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Supporting quality data and decisions for higher education.

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SPECIAL ISSUE: Building More Inclusive Systems for Who Counts

PREFACE

Building More Inclusive Systems for Who Counts

While institutional research is a mainstay for providing replicable and standardized data about college and university populations such as faculty, staff, and students, our systems too often limit who can be counted, and in what ways those individuals can be defined. For example, since they are neither faculty, staff, nor student, postdoctoral scholars are often rendered invisible (Jaeger & Dinin, 2018; Schaller & McDowell, 2016); the number of undocumented students pursuing higher education is often an estimate rather than a reflection of true counts (California Student Aid Commission, 2023); systems conflate sex and gender, rendering trans-identified individuals as "other" (Bates et al., 2022); disability identification within education is often framed by deficit views, and needs improved practices and strategies that reflect the complexities of lived experiences (Artiles, 2019); and national data about adjunct faculty characteristics and workloads are lacking (Scott et al., 2019). While this is by no means an exhaustive list, what these disparate issues and groups have in common is a need for good practices to build systems for more-inclusive representation.

It is not uncommon for data warehouses and off-the-shelf systems to dictate the terms by which institutional research/institutional effectiveness professionals are able to track information about constituent groups within their institutions. These professionals are familiar with a long list of reporting requirements and various definitions, including federal requirements such as the Integrated Postsecondary Education Data System (IPEDS) (U.S. Department of Education, 2023–2024), U.S. News and World Report (2023), institutional and disciplinary accreditation agencies, and state reporting requirements. To be sure, these systems and reporting efforts make it possible to have comparative data over time that have high value and utility. Yet the rigidity of these systems and requirements can risk instances of the tail wagging the dog, in that the ability to nuance and include are controlled by the limits of an archaic data warehouse. Institutional data collection and reporting systems need better ways to identify and describe who comprises our institutional communities, with attention to upholding the autonomy, confidentiality, and privacy of minoritized individuals.

As a scholar-practitioner of higher education, I have 10 years of full-time experience in administration, 7 years of which included work within or adjacent

to institutional research. I found myself among dedicated colleagues who were interested in making real changes but were too often understaffed and under-resourced. My aspiration for this volume is to keep building on what is being done already and what we can keep doing better. By no means will this volume solve the issues, but rather will provide evidence-based guidance toward improvement.

This special issue of the *AIR Professional File*, entitled "Building More Inclusive Systems for Who Counts," contains manuscripts on a variety of related topics. Authors have identified strategies for systematically gathering and reporting information about an overlooked group and/or status within higher education, with key case examples. This volume contains clear guidance regarding the importance of responsible data use, including but not limited to secure data collection, access, storage, deidentification, and aggregate reporting; and delineated safeguards for ensuring the autonomy, privacy, and confidentiality of individuals holding various minoritized identities.

It is my honor to present this special issue with eight articles that seek to address specific constituent groups within higher education, and ways to build more-inclusive ways to report information while maintain the autonomy, privacy, and confidentiality of these constituents. Articles address issues on race and ethnicity, legal status, gender identity, disability, and first-generation status.

In the first article, Jameson D. Lopez, Kyle X. Hill, and Jana Hanson address data limitations for Indigenous students and Tribal Colleges and Universities. The authors provide key examples of ways to improve data outside postsecondary data collection efforts through a focus on data sovereignty and data governance, with an emphasis on community engagement and complicating measures of cultural identity.

Nathan Lieng, Jason L. Morin, Que-Lam Huynh, and Janet S. Oh provide a framework for equity-minded race disaggregation. Their article showcases a case study on Asian Pacific Islander Desi American undergraduates that disaggregates student race/ethnicity data toward complicating trends on socioeconomic status, academic achievement, and retention. The authors offer a Race Data Disaggregation Readiness framework toward leveling up on engaging in these efforts.

To further address multiracial categorization, Jacob P. Wong-Campbell, Ashley Gerhardson, Marc P. Johnston-Guerrero, and Naunihal Zaveri offer strategies to disrupt quantitative monoracism. The authors critique the "two or more races" category and use both quantitative critical race theory and critical multiracial theory to guide anti-monoracist action.

Given valid concerns institutions have about collecting information about undocumented students, Cynthia N. Carvajal, Felecia Russell, and Yadira Ortiz offer strategies for how institutions can collect data about these populations while maintaining protections for students' legal status. They summarize key strategies, including assessing undocumented student populations, ensuring safe strategies, and collaborating across departments and units.

Turning to gender identity and chosen pronouns, Casey Gogno, Scott Burden, and Wyntre Scott offer a case example of how to use Ellucian's Banner to collect and use chosen name, gender identity, and gender pronouns, with particular relevance to individuals who identify as transgender.

In an international case example, Paulina Berríos, Estefanía Álvarez, Karen Gutiérrez, and Antonia Santos detail how a public university in Chile

implemented the nonbinary sex category in institutional data. The authors also provide an international context for how institutions in countries around the world are moving beyond binary record-keeping.

Kathleen Clarke and Adam R. Lalor provide an overview of ways to demonstrate more inclusion of disabled populations within the campus community. The authors offer a definition of disabled people on campus, outline strategies for ensuring ethical and equitable treatment, and delineate accessible methods of data collection and reporting.

Finally, AIR Board Chair 2024-2025 Brent M. Drake examines robust data on first-generation students to consider equity gaps within postsecondary education outcomes. While it acknowledges the lack of a single definition for first-generation students, the article demonstrates evidence of a high level of intersectionality between first-generation status and other underserved populations, indicating a need to focus on improving outcomes for first-generation students.

I thank the authors for sharing their expertise, Leah Ewing Ross at AIR for facilitating this special issue, Iryna Muse and Inger Bergom for the opportunity to guest edit, and Becki Elkins for connecting me to the *Professional File*. Special thanks to authors attending the 2024 AIR Professional Forum engaging in the impact session highlighting this issue.

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Table of Contents

Federal Postsecondary Data Limitations for Indigenous Students and for Tribal Colleges and Universities

Jameson D. Lopez, Kyle X. Hill, and Jana Hanson

About the Authors

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Abstract

The purpose of this project is to explore the limitations of federal postsecondary data as data as those data relate to Indigenous students and to Tribal Colleges and Universities. After first establishing some of the statistical limitations we commonly find in postsecondary data with Indigenous students, we provide strategies and practices that educational institutions should consider. We highlight important considerations that they must consider when working with Indigenous data, including data sovereignty and data governance through some current examples of improving data outside postsecondary data efforts.

The concern about postsecondary education erasure of Indigenous people has been investigated by several Indigenous scholars (Brayboy, 2004; Lopez, 2020a; Lopez & Marley, 2018; Shotton et al., 2013, pp. 1–24; Tachine, 2022). Indigenous people erasure is found in almost every federal data set, and is often denoted by an asterisk. The use of an exclusionary measure such as consistently using an asterisk next to Native American data signifies statistical extermination. This use of statistics is a remnant of consistent federal government extermination policies that continue to exacerbate the validation of the federal government's efforts to eradicate Indigenous people's existence and presence (Jaimes, 1992, p. 137).

The AIR Professional File, Summer 2024

Article 168

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Through statistical extermination, settler colonialism (Wolfe, 2006) permeates with efforts to control Indigenous peoples within the borders of the United States by treating them as wards of the government. Such efforts are in direct conflict with the recognition of Indigenous people as a political designation, owing to the government-to-government relationship with federally recognized tribal nations, rather than as an ethnological or racial designation. Thus, there is an inherent trust responsibility on behalf of the federal government to protect and promote sovereignty of Native peoples (Bureau of Indian Affairs [BIA], 2024). For these reasons, among others, Native presence and sovereignty (Tachine, 2022) are apex goals of this work to improve the data limitations that exist in currently managed federal postsecondary data sets. Therefore, the purpose of this article is to explore the limitations of postsecondary data as those data relate to Indigenous students and Tribal Colleges and Universities. This article will also provide strategies and suggest practices that organizations should consider related to data sovereignty as well as the students and tribal nations served by Tribal Colleges and Universities.

BACKGROUND

Federal Postsecondary Data Collection

As described by Miller and Shedd (2019), the U.S. Department of Education has attempted to capture postsecondary data since the late 1800s. Primarily focused on enrollment, earned degrees, and faculty, these data have been used to help policymakers understand the higher education landscape. Eventually, in the early 1960s, the U.S. Department of Education established the National Center for Education Statistics (NCES) to help provide guidance and support of education statistics.

The passage of the Higher Education Act of 1965 introduced the Higher Education General Information Survey, which was a more systematic and regular reporting system. Data from that survey were primarily used for reporting purposes, such as in the *Digest of Education Statistics*, to inform policymakers on the condition of higher education. In addition, data from that survey were made available to researchers who were interested in higher education research.

The Higher Education General Information Survey evolved into the Integrated Postsecondary Education Data System (IPEDS) around the late 1980s. Over time, IPEDS has transitioned from a paper format to an online format. The number of institutions participating in IPEDS has increased to more than 6,500 institutions. In addition, the collection cycle surveys and variables collected have all expanded over the years. Currently, there are 12 reporting components: (1) institutional characteristics, (2) completions, (3) 12-month enrollment, (4) student financial aid, (5) graduation rates, (6) 200% graduation rates, (7) admissions, (8) outcome measures, (9) Fall enrollment, (10) finance, (11)

human resources, and (12) academic libraries. A dense codebook has attempted to standardize data definitions. However, it is unknown the extent to which data are consistent among institutions. In addition, IPEDS tends to primarily focus on mainstream, traditional 4-year degree-granting institutions. Given the distinct missions of varying institutional types, the data required for IPEDS are not always appropriate or readily available.

Through legislation and harsh penalties, postsecondary institutions are compelled to participate. Failure to report IPEDS metrics results in fines and withholding of Title IV funds. In the early 2000s, the reauthorization of the Higher Education Act led to increased transparency and consumer information related to postsecondary education (Miller & Shedd, 2019). In 2007 the NCES created the College Navigator (nces.ed.gov/collegenavigator/) to increase accessibility and to allow parents and students to make comparisons among institutions by using the data available. Data are also made available to educational researchers.

Insufficient Data on Indigenous People in Postsecondary Education

Even with the extraordinary efforts, expenses, and resources made by the federal government to establish a postsecondary data warehouse, the result has been skewed, insufficient, and biased information—especially for Indigenous students in higher education. Specifically, there are excessive limitations to federal data due to self-reported data on identity, race/ethnicity definitions, small sample sizes, and other constructs that better reflect culturally relevant variables (Lopez, 2018).

All federal data have excessive limitations because of self-reported data on identity. Native Americans are political designations given the government-to-government relationships, and not only a racial or social construct. According to the BIA, the term *Indian*, which also is recognized as referring to Native American and/or American Indian people, refers to a political designation due to the special trust status conferred to these communities as a result of treaty negotiations, land cessions, and so on (BIA, 2024).

Also, IPEDS and other federal data sets have done an inadequate job of representing the diversity of students in higher education. Currently, higher education institutions are forced to collect race/ethnicity identities based on IPEDS's definitions:

> When institutions collect race and ethnicity data from students and staff, they are required to use a two-question format. The first question asks about ethnicity (is the individual Hispanic or Latino, yes or no) and the second question asks about race (the individual is asked to select one or more race categories with which he or she identifies: American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; White[)]. So, there are 6 categories for data collection. ALL respondents must have the opportunity to answer BOTH questions.
>
> There are 9 categories for data reporting to IPEDS. The categories for reporting are: Hispanic (regardless of race); and for non-Hispanics: American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; White; Two or more races. In addition, U.S. Nonresident (for whom race, and ethnicity is not reported), and Race and ethnicity unknown. (NCES, 2024, #1)

Using these definitions results in categorizing identity based on a hierarchy, so each student has one race or ethnicity identity. If a student selects Hispanic or Latino, they will be primarily categorized as "Hispanic." If a student selects more than one race, they will be categorized as "Two or more races." Specifically, if an American Indian or Alaska Native student also identifies with any other race, they will not be counted as American Indian or Alaska Native, but rather will be placed in the "Two or more races" bucket. This has resulted in severe undercounting and erasure of American Indian or Alaska Native students that participate in postsecondary education (Faircloth et al., 2015; Sharma, 2021). As Lopez and Marley (2018) argued, researchers collecting federal data on Indigenous populations need to recognize their limitations more thoroughly. Any policymaker or researcher who has used these data has not received accurate data that reflect student diversity.

These data definitions have resulted in small counts and sample sizes for Native student data. As many students sitting in statistics classes are taught, we either ignore or throw out small counts, or we somehow combine data (e.g., all non-White students). Again, this has resulted in underrepresentation of Native students, Native student experiences, and Native student outcomes as it relates to postsecondary education systems.

As Lopez (2018) has suggested, there is a strong need for oversampling Native students, and for collecting culturally relevant variables that address the omitted variables that plague current federal data. Current data available in federal postsecondary data do not oversample or have enough variables relevant to Natives, whereas some of the data collected by Native-focused national nonprofits, such as the National Native Scholarship Providers, have collected some of the most national data on Indigenous students, but are not federally managed. Oversampling is not a new suggestion, but rather a long-standing plea of many researchers over the past two decades (Faircloth et al., 2015; Lopez & Marley, 2018; Shotton et al., 2013). Additionally, federal data sets omit items to measure constructs such as reciprocity, Native nation-building, and cultural experience that render most federal data all but useless.

We do note that the American Indian Measures of Success (AIMS) defines American Indian or American Native (AI/AN) students as students who are able to provide federally accepted documentation that they are either an enrolled member of a federally recognized Indian tribe, or that they are the biological child of an enrolled member of a federally recognized Indian tribe, living or deceased. This is somewhat different from Tribal Colleges and Universities (TCUs) and the BIA, who define the term *AI/AN student* as meaning a member of an Indian tribe, because membership is defined by the tribe (White House, 2011). We do recognize that American Indian Higher Education Consortium (AIHEC) reporting classifies students in their Indian students count as either Indian or non-Indian. While we see that this can eliminate the Hispanic component as a barrier to accurate head count, the method has limitations in that the Indian students count is only for a student who is an enrolled member or the biological child of an enrolled member of a federally recognized tribe. This method excludes from the performance measures a significant number of students who identify as Native American but who are not enrolled members of a federally recognized Indian tribe. This is why the AIHEC AIMS Key Indicator System (AIHEC AKIS) uses descendancy as well. Nonetheless, at the end of the day tribes have the sovereignty to determine their own membership.

Finally, there is a lack of constructs that reflect culturally relevant information. For example, IPEDS does not currently ask for tribal affiliation, tribal language(s) spoken, whether a student was raised in their tribal community, or whether community members served their tribal community.

Comprehensive Data for Tribal Colleges and Universities

Because federal postsecondary data sets are typically created with large 4-year public universities in mind, they have not accurately reflected institutions with culturally relevant missions, such as TCUs. Currently there are 35 accredited TCUs. These institutions are located primarily in the Midwest and Southwest, on the West Coast, and in Alaska. Their missions are tied to their local tribal community to help preserve American Indian culture, languages, and traditions. These 35 TCUs represent more than 250 tribal nations.

Due to the significant limitations of federal data, TCUs and AIHEC have worked together to define and collect postsecondary educational data that are more reflective of TCUs missions, community, and the students they serve. The AIHEC AIMS has a set of 116 tribal college indicators. As previously reported (Hanson et al., 2023), AIMS collects more-robust information on students who are enrolled, such as on both AI/AN students and non-AI/AN students. TCUs report on the number of students who are members of federally recognized tribes. AIMS includes qualitative components to invite institutions to share their narratives. There are also sections on community partnerships and services provided to the community. The AIHEC AKIS collects information on the institution, such as mission, location, and tribal reservation information. Unlike IPEDS, AIHEC AKIS includes qualitative components where institutions can describe their successes and challenges. In addition, there are also indicators related to the number of students who speak an American Indian or Alaska Native languages. AIHEC has collected these data since 2007.

Because of AIMS, we know that TCU student enrollment has steadily increased. The overall total and first-time entering enrollments have increased by 18% over the past 3 years across all TCUs. The proportion of AI/AN students (using the AIMS definition) attending TCUs and not attending non-TCUs has remained steady, averaging 86% identifying as AI/AN. The average retention rate has increased by 7% over the past 3 academic years. These institutions remain a good value for students, and offer an average cost per credit hour that is significantly lower than the cost at other private and public institutions. Currently, AIMS is undergoing a revamp related to what data are collected, and how they are collected, from each TCU. The goals of this revamp include recording data that are more consistent and improving data accessibility for TCUs. Also, additional culturally relevant variables have been added.

THE IMPORTANCE OF DATA SOVEREIGNTY AND DATA GOVERNANCE

As demonstrated, there are several limitations to federal data and educational data sets. There are important considerations that must also be considered when working with Indigenous data, but at the forefront we must include data sovereignty and data governance. Tribal nations have inherent sovereign authority to administer the collection, ownership, and application of their own data (Carroll Rainie et al., 2017). Due to gross misuse and abuse

by researchers, it is vital to protect tribal nations' data. Data governance also plays a role in Indigenous nations' management of their data systems and sharing of information (Carroll et al., 2020).

TOWARD A NEW INDIGENOUS DATA FUTURE

To ensure that federal data are helpful and that they support Native students at all levels, the federal government must engage in meaningful consultation with tribal nations and TCUs to cultivate a relationship that fosters productive data collection that is representative of Indigenous populations in the United States. Furthermore, tools need to be developed to provide tribal nations with deliberate and useful access to data about their respective nations. Finally, federal data should seek to support tribal governments and to honor their right to sovereignty by helping Native nations answer and contextualize their own questions as they pertain to postsecondary education. Notably, Indigenous data sovereignty approaches and frameworks, such as Carroll et al. (2020) and their "CARE Principles for Indigenous Data Governance," provide a framework and set of principles that honor data sovereignty concerns within tribal communities. Furthermore, culturally safe research frameworks have also advanced Indigenous data sovereignty as a central component of the set of principles known as Ownership, Control, Access, and Possession (OCAP; Brockie et al., 2022). One example of moving forward is to ask what we should measure that we do not currently measure.

When thinking about measurement, we need to consider what we are measuring. There have been several reports recommending the reimagination of educational outcomes of Native communities to reflect the reality in which those communities' function. The first example is the Meriam report (Meriam, 1928), which extensively demonstrates the lack of adequate education provided by the federal U.S. government. Furthermore, the Meriam report recommends that standardized testing should not be used in Indigenous communities because it was biased. This recommendation implies that they knew in 1928 that standardized testing should be based on Indigenous value systems. Nonetheless, little changed, and almost 100 years later the Broken Promises report (U.S. Commission on Civil Rights, 2018) recognized identical results and implications for Native communities. Based on those two reports, an argument could be made that we measure educational outcomes differently for Native and non-Native students, and that we do not currently measure outcomes well.

After searching the literature, it is fairly evident that a dominant construct that consistently arises is the desire of Native American students enrolled in postsecondary education to give back to their community (Drywater-Whitekiller, 2010; Guillory, 2009; Huffman, 2011; Lopez, 2018; Shotton et al., 2013). This lays evidence to the fact that Native communities put a high value on giving back through postsecondary education. However, postsecondary data sets often overlook giving back as a postsecondary outcome, which is the value of giving back to one's tribal nation. Lopez and Tachine (2021) argue that giving back is a form of nation-building. Or, in the contexts of Indigenous communities, nation-building is a tribe's pursuit to build its respective capacity to self-govern toward sustainable communities. The argument Lopez and Tachine (2021) make is that the desire of Indigenous people to give back to Native communities is the motivation behind students persisting through postsecondary

education. If giving back is an important construct to Native students, then it should be measured. If giving is measured, it may become a more important educational outcome than traditional measures of postsecondary success such as persistence, graduation rates, and GPA. Native communities have often demonstrated that giving back is a more important outcome than a student persisting from their 1st to 2nd years. We are not saying persistence is not an important metric, but rather that there are other metrics that are just as important in the context of Indigenous communities.

An example of Indigenous outcomes is the construction of Kwanamii as an educational outcome for Quechan students. Kwanamii is the embodiment of the warrior spirit as it relates to protecting and giving back to the Quechan way of life. Lopez et al. (forthcoming) began constructing evidence about the relationship between giving back and the Quechan value of Kwanamii. Exploring the relationships among the Kwanamii (warrior spirit), nation-building, and postsecondary education, Lopez et al. (forthcoming) indicate findings that contribute to the development of survey questions that measure Kwanamii, and that can be used in future postsecondary research among the Quechan. A short clip of the scale development and validation process to establish evidence based on content validity (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014) was captured in a short documentary (Lopez et al., 2019). Through the Kwanamii Project, questions were asked related to defining Kwanamii, and the relationship between Kwanamii and postsecondary education. To provide validity (Shadish et al., 2002) and to center Indigenous quantitative methodologies (Walter & Andersen, 2013), there were five semi-structured interviews with Quechan veterans about their embodiment of Kwanamii. The transcripts were coded using a phenomenological method, with an additional six more interviews planned to strengthen the construct validity for survey items measuring Kwanamii. From the completed interviews, the dominant emergent theme to operationalize Kwanamii is that Quechan veterans viewed their military service as an act of protection, while they carried out ancestral traditions related to war. Later in the interviews, however, it became more important that the wars the Quechan fight are not physical or court battles, but instead are fights to protect water, language, agriculture, and, ultimately, the way of life.

FRAMING INDIGENOUS DATA

A structure for considering the use of Native data should be Indigenous data sovereignty. Indigenous data sovereignty recognizes the right of tribes to build the capacity of their respective nation to develop data processes and analyses as data relate to governance of Indigenous data. The basis of Indigenous data sovereignty in the context of postsecondary education data should be situated within Indigenous quantitative methodology, which remedies many limitations that plague national and institutional data sets while simultaneously uplifting Indigenous data sovereignty. Indigenous quantitative methodology relies on two concepts related to creating data from Indigenous lens that privileges the Native voice, denies dominant non-Native value systems, and avoids deficit frameworks as the beginning in research. The second aspect of Indigenous quantitative methodologies is that they challenge the postpositivist statistical practice that has historically been conducted within Indigenous nations by recognizing the problematic approaches

that traditional quantitative research has operated with in Indigenous communities in the past (Snowshoe et al., 2015; Walter & Andersen, 2013). Due to the limitations discussed in the previous sections of this article, some Native communities have made efforts to embody Indigenous data sovereignty to improve the relevance of and access to data, and to improve the consistency with which those data can operate.

Indigenous people have seen the recognition that standardized testing was not meant for them (Meriam, 1928). There is also the constant wait for federal data sets to improve and to have data collected on a national level to indicate the progress Indigenous communities have made. Yet, it is highly unlikely that the data will become relevant at the federal level, be consistent, and/or have a representative sample within the next decade. The support of Indigenous data, including the collection of those data, can be led only by Indigenous researchers with tribes as stakeholders to improve the understanding of Indigenous communities' realities. The burden is therefore on the tribal nation and/or Indigenous researcher to address the issue of data, and it becomes an extra concern that many other racial identities do not need to carry. However, the previously stated needs of quality data underpin the reasons why the burden needs to be carried so that tribes can make data-driven decisions that inform nation-building while also holding the federal government accountable for treaties that are contingent on accurate numbers. Indigenous data sovereignty helps Indigenous communities and is something that all researchers controlling federal data should consider when trying to make Native communities more visible.

Furthermore, when measuring educational outcomes from a Native lens, researchers can implement policy that recognizes Indigenous outcomes by adding statistical validity to the values through robust statistical practices. This is an opportunity to change how we measure educational success for Indigenous students, a change that has been long overdue. For example, if federal longitudinal data are collected and the subsequent analytical procedures are framed through an Indigenous lens, researchers then can create statistical and theoretical models so institutions can measure Indigenous educational success using causal statements. Using the subsequent evidence, tribes can have empirical evidence to establish meaningful data-driven policy change that will modify the deficit perspective that society has often been acclimated to viewing Native peoples. Future and current practice and policies should consider collecting data that recognizes and upholds tribal culture, even though the most basic statistical procedures such as data collection. Indigenous data collection (Lopez, 2020b) can be used if we were able to accurately and consistently identify tribal affiliation. Researchers could then group tribes according to creation stories, and in turn give credibility to Indigenous knowledge and Indigenous voices, while also analyzing data from homogenous groups that could identify finite relationships that are often missed by federal data. Finally, data collection generally should follow these procedures (adapted from Lopez [2020a] and Snowshoe et al. [2015]):

1| Engage in the complex authority structures of Indigenous nations.

2| Follow each individual tribal nation's elder engagement process.

3| Use culturally competent partners to help in the tribal partnership process.

4| Use an Indigenous approach that works in the community for the research design.

5| Anticipate a longer timeframe for the community engagement process.

6| Select culturally appropriate data collection methods.

7| Commit significant time and resources to Indigenous data collection and analysis.

CONCLUSION: IMPLICATIONS FOR ORGANIZATIONAL CONSIDERATION

There are already organizations working toward making Indigenous data more relevant among Indigenous communities. First is the state of Michigan, which requires school-to-state tribal affiliation; second is AIR and its federal practices around improving Indigenous data. Michigan is one of the first states to require schools to report tribal affiliation. The Michigan Department of Education has a $3 million budget to assist schools with the new reporting requirement. This is a great tool for tribes to use when looking at their respective data and tracking their tribal citizenship in urban areas (Fernandez-Alvarado, 2023).

There is also the Indigenous Student Identification project that the American Institutes for Research (2024) is supporting. The goal for the project is to increase the capacity of state education agencies in supporting Indigenous students, and to improve the policymaking power of national Indigenous education professionals and organizations by offering information, research, and tools to locate and advocate for Indigenous students. For example, the American Institutes for Research has released the Indigenous students count map and reports that show Indigenous students in K–12 schools. Although these two organizations are in their infancy, their existence indicates that they will be a solution to a long-standing problem.

Again, the purpose of this article is to explore the limitations of postsecondary data as they relate to Indigenous students and TCUs. We established some of the statistical limitations we commonly find in postsecondary data with Indigenous students, but we also provide strategies and practices that organizations should consider. Two major suggestions we would like organizations to consider are these:

First, collect data with Indigenous communities by using the following process (adapted from Snowshoe et al. [2015]).

1| Engage in the complex authority structures of Indigenous nations.

2| Follow each individual tribal nation's elder engagement process.

3| Use culturally competent partners to help in the tribal partnership process.

4| Use an Indigenous approach that works in the community for the research design.

5| Anticipate a longer timeframe for the community engagement process.

6| Select culturally appropriate data collection methods.

7| Commit significant time and resources to Indigenous data collection and analysis.

Second, add items such as the following to measure cultural identity that move beyond only asking if a person is "American Indian," because folks committing ethnic fraud by claiming Native ancestry permeates many spaces in academia.

1| I have a close relationship with my tribal relatives.

2| Before coming to college, I had knowledge of my tribal language.

3| I can speak my tribe's language.

4| I participated in tribal ceremonies prior to attending college (e.g., sunrise, sundance, cremation, sweat).

5| I know my tribe's history.

6| I spent most of my life on my tribal homelands.

A few other important considerations we offered when working with Indigenous data include data sovereignty and data governance through some current examples of improving data outside postsecondary data efforts. As we have seen, we can wait another 90 years with no substantial change to the limitations of AI/AN data, or we can allow Indigenous researchers to lead the way on how we can reimagine the future of Indigenous data.

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A Framework for More Intentional and Equity-Minded Race Data Disaggregation

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Abstract

Higher education leaders have repeatedly called for improved diversity, equity, and inclusion efforts, but many institutions continue to fall short. Data can play an integral role in this work; key among them are data on student demographics, including race/ethnicity. Meeting diversity, equity, and inclusion goals requires a thorough and nuanced understanding of the diversity within student bodies through intentional and systematic data disaggregation from broad racial/ethnic categories (e.g., Asian American, Black or African American [hereafter Black], Latinx) into finer subgroups (e.g., Hmong, Haitian, Salvadoran). Without further data disaggregation, minoritized student populations can remain invisible to institutional leaders who seek to provide focused, targeted equity programming. To offer actionable guidance for race data disaggregation, we present a case study on the Asian Pacific Islander Desi American (APIDA) undergraduate population at a large public university in the Southwest United States as a roadmap for institutions seeking to further disaggregate student race/ethnicity data. APIDA students are often homogenized as a group that has been very successful in higher education; our case study, however, found significant heterogeneity in demographic profiles and academic outcomes, showing that this model minority myth belies tremendous diversity within the group. When disaggregated into regional and national origin groups, the APIDA population demonstrates first-generation college status and Pell Grant (hereafter Pell) eligibility proportions, as well as 1st-year GPA and 2nd-year

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Article 169

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retention rates, that range from the lowest to the highest at the university level across all racial/ethnic groups. Building on the insights gained, we present a Race Data Disaggregation Readiness framework to contextualize the continuum of readiness of postsecondary institutions to do this work, and we offer suggestions on how they can progress—or level up—in their readiness.

Keywords: data disaggregation, race/ethnicity, Asian Pacific Islander Desi American, demographic profiles, academic outcomes

INTRODUCTION

The collection of racial/ethnic data in higher education—when done intentionally with an equity lens—can be an important tool in developing evidence-based practices for student success. Postsecondary institutions rely on racial/ethnic data to identify patterns across a host of demographic, academic, and institutional indicators, advocate for the allocation of resources, and develop data-driven programs to promote important goals, such as student retention, graduation rates, and general improvement in academic performance. Many of these institutions, however, rely on broad pan-ethnic categories, such as Latinx, Asian American, Native American, or Native Hawaiian and Pacific Islander, to classify students' racial/ethnic backgrounds. This practice can obscure important variations within these groups, which can lead to gross overgeneralizations, perpetuation of stereotypes, and the spread of common misconceptions harmful to students.

The tendency to use pan-ethnic categories by postsecondary institutions has led many—including administrators, faculty, and students—to advocate for the collection of disaggregated racial/ethnic student data into finer subgroups (e.g., Thai, Jamaican, Mexican; see Kauh et al., 2021). Progress has been slow, however, and many postsecondary institutions have yet to make significant changes to their current data collection practices.

To address these critical issues, we use a case study of the Asian Pacific Islander Desi American (APIDA)[1] student population at a large, regional public university in Southern California to make a case for disaggregating beyond pan-ethnic groups. Our findings reveal significant heterogeneity within the APIDA student population, demonstrating the importance of race data disaggregation to expose disparities that are often overlooked within broad racial/ethnic groups. Furthermore, our case study illustrates a systematic approach that can be used to achieve more intentional and equity-minded race data disaggregation. Building on insights gained from conducting the case study, we offer a framework for data disaggregation readiness. More specifically, we provide actionable suggestions for postsecondary institutions to progress—or level up—in their readiness based on their access to disaggregated data, analytic approach, and dissemination strategies, while also recognizing distinct institutional and resource-related challenges that administrators may navigate along the way. Considerations for data confidentiality, regrouping disaggregated data with intention, and analyzing and presenting disaggregated data are discussed. With this article we strive to offer best practices that are both grounded in real-world experiences and that have implications for postsecondary institutions promoting academic success among students belonging to diverse racial/ethnic groups.

1. In this paper, we intentionally use the term *APIDA* to highlight the inclusion of South Asians/Desis, who are often overlooked in the Asian American diaspora.

ASIAN PACIFIC ISLANDER DESI AMERICANS

The APIDA population is one of the most culturally, socioeconomically, and politically diverse (and is among the fastest-growing) racial/ethnic groups in the United States. The APIDA population saw an 81% increase in size between 2000 and 2019 (Budima & Ruiz, 2021a). If this trend continues, the APIDA population is projected to triple by 2060, surpassing the Latinx group for the first time (Budima & Ruiz, 2021b).

There are many terms used to represent this diverse population, such as Asian American Pacific Islander, and Asian American and Native Hawaiian and Pacific Islander. In this article, we intentionally use APIDA to highlight the inclusion of South Asians/Desis, who are often overlooked in the Asian American diaspora. APIDA as a pan-ethnic term represents a diverse number of ethnic groups from East Asia (e.g., Chinese, Korean, Japanese), South Asia (e.g., Indian, Bangladeshi, Sri Lankan), Southeast Asia (e.g., Filipino, Hmong, Viet), and the islands of Melanesia (e.g., Fijian, Papua New Guinean, Solomon Islander), Micronesia (e.g., Chamorro/Guamanian, Mariana Islander, Saipanese), and Polynesia (e.g., Native Hawaiian, Samoan, Tahitian). Each ethnic group has its own unique historical contexts, migration patterns, and racialization, contributing to the diverse lived experiences within these communities.

Some APIDA ethnic groups have primarily immigrated to the United States for career and educational opportunities, whereas others sought asylum in the United States due to political instability in their home countries. For example, the first wave of Asian immigration consisted of Chinese, Japanese, Filipino, and, to a lesser extent, Korean laborers in the late 19th and early 20th centuries. However, Congress—motivated by racial animus—placed several bans on Asian immigrants; an example is the National Origins Act of 1924, passed to ensure the United States population remained European. The Immigration and Nationality Act of 1965 and the Immigration Act of 1990 put an end to these exclusionary immigration policies and placed greater emphasis on attracting highly skilled immigrants, leading to hyper-selective immigration from Asia, particularly Chinese, Indian, Korean, and Filipino individuals who immigrated to the United States for work and education opportunities (Tran et al., 2019; Zhou & Lee, 2017). In contrast, some APIDAs (such as Viet, Hmong, Khmer, and Lao Americans) are refugees from war-affected countries that were influenced by U.S. political involvement and other colonial forces, who may lack the economic resources, education, and English literacy to adapt smoothly to American life (Ngo & Lee, 2007; Southeast Asia Resource Action Center, 2020).

These diverse immigration patterns play a crucial role in understanding the socioeconomic heterogeneity within the APIDA community. For instance, ethnic groups like Indian (75%), Chinese (57%), and Korean (57%) exhibit higher bachelor's degree attainment rates, whereas groups such as Lao (18%), Hmong (23%), and Viet (32%) have comparatively lower rates (Budima & Ruiz, 2021b). When the aggregated bachelor's degree attainment of 54% for Asian Americans is presented alone, however, it masks these within-group differences. As such, although collecting students' racial/ethnic identity data helps educators to understand opportunity gaps and to develop programs to promote student outcomes, the reliance on aggregated data obscures diversity within the APIDA student population. The danger of making sweeping generalizations from aggregated data can lead faculty, administrators, and lawmakers to assume that all APIDA students are high achievers and

"problem-free" (Museus & Chang, 2009; Shih et al., 2019), fostering the misconception that resources and institutional programming are unnecessary for this demographic. Therefore, to ensure APIDA students and students of other minoritized racial/ethnic groups are seen and represented, higher education institutions must move beyond the broad racial/ethnic categorizations commonly used and must systematically and intentionally disaggregate race data.

A CALL FOR DATA DISAGGREGATION

Given the aforementioned challenges, there have been numerous calls from academics, government leaders, and civic organizations to collect disaggregated data on APIDA students and students belonging to other racial/ethnic groups in postsecondary institutions (Chang et al., 2015; Ramakrishnan & Ahmad, 2014; Southeast Asia Resource Action Center, 2022). One method of data disaggregation is to deconstruct the common term—*underrepresented minorities* (URM)—into distinct pan-ethnic groups: Black, Latinx, and Native American. In this article, we take it a step further by using detailed ethnicity or national origin subgroups (e.g., Hmong, Haitian, Salvadoran). Our method also entails the collection of additional demographic characteristics by pan-ethnic group and subgroup, such as first-generation status, gender identity, and socioeconomic status. When intentionally implemented, data disaggregation can help faculty and administrators to identify students who have historically been overlooked and redirect vital campus resources (e.g., financial assistance, academic advisement, mental health services) to promote parity and close achievement gaps.

All postsecondary institutions that receive federal financial aid are required to collect and report racial/ethnic data about their students to the Integrated Postsecondary Education Data System (IPEDS).[2] According to IPEDS standards, to assess students' race and ethnicity, these postsecondary institutions, at a minimum, must use a two-part question (National Center for Education Statistics, n.d.). The first question asks about students' ethnicity: "Are you Hispanic or Latino?" The second question asks if students belong to one or more of the following racial groups: "American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White." Although IPEDS allows institutions to add additional questions to disaggregate race data, it is up to the individual institution to do so, and only the aggregated form is mandatory for reporting purposes. This federal policy raises a key issue: the loose requirements can impede buy-in and disincentivize systematic race data disaggregation across institutions.

The current landscape in higher education must move beyond standard aggregate measures to improve their understanding of racial equity, diversity, and inclusion on their campuses. We now turn to a case study of disaggregated data on the APIDA student population at our university to showcase key insights that are obscured when the data are presented only in the aggregate form. More importantly, we provide a detailed account of our procedure, which serves as a roadmap for other institutions looking to implement race data disaggregation.

2. There are nearly 6,000 postsecondary institutions that accept federal financial aid.

CASE STUDY

In this case study, we disaggregated data on the APIDA undergraduate student population at California State University, Northridge (CSUN). CSUN is a large, regional, masters-level public university in the San Fernando Valley region of Los Angeles County. CSUN is a part of the California State University (CSU) system. The CSU system is the nation's largest and most diverse public university system, comprising 23 campuses across California. CSUN has consistently been among the five largest CSU campuses based on student head count (CSU, n.d.b). In 2021, the university served a total of 34,275 undergraduate students, 71.4% of them being first-generation and 56.8% Pell recipients. The four largest racial/ethnic groups that year were Latinx (56.9%), White (20.5%), APIDA (9.1%), and Black (4.7%) (CSUN Counts, n.d.). CSUN holds the designation of being a Hispanic-serving institution and was previously an Asian American and Native American Pacific Islander–serving institution. The many ethnic and national origin groups within the APIDA community make it a compelling pan-ethnic case study to showcase the process and benefits of race data disaggregation.

Data Overview

Applicants to all CSU campuses, including CSUN, must complete the CSU systemwide common application (Cal State Apply; CSU, n.d.a). This form includes the two IPEDS-required questions about race/ethnicity, as well as additional options to specify detailed ethnic and national origin identity under each of the pan-ethnic racial/ethnic groups (see Cal State Apply [CSU, n.d.a] for a comprehensive list of available options). Applicants can choose from among 49 detailed APIDA ethnic and national origin identities.

For our case study, we used the detailed race/ethnicity data collected from the CSU system common application for undergraduate applicants to CSUN (first-time freshmen and new undergraduate, upper-division transfers) from 2009 to 2021. After filtering for only APIDA-identifying students who are not international students (i.e., those who hold F and J visas),[3] the dataset includes 13,396 students, representing 28 APIDA ethnicities of the 49 options on the Cal State Apply form.[4] In addition to data on race/ethnicity, the dataset contains additional demographic characteristics, including parents' education and Pell eligibility, as well as academic outcomes, such as 1st-year GPA and retention rates.

DISAGGREGATION TO REGIONAL GROUPINGS AS A STRATEGY

The CSU application, from which we are pulling data for this case study, includes 49 detailed APIDA ethnic and national origin identities. This many categories, which include some groups with very small counts, can be overwhelming; it can be difficult to develop a cohesive data story due to the diverse number of individual trends and patterns that require interpretation. Recognizing the need for a more manageable approach, we regrouped the disaggregated APIDA ethnic and national origin data into regional Asian and Pacific Islander groups as informed by the Asian Pacific Institute on Gender-Based Violence (n.d.) with two modifications: (1) the Filipino ethnic group was disaggregated from the Southeast Asia region into its own separate category due to its unique history with U.S. colonization

3 . Research suggests variation in demographics and academic outcomes between domestic and international students.

4 . Some APIDA ethnic groups might not be represented in this case study due to the limited options provided in the CSU system common application form and enrollment patterns at CSUN.

(David & Okazaki, 2006) and its relatively large size at CSUN; and (2) due to the shared sociopolitical identity as refugees following the Vietnam War, Khmer Rouge Genocide in Cambodia, and the U.S. Secret War in Laos (Southeast Asia Resource Action Center, 2020), the Khmer, Hmong, Lao, and Viet ethnic groups are grouped as one-half of the Southeast Asia region, while the remaining ethnic groups in the Southeast Asia region are grouped separately: Burmese, Indonesian, Indo Chinese, Malaysian, Singaporean, and Thai. See Table 1 for the regional groupings.

Table 1. Disaggregated Regional Groupings

Regional Group	Detailed Ethnicity or National Origin	
East Asian	• Chinese • Iwo Jiman • Japanese	• Korean • Okinawan • Taiwanese
Filipino	• Filipino	
Native Hawaiian and Pacific Islander	• Carolinian • Chuukese • Fijian • Chamorro/ Guamanian • I-Kiribati • Kosraean • Mariana Islander • Marshallese • Native Hawaiian • Ni-Vanuatu	• Palauan • Papua New Guinean • Pohnpeian • Saipanese • Samoan • Solomon Islander • Tahitian • Tokelauan • Tongan • Yapese
South Asian/Desi	• Bangladeshi • Bhutanese • Indian • Maldivian	• Nepalese • Pakistani • Sri Lankan
Southeast Asian 1: Refugees	• Khmer • Hmong	• Lao • Viet
Southeast Asian 2: Geography	• Burmese • Indonesian • Indo Chinese	• Malaysian • Singaporean • Thai

The strategy of pulling out the larger ethnic or national origin groups, such as Filipinos in our case, and grouping the smaller groups by region is a common practice in APIDA scholarship and work, since it helps with increasing group sizes and strengthening data confidentiality (CARE, 2015; Nguyen et al., 2018). This

approach could be adopted at other institutions as well, particularly those with smaller APIDA student populations. This grouping assumes that ethnic subgroups in regions of Asia and the Pacific Islands share similarities in immigration histories and racialized experiences. The decision to pull out specific ethnic groups, however, also acknowledges the unique characteristics within these regional similarities that warrant individual analyses, especially if the group is large enough. We present the sociopolitical and regional groupings here as one possibility and recommend that other institutions consider groupings that make sense in their context. Importantly, we acknowledge that there is no one right way to determine which groups and how many groups to use in APIDA disaggregation work. We revisit this topic later in the "Discussion" section of the article, where we also elaborate on additional considerations for decision-making.

Enrollment Count

CSUN serves a diverse APIDA undergraduate population from varying regional and ethnic groups. During the period under study, Filipino students comprised the largest APIDA ethnic group, making up 38.33% of the APIDA population at CSUN. The next-largest regional groups were East Asian students at 28.05%, South Asian/Desi (12.77%), Southeast Asian 1: Refugees (11.23%), Southeast Asian 2: Geography (4.55%), and Native Hawaiian and Pacific Islander (1.25%). Approximately 3.81% of the APIDA undergraduate student body selected "Other Asian," "Decline to State," "Not Specified," or "Two or More Ethnicities." The five largest ethnic groups at CSUN by head count during the period under study were Filipino (5,135), Korean (1,813), Chinese (1,328), Viet (1,276), and Indian (873). See Table 2 for a breakdown of student count by regional grouping and ethnicity.

Table 2. New Asian Pacific Islander Desi American Undergraduate Enrollments, 2009–2021

	Count	APIDA Percentage
East Asian	3,757	28.0%
Korean	1,813	13.5%
Chinese	1,328	9.9%
Japanese	405	3.0%
Taiwanese	205	1.5%
Filipino	5,135	38.3%
Native Hawaiian and Pacific Islander	168	1.3%
Other Pacific Islander	69	0.5%
Guamanian/Chamorro	23	0.2%
Samoan	25	0.2%
Fijian	20	0.1%
Native Hawaiian	18	0.1%
Tongan	12	0.1%

	Count	APIDA Percentage
South Asian/Desi	1,711	12.8%
Indian	873	6.5%
Pakistani	332	2.5%
Bangladeshi	287	2.1%
Sri Lankan	172	1.3%
Nepalese	46	0.3%
Southeast Asian 1: Refugees	1,505	11.2%
Viet	1,276	9.5%
Khmer	162	1.2%
Lao	35	0.3%
Hmong	32	0.2%
Southeast Asian 2: Geography	610	4.6%
Thai	396	3.0%
Indonesian	123	0.9%
Burmese	42	0.3%
Indo Chinese	32	0.2%
Other Asian	510	3.8%
APIDA	13,396	100%

Note: Some detailed ethnicity groups are not shown due to counts being hidden for groups with fewer than 10 individuals.

Because race data disaggregation involves breaking down pan-ethnic groupings into smaller subgroups, the granular data introduce potential data reidentification. In other words, because of the smaller group sizes it might become easier to trace and identify individual students. Consequences of data identifiability can be severe, including breaches of privacy, potential misuse of sensitive information, and violations of data security regulations. Therefore, steps must be taken to safeguard student data and reduce risks of reidentification. We choose to, and recommend, hiding groups smaller than 10 for these reasons. A potential workaround to allow the data from smaller ethnic groups to remain visible, however, is by intentionally grouping them with other ethnicities that have conceptual reasons to be similar—in our case, by regions informed by immigration histories. This highlights another functional aspect of the practice of grouping disaggregated data. Further considerations for data confidentiality when engaging in race data disaggregation will be discussed later in the article.

Between-Region and Within-Region Comparisons

By first regrouping the disaggregated APIDA data into regional groups, we gained a framework to make between-regional and within-regional APIDA group comparisons among the CSUN APIDA undergraduate population. In other words, instead of comparing APIDA students solely against White and other major racial/ethnic groups, the data structure with APIDA regional groupings established a framework for conducting more-meaningful and more-purposeful comparisons within the APIDA

student population itself. This two-tiered between-region and within-region methodology enabled us to explore variations in demographics and academic outcomes across APIDA regional groups, compare them with other racial/ethnic groups, and delve into specific regional contexts. This approach provides a more detailed and contextually rich analysis of the APIDA undergraduate experience at CSUN, and this model could be used with data on other pan-ethnic racial/ethnic groups, such as Latinx and Black students. For example, among our Latinx population at CSUN, the three largest national origin groups are Guatemalan, Mexican, and Salvadoran, so we have begun to disaggregate those groups out, along with South American, other Central American, Caribbean, and other Latinx/Hispanic, in much the same way we have demonstrated for the APIDA case study.

Analytic Plan

We explored descriptive variations in demographic profiles (first-generation college status and Pell eligibility) and academic outcomes (1st-year GPA and 2nd-year retention rate) in the disaggregated data for CSUN APIDA undergraduate students. To address challenges related to statistical power and data confidentiality posed by small group sizes resulting from disaggregation, we chose to include cohort data from new students entering the university between Fall 2009 and Fall 2021.

We began by comparing the APIDA regional groups with Black, Latinx, and White students at CSUN, as well as with the APIDA aggregate (the four largest pan-ethnic groups) to provide a broader context for the findings. Subsequently, we disaggregated the data further into detailed APIDA ethnicity groups to investigate within-region differences. Finally, when analyzing academic outcomes, we split the data further by comparing first-time freshman and transfer student outcomes at the regional and detailed ethnicity levels to explore differences by disaggregated student entry type.

To help with interpretation of the disaggregated data, we used a visual approach through a series of bar graphs. We used two vertical lines for comparison, representing the aggregated 2009 to 2021 cohort data: the first line was for the comparison to numbers for the overall CSUN new undergraduate population, and the second was for the numbers for the aggregate APIDA CSUN new undergraduate population. This visualization method, another recommended practice resulting from this work, facilitates identification of disaggregated APIDA regional groups as well as detailed ethnicities that differ from these aggregated group proportions or mean scores. It also enables the exploration of differences among regional groups, racial/ethnic groups, within regional groups, and between different student types. Detailed ethnicity groups with fewer than 10 members were excluded, and those with 10 to 30 members were represented with striped bars. Interpretations for the latter should be approached with caution due to the small group sizes.

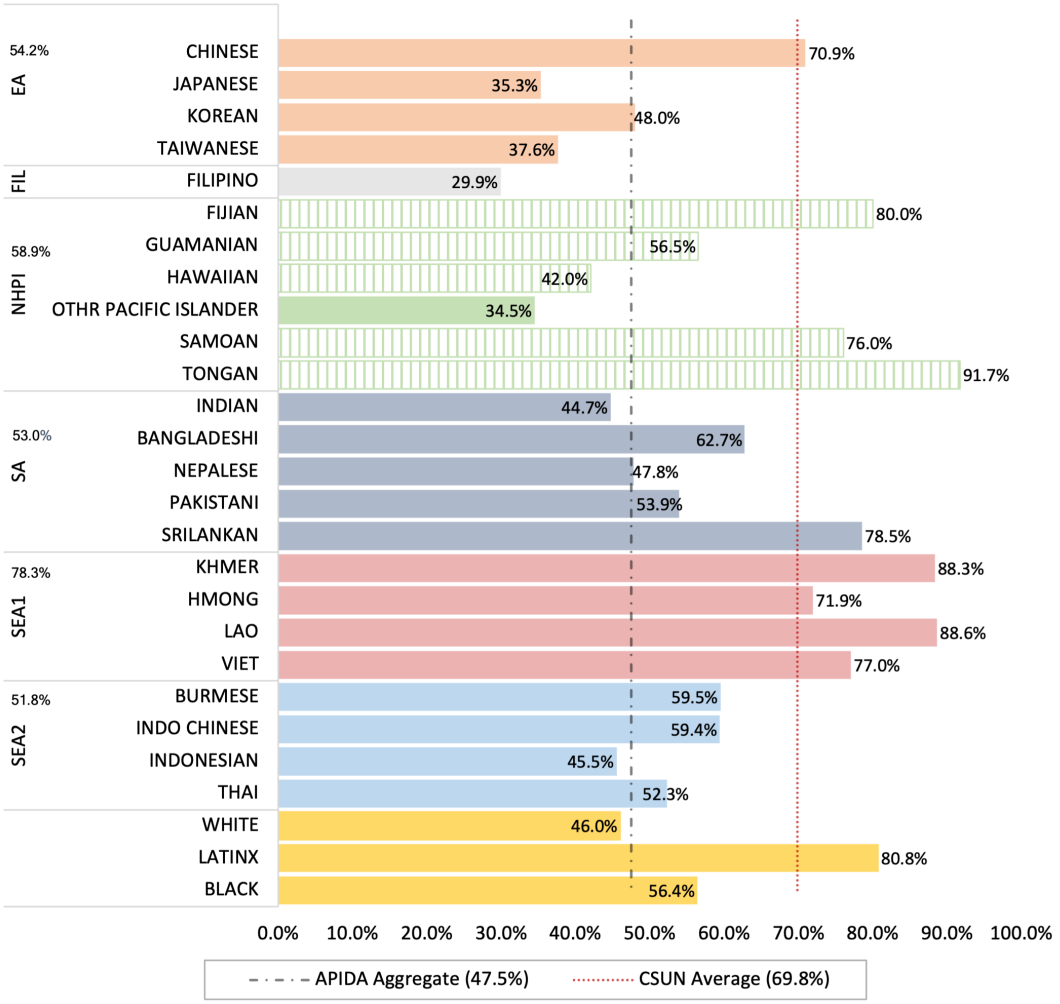
Demographic Profiles

APIDA students are a diverse population with varying demographic profiles influencing their academic journeys, yet the APIDA aggregate often conceals this diversity (Museus & Chang, 2009). A disaggregated understanding of these varied profiles is crucial for developing targeted institutional programs that can effectively meet the unique needs of the APIDA student body. In this section, we present the proportion of new undergraduates who were first-generation college students and Pell recipients at CSUN in each of the APIDA

regional groups. We compare these students to the proportions in the APIDA aggregate, as well as with Black, Latinx, and White students (the four largest pan-ethnic groups), and compare them to the university average. Additionally, we examine ethnic comparisons within the regional groups themselves.

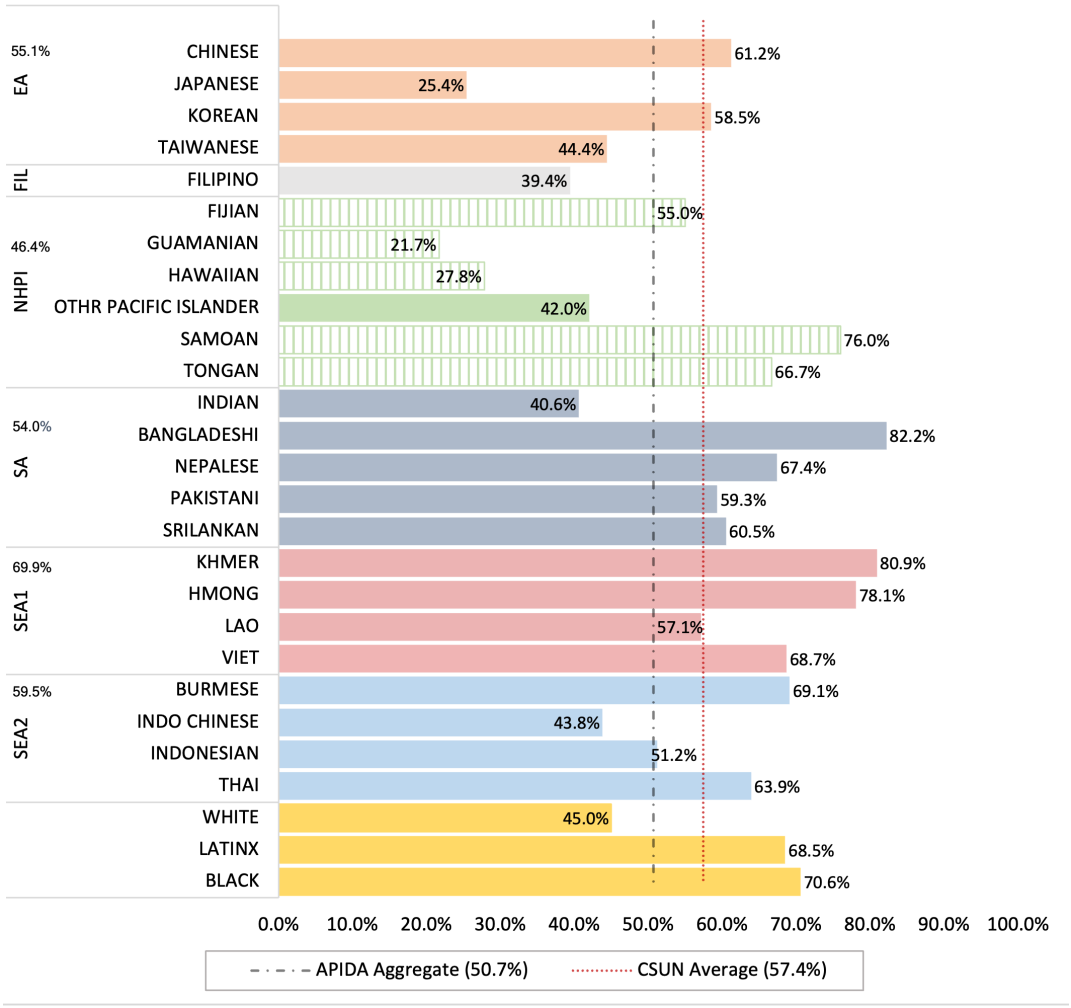
At the aggregate level, APIDA students were less likely to be first-generation college students (47.5%) or Pell recipients (50.7%) compared with their Latinx and Black peers (see Figures 1 and 2). These aggregate numbers, however, obscure the substantial variation in first-generation and Pell recipient status within the APIDA undergraduate population by regional group. For example, among all regional APIDA groups, the proportion of first-generation college students is higher than that of the APIDA aggregate, with the exception of Filipino students. Given that Filipino students represent the largest student count within the APIDA group, their lower rate of first-generation status (29.9%) seems to be driving the overall APIDA average down. In fact, the Southeast Asian 1: Refugees regional group (78.3%) showed a first-generation rate above the CSUN campus average (69.8%). Moreover, Southeast Asian 1: Refugees (69.9%) and Southeast Asian 2: Geography (59.5%) both had Pell eligibility proportions above the CSUN average (57.4%). Most notably, the Southeast Asian 1: Refugees region had the highest proportion of Pell-eligible students across the APIDA undergraduate population at the university and was more similar to the proportions of Latinx (68.9%) and Black (70.9%) students.

Figure 1. Proportion of First-Generation Students among New Asian Pacific Islander Desi American Undergraduate Students, 2009–2021



Note: EA = East Asian; FIL = Filipino; NHPI = Native Hawaiian and Pacific Islander; SA = South Asian/Desi; SEA1 = Southeast Asian 1: Refugee; SEA2 = Southeast Asian 2: Geography.

Figure 2. Proportion of Pell-Recipient Students among New Asian Pacific Islander Desi American Undergraduate Students,2009–2021



Note: EA = East Asian; FIL = Filipino; NHPI = Native Hawaiian and Pacific Islander; SA = South Asian/Desi; SEA1 = Southeast Asian 1: Refugee; SEA2 = Southeast Asian 2: Geography.

When the regional groupings were further disaggregated by detailed ethnicity, many ethnic groups showed higher proportions of first-generation status and Pell eligibility than the overall APIDA aggregate at the university. This serves as another example highlighting how the APIDA aggregate—and pan-ethnic groupings generally—can mask the diverse experiences within the finer ethnic groupings.

Furthermore, sizable variations exist between ethnic groups even within regional categories. For instance, within the East Asian regional group, the overall first-generation rate was 54.2%. However, this might not accurately represent the East Asian community at the university when we compare Japanese students (35.3%) and Chinese students (70.9%). Similarly, within the South Asian/Desi regional group, the overall Pell-

recipient proportion was 54.0%, yet comparing Indian students (40.6%) to Bangladeshi students (82.2%) highlights notable within-region differences. Taken together, these findings (see Figures 1 and 2) also underscore the importance and need for detailed disaggregation to capture the nuanced differences and consistencies within the APIDA community.

Academic Outcomes

The false yet widely held belief that all APIDA students are academically successful and well-adjusted (Yoo et al., 2010) perpetuates the assumption that APIDA students do not require tailored institutional programming or resources (Shih et al., 2019). As showcased, APIDA students comprise diverse demographic profiles, some more resourced and some less resourced, which may influence diverse academic trajectories. Therefore, it is important for institutions to intentionally disaggregate their APIDA student data to understand the diverse academic outcomes of this population to better implement equitable academic programming. In this section, we focus on 1st-year GPA and 2nd-year retention, both of which serve as early predictors of academic adjustment (Larose et al., 2019).

We examined student outcome data by entry type, differentiating between first-time freshmen and transfer students. We then analyzed their disaggregated average 1st-year GPA and 2nd-year retention rates, comparing the results across regional groups, the APIDA aggregate, as well as Black, Latinx, and White students, and the university average. Similarly, we examined within-ethnic regional group comparisons.

As an aggregate, both APIDA freshmen (2.85) and transfers (2.89) demonstrated higher overall 1st-year GPAs than their Black and Latinx peers, but lower GPAs than their White peers. A similar pattern emerged in the retention rates for both freshman (85.1%) and transfer (86.0%) APIDA students, although the difference was not as pronounced.

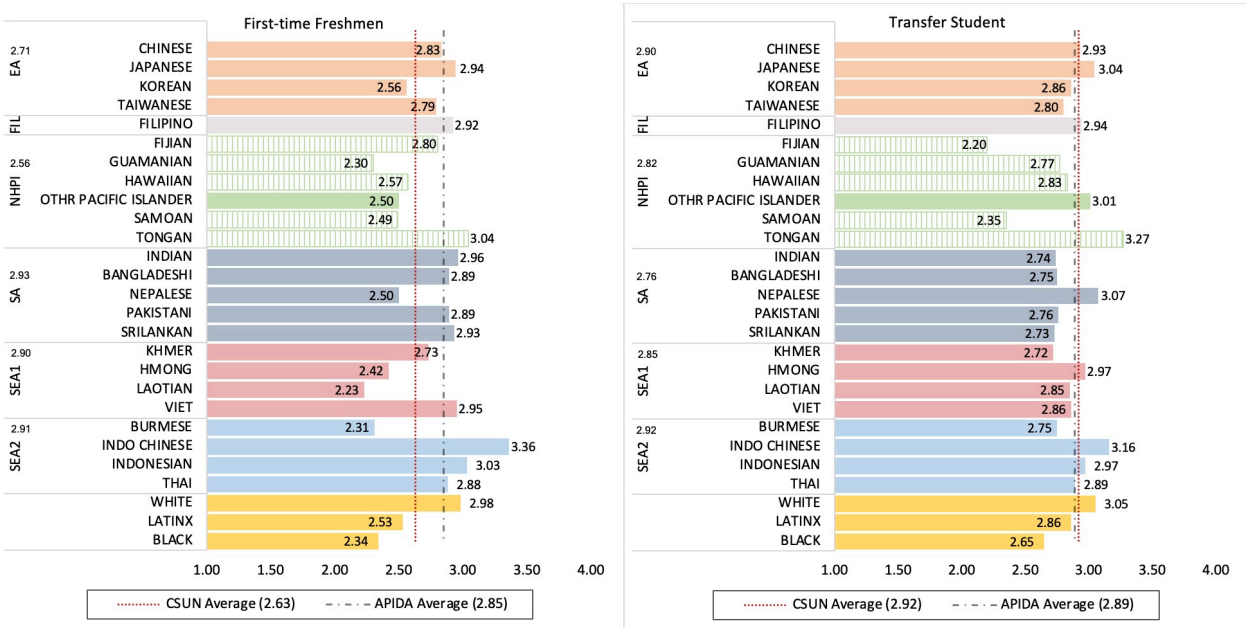
Consistent with the demographic profiles, notable variations were observed across APIDA regional groups. Within these groups, Native Hawaiian and Pacific Islander students exhibited the lowest average 1st-year GPA of all APIDA freshmen (2.56). Additionally, for both freshman and transfer Native Hawaiian and Pacific Islander students, their 2nd-year retention rates (75.5% and 71.9%, respectively) were lower than the university and APIDA averages. Furthermore, the retention rates for these transfer students were lower than those for Black and Latinx transfer students.

Differences also emerged among APIDA regional groups by student entry type. Notably, South Asian/Desi freshmen had the highest average 1st-year GPA (2.93) among the freshman APIDA students by regional groups. However, South Asian/Desi transfers had the lowest average 1st-year GPA (2.76) among the transfer APIDA students by regional groups, placing below both the CSUN and the APIDA aggregate averages.

Upon further disaggregation of the data to detailed ethnicity, more variations became evident. At the within-region level for freshmen, all the ethnic groups within the East Asian regional group had an overall average 1st-year GPA higher than the university average (2.63), except Korean students (2.56). Additionally, when it comes to retention rates, all East Asian freshmen showed rates above the university average (78.5%), except Korean students (77.4%). In other words, the academic outcomes of freshman Korean students may be obscured by the East Asian aggregate.

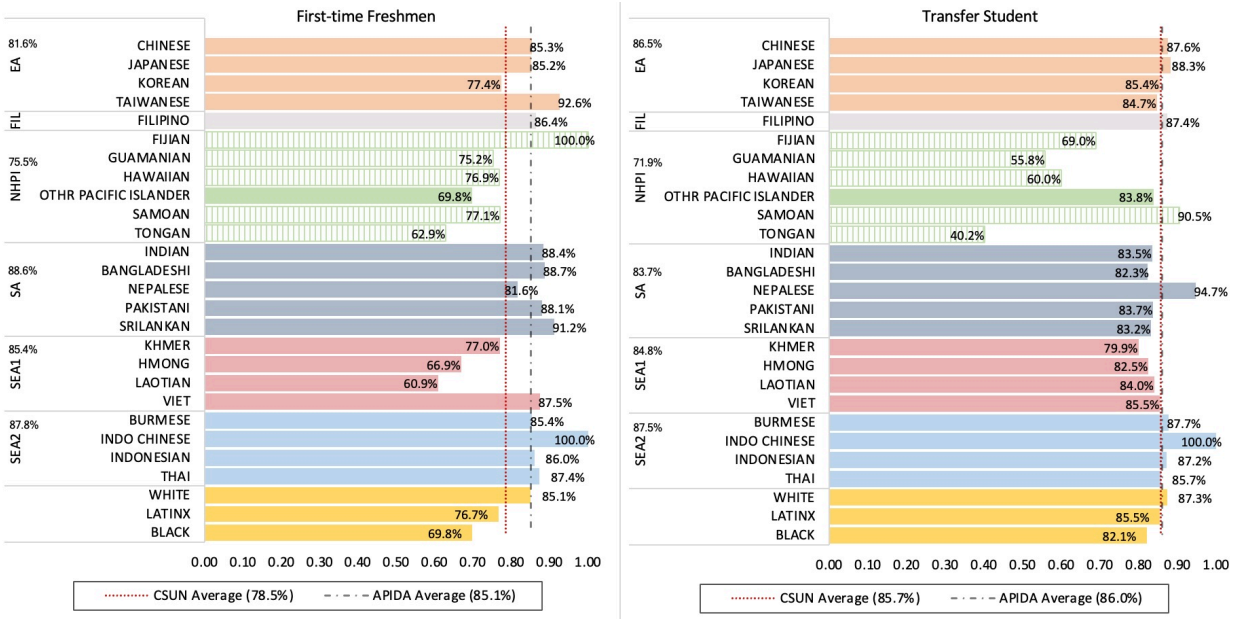
Although the variations are less pronounced among new APIDA transfer students, regional group patterns remain relatively consistent across student entry types. For example, within the Southeast Asian 1: Refugees regional group, Khmer, Hmong, and Lao freshmen and transfers show a lower retention rate than both the APIDA and university aggregate. Differences also emerged within detailed ethnicity by student entry type. Interestingly, Indian and Viet freshmen displayed the highest average 1st-year GPA (Indian = 2.96, Viet = 2.95) and retention rates (Indian = 88.4%, Viet = 87.5%) among freshman APIDA, above both the university and APIDA averages. However, Indian and Viet transfers showed relatively lower average 1st-year GPAs (Indian = 2.74, Viet = 2.86) and retention rates (Indian = 83.5%, Viet = 85.5%) among transfer APIDA students, below both the university and APIDA averages. These findings (see Figures 3 and 4) again highlight the diverse academic trajectories in the APIDA student population, emphasizing the need to explore within-region variations and how differences might exist for a specific detailed ethnicity group (e.g., Indian), depending on whether they are first-time freshmen or new transfer students.

Figure 3. Average 1st-year GPA of New Asian Pacific Islander Desi American Undergraduates, 2009–2021



Note: EA = East Asian, FIL = Filipino, NHPI = Native Hawaiian and Pacific Islander, SA = South Asian/Desi, SEA1 = Southeast Asian 1: Refugee, SEA2 = Southeast Asian 2: Geography.

Figure 4. Retention Rates of New Asian Pacific Islander Desi American Undergraduates, 2009–2021



Note: EA = East Asian, FIL = Filipino, NHPI = Native Hawaiian and Pacific Islander, SA = South Asian/Desi, SEA1 = Southeast Asian 1: Refugee, SEA2 = Southeast Asian 2: Geography.

Case Study Summary

We used a funnel-shaped disaggregation framework to analyze the APIDA undergraduate population at our university, regrouping detailed ethnicities into regional groups informed by immigration histories. This framework allowed for between-region and within-region APIDA group comparisons. Our exploration revealed significant diversity and variation in demographic profiles and academic outcomes, emphasizing how the APIDA pan-ethnic category can obscure disparities within the community. Notable findings include variations across APIDA regional groups (e.g., Southeast Asian 1: Refugees are the most likely to be first-generation and Pell-eligible), within-region differences (e.g., Korean freshman students have lower 1st-year GPA and 2nd-year retention rates than other East Asian groups), and potential moderations by student entry type (e.g., Indian transfer students have 1st-year GPAs below the university average for transfers, whereas Indian freshmen have GPAs that exceed the university average for freshmen).

Moreover, while the complexity, privacy, and confidentiality of data disaggregation may pose challenges for widespread buy-in and implementation by institutions, our case study demonstrates that a systematic approach can be used to overcome these challenges, facilitating more intentional and equity-minded data disaggregation. First, while it is counterintuitive to data disaggregation and not always ideal, we found value in regrouping the disaggregated ethnicity or national origin groups into specific contextual categories; in this case, we regrouped by regions of Asia and the Pacific Islands informed by immigration

histories. Grouping with intention allowed for more-parsimonious analyses while still retaining the nuance needed to understand disaggregated patterns. Additionally, intentional grouping can help to address challenges related to statistical power and data confidentiality posed by small group sizes resulting from disaggregation, especially at institutions with smaller numbers of minoritized student populations. Institutions pursuing this work should consider whether grouping by intention would benefit their data disaggregation. For example, the Latinx population can be regrouped into regions, such as Central America and South America, and the White population can be regrouped by ancestry, such as Western European and Eastern European.

Second, the data structure of disaggregated regional categories allows for examination between disaggregated categories (e.g., Central American students and South American students) and within disaggregated category comparisons (e.g., Honduran students and Chilean students). Rather than just comparing between pan-ethnic groups, a more useful approach could be to explore the diversity within these groups, since within-racial variations have been found to be at times more pronounced (Read et al., 2021), reflecting diverse experiences that are obscured when aggregated.

Third, our case study suggests that further breaking down disaggregated data into additional demographic variables can play a role in identifying disparities within pan-ethnic groups. This approach provides a more detailed analysis, considering additional factors or characteristics, that can help reveal nuanced variations within the broader pan-ethnic groups. For example, we compared the disaggregated data by student entry type (first-time freshmen and transfer students). Future institutional research could also differentiate the disaggregated data by demographic variables such as gender (e.g., male Hmong and female Hmong students; Teranishi & Nguyen, 2020).

Fourth, in addition to grouping with intention to strengthen data confidentiality and statistical power, we further increased group sizes and privacy by aggregating cohort data from new students entering the university between Fall 2009 and Fall 2021. We also chose to suppress (or hide) data when groups had fewer than 10 individuals. Together, these three practices helped increase data integrity and reduce the risk of data reidentification of sensitive information resulting from disaggregation in our case study.

Finally, to make sense of and present disaggregated findings, we presented our data visualization as a model. Using bar graphs for the disaggregated groupings with comparative trend lines for the aggregated and university averages can help researchers and readers quickly comprehend the trends and patterns of the disaggregated data.

In sum, our process illustrates how the risks, complexity, and possible messiness of race/ethnicity data disaggregation can be addressed and made more cohesive by intentional groupings and step-by-step comparisons. Next, building on the insights gained, we present a framework to contextualize the continuum of readiness of postsecondary institutions to do this work, and we give suggestions on how they can progress—or level up—in this work.

FRAMEWORK FOR RACE DATA DISAGGREGATION READINESS

We recognize that there is a wide range of readiness and capacity across institutions to do the work of disaggregating race/ethnicity data. In order to meet institutions where they are, we have developed a framework of Race Data Disaggregation Readiness (RDDR). We describe the five levels of RDDR below, with recommendations for doing the disaggregation work based on level of readiness. As readers attempt to classify their institution's level of readiness using this framework, we recommend that they learn more about the data being reported. If student race/ethnicity data are usually reported only in larger aggregate categories, it does not necessarily mean that additional detailed information is not available. It is therefore critical that the source of these data is identified to fully understand what types of data are available.

Level 1: No Further Disaggregated Race/Ethnicity Data

Although most colleges and universities participate in IPEDS reporting, they are only required to collect data on the larger race/ethnicity categories (National Center for Education Statistics, n.d.). In other words, many institutions will have no further detailed race/ethnicity data beyond what is required for federal reporting.

For these Level 1 institutions, it will be vital to make the case for the added value and critical importance of having the additional disaggregated data. It will be difficult to make that case without having the data on hand, so the best way to do so might be by collecting these data oneself, perhaps in a voluntary student survey (see Kodama [2021] for a case example). Even if these data represent only a fraction of the student body, collecting them will at least allow for some data-informed arguments in support of the value of further disaggregated race data. For example, the data may reveal that one particular national origin group within a pan-ethnic race group has particularly low academic outcomes and that averaging this group with all the other subgroups within that pan-ethnic group results in obscuring their poorer outcomes. Researchers may choose to target specific racial/ethnic groups in such data collections when they have intimate knowledge of the student body and surrounding communities at the particular institution (e.g., institutions in Michigan, the state with the largest Arab American population in the nation, may decide to collect disaggregated data on this group to begin their efforts).

Level 2: Some Further Disaggregated Race/Ethnicity Data, but Limited

Some institutions collect additional detailed race/ethnicity data, but in a very limited capacity (e.g., what they assume to be the largest national origin groups, plus other). In order to both better represent the wide range of backgrounds within each race category, as well as to track changing demographics, it is essential that institutions develop more options that are comprehensive.

For these Level 2 institutions, like Level 1 institutions, much of the work will be in convincing institutional stakeholders of the critical importance of having these additional data. Concerned stakeholders at these institutions may have to gather additional disaggregated data themselves, as mentioned above for Level 1 institutions. It is also critical to gain access to whatever disaggregated data exist to better understand how comprehensive they are and what holes might exist in those data. These data can also serve as an opening to conversations about the value added in the existing disaggregated

data and what further value could be gained by expanding on these categories. For example, if data are collected on only two or three subgroups within a major racial/ethnic category and these subgroups show different patterns of enrollment or outcomes, those collections can open the door to curiosity about other subgroups that are not represented, which can help to motivate the case for collecting additional disaggregated data.

Level 3: Further Disaggregated Race/Ethnicity Data Exist, but Are Not Analyzed

Just because disaggregated data are available does not mean they have been examined or analyzed. In fact, in some cases only a few individuals at these institutions might even know that such disaggregated data are available. For this reason, it is important that stakeholders interrogate the source of these data to better understand what data are available, even if they are not analyzed or widely reported.

It will be essential for Level 3 institutions to convince stakeholders of the utility of analyzing disaggregated data. We recognize the catch-22 of this situation: it is difficult to make the case for what is revealed by these sorts of analyses when the analyses have not been done. As institutional research/institutional effectiveness (IR/IE) professionals, these analyses are a crucial way that we can contribute to diversity, equity, inclusion, and justice efforts on our campuses. For those whose IR/IE offices are either not motivated to do this work or who lack the capacity to do so, it might be helpful to lean into other concerned stakeholders, including the data owners, who can additionally guide and motivate the direction of this work. For example, on a campus in which enrollment of a particular racial/ethnic group has been declining, a better understanding of the disaggregated data could improve recruitment and yield efforts; these motivations could lead to grants or other sources of funding that could help with building capacity for these types of data collections and analyses.

Level 4: Analyses of Further Disaggregated Race/Ethnicity Data Have Been Conducted

For those institutions that have disaggregated race data and have conducted analyses to better understand these data, we encourage IR/IE professionals and other stakeholders to think through how the data story is developed and disseminated on their campuses. In other words, the work does not end with the analyses; rather, that is when the sense making and advocacy begins.

These Level 4 institutions will need to consider the challenges and strengths that are evident in the data to develop their data story and how it will be disseminated to key stakeholders. As we have demonstrated with our case study, this kind of disaggregated data can result in an overwhelming array of findings. It is therefore essential that IR/IE professionals and others who have worked on the data analyses tell a clear and compelling data story. Our case study with the APIDA data demonstrates that subgroupings—such as the regional groupings we used—can be useful for summarizing findings with disaggregated data. At the same time, these subgroupings could result in the same kinds of issues as the larger racial/ethnic group summaries in terms of obscuring the outcomes for specific groups. As the data story is developed, Level 4 institutions will need to consider how to balance the additional nuances and details provided by further disaggregation of race data with the need to tell a coherent data story.

Level 5: Analyses of Further Disaggregated Race/Ethnicity Data Have Led to Development of Action Plans

Ultimately, in this work, we are striving toward not just collecting, analyzing, and disseminating further disaggregated race data, but also using these findings to motivate action on our campuses. As IR/IE professionals, one of our key roles is to help campus stakeholders to make data-motivated decisions, and these data can help to ensure that data-motivated decisions move our campuses toward greater diversity, equity, inclusion, and justice.

It is our hope that any Level 5 institution is celebrating these achievements on campus. At the same time, it is important to keep in mind that action plans take concerted effort to become a reality, and we need to continue to engage in formative evaluation of outcomes to ensure that we are achieving the results we hope for.

RACE DATA DISAGGREGATION READINESS EXAMPLES

To provide more-concrete examples of institutions on different ends of the RDDR spectrum, we provide two institutional examples: (1) Oakton College, a Level 1 institution in Illinois, and (2) CSUN, a Level 4 institution in California.

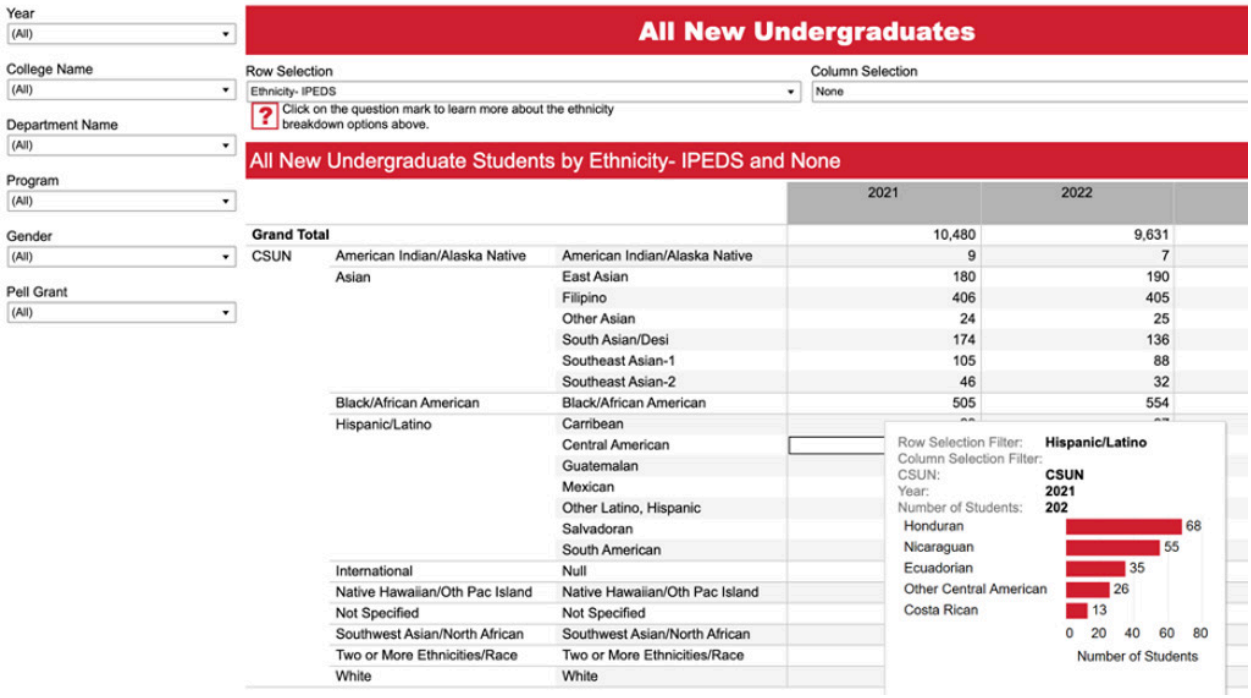
OAKTON COLLEGE

With their institution's first-ever Asian American and Native American Pacific Islander–Serving Institutions grant, Oakton College established its Center for Organizing Minority Programs to Advance Student Success (COMPASS; oakton.edu/life-at-oakton/diversity-at-oakton/aanapisi.php). One of the aims of COMPASS is to highlight the importance of disaggregated data on APIDA students. The college had never collected disaggregated data on this population, but COMPASS now sends a voluntary survey to all new APIDA students to gather these data, and the center is using the findings from this survey to work with their colleagues in enrollment and IT to further institutionalize these data. COMPASS is creating a systematic way to collect data from all students when they register for classes and to make it part of their student record. Having these sorts of disaggregated data, although not yet for all students, has helped the center to better advocate for their APIDA students and to more clearly demonstrate student needs.

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Our institution is an example of a Level 4 institution. As we have demonstrated in the case study of our APIDA data, we have engaged with in-depth analyses. We have also conducted similar analyses of our Latinx and Black student populations. We are now thinking through how we share this data story in a way that is coherent while also capturing all the rich variations evident in the data. One way that we are doing this in our data visualizations is by showing the regional subgroupings in our institutional dashboards, but also offering a deeper dive into the national origin groups' data with a visualization within visualization option (available in Tableau, the business intelligence platform used by our campus; see Figure 5). On the face of it, the dashboard shows visualizations and data for the regional groupings, but when users hover a cursor over data points, another visualization appears that shows the data for the national origin groups within the regional group in question. In this way, we aim to provide these disaggregated data in a way that is not overwhelming to the user, but that also allows them to explore the disaggregated data further.

Figure 5. California State University, Northridge Counts Disaggregated Visualization within Visualization Dashboard



Limitations and Considerations

While our case study and RDDR framework make significant contributions to race data disaggregation research and practices, several limitations and considerations should be noted. First, beyond descriptive statistics comparisons, no further statistical analyses were conducted to test the significance of the observed differences found in the disaggregated data. Therefore, we are unable to draw definitive conclusions about the differences themselves or to identify potential factors driving them, such as first-generation student status, Pell eligibility, or student major. Within the scope of this article, however, our findings contribute to the field by demonstrating that there are, in fact, potential differences among ethnic and national origin groups when they are disaggregated from their pan-ethnic groupings. As such, these initial insights point to race data disaggregation as an important area of consideration for future inquiry. Future research can further investigate and test such differences. Additionally, guidelines and practices will need to be developed to address the statistical power in significance testing when disaggregated group sizes are too small.

Second, although aggregating cohort year data yielded larger group sizes for our comparisons (especially for ethnic or national origin groups that were too small otherwise) and safeguarded against data reidentification, this decision assumes stability in the groups across time. If some of the groups are not stable across time (e.g., the demographic profile of Bangladeshi students between cohorts 2009 to 2021), it could bias the data and misrepresent the overall comparisons between the disaggregated

groups. At least for demographics, however, research suggests high income immobility across time among racial/ethnic groups, especially at the within-group level for Asian Americans (Akee et al., 2019). Future research could incorporate stability testing in their analytic plan, such as through time-series visualizations, as an assumption that needs to be satisfied when aggregating across cohort years for data disaggregation. Furthermore, narrowing the period can help account for changes in trends (albeit doing so loses statistical power due to smaller group sizes). Finally, aggregating across cohorts might not allow researchers to detect changes in academic outcomes over time (i.e., reaching parity or widening inequality). Therefore, the decision to aggregate cohort years could ultimately depend on the research question of interest.

Third, while our regional groupings informed by immigration histories helped us make sense and better manage the disaggregated data, our findings evidenced notable within-regional ethnic group differences (e.g., Korean freshman students having lower 1st-year GPA and 2nd-year retention rates compared to other East Asian ethnic groups). This highlights the need to continually assess and modify regional groupings to capture the diversity and account for contextual factors that may influence the within-regional ethnic group differences (e.g., Korean American students in the Southwest might differ from Korean American students in other geographical areas in the United States). Furthermore, while Viet, Hmong, Khmer, and Lao individuals are often grouped together due to being refugees of wars and political instability, researchers could consider including the Burmese population in this grouping because many are also refugees. Therefore, researchers should also disaggregate to detailed ethnicity and national origin groups whenever possible, and continue to refine and modify conceptualized regional groupings.

Fourth, while our university is rich in diversity, other institutions might have a much smaller population of students from minoritized racial/ethnic backgrounds. Thus, while being an informative reference point, these institutions may not be able to engage as fully with the practices presented in our case study and the suggestions put forward by the RDDR framework. Finally, as affiliates of our university's institutional research office, we had access to the collected disaggregated race data. Researchers interested in race disaggregation without such direct connections could be disincentivized to engage in the work despite potential expertise in student populations. IR/IE offices engaging in race data disaggregation should create pathways for collaboration and access to the data for interested stakeholders.

DISCUSSION

In order to serve students well, it is necessary to truly understand who our students are and what unique struggles they face in attaining their higher education goals (Hurtado et al., 2012). Many institutions still fall short of understanding the true diversity of their student bodies; the experiences of some of the most vulnerable student populations are rendered invisible because of the inability to tease apart institutional data beyond broad racial/ethnic categories (e.g., APIDA, Black, Latinx), into more-detailed subgroups (e.g., Hmong, Haitian, Salvadoran). Therefore, to ensure students of minoritized racial/ethnic groups are seen and represented, higher education institutions must systematically and intentionally disaggregate race data.

Our case study disaggregating an APIDA undergraduate population offers a detailed account of our procedure to serve as a roadmap for institutions

seeking to disaggregate race data. We found that the APIDA aggregate grossly misrepresented many regional and ethnic subgroups. Specifically, we found significant diversity and variation in demographic profiles and academic outcomes across APIDA regional groups (e.g., Native Hawaiian freshman students exhibiting the lowest 1st-year GPA), within-region differences (e.g., more than double the Pell eligibility for Bangladeshi compared to Indian students within the South Asian/Desi region), and potential moderations by student entry type (e.g., Viet transfer students with 1st-year GPAs below the university average for transfers, but Viet freshmen with GPAs that exceed the university average for freshmen). These findings highlight the importance of race disaggregation to render visible the disparities overlooked within broad racial/ethnic groups. While the complexity, privacy, and confidentiality of data disaggregation may pose challenges for widespread buy-in and implementation by institutions, our case study demonstrates that a systematic approach can be used to overcome these challenges, facilitating more intentional and equity-minded data disaggregation.

Data Confidentiality

For IR/IE professionals, engaging in race data disaggregation requires striking a fine balance between subsetting the pan-ethnic data into more-granular ethnicity groups and protecting student confidentiality. We advise institutions to follow their campus's general practices and policies around handling data reidentification risk and to take into account whether disaggregated information shared in dashboards or reports will be public facing or private for internal or stakeholder purposes. For any public-facing dissemination of disaggregated data, we recommend hiding (or suppressing) groups with fewer than 10 students. On the other hand, if the data are private facing, there might be a case to be made that the value added in sharing such data outweighs the potential costs. For instance, this could allow IR/IE professionals and interested stakeholders to point out that their university has only one or two Native Hawaiian students for recruitment and outreach implications, rather than "disappearing" them by excluding them due to small group sizes. Moreover, potential workarounds to keep data from smaller ethnic groups visible is to intentionally group them with other ethnicities that have conceptual reasons to be similar (in our case, by regions informed by immigration histories) and/or to combine data across cohort years to increase group sizes.

Regrouping with Intention

Due to the complexity of data disaggregation stemming from the diverse number of individual trends and patterns that require interpretation, we recommend intentional grouping, such as by regional groups, for more-parsimonious analyses. This approach retains the nuance needed to understand disaggregated patterns. We also suggest that pulling out specific ethnic groups to acknowledge their unique characteristics within these regional similarities warrants individual analyses, especially if the group is large enough. We present the sociopolitical and regional groupings as one approach and encourage other institutions to consider groupings that are relevant to their context.

For instance, an alternative method for determining decision-making for groupings is to build on the term *underrepresented-minority group* (URM), which combines Black, Hispanic/Latinx, and Native Americans due to their historically disadvantaged status. Extending this idea, if an institution has

a large number of Indian and Viet students and smaller counts for other ethnic groups in the South Asian/Desi (e.g., Bangladeshi, Nepalese) and Southeast Asian 1: Refugee (e.g., Khmer, Lao) categories, these smaller groups could be combined based on potential conceptual similarities in demographic profiles, such as first-generation status and Pell eligibility. Meanwhile, Indian and Viet students could be kept as separate distinct groups due to their larger numbers.

On the other hand, grouping national origin groups solely based on regional context, *without careful intention*, can lead to significant misrepresentations of certain groups within the aggregate. For example, the advocacy to reclassify the Hmong community from East Asian to Southeast Asian in the U.S. Census underscores the need for thoughtful regrouping (Southeast Asia Resource Action Center, 2023). Our case study highlights that Hmong students differ significantly from East Asian ethnic groups, and that they align more closely with Southeast Asian 1: Refugee groups.

In sum, if there is a conceptual justification for the groupings that help make sense of the disaggregated data, and potential limitations and drawbacks are acknowledged, there is no single perfect method to determine which groups and how many groups to use in APIDA disaggregation work. We use and recommend regional groupings further informed by immigration histories as a method of intentional grouping. This approach carefully considers the conceptual similarities between ethnic subgroups, and the shared context among the groups could play an important role in the design and implementation of potential institutional programming and resources that are culturally sensitive.

Analyzing and Presenting Disaggregated Data

We used a funnel-shaped disaggregation framework to analyze the APIDA undergraduate population at our university, regrouping detailed ethnicities into regional groups informed by immigration histories. This structure facilitated both between-regional and within-regional comparisons among CSUN's APIDA undergraduates. Rather than comparing APIDA students solely against White and other major racial/ethnic groups, this framework allowed for more-meaningful comparisons within the APIDA student population itself. This two-tiered between-region and within-region methodology enabled us to explore variations in demographics and academic outcomes across APIDA regional groups, compare them with other racial/ethnic groups, and delve into specific regional contexts. We recommend this model be used by other institutions that want to engage in race data disaggregation.

Additionally, our case study suggests that breaking down the disaggregated data to a greater extent by demographic variables (in our case, by first-time freshmen and transfer students) can play a role in further identifying disparities within pan-ethnic groups. This approach provides a more-detailed analysis, considering additional factors or characteristics, that may help reveal variations within the disaggregated groups. Future institutional research could also differentiate by demographic variables such as gender (e.g., male Samoan students and female Samoan students). Finally, to make sense of and present disaggregated findings, we presented our data visualization as a model. We recommend the use of bar graphs for the disaggregated groupings with comparative trend lines for the aggregated and university averages to help researchers and readers quickly comprehend the trends and patterns of the disaggregated data.

Building from the insights gained in our case study and recognizing the varied capacities of institutions to disaggregate race/ethnicity data, we presented our RDDR framework. This framework contextualizes this work in a continuum and provides suggestions for how postsecondary institutions could progress—or level up—in readiness based on their access to disaggregated data, analytic approach, and dissemination strategies, while also acknowledging the unique challenges administrators can encounter along the way. Without data disaggregation, minoritized student populations remain invisible to institutional leaders who need to provide focused, targeted equity programming. More postsecondary institutions should adopt and implement data disaggregation practices to inform their university programming. As highlighted in RDDR, it will be important for Level 1 and 2 institutions (no disaggregated data or limited disaggregated data) to collect and analyze disaggregated data themselves and to present findings to highlight the added value of systematic collection of disaggregated race data. For Level 3 (no analyses conducted) and Level 4 institutions (analyses conducted), the goal will be to conduct disaggregated data analyses and make sense of the granular findings to reach Level 5, in which university action plans informed by the disaggregation have been developed.

Moreover, our case study on the APIDA undergraduate student population at CSUN showcases only one broad racial/ethnic category that can benefit from data disaggregation. As such, more disaggregated work needs to be done to better understand the diversity in the Latinx, Black, Native American, Southwest Asian and North African, and White populations. For example, Latinx is another broad pan-ethnic label, representing more than 20 countries with distinct cultures and immigration histories (Lopez et al., 2023). Additionally, while many Black Americans have lived in the United States for many generations, a large proportion of this population are recent immigrants from countries in Africa and the Caribbean (Tamir, 2022).

Furthermore, when engaging in disaggregated work, it is crucial to consider the local context to enhance the sense-making process. For example, in our case study, we found that Filipino undergraduate students at our university were the least likely among APIDA ethnic groups to be first-generation and Pell recipients. This contrasts with disaggregated systemwide University of California data, which indicate that Filipino students are one of the APIDA ethnic groups most likely to be first-generation and Pell recipients (Reddy et al., 2022). As such, researchers should also be careful about how disaggregated findings can vary across local contexts.

CONCLUSION

Data disaggregation of pan-ethnic groups (e.g., APIDA, Black, Latinx) into detailed ethnicity or national origin (e.g., Hmong, Haitian, Salvadoran) reveals visible patterns of inequity that would otherwise be concealed by the aggregated pan-ethnic grouping. Therefore, to ensure that all minoritized racial/ethnic groups are seen and represented, higher education institutions must move beyond reliance solely on aggregated pan-ethnic data and systematically disaggregate the data into detailed subgroups. To help fill the critical gap in resources to inform this practice, we presented a detailed account of our procedure disaggregating our APIDA undergraduate population and recommended practical strategies. We also introduced the RDDR framework to contextualize the continuum of readiness of postsecondary institutions to do this work, and how they can

progress—or level up. Only when institutions truly understand who they are serving can a diversity, equity, and inclusion–centered lens be achieved and reach its full potential. Until then, those efforts will always fall short.

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Disrupting Quantitative Monoracism in Institutional Research: Critical Considerations for Multiracial Categorization

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Abstract

While the Two or More Races category has been the de facto mechanism to count multiracial college students since 2010, little research has critically examined how this category has been used in institutional research contexts. Extending previous scholarship on monoracism in higher education, we define *quantitative monoracism* as the policies, practices, and processes by which monoracial categories are elevated and multiraciality is erased in quantitative research. Quantitative monoracism harms those who do not fit monoracial categories by rendering their nuanced needs invisible in statistical analyses. Grounded in quantitative critical race theory and critical multiracial theory, we advance a series of guiding questions and illustrate their application to a case study in hopes of amplifying anti-monoracist action in institutional research.

Keywords: Two or More Races, multiracial, monoracism, institutional research

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INTRODUCTION

Prior to federal guidance establishing a Two or More Races (TOMR) reporting category, higher education institutions lacked a formal mechanism to account for multiraciality in campus data systems (Renn & Lunceford, 2004). Institutional research (IR) offices and professionals are often responsible for meeting external reporting requirements, including a series of mandatory annual surveys via the Integrated Postsecondary Education Data System (IPEDS) (Jones et al., 2022). In October 2007, to align with the Office of Management and Budget's Statistical Policy Directive No. 15, the U.S. Department of Education released new IPEDS race/ethnicity reporting guidelines (including a new TOMR reporting category) with required implementation by the 2010–2011 academic year (IPEDS, n.d.). Surveyed senior IR professionals noted, "[Coordinating] institutional response to federal race/ethnicity changes" is a prominent job task (Lillibridge et al., 2016, p. 28). However, the TOMR category is a flawed proxy for measuring multiraciality (Johnston-Guerrero & Ford, 2020; Johnston-Guerrero & Renn, 2016), and little research has critically examined how the growing population of multiracial college students has impacted IR processes. This lack of attention to multiraciality in IR is especially concerning considering recently announced updates to the Office of Management and Budget's Statistical Policy Directive No. 15 (Orvis, 2024), which establishes a new minimum category (Middle Eastern and North African) and calls for collecting race/ethnicity data in a combined question. These updates create a host of new categorical combinations to be reported as Multiracial and/or Multiethnic (formerly TOMR). We assert that it is a strategic imperative for IR professionals to reflect on challenges and opportunities associated with TOMR data in preparation for updated guidance from IPEDS to align with new Office of Management and Budget standards.

A session at the Association for Institutional Research's (AIR) 2015 AIR Forum conference described the TOMR category as a symbolic "'break' between the old and new" practices related to race/ethnicity data collection and reporting in higher education (AIR, 2015, p. 38). As Osei-Kofi (2012) claimed, dominant discourses in education ahistorically position multiraciality as a *new* phenomenon signaling progress toward a post-racial (thus, post-racist) society. To be clear, we contend that racism is ever-present in contemporary society, including in IR contexts, and we echo Osei-Kofi's argument that discourses of multiraciality tend to strengthen rather than subvert racial categorization. Beyond IPEDS reporting requirements, IR professionals have varying degrees of agency in shaping how race data are collected and categorized—how multiraciality is counted or concealed—at the campus level. It is within this latitude that we assert IR professionals could (un) intentionally perpetuate monoracism (Johnston & Nadal, 2010) by privileging monoracial categories in policy and practice. Therefore, we aim to advance a series of guiding questions toward the disruption of what we term *quantitative monoracism* in IR. To begin, we ground our work in relevant literature, offer a working definition of quantitative monoracism, and outline the theoretical frameworks that inform our proposed questions. Then, we review the series of guiding questions, apply them to a case study, discuss applying the framework more broadly, and conclude with recommendations for using these prompts in IR contexts.

SITUATING MONORACISM IN INSTITUTIONAL RESEARCH THROUGH THE LITERATURE

To contextualize our guiding questions, we first synthesize extant literature related to monoracism and IR.

What Is Monoracism?

Johnston and Nadal (2010) defined *monoracism* as a system of oppression rooted in "assumptions and beliefs in singular, discrete racial categories" (p. 125). Monoracism operates on both systemic and interpersonal levels, and is enacted vertically to enshrine White supremacy, enacted horizontally by communities of color, and internalized by those who do not fit monoracial categories (e.g., multiracial people, transracial adoptees) (Guillermo-Wann & Johnston, 2012; Harris, 2016; Harris, Johnston-Guerrero, et al., 2021). There is a growing body of literature that focuses on monoracism at the interpersonal level, with an emphasis on multiracial microaggressions in higher education contexts (e.g., Harris, 2017a, 2017b; Harris, Snider, et al., 2021). However, Hamako (2014) argued that attention to interpersonal manifestations of monoracism can overlook "systemic privileging of things, people, and practices that are racialized as 'single-race' and/or 'racially pure'" (p. 81). Policies that guide the recognition of and/or (re)classification of multiraciality in educational data systems are an example of monoracism at the systemic level (Johnston-Guerrero & Ford, 2020; Johnston-Guerrero & Renn, 2016; Wong-Campbell & Ramrakhiani, 2024). While such policies are often interpreted and implemented by IR professionals, there is a dearth of scholarship examining monoracism in IR contexts.

The Work of Institutional Researchers

Terenzini (1993) outlined three tiers of intelligence that effective IR professionals must use. These are (1) technical/analytical intelligence (foundational data management skills and fluency in research design/methods), (2) issues intelligence (political savvy and decision-making support), and (3) contextual intelligence (deep understanding of institutional history and operations). Notably, Terenzini's (1993) only explicit reference to race is found in tier one as an example of requisite "familiarity with the standard categories and definitions of basic terms" (p. 3). Even after Terenzini updated these tiers (Terenzini, 2013)—noting the increasing racial diversity of higher education—they did not include additional knowledge and skills aimed at reducing racism in IR processes. This aligns with Abrica and Rivas's (2017) observation that advocacy for racial equity is "not routinely part of IR work" (p. 44). However, scholars have pushed for an increase in equity-minded, race-conscious practices in IR (Bensimon & Malcom, 2012; Dowd & Bensimon, 2015; Dowd et al., 2012), including Baxter's (2020) call to reimagine IR professionals as "facilitators of organizational learning about race and racism" (p. 2). While there is no shortage of scholarly attention to the relationship between quantitative data and power (e.g., D'Ignazio and Klein's [2020] data feminism and Walter's [2013] Indigenous statistics), these critical considerations do not appear to be widely engaged in IR literature. One exception is a series of special issues dedicated to quantitative criticalism in *New Directions for Institutional Research* (see Stage, 2007; Stage & Wells, 2014; Wells & Stage, 2015); however, that journal is no longer publishing new content. Moreover, practices that amplify or alleviate monoracism in IR are underexplored.

Theoretical Framework: Quantitative Monoracism

We define *quantitative monoracism* as the policies, practices, and processes by which monoracial categories are elevated and multiraciality is erased in quantitative research. We apply two theoretical lenses to advance a model for disrupting quantitative monoracism in IR contexts: quantitative critical race theory (QuantCrit; Gillborn et al., 2018) and critical multiracial theory (MultiCrit; Harris, 2016). Both QuantCrit and MultiCrit are extensions of critical race theory (CRT), which emerged from the field of legal studies to interrogate the foundational role of racism in social structures (see Delgado & Stefancic, 2017) and has since been applied in research across multiple fields, including higher education (e.g., Patton, 2016).

Amplifying the chorus of scholarly voices engaging the possibilities and tensions at the intersection of CRT and quantitative methods (see Garcia et al., 2018), Gillborn et al. (2018) articulated five principles of QuantCrit. First, QuantCrit acknowledges the centrality of racism in quantitative research. Second, QuantCrit contends that numbers are not neutral, but instead reflect and reify White supremacy. Third, QuantCrit asserts that categories are not natural (they are socially constructed) and locates inequity not as a deficit of race but rather as a product of racism. Fourth, QuantCrit resists the notion that data can speak for themselves by emphasizing the role racialized assumptions and interpretations play in quantitative analyses. Finally, QuantCrit advances a social justice and equity orientation toward quantitative research. As Castillo and Gillborn (2022) succinctly stated, QuantCrit is a tool to "reimagine the role that research and data can play in an anti-racist society" (p. 3).

While QuantCrit interrogates racism in quantitative research broadly, MultiCrit is a complementary lens through which to examine a nuanced form of racism: monoracism. MultiCrit adapts four original CRT tenets: (1) challenge to ahistoricism, (2) interest convergence, (3) experiential knowledge, and (4) challenge to dominant ideology. In addition, MultiCrit more distinctly reframes an additional four tenets: (5) racism, monoracism, and colorism; (6) a monoracial paradigm of race; (7) differential micro-racialization; and (8) intersections of multiple racial identities (Harris, 2016). While we incorporate each of these tenets throughout our guiding questions, we particularly emphasize the monoracial paradigm of race that can "push, pull, and erase multiracial students" (Harris, 2016, p. 805). To our knowledge, MultiCrit and QuantCrit have not been used in tandem in extant research on IR. Just as QuantCrit questions the constructed nature of categories (Gillborn et al., 2018), MultiCrit resists normative notions that "race exists in neat, defined, monoracial categories" (Harris, 2016, p. 797). As such, pairing MultiCrit with QuantCrit provides a strong theoretical foundation for considering anti-monoracist approaches to quantitative research in IR.

Positionality Statement: Who We Are

QuantCrit asserts that data cannot speak for themselves and foregrounds the role of researchers in shaping analyses (Gillborn et al., 2018). As such, we outline how our own identities and lived experiences inform our approach to the current project.

Jacob is a doctoral student in a higher education program at a large, public, research-intensive university in the Midwest. He identifies as a multiracial (Asian/White) and multiethnic (Chinese/Filipino) cisgender man, and his professional experience as a data analyst at a large, public

university on the West Coast undergirds his research interests in the quantification of (mixed) race in higher education.

Ashley holds a doctorate in curriculum and instruction and identifies as a White, cisgender woman. Her professional experiences include previous roles as an educator in the high school setting and instructional facilitator for more than 10 years. Currently, she serves as Director of Data Analytics and Institutional Research for a professional healthcare educational institution in the central United States. Both her professional and personal experiences led to her research interests in the representation of the TOMR category and underrepresented minorities (URM).

Marc is an academic administrator and faculty member in a college of education at a mid-sized, private research university in the Rocky Mountain region of the United States. He identifies as a mixed race (Filipino and White), queer, cisgender man, whose scholarly agenda and praxis has centered around race and multiraciality for 20 years. His work has foregrounded multiracial individuals as an additional approach toward racial justice and the dismantling of White supremacist hierarchies by interrogating the structures and categories that maintain such hierarchies.

Naunihal is a naturalized U.S. citizen who was born in India, is Muslim, and identifies as a cisgender woman. Her training is in pharmacology (master's and doctorate); she has worked in the realms of biotechnology research as a scientist, and in academia as a faculty member in medical education. Her passion, work, and lived experiences involve the integration of both pharmacology and diversity, equity, and inclusion in medical education.

Rather than position ourselves as neutral actors, QuantCrit pushes us to name our collective commitment and equity orientation toward leveraging data to unsettle (mono)racist practices in IR.

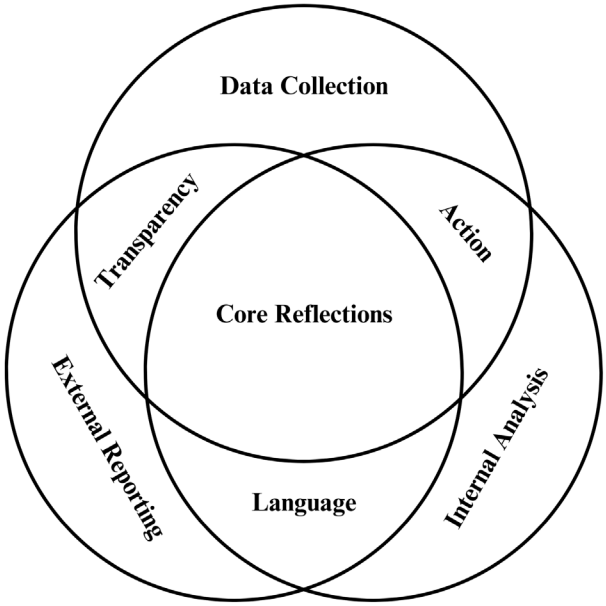
GUIDING QUESTIONS TO INFORM INSTITUTIONAL RESEARCH METHODS

Building on Castillo and Gillborn's (2022) guide for operationalizing QuantCrit in practice and bolstered by key tenets of MultiCrit, we offer a series of reflective questions to advance anti-monoracism in IR (see Table 1). We present these questions visually within a set of interconnected circles in Figure 1. First, we ground the framework in core reflections (at the center). Then, we focus on three primary domains of IR: (1) data collection, (2) external reporting, and (3) internal analysis. Recognizing that these domains are not mutually exclusive, we pose broader questions around three themes that speak to their intersections: (1) transparency, (2) language, and (3) action. Although we focus on applications of these guiding questions in IR contexts, we assert that they may have broader relevance in (and beyond) higher education research.

Table 1. Guiding Questions to Disrupt Quantitative Monoracism in Institutional Research

Core Reflections	• Who do monoracial categories benefit or exclude? • Whose agency is amplified or diminished? • How is monoracism mitigated or maintained?
Data Collection	• Are questions about race aligned with intended use(s) of data? • What restrictions are in place? • How are updates made?
External Reporting	• Does (dis)aggregation essentialize or expand racial categories? • How is multiraciality visually represented? • What incentives drive displays of data?
Internal Analysis	• How is race defined/contextualized at the campus level? • Does analysis rely on or resist discrete categories? • How might anti-monoracist practices reduce erasure of small groups?
Transparency	• In what ways are institutional (re)categorization practices made visible?
Language	• How are racial identity and racial category differentiated/conflated?
Action	• What are the material impacts of anti-monoracist data collection/analysis?

Figure 1. Framework to Disrupt Quantitative Monoracism in Institutional Research



Core Reflections

WHO DO MONORACIAL CATEGORIES BENEFIT OR EXCLUDE?

This framing emphasizes the use of socially constructed categories as "controlling devices" (Gillborn et al., 2018, p. 15) in educational research, and the selective recognition of multiraciality as a function of institutional interests (Harris, 2016). Thus, we call for critical attention to when (and why) multiracial categories (e.g., TOMR) are included or obscured from quantitative practice. If multiraciality is measured in such a way that monoracial communities of color are undercounted, who benefits? If multiracial student data are deemed *too complicated* to include in analysis of retention and graduation rates, who is harmed? Standards established by federal, state, and programmatic agencies define the methodology for (mono- and multi-) racial coding. These standards limit how IR professionals represent ethnicity and race in externally mandated reporting, often with little incentive to exceed minimum requirements. We acknowledge that such standards constrain, but do not foreclose, more-expansive racial/ethnic data collection, reporting, and analysis. Within the confines of external mandates and institutional priorities, IR professionals make choices in how they conduct analyses, and these choices are not without consequences.

WHOSE AGENCY IS AMPLIFIED OR DIMINISHED?

MultiCrit centers the voices and lived experiences of multiracial students in higher education contexts, and QuantCrit aims to foreground such experiential knowledge in quantitative research (Gillborn et al., 2018; Harris, 2016). As such, IR professionals should consider how their decisions silence or support multiracial voices. Whose voices are diminished when multiraciality is relegated to an "Other" category? Whose voices are honored when we consider, rather than conceal, categorical complexity? Within their spheres of influence, we believe IR professionals have a responsibility to elevate (not erase) multiracial voices.

HOW IS MONORACISM MITIGATED OR MAINTAINED?

QuantCrit explicitly names the centrality of racism in statistics (Gillborn et al., 2018), and MultiCrit provides a lens to articulate how monoracism is similarly embedded in quantitative practices (Harris, 2016). If data can be used to advance racist lies (Zuberi, 2003), so too can data assert multiracial truths. We contend that resisting discrete racial categories is a necessary step toward more-authentic (counter)storytelling with data, and IR professionals have varied levels of positional power to push for practices that reflect multiracial realities.

Data Collection

ARE QUESTIONS ABOUT RACE ALIGNED WITH INTENDED USE(S) OF DATA?

Research shows that the wording and stated purpose(s) of race data collection influences multiracial claims (Franco, 2015; Johnston et al., 2014). As such, we elevate the use of more-purposeful race questions as conceptualized by Johnston et al. (2014). For example, collecting data on racial ancestry (e.g., "What is your racial background?") and racial identity (e.g., "How do you racially identify?") require distinct wording (see Johnston et al. [2014] for additional examples), which might not align with one's "street race" based on appearance (López & Hogan, 2021). To advance anti-monoracism in IR, it is essential to align the collection of race data with intended use(s).

WHAT RESTRICTIONS ARE IN PLACE?

At a minimum, respondents should have the option to select more than one race on demographic forms. This option should extend to subgroups within racial categories, because forced-choice questions at this level invisibilize multiethnic students. We encourage the collection of race data in multiple ways, including an option to self-report multiraciality rather than solely relying on the TOMR proxy. We acknowledge that external mandates exert pressure on how race data are collected such that they can be aggregated into required reporting categories (e.g., IPEDS). Even so, there are multiple models of universities that collect detailed race/ethnicity data beyond minimum requirements (see University of California, 2022). While we do not suggest a one-size-fits-all approach with prescribed categories for inclusion, we posit that decisions to collect more-detailed race/ethnicity categories should be made in consultation with the campus community. For example, in response to student advocacy (see Jarrah, 2020), the California State University system recently added a new Southwest Asian and North African category with detailed subgroups, such as Palestinian (California State University, n.d.). While this category is aggregated into the White count for IPEDS reporting purposes, these granular data create new opportunities to see and support students who might not be racialized as White on campus. We urge IR professionals to prioritize the most expansive, rather than the most restrictive, question formats when collecting race/ethnicity data.

HOW ARE UPDATES MADE?

Multiracial identity claims evolve over time and across contexts (Harper, 2016; Johnston et al., 2014; Phinney & Alipuria, 1996; Renn, 2003). As such, point-in-time data (often collected during the admission process) likely offer a skewed portrait of multiraciality on campus. Thus, we encourage IR professionals to establish (or enhance) processes by which individuals can review and update their race/ethnicity designations. Building systems that support the fluidity of multiracial identity is an important step toward destabilizing quantitative monoracism in IR.

External Reporting

DOES (DIS)AGGREGATION ESSENTIALIZE OR EXPAND RACIAL CATEGORIES?

Institutions sometimes normalize monoracial categories on university websites by selectively grouping multiracial students (e.g., students of color) or erasing them altogether (Ford et al., 2019). We contend that disaggregation can highlight rather than hide heterogeneity within the aggregate TOMR category. This is not to suggest that aggregate groupings should be eliminated. Rather, we envision a both/and approach whereby aggregate groupings (e.g., URM students) are supplemented with more-granular data tables.

HOW IS MULTIRACIALITY VISUALLY REPRESENTED?

We ground this question in maximum representation, which is the concept and practice of counting all applicable racial/ethnic categories independently from the total of unique individuals to "enhance the probability of inclusion" (University of Washington, n.d., para. 2). While we see potential in this strategy, we also caution against the visual erasure of multiraciality. Counting students in all applicable categories and removing a TOMR category from graphical representations of demographic data may inadvertently bolster a monoracial paradigm of race (Harris, 2016). We challenge IR professionals to consider visual communication strategies that resist rigid racial boundaries (e.g., stacked bar charts).

WHAT INCENTIVES DRIVE DISPLAYS OF DATA?

We invite IR professionals to critically consider the pressures and priorities that might help or hinder increased recognition of multiraciality. Amid growing anti-DEI legislation and in a post–affirmative action era, the use of race data on college campuses could be increasingly scrutinized. We acknowledge that contextual factors influence the ways in which race/ethnicity data are shared and (in)directly impact IR offices. As QuantCrit asserts, numbers are not neutral—they reflect (and maintain) systems of power (Gillborn et al., 2018).

Internal Analysis

HOW IS RACE DEFINED/CONTEXTUALIZED AT THE CAMPUS LEVEL?

We center the importance of shared language in the data analysis phase. Some IR offices use a digital data dictionary to centralize such information and aid campus partners in navigating data request processes. Where multiple data points exist for race/ethnicity, data dictionaries can help distinguish which option is most applicable for each inquiry. We highlight the University of Hawai'i's (2009) clear guidance on the multiple ways race data are aggregated at the campus level to meet distinct internal and external priorities, and we invite IR professionals to develop similar tools that reflect their unique university context. Additionally, we stress the importance of defining terms with distinct contextual meanings (e.g., URM). MultiCrit challenges ahistoric treatment of multiraciality in higher education (Harris, 2016). For example, multiracial students might not be considered underrepresented in higher education because there have not historically been categories to measure this metric. We urge IR professionals to ensure that contemporary categories are consulted when considering which groups are (or are not) counted as underrepresented. Furthermore, assumptions that multiracial means "White and" could influence decisions to exclude the TOMR category from URM definitions, which overlooks the racialized realities of students with multiple minoritized racial backgrounds (Talbot, 2008). Without a clear definition of URM, including explicit instructions regarding multiracial students, campus-level analyses might make inappropriate comparisons to state/federal benchmarks.

DOES ANALYSIS RELY ON OR RESIST DISCRETE CATEGORIES?

We assert that moving beyond the TOMR category in statistical analyses can provide rich results. One strategy we encourage IR professionals to consider is effect coding, which Mayhew and Simonoff (2015) asserted maintains the integrity of multiracial data and increases the accuracy of findings across all racial categories. Furthermore, MultiCrit attends to the intersections of multiple racial identities (Harris, 2016), and IR professionals can counter monolithic treatment of multiraciality by analyzing within-group differences. By considering differential experiences that the TOMR category masks, IR professionals can mitigate quantitative monoracism.

HOW MIGHT ANTI-MONORACIST PRACTICES REDUCE ERASURE OF SMALL GROUPS?

Often, small populations are excluded from quantitative analyses due to sample size. This is especially troubling among small, highly multiracial populations such as Native Americans and Native Hawaiian/Pacific Islanders (Jones et al., 2021; Shotton et al., 2024) who are disproportionately (re)categorized as TOMR (Wong-Campbell & Ramrakhiani, 2024). While we affirm the use of

data suppression thresholds (e.g., $n < 5$) that prioritize student privacy and reduce the risk of data re-identification, we challenge IR professionals to consider how maximum representation might expand opportunities to include groups in analyses from which they might otherwise be excluded due to sample size.

Transparency

IN WHAT WAYS ARE INSTITUTIONAL (RE)CATEGORIZATION PRACTICES MADE VISIBLE?

Campbell-Montalvo (2019) described the "process of change or distortion" (p. 2) applied to self-reported data for institutional reporting purposes as *racial re-formation*. We assert that racial re-formation is embedded in the IR job function, and we call on IR offices to document and display these processes. Publishing these practices holds institutions (and IR) accountable for their role in (re)shaping racial categories. Increasing transparency around current racial re-formation practices in IR can highlight barriers to and best practices for mitigating monoracism.

Language

HOW ARE RACIAL IDENTITY AND RACIAL CATEGORY DIFFERENTIATED/CONFLATED?

Here, we draw on the work of Rockquemore et al. (2009) who conceptualize racial identity (internal self-understanding) and racial category (chosen label based on available options) as analytically distinct, interrelated, and potentially less correlated for multiracial individuals. IR professionals often work with racial category data that has undergone racial re-formation for reporting purposes (e.g., IPEDS). As such, claims about racial identity with said data are inappropriate. Instead of language like "students who identify as TOMR," IR professionals should incorporate phrases like "students categorized as TOMR." Small language shifts can meaningfully impact how data are interpreted and avoid conflating racial identities with racial categories.

Action

WHAT ARE THE MATERIAL IMPACTS OF ANTI-MONORACIST DATA COLLECTION/ANALYSIS?

We stress that data do not exist in isolation from the lived experiences of those they represent. Rather, IR can leverage data toward tangible impact. Making multiraciality more visible in campus data systems (e.g., enrollment dashboards) may amplify the need for increased multiracial-focused programming, and may catalyze intentional efforts to make monoracially organized spaces more inclusive for multiracial students. QuantCrit contends that racial categories have racist consequences, and MultiCrit centers the multiracial realities that monoracial categories consistently collapse (Gillborn et al., 2018; Harris, 2016). In the quest for more just higher education contexts, IR professionals have the opportunity and responsibility to advocate for and apply anti-monoracist action in their approaches to data collection, analysis, and reporting.

CASE STUDY: THE COMPLEXITIES OF THE TWO OR MORE RACES CATEGORY

We present a real-life case using hypothetical numbers to demonstrate how the guiding questions above might help IR professionals navigating similar dynamics and decisions. Although developed separately, we bring our framework and this case together to suggest broader recommendations for IR.

Expanding and Contextualizing URM

The Arkansas Colleges of Health Education (ACHE) serves as the parent institution for the Arkansas College of Osteopathic Medicine (ARCOM), which trains doctors of osteopathic medicine. Given the continued disparities in racial representation within the healthcare field, reporting to programmatic agencies is necessary for tracking trends. Programmatic agencies such as the Association of American Medical Colleges and the American Association of Colleges of Osteopathic Medicine (AACOM) use race/ethnicity codes to identify trends in representation. This case captures complexities in how the healthcare field defines URM and, more specifically, underrepresented in medicine (URiM), with a focus on students who selected multiple race categories on their application forms. The Association of American Medical Colleges (2024) defines *URiM* as "racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population" (para. 3). While the healthcare field is intentional in defining (under)representation in relation to the general population, this might not mirror trends in all higher education settings, where some institutions might use the term *URM* to reflect histories/legacies of oppression in relation to White supremacy and racism.

At ACHE, race/ethnicity data are collected from students via the admissions process using federal prompts: "Indicate whether you consider yourself to be of Hispanic or Latino origin," "Select one or more of the groups of which you consider yourself to be a member" (AACOM, n.d.). Upon matriculation, ACHE students may update these designations at any time during their educational journey. IR later codes these self-reported data as URM or non-URM, coding that is further complicated by conflicting definitions of URM by the various external agencies the institution is required to report to. For instance, some programmatic reporting agencies (e.g., AACOM) define TOMR as non-URM, regardless of ethnic and racial composition. Thus, IR offices and admissions teams work collaboratively to operationalize how to identify and categorize multiracial students according to differing agency guidelines. At ARCOM, in academic year 2021–2022 students were categorized according to the method illustrated in Table 2.

Table 2. Previous (Academic Year 2021–2022) and Current Classification Method

Race/Ethnicity	Previous *N*	Current *N*
White	435	435
Hispanic/Latinx (Ethnicity: counted as URM no matter the race indicated)	45	45
Asian	200	200
American Indian/Alaska Native	5	5
Native Hawaiian/Other Pacific Islander	5	5
Black/African American	35	35
Race/Ethnicity Not Reported	25	25
TOMR (non-URM)	50	15
TOMR (URM)	–	35
Total	800	800
URM (includes Hispanic/Latinx; American Indian/ Alaska Native; Native Hawaiian/Other Pacific Islander; Black/African American)	90	125

Note: All numbers are examples only, and do not depict actual ARCOM enrollment data.

Using the previous system, a student who selected both *American Indian/Alaska Native* and *Black/African American* was reported in the catchall TOMR category, leading to an undercount of URM (*n* = 90). The healthcare/osteopathic professions value identifying health disparities by contextualizing the racial/ethnic representation of medical students in relation to the general population. Thus, a revision was required at ACHE to accurately depict those who are both multiracial and URM, resulting in a new TOMR (URM) reporting category in alignment with AACOM's definitions. This modification was established via ACHE's IR ad hoc committee to maintain accreditation requirements for AACOM. Table 2 also outlines the updated approach. In this revised method, only those who self-report as both White and Asian are placed into the TOMR (non-URM) category. Other racial combinations (e.g., Black and Asian) are placed into the TOMR (URM) category. The goal of this categorization is to more accurately capture students who are URiM without excluding those who self-reported multiple racial categories.

The example in Table 3 highlights two fictitious students who identified as multiracial (or, more accurately, who selected multiple racial categories) and were previously reported in the TOMR category. Thus, LaDonna Jones and Maggie Nguyen were not analytically distinct under ACHE's prior guidelines. This is problematic because the life experiences with racism and settler colonialism between these two students are assumed to differ greatly. Further problematizing this issue is limited student-facing transparency around how their data will be aggregated into broader categories like TOMR or URM. Statistics on ethnicity and race are used for important purposes, such as for assessing health disparities, educational inequities, employment discrimination, and civil rights protections, as well as directing resources to ameliorate the underrepresentation of specific communities within medical professions. Accordingly, IR at ACHE was limited in providing decision-making guidance that was both relevant to medical fields and reflective of the nuanced diversity among its student population without updating its approach to URM categorization.

Table 3. Comparing Students Categorized as Two or More Races in Previous vs. Current Classification Methods

Student (pseudonyms)	Self-Reported Racial Categories	Previous Classification	Current Classification
LaDonna Jones	Black, American Indian	TOMR	TOMR (URM)
Maggie Nguyen	White, Asian	TOMR	TOMR (non-URM)

Note: These are not actual students but are fictitious examples used in the context of this article.

APPLYING THE FRAMEWORK: RECOMMENDATIONS FOR PRACTICE

To operationalize our framework for disrupting quantitative monoracism in IR (see Figure 1), we offer a series of guiding questions (see Table 1) as a starting point for IR professionals to reflect on and revise practices that privilege a monoracial paradigm of race (Harris, 2016). The questions we pose are not an exhaustive list nor do we prescribe simple solutions. Rather, we hope to spark more questions than answers—to rupture rigid racial categories and create space for more-expansive understandings of multiraciality and monoracism in and through IR. Additionally, we acknowledge that some guiding questions could be more (or less) relevant to a given IR task or team. As such, we highlight a few generative questions rooted in our framework that deepen our engagement with the case study presented above and undergird practical recommendations for disrupting quantitative monoracism at (and likely beyond) our institution of focus. We also demonstrate how the guiding questions can be used in combination or across contexts in alignment with the framework's overlapping circles (see Figure 1).

Aligning Data Collection Practices with Intended Uses and Increasing Visibility

Here, we engage two guiding questions from our proposed framework: "Are questions about race aligned with the intended use(s) of data?" (Data Collection), and "In what ways are our (re)categorization practices made visible?" (Transparency). Although various reporting agencies provide guidelines for collecting racial and ethnic demographic data in higher education, most are minimum standards and our questions and categories can be tailored to our specific institutional contexts. Moreover, we continue to encourage IR professionals to further consider how questions are asked and ways we can increase transparency at the time of data collection. For instance, the two hypothetical students presented above might identify differently based on how the race question is asked (Johnston et al., 2014). Tweaking the race question to "What racial category/categories best represent your lived experience?" might align more with intended uses of racial classifications to represent lived realities with racism and settler colonialism, rather than solely with group membership (although we acknowledge how group membership might be particularly relevant to American Indian/Alaska Native populations and tribal sovereignty).

Additionally, we encourage adding more visibility to racial re-categorization practices (e.g., URM) upfront at the data collection stage. Including footnotes or explanations within the admissions application can give students greater context about the uses (and transformations) of their data and increase their agency to make informed decisions related to the selection of racial categories. Racial categories, alone or in combination, do not signal singular, standardized, static meanings, nor are they operationalized consistently across contexts. As such, IR professionals must be explicit about their role in defining who is (or is not) counted, and how they are (re)categorized.

Using External Reporting to Disrupt Monoracist Practices and Increase Transparency

Next, we engage the following questions from our framework: "Does (dis)aggregation essentialize or expand racial categories?" (External Reporting), and "In what ways are our (re)categorization practices made visible?" (Transparency). As demonstrated by the ARCOM/ACHE example, IR professionals engage in racial re-formation (Campbell-Montalvo, 2019) when assigning students to URM/non-URM categories. However, the meaning(s) of these aggregate groupings are fluid and contextual. When AACOM revised its definition of URiM, ACHE followed suit and expanded its campus definition of URM beyond a monoracial paradigm of race (Harris, 2016). While this resulted in a multiracial-inclusive URM definition at ACHE (categorical expansion rather than essentialization), one might argue that the impetus was compliance with an external reporting agency and that recognition of multiraciality served an institutional interest (Harris, 2016). Even so, this example highlights the role that external reporting agencies (e.g., AACOM) can play in catalyzing shifts away from monoracist practices at the institutional level.

We recommend that ACHE, and institutions more broadly, increase transparency around the forces that drive racial re-formation within their campus context. For example, the University of Hawai'i system publishes an online summary of the various ways race/ethnicity data are (re)coded in relation to external reporting bodies (see University of Hawai'i, 2009). In the case of ACHE, such documentation should also include historical context (e.g., prior to the 2022–2023 academic year, no students categorized as TOMR were considered URM). Furthermore, we push for this documentation to be easily accessible on IR websites and included as a footnote in reports and analyses, as applicable.

Clarifying Internal Analysis Procedures toward Anti-Monoracist Actions

Finally, we critically reflect on the following guiding questions: "How is race defined/contextualized at the campus level?" (Internal Analysis), and "What are the material impacts of anti-monoracist data collection/analysis?" (Action). The ARCOM case outlined how internal analysis can align directly with what is requested for external reporting agencies, in this case for AACOM. We recommend that IR professionals continue to further contextualize their definitions of racial categories, particularly aggregated categories. The definition and usage of URiM (not just URM) demonstrates this contextualization within the field of medicine (and healthcare more broadly) and how updated definitions can become more inclusive of multiraciality. A college of education might use this example to define URM in the education context to include Asian Americans, who are underrepresented in the teaching profession (Kim & Cooc, 2020). Furthermore, we encourage contextualization that includes historical and ongoing legacies of racial exclusion/oppression that can further understanding of underrepresentation as an active and ongoing process, rather than as just a static calculation of current proportionality, and why spotlighting such aggregated groups can help disrupt White normative representations in higher education. Additionally, we encourage IR professionals to further disaggregate large racial groupings as we understand the diversity within groups and how specific subpopulations might be underrepresented within different contexts. In areas with large populations of specific multiracial groups

(e.g., mixed Pacific Islanders and Asian Americans in Hawai'i), there could be further contextualization of how specific multiracial groups should be classified when defining underrepresentation.

Moreover, these institutionally contextualized and nuanced racial categorizations can have material impacts toward disrupting monoracist practices on campus. For ARCOM, now that there is a distinct TOMR (URM) categorization, comparisons can be made regarding several important experiential and outcome variables for this grouping, particularly in comparison to the TOMR (non-URM) students. These analyses could demonstrate the need for more-intentional support services, inclusion in the curriculum, and outreach efforts for different multiracial populations, which would impact how resources are allocated.

LIMITATIONS

While we introduce a framework and associated guiding questions to prompt discussion and disruption of quantitative monoracism in IR, we also acknowledge the inherent limitations in approaches to systemic and institutional change that rely solely on reflection and action at the individual level. At present, TOMR is a required reporting category that is tied to material resources (e.g., federal funding). To simply abandon its use is neither practical nor purposeful. Within an IR ecosystem that some could argue fosters a culture of compliance with campus, state, and federal mandates, we ask, "How can IR professionals most effectively and sustainably exert agency to disrupt monoracism within their spheres of influence?" For example, an IR professional might not have the positional power to amend the categories used to collect race data in the admissions process. However, they can be clear about the limits of these data and clearly articulate the choices they make when analyzing race data (e.g., aggregation, exclusion). A university might not have the budgetary agility to quickly overhaul campus data systems, but IR professionals can foster productive relationships and test incremental changes to build buy-in around proposed changes. IR professionals alone cannot eradicate quantitative monoracism, but they can model multiracial-inclusive practices and advocate for policies that support anti-monoracist approaches to quantitative research. We position our guiding questions as conversation starters rather than as problem solvers. It is our hope that these questions spark critical dialogue within IR spaces that, alongside broader efforts to (re)shape the systems and structures that privilege monoracial categories, will move the IR field toward more-expansive and more-innovative analyses of race data.

CONCLUSION

Our framework and examples like the above case study provide convincing reasons to critically examine the policies, practices, and processes that elevate and essentialize discrete racial categories in IR contexts. We assert that the existence of "select all that apply" race data collection and a TOMR reporting category do not inherently disrupt quantitative monoracism. Rather, IR professionals exercise agency in translating and transforming these data to serve institutional needs and priorities. Failure to acknowledge the subjective, contextual nature of race data perpetuates false notions of neutrality in quantitative research (Gillborn et al., 2018), and strict adherence to rigid racial categories masks multiracial realities (Harris, 2016). As such, we offer guiding questions and illustrate their application in hopes of amplifying anti-monoracist action in IR.

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“Students Want to Feel Safe, Safety Breeds Inclusivity”: How Universities Implement Data Collection Methods for Undocumented Students

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Abstract

Inclusivity in data reports for undocumented students can be difficult to achieve. By nature of those students’ status and livelihood, there is contention among academics and practitioners on whether this is a population that should not be formally tracked or identified, for a variety of reasons. Concerns about tracking arise because of the Freedom of Information Act, which is designed to ensure the public’s access to government records. This law motivates higher education institutions to not document immigration status in an effort to protect students’ identities, although the Family Educational Rights and Privacy Act policy emphasizes the protection of student data and privacy. Nevertheless, the fear of future policies that could implicate undocumented students has created an impermeable hesitancy among higher education administrators and undocumented students. Drawing from undocumented critical theory to center the varied experiences of undocumented (current and former) students, this study surveyed the study’s authors and other higher education professionals to identify strategies that also center those most directly impacted. This article details existing strategies that intentionally and safely center undocumented students in replicable and standardized data. We found that major university

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systems used a combination of three strategies: we found that university officials shared significant success in data collection when they (1) developed and institutionalized safe data collection methods specific to their population, (2) hired intentional and informed staff to focus on this population, and/or (3) expanded existing services such as scholarships and resources to create a safe space for students to share their status. Although not all practices may work on a single institution, it is the authors' hope that intentional and safe practices will breed inclusivity.

INTRODUCTION

While it is the responsibility of higher education institutions to identify creative and safe avenues for inclusion, no research or example studies of this effort exist. Since institutions rely heavily on data for funding and for prioritizing student-facing initiatives, undocumented students are often not included in these metrics. As a result, students toggle with an expectation to forgo inclusivity in exchange for their own safety (Mangual Figueroa, 2017). This situation emphasizes the importance of exploring and implementing safe and inclusive data practices. Without an informed and safe higher education administrator, the vulnerability of their status discourages students from disclosing in higher education (Reed et al., 2022). The authors of this article sought to address this gap in the research with the extensive work they have done in creating safe and inclusive data collection methods.

Therefore, the structure and methodologies of our article draws from our experiences and the experiences of other scholars who have incorporated their own lived and professional experiences as informed methods of practice. In particular, we drew from Nakae and colleagues' (2022) chapter in *Critical Praxis in Student Affairs* titled "Critical Praxis with Undocumented Students in Medical Education." This chapter positions the authors' experience of "conscientization" as the foundation to their work and efforts as practitioner–activists cocreating resources with undocumented students who are navigating the medical field.

Similarly, our work is grounded in our personal and professional narratives. Drawing from our own experiences as well as from a survey of other practitioners, we sought to document strategies that have allowed universities to more accurately and more safely estimate the undocumented student population. Within each of these strategies, higher education staff implemented responsible data use to limit access, deidentify data, and communicate transparency for concerned students and community members. While none of the strategies accounted for every undocumented student, these strategies have resulted in university systems using a truer estimate of their student population, and this in turn has resulted in more funding allocation, more resource development, and more inclusion in strategic roadmaps, while simultaneously protecting students from capricious legislation.

The respondents' reactions to our questions and their apprehension about divulging strategies demonstrates that this is a sensitive topic, but one that it is necessary to explore. Without any existing research or guidance, higher education institutions are often left to their own devices and are hesitant to share strategies that are not tested or grounded in informed research. A continuing scarcity in funding and the politicization of undocumented students emphasizes the importance of research on this delicate but necessary subject.

AUTHORS' NARRATIVES

This article was developed and written by three higher education practitioners and researchers who have personal and professional experience at the intersection of immigration and education. As detailed in the "Methods" section, we initially intended to draw data only from colleagues and collaborators. It soon became clear, however, that our own practices and strategies influenced our writing and our engagement with the data. In a group epiphany, we agreed that our own narratives should be incorporated to include practices in our professional spaces. These are practices that span several states, are long-standing, and are intersectional to our own identities. The following narratives detail the authors' experiences developing inclusive practices for standardized data and expanding services for undocumented students.

Author 1

I immigrated to Boyle Heights/East Los Angeles, California, from Zapopan, Mexico, when I was 5 years old. My family and I originally came on a tourist visa to reconnect with my grandmother. We decided to stay in the United States after our visas expired. As my parents struggled to support my sister and me, there were often conversations about returning to Mexico. These conversations became more common when anti-immigrant legislation created by then-Governor Pete Wilson began to target undocumented youths in K–12. While the legislation was being settled in the courts, my parents continued to prioritize our education as an avenue for social mobility and eventually to U.S. citizenship. After my parents' divorce, my dad continued to raise me and my sister alone, focusing on our education by attending parent–teacher conferences and speaking to our counselors about our immigration status. My dad spoke to my counselors as if our status were not something that should be hidden, but rather as something we needed to communicate to ask for resources. My counselor spoke to us about California Assembly Bill 540 (AB 540), the in-state tuition legislation and private scholarships that could help us afford college at a time before the California Dream Act. Although I would speak candidly to my counselor about my status, it was not something I would speak about with my teachers or classmates. During my time in high school, I knew of only one other student who was undocumented.

It was through my dad's remarriage, which happened right before my sister and I turned 18, that we were able to adjust our status. Upon getting my green card, I shared the news with teachers because the day of my residency interview was the only time I missed class. They expressed how surprised they were that I was undocumented. I also began to share my status with my friends, and learned that two of my closest friends were also undocumented. We were completely shocked that we had never spoken about it to each other. We knew each other's parents and siblings, but even then, we never felt safe enough to share our struggles with our immigration status. We also realized that we could have supported each other and advocated for each other had we known.

I carry that feeling and experience with me in professional spaces I have navigated as I have advocated for undocumented and immigrant student resources. Throughout my time in Arizona, California, Massachusetts, New York, and Washington, DC, my roles in higher education have focused on how we can cultivate a space for undocumented students to access resources, regardless of whether they share their immigration status.

ACCESSIBLE TAKEAWAY STRATEGIES

1| Create a proxy that does not use identifiers.

2| Invest in full-time staff who are content experts.

3| Normalize and embed immigrant resources with general resources.

WHO CAN IMPLEMENT THESE STRATEGIES?

These takeaway strategies have been implemented in public universities in states like Arizona, California, and New York. This means that, regardless of the political context, and when implemented safely by a content expert, these practices can be a successful assessment of the undocumented student population at a campus. It is important to cultivate a sense of trust at the campus to encourage participation and, in some instances, self-disclosure.

1. Create a Proxy that Does Not Use Identifiers.

Admission and financial aid offices collect general data questions that can lend themselves to producing a proxy to determine estimates of the numbers of undocumented students at a campus. The use of data from data queries such as a FAFSA submission, country of origin, or Social Security numbers, can provide a sense of how many students could be undocumented or might have a precarious immigration status. Additionally, some campuses have questions about visa types or immigration status that can help this proxy include students with Deferred Action for Childhood Arrivals (DACA), while omitting international students. Importantly, proxies should be developed in collaboration with expert data analysts to remove identifiers that could create a list of possible undocumented students. While a proxy with identifiers could work at a private university that has more autonomy, public universities and their general counsel might be more likely to submit requests from the federal government.

2. Invest in Full-Time Staff Who Are Content Experts.

These full-time staff can be a point of contact for students is the most effective way to collect data. More importantly, these staff will manage the proxy (Accessible Takeaways, #1), in a safe way. These staff can document unique points of contact and needs through one-on-one interactions and informal data collection from events, programming, and email lists. They would collect the data without identifiers and track what resources are needed, the dollar amounts students access through scholarships, and any barriers that students experience. This strategy has resulted in data that speak to the impact of programming, return on investment, and population sizes. Staff in these scenarios have created an informal tracking document to account for this population, which has proven to be particularly successful in public universities where campuses generally do not track or ask students to self-identify their immigration status. Additionally, these staff could access existing sensitive data they share with leadership at the campus.

3. Normalize and Embed Immigrant Resources with General Resources.

Normalizing resource dissemination to welcome self-disclosure is another method to include undocumented students in data collection efforts. Students hesitate to seek resources that require them to disclose their immigration status. As a result, campuses might assume there are no undocumented students. By sharing resources with undocumented students in general resources in key spaces like admission, financial aid, and career

opportunities, however, students understand that the campus has some knowledge base. This strategy has resulted in students seeking additional information, leading to a new level of awareness about the needs of this population. This is particularly important considering that non-Latin/x students are less likely to reveal themselves as undocumented and to seek resources for their immigration status. Normalizing these conversations across all institutional spaces can allow Black, Asian, and trans undocumented students to connect with spaces they already identify as safe for one of their identities, and to ask for more resources. Ultimately, this allows the campus to account for possible undocumented students without collecting identifiers through self-developed tracking tools.

Author 2

As a former higher education administrator, it was important for me to find ways to provide services, resources, and tools for undocumented students. In doing so, tracking those students was always critical to the support I could provide. Whether the data were financial, academic, social, or emotional, they were key for me to know how many students I was advocating for. Without the data, senior leaders, donors, faculty, and staff had an arduous time finding funds to allocate to programs and services. As a former undocumented student myself, however, I also understood the nuances of fear, contention, and anxiety around my status being formally documented.

I was born in a rural village in Jamaica, and migrated to the United States as an adolescent. In high school, I learned I was undocumented, a tough reality that shook my world. Without much knowledge of what it meant to be undocumented, I hid my status from teachers, counselors, and friends. Fortunately, I had a counselor who provided a safe space for me to disclose my status. With his support, I received a sizable academic scholarship from California Lutheran University, and, because I lacked any other financial support, members in the administration and board of regents personnel supported my room and board expenses.

Within 3 years of starting my undergraduate education, the DACA policy was announced. DACA opened many doors for me, one of which was the ability to continue my higher education. While working multiple jobs, I went on to earn my master's in public policy, and later my doctorate in higher education. As a young professional, I served as a teacher, college counselor, and supporter of other marginalized and underserved students. After 7 years in the K–12 system, I transitioned to higher education, where I worked as director of undergraduate admission, with a personal mission to increase access to higher education for undocumented and other marginalized students. I left higher education in 2023, and now work at the intersection of higher education and immigration at the Presidents' Alliance on Higher Education and Immigration. Throughout my many professional roles, I have learned how to safely include, account for, and support undocumented students, while simultaneously understanding and balancing the fear of students, administrators, and families regarding data collection of this vulnerable population. Similar to the findings from this study, my personal and professional experiences have provided me with insight to posit to higher education professionals, students, and faculty. Below are three takeaways that higher education leaders, policymakers, practitioners, and students can use when thinking about how to safely track students; these strategies, in turn, are producing programs, support, and services for undocumented students.

ACCESSIBLE TAKEAWAYS STRATEGIES

1| Code.

2| Hire full-time staff to support undocumented students.

3| Create unique scholarship funds.

WHO CAN IMPLEMENT THESE STRATEGIES?

These takeaway strategies are well suited for small private liberal arts schools in California. Additionally, campuses that classify as a Hispanic Serving Institution or as a religious institution, have ample opportunities to implement some of these strategies. In order to justify additional support for undocumented students, it is important to account for them because data can lead to funding, programming, and support services that would otherwise not be available.

1. Code.

Small private liberal arts institutions can implement coding of undocumented students for the purposes of admission and financial aid. This would mean checking the common application for certain markers that would indicate that the student is undocumented (i.e., place of birth, years in the United States, whether they provide a Social Security number, information about their parents, whether they qualify for the Free Application for Federal Student Aid [FAFSA], etc.). In some cases, students openly disclose their undocumented status via common application or other application services, but in other cases students do not voluntarily divulge that information out of fear of the consequences. Therefore, smaller admission offices can code students before sending their application to the financial aid office. This will allow financial aid officers to know whether students filed a FAFSA or any other financial aid applications. Institutions can add questions to their sections of the common application that can point them to this information. This type of information helps to provide admission staff with an opportunity to advocate for undocumented students in the financial aid rewarding process. This type of coding will also allow the institutions to have a basic idea of who the undocumented students are.

2. Hire Full-Time Staff to Support Undocumented Students.

Another practice that small private liberal arts schools can use is to hire or assign full-time personnel to focus on and support undocumented students. Admission offices can assign counselors to undocumented students or to recruitment areas that are heavily impacted by undocumented people. Through counselor interactions, there are also additional data on undocumented students that will support expanding services. Student affairs personnel can identify a staff member who could be a point person for undocumented students and make the information visible on the campus website. While some institutions might not have the finances to dedicate full-time staff to undocumented students, having someone who is focused on the population can provide access to the data. Once students feel supported on campus, they will openly seek those supports.

3. Create Unique Scholarship Funds.

Finally, another important strategy for small liberal arts schools is to create unique scholarship funds for undocumented students. To create scholarship funds for undocumented students, admission offices can partner with the university advancement offices and successful alumni who want to support

an undocumented student fund. The scholarship fund would also provide data on how many undocumented students need support at those institutions, and could lead to the expansion of funds and more-inclusive systems and processes.

Author 3

I started my professional journey in 2006 in the California State University system as an admission evaluator and residence specialist. In California, a law providing in-state tuition for undocumented students (AB 540) had passed 5 years before, in 2001. As an admission counselor and residence specialist, I met with prospective students, including undocumented students, some of whom were finding it difficult to navigate higher education.

In 2006 undocumented student programs, research around this topic, and UndocuAlly trainings were minimal, even in California. Grassroots organizations and activists in California had been working with undocumented communities, however, and those training sessions were a great place to learn. Over the years, and through research and conversations with community members, educators, and students, I helped create resources and training that increased the support for undocumented students on campus, then later did the same to provide statewide support.

In 2011 I added to my role and worked for the Educational Opportunity Program, which had just started admitting undocumented students. Even more important, the California Dream Act had been signed into law that year, making state financial aid available to undocumented students. As a residence specialist, admission Educational Opportunity Program counselor, and UndocuLiaison,[1] I worked with the financial aid and admission director to set up the admission and financial aid process for undocumented students. Through this experience, I learned about coding and running processes while ensuring confidentiality and compliance.

Through data collection, we learned that there were more than 800 undocumented students on campus. These data supported our efforts to establish an undocumented student club and Dream Center. Using the on-campus data, our team sent out an email to ask how many students were interested in starting a club for undocumented students, and 75 students showed up to the first meeting.

Everything I learned regarding processes and data collection was through research and collaboration. Students' voices were essential and, thanks to them, we were able to establish holistic support. Without knowing how many students there were on campus, it would have been difficult to prove the impact that funding allocated for undocumented students would have.

In 2019 I was hired as executive director of Pre-Health Dreamers, an organization that serves undocumented students pursuing health-related careers. This organization helps students navigate the obstacles of higher education. In the 18 years since I began my career, I have seen many undocumented students graduate. The support for undocumented students in California and across the country needs to be uplifted, and it is through constant learning, conversations, and advocacy that we can make it happen.

1. An UndocuLiaison is campus-based staff, designated by campus leadership, to include undocumented and immigrant student concerns in their portfolio.

ACCESSIBLE TAKEAWAYS STRATEGIES

1| Use responsible hiring and training.

2| Support directors and administrators.

3| Use partnership and collaboration.

WHO CAN IMPLEMENT THESE STRATEGIES?

These takeaway strategies have been implemented in public institutions over the years, especially in California and in other states where financial aid and/or in-state tuition is available to undocumented students.

1. Use Responsible Hiring and Training.

As institutions move forward in creating support for undocumented students and assessing whether tracking students is beneficial, it is essential to carefully select the staff leading the efforts. Hiring individuals with a background in working with undocumented students, and who understand the extreme importance of confidentiality, is vital in successfully and responsibly collecting and using data. Throughout my career, I have seen coordinators hired solely due to them having a Latinx background, although they frequently lack an understanding of the importance of confidentiality and sensitivity around this population. Even more important, training that reminds staff about the confidentiality of personal information is essential, especially when they work with undocumented students' data. Residence specialists are often individuals who have continuous training, and who have extensive access due to processing immigration documents and coding for tuition purposes. Individuals working with undocumented student data must be held to the same standard. Even more important, as students self-identify, referring students to specialized individuals is essential rather than referring them without vetting them, and having students disclose their information to untrained individuals.

2. Support Directors and Administrators.

Working with undocumented students requires a high level of specialization. When serving undocumented students, staff will be entrusted with information regarding complex immigration questions that might need third-party intervention, specialization regarding background checks and professional licensure, advocacy, and collaborative efforts among departments. Liaisons, coordinators, and directors leading such efforts should be entitled to and entrusted with access to resources. The support of higher administration and decision-makers for staff to connect with the required resources is vital for those working with undocumented students to serve them appropriately. Serving students appropriately also means accessing the data that allow these individuals to understand the population and connect them with even more support. In-house data, surveys through email lists, and quotes from in-house conversations are all vital in creating support. Students must know that their quotes and non-identifying data are being reviewed but that they are also protected through the Family Educational Rights and Privacy Act (FERPA).

3. Use Partnership and Collaboration.

Given the complexity of undocumented students' needs, it is important to note that no single staff member will be able to provide all the answers a student needs, especially in a larger institution where admission, financial aid, and advising do not work closely together.

Collaboration and partnerships are important to create a safe and welcoming space for undocumented students, a space that promotes well-being, retention, and graduation. For example, holds on student accounts regarding tuition might need a different process and documentation for undocumented students than for students who are U.S. citizens. Because no two undocumented students' personal backgrounds are the same, different situations can require different documentation. At times, problem solving for a student requires creative solutions that require collaboration and buy-in from various departments. It is important for department liaisons working with undocumented students to collaborate to figure out the issues behind the scenes rather than sending the student to solve it on their own. Solving technical and nontechnical issues for undocumented students may need various individuals who have access and know how to solve an issue, possibly including the student's immigration status. Regardless of data collection, collaboration and proper funneling of each student's information is important to avoid ill-advising the student and elongating any issues the student might need to solve.

Administrators and directors must understand confidentiality and access to data and must be able to adequately train support staff who work with this population to meet goals that help retain and graduate students. Although administration does not work with undocumented students every day, liaisons with undocumented students need to have support from their higher-ups to do as required and to be entrusted with accessing data.

Theoretical Framework

We draw on undocumented critical theory (UndocuCrit), a sub theory of critical race theory (CRT). CRT can be traced back to critical legal studies (Kennedy & Klare, 1984), where legal scholars emphasize that law is intertwined with social issues and subsequently social biases. The development of CRT from critical legal studies further interrogated the impact of race in our society (Crenshaw et al., 1995). The application of CRT to both K–12 and higher education scholarship is integral to addressing racial inequities that persist in educational institutions (Ladson-Billings & Tate, 1995; Solórzano, 1998). Inspired by the work of CRT, subcategories were developed to expand on the nuanced epistemologies of socially constructed groups in society, such as tribal critical theory (Brayboy, 2005) and Asian CRT (Gotanda, 1995). Similarly, Aguilar (2021) introduces UndocuCrit, which is rooted in CRT and influenced by forms of CRTs, and is an effort to highlight the nuances within undocumented communities in the United States (Aguilar, 2021). In this article we use UndocuCrit to position the nuanced historical and geopolitical experiences of undocumented communities in spaces where those experiences are often excluded, and expand on existing scholarship that focuses on undocumented student literature. While we use UndocuCrit in this article, we directly link this theoretical framework to lived practices to link our work to the founding tenets of critical legal studies, an important facet of this work (Dixson & Rousseau, 2005). Through UndocuCrit, we are able to integrate not only the authors' lived experiences, but also the existing practices of responsible data use in conversation with institutional research.

In fact, since standardized data for undocumented individuals rarely exist, UndocuCrit has been used to incorporate the narratives and practices for undocumented individuals across research. Within vocational psychology (Cadenas et al., 2018), disability justice (Padilla et al., 2021) and health

equity (Manalo-Pedro et al., 2023), UndocuCrit provides a lens to account for undocumented marginalized narratives and the impact of institutional practices.

While UndocuCrit and DACAdemics and undocumented scholars have made great strides in applying this framework across different fields, there continues to be a need to further incorporate the undocumented student lens. In an effort to bridge the conversation between institutional research and UndocuCrit, we found a similar need: there is no standardized, publicly available, educational data for immigrant students in the United States (Wiseman & Bell, 2022). With the use of UndocuCrit, our article aims to develop alternatives by including our experiences, and those of our colleagues, within higher education, policy, and data creation.

UNDOCUMENTED CRITICAL THEORY IN HIGHER EDUCATION

When exploring the impact of immigration status on educational mobility, scholars have defined *undocumented status* as either a master status (Gonzales & Ruszczyk, 2021; Valdez & Golash-Boza, 2020) or the final straw (Enriquez, 2017). In either definition, undocumented status is a determining factor in access to higher education that can be further augmented by other intersectional identities. It is important to note that the positioning on master status for undocumented students is mainly rooted within the UndocuLatinx perspective, thus possibly not accounting for other groups. This classification emphasizes the importance of UndocuCrit theory in higher education research and practice. It is imperative that looking at the inclusion and practices that impact undocumented students be done with and by directly impacted scholars (Aguilar, 2021). This becomes particularly important when institutions are largely not trained to be Undocu-friendly (Marcial, 2023). Universities as educational institutions serve as a pinnacle space because of their potential to be a space of inclusion for undocumented students (Gonzales & Carvajal, 2015).

STRATEGIES IN POLICY ENACTMENT

The onset of the undocumented student rights movement shows that policies that help undocumented and other minoritized identities access resources are often not given willingly. In fact, it is always through advocacy and grassroots organizing that policies are passed and enacted by those in power (Escudero, 2020). As a result, policies can include limiting restrictions that exclude certain groups and populations, such as DACA. While DACA was a groundbreaking legislative action, its eligibility criteria favored individuals who arrived at a young age and who had experienced some level of integration into the United States, through either education or labor. Moreover, it favored those who have not been targeted or criminalized by the legal system. Therefore, the policy does not take into consideration that certain communities are more likely to be targeted by the police, and therefore are ineligible. UndocuCrit theory allows us to include the experiences of those most vulnerable and how to navigate and overcome restrictions in policies. Moreover, lived experiences with a precarious immigration status can help prevent complacent policy compliance in policy enactment (Castrellón, 2022). The authors and respondents in this article are actors in higher educational and immigrant justice spaces that are often tasked with creating accessible pathways when policy is either limited or exclusionary.

INCLUSIVITY IN DATA

While the purpose of this article is to include undocumented individuals in standardized data sets, the nature of this experience already limits these data to those who self-identify. We must also be mindful, however, of how even intentional strategy could exclude the incorporation of non-Latinx individuals. For example, the experience at the intersection of immigration and race creates a unique experience for UndocuBlack students, and that calls for our strategies to bear that experience in mind (Hall, 2022; Meitzenheimer, 2020; Russell, 2022; Russell & Cisneros, 2023; Russell & Rivarola, 2023). Asian (Buenavista & Chen, 2013; Cho, 2017), Central American (Zimmerman et al., 2023), and transgender undocumented students (Fernández, 2018), among other statuses, can also be further invisibilized even when the initial effort is to include undocumented students. Through UndocuCrit theory, we hope to include the most vulnerable narratives in order to present practices for inclusive data. Moreover, UndocuCrit theory also provides a framework that allows us to safely and mindfully include individuals, while not exposing individuals who have chosen to not self-identify (Entigar, 2021).

METHODS

Our methods focused on a questionnaire with four open-ended questions. The questionnaire consisted of the following questions:

1| What practices do you have in place to account for undocumented students, to justify expansion and funding, and to build a more inclusive system?

2| What are safety protocols or training you have in place to maintain anonymity of data?

3| Is there something unique about your campus that allows you to implement these practices, protocols, or training?

4| Are there any consequences to breaking protocol and endangering students?

These questions sought to situate the current experiences of immigrant, undocumented, and formerly undocumented higher education professionals, as well as allies in the field.

Through convenience sampling, we identified colleagues in universities that each author of this article knows. Through our personal and professional work and our involvement in this field we reached out to individuals who have developed creative and safe ways to standardize data related to undocumented students. With convenience sampling in mind, we reached out to campus personnel who directly work in undocumented student affairs. While identifying our contacts, we also sought to connect with universities that represented a variety of student experiences, resources, and trajectories—such as private, public, 4-year, and 2-year colleges. While some individuals did respond to our questions, some of the responses introduced barriers to our process, including (1) concerns over identification of the institution, (2) lack of staff capacity to respond, and (3) lack of permission from their supervisors to share. Table 1 details the institutional participants, including the authors of this study. The table details the U.S. state where the respondents are based, the type of institution they represent or where have conducted their work, and whether they provided a response.

Table 1. State Where Institution Is Located, Type of Institution, and Responses

State	Type of Institution	Responses
Massachusetts	Private and comprehensive institution. It treats undocumented students the same as domestic students. It has a range of 2–3 support systems, including student organizations and clubs.	Response provided, with concerns about identifying the university
Illinois	Private and comprehensive institution. It treats undocumented students the same as domestic students. It has a range of 2–3 support systems, including student organizations and clubs.	Response provided
California	Public university system. Legislation provided a Dream Center, state aid, and funding to provide resources mandated by the state.	Response provided
California	Primarily private universities. They treat undocumented students the same as domestic students. They provide scholarships opportunities and a safe tracking method.	Response provided
California	Primarily public universities. Legislation provided a Dream Center, state aid, and funding to provide resources mandated by the state.	Response provided
New York	Public university system. It receives state aid. Funding is not provided for resources, but instead funding is up to the individual campus to provide.	Response provided
New York	Public 4-year institution. It receives state aid. Funding is not provided for resources, but instead funding is up to the individual campus to provide. It has a safe tracking method.	No response, did not receive approval from supervisor
California	Public 4-year institution. Legislation provided a Dream Center, state aid, and funding to provide resources mandated by the state. It has a tracking system in place.	No response, lacked capacity
California	Public 4-year institution. Legislation provided a Dream Center, state aid, and funding to provide resources mandated by the state.	No response, lacked capacity
Utah	Public community college. It has a Dream Center and dedicated staff.	No response, lacked capacity
New York	Public university system. It receives state aid. Funding is not provided for resources, but instead funding is up to the individual campus to provide.	Response provided
New York	Public 4-year institution. It receives state aid. Funding is not provided for resources, but instead funding is up to the individual campus to provide. It has a safe tracking method.	No response, did not receive approval by supervisor

State	Type of Institution	Responses
California	Public community college. It has a catalyst grant that propelled Dream Centers to establish support. Assessment efforts to continue to understand student population and need.	No response
California	Public community college. It has a catalyst grant that propelled Dream Centers to establish support and how much support is needed.	No response
California	Public 4-year university. It has comprehensive assessment efforts to continue to understand student population and need.	No response
Utah	Public community college. It has a Dream Center and dedicated staff.	No response, lacked capacity

Table 1 details 14 prospective participants, seven of whom responded and seven who did not. Regardless of where they exist, some universities were hesitant to identify themselves out of concern that their practices were for internal purposes only or concerns that they could be targeted by the Freedom of Information Act. Moreover, many of the individuals are situated at the intersection of immigration and education at their institutions, are directly impacted by immigration legislation, and lack capacity to answer our questions. While we knew that their strategies were creative and protected by FERPA, we also understood that the strategies were not easily replicated due to restrictions and the concerns they highlighted. The hesitancy to participate and the lack of capacity demonstrated the importance of properly supporting, informing, and funding support structures of this population and the staff that serve them.

In our sharing we realized our article could benefit from our own professional and personal experiences in this field. We were inspired by our colleagues who incorporated their professional and lived experiences as valid and potent data. From the work of Pre-Health Dreamers (Nakae et al., 2022) to Latina Sister Scholars (Espino et al., 2010), we used our knowledge and expertise in this field to inform and expand on responses we received to our questionnaire. Our methods were grounded in critical pedagogy (Freire, 1972) to frame and situate our professional and personal lived experiences within the pre-collected data.

Once our responses had been documented, they were coded into one of eight categories: (1) guidance, (2) data collection, (3) information development, (4) collaboration, (5) personnel and hiring, (6) direct involvement, (7) expanding services, and (8) policies. We then categorized these codes into three overarching themes that spoke to the campus efforts to develop safe and reliable data for undocumented students in higher education. Table 2 clarifies how the eight categories were organized into three themes: (1) developing and managing safe and inclusive data collection, (2) intentional personnel hiring, and (3) expanding existing and needed services.

Table 2. Coding Survey Responses

Theme	Code	Example Quotes	Frequency
Developing and managing safe and inclusive data collection	Guidance	"During the last presidential administration, the California attorney general released guidance to K–12 schools on protecting students' privacy, [the guide] was mirrored in the practices of higher education institutions in the state."	4
	Data collection	"We now only use the receipt of a [California Dream Act Application] CADAA to identify students as undocumented. Those data have the same levels of protection as our FAFSA filers."	20
	Information development	"Provide extra training regarding FERPA to all staff working with undocumented students."	8
	Collaboration	"The admissions office formed partnerships with community-based organizations and local schools that have large numbers of immigrant students and we facilitate "warm handoffs" so that a student is aware of who is safe to share their status with at the University and where to go for resources."	6
Intentional personnel hiring	Personnel and hiring	"When hiring, create interview questions and requirements that recruit well-rounded employees with a background in the undocumented and/or immigrant community, have a passion for serving this population, understand the high level of confidentiality needed to serve this population, etc."	12
	Direct involvement	"Invite students to a private [email list] that is only controlled by key players."	3
Expanding existing and needed services	Expanding services	"Budgeting for our non-employment-based experiential learning fellowship."	9
	Policies	"The University of California has advocated and supported the expansion of services and financial support cited above, but it is also a credit to the student and other activists in California that we are where we are."	10

FINDINGS

Through the responses and narratives we collected, we identified three key findings with regard to inclusivity, safety, and reliability of data for undocumented students in higher education:

1. Developing and managing safe and inclusive data collection methods through safe estimates via proxies, deidentifying data, coding, and positive evidence

2. Intentional personnel hiring such as staff with personal and professional experience working

with this population who can coordinate individual interactions to better account for this population

3. Expanding existing and needed services for this population to better assess the needs of this population, because this population often does not share their status because they do not have access to safe or informed individuals.

Takeaways

Creating safe and inclusive data collection method through

1| Assessing undocumented student populations,

2| Ensuring safe measures,

3| Using positive evidence data, and

4| Collecting data through departmental collaboration.

1. ASSESSING UNDOCUMENTED STUDENT POPULATIONS

While institutions of higher education seek to create and establish resources for undocumented students, many of them also wonder how they can count students who are undocumented and enrolled on their campus. Some institutions might need to determine the number of undocumented students on campus to evaluate the support this population needs. Some institutions might also want to prepare to enroll their first undocumented students. Currently, there are "more than 408,000 undocumented students enrolled in postsecondary education" (American Immigration Council and Presidents' Alliance on Higher Education and Immigration, 2023). California with 83,000, Texas with 59,000, and New York with 30,000 are the states with the most undocumented students. Moreover, practitioners have witnessed more students enrolling without employment authorization and Social Security numbers through DACA, calling on more-informed advisors and holistic support, which could also mean that administrators seek data to be able to allocate funding. How can institutions account for students to justify expansion and ensure safety protocols? Some practitioners have already implemented data collection practices to account for students and to justify expansion.

2. ENSURING SAFE MEASURES.

One of the questions that we asked participants was, "What practices do you have in place to account for undocumented students, to justify expansion and funding, and to build a more inclusive system?" Various respondents mentioned that data of undocumented students were being collected on their campus, but that perimeters, coding, and access to these data was kept confidential from the rest of the campus community such as staff, faculty, and students.

> We are very tight with data access permissions. Not only do we not use any clear "undocumented" markers in our student information system, but any immigration data (which could be interpreted/distilled in order to identify those who are not US citizens/ permanent residents and who do not hold another status in the US) is available to a very small group of staff. Immigration status is, as a rule, never included in shared data unless absolutely necessary.

Respondents have stated that, if they collect and code data, they also use safe markers, omitting words that identify a student's undocumented status in any data input within the system, even

for admission, financial aid, or tuition purposes. "Undocumented," "DACA," and "Dreamer" are words that should be omitted from coding. Running and requesting processes are also held to strict confidentiality with coding that omits these terms for requests. Respondents also stated that any data collected regarding undocumented students should be limited to key players.

> The admission and financial aid director and the lead who serves undocumented students work with the system to create a non-identifying code. This code can help create a report that provides numbers that do not identify info such as name, immigration status, address, etc.

Another respondent mentioned an even higher level of confidentiality: "Aggregated data is considered highly sensitive and only provided to college presidents and the chancellery for internal purposes.

3. USING POSITIVE EVIDENCE DATA.

In most cases, as students enroll in higher education institutions, the admission and financial aid offices are vital to the enrollment success for undocumented students and have access to the data that could be available for practitioners who are leading undocumented students' resource centers, hence why admission and financial aid directors are vital in partaking in data collection. Other practitioners noted that they use positive evidence data from state financial aid: "[We] only use the receipt of a [California Dream Act Application (CADAA)] to identify students as undocumented. Those data have the same levels of protection as our FAFSA filers." CADAA provides access to financial aid to undocumented students with and without DACA and to students with temporary protective status in the state of California. CADAA has allowed many California public higher education institutions to use positive evidence to estimate the number of undocumented students on their campuses. These numbers are not precise, however, since not all undocumented students apply for CADAA due to fear; many also find it challenging to complete the form, some do not know the application exists, and some assume they are not eligible.

Even though it is an estimate, institutions from states that provide access to state financial aid to undocumented students can also assess whether using their financial aid application numbers as data could be beneficial in creating support: "24 states and D.C. provide in-state tuition to the states' undocumented students. Of those states, 18 and D.C. ('Comprehensive Access') also provide access to state financial aid. Massachusetts, which just passed in-state tuition for undocumented students, brings the number of states with access to in-state tuition to 24" (Higher Ed Immigration Portal, 2023).

One of the respondents served as a residence specialist and UndocuLiaison of the university, where they worked closely with the vice president of student affairs, the financial aid director, and the research institute to create coding that allowed their campus to run a process to create estimates of undocumented students in the university.

> Dream Center Coordinator, Director, or undocu-liaison works closely with the school Residence Specialist, Financial Aid Director, and Admission Director to strategize processes to estimate the number of undocumented students based on financial aid applications, non-resident tuition exemption forms submitted (ex. AB 540), students visiting a dream center or undocumented student program.

This above-named respondent worked closely with the financial aid director to pull the number of CADAA applications submitted. Moreover, the respondent also created a non-identifying report that helped assess the number of students who applied for the non-resident tuition exemption, an affidavit that non-residents who had graduated from a California high school could submit to be evaluated for in-state tuition. Many undocumented individuals submitted this form, providing the respondent with a closer estimate. Due to the sensitivity of this document, only two staff members had the privilege of processing and knowing the codes for this form. Even though it was not exact, this number would help get a precise number of students on campus.

4. COLLECTING DATA THROUGH DEPARTMENTAL COLLABORATION.

Data collection without identifiers helps staff and administrators identify the number of students who are undocumented and enrolled on their campus while keeping the student's identifying information confidential. The examples noted above also highlighted that, through collaboration with other offices, practitioners were able to collect data without identifiers. Additionally, with liability being a significant priority for administrators and legal counsel, setting restrictions on who has access to the data among department spaces, restrictions on coding, and contracts that preserve confidentiality, and training can lessen individuals' uncertainty about collecting data on undocumented students.

Takeaways

Accounting for undocumented students leads to better

1| access to dedicated personnel,

2| expansion of institutional aid,

3| legal services support, and

4| additional institutional support

1. INTENTIONAL HIRING

One of the primary findings is the necessity of hiring intentionally. Assigning full-time staff to support undocumented students requires data collection.

Due to the sensitive nature of working with data that include data for undocumented students, personnel was an area of importance within the findings of this research. One practitioner from a public university stated, "I would hire directly impacted individuals who understood the sensitivity of this data and how to maintain anonymity. Additionally, these individuals had the professional and personal experiences to inform future practice."

When establishing efforts to implement undocumented student resources and programming, some institutions hire a part-time or full-time coordinator or director to be the lead. Other institutions employ or designate a task force of key players to lead the efforts. Regardless of which option is best for the institution, practitioners noted that hiring an individual has allowed for the centralization and confidentiality of data regarding undocumented students. A director of undocumented and immigrant student programs at a 4-year public university stated,

> My role at the centralized level allows me to engage with the data in a safe way and positions me to justify and provide information on how we can expand resources across the campuses. …The creation of this position has created an educational opportunity for campus leaders to get a better sense of estimated student population sizes, which they otherwise may have assumed were much smaller or not present at their campuses.

The staff of undocumented student centers or liaisons who were respondents in this research also noted the importance of staff in data collecting and sharing among departments that could lead to hiring of full-time staff. A practitioner from a liberal arts college stated,

> I never refer to a student's status in writing, if at all. I may at times refer to "students without US work authorization" more generally in conversations about our non-employment-based experiential learning fellowship. We have a diverse group of students without US work authorization—from those on dependent visas, to those waiting for an EAD [Employment Authorization Document] renewal, to those without access to US work authorization—so referring to a student as someone without US work authorization can mean a lot of things and does not convey anything specific about their immigration status.

Within institutions, departments often share details or documentation with other departments only if the student provides permission. Justly so, data on immigration has been reserved only for individuals who are processing documentation necessary for admission, in-state tuition, financial aid, and the departments that work with international students. This information is often also provided to coordinators of undocumented student programs or Dream Centers that keep the data secure only for their use. Practitioners noted that they provided only "Figures aggregated at the college or system level when necessary. Therefore[,] the amount of people who have access to any numerical data is extremely limited."

Intentional hiring encourages hiring of individuals who understand the level of confidentiality undocumented students require and who are able to perform their jobs with a high sense of sensibility. A practitioner from a private liberal arts college stated that they "offer confidential drop-in advising hours, advising appointments, and bi-weekly dinners for our students in fragile statuses. From these conversations, I get a sense of the size of our population each year and can advocate accordingly."

Even more, many of the positions that have been filled to serve undocumented students have been filled by staff who are DACA recipients, creating a greater connection and sense of confidentiality (Cisneros & Valdivia, 2018). Whether or not institutions have established an undocumented student resource center, hiring or appointing staff to work with this population should be intentional.

Based on the authors' experiences and the responses from the participants of this study, administrators are always worried about liability. Promoting that the campus is DACA-friendly, creating Dream Centers, gathering data, and providing resources seem like a task that comes with fear of putting students in danger and putting the institution in a sticky situation.

Hiring knowledgeable people and setting perimeters through which staff can access data can enhance

the support provided to undocumented students. It is beneficial that staff with access to data about this population have a background in working with this population and should understand why confidentiality is vital. This finding was pertinent in understanding the need for data collection to accurately support undocumented students.

2. EXPANDING SERVICES

Another major finding noted by the authors' experiences as well as the participants is that, to expand services, data collection continues to be important. Another of the questions we asked participants was, "What practices do you have in place to account for undocumented students, to justify expansion and funding, and to build a more inclusive system?" What we found was that practitioners were clear that, even without the accurate data of undocumented students on campuses, it was imperative to expand services and needed services for this population to better assess their needs, since this population often does not share their status because they do not have access to safe or reliable support. Expanding services for undocumented students also leads to the retention of this student population. Based on the respondents' answers to the questions, there were two overall themes: (1) access to legal services and institutional aid, and (2) expanding the role of institutional agents.

3. ACCESS TO LEGAL SERVICES

One of the main services that was evident from the respondents was expanding legal and financial aid services on campuses. According to Pérez (2010), with campus support programs and opportunities, undocumented students can mitigate the barriers they face within higher education. When undocumented students have access to legal resources, they can renew their DACA or seek advice from lawyers on campuses. Students want to feel safe, and safety breeds inclusivity and leads to retention. A current executive director of student experience and inclusion at a private institution in Illinois said, "We provide access to legal advice and financial support and a bilingual Family Program is available for all students and their families that allows for families to earn free courses and save money."

Through legal services, practitioners can account for the undocumented students on campus because students will use the resources. Furthermore, students want to feel safe, and safety breeds inclusivity and leads to retention. It was also evident that expanding access to institutional aid can better account for undocumented students. An executive director of student financial aid support from the University of California system said,

> Starting in 2000, the State of California created the "AB 540" exemption, which allows students who have attended and graduated from a high school in the State to qualify for in-state tuition levels. Starting in 2011, the State provided UC [University of California] the authority to provide both State- and University-funded financial aid. UC's financial aid philosophy is that all students should contribute the same amount towards their own education. For our undocumented students, that means "backfilling" for missing Federal Pell Grants and providing State-funded Dream Loans.

For this practitioner, the expansion of access to financial aid led to accounting for undocumented students. Since cost is a major barrier to higher education, institutions can use their own financial aid

policies that would provide undocumented students with access to other funding opportunities for their education. The University of California system can serve as an example and mirror for other public school systems that do not have comprehensive financial aid options for students.

4. EXPANDING THE ROLE OF INSTITUTIONAL AGENTS

One other service that practitioners noted expanding was non-employment-based opportunities for undocumented students. Since undocumented students without DACA cannot legally work, providing access to on-campus employment-based opportunities can contribute to accounting for undocumented students. According to the American Immigration Council and Presidents' Alliance on Higher Education and Immigration (2023), undocumented students can qualify for scholarships because scholarships are defined by the Internal Revenue Service as an amount paid for the purpose of study. Additionally, "Institutions may be able to provide internship stipends to students who accept off-campus internships. For example, students who accept an unpaid internship to further their study/training can be eligible to receive a living stipend to help offset living costs associated with being in an unpaid status" (Higher Ed Immigration Portal, 2023). Even more, a director of immigration services at a private institution in Massachusetts stated the following:

> An important trend within this population that we and many institutions are seeing currently is the shift from undocumented students predominantly holding DACA to undocumented students predominantly not holding DACA. This impacts resources. So, while our overall numbers of students in fragile statuses has stayed relatively consistent, our number of DACA holders is dwindling. This impacted, for example, the budgeting for our non-employment-based experiential learning fellowship.

According to the American Immigration Council and Presidents' Alliance on Higher Education and Immigration (2023), undocumented students can qualify for fellowship grants because they are paid for purposes of study and research and are considered non-employment based. Additionally, according to Immigrants Rising (n.d.), "Fellowships are generally defined as short-term opportunities, lasting from a few months to several years, that focus on the educational and/or professional development of the fellow." Therefore, expanding non-employment-based internships and fellowships are a great way to expand financial aid access and services within higher education for undocumented students.

The second theme for expanding services is the intention to hire full-time personnel to support those who are on campus, which is one of the findings we highlighted above. Many institutions cannot afford to hire a full-time staff member, however, so others have found ways to expand support for undocumented students. A director of immigration services at a private institution in Massachusetts stated, "I offer confidential drop-in advising hours, advising appointments, and bi-weekly dinners for our students in fragile statuses. From these conversations, I get a sense of the size of our population each year, and can advocate accordingly."

Offering listening sessions as a space of service to undocumented students will provide them with a sense of support on campus. This support leads to disclosing hardships, legal status, and other barriers to success within higher education. Undocumented students who feel supported and can openly

disclose their status are more likely to graduate and persist (Gonzales et al., 2013). By expanding the role of institutional agents to support undocumented students, it improves campus climate and retention (Cadenas et al., 2018; Cisneros & Lopez, 2016).

Finally, expanding services are all important for accounting for undocumented students because knowing the estimated number of undocumented students can influence services such as emergency grants, non-employment-based experiential learning fellowships, hiring of full-time staff, DACA funds, and broadening support on campuses.

LIMITATIONS

Our data collection consists of experiences and narratives from higher education professionals creating and navigating ways to include undocumented students in data accountability efforts. As we collected and analyzed the data, we came across limitations to this study. As stated above, there is no prior research on this topic. Due to the vulnerability of this population, data collection is not explored as a method of inclusion. Universities default to the perceived safety of the students and their own plausible deniability. As a result, there have been no efforts to document and assess data collection methods for undocumented students with sensitive immigration statuses. The result is a lack of available data to analyze existing practices.

When we did identify individuals who developed data sets and reliable practices, the suggestions often came from individuals who were leading these efforts at their campus and were at capacity and often underpaid. This resulted in several individuals sharing that they did not have the capacity to participate in this study. Time and capacity constraints, therefore, limited our data collection efforts.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Higher education institutions continue to struggle with incorporating and accounting for undocumented students in their demographics data. Our research methods resonate with the struggles of the higher education institutions and our respondents; institutions are not sure how they can safely account for undocumented students. In fact, institutions are worried about the safety of both the students and the university. Concerns over identifiable markers for the staff as well as students went hand in hand. Historically, some institutions have been able to engage in fugitive work to include undocumented students in resources when state legislation prohibits access to certain state benefits (Carvajal, 2020). These were creative tactics to include undocumented students in higher education due to extreme anti-immigrant legislation. Although the work we described above is not considered fugitive work, many individuals treated it as such and were concerned about identifying themselves or their campus when sharing because they were unsure about the legitimacy of the practice they implemented.

Currently there is no existing research on safe and inclusive data collection practices that universities can look to accurately account for their undocumented student population. The findings in this research can help create an opportunity for universities to implement safe methods to account for undocumented students. Moreover, they can also vacillate between a choice of practices that work best for their institutions, depending on state legislation and opportunities in their state. For example, a state like California has made significant legislative efforts to support undocumented students. This has created an opportunity for higher education practitioners to expand their services and use affirmative markers to account for

undocumented students from state data. As a result, states like Illinois and New York, with similar in-state and state aid legislation, could learn from California, a state that advocates for the expansion of state services. Moreover, a state like Massachusetts, which just recently started expanding its education legislative efforts for undocumented students, can use California as a roadmap for what is possible.

Data collection allows funding to be disbursed appropriately. In the past decades, individuals such as coordinators or directors of Dream Centers and undocumented student programs have been underpaid compared to directors and staff of other departments or programs. Being underpaid can be a result of administrators not understanding the specialty and knowledge required to serve undocumented students, the amount of time it takes to research and work with each student, and not knowing exactly how many students on campus will need the resources of a Dream Center or UndocuLiaison over time.

Overall, not knowing or acknowledging the number of undocumented students attending the institution can lead to underfunding of staff, programming, and resources, creating a non-inclusive campus for undocumented students.

Even more important, knowing the number of undocumented students or setting a goal to enroll more undocumented students can increase the impact an institution can report when applying for grants that fund programs for underrepresented groups or diversity efforts. Funding is often tied to impact, such as, "How many individuals benefited from the funding provided?" Programs can be underfunded if there is no proof of impact.

With regards to research, this study can also create an opportunity to continue researching safe data collection practices to normalize them. As previously stated, there is no literature on data collection efforts to account for undocumented students across educational institutions. Academic discussion on these data can create a space to further explore and evaluate the effectiveness of data accountability efforts and practices. Findings from studies can situate institutions to begin having difficult discussions on practices to incorporate with this population.

Ultimately, by sharing the practices that account undocumented students as recognizable voices in their institution, we create an important level of accountability for institutions to do better and to do more for their undocumented students (Jach & Carvajal, 2023). This level of accountability could result in the difference between sustainable advocacy, funding, and inclusion of a population that is often undercounted and undervalued.

CONCLUSION

This article sought to document university practices to account for undocumented students in demographic and data collection efforts. Our findings suggest that effective practices currently exist and that there is a clear benefit to hiring personnel to focus on this population. Campus attempts at safe data collection often depend on the political context of the state and whether the university is public or private. As one of the authors of this article notes in their personal narrative, private universities often already collect the number of possible undocumented students due to their smaller numbers, financial aid application forms, and

need-based scholarships. Some public universities also implemented this practice through existing information tied to legislation such as in-state tuition and state aid.

Regardless of whether the campus was in a conservative or progressive state, however, and regardless of whether it was private or public university, the key determining factor for safe and inclusive data collection was the existence of a trusted and highly informed staff member who would manage the data. Rationale for hiring informed staff has been clear from previous studies that focus on undocumented student and student affairs services (Cisneros & Valdivia, 2020; Cisneros et al., 2022). However, the findings of this study position that hiring staff can also help create safe data accounting practices which can lead to expanding services and allocating funds toward undocumented student needs. As general undocumented student data continue to show that 98,000 undocumented students graduate from high school every year (Zong & Batalova, 2019), it is necessary for university systems to begin developing practices that properly account for and allocate resources for a population that so often pays out of pocket for their education.

RECOMMENDATIONS FOR REFLECTION AND PRACTICE

Through our practice and speaking with practitioners working with undocumented students, we remain convinced that gathering data regarding undocumented students is vital to strengthening resources and support. We also know, however, that a high level of confidentiality and sensitivity must be maintained throughout the data collection of this population. This means that designated officials should be actively learning and integrating their knowledge base on this population across their work, and not collecting data for the sake of collecting them.

We recommend that the campus administration be informed of the needs of undocumented students and understand best practices for serving this population. The language used, the individuals involved, coding, and maintaining information are essential in keeping students' safety and confidentiality at the highest level. Without administration support, staff can go only so far in data collection, reporting, and implementing support services based on data.

Campus administration supporting the launching of initiatives can also be followed by implementing initiatives to ensure other staff and faculty are trained. Training on state and federal policies affecting undocumented students, the chilling effect, and practices that maintain confidentiality when advising students and collecting their data must also be frequent, if possible annual or bi-annual collection. When collecting data, understanding what degrees and careers undocumented students pursue is vital, since a student's immigration status can affect clinical experience, background checks, internship and fellowship attainments, clinical and financial aid, and more.

As part of responsible data collection, administrators, staff, and faculty must also know if any anti-immigrant laws have been passed in the state, which would require an increase in keeping the student's information confidential. Such anti-immigrant laws would also require stricter gatekeeping from any task force. We recommend that the departments housing

undocumented student information ensure that there are non-identifying markers and language in any database. Individuals must ensure that words like "undocumented" or "Dreamer" are omitted from systems and data, and be replaced with non-identifying markers.

Through training, additional contracts can also be created where staff state their understanding of the level of confidentiality needed and emphasize FERPA and its importance in the safety of students.

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Accurately Representing Identity in University Data Systems: Collecting and Utilizing Chosen Name, Gender Identity, and Gender Pronouns

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Readers can access the policies referenced in this article on Lehigh University's website: Designating Gender Identity and Legal Sex (https://provost.lehigh.edu/designating-gender-identity-and-legal-sex) and Chosen Name Policy (https://provost.lehigh.edu/chosen-name-policy).

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Abstract

Creating a welcoming community is key for an academic environment to thrive. This approach includes accurately representing community members' identities to understand their experiences, and establishing procedures for recording and utilizing individuals' names to support their ability to express their identities freely and without fear of discrimination. In this article we discuss a collaborative project undertaken at our university to begin collecting and storing expanded demographic information, specifically gender identity, chosen name (including diacritical marks), and pronouns. While these changes impact all populations, they are particularly important for the university's transgender population. We describe the working group that carried out this project and the policies developed to guide the group, the mechanisms established to collect the information, and the fields that were utilized in the system of record (i.e., Ellucian's Banner) to store the information. We also discuss the value gained because of this project, including increased inclusivity and the ability to use this information for reporting purposes, informing decisions, and improving the support and services offered to the community. Finally, we describe the challenges, barriers, security/privacy concerns, and successes that we encountered throughout the process and we offer recommendations for other institutions pursuing a similar goal.

Keywords: inclusivity in data, gender identity, lesbian, gay, bisexual, transgender, queer, and others (LGBTQ+), data governance

INTRODUCTION

Creating a welcoming community is key for a thriving academic environment. This approach includes accurately representing community members' identities to understand their experiences (Becker et al., 2022), and establishing procedures for recording and utilizing individuals' names (Roberts et al., 2022) to support their ability to express their identities freely and without fear of discrimination (Lange, 2022). Failing to address changing needs in this area could result in negative experiences for community members (Flint et al., 2023), as was the case with a transgender graduate student attempting to enroll at our university. This individual student's experience was the catalyst for a cross-departmental collaborative project to store and collect expanded demographic information, specifically chosen names (including diacritical marks), gender identity, and gender pronouns.

After contextualizing our institution and the initial impetus behind this project, we describe our process for establishing mechanisms to collect this information and then to store it in our system of record, Ellucian's Banner (hereafter Banner; General v8.17/9.3.27.0.2 and BannerGeneralSSB v9.14.1). Throughout our discussion, we offer recommendations for other institutions that might be on a similar path; we highlight the aspects of our approach that worked well or could be improved, and we identify challenges encountered along the way. Finally, we describe how our university uses this information to inform decisions, and we describe the support services offered to our community.

BACKGROUND

Lehigh University is a private nonprofit research university located in eastern Pennsylvania. Lehigh University is classified as a high-research doctoral university (R2). It was founded in 1865 as an all-male engineering school and became coeducational in the Fall of 1971. As our institution evolved, it became increasingly diverse. Lehigh University is now made up of five colleges, and is committed to enhancing diversity, inclusion, and equity in our campus community.

The impetus for our Chosen Name and Gender Identity Project began as a direct result of working alongside a transgender graduate student who was applying for admission to the university. While completing the application for admission, the student mentioned several harmful occurrences in the process that had caused them distress. These included a lack of ability to note any name aside from their legal name, as well as not being able to list their gender identity and/or gender pronouns. This student reached out to our Office of Enrollment Management Services, which oversees the processing of admissions and student data. This incident was the catalyst for the establishment of our Chosen Name and Gender Identity Working Group (hereafter working group). Broad systemic change can be slow and often lags culture. Although this group was established because of one student's negative experiences, we quickly realized that there was an important opportunity to bring about structural change that would impact several populations at Lehigh University, including undergraduate and graduate students, staff, and faculty.

For years, transgender students sought the ability to have their name accurately represented at Lehigh University to prevent use of their deadname, which is their legal or previous name that is no longer used and should not be spoken or accessible to broader audiences. Attempts to accommodate a chosen name resulted in a few manual overrides with limited options as to what could be updated: our Banner database was not configured to store this information and send it to downstream applications or processes. As noted by several researchers, these cumbersome mechanisms place transgender college students at risk of academic disruption, while those students faced lower retention rates because of campus-based discrimination (Beemyn & Rankin, 2011; Flint et al., 2023; Goldberg, 2018). Literature suggests that having policies with follow-through and systems that support transgender college students leads to higher rates of academic success and enables more comfort in gender identity exploration for college students (Lange, 2022).

Through discussions with the Lehigh University Pride Center for Sexual Orientation and Gender Diversity (hereafter Pride Center), the importance of ensuring accurate data collection for the lesbian, gay, bisexual, transgender, queer, and others (LGBTQ+) population on campus became clear. Accurately representing community members' identities is key to understanding their experiences (Becker et al., 2022) and ensuring that they can express their identities freely and without fear of discrimination (Lange, 2022). It has historically been difficult to collect sexual orientation and gender identity data (Cross et al., 2023), however. Prior to the Chosen Name and Gender Identity Project, our institution collected sexual orientation and gender identity information, but only via demographic questions added to surveys that assessed the subjective experience of our campus community. The wording for these questions was provided by the Pride Center to ensure it reflected current terminology. The sexual orientation and gender

identity information gathered through these surveys was useful in understanding the experiences of the LGBTQ+ population on our campus and was utilized by the Pride Center to make programmatic and strategic decisions. The sexual orientation and gender identity information was collected only for the subset of people who completed the surveys, however, which meant it did not provide an accurate picture of the composition of our campus. Furthermore, this information was not integrated into our institutional data systems that housed other demographic and academic information, which limited our ability to use this information to understand student outcomes.

It also became clear that some individuals needed to use a chosen name for personal reasons. Some individuals use a shortened name or nickname, and some choose to be called by their middle name or a combination of the parts of their full name. At Lehigh University, some individuals shared that they use a professional name throughout their career that might not match their legal name. Additionally, some individuals in our international population prefer to be called by a Western or anglicized name (Ruzicka, 2018). Gender pronouns are another critical identity marker for many people: by enabling the identification and storing of gender pronouns in university systems, we are promoting accurate identity representation across campus while reducing the potential for harm to occur (Lange, 2022). For these reasons, our institution believed it was important to allow individuals to provide a chosen name that differs from their legal name, as well as to note their gender pronouns.

Relatedly, the importance of accurately recording names, including diacritical marks, became a priority. Our data stewards were engaged in conversations for several years about implementing the use of diacritical marks in Banner in response to requests to allow diacritical marks to appear in names. Historically, our Banner database did not allow for the storage of diacritical marks in names due to interfacing with systems that cannot accommodate those characters. As the conversation about chosen names at our university started to gain traction, it became clear that implementing the use of diacritical marks would be another step toward inclusivity for individuals whose name contains a diacritical mark. The Data Governance and Standards Committee ultimately decided that these two initiatives (chosen name and diacritical marks) should be one project, since they both relate to the collection and storage of names. As Roberts et al. (2022) note, names are fundamental to our identity; the accurate use of a person's name conveys respect and affirms their individuality

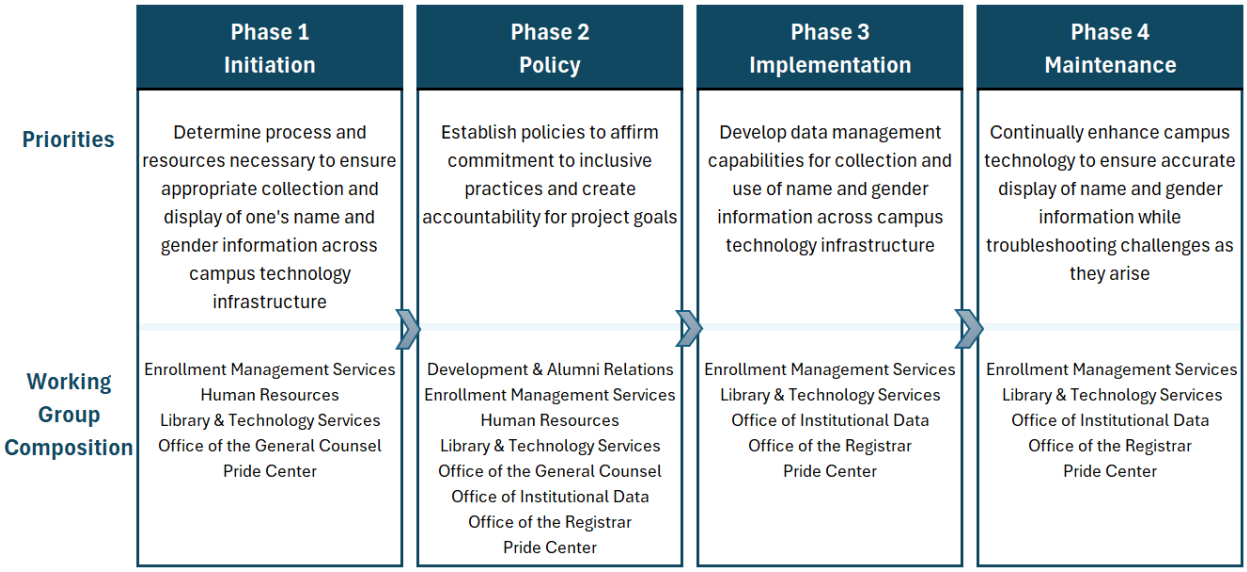
1. INITIATION: CHOSEN NAME AND GENDER IDENTITY WORKING GROUP

The working group was established to guide a university-wide effort to collect and store expanded demographic information, namely chosen name (including diacritical marks), gender identity, and gender pronouns. The foundational and guiding goal of our working group was to establish a university environment where every member of our community is accurately represented in their name, gender identity, and pronouns across university databases without fear of having their incorrect personal information referenced and/or shared without their knowledge. Emerging from this overarching goal were several subgoals that developed over time. These included the establishment of two policies related to chosen name and gender

identity, determining the capabilities of Banner to store various forms of demographic information, and to account for the accurate population of demographic information in downstream applications that pull from our Banner database.

This group was initially convened by our vice provost of academic systems, who oversees the Office of Enrollment Management Services and the Office of the Registrar. Additional representation included human resources, library and technology services (our information technology unit), Office of the General Counsel, and the Pride Center. Members of the group were selected based on their expertise and level of interaction with individuals and their personal data across the university. Originally part of the student affairs stem, and later reorganized under the diversity, inclusion, and equity stem, the Pride Center was a particularly important partner given its direct experience with end users and the Pride Center's reporting lines. Additional units joined the working group in subsequent phases; see Figure 1 for an overview of the working group's composition and priorities. Inclusion of human resources, library and technology services, the Office of Institutional Data, and the Office of the Provost were paramount, given the overlapping nature of various systems coupled with the database management function of each of these departments. The inclusion of the Office of the General Counsel, which helped to write and review the two university-wide policies, was also critical.

Figure 1. Chart Depicting the Working Group Priorities and Composition for Each Phase of the Project



Our data governance program, overseen by our Office of Institutional Data, was utilized to manage the implementation phase of the project. This decision was made to leverage our established stewardship structure and the Data Governance and Standards Committee, both of which are used for decision-making regarding changes to our data environment. The needs of this project are closely aligned with other data governance projects that we have successfully completed, which provided an opportunity for us to utilize our past learnings and apply them to this work.

2. POLICY: COMMITMENT TO INCLUSIVITY

The working group began by proposing and adopting two new policies stating the university's commitment to inclusivity: one on gender identity (https://provost.lehigh.edu/designating-gender-identity-and-legal-sex) and one on chosen name (https://provost.lehigh.edu/chosen-name-policy). Input for these policies and consultation throughout the project was provided by the Pride Center and its Trans and Non-binary Advocacy Committee. This committee included transgender and/or nonbinary students, staff, and faculty, and was consulted to ensure this project centered the voices of those who the project would most impact. These policies were instituted by the provost, the vice president of finance and administration, and the vice president for equity and community; the policies formalized the university's commitment to inclusive practices that create a welcoming and supportive culture for all on campus. They also laid out the expectations for collecting, maintaining, and sharing the data.

Formalized policies are one way to establish expectations for the university community and to create accountability among community members. They also provide visibility to a project and encourage follow through. By establishing the policies first, the working group would be able to move forward to the implementation stage with something to bolster the importance of the work and the need for change.

Once the policies were finalized and had been adopted, the work shifted to implementing procedures and other changes that would support the policies. While the policies established the *what* and the *why*, we needed to determine the *how*. This necessitated a change of the working group members, since we needed help from different areas of expertise to implement the process changes. We knew a lot of the implementation work would be done in our university systems and technologies, so the working group makeup shifted to include more representatives from IT and fewer representatives with functional expertise.

3. IMPLEMENTATION: DATA MANAGEMENT

The implementation phase was led by the data governance project team, which is a partnership between data governance and enterprise systems (i.e., IT). The working group met on a recurring basis every 3 weeks and maintained an ongoing agenda for more than 2 years. The agendas consisted of status updates on outstanding tasks as well as new issues that needed to be discussed. This meeting frequency allowed members of the working group to make progress without stagnating. The data governance and IT project team held additional separate meetings to work through specific tasks and issues that did not require attendance of the full working group.

Using Banner as our institution's system of record meant it was essential that these data elements could be stored and maintained there. In addition, we have many other third-party applications in use at our institution. The priority of the working group was to implement the use of chosen names and gender identity in Banner, after which we would work to disseminate information as appropriate to our other tools. Additional considerations were necessary before this information could be stored in Banner, discussed below.

Storage of Chosen Name Information

In Banner, we had previously stored the Full Legal Name, Preferred First Name, and Previously Known By names in the *IDEN forms (Person Identification forms: SPAIDEN, PPAIDEN, and APAIDEN). While the Preferred First Name field had potential to represent chosen name, Lehigh University's chosen name policy includes the ability to designate a chosen middle name and a chosen last name, so the Preferred First Name field was able to hold only one part of the name. Therefore, we decided to leverage the ability to have multiple name types on a person's record that would allow a unique first, middle, and last name, if the person desired. To do so, new name types were created in the Name Type Validation (GTVNTYP) table to allow us to designate the different names that could be assigned to an individual in the *IDEN forms (Person Identification forms). Since we were also encompassing the use of diacritical marks into this implementation, the working group determined there would be four name types to allow for the storage of both a legal name and a chosen name with diacritical marks, and a legal and a chosen name without diacritical marks. This approach allowed us to accurately represent individuals' names while also storing names without diacritical marks so that we could accommodate the limitations of some third-party tools and systems that receive these data and are not able to accept diacritical marks. The four name types created were as follows:

1| Legal Name with Diacritical Marks

2| Legal Name without Diacritical Marks

3| Chosen Name with Diacritical Marks

4| Chosen Name without Diacritical Marks

Since the Preferred First Name field had been in use for a long time, there was information populated in this field for many employees. The working group made the decision to load the Preferred First Name data into the new Chosen First Name field on behalf of users who had previously supplied a Preferred First Name. We made sure to inform the campus community of this data load.

While everyone has a legal name in our Banner database, not everyone has a chosen name in their record. To address this, IT altered an Ellucian-provided database function called F_FORMAT_NAME (Banner Name Function) to pass in a name type so that it could be used in reporting and in integrations.[1] The altered Banner Name Function returns a name based on the end user's needs. For example, if chosen names are preferred, the end user passes in the chosen name parameter and the result displays the chosen name if one exists, but defaults to legal name if no chosen name exists. Only approved departmental staff (e.g., data scientists, data analysts, system managers, and report writers) and IT staff have access to this database function.

Storage of Gender Identity and Pronouns

Prior to the announcement of the policies, fields had recently been made available in Banner for the other demographic information that we wanted to collect. Legal Sex, Gender Designation, and Personal Pronouns existed in Banner in the Biographical Information section of a person's record. At Lehigh University, we were utilizing only Legal Sex until the new policies were implemented. All three fields are drop-down fields that do not allow for custom

1 . Please contact Casey Gogno at cap211@lehigh.edu for details about this function.

text entry. Therefore, to start using the Gender Designation (GTVGNDR) and Personal Pronoun (GTVPPRN) tables, we needed to designate the valid values that would serve as options in the drop-down menus of our data collection processes.

Determining the Values for Validation Tables

To designate the valid values, the working group discussed possible values while following the guidance and expertise of our Pride Center. Our Pride Center director provided guidance based on their education in the field and knowledge of our student population. They provided a list of gender identities and pronouns that they recommended we include in the drop-downs on the intake forms (see Table 1 for these values). The list of gender identities was generated by examining gender identity options on other university surveys and through consultation with the Trans and Non-Binary Advocacy Committee. Due to Banner restrictions and concerns about data quality, we were unable to allow for self-reporting of gender identity using an open text field. We also were unable to utilize a separate field to allow for self-reporting of transgender identity status. Given these limitations, the team decided to move forward with the option to list transgender and cisgender identity status as options within the drop-down menu. Our intent is to continue exploring the addition of a transgender status question to decouple this it from one's gender identity selection.

Table 1. Values Available in Gender Identity and Pronoun Tables in Banner

Gender Identity Values (GTVGNDR: Gender Designation)	Pronoun Values (GTVPPRN: Personal Pronoun)
Agender	He/Him/His
Gender Fluid	He/They
Gender Non-Conforming	Not Listed
Genderqueer	Prefer not to disclose
Man (Cisgender)	She/Her/Hers
Man (Transgender)	She/They
Non-Binary	They/Them/Their
Not Listed	Ze/Hir/Hir
Prefer not to disclose	Ze/Zim/Zir
Woman (Cisgender)	
Woman (Transgender)	

Once the proposed list of valid values was established, we utilized the existing data governance process that is followed whenever we make a change to the Banner database. The Data Governance and Standards Committee, made up of data stewards, data managers, and other representatives from campus departments, circulates a proposed change within each unit to identify possible impacts. Once these findings have been shared with the committee, the proposed change is brought to a vote to determine whether the work will move forward. This process is followed for changes such as the creation of new fields and the addition or removal of valid values from a validation table, as was the case with the gender identity and pronoun values.

After the working group and the Data Governance and Standards Committee had reviewed and approved the proposed values for the validation tables, our IT department updated the validation tables in Banner. It was also agreed on by the Data Governance and Standards Committee and other campus partners that these values would be used on all intake forms as our standard list in a drop-down field. This ensured that data would flow smoothly and without error into Banner from third-party applications where it was collected. We established that the validation tables would be reviewed on an annual basis to determine if changes need to be made based on the needs of our community. The next step of the implementation was to determine how to collect the information, ideally at the earliest point of contact with all our populations.

Data Collection for New Community Members

Once there was a place to store the chosen names, gender identity, and pronouns, we made changes to our intake forms to collect the information at the earliest point of contact with someone. Intake forms include employment applications, onboarding forms, and admission applications. In the past, there were multiple versions of employee intake forms used across our campus, which were inconsistent in the information they collected. By creating a standard employee intake form used for all employee hiring, we streamlined the data collection and ensured it was consistent and occurred at the earliest point of contact with new employees. There are also separate admission applications in use by undergraduate and graduate admissions; we worked to make sure they were consistent.

Data Collection for Current Community Members

For current community members who would not have the opportunity to complete a new intake form, we created a Google Form that they can complete at any time to update their chosen name information (see Appendix for form details). The Google Form submission is routed to the appropriate office based on the type of record that needs to be updated (student, faculty, or staff member). The Google Form is intended as a temporary solution until we can create an automated process that will update the name directly in Banner with no manual data entry required. It should be noted that an automated process is preferable to the Google Form procedure due to the limitations and potential for error associated with manual data entry. We have experienced both delays and errors in data entry, likely due to the reliance on manual intervention.

Gender identity and pronouns for current community members can be updated by the individual using the Self-Service Banner application. This is where other biographical and demographic information can be updated by an individual; it was logical to enable these two fields there. We also created a link within the Self-Service Banner application that will direct the individual to the Google Form to update their chosen name if they wish to do so. The goal was to have as few places as possible where biographical and demographic information is updated. We wanted to make the process as user friendly as possible, requiring little navigation between forms.

Review of Chosen Names

There were some conversations within the working group regarding the review and approval of chosen names that were submitted through the forms. Ultimately, we decided we would not require an immediate review of every chosen name submitted. Instead, we opted to do a regular review of all chosen name changes to ensure there is no abuse of the system. This decision was made to reduce both barriers to access and the potential for bias. Lehigh University also has policies and procedures in place outlining expectations of community members in selecting a chosen name. In particular, our student code of conduct outlines the expectations of respectful conduct and prohibits intentional furnishing of false information to the university. If a student should choose to submit an inappropriate name as their chosen name, they would be subject to our disciplinary procedures following a violation of the code of conduct.

Context-Based Selection of Appropriate Name Type

We had to make decisions internally about whether a tool or process would use chosen names or legal names, subject to its capabilities. We intended for a chosen name to be the default name displayed in all cases unless a legal name is necessary for a legitimate purpose, which meant that we had to identify the requirements of each tool or process and determine whether chosen names could be used. For example, there are some processes that require the use of legal names without diacritical marks, including those in which the government requires that information exactly match their records (e.g., tax-related data sent to the IRS such as W-2, W-4, 1099, etc.). Other examples include our study-abroad program for travel documentation and our benefits vendors, such as insurance carriers. In those cases, there was a legitimate need to utilize a legal name, and it was determined that the chosen name would not be loaded.

Some of our third-party tools have a student-facing portal where students are greeted by name and can see their own personal information upon logging in. In these instances, in particular, we believed it was of utmost importance to load chosen names so the student sees the information they provided to us. For chosen names to display in our third-party applications, integrations, reporting, and other processes, we first identified the requirements of each tool or process and determined whether chosen names could be used for their purposes.

Database Capabilities and Integration of Third-Party Tools

There are many third-party tools and integrations in use at our institution. The Enterprise Systems group was tasked with reaching out to the vendors we work with to determine abilities and limitations of the tool to accept diacritical marks, chosen name, and gender identity information. In cases where this information should be incorporated but a tool was not able to do so, the Enterprise Systems group requested enhancements from our vendors; the group also continues to monitor any new releases for adverse impacts on these updates. If it was determined that the tool could accept these data points, that group made any provisions necessary to integrate the data from Banner to the tool.

We also worked with student service departments that utilize kiosks or machines to sign into a queue to assist students. We found that, in some locations, students had to sign in using their student ID number, but the kiosk or queue would display their legal name. In instances such as those, our IT department worked with the student service department and the kiosk vendor to determine how the student's personal information was being loaded, and would then update the data feed to utilize the chosen name instead of the legal name.

Our institution utilizes several reporting platforms/tools that use Banner data to generate reports; there are many users who can write reports or generate new versions of existing reports. With the use of the new name types, IT worked to inventory the existing reports and update the field that was used for names. IT also trained users on how to select the appropriate name for future reporting. Even with this proactive approach, it is an ongoing process to update older reports that still inaccurately reference legal names as we become aware of them.

4. MAINTENANCE: CONTINUOUS IMPROVEMENT

Upon completion of the main objectives of the project, the working group made the decision to classify the project as complete and to move into a maintenance phase. There were still items to troubleshoot and incidents being raised, but it was no longer necessary to continue the regular meeting schedule. Instead, the working group reconvenes when necessary and small groups continue to meet as needed to troubleshoot problems, reassess technology capabilities, and work on enhancements and wish list items. As we continue to seek feedback from individuals who are impacted by these processes, we anticipate new opportunities for improvement over time, and are prepared to continue refining our practices.

There is also still work to be done to educate our users. We anticipate the development of further training and documentation to meet these needs. Documentation and communication have been vital throughout all phases of this project and continue to be at the forefront of the maintenance phase.

Documentation

Throughout the project, the working group ensured that documentation was updated and available to our campus community; the working group was thus able to promote transparency in this process. The documentation included instructions on how to update personal information, as well as a page specifically used to track the locations where people could expect the chosen name to display, based on the completed work on the third-party integrations. This page provided transparency of the progress being made.

Data definitions were also created in our institutional data dictionary to define relevant terms: chosen name, gender identity, sex, and pronouns. The definitions include information on where these data are stored in our Banner database. The definitions also designate the appropriate data classification, which determines who can access the data, where it can be stored, whether it can be shared, and whether it is protected as the Family Educational Rights and Privacy Act (FERPA) data. At Lehigh University, the decision was made to classify the chosen name as directory information under FERPA. Our policy already considered a name to be directory information, and we decided to clarify that both legal name and chosen name were considered directory information. Based on this decision, both name types can be shared without prior permission of the student unless they choose to limit its disclosure. Conversely, gender identity and pronouns are classified as restricted data and can be shared only with school officials who have a legitimate educational interest, as defined by FERPA. In addition to the definitions, there is also documentation on how to utilize the Banner Name Function, for those in a more technical role who might need to use it.[2]

The importance of documentation cannot be stressed enough. Since this project has spanned nearly 3 years, there are often questions raised that have been addressed previously. With the limitations of collective knowledge, our documentation and notes provide reminders, and allow us to get efficient answers when needed. The documentation also allows us to track our wish list of future enhancements or tasks that did not get finished to make sure we do not lose sight of things.

Communication to Campus Community and Project Stakeholders

Throughout this process, communication was an integral part of our efforts, and was essential to the success of the project. Communication was necessary throughout all steps of the project: to educate the campus community on the new policies, to announce the ability to collect and store this information, to announce updates as the team worked to update third-party tools, and to educate and train users. It was essential to communicate with our campus community about the progress that was made.

Methods of communication included mass emails to the campus community, updates to our web pages, and presentations given to the campus community. We also provided ongoing updates at our data governance committees' meetings; those committees are made up of representatives from departments across campus who are responsible for disseminating information to their units and facilitating ongoing communication. We relied on our data stewards to provide input into decision-making for this project based on their subject matter expertise. We requested ongoing feedback and worked to create open communication to ensure that concerns and questions were addressed throughout the implementation phase.

Over time, as awareness spread on campus about the utilization of chosen names, gender identities, and pronouns, the working group has been able to have more discussions with departments about their third-party tools and whether any updates have been made to accommodate the use of these fields. Through these conversations, it was clear that insufficient communication would be detrimental to

2 . Please contact Casey Gogno at cap211@lehigh.edu for details about this function.

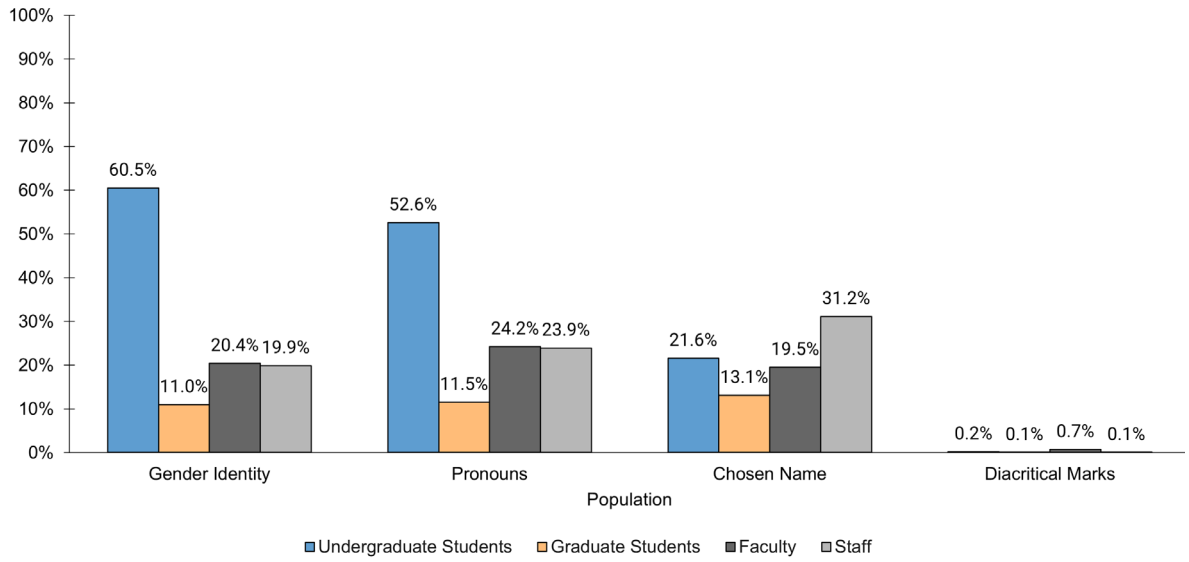
the project as well as to our diversity, inclusion, and equity efforts on campus. We are working to create open and repetitive communication to educate our campus community about the importance of utilizing this information in a way that is beneficial to all.

Outcomes and Impact

COMMUNITY UTILIZATION

Utilization of these new fields is increasing across our entire community, although it is strongest among those joining our campus most recently. Among the most recent incoming undergraduate class (Fall 2023; 1,531 students), 98% provided information about their gender identity, 96% identified their pronouns, 16% supplied a chosen name that differed from their legal first, middle, or last name, and 0.5% had a name containing diacritical marks. Utilization of these fields is lower across the whole undergraduate student body, however, and is lowest for graduate students (see Figure 2 for utilization rates across all populations). Utilization of these fields by faculty and staff, the populations with the longest tenure at our institution, is notable. In the most recent employee census (Fall 2023; 681 faculty, 1,316 staff), 20% of faculty and staff provided information about gender identity; 24% of faculty and staff identified pronouns; 20% of faculty and 31% of staff supplied a chosen name that differed from their legal first, middle, or last name; and 0.7% of faculty and 0.1% of staff had a name containing diacritical marks.

Figure 2. Utilization of New Fields by Undergraduate Students, Graduate Students, Faculty, and Staff as of Fall 2023 Census



SYSTEM UTILIZATION

These fields are now being utilized in university systems, databases, and processes (e.g., course rosters, housing rosters, and student advising platforms). Specific areas of impact for individuals with a chosen name include greetings in mass/custom emails, ID cards, course rosters for both faculty names and student names, learning management software, and self-service portals. When new technologies are implemented, our practices now include an evaluation of whether the legal name is required; if not, the chosen name is utilized.

VALUE TO CAMPUS COMMUNITY MEMBERS

We have received positive feedback from students, staff, and faculty about the impact of these new capabilities. In an annual end-of-year survey administered by the Pride Center, several transgender student respondents noted that the ability to update personal demographic information across university databases has made them feel safer and more valued as a member of the Lehigh community. This is especially important for our transgender students who are now interacting with various platforms that used to be a source of harm. For example, prior to our efforts, there was no ability to update the display name on campus computers upon logging in to the device. This was like our learning management system where students would be outed simply by way of their discussion board posts being associated with their legal name. The risk of being outed is particularly dangerous for transgender students for various reasons. Allowing people the opportunity not only to update demographic information but also to do so in the easiest and least obstructive way is paramount to promoting a safe and healthy campus climate for LGBTQ+ populations. This safety can go a long way in supporting students' academic and co-curricular pursuits (Beemyn & Rankin, 2011; Flint et al., 2023). Similar feedback has been shared by staff and faculty. Specifically, several staff and faculty have noted that they appreciate the ability to provide more-comprehensive demographic information and that they value the flexibility in specifying their first, middle, and last names to accommodate their personal and professional preferences. These practices support community members' autonomy by giving them the power to choose how their identities are represented.

INSTITUTIONAL RESEARCH AND REPORTING

In addition to enhancing the climate on our campus, the initiatives described in this article are beneficial to our institutional research function. System-wide collection and storage of gender identity has been especially useful for institutional research analyses, external reporting, and data literacy efforts.

A key element of the institutional research function on our campus is assessing the subjective experiences of our campus community members through self-report surveys. To derive meaning from survey data and support an equitable campus climate, we need to differentiate and contrast the responses of community members from various social groups. Prior to our university-wide collection of gender identity, we asked survey respondents to provide their gender identity via additional questions in each survey. Now we can bring gender identity in along with other demographic information housed in our data systems and no longer must ask respondents to provide this information each time they complete a survey. This reduces the number of survey questions, which helps mitigate survey fatigue and improves the quality of the survey data that we collect.

Another key element of institutional research is examining potential disparities in student outcomes such as retention and graduation rates. The system-wide collection and storage of gender identity allows us to include it alongside other demographic indicators like legal sex and race/ethnicity in analyses of student outcomes. A more complete picture of student identities allows us to better identify and address any disparities in student outcomes.

While having gender identity information available in data systems is useful for institutional research and reporting, it is imperative to consider the safeguards necessary for ensuring privacy and confidentiality when reporting this sensitive information. Privacy considerations are especially important because they pertain to populations with identities that are often minoritized and stigmatized. The expanded values available to represent gender identity within a relatively small campus mean that there are likely to be few people who identify with some gender identity values. Reporting information for a small group of people poses the risk that their identity could be ascertained, and their privacy violated. On our campus we found that it is often necessary to group some gender identities for aggregate reporting with large enough group sizes to protect individuals' identity. This must be done, however, with great care to avoid further minoritizing and othering those with gender identities that put them in smaller group sizes.

The capacity to report nonbinary gender identity is becoming increasingly relevant for external reporting. Beginning in the 2022–2023 data collection, for example, Integrated Postsecondary Education Data System (IPEDS) asks institutions to indicate whether they collect data on nonbinary genders (National Center for Education Statistics, n.d.). It is likely that rankings and other external reporting requirements will place increasing emphasis on institutions' ability to provide gender identity apart from binary legal sex.

DATA LITERACY

One secondary yet important impact of this project is the contribution it has made to data literacy on our campus, including promoting competence as it relates to technical considerations as well as inclusivity. As one of the more recent large-scale projects of this nature, this project relied on the data literacy foundation that we have cultivated, and provided an opportunity for us to establish a framework of how data literacy can be supported in our community of data users. Our efforts to collect, store, and appropriately utilize gender identity, pronouns, and chosen name information highlighted the importance of providing communication and training to data users at multiple points across the institution. A lack of understanding of the data poses the risk of improper use or mishandling. It is critical to educate those who interact with data at all levels, including the individual provider of the information, the person entering the data, the developers supporting the tool housing the data, and those who use the data in reporting or other processes. Data literacy is enhanced as awareness is built about what data are collected and why, as well as how they are used and shared.

Furthermore, the collection and availability of gender identity, pronouns, and chosen name information creates opportunities to educate the campus on inclusivity. For example, having access to gender identity in our institutional data systems has opened the door for our institutional research team to have conversations about gender identity when we receive ad hoc requests for data. When a request comes in for head counts by gender, for example,

we can talk with the requester to confirm that they are aware of the difference between gender identity and binary sex, then guide them in determining the dimension that is most relevant to their request. Through these conversations we can educate our constituents and improve their awareness of identities as they intersect with data, ultimately supporting inclusivity across our campus.

RECOMMENDATIONS

Challenges and risks are inherent when executing any project of this magnitude. Without strategies to successfully address them, these potential limitations can be barriers to more-inclusive practices. In the following sections, we discuss the challenges and limitations that we encountered and believe would be beneficial for other institutions to consider. We offer recommendations for navigating these potential barriers based on the key lessons we learned along the way. Finally, we describe our ongoing efforts to maintain and improve the processes we have established. Our hope is that, in sharing the insights we gained on this journey, the work of other institutions pursuing a similar path will be bolstered.

Challenges and Limitations

Throughout the project, we encountered numerous challenges that often required complex and creative problem-solving. The biggest challenges overall were the limitations of our Banner database and third-party tools to accommodate the use of chosen names and diacritical marks. The investigation into possibilities was time consuming due to the decentralized management of software tools on our campus. Additionally, the communication with vendors and subsequent testing of technological changes contributed to long wait times before changes could be implemented. The nature of this project, particularly related to the widespread use of names across systems, makes this work extremely sensitive and prone to error. If the entry process must be manual, institutions should administer proper user training to reduce the risk of error. We were cautious and deliberate about evaluating and changing procedures that involved names. It is imperative to be cognizant of the risk of breakdowns in systems and processes if they were not set up to accurately handle updated demographic information.

Due to the widespread use of demographic information, decision-making and communication was another limitation that challenged our efforts. Numerous employees are responsible for the data entry of this information, and even more employees can view and utilize these data in their work, and can often rely on the accuracy of these data for their duties. Making decisions about the implementation of these fields was a challenge due to the number of users who must be consulted. We relied on our existing data governance structure and recommend other institutions consider doing the same, if possible.

Another challenge of this project was the pace at which it moved, a pace that is common in other data governance work. Being intentional with a focus on long-term sustainability should be at the forefront of rolling out a change to data collection processes such as this. Patience is critical and we believed it was important to communicate clear expectations to the community that this will take time. We continually provided updates as progress was made so our constituents were reminded of the project and informed of new information in a timely manner. The work on the policies that established the goals of our project started in 2020 and the policies were announced in the Fall 2021

semester. The working group continued regular meetings through May 2023, at which time the project was considered largely closed. However, the working group continues to receive reports of issues and requests for improvements. For institutions embarking on a project such as this, setting expectations for the project's pace and completion of implementation would be prudent. It is important to expect multiple iterations and plan for ongoing continuous improvement.

Finally, it is important to acknowledge that resources and capacity are an important limitation that other institutions may encounter. In carrying out this project, we relied extensively on the data governance infrastructure already established at our university and the capacity available in our institutional research office. The time and effort required to see a project like this through could be a significant limitation for institutions that do not have this infrastructure or capacity available.

Key Lessons Learned

We recommend that the management of a project of this scope be overseen by a central entity, if possible. In Lehigh University's case, it was logical to utilize the established structure and decision-making processes in our data governance program to carry out the implementation phase. Due to the numerous departments and individuals involved, it was extremely helpful to have an organized method by which the status of tasks was managed. A centralized entity, such as a data governance program, can aid in the inclusion of the appropriate individuals for feedback and communication throughout the process. Leveraging a stewardship structure, as well as constituents who are already familiar with the nature of data governance work, was instrumental in efficient implementation.

Communication and feedback are other critical elements that contributed to the success of this project. When making a change to the collection, storage, and use of data points that are as impactful as someone's name, it is critical to communicate at all levels—from the individual provider of the data to the user of the data. It is important for individuals to understand what data we are collecting, why we are asking for it, and how their data will be used and shared. Subsequently, users of this information must be trained and educated on the appropriate use of these data. Inadequate communication and education, on both the subject matter at large and the project itself, could result in misuse or unintentional harm by those who have access to the information. The importance of communication cannot be stressed enough.

The working group relied heavily on user reports of incidents where their information was not appearing correctly. Specifically, we created a Google Form in which users could report incidents of their deadname appearing somewhere unexpected. This allowed us to follow a breadcrumb trail to the source where the incorrect name was being used. For example, many departments on campus utilize their own mass email tool. They either pull lists of email addresses from reporting tools, or have a report sent to them. In many cases, a student would submit a deadname incident report in which someone sent a mass email with their deadname in the greeting. As the working group investigated these incidents, we learned that departments were often using an old version of a report that was retrieving legal names instead of chosen names. We used these incidents as opportunities to educate our data users about the new ability to utilize chosen names instead, and the importance of doing so.

It is also useful to maintain an inventory of systems and tools in use on campus. This was helpful for us to track the ability of systems to accommodate the new fields and make notes on the status of updates. An inventory of applications that integrate with our student information system will be essential for other projects and investigations in the future. We also recommend maintaining an inventory of data collection methods (intake forms) such as employment/hiring forms, admission applications, and other methods used to collect data from new entities that will interact with the institution. An inventory will make it easier to identify items that need to be updated if future changes must be made to the data management process again.

The working group also learned about the risks for negative impact that a project like this can have on some populations. For example, we were informed that, in some cases, individuals in our international community felt pressured to provide a chosen name when they received our communications. Here it is important to consider intention versus impact: they interpreted the communication as a strong suggestion to provide a chosen name, whereas our intention was to allow users to provide a chosen name if they wished to do so. We did not anticipate this issue, and were grateful that a campus partner brought it to our attention. Additionally, we discovered that some users provided a nickname that they go by but ultimately did not want to appear across systems and practices because they believed their legal name was more professional and/or appropriate for official use. Other institutions embarking on a project of this nature should consider differing expectations across populations.

Finally, we found it immensely helpful to include representation and input from constituents impacted by these policies (e.g., students, faculty, staff) to ensure that we had a strong understanding of needs and impact. Since this project had implications that extended far beyond our working group members, it was helpful to hear a variety of perspectives to inform our understanding of needs and impact. We were able to learn about individuals' experience of the process downstream and to receive ideas for improvement to the user experience. The suggestions we have received for improvement have also highlighted the need for a continual feedback loop process.

Future Directions and Ongoing Improvement

It is critical to be agile and responsive when implementing new processes and shifting campus expectations regarding data management. Our extensive process revealed several additional recommendations for our group to consider as the project continually evolves to meet the needs of our campus constituents. Some of the work that is ongoing includes discussion around FERPA standards, data access, privacy regulations, and automated process implementation. We are working to investigate the need for access to these data in our current security privileges, and potentially refine what is made available based on a user's role. We also plan to create additional guidance, for end users and the campus community in general, which will outline the general principles that should be followed when accessing and utilizing these data.

We note that utilization of these new fields is lowest among graduate students, an often-overlooked population. While we undertook efforts specifically targeting undergraduate and faculty/staff utilization of these fields, we are still working toward reaching our graduate student body. Methods to reach the graduate population will be reviewed, including

considering which approaches that work for other populations will also work for graduate students, and where there are unique opportunities to communicate with graduate students.

We also learned that often technology lags culture. While there has been a culture of progressive thought regarding data management at Lehigh University, we found that we are sometimes limited by database capabilities. For example, during the implementation phase we were restricted to displaying 11 values in our gender identity category in the Self-Service Banner application. Since it would be ideal to allow unlimited values to be added to the drop-down field for future additions, we submitted an enhancement request to Ellucian; that change was completed during the maintenance phase of the project.

Additionally, it would be preferable to have the ability to identify transgender identity status separately from gender identity. Currently, our gender identity values include the ability to note transgender identity status within the gender identity category, such as Man (Transgender) and Man (Cisgender). This is not ideal since transgender identity should be decoupled from gender identity—a transgender man is a man, just as a cisgender man is a man. Conflating the gender identity and transgender identity status may pressure community members to out themselves in an undesirable way. At present, our university does not have a means to collect the transgender identity separately from the gender identity due to limitations in Banner, but we are investigating this enhancement.

The working group is exploring the collection of information about sexual orientation from those who feel comfortable providing it. Doing so would further expand our ability to represent the identities of our community members. This would aid us in tracking the outcomes of our LGBTQ+ population and better support their success at our institution.

We are also discussing opportunities for community members to share their chosen name in some places and not in others. This will require ongoing dialogue because the technological capabilities to specify which name will appear in different places are limited and would be quite cumbersome to utilize. These considerations are in response to feedback that we have received from students requesting that their chosen name be updated across campus systems but not printed on mail that could be sent to their home address. Students do not want to be outed at home if they have not disclosed a new name to their family.

We continue to work toward addressing concerns that the risk of human error will unintentionally cause harm to certain populations (e.g., outing someone's transgender identity). It is critical to determine which users or offices have access to the different name types and gender identity information, and ensure that those users or offices receive comprehensive training on appropriate use of this information. Consideration and education about the potential human impact will help to ensure that all members of our campus community feel safe accessing resources and that they feel supported by every academic and administrative office on campus.

CONCLUSION

What began as a response to address the negative experience of one transgender student applying to our university evolved into a multiyear cross-departmental coordinated effort to expand the demographic information utilized at our institution. The ability to store and collect chosen names (including diacritical marks), gender identity, and gender pronouns represents a structural change to our data management practices that supports an inclusive campus climate. These improvements affect all populations at our university but are especially impactful for transgender students; these students perform better academically and feel safer in their overall college experience when institutions implement policies that honor their identities (Flint et al., 2023; Lange, 2022).

While improving inclusivity in data practices is undoubtedly important work, it poses challenges that can be difficult to navigate. We believe that the following recommendations are key to improving inclusivity in data practices:

1| Ideally, large-scale data inclusivity projects should be overseen by a central entity.

2| Input from constituents directly impacted is key, including feedback loops that provide avenues for reporting inconsistencies and potential negative impacts.

3| Intentional communication is critical—both to constituents and among units contributing to this work.

4| Maintenance of an inventory of systems and tools used on campus is useful for ensuring changes are implemented across an entire campus.

5| Education on the appropriate use, handling, and meaning of data elements in data inclusivity projects is crucial, due to the sensitive nature of this information.

By sharing our process, its impact, and our recommendations for navigating this work and its challenges, we hope that other institutions can use this knowledge in their journey to promote inclusivity on their campuses.

APPENDIX

Chosen Name Update Form

Instructions

Please complete the form below to update your chosen name in applicable Lehigh University databases.

Additionally, we have updated the university's Banner system to allow for the storage of diacritical marks, also known as special characters in names (i.e., the first "e" in Renée). If your chosen name includes a special character, please include that in your name below.

Please note, if you have already submitted a "Preferred First Name" via Self-Service Banner, this name has been added to the new chosen first name field with your legal last name. Should you wish to update that name and/or your middle and last name, please complete the form below.

If you are interested in submitting a legal name change to the university, you can learn more about that process here: http://go.lehigh.edu/UpdatePersonalInfoHowTo

If you have questions or would like more information, please contact the Pride Center for Sexual Orientation and Gender Diversity at pridecenter@Lehigh.edu and/or the Chosen Name Gender Identity Working Group at datagoveranance@Lehigh.edu

Form Fields and descriptions (*asterisks denote required fields):

Email*:

ID*:

Institutional email*:

Primary role at institution*:

Chosen First Name (if this this not identified, your legal first name will continue to be used in Lehigh University databases):

Chosen Last Name (if this this not identified, your legal last name will continue to be used in Lehigh University databases):

Would you like a new ID card? If you select yes, more information will be sent to you via email.

Please note: in some contexts, you may be asked to provide your Lehigh ID card. If a legal form of identification is required, your Lehigh University ID card will not suffice. We encourage you to carry a legal form of identification (such as a driver's license) should that be needed.

◯ Yes ◯ No

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Introducing the Nonbinary Sex Category in Institutional Data: The Case of a Successful Public University

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Abstract

This article delves into the challenges of institutional data collection processes in higher education, particularly regarding diversity reporting. The study this article is based on focuses on enhancing inclusivity by introducing a nonbinary sex category into the institutional data of a distinguished Chilean public university. In the Chilean context, national- and university-level efforts have been made to acknowledge that gender identities extend beyond the conventional female/male dichotomy. By incorporating the nonbinary sex category into institutional data, this article illuminates the significance of capturing information about gender identities that are diverse. The examination centers on a public university, and illustrates a progressive initiative to foster inclusivity and to acknowledge gender diversity within higher education.

The introduction of the nonbinary sex category is commendable in addressing gender diversity within university communities. Nonbinary signifies a departure from the traditional female/male binary, and acknowledges the multifaceted nature of gender identity. While the nonbinary category might not encompass the entirety of sexual diversity, it nonetheless signifies positive progress. The shared view that there are more than two gender identities has implications for data collection and reporting, and creates the need for

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Article 173

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adaptations in information systems to accommodate this reality that now includes a third category, the nonbinary sex. Our discussion emphasizes the importance of integrating a gender perspective into the management and administration of university databases.

Keywords: institutional research, University of Chile (Universidad de Chile), gender equity, data management, higher education, inclusive data, nonbinary sex

INTRODUCTION

Data systems and statistical information, in general, do not accommodate sexual diversity. Inclusive data exist only when the mechanisms for registering information permit people to update their gender marker, thus leading to an update of the data systems that reflect their gender identity—an identity that might or might not comply with traditional notions of binary gender (male/female).

In data systems, the notion of binary gender still prevails when formatting the data collection process of population demographics. This means that, if asked their gender, people must choose either male or female.

Both the collection process of institutional data and the need for reporting systems that better represent diversity in the distinct sectors of higher education institutions present challenges on how to register, store, administer, and access information on previously unrepresented minority groups. Which strategies have higher education institutions used to include information about sexually diverse groups in their data systems? This question arises in the context of sexual minorities demanding greater visibility and recognition of their gender identity, and in the context of the institutions that must adapt to these changes. Moreover, there are currently laws in Chile that require registration of the legal sex; those laws raise awareness of the expansion of gender categories that go beyond the traditional binary male/female category.

In this regard, how is the information about the gender identity of the people who make up the higher education community collected and measured? Feminist authors have highlighted the need for an operationalization review of the binary gender, and the consideration of other alternatives of nonbinary gender in the data analysis process. Ford et al. (2020) emphasize the data collection methods and policies that provide a more inclusive view both for the information gathering, and for general work with data on minority sexual populations in higher education.

Millennials are more likely than any other generation to publicly identify themselves as nonbinary. This means that, among other things, there are now more students and academic staff in higher education that identify as nonbinary. It is thus increasingly important and, indeed, necessary for academic institutions to educate themselves about the nonbinary population (National Academies of Sciences, Engineering, and Medicine [NASEM], 2022).

The first efforts to address inclusive data systems have been made within the past decade. Certain countries, such as the United States, have made important advances, including associative action between distinct governmental experts, to address an issue that is both complex and multidimensional.

In the case of Chile, the gender identity law of 2019 means that data systems must include the distinct

alternatives of legal gender as defined by the law: male, female, and nonbinary. This study of a public university of excellence offers a view of inclusive data and recognition of gender diversity in higher education, and how this 2019 law has brought about challenges in adapting processes in information gathering, information registers, and institutional databases.

In this study, the research questions were as follows:

- Which strategies have higher education institutions used to include information on sexual minorities in their data systems?
- What has the Chilean experience of incorporating a gender perspective in institutional data been like, particularly in a public university of excellence?

In addition, the general objective of this study is to determine in what ways higher education institutions have introduced the nonbinary gender category in their institutional data.

The relevance of gathering these data inclusively in higher education is to contribute to the creation of a more comprehensive view of the higher education community and to recognize that diversity exists in terms of sex and gender identity. Additionally, these data help to transform the culture and formation in higher education concerning the values associated with human rights, equality, and nondiscrimination—elements that radiate throughout society. Furthermore, the gender perspective and gender data allow cross-referencing with other institutional data to carry out better multidimensional analysis related to the issues that are specific to higher education itself. Thus, higher education institutions should be permitted to detect if gender is relevant in the data that they have analyzed and to determine if they need to take focalized measures.

Currently, there is an evident lack of information about the diversity and number of sexual minorities. With more-accurate data, the institutions can assign resources in a more effective way, and, with more equality, the institutions can meet the different needs that members of the higher education community have, thus guaranteeing equal opportunities to its members independent of their gender identity. In this sense, having these data available is essential for the creation of policies and strategies that guarantee and promote acceptance, respect for diversity, and equal opportunities for sexual minority groups. Undoubtedly, having inclusive data on gender diversity and sexual minorities in higher education is key to advancing matters related to diversity, equality, and inclusion. Additionally, those data allow institutions to direct their support services, policies, and initiatives to meet the unique needs of these sexual minority groups, thus contributing to a more inclusive and safer environment.

This article is structured as follows: the first section, "Background," reviews the feminist demands in Chilean higher education institutions related to a nonsexist education and the visibility and recognition of the diverse sex-gender; this section permits a brief reflection on the evolution of the concept of gender and the discussion around the nonbinary gender. In the next section, "Context," we analyze the case of the university system in Chile, and the University of Chile (Universidad de Chile). In particular, we examine how a public university of excellence works through the incorporation of the nonbinary gender category in its gathering and treatment of data. We analyze the University of Chile by comparing it with universities in the United States. In the "Results and Analysis" section, we identify essential strategies for inclusive data management in higher education. We also explore the main

challenges that higher education institutions face when they commit to inclusive data practices. We then discuss best practices for nonbinary sex data collection processes. Finally, the "Conclusions" section reflects on the need for inclusive information on the dimensions of gender and gender identity by using categories that provide evidence of the social plurality that includes diverse sex-genders, and the breaking of traditional binarism.

BACKGROUND

Demands for a Nonsexist Education in Higher Education in Chile, and the Break in Binarism

During the past decade in Chile, the emergence of the feminist movement has helped with regard to the fundamental central demands in the recognition of rights, particularly with efforts to eradicate gender-based violence. These social movements have also penetrated the university community: it was the feminist movement, in May of 2018, that mobilized higher education students from all of Chile against sexual harassment and sexist education.

This feminist movement in higher education involved students and staff (both academic and nonacademic), all of whom participated actively in discussion groups, engaged in elaborating proposals for actions, and participated in distinct creative activities in the higher education environment. These proposals demanded the visibility and establishment of measures to address and eradicate violence and sexism in higher education. Other demands were to incorporate the gender perspective in the development of higher education curriculums and to recognize gender diversity. Likewise, the proposals demanded that the transversality of gender is to be incorporated into all aspects of higher education work. This resulted in 30 universities that belong to the Chilean Board of Rectors (Chilean Consejo de Rectores) creating offices for Gender Equity to adapt their protocols and to raise awareness of and deal with and sanction sexual harassment.[1]

The feminist movement in Chilean higher education, together with the entire higher education community, thus questions and makes visible the gender discrimination that is present in higher education institutions, as well as the necessity for establishing measures to guarantee the recognition and equality of gender diversity in those institutions.

System Sex-Gender and Its Extension

The word *gender* is part of everyday language and is frequently misused as a synonym for *women* or *sex*. In fact, the term *gender* refers to the social differences attributed to men and women related to their morphological differences. Gender breaks with the idea of sex, which is based on biology.

From the beginning, the concept of gender has implied the recognition of the social division of the sexes modeling two identities—male and female. This concept responds to the dichotomy between nature and culture, and applies a category that interprets reality as binary. The distinction between the concepts of sex and gender enables us to have a more in-depth conversation about what is determined by biology versus what is influenced by society. However, this differentiation and its usefulness in developing social analysis constricts and overshadows diversity. The concept of gender

1 . The Chilean Board of Rectors is made up of 18 public and 12 traditional private universities.

has developed as a category of analysis, and allows the critical observation of social reality, which in turn permits the expansion of feminist theories. Incorporating this concept has made it possible to distinguish the male and female social construction, and situates the understanding of asymmetric power relationships as based on the hierarchy between sexes.

More recently, the gender identities that have themselves been excluded, the nonbinary and sexual diversity identities, question the reach of gender. This questioning has allowed the feminist movement to form a fixed category (male/female) of relational character where people are capable of assigning meaning to their vital experiences and defining their gender identity. In this way, gender is perceived as situating and embodying a place that recreates, and names, by gender dissent. For Butler (1990), gender is a dynamic project in its cultural construction as much as in each individual's personal choice.

For Monro (2007), gender-fluid identities challenge the binary category and therefore cause difficulties in social relationships; those identities also impact the binary dynamic. The binary category is reductionist and excludes sexual diversity as it is expressed in the body and in social relationships. Monro questions the binary model for its insufficiency in demonstrating social reality. That model's theoretical amplification is necessary to deepen male/female diversity and to include people who have different bodies and social roles. Although they are distinct theoretical proposals, Monro (2007) backs a pluralist theory of gender where diverse identities exist—including intersex, androgynous, and third sex—and goes further than the binary system.

Scott (1986) proposes rejecting fixed binary categories and subjecting those categories critically to the social framework of the construction of the sex-gender system. For that reason, when applied to the reflection of work with data, Scott highlights the need for widening the binary categories to consider at least the categories of male, female, and nonbinary.

CONTEXT

The University System in Chile

Regarding the IT systems in Chile, higher education institutions did not separate statistics in higher education by sex until the start of the 2000s. That is, the databases containing information about students and academics showed only a total number, and it was not possible to distinguish how many of those students and academics were male or female. It was through a program of modernization managed by the state that Chile established the incorporation of the perspective of gender as an area of work; this program turned into (among other initiatives) the incorporation of the variable of sex in databases. More than two decades later, the variable of sex is still understood as male/female in the management of databases. Sexual minority groups have challenged this notion for some time, however; they demand greater consciousness and recognition by society. To that end, several distinct initiatives have started to deal with this phenomenon.

In the case of the policies on gender equality, particularly in the case of the Chilean higher education system, there is a regulatory and legal framework. One of these regulations includes orientation for the inclusion of lesbian, gay, bisexual, transgender, intersex, queer, and other sexual and gender orientations (LGBTIQ+) people in the Chilean

education system (Ministry of Education [Ministerio de Educación], 2017). Law No. 21.094 also exists and regulates state universities with regard to the incorporation of nondiscrimination and gender equality as governing principles in higher education (Ministry of Education, 2018). In Chile, this regulation has driven the 18 state universities to recognize the preferred names of students; currently, in higher education, more than half of the institutions in Chile use this regulation.[2]

Similar to other countries, Chile, both on a national level and in the higher education system, has not always had IT systems and databases that are inclusive of sexual minorities. In this context, different types of strategies for data gathering and registration are currently in use to reflect the diversity of gender identity. On the one hand, there is recognition that the dimension of sex is made up of more than male/female categories; to that end, we have added an additional category of nonbinary to the institutional data. On the other hand, there is the challenge of adapting technology and IT systems to adequately capture the new category of nonbinary sex.

The Chilean higher education system, like that of the United States, is diverse. It is made up of both public and private institutions. In terms of size, the Chilean system is small when compared with that of the United States. The former has 128 higher education institutions in the whole country, while the latter has more than 6,000 institutions (Integrated Postsecondary Education Data System [IPEDS], 2022). As of 2021–2022, the United States had a student population of almost 25 million (IPEDS, n.d.), while Chile had 1.2 million. The academic body in 2023 was significantly larger in the United States, with 1,377,442 academics [IPEDS, 2022], while Chile had 100,000 academics (Vice-Ministry of Higher Education [Servicio Información de Educación Superior], n.d.).

In Chile, the higher education system is made up of distinct types of institutions, including universities, technical colleges, and professional institutes. As of 2023, of the 128 Chilean institutions, 55 are universities, 41 are technical colleges, and 32 are professional institutes. The whole system has 1.2 million students: 55% of those students (693,335) are in universities, compared with 11% who are in technical colleges and 34% who are in professional institutes. When it comes to participation by sex, the number of women has increased significantly in the past decade: in 2013, 52.1% of all university students were men; 10 years later, in 2023, this statistic was inverted, and 55% of all university students were women.

When it comes to academic offerings, both undergraduate and postgraduate programs exist, but only universities can offer postgraduate programs. There is a national admission test for entry to university; admissions can be competitive, especially when it comes to the more prestigious universities. All institutions charge both tuition fees and an enrollment fee, and the prices are very high compared to the average Chilean income. Although there are public policies for help and financial assistance—the most relevant in recent years being free tuition—these are offered only to the most economically vulnerable sectors. In addition, there are categories of student financial aid related to university study (enrollment fees, accommodation, and food). Concerning quality assurance, the accreditation of university education has been obligatory since 2018 and the

2 . A preferred name is the name that a person uses related to their gender identity, and is the name that they prefer over their legal name.

universities must undergo periodic evaluations. The National Agency of Accreditation (La Agencia Nacional de Acreditación) is the body responsible for supervising this process; as part of its 2018 criteria, it established gender equality through this new higher education law (Law No. 21.091). This new law requires universities to comply with a comprehensive policy against sexual harassment, violence, and gender discrimination; if not, they risk losing their accreditation.

University of Chile: A Public University of Excellence

The University of Chile has been a pioneering institution in incorporating the perspective of gender in its policies, and has established the nonbinary category in its institutional data.

The University of Chile, the oldest university in the country, was founded in 1842. With more than 40,000 undergraduate and postgraduate students spread across 71 undergraduate degrees, 117 master programs, 42 doctorates, and 83 medical specialties, the university expands its influence through its graduates—not only in the rest of the higher education system, but also in different aspects of the development of the country. Concerning the percentile of registered students, in the past decade the University of Chile has significantly reverted the composition according to the sex of the student body, and now shows a higher participation of women than men registered in undergraduate degrees, with 53% female students versus 47% male students.

During its history, the University of Chile has had great relevance and impact on the decision-making process of public policy in the country. Evidence of this is the university's graduates who stand out in the most important aspects of the country's development. For example, 21 out of a total of 34 presidents in Chile's history, including the country's current president, have been graduates of the University of Chile. In 2023, the cabinet was composed of 24 ministries, 14 of which were led by the university's graduates; one of those cabinet members is even a full professor at the University of Chile. Concerning national medal prizes, the university stands out for its significant contribution in all matters related to the sciences, arts, and humanities. As of 2023, of the 257 national prizes that have been awarded, 209 have gone to graduates and/or academics of the University of Chile (n.d.).

Since 2018 the University of Chile has been a pioneer in the country in establishing the Mara Rita procedural instruction; this instruction is related to the use of preferred names and the nondiscrimination of people due to their gender identity.[3] This procedural instruction permits transgender or nonbinary people who study or work at the university to use their preferred names in registers, class rosters, documents, and written and oral communications; for internal effects; and in curricular, extracurricular, and work matters (University of Chile, 2021).

This advance in the recognition of sexual diversity inside the university has brought about the challenge of having to adapt forms and databases in IT systems to record name changes and register

3 . This procedural instruction is named after Mara Rita, who was a writer and lecturer at the university from 1991 to 2016.

sex changes to include a third category of nonbinary. Additionally, a synergy has been created between the distinct areas involved, incorporating expert consultancy in matters of gender by the Office for Gender Equity (Dirección de Igualdad de Género), the area in charge of these matters at the level of the university's central government. Its contribution has been to focus on finetuning the instruments for data collection through surveys, especially with regard to the use of the categories of sex, gender, and sexual orientation (the questions) and the alternative categories (the replies).

Literature Review

This study uses the methodology of document review from an up-to-date systematic search across academic databases including PubMed, JSTOR, and Google Scholar using four keywords: (1) gender equity, (2) data management, (3) inclusive data in higher education, and (4) nonbinary sex. This document review does not constitute an exhaustive analysis encompassing all possible documents. This study has systematically explored the literature, however, and has considered the distinct nuances and perspectives found therein. In addition, the analysis is complemented with quantitative data from national statistics produced for the University of Chile.

In compiling the information, we established two criteria. The first relates to the short term, and uses documents produced in the past eight years (2016–2023). The reason we selected those years is that scholars have addressed this subject relatively recently; the earliest document we found was published in 2016. The second criterion has been to review literature from only two countries—Chile and the United States. We used Chile because our analysis is from Chile and deals with a Chilean public university, and we used the United States because it is an international referent.

Regarding the data analysis, we took an approach approximating the thematic content of the selected bibliography based on the four aforementioned keywords. The objective was to capture the principal actions and strategies used in both countries, as well as the challenges and best practices associated with inclusive data in higher education in Chile and the United States.

To ensure the reliability and accuracy of the study, the methodology we used was that of pairing experts who met with the research team to discuss the issues arising, to resolve discrepancies, and to refine the interpretation. Through a series of work meetings, the institutional research and information technology teams collaborated with gender and equity policy experts from the University of Chile to discuss data collection on nonbinary sex. These meetings were productive because they helped us understand the importance of consistency for collecting such data across all information collection systems. In addition, the workgroup agreed on the importance of having clear terms to define the categories of sex and gender, as well as the importance of considering the privacy of the information collected.

Gender Diversity and Institutional Data

Current practices of data gathering are moving toward a place that, suitably, better reflects the reality of the LGBTIQ+ population. The feminist movements and the sexually diverse communities have paved the way for recognition, respect, and greater visibility of diversity; nevertheless, the members of these groups still suffer from discrimination and gender-based violence. In the past decade, and in the context of information and

data becoming ever more relevant, there are initiatives that evidence the need for greater information about these groups, which is currently scarce. The availability of demographic information is necessary to estimate the number and identity of these people. Thus, we included data that allow a better understanding of the challenges faced by nonbinary populations in higher education (NASEM, 2022).

There has been a growing recognition of sexual and gender diversities internationally in the 21st century. Many countries and higher education systems are developing initiatives to support this recognition, at both the national and international levels.

Starting in 2009, several Latin American countries, including Argentina, Chile, Mexico, and Uruguay, have implemented gender identity laws that recognize the alternative gender identity *X* or *nonbinary* in their civil registry identity documents. Similarly, at least 12 countries in Europe have also introduced similar initiatives, according to Ellis Montalbán & Bartolomé Peral's research from 2020. In recent years, some European countries, including Germany, have started recognizing sexual diversity by adding it to their current "Diversity" category in registries; other countries allow national identity documents to reflect a third alternative, as is the case in Malta and the Netherlands (Ellis Montalbán & Bartolomé Peral, 2020).

It is interesting to note that some Asian countries, including Nepal and Pakistan, have officially recognized the "Other" category as a marker for nonbinary sex in their documents. This shows how these countries are becoming more inclusive and accepting of different gender identities.

Regarding higher education, two main groups of institutional policies stand as the most relevant. One group is related to the information available on sexual minority groups, while the other group has to do with the delivery of diplomas and titles with gender-inclusive language. Some Latin-American countries, including Argentina and Mexico, have already started to include nonbinary sex in the student-level population census. Uruguay has also begun to include nonbinary sex in the statistics of some higher education institutions. Some universities in Chile, Colombia, and Uruguay recognize a third pronoun when writing the titles that appear on diplomas and certificates, which is seen as a step toward inclusivity (Torres et al., n.d.).

In the case of higher education institutions, the recognition of diverse sex-genders has advanced step by step. In this sense, differentiated strategies can be seen according to the objective of gathering and registering information. With different degrees of development in different countries, the United States is a case in point for the initiatives implemented to manage data from a gender perspective. The Chilean case, and particularly the case of the University of Chile as a public university of excellence, is useful to illustrate that there are common strategies that build capacity to advance in the construction of more-inclusive environments in higher education, despite the differences regarding the number and level of development of the distinct national higher education.

BRIEF OVERVIEW: MAIN INITIATIVES OF INCORPORATING THE NONBINARY SEX IN THE UNITED STATES

Concerning data gathering in the United States, there are certain requirements to ensure that the information collected is inclusive. These methodological, conceptual, and technological requirements aim to put certain standards in place

when working with data. These requirements can be valuable recommendations for countries that are interested in advancing these matters. In addition, the requirements can also apply at both at the national and higher education levels.

The National Academies of Sciences, Engineering, and Medicine (2022) indicates that both concepts of sex and gender should be clearly defined. These two concepts must not be based exclusively on biology, nor should they be used as synonyms. Given that each concept has a specific social representation, identity, and expression, the existence of definitions that truly capture these distinct realities is very important. Another point to consider is that the recognition of the diversity of sexual orientation must also be incorporated and measured, including the concepts of LGBTIQ+ (American Association of Collegiate Registrars and Admissions Officers [AACRAO], 2019; Office of the Chief Statistician of the United States, n.d.).

In the United States, the groups campaigning for LGBTIQ+ rights have pushed a series of initiatives that have influenced the discussion on how to gather information on these sexual minority groups and on what should be the main principles and considerations at the time of measuring the LGBTIQ+ population (Office of the Chief Statistician of the United States, n.d.). These social groups have lobbied for inclusive information gathering for all agencies who work carrying out surveys at the federal level. For this reason, working groups have been set up in some ministries to recommend good practices when gathering information about sexual orientation and gender identity through the various surveys that governmental agencies carry out.

Regarding the higher education sector, the association of admissions offices has started associative work that deals with the necessities established in Title IX, the law stipulates that higher education needs to consider the legal gender of students, now including a nonbinary gender. We argue that the role of the admissions process is important, since it contributes to promoting more-inclusive environments in higher education institutions. Among good practices in data gathering is the act of updating self-reported sex/gender information to include a nonbinary category. On the other hand, making a nonbinary gender category available as an alternative among the other available categories is another step in the right direction in administrative processes such as enrollment and registering for courses. Another aspect is to find ways for information to be consistent across different IT systems. The aim is to have information that contributes to a better understanding of the needs of minority groups, thereby focusing institutional actions on supporting their trajectory in higher education.

BRIEF OVERVIEW: MAIN INITIATIVES FOR THE INCORPORATION OF THE NONBINARY SEX IN DATA IN CHILE AND IN HIGHER EDUCATION

The actions to incorporate the category of nonbinary sex is evident on multiple levels. These levels include, among others, the national level, higher education system level, and, in this particular experience, the University of Chile. On a national level, there are laws and surveys carried out by the National Institute of Statistics (Instituto Nacional de Estadística; INE) for the census of the population. On a more specific level, there is the implementation of the use of a preferred name in the higher education system during the university admissions test. Specific to the University of Chile is Mara Rita, a landmark procedural instruction in the university community

when it comes to preferred names, where people, via an institutional process, can change their legal name for their recognized preferred names.

Regarding national legislation, Law No. 21.120 stands out because it recognizes and protects the right to gender identity (Right to Gender Identity [Derecho a la Identidad de Género], 2018) via a voluntary rectification of legal sex and name. This regulation aims to answer the lack of legal recognition of gender identity when that identity differs from the sex assigned at birth (National Library of Congress of Chile [Biblioteca del Congreso Nacional de Chile, BCN], 2022). In this regulation, gender identity is considered to be the personal and internal conviction to be male or female as the person perceives themselves, which may or may not coincide with the sex and name on their birth certificate (Art. 1). This establishes the right to be recognized and the protection of the expression of gender identity, as well as the person's freedom to develop and to be recognized and identified by that expression of gender identity. Higher education institutions, therefore, allow people to register and rectify their name and sex a maximum of two times. About the technical elements, the law stipulates that, once the legal sex has been rectified, all instruments (including IT data) where a person figures in official registries must match said identity (Art. 4) (INE, n.d.). Due to Law No. 21.120, all systems for registering information must be updated to include the option of a nonbinary sex. The Civil Registry (Registro Civil; the office responsible for registering births and issuing official national and international identification documents) has had to face the major challenge of incorporating this change in their databases. Since this change is a legal requirement, the law obliges higher education institutions to incorporate these changes in their data registration and storage systems.

INE, the organization responsible for producing the country's national statistics (INE, n.d.) has generated standards for measuring sex, gender identity, and sexual orientation when surveying homes and conducting censuses of the population. These standards are part of their methodological guidelines. In this context, these guidelines have been useful for governmental and nongovernmental organizations that measure and report on these disintegrations. The reach of the standard is limited, however, since it was designed for the evaluation and implementation of surveys in homes and for the census of the population. Thus, the use of this standard for other types of statistical operations and administrative registers requires an adaptation and methodological evaluation.

Among the importance of measurements taken under these standards, INE underlines that this information must take on a central role in responding to the demands for recognition by citizens and by LGBTIQ+ organizations. Adopting these measures that are more inclusive of sexual minority groups strengthens the national statistics system driving it toward the production of statistics that better evidence, with greater precision, the socioeconomic and cultural reality of the country.

INE distinguishes between sex and gender identity as concepts that are both different and interrelated. INE indicates that sex refers to people's sexual characteristics, such as sexual and reproductive organs, hormones, genes, and chromosomes. Meanwhile, it indicates that gender is a multidimensional concept in which cultural aspects intervene, as do social and self-identification aspects, about the differences that manifest in people related to certain identities, and expressions that are female, male, and nonbinary (Australian Bureau of Statistics, 2020; National Statistical Office, Canada, n.d.).

University Admissions Process

In Chile, access to the main universities is principally via a unique national admission system (National Admission System [Sistema Único de Admisión]); students must take the standardized university entrance test called Higher Education Admission Test (Prueba de Acceso a la Educación Superior, PAES). Since the year 2018, the Department of Evaluation, Mediation, and Educational Registrar (Departamento de Evaluación, Medición y Registro Educacional, DEMRE), which is the Chilean organization responsible for writing and carrying out PAES, allows students to take the exam under a preferred name. DEMRE states that, regarding principal guidelines for gender identity recognition and protection (DEMRE, 2018), the student taking the test must, upon registration, declare if they have a preferred name different from their legal name. Additionally, they must complete the document entitled "Declaración y solicitud de utilización de nombre social" (Declaration and request for use of a preferred name) (DEMRE, 2024a). If a student indicates a preferred name, this is the name used when calling students to the room to take the PAES exam. Their legal name will still appear in official documents, however, and in the system for registration purposes, notification of the exam results, university acceptance, and enrollment. The legal name will show in official documents only once the individual makes the change at the Civil Registry; the Civil Registry will then issue a revised birth certificate under the terms set out by law (DEMRE, n.d.).

Regarding the people enrolled in the PAES exam to access higher education and who requested the use of a preferred name, 432 people, out of a total of 287,599 enrolled people, requested the use of a preferred name in the 2023 exam (DEMRE, 2024b).

Experience of the University of Chile: Gender Diversity and Data Registration

The University of Chile collects its information through the procedural instruction for a name change, Mara Rita, and through some surveys directed at students. The recognition of a preferred name started at the University of Chile in 2017. In this public university, ranked one of the best in Latin America according to QS World and Shanghai University Rankings, a group of students in the government faculty drove forward the recognition of sex–gender diversity, and established the need for a preferred name, as a way of reflecting their gender identity, in the students' academic records. The procedural instruction Mara Rita began December 2017 and was updated in 2021; it establishes that a preferred name can exist at all levels in the university, and that those who choose a preferred name will have that name shown in all university registers. The members of the university community, therefore, can request that the university use their first name or preferred name internally for matters such as subject registration, attendance lists, and ID cards, among others.

Thus, any person with a link to the University of Chile can request that the university use their preferred name that conforms to their gender identity and/or expression; they are also allowed to register names that might or might not be gendered. This process is simple and takes up to 60 working days for all changes in the person's university documents and registrars to be carried out. Thereafter, the preferred name is used in class lists, identification in tests and exams, institutional email, digital platforms, university ID cards, institutional communications, internal candidatures, and any other written information from the university. Also, as a minimum requirement, all members of the university

community must (in oral or written communication) address the person under their preferred name and gender identity, showing the respect and dignity that each person deserves.

Since 2018, almost 200 members of the university community have requested a change to a preferred name, increasing gradually from 5 requests in 2018 to more than 60 requests in 2023. It is primarily students who make these requests across all areas, but the requests are more frequent in social sciences and humanities. Few requests have come from academic and nonacademic staff.

In the University of Chile, the Mara Rita procedural instruction, which was established in a public higher education institution, states that it is the minimum required and that it is only correct that there is respect for gender identity and expression, under the understanding that (1) this establishment is an intellectual reserve of the nation characterized by its social conscience, (2) it is critically and ethically responsible, (3) it tends to the common good and the formation of citizens, (4) it is inspired by democratic values, (5) it is guided by the principle guidelines of free thinking and expression, (6) it reflects pluralism, (7) it is an attitude that is reflexive, open to dialogue, and critical in the exercise of intellectual tasks, and (8) it contributes to the formation of people with ethical values, civic and social solidarity, and respect for others (University of Chile, 2021, 4).

Student Affairs and Admissions Process Surveys in the University of Chile

Every year the University of Chile sends out the Student Characterization Form (Formulario de Caracterización Estudiantil, FOCES), which is a form for characterizing the student body. Among the purposes is to describe the conditions of the student body, and to identify the particularities of diverse priority groups. FOCES started as a pilot program in 2018, and 2019 was its first official academic year. It is useful to develop support mechanisms proper to the real needs of the minority groups, thus favoring their trajectory in the university system (FOCES, 2020). To characterize the students, the FOCES survey asks about their sex and gender identity. Based on the self-declared information collected by FOCES, 50.8% of students surveyed declare themselves as female gender, and 44.2% as male gender. In addition, 1.7% declare themselves to be nonbinary, 0.9% do not know or prefer not to answer, and 0.3% belong to the other-gender category (FOCES, 2022).

Undergraduate students entering the University of Chile for the first time are required to answer an admission survey. In 2024 this survey will incorporate questions about legal sex, including a nonbinary category, as well as a second question about gender identity.

RESULTS AND ANALYSIS

Strategies for Inclusive Data in Higher Education

In general, data gathering in higher education is not always inclusive of gender diversity and sexual minorities (NASEM, 2022). Some higher education institutions, however, have started to generate their own strategies for collecting information about the university community, including information on the nonbinary category. Until now these efforts have focused on the characterization of the student body, this being the mechanism most commonly used when designing surveys. In some cases, also,

there have been attempts at adapting technology to register information in databases and software.

In Chile the feminist movements, and movements of the sexually diverse groups, have raised their demands; among the fruits of their labor is the enactment of the gender identity law of 2019. Specific to the higher education system, the initiatives are related to the recognition of greater sexual diversity that goes further than the traditional definition of the binary sexes. Universities have started to recognize the use of a preferred name; in half of the public universities some mechanisms allow people to choose what they want to be called, and how they want to be identified, within the institutions. Nonetheless, to comply with the gender identity law, all higher education institutions have put actions in place to permit the recognition of a preferred name.

In Chile, the integration of indicators of gender diversity is in the first stages of development. That is, it is the continuing focus on the means and mechanisms for gathering information that, in reality, captures greater representation. Naturally, these first steps refer to the conceptual delimitation of the categories of sex and gender identity, and how those identities can be operationalized for measurement purposes. These conceptual and methodological definitions are incredibly relevant to the impact on data construction and access to those data. These considerations evidence that sex and gender identity are different concepts and are not interchangeable.

The appropriateness of gathering data that reflects sexual orientation, and the respect for privacy and confidentiality of sensitive information, has become a talking point in Chile. Informed consent is not required for questions on sex and gender identity to be part of an institutional database, however. As good practices in data management recommends, questions regarding sexual orientation should be used in direct surveys belonging to specific studies, and informed consent should be required. Until now efforts have focused on gathering and storing information, but not as much effort has been spent on generating practices for use of the data to benefit those populations that are subject to discrimination and gender-based violence in daily life, while at the same time respecting their confidentiality and privacy.

Challenges of Incorporating Nonbinary Sex in Data

Sex, gender identity, and sexual orientation are key indicators of the social diversity of a community. Until now the gathering and registration of these indicators has been scarce, both globally and in higher education. That scarcity has considerably hindered the possibility of better understanding populations belonging to gender diversities and sexual minorities, groups that are subject to discrimination and that rarely receive the opportunity to reflect their true identity in information registration systems. In this sense, all those initiatives that work to collect information about these characteristics of the population will allow the improvement of public policy and the advancement in equal opportunities—this implies recognizing differences and demanding respect and acceptance.

Until now the barriers or difficulties of incorporating demographic information on LGBTIQ+ populations are given in general terms due to theoretical, methodological, and technological aspects. The theoretical dimension is related to the understanding that sex is not solely made up of the male/female binary categories and that gender identities are plural and broad, and permit

a wider view than that of sex. That is to say that the dimensions of neither sex nor gender can be reduced to the categories of male/female or masculine/feminine.

Another barrier that exists in the process of inclusively gathering information on diversity and sex-gender minorities, is methodological, and is related to the use of the concepts of sex, gender, and sexual orientation as if they were synonymous and interchangeable. Feminist theory has done a good job informing us about these differentiations; today there are lobby groups who recommend how these concepts should be used—each group with its own definition—and its specific form of measurement. This is very important because the measurement and form in which this information is gathered and analyzed is dependent on the definitions themselves. This data gathering should have shared criteria as a starting point and minimum standard, thus allowing the data to be analyzed comparatively.

Concerning the technological barriers, there are some important weaknesses. The reason is that IT systems are not yet sufficiently prepared to incorporate the composition of the dimension of sex, permitting a true reflection of sexual diversity. Systems that are formatted to register male and female as 0 and 1, respectively, when faced with a third category of nonbinary sex, would have to codify a third element (which could be 2), so we would have 0, 1, and 2. On the surface, this seems like a minor change but it implies an important change in IT systems that register information. Lately, some recommendations of good practice have been established; these practices are consistent with the definitions (both conceptually and methodologically) of sex, gender, and sexual orientation, so that the software used by higher education institutions can effectively register, store, and access information on sexual minorities (AACRAO, 2019).

A brief comparison of the data-gathering practices according to the nonbinary sex category that exists between different institutions (national and international) follows:

- Data gathering in the United States centers principally on the student body. Interestingly, in the case of University of Chile and the procedural instruction Mara Rita, the use of preferred names extends to the whole university community, meaning the student body, academic staff, and nonacademic staff. The focus on academic and nonacademic staff is a distinctive characteristic, given that until now the focus in higher education has been primarily on students.
- The United States gathers information on the nonbinary sex category through surveys and academic studies. Chile also uses surveys. Particularly in the University of Chile, this new nonbinary sex category is being incorporated directly into the records that feed the institutional databases.
- The discussion in the United States is more centered on how to measure sexual diversity and gender identity, and on clarifying the concepts. In contrast, Chile is recently beginning to discuss and witness the first practices of registration of preferred names; preferred names are a concept of sex and gender as nonbinary. The University of Chile case is a pioneer forerunner for the whole university system and has a long history of advancing gender equity in Chilean higher education.

The United States has a higher level of development than Chile does when it comes to information security and data confidentiality of minority groups. In contrast, Chile still has a long way to go in terms

of data security. This is partly because Chile's efforts are currently focused on collecting information on nonbinary populations, which has left data security as a secondary concern for now.

Good Practices in the Collection of Data on the Nonbinary Sex

"I don't know how to address them, or where to go to get information about students I have who are different." This statement seems to be more common than we would expect among higher education administrators. From addressing a person by their name to supporting those who may be transitioning in how they define their gender, there is a whole spectrum of situations that reveal the need for having more institutional communication channels, as well as more-inclusive information systems where the same people can be represented in a broader sense than that of the nonbinary sexes. In the United States, educational communities have already integrated pronouns as part of a person's identification. And today other types of initiatives have come to complement gender markers, allowing others to identify individuals according to their preference. In Chile, the initiatives are more recent; for example, the use of pronouns is not very widespread but it is starting to be incorporated into some information on academics.

So, how to move forward? This seems to be a gigantic task when thinking about the weight of social and cultural reality faced by minority populations. The challenges are not only in information gathering, but also in how the higher education systems register the information, how every individual's privacy is protected, and what will be the final use of the data.

The influence of the political demands by feminist and sexual minority groups has brought about the establishment of laws and regulations that recognize and protect a greater representation of sex-gender identities. Through these laws and regulations, these movements have even managed to influence a sphere that has not always been addressed, as in the case of data. An example is that, upon the right to change to a preferred name by law or the possibility of marking a third alternative of nonbinary sex, important challenges become evident and show that the social demands made by the aforementioned LGBTIQ+ groups are ahead of the IT systems, and their demands for social recognition move far faster than can be answered by the IT systems and the institutions themselves. In the presence of the challenge of obtaining more-inclusive data, strategies have appeared that could be better ways forward, and might serve as an example of good practice for other higher education systems.

The starting point should be combining criteria regarding the content or definition of the concepts, in addition to which dimensions to observe; being clear about the implications of each dimension is critical when it comes to designing how to measure said concepts in practice. Next, we summarize some of the concepts used in the framework of initiatives used to face the nonbinary variable in working with data in Chile.

The first concept refers to the registered legal sex. Sex is usually understood as the administrative register of biological sex (male/female) assigned at birth. Declaratory or registered sex can also be used according to the law (Law No. 21.120), which recognizes and protects the right to a gender identity.[4] It is for this reason that, when the variable of sex is referenced, the declaratory or registered

4 . The University of Chile recognizes a preferred name via the procedural instruction called Mara Rita (University of Chile, 2021).

sex must be considered, admitting in this case the categories of male, female, and nonbinary (INE, 2022, 19).

The second concept is gender identity, which refers to a social construction of social and cultural differentiation that expresses feminine, masculine, and nonbinary. This concept includes gender identity (personal experience) and gender expression (expression of social interaction). These dimensions are dynamic over time. Gender identity that coincides with the biological sex assigned at birth is defined as cisgender, while the gender identity of a person that is not that of the sex assigned at birth is defined as transgender. Not all transgender persons identify with the binary sexual assignation male/female. So, in addition to transmasculine and transfeminine persons, a trans-nonbinary person is also included.

Finally, a third concept that is being used is sexual orientation. Sexual orientation refers to the form in which a person identifies their affectionate or sexual attraction to another according to their sex or gender (INE, 2022, 23). This question is recommended for specific studies that aim to characterize and estimate sexually diverse groups, and whose methodological design permits responses from a surveyed person (i.e., self-identification), thus guaranteeing confidentiality and privacy of the person in the moment with informed consent (INE, 2022, 31).

Institutions need to consider the relationship between the concept and the form used to gather information to effectively capture data about sexual minority populations. This is shown in Figure 1, which provides a brief look at how the concepts are measured according to their definitions.

Figure 1. Relationship between Concepts and Type of Measurement

Sex	Gender Identity	Sexual Orientation
Male	Female	Gay
Female	Male	Lesbian
Nonbinary	Transgender female	Bisexual
	Transgender male	Heterosexual
	Transgender nonbinary	Other
	Other (queer, fluid, agender)	

Source: INE 2022.

While the United States has made significant strides in integrating pronouns and other initiatives into educational communities, Chile is in the early stages of such developments. The task at hand appears daunting, considering the weight of social and cultural realities faced by minority populations. The influence of political demands from feminist and sexual minority groups, however, has led to the establishment of laws and regulations recognizing diverse sex-gender identities, even influencing the sphere of data collection. The challenges posed by these demands often outpace the responsiveness of IT systems and institutions. Despite these obstacles, strategies for obtaining more-inclusive data have emerged as potential models for higher education systems. A crucial starting point involves combining criteria for defining concepts, considering dimensions to observe, and understanding the implications of each. As illustrated in Figure 1, this approach can guide the practical measurement of nonbinary variables, offering a foundation for future advancements in data collection practices within educational institutions.

CONCLUSIONS

The strategies outlined in this article highlight the imperative for a steady commitment to inclusivity within the higher education sector. By incorporating the nonbinary sex category into the institutional databases of a Chilean public university of excellence, this study adheres to global calls for diversity. It creates an environment where everyone feels acknowledged and valued.

Incorporating institutional data is crucial in shaping strategies for inclusion. It enables organizations to track their progress, identify areas for improvement, and make informed decisions. Therefore, it is apparent that adding the nonbinary sex category should not be viewed as a mere checkbox task on a diversity list. Instead, it should be seen as a deliberate, data-driven effort to effect lasting change.

The reflections shared in this article highlight the importance of ongoing collaboration and sharing of best practices worldwide. As higher education institutions work toward including the nonbinary gender category, a joint effort to exchange experiences, successes, and challenges will speed up progress. This conclusion emphasizes the positive contribution to establish partnerships among different agencies and institutions of higher education to implement good practices regarding the use of gender perspective in the work with data. Collaborative work between institutions can be a powerful strategy to achieve this goal. For instance, the success of associative work within the AACRAO's officers in the United States and the initiation of a survey initiative by an interministerial group exemplify effective collaborative models recommended as best practices.

The recommendations highlight that the information collected on nonbinary populations should be done in an integrated manner so that information on gender identity is consistent across all data systems and information collection sources. The latter is relevant because higher education institutions tend to count with different means to record the demographic data of their community. Collecting information on nonbinary populations in an integrated manner is crucial. Integrating data collection systems can standardize data after defining key concepts of sex and gender. Standardizing key terms makes it easier to collect and store data, which can improve its quality. Having integrated information systems adds value by aligning the work within higher education institutions.

Since nonbinary individuals are often victims of discrimination and gender-based violence, it is crucial to ensure the security and confidentiality of their personal information. Therefore, it is highly recommended that institutions create protocols that govern the use, protection, and access to information concerning these vulnerable populations.

After reviewing international literature, two major initiatives have been identified. The first initiative pertains to gender identity laws that legally recognize the existence of a third category of sex at the country level: nonbinary sex. The second initiative involves the creation of statistics and data collection systems on minority populations for which information was previously unavailable. Legal recognition initiatives seem to emerge first, followed by the need to record data on these sexual and gender identity minority populations that emerge as a result of this new legal framework. This information suggests that institutions can prepare themselves in advance to adapt to these new laws by adapting information systems to the challenges posed by these gender identity laws once they are enacted in their respective countries.

Another recommendation is to incorporate a gender perspective into institutional research. Doing so can improve data analysis capabilities by emphasizing the importance of using data-driven strategies that contribute to closing the gender gap in higher education. Additionally, taking a gender perspective can be beneficial because it considers multiple factors that impact reality and lays the groundwork for collaborative work with other specialized areas or offices that work on gender issues. This approach can help to develop a better understanding of the reality of university work, which can lead to a more accurate interpretation of the gender-inclusive data. In short, incorporating a gender perspective can be an effective way to improve institutional analysis.

The University of Chile has been at the forefront of institutions that have incorporated the gender perspective into their policies. As a result, it has established a nonbinary category in its institutional data. The university has a long-standing commitment to gender equality and continues to make steady progress within and in the Chilean higher education system. Given its significant influence in the rest of the country, this commitment can potentially shape the gender policies of other institutions in Chile.

Future research could provide deeper insights by exploring the long-term impacts of gender-inclusive data practices on the academic and social experiences of gender diverse individuals.

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Building More-Inclusive Institutional Research for Disabled Populations in the Campus Community

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Abstract

Traditional institutional research systems may limit who is counted and how they are counted because of limitations associated with disability classification, self-disclosure of disability status, and accessibility limitations inherent within some data-collection methods. As postsecondary institutions work toward improving access for disabled groups, the ways in which they collect and report information related to this population becomes even more important. The purpose of this article is therefore to explore current issues faced by institutional research offices when conducting research that includes or is about disabled people, and to propose questions for institutional research professionals to consider. After providing an overview of disabled subpopulations on campus, we focus on four areas: (1) identifying and discussing or defining disabled individuals, (2) ensuring the ethical and equitable treatment of disabled individuals, (3) using accessible methods of data collection, and (4) reporting on disabled populations and disseminating results. We provide a supplementary resource for institutional research professionals in an appendix. This appendix includes questions to consider during the planning and research development phases, as well as the data analysis and dissemination phases.

Keywords: institutional research, disability, inclusion, accessibility

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INTRODUCTION

According to the World Health Organization (WHO; 2024), 1.3 billion people across the world, or roughly 16% of the world's population, have a significant disability. Compared to a decade ago, the number of disabled people has increased. This increase is a result of a variety of factors, including an increased world population, advances in medicine and health care worldwide that have increased life expectancy, and greater awareness—and subsequent diagnosis—of cognitive, mental health, and other health disabilities (WHO, 2024; Young, 2023). It is important to note that a 16% worldwide disability rate is likely an underestimation due to lack of reporting, lack of diagnosis despite meeting disability criteria, and variation of disability criteria and definitions across the globe (Lauer & Houtenville, 2018; McDermott & Turk, 2011). Although no statistics clearly and consistently outline how many disabled students, faculty, and staff are enrolled or work in higher education, there are some approximations from different sources, mainly about students. For example, the U.S. National Center for Education Statistics (2023) noted that roughly 21% of U.S. undergraduate students identify as disabled, and Parsons and colleagues (2020) noted that 14% of Canadian undergraduates identify as disabled. Similar to concerns about underestimations regarding world rates of disability, the same can be said for determining the number of disabled students, faculty, and staff on campus, where lack of reporting and variation of disability criteria and definitions also impact rates.

Providing accurate, contextualized, and useful data about students, faculty, staff, and other postsecondary populations is central to college and university improvement and to the mission of institutional research (IR) professionals and offices (Association for Institutional Research [AIR], 2019). With regards to disability specifically, however, institutional researchers sometimes limit who is counted and how they are counted because of vagaries in disability classification, self-disclosure of disability status, and accessibility limitations inherent to some data-collection methods. In fact, Hurtado and colleagues noted the need for consideration of disabled populations in institutional assessments as early as 2002. Unfortunately, limited data have been collected about disabled populations at institutional, state, provincial, national, and international levels since that time, and much of it is of questionable quality (Blaser & Ladner, 2020). As a result, decisions that have implications for disabled students, faculty, and staff are made without current data, and it is unclear sometimes whether disabled people are being considered at all (Leake, 2015).

As postsecondary institutions continue to work toward improving access for disabled groups on campus, the ways in which they collect and report information related to this population becomes even more important. To date, postsecondary disability has received little attention within the IR literature (Madaus et al., 2018; Vaccaro et al., 2015). Although some recommendations for collecting institutional data on disability exist (see Cox & Nachman, 2020; Madaus et al., 2020), only Vaccaro et al. (2015) have focused on this topic in IR journals. Given the scarcity of work in this area, the purpose of this article is to explore current issues faced by IR offices when conducting research that includes or is about disabled people, and to propose questions for institutional researchers to consider. After providing an overview of disabled subpopulations on campus, we focus on four primary areas: (1) identifying and discussing or defining disabled individuals, (2) ensuring the ethical and equitable treatment of disabled individuals, (3) using accessible methods of data collection, and (4) reporting on disabled populations, and dissemination of results.

OVERVIEW OF DISABLED SUBPOPULATIONS ON CAMPUS

Hansen and colleagues (2022) reflect on how their Institutional Research and Decision Support office developed an equitable framework for their work. They note, "Applying an equity lens required that we—at a minimum—continue to disaggregate data to help decision-makers understand inequities in access and outcomes by faculty, staff, administrator, and student groups (e.g., first generation, gender, historically marginalized, under-resourced, low-income, nontraditional, transfer)" (p. 96). As a collective, disabled students, faculty, and staff are a Like group that has been marginalized, in part due to a tendency to aggregate data across disability diagnoses or profiles. Furthermore, even when disabled people are disaggregated by disability diagnosis or profile, many disabled faculty and staff members are often overlooked (Higbee & Mitchell, 2009). Although disabled students are undeniably important, rarely are disabled faculty and staff the focus, unless it relates to enacting accommodations, disability-related classroom climate, universal design for instruction and learning (UD-IL), or disability-related professional development. This is also true of research on disability (Madaus et al., 2018). It is therefore important that IR professionals explore disability from the positions of multiple campus subpopulations (e.g., specific disability diagnoses or profiles; students, faculty, or staff), and that they also consider to what extent these subpopulations are being examined.

Students

As it relates to disabled students, research efforts have largely focused on providing accommodations for access via disability resources offices (Madaus et al., 2018). Despite the importance of research on accommodations, it is only one aspect of the disabled student experience in higher education. Moreover, if one believes that college completion is the outcome measure of greatest import, the predictive ability of accessing accommodations is limited (Newman et al., 2021). Although an exhaustive list of potential topics to explore related to disabled students is not possible, some include campus belonging, engagement in high-impact educational experiences, post-college outcomes, online versus on-campus educational outcomes, and academic service use (e.g., writing centers, career services).

Faculty and Staff

As noted, far less is known about disabled faculty and staff compared to what is known about disabled students. Evans et al. (2017) suggest that, when conversations about disabled faculty and staff do take place, they are typically about preventing workplace injury and managing return to work or accommodations. Although it is meaningful to examine disabled faculty and staff as a collective group and to position this group as employees on campus, consideration should also involve examining these groups separately, because of their distinct roles on campus.

A small body of literature has specifically examined disabled staff on campus, such as student affairs professionals (Brewster et al., 2017; Daddona & Harold, 2018; Higbee & Mitchell 2009). More often, the focus is on experiences of compassion fatigue and burnout within this group (Anderson, 2021; Mullen et al., 2018; Walker et al., 2023). While the literature about staff is quite limited, a growing body of work has supported the development of a greater understanding of the rate of disability and

the experiences of disability among faculty members. In the Canadian context, Statistics Canada (2020) data from the Survey of Postsecondary Faculty and Researchers revealed that the disabled faculty/professors, instructors, teachers, or researchers[1] are among the groups that experience the highest levels of harassment, ableism, and unfair treatment within the postsecondary environment. Much of the literature pertaining to disabled faculty has focused on ableism within the academy (Brown, 2021; Dolmage, 2017), as well as mental health challenges and disabilities (Kerschbaum et al., 2017; Price, 2011).

Although a thorough examination of the topics related to disabled faculty is outside the scope of this article, suggestions for areas of inquiry or variables that IR professionals might consider include faculty accommodations (American Association of University Professors, 2012), barriers to academic employment (Levitt et al., 2023), burnout, and disclosure. Although some literature about disabled faculty and staff exists, it is fairly limited in comparison to literature about disabled students. Furthermore, discussion and literature about disabled faculty and staff within the realm of IR is essentially nonexistent. There is a need within the IR literature and practice to disaggregate disability data according to students, faculty, staff, and other subpopulations on campus. Due to the limited understanding of disabled higher education employees at the international, national, and institutional levels, many research questions exist that can be explored by IR professionals to support educational missions. A few broad questions that might be of particular interest include, "Do differences exist between retention and promotion rates of disabled faculty and staff and nondisabled faculty and staff?," "Do salary disparities exist between disabled and nondisabled faculty and staff?," and "Do student evaluations of disabled faculty differ significantly from their evaluations of nondisabled faculty?" Answers to these questions have potential to inform decision-makers as they develop equitable and inclusive policies and procedures.

IDENTIFYING AND DISCUSSING OR DEFINING DISABLED INDIVIDUALS

Defining Disability

The language around disability is constantly evolving. Disability can be conceptualized in different ways, depending on context such as country, since there are differences in political and cultural characteristics. Furthermore, there can be differences in definitions within countries, depending on who or which group is being cited. In the United States, definitions of disability are provided within Section 504 of the Rehabilitation Act (U.S. Department of Education, 1973) and the Americans with Disabilities Act (ADA) (1990). According to the ADA,

> The term "disability" means, with respect to an individual—(A) a physical or mental impairment that substantially limits one or more of the major life activities of such individual; (B) a record of such an impairment; or (C) being regarded as having such an impairment. (Sec. 12102)

Furthermore, according to the ADA (1990), an individual with a disability is someone who,

1 . This group also includes those who are sessionals and part-time lecturers. It excludes teaching assistant and research assistant positions that are part of an academic program.

> with or without reasonable modifications to rules, policies, or practices, the removal of architectural, communication, or transportation barriers, or the provision of auxiliary aids and services, meets the essential eligibility requirements for the receipt of services or the participation in programs or activities provided by a public entity. (Sec. 12131)

In Canada, to define disability one might turn to some different sources such as the Accessible Canada Act (2019), the Accessibility for Ontarians with Disabilities Act (AODA) (AODA, 2005, S.O. 2005, c.11), the Employment Equity Act, and sources such as Statistics Canada and the Social Sciences and Humanities Research Council. In many cases, researchers will draw on the definition within the Accessible Canada Act, which became law in 2019 and is aimed at creating a barrier-free Canada, particularly for disabled people. The Act defines *disability* as

> any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment—or a functional limitation—whether permanent, temporary or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person's full and equal participation in society. (Sec. 2)

Although comparing various formal and legal definitions of disability is not within the scope of this article, we do want to highlight that considering whether and how to define *disability* within IR work is important. The decision to include a definition and then to use a specific definition, perhaps based on legal understanding of disability, is going to include or exclude certain participants.

We reviewed a small sample of higher education student surveys that are often used to examine students within the campus context. We found that none of these surveys included a definition of disability. With that being said, we encourage IR professionals to consider including some form of a definition, so that participants are aware of how the researchers have conceptualized the term.

Person-First vs. Identity-First Language

An example of the way in which language can be contested pertains to the use of person-first and identity-first language (Wooldridge, 2023). Person-first language means that the individual is acknowledged before the disability or condition (e.g., person with a disability, person with autism[2]). The argument is that, with person-first language, the individual is being recognized as a whole person who has value and worth before their condition. As Brown (2011) points out,

> From that…perspective, you would think we would support the use of person-first language, because we want to be seen as people with equal rights, value, and worth to non-Autistic people. But we don't. Because when people say "person with autism," it does have an attitudinal nuance. It suggests that the person can be separated from autism, which simply isn't true. (para. 8)

With identity-first language, disability is brought to the forefront (e.g., disabled person, autistic person). With this approach, there is an opportunity for disabled individuals to claim *disability* as an identity and source of pride, to diminish the negative connotations that the term disability has traditionally held (Wooldridge, 2023). Brown (2011) argues that,

2 . The autistic community has also not yet reached consensus regarding the capitalization of the word *autism* as related to person-first and identity-first language. Professionals are encouraged to research and use the conventions preferred by those with the lived experience in the community they wish to know more about.

> when we say "Autistic person," we recognize, affirm, and validate an individual's identity as an Autistic person. We recognize the value and worth of that individual as an Autistic person—that being Autistic is not a condition absolutely irreconcilable with regarding people as inherently valuable and worth something. (para. 18)

These different approaches mean that the preferred use of language can differ from person to person, illustrating the nuances within this population. Recognizing that there are differences in preferred language can allow IR professionals to then make changes in their work that acknowledges this complexity. For example, when collecting data about disabled students, faculty, and staff, or when disseminating findings related to them, IR professionals can include an acknowledgement clarifying this complexity of person-first versus identity-first language, and indicate what their approach to language will be in the data collection and dissemination. Will they be using person-first or identity-first language? Are the different approaches being used interchangeably? If one approach is selected, why? To model this behavior, the authors of this article elected to use identity-first language to acknowledge disability as an identity and cultural group. It is acknowledged that the disability community has different perspectives on the use of identity-first language and the authors respect these perspectives.

Models of Disability

There are several different models or approaches to conceptually viewing disability. One is the medical model, which views the disability as a part of the person who requires medical care or treatment. From this perspective, disability is viewed as something that needs to be treated or fixed. While the medical model views disability as something wrong with the individual, the social model of disability views disability as something that has been socially or environmentally created. Other models also exist. For example, the International Classification of Functioning, Disability and Health uses a biopsychosocial model that considers the role of biological, individual, and social factors. There is also the relational model and the human rights model.

The point here is that the approach or model of disability that is informing the work of IR professionals will have several implications. For example, some participants might not identify with disability in the way that a medical model lends itself to. This means that IR professionals could be analyzing and interpreting data that do not fully capture the disabled population on campus. This is one factor that contributes to the underestimate of disabled campus populations.

Asking Questions about the Presence and Type of Disability

Institutions frequently collect information from and about faculty and staff through a variety of methods including course evaluations, applications, performance evaluations, focus groups, institutionally developed surveys, and national surveys (e.g., Higher Education Research Institute Faculty Survey, National Faculty and Staff Health Assessment, National Study of Postsecondary Faculty). Of note is that, apart from the National Faculty and Staff Health Assessment, the national surveys do not inquire about disability as a demographic. More curious is that even the National Faculty and Staff Health Assessment asks about only a limited number of diagnoses (e.g., diabetes, migraines).

For this article, we reviewed a sample of five higher education student surveys, three from the United States and two from Canada. We found that questions about the presence of disability or impairment were consistently present, but that there were different ways of asking these questions. We found that these surveys also consistently asked about the type of disability or impairment; these questions were asked in different ways as well. These disability-related questions are presented in Table 1.

Table 1. Examples of Disability-Related Questions and Response Options in a Sample of Higher Education Student Surveys

Survey Instrument	Question Stem(s)	Response Options
National College Health Assessment (NCHA) through the American College Health Association (ACHA)[3]	This part of the survey will help us understand your personal characteristics. There may be limitations to the response options provided, and the response categories offered may not represent your full identity nor use the language you prefer. We care about all identities and experiences and ask that you indicate which choice best describes you. Do you have any of the following?	• Attention-Deficit/Hyperactivity Disorder (ADD or ADHD) • Autism spectrum disorder • Deaf/hearing loss • Learning disability • Mobility/dexterity disability • Blind/low vision • Speech or language disorder
Canadian Graduate and Professional Student Survey (CGPSS) through the Canadian Association of Graduate Studies (CAGS)	Do you self-identify with any disability or impairment? Please specify which one(s) (select all that apply)	Yes/No/I prefer not to respond • Sensory (vision or hearing) • Mobility • Learning (e.g., ADHD, dyslexia) • Mental health (e.g., depression, bipolar) • Autism spectrum (e.g., autism, Asperger's) • Chronic (e.g., Crohn's, colitis, multiple sclerosis) • A disability or impairment not listed above, please specify • I prefer not to respond

3 . We have included the question that is in the demographics section at the end of the survey. Earlier in the survey, there are other relevant questions such as under the "Chronic Conditions" section, which asks this question: "Have you ever been diagnosed by a health-care or mental health professional with any of the following ongoing or chronic conditions?" The 40-response options list a range of conditions, including many that are mental health–related and others that are asked about in the demographic section.

Survey Instrument	Question Stem(s)	Response Options
1st-year Students Survey through the Canadian University Survey Consortium (CUSC)	Do you have any of the following disabilities/impairments?	• Mobility/dexterity • Hearing • Speech • Vision (e.g., blindness, low vision) • Learning/memory (e.g., learning disability) • Other physical disability • Neurodivergence (e.g., autism spectrum, attention deficit disorder) • Mental health • Chronic conditions (e.g., multiple sclerosis, Crohn's, autoimmune) • Other (please specify)
Student Experience in the Research University (SERU) through the SERU consortium	Do you have any conditions or disabilities that significantly affect your experience as a student at [university name], including how you learn or perform academically, interact with others, or access campus?	Yes/No for each of the following: • Physical disability or condition (e.g., mobility limitation, sensory condition) • Learning disability or condition (e.g., dyslexia, speech disorder) • Neurodevelopmental/cognitive disability or condition (e.g., autism, attention deficit/ hyperactivity disorder, brain injury) • Emotional or mental health concern or condition (e.g., depression, anxiety, posttraumatic stress disorder) • Other disability or condition. Please specify

Survey Instrument	Question Stem(s)	Response Options
National Survey of Student Engagement (NSSE) through the Center for Postsecondary Research	Do you have a disability or condition that impacts your learning, working, or living activities? Which of the following impacts your learning, working, or living activities? (Select all that apply)	Yes No I prefer not to respond **Sensory disability** • Blind or low vision • Deaf or hard of hearing **Physical disability** • Mobility conditions that affect walking • Mobility condition that does not affect walking • Speech or communication disorder • Traumatic or acquired brain injury (TBI) **Mental health or developmental disability** • Anxiety • Attention deficit or hyperactivity disorder (ADD or ADHD) • Autism spectrum • Depression • Post-Traumatic Stress Disorder (PTSD) • Another mental health or development disability (schizophrenia, eating disorder, etc.) **Another disability or condition** • Chronic medical condition (asthma, diabetes, Crohn's disease, etc.) • Learning disability • Intellectual disability • Disability or condition not listed

Presence of Disability

Although not an exhaustive list of student surveys, there are a few things of note that would be of interest to IR professionals. First, with regards to the Canadian Graduate and Professional Student Survey, there is acknowledgement that participants are self-identifying, and there is use of the terms *disability* or *impairment*. This broadens the approach to disability toward a social model. A participant could select "yes" because of the inclusion of the word *impairment*, and they might not have responded affirmatively if only the word *disability* was used. Second, inclusion of the term *self-identify* in this survey is noteworthy because some instruments might include a question stem such as, "Have you been diagnosed with any of the following conditions?" Incorporating language that centers the participant in decision-making of their experience is more in line with a social model of disability.

It is important to note that definitions and questions about disability are situated within historical contexts. Although there is evidence that there is some movement away from the medical model of disability on some items, other common instruments or those developed within IR offices may not have been revised. An example of this shift in language is with the disability items on the National Survey of Student Engagement (NSSE). In a blog post, Zilvinskis et al. (2021) describe how a small team went through an updating process to address these items. The initial disability question asked, "Have you been diagnosed with any disability or impairment?" With this item, using the term *diagnosed* is more in line with a medical approach to disability where a medical professional must determine whether the person meets criteria to be diagnosed with a disability. The new question, "Do you have a disability or condition that impacts your learning, working, or living activities" is more in line with a social model.

IR professionals must therefore consider who they are including and excluding in their research based on decisions about how they define disability, which model of disability they are using, and whether they are using person-first or identity-first language. All these considerations will impact how data are collected, analyzed, reported or disseminated, and interpreted.

Type of Disability

Similar to how the disability-related question can be asked in different ways, so too can questions about disability type. The "Response Options" column in Table 1 presents options for participants to consider for each of the five student surveys we reviewed. There are a few observations of note: The developers of the NSSE have grouped types of disability under four broad headings. This illustrates that the instrument developers not only have considered the specific disabilities they want to include, but also have considered how they might aggregate those disabilities into the broader four categories—potentially for analysis. During the planning and research development phases, they have considered how individuals using the collected data will group responses for the analysis phase. This differs from the 1st-year Students Survey, where its developers have used nine categories of disabilities. This difference is significant because it allows for different questions to be answered: In the 1st-year Students Survey, there is a heading for "Mental Health," which differs from the NSSE instrument where "Mental Health or Developmental Disability" are grouped under one heading, with multiple response options within that heading. If someone on campus is interested in within-group differences across different types of mental health

diagnoses, the 1st-year Students Survey does not allow for that level of analysis, while the NSSE instrument does. Again, whether it is important to be able to disaggregate mental health conditions during analyses depends on the objectives of the research and the audience. The final point with regards to these surveys is whether examples of different disabilities have been provided. "Are students, faculty, and staff with different conditions going to view themselves within these types of disabilities, or are they going to have to select 'other?'" Decisions about how to ask questions about disability type should be informed by ongoing discussions within the IR field, departmental or institutional priorities, and theoretical or research-based evidence of promising practices.

IR professionals should consider whether disaggregation by disability type is a level of analysis that is needed. We advocate for a critical, inclusive approach to IR in which multiple identities are acknowledged and prioritized throughout IR practices. Any existing or new instruments or protocols should be carefully reviewed for questions about disability type. Questions that IR professionals might consider are, "Do we ask a demographic question about type of disability?," "What are the response options?," "How will we analyze the data in the case of low counts?," and "What are the practical implications of conducting analyses based on type of disability?"

By approaching data collection, analysis, and presentation or interpretation with an understanding that there are within-group differences according to disability type, IR professionals will be in a better position to support an evolving understanding of their institution's disabled population and contribute to the growing need for a more comprehensive understanding of this group.

ENSURING THE ETHICAL AND EQUITABLE TREATMENT OF DISABLED INDIVIDUALS

The ethical treatment of all research participants is critical to the work of IR professionals, as evidenced by the promulgation of and regular revisions to the AIR Statement of Ethical Principles (AIR, 2019). Although these ethical principles serve as a guide for conducting research in an ethical manner in a broad way, it is critical for professionals to understand the nuances of ethically conducting research with disabled participants.

Vulnerable Populations

Research ethics trainings have long discussed ensuring the protection of vulnerable populations. Among the populations considered vulnerable are those who have "impaired decision-making capacity" (Protection of Human Subjects, 2018, S46.111, #3, p. 11) and those who have "attributes such as… disability" (Panel on Research Ethics, 2022, chap. 4, SA, Art. 4.1). But what makes these groups vulnerable? According to the National Bioethics Advisory Commission (2001), "Vulnerability, in the context of research, should be understood to be a condition, either intrinsic or situational, of some individuals that puts them at greater risk of being used in ethically inappropriate ways in research" (p. 85). The Commission continues by noting that populations are vulnerable "because they have difficulty providing voluntary, informed consent arising from limitations in decision-making capacity …or situational circumstances…, or because they are especially at risk for exploitation (as in the case of persons who belong to undervalued groups in our society)" (p. 85). Essentially, a prospective

participant's comprehension of consent forms, ability to review consent forms in accessible formats, segregation from (e.g., hospitalization) and discrimination by society (e.g., ableism), and/or potential for being unduly influenced due to needs (e.g., life-saving medical services, funds for medical bills or interventions) all make them vulnerable (Gehlert & Mozersky, 2018). Each of these potential reasons for being part of a vulnerable population should be considered when researching disabled people, because any of those reasons could be present. Not all disabled people are vulnerable. To be clear, a person's disability is not what makes them vulnerable. Rather, it is the inaccessibility, inequity, and noninclusivity of a society, including research endeavors, that produces the vulnerability.

Informed Consent Requires Accessibility

According to the Belmont Report, informed consent, or understanding a research study and choosing to participate without being unduly influenced to do so, is critical to respecting prospective participants and their autonomy (U.S. Department of Health, Education, and Welfare, 1979). Although many investigations conducted by IR professionals do not require informed consent, the investigations that do require informed consent need to consider issues of accessibility. When prospective participants cannot access and understand information about the study and their rights—whether due to physical, sensory, or cognitive inaccessibility—informed consent has not been secured. For example, prospective participants who are blind or dyslexic (which is a disability that impacts reading) who are provided with consent materials in only a paper format, might not be able to read about and understand the study and their rights as participants. As such, informed consent is not obtained. Ensuring accessibility of the informed consent materials and the associated process is a precursor to receiving consent.

Subjects of vs. Participants in Research

Disabled people have long been subjected to research as the subjects of that research in society. Despite college and university researchers investigating this population external to the academy from a medicalized perspective, very little research has explored disabled students, faculty, and staff within higher education (Madaus et al., 2018). Higher education is only beginning to develop a body of literature on this topic. For too long, disabled voices have been marginalized by higher education, and, as a result, very little is known about how best to educate, supervise, train, and serve them. What makes expanding this body of research even more challenging is that very few within higher education understand what is and is not known about disabled people within higher education. What questions should we be asking? What information would serve the needs of college and university faculty and staff in serving disabled people? This is where the opportunity exists to partner with disabled people in the creation of research.

Disabled people are regularly subjected to educational, psychological, medical, and physical assessments. The assessment is being done *for* the disabled person. Rarer are research projects and assessments that are participatory in nature and work in collaboration *with* disabled people. In higher education, community-engaged research with disabled populations is needed. This would be where disabled people (e.g., students, faculty, and/or staff) are serving as co-researchers in the identification of research topics and questions, instrument design, data collection and analysis, and dissemination (Bromley et al., 2015). These populations are leveraging their expertise (i.e., their lived experience and knowledge associated with disability) to help address questions that

they and their community want to answer. They support allies, who are researchers who do not have disabilities but who are working to create more-accessible, more-equitable, and more-inclusive educational environments, and who understand the questions and interpret the data—qualitative and quantitative—using more-complete and more-representative approaches.

USING ACCESSIBLE METHODS OF DATA COLLECTION

The use of accessible methods of data collection is critical to research ethics and validity. When data collection methods and materials are inaccessible to a disabled person, is it ethical to ask them to participate? Despite IR professionals' desire to have representative data, what might be the emotional implications of inaccessible research experiences for disabled participants? For example, is it ethical to ask a blind participant to take a survey that does not allow for the use of a screen reader and text-to-speech software? This is an important issue to consider, and the solution is not to exclude disabled participants but instead to ensure that research experiences are proactively designed in accessible, equitable, and inclusive ways.

Although social justice, the ethical treatment of participants, and a desire to have representative data should be the primary reasons for ensuring the accessibility of the research methods used, accessible methods likely improve the validity and reliability of the findings. Significant questions about validity arise when participants are unable to access, whether cognitively, physically, or sensorily, data collection materials and/or intervention materials. Certainly, most IR professionals have encountered participant data that they suspect is inaccurate (e.g., if a participant has selected the same response option for all questions on a survey). When it comes to disabled participants, inaccessible materials may, in some cases, result in unintentional responses that are inaccurate. For example, a student who has a mobility impairment that results in involuntary arm movement might accidentally select a response on an electronic form or might not be able to provide a complete response to an open response question without accessibility features enabled or available. Thus, the following suggestions are offered to improve practice.

Universal Design for Instruction and Learning

UD-IL has been used within the postsecondary classroom for decades and is more recently being used in postsecondary administration to proactively improve access, equity, and inclusion (Lalor & O'Ryan, 2023). As described by McGuire and Scott (2002), UD-IL

> embodies an approach to instruction that anticipates diversity in learners as the norm and operates on the premise that the planning and delivery of instruction as well as the evaluation of learning can incorporate attributes that embrace heterogeneity in learners without compromising academic standards. (p. 27)

With some replacement of terms, IR professionals can adapt this approach to meet research needs. McGuire and Scott's (2002) statement can be revised to read that UD-IL

> embodies an approach to [IR] that anticipates diversity in [participants] as the norm and operates on the premise that the planning

> and delivery of [research recruitment, data collection, and dissemination] can incorporate attributes that embrace heterogeneity in [participants] without compromising [research] standards. (p. 27)

To achieve this norm of anticipating diversity in participants, UD-IL should be used proactively during the planning and research development phases. Orr and Hammig (2009) identified five core elements of UD-IL, four of which apply to the work of IR professionals: (1) backward design, (2) multiple means of presenting information, (3) inclusive and varied assessment, and (4) empathy and approachability. (Note that the fifth element of UD-IL relates to the delivery and/or instruction of learning materials rather than assessment and evaluation.)

Backward Design

Backward design deals with objectives, and is critical to UD-IL. Essentially, backward design asks, "What is the specific, measurable objective of the research and what is needed to determine if that objective was met?," "What method or methods are needed to answer the research question in a responsible and respectful way (e.g., quantitative, qualitative, single-subject, mixed methods)?," and "What are the extraneous elements that might not directly pertain to the objective that may distract or detract from meeting the objective (e.g., the need to use math to answer a question about how often someone engages in an activity)?" With these questions answered, backward design then asks, "How can the extraneous elements be removed so that greater focus is given to the research objectives?"

MULTIPLE MEANS OF PRESENTING INFORMATION

This element can be thought of as relating to marketing: "How can IR professionals more effectively recruit participants with varied abilities?" Although there is limited research about research recruitment methods in IR work, broader research suggests that most studies use a single method of recruitment (Buckley et al., 2023). Given what is known about accessibility of printed and audiovisual content, a variety of methods should be used when recruiting from diverse populations. IR professionals should consider using a combination of the following recruitment methods to reach prospective participants:

- Videos combining audio, images, and text sent by email. (Do not forget to caption videos.)
- Text messages.
- Low-text, high-visual contrast posters. (Remember to hang them at varied heights and in varied locations such as the stairwell and the elevator.)
- In-person verbal requests with visual aids.

Although most of these strategies are likely familiar to IR professionals, the incorporated reminders indicate that more in-depth consideration of accessibility is needed during the planning and research development phases.

INCLUSIVE AND VARIED ASSESSMENT

Inclusive and varied assessment relates to ensuring that people of all abilities can participate in ways that are ethical and accessible to provide information of sufficient quality and validity. Far too much weight is given to single studies, evaluations, and assessments. The findings of a

single survey or a series of focus groups provide initial information, but should not be relied on and should always be approached with caution when it comes to generalization (Bandalos, 2018; Bekhet & Zauszniewski, 2012). This is critical when considering disabled people as some forms of data collection systematically exclude, marginalize, and discourage participation. For example, it would be difficult or impossible for some dyslexic participants to complete a text-based survey that does not allow for the use of text-to-speech technology. Although the importance of access has been discussed already, particular strategies include the following:

- Offer surveys in multiple formats (e.g., paper, electronic).
- Enable or incorporate accessibility features for electronic surveys (e.g., speech-to-text, text-to-speech, closed captioning, alternative text).
- Use software (e.g., Grammarly, Microsoft 365) to confirm that written materials are at less-advanced reading levels to improve access and comprehension. (Note that reading level might need to be more advanced due to the topic, such as when using specific terminology related to health, but language at a 7th grade reading level is recommended.)
- Ensure onsite data collection is physically accessible (e.g., elevator access, space for navigating a wheelchair) and sensory accessible (e.g., low odor).
- Use multiple methods to broaden opportunity for participation (e.g., surveys, interviews, focus groups).

These strategies might not provide 100% access to all participants, so it is important to indicate on recruitment materials that reasonable accommodations can be provided to participants with documented disabilities.

EMPATHY AND APPROACHABILITY

Given that disabled people, as a class, have long been targets of discrimination (Cotter, 2018; Singer & Bacon, 2020) and are frequently subjected to disability-related diagnostic assessment and performance appraisal (Jez, 2020), it is recommended that IR professionals lead with empathy and try to be mindful of how people in power, including researchers, may have treated them. Likely without malicious intentions, medical professionals, educators, researchers, and others seeking to help disabled people sometimes do not listen to or include them in the process (Keating, 2021; Millar & Renzaglia, 2002; Rood et al., 2014; Sanderson & Goldman, 2022). Recognizing this could be the case, and making concerted efforts to understand their lived experiences, needs and wants related to research, and any obstacles to participation, is a start to respecting disabled participants. It is also important to recognize that many disabled people have been subjected to testing and assessment as children but were never told the outcomes. For some, research has long been associated with highlighting their deficiencies. As such, it becomes even more important to use clear, accessible communication, to be patient with participants who might take longer to participate, to explain terms (e.g., "What exactly is an IRB [institutional review board]?"), to describe the researcher and the importance of the research, and to share findings in accessible ways.

REPORTING ON DISABLED POPULATIONS, AND DISSEMINATION OF RESULTS

IR professionals play a critical role in disseminating relevant data to appropriate audiences. What data are shared and to whom depends on a variety of factors related to the IR office such as institutional size, type of institution (e.g., college, university), institutional priorities, and state or provincial requirements. Interpretation also plays a role in how the results are used by decision-makers.

IR offices and IR professionals are in a position where they will share different kinds of information with various audiences. Consideration of who the audience is can help decide which data are collected, and then analyzed, reported, and interpreted. The audience might be a government body that has specific reporting requirements, departmental or institutional leadership, practitioners, or students, faculty, and staff. Once the audience has been identified, IR professionals can determine the best way to share information.

After the results are prepared for dissemination, IR professionals must consider how they are going to share the information. The methods for dissemination must also take accessibility into account because, if the information is not accessible, it excludes potential audiences, and does not acknowledge the time and effort that disabled participants took to participate in the research. Accessibility at this dissemination stage can refer to different issues, such as making results available to different audiences so that they are easy to find and understand (Aidley & Fearon, 2021). Results could be shared using reports, presentations, infographics, social media, journal articles, magazine articles, blogs, or podcasts. Like our earlier suggestion that there should be multiple ways for disabled people to participate in research, there should also be multiple ways of sharing information. For this reason, we recommend using a combination of methods to reach different audiences with varied abilities.

Making Information Accessible

Some resources can guide IR professionals on how to consider the accessibility of their chosen means for dissemination. For example, the ICT for Information Accessibility in Learning project (ICT4IAL, n.d.) has a set of guidelines for making different types of information accessible. They categorize these information types as (1) text accessibility, (2) image accessibility, (3) audio accessibility, and (4) video accessibility.

TEXT ACCESSIBILITY

The guidelines describe how important it is to have the ability to easily navigate the information using an effective structure. Doing this allows for readers to easily navigate the information and it makes it easier for someone to transfer the text to a different format. Questions that IR professionals might consider when writing reports are the following:

- Are headings, tables, and figures clearly labeled?
- Is there a description of the organization of the information?
- Is there a table of contents? (This would depend on length of the document.)
- Are there styles embedded within some software programs?

IMAGE ACCESSIBILITY

The guidelines highlight that images convey meaning to readers and that a written description should also be included for this information to be accessible to everyone. This form of accessibility may be particularly relevant to IR professionals who are typically sharing tables and figures with various audiences. To illustrate the detrimental effect this can have on certain disabled people, Daddow (2021) shares their experience of color blindness:

> After being on Twitter for 24 months, at the time of writing, I estimate that I can process "normally" around half the images I see on the platform. I can spend time deciphering what is going on in a few of the remainder if I concentrate hard. The rest remain an impenetrable morass of shapes and numbers, the content of which is meaningless if not invisible. Even if I can distinguish colours in, say, a line graph, it is usually impossible to translate from legend to graph. (p. 102)

Some ways of communicating information are going to include a combination of text, image, audio, and video. For example, infographics are a common way to clearly summarize information in a visual way. A key part of infographics is that they are trying to convey a story to the audience in a way that is easy to comprehend. Some questions to consider if you are using infographics include the following:

- Have you examined the use of colors and ensured there is accessible color contrast?
- Have you provided an alternative format for the infographic such as alternative text, audio, or video narrating the storyline?

AUDIO ACCESSIBILITY

The guidelines explain how audio should be shared in combination with other types of information so that the audience can access the information in different ways. For example, it is common to use a PowerPoint presentation to convey information, which sometimes includes audio. The combination of the PowerPoint slides with the audio makes this approach to sharing information more accessible.

VIDEO ACCESSIBILITY

Some of the barriers with videos are similar to those with images. When video is not accessible to an individual, they might need audio description in which there is dialogue explaining what is occurring. You can also include closed captioning for those who cannot access audio within a video so they can still access the material.

Interpretation of Data

Coburn and Turner (2011) point out, "Data does not speak for itself. Rather, people must actively make meaning of data and construct implications for action" (p. 177). IR professionals are in critical positions to inform audiences across their institutions and beyond about what the data mean—what the story is that can be taken away from the analysis. One of the AIR (2019) ethical principles is, "We provide accurate and contextualized information. We do not knowingly or intentionally mislead the consumers of our information." In terms of interpreting data, IR professionals might consider these questions:

- Have you situated the research questions and results within various contexts such as the higher education landscape, the institution, or the department?

- Have results been translated into concrete advice for all audiences, both internal and external to the institution?
- Have you taken the results and interpretation to disabled people to do member-checking?
- Have you discussed the limitations of the work?

Protecting Privacy and Confidentiality

The task of dissemination also addresses this AIR (2019) ethical principle: "We protect privacy and maintain confidentiality when collecting, compiling, analyzing, and disseminating information." We connect dissemination to this principle because confidentiality is a significant area of concern for disabled participants. If IR professionals are not cautious with certain information, there is a risk that participants' identities could be revealed. This is of particular concern when a sample size is small or when qualitative methods are being used and participant quotations are included in reports.

LIMITATIONS AND FEASIBILITY

Limitations exist related to the recommendations offered in this article. As mentioned in the introduction, because the literature is scarce on the topic of disabled populations on campus, it is not possible to conduct a scoping review that includes only articles published within a specific timeframe. Thus, recommendations offered are a synthesis of findings from the limited disability and IR research, known literature from non-IR sources that the authors believe might be helpful to the field of IR, and the authors' combined experience over several decades researching disabled populations in higher education. As this topic garners increased attention on campus and within the IR profession, this will likely be a campus population that continues to be discussed. Future work may, therefore, include a more systematic approach to reviewing the applicable literature. Another limitation of this work is the small sample size of the five student surveys reviewed. A more comprehensive examination of higher education surveys would provide a greater understanding of the landscape for whether and how disability and impairments are included or excluded. Finally, student surveys were reviewed but, despite advocating for the use of multiple modes of data collection, the disability-related content of non-survey techniques were not explored. Future work should use interviews or focus groups to consider how disability-related questions are raised, and what information might be gleaned from posing such questions.

Beyond the limitations of this article are feasibility considerations. How realistic is it that IR professionals can develop knowledge and understanding of disability and the skill at developing universally accessible methods and measures, and that they include disabled people in ways that go beyond simply serving as participants? This is a reasonable question. Although equitable, accessible, inclusive research should be a goal, it is not always achievable in every instance, especially when researching diverse people. Competing access needs of participants, turnaround time, and knowledge and skill related to accessibility prevent universal access from being achievable. For this very reason, disability experts (e.g., disability resource professionals, ADA coordinators, access technologists) can be an important resource to the IR professional. Even so, implementing all the recommendations may seem daunting. It is important to recognize that, in the absence of 100% accessibility, taking steps to move toward that goal is still an important accomplishment. For this reason, we suggest that IR professionals use a Plus-One

approach, which is typically used to help educators embed UD-IL principles into their teaching and course development. Tobin and Behling (2018) suggest that a sustainable method of incorporating those principles into a course is by finding just one more way to support their students' learning. This concept can be applied to IR, where IR professionals can gradually incorporate more-inclusive practices for disabled campus populations by finding just one more way to make their practices more inclusive. To support IR professionals with identifying one specific thing they would like to change in their practices, we have provided a supplementary resource to this article called Starting Points for Disability-Related Access, Equity, and Inclusion for Research (see appendix). In this appendix, we offer a series of questions that are intended as a guide to improve the accessibility, equity, inclusion, and quality of IR. In line with a Plus-One approach, we invite IR professionals to identify a question that may be achievable as an action item, and focus on that question prior to implementing further changes.

POTENTIAL IMPLICATIONS

The recommendations offered have the potential to improve the comprehensiveness of the data that IR professionals collect and the stories they can tell. Again, relatively little is known about the experiences, outcomes, and opinions of disabled students, faculty, and staff. With better data and a greater understanding of disabled people on campus, decision-makers are better equipped to make critical decisions on budget, staffing, retention, and decisions.

In addition to improved decision-making ability, the recommendations could increase collaboration with disability experts on campus such as disability resources professionals, ADA coordinators, and accessible technology professionals. Disability resource scholars (e.g., Madaus et al., 2018) have called for more-comprehensive data and research on disabled people in higher education. As such, collaborators within disability-related departments might be highly interested in supporting and being a resource for IR professionals who are seeking to better understand disabled students, faculty, and staff.

Finally, IR may be positioned to request additional resources to facilitate data collection related to disabled people. New, more-accessible survey software could be an option, and additional staff with expertise in disability, accessibility, and research might be justifiable with increased research on disabled campus populations and the associated findings. Given the increasing number of students disclosing their disabilities on campus (Parsons et al., 2020; National Center for Education Statistics, 2023), the need for information about this student population will become only more critical and require more investment in personnel across departments, including IR.

CONCLUSION

One of the AIR (2019) ethical principles is this:

> We value lifelong learning and the enhancement of our field. We draw on and contribute to relevant and emerging scholarship and educate ourselves on developing trends. We utilize those methods and techniques for which we have, or can obtain, appropriate knowledge and capabilities.

As the demographic of people on college and university campuses continues to diversify, it becomes even more important for IR professionals

to continue learning about specific populations on campus. IR professionals must acknowledge their position as change agents on campus and recognize that, because they are in this position, they have a significant role to play in advancing social justice and equity-driven approaches and initiatives. Reflecting on their practice and the choices they make is critical to moving the IR field forward and potentially improving the experiences of marginalized groups on campus, such as disabled students, faculty, and staff. Without actively working toward more-inclusive IR practices, there is a risk that the marginalization of certain groups will continue. Peña (2014) points out, "When certain areas of inquiry are marginalized, they bring less attention to the education problems in need of change because those problems and areas of change are neither addressed nor discussed: they become invisible" (p. 31). In this article, we discussed ensuring the ethical and equitable treatment of disabled people, identifying and discussing or defining disabled people using accessible methods of data collection, and reporting about disabled people on campus. Throughout these discussions, we have recommended inclusive approaches and practices for IR that would support building a more inclusive IR system that takes disability into account.

APPENDIX: STARTING POINTS FOR DISABILITY-RELATED ACCESS, EQUITY, AND INCLUSION FOR RESEARCH

This series of questions is intended as a guide to improve the accessibility, equity, inclusion, and quality of IR. These two lists are not exhaustive. We invite you to view them as a starting place with developing IR practices that are more inclusive. Try to address one or more of these questions in your work, reflect on the process of making the relevant changes, and share your experiences in some way with the rest of the IR community.

Planning and Research Development

- Have disabled people been considered as co-researchers?
- Have disabled people been considered in the development of the research purpose and research question?
- Does the research consider diversity in ability (e.g., cognitive, physical, sensory)?
- Has universal design been used to develop the procedures and data collection methods?
- Have extraneous elements (e.g., questions, language) been removed from recruitment materials, consent forms, and instruments or scripts?
- Have jargon, key constructs, and other complex terms been defined and/or simplified on recruitment materials, consent forms, and instruments or scripts?
- Have recruitment materials, consent forms, and instruments or scripts been developed in multiple formats (e.g., written, auditory)?
- Are all materials created in accessible formats (e.g., alternative text, formatted for text-to-speech and speech-to-text technology, reading level at or above a 7th-grade reading level)?
- Is the length of the survey or interview reasonable for students with difficulty processing information quickly, reading, and/or paying attention?
- Are disability demographics being collected? Has disaggregation of disability profiles been considered?

Data Analysis and Dissemination

- Have disabled people reviewed the findings for cultural context?
- Have disabled people reviewed the reports for cultural context?
- Have disabled people given their feedback on implications?
- Have disabled people been asked about avenues for sharing the findings with the disabled community?
- Are the findings presented in multiple formats (e.g., written, auditory)?

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The Intersectionality of First-Generation Students and Its Relationship to Inequitable Student Outcomes

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Abstract

First-generation students are estimated to be a large portion of current and future postsecondary education enrollment in the United States. Additionally, existing research indicates that those students are more likely to be at risk of not being as successful in higher education. However, all this research is in spite of the fact that there is not a nationally agreed on definition of what is a *first-generation student*. This study uses two large national data sets of individual student course records and registration from the past two decades, gathered from 140 different U.S. institutions, to examine how institutions are gathering data on and defining first-generation students, the intersectionality of first-generation students with other student populations that have been traditionally underserved in U.S. postsecondary education, and the success of those intersectional students at their various institutions. Results indicate the high level of intersectionality of first-generation status with other student populations that have traditionally been underserved in U.S. postsecondary education, the contribution of first-generation status to the increased likelihood of a student being less successful in higher education, and the compelling need for a national standard for reporting the results of a large student population that is at greater risk. The need for creating a greater focus on the inequitable outcomes experienced by an extremely large percentage of postsecondary students is discussed.

Keywords: first-generation, student success, equitable outcomes

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INTRODUCTION

The U.S. Department of Education's National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) serves as an invaluable resource for the postsecondary educational sector within the United States. While there are certainly limitations to IPEDS that could, and have, been argued (Ashford, 2017), the fact that the NCES sets national definitions for data elements and requires collection of them for all postsecondary institutions that participate in the federal student financial aid program allows us to see trends within inequitable outcomes that identify populations of students who could be at greater risk of not completing higher education, and thus direct services toward them. For instance, because of IPEDS we know that the 6-year graduation rate for White students who first attended a public 4-year institution in 2015 is 66.6% compared to 46.1% for Black or African American (hereafter Black) students and 58.1% for Hispanic or Latino students (hereafter Hispanic) (NCES, 2022), and we know that the 6-year graduation rate for students who entered 4-year public institutions in 2013 is 52.1% for students who were not awarded a Pell Grant (hereafter Pell) in their first year, compared to 46.6% for those who did (NCES, 2022).

Because NCES has not required collection of students' first-generation status in similar fashion, however, we do not have access to the same national-level data on the enrollment, degrees earned, or completion rate trends of first-generation students, nor do we even have a national definition of what constitutes a *first-generation student*. This lack of a national standard definition generates a significant problem because first-generation students constitute a large portion of postsecondary education enrollment. Research from Redford and Mulvaney Hoyer (2017) of the 2002 high school sophomores who later went on to attend postsecondary education, indicates that 24% were students whose parents had no higher education experience and an additional 34% were students who had at least one parent with some higher education experience, but neither parent had earned a bachelor's degree. This finding aligns with data from the 2015–2016 national Postsecondary Student Aid Study (RTI International, 2019a), which indicates that, among undergraduates enrolled in postsecondary education in 2015–2016, 24% had parents who had no higher education experience, and 56% had neither parent who had earned a bachelor's degree; in addition, 59% of those students were the first sibling in their family to go to college. Given the lack of consistent national data capture for this population we do not have the same information available on national data trends that indicate the potential inequitable outcomes that occur for first-generation students in the same fashion that we have for other traditionally underserved postsecondary student populations such as underrepresented minority (Black, Hispanic, and Indigenous) students and Pell recipients. This lack of insight limits potential research on ways to assist a significant portion of higher education students who have been shown in the literature highlighted below, as well as in the results of this study, to be less likely to be retained, progress through, and graduate from postsecondary education. The purpose of this study is to demonstrate those inequitable outcomes that are occurring for a significantly large portion of postsecondary students, how first-generation status intersects with student populations that are at higher risk to be less successful in higher education, how that status contributes to an increased predicted risk, and how the lack of a national

standard for reporting contributes to the lack of focus for this student population. Higher education, and society at large, benefits from successful completion of degree goals for a larger number of postsecondary students; this research demonstrates how an increased focus on a very large portion of those students could help contribute to that goal.

Defining First-Generation Students in Postsecondary Education

The above data on postsecondary enrollment indicates the initial issue inherent in examining first-generation students in U.S. postsecondary education: the lack of a nationally recognized definition of what constitutes a first-generation student. Some research has chosen to define first-generation students as only those students where neither parent has any postsecondary education experience (Chen, 2005; Redford & Mulvaney Hoyer, 2017), while others have chosen to define first-generation students as those students whose parents have not completed a bachelor's degree (Engle & Tinto, 2008; Pike & Kuh, 2005; RTI International, 2019a, 2019b, 2019c; Thayer, 2000). While both definitions have value, and the literature around first-generation students has found differential experiences for both definitional types, the lack of consistency leads institutions to both collect and use internal data on first-generation students in different methods, and does not allow for a consistent effort to serve a significant portion of students enrolled in higher education. Additionally, while recent projections from Nathan Grawe (2021) indicate that the percentage of high school graduates where neither parent had earned a bachelor's degree will decline over the next decade, the projections still indicate that as of 2033 more than 60% of high school graduates will have had neither parent earn a bachelor's degree; this indicates the continuing substantial population of first-generation students who will enroll in postsecondary education in the future.

First-Generation Students Characteristics and Postsecondary Expectations

Redford and Mulvaney Hoyer (2017) found that students whose parents had no higher education experience were three times more likely to be Hispanic compared to students who have a least one parent who has earned a bachelor's degree (27% vs. 9%). They were also more likely to be Black (14% vs. 11%) and less likely to be White (49% vs. 70%). Additionally, the first-generation students were more than twice as likely to come from a home whose household income was below $50,000 (77% vs. 29%; Redford & Mulvaney Hoyer, 2017). This aligns with the finding that, among postsecondary enrollees in 2015–2016, those students where neither parent had earned a bachelor's degree were more likely to be Hispanic (25% vs. 14%), to be Black (18% vs. 12%), to be veterans (5% vs. 3%), to be age 30 or older (28% vs. 16%). In addition, they were less likely to be White (46% vs. 61%), and less likely to come from lower-income households (median parental income $41,000 vs. $90,000) than students where at least one parent had earned a bachelor's degree (RTI International, 2019a).

Additionally, students whose parents have no higher education experience are less likely to take the ACT test while in high school (66% vs. 83%), are less likely to have a high school GPA above 3.00 (33% vs. 56%), are more likely to delay their postsecondary enrollment (42% vs. 21%), and less likely to attend a highly selective institution (6% vs. 28%; Redford & Mulvaney, 2017). Also, a greater percentage of

students whose parents had not earned a bachelor's degree were enrolled in 2-year institutions (64% public 2-year undergraduates, 69% private nonprofit 2-year undergraduates) or for-profit institutions (72% 4-year for-profit undergraduates vs. 70% 2-year for profit undergraduates) in 2015–2016 (RTI International, 2019a).

First-Generation Students' Experience in Postsecondary Education

The National Association of Student Personnel Administrators' Center for First-Generation Student Success has found that undergraduate students who first enrolled in postsecondary education in 2011–2012, where neither parent had earned a bachelor's degree, were less likely to use health services (14% vs. 29%), academic advising (55% vs. 72%), or academic support services (30% vs. 37%), but were more likely to use financial aid resources (65% vs. 49%) than students who have at least one parent who has earned a bachelor's degree (RTI International, 2019b). Engle and Tinto (2008) discovered that students who have had neither of their parents earn a bachelor's degree were less likely to join campus clubs and organizations, more likely to live off campus, and more likely to take fewer classes. Additionally, this type of first-generation student had lower ratings of engagement on the National Student Survey of Engagement, were more likely to report being dissatisfied with their institution (Pike & Kuh, 2005), and were less likely to be enrolled full time (RTI International, 2019c). Finally, first-generation students where neither parent had any postsecondary educational experience were more likely to report financial strain as being a reason to drop out of college, as opposed to students who had at least one parent who had earned a bachelor's degree (Redford & Mulvaney Hoyer, 2017).

First-Generation Students' Postsecondary Education Success

Among students who entered postsecondary education in 2003–2004, first-generation students where neither parent had earned a bachelor's degree were less likely to have completed an advanced-level math course, had lower 1st-year retention rates, and were more likely to have left higher education altogether after their first year of enrollment (RTI International, 2019c). Additionally, Engle and Tinto (2008) found that first-generation students, where neither parent had completed a bachelor's degree, earned lower college GPAs; and Weston et al. (2019) indicated that first-generation students were less likely to earn passing grades in introductory "weed-out" science, technology, engineering, and mathematics (STEM) courses, that fail large numbers of students, particularly traditionally underserved students, before they can enter their major specific courses.

Given these initial indicators of student success it is not surprising that the literature has indicated that first-generation students are also less likely to earn a degree. The National Association of Student Personnel Administrators' Center for First-Generation Student Success (RTI International, 2019c) found that, among the students who entered higher education in 2003–2004, those where neither parent had earned a degree were more likely to have not attained any postsecondary credential 6 years after first enrolling than students who have at least one parent who had earned a bachelor's degree (56% vs. 40%). Additionally, Redford and Mulvaney Hoyer (2017) found that, among high school sophomores in 2002 who later enrolled in postsecondary education, only 53% of first-generation students (neither parent had postsecondary education experience) had attained

any type of postsecondary credential by 2012, as compared to 70% of students where at least one of their parents had earned a bachelor's degree.

Relevance of the Current Study

It is clear from the existing literature that there is no clear national definition of what a first-generation student is. Regardless of how first-generation students are defined, however, they are more likely to also be identified in a student population that has been historically underserved in U.S. postsecondary education, and they are less likely to be engaged and successful in their postsecondary education endeavors. Given those issues this study used a large national data file of postsecondary student records to answer three research questions relevant to this important postsecondary student population:

1| How do U.S. postsecondary institutions collect data on and define first-generation students?

2| What is the intersectionality between first-generation students and other traditionally underserved student populations in U.S. higher education?

3| What are the student outcomes for first-generation students overall, and what are they for those first-generation students who are also members of traditionally underserved student populations, compared to non-first-generation students?

METHODOLOGY

The study used two large national deidentified unit record data files to examine the research questions. One was a file of students' course grade results (course file) and the other was students' registration and degree records (retention file). Institutions submitted students' deidentified unit record data to a national nonprofit organization as part of their ongoing work on student success efforts. Two institutions that submitted course or registration data were not included in the study because they did not also provide data on first-generation status.

The course file consists of more than 62 million course grade records submitted by 146 separate institutions. The more than 62 million course records were submitted for 3,792,717 unique students for courses that occurred in academic terms ranging from Fall 2003 through Fall 2022. The data elements contained in the file consist of institution names; academic year; academic term; course subject; course number; research ID; if student was required to take developmental education courses; first-generation status; IPEDS race/ethnicity; gender; veteran status; Pell recipient status; course delivery method; course instructor designation; and course grade.

The retention file consists of 1,881,559 unique student registration records submitted by 122 separate institutions. Only one of the retention file institutions did not submit course data to the course file. The more than 1.8 million students were all new entry students at their institutions with cohort entry terms ranging from Fall 2005 through Fall 2022. The data elements contained in the file consist of institution names; cohort academic year; cohort academic term; research ID; first-generation status; IPEDS race/ethnicity; gender; veteran status; Pell recipient status; and retention and graduation status for years 2, 3, 4, 5, and 6.

The institutions that submitted to the two files were over-represented by public institutions (71.7%) and 4-year institutions (71.8%), but cover a significantly large sample of the U.S. postsecondary educational sector over the past two decades.

Institutions were allowed to self-define *first-generation status* for students. Thus, to examine Research Question 1, online data reviews were scheduled with all institutional partners. More than 50 online sessions were conducted, covering approximately 50% of the institutional sample.

The student outcomes examined in the study consist of the non-pass rate in courses, defined as the percentage of grades awarded that were Ds, Fs, Waived grades, or Incomplete grades (DFWI) and the progression of students defined as the percentage of students who reenrolled in their second Fall semester (1st-year retention rate), third Fall semester (2nd-year retention rate), fourth Fall semester (3rd-year retention rate), and the percentage that graduated from their enrolled degree level or higher (primarily baccalaureate degrees at 4-year institutions, associate's degree at 2-year institutions) after their 4th year (4-year graduation rate), 5th year (5-year graduation rate), and 6th year (6-year graduation rate).

Chi-square statistics were used to examine the differences in the observed values. Given the large student sample sizes contained in the two data files, nearly all observed differences were statistically significant at the $p < 0.001$ level even when practical differences were negligible. All differences from the course data file met this criterion. When this was not the case for the observed variables in the retention file, however, it is noted in the results.

Finally, a set of logistic regression equations were run to examine the multiple correlational relationship between first-generation status and all the other historically underserved student populations. There is one regression equation for each student success outcome. Data are coded such that the DFWI model predicts the likelihood of earning a DFWI grade, and the progression models predict the likelihood of not being retained or graduating. Predictive variables consisted of first-generation status (1 = no), developmental education status (DFWI model only; 1 = no), veteran status (1 = no), Pell awarded status (1 = no), Hispanic (1 = yes), Black (1 = yes), White (1 = yes), and Male (1 = yes).

RESULTS

Research Question 1. How do U.S. postsecondary institutions collect data on and define first-generation students?

Among the institutions that participated in the data information sessions, a very small number (fewer than five) relied on the Free Application for Federal Student Aid (FAFSA) data on parental education level for defining first-generation status. The reasons stated for not using the FAFSA data on parental education level were as follows:

1 | The difficulty working with FAFSA data posed by the various interpretations of the current U.S. Department of Education guidelines on acceptable use of FAFSA data, and

2 | The fact that not all students complete the FAFSA. This finding obviously has implications for the disconnect between how institutions define first-generation status and how many of the national studies on first-generation students, which rely on the postsecondary longitudinal data sets generated by NCES, define first-generation status (Chen, 2005; Redford & Mulvaney Hoyer, 2017; RTI International 2019a, 2019b, 2019c).

Overwhelmingly, institutions instead collected parental education level at the time of application to determine first-generation status. A small set

of institutions simply asked whether either parent had completed a 4-year degree. Given the almost ubiquitous nature of the common application among the institutions in the sample, however, most of the institutions collected the reported education level for each parent either directly from the common application or from a similar style question. The most common stated reason for collecting the full parental education level is the flexibility of being able to define first-generation students in multiple fashions for different institutional purposes.

The two most common definitions provided by the institutions matched the national literature as either (1) neither parent has earned a bachelor's degree, or (2) neither parent has any postsecondary educational experience. Every institution that participated in one of the data information sessions indicated that they used the definition "neither parent has earned a bachelor's degree" for their data file submissions and for the two data sets used in the remainder of this study.

Research Question 2. What is the intersectionality of first-generation students and other traditionally underserved student populations in U.S. higher education?

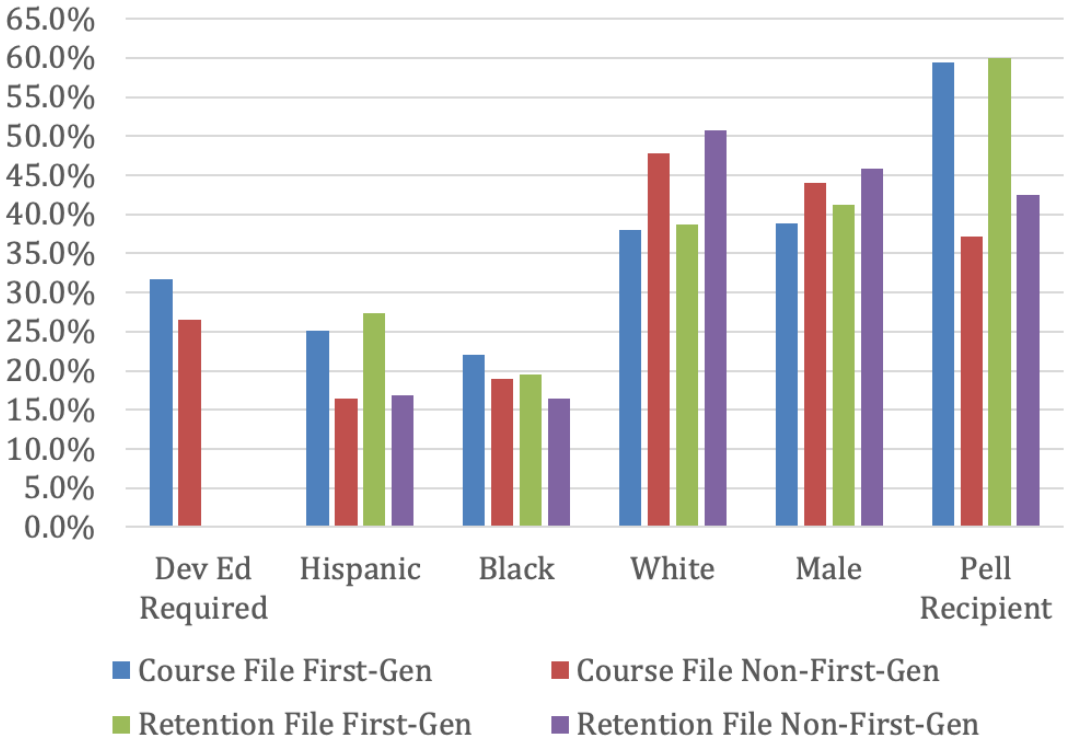
Table 1 indicates that first-generation students accounted for approximately a quarter of each of the files (27.0% Course file, 25.5% Retention file). There are a few areas where first-generation students were vastly overrepresented among student populations that have traditionally been underserved in U.S. postsecondary education. The first area is that first-generation students were much more likely to be Hispanic (25.1% vs. 16.4% Course file, 27.4% vs. 16.8% Retention file) as well as students who are required to take developmental education courses at their institution (31.7% vs. 26.5% Course file); first-generation students were dramatically more likely to be Pell recipients (59.4% vs. 37.2% Course file, 60.0% vs. 42.5% Retention file). First-generation students were also much less likely to be White (38.0% vs. 47.8% Course file, 38.7% vs. 50.7% Retention file). Among some additional traditionally underserved populations, first-generation students were slightly overrepresented among Black students (22.0% vs. 18.9% Course file, 19.5% vs. 16.4% Retention file) and veteran students, although there is little practical difference in the populations (3.4% vs. 2.5% Course file, 2.3% vs. 2.1% Retention file). However, there were no practical differences among Indigenous students (American Indian/Alaska Native 0.8% vs. 0.8% Course file, 0.8% vs. 0.7% Retention file, Native Hawaiian/Pacific Islander 0.5% vs. 0.4% Course file, 0.3% vs. 0.3% Retention file); in addition, first-generation students were less likely to be male (38.9% vs. 44.0% Course file, 41.2% vs. 45.8% Retention file). Figure 1 provides a visualization of the differences in key demographic groups between first-generation and non-first-generation students for each of the data files.

Table 1. Student Demographics for First-Generation and Non-First-Generation Students

Student Subpopulation	Course File		Retention File	
	First-Gen	**Non-First-Gen**	**First-Gen**	**Non-First-Gen**
Total	1,025,236 27.0%	2,767,481 73.0%	478,939 25.5%	1,402,660 74.5%
Developmental Education Required+	31.7%	26.5%	Unk	Unk
Nonresident Alien	2.0%	3.8%	2.0%	4.0%
Hispanic	25.1%	16.4%	27.4%	16.8%
American Indian/Alaska Native	0.8%	0.8%	0.8%	0.7%
Asian	4.8%	5.1%	5.0%	4.6%
Black	22.0%	18.9%	19.5%	16.4%
Native Hawaiian/Other Pacific Islander	0.5%	0.4%	0.3%	0.3%
Two or More Races	3.0%	3.3%	2.8%	2.9%
White	38.0%	47.8%	38.7%	50.7%
Unknown	3.8%	3.5%	2.8%	2.9%
Male	38.9%	44.0%	41.2%	45.8%
Veteran+	3.4%	2.5%	2.3%	2.1%
Pell Recipient+	59.4%	37.2%	60.0%	42.5%

Note: + Not every student reported data for developmental education (85% of cases reported), veteran status (90% of cases reported), and Pell recipient (76% of cases reported). First-Gen = first-generation student; Non-First-Gen = non-first-generation student.

Figure 1. Key Demographic Differences for First-Generation and Non-First-Generation Students



Note: Dev Ed Required = students for whom developmental education was required; First-Gen = first-generation student; Non-First-Gen = non-first-generation student

Research Question 3. What are the student outcomes for first-generation students overall and for first-generation students who are also members of traditionally underserved student populations compared to non-first-generation students?

Table 2 lists the DFWI rates by various student populations. As expected given the existing literature, first-generation students had higher DFWI rates than non-first-generation students. Additionally, the results aligned with national data trends on higher non-pass rates for other student populations that are often defined as being at risk (Weston et al., 2019). The largest gap is seen between Black students and White students (13.5 percentage points), followed closely by the gap between students for whom developmental education courses are required and those for whom they are not (13 percentage points). Hispanic students, male students, veteran students, and Pell recipients all have higher DFWI rates as well.

Table 2. Course DFWI Rates for Univariate Student Populations

Student Poplulation	DFWI Rate
Overall	18.7%
First-Generation	20.9%
Non-First-Generation	18.0%
Developmental Education Required	30.0%
No Developmental Education Requirement	17.0%
Hispanic	21.0%
Black	28.5%
White	15.0%
Male	20.4%
Female	17.4%
Veteran	20.8%
Nonveteran	19.0%
Pell Recipient	23.5%
Not a Pell Recipient	16.5%

Note: DFWI = Ds, Fs, Waived, or Incomplete Grades.

Aligning with the course outcomes, we see the same equity gaps in progression rates for nearly all student populations (Table 3). First-generation students had lower rates at each progression level; the gap widens progressively after it starts at 2.2 percentage points lower in 1st-year retention rates then widens to eventually be 5.4 percentage points lower in 6-year graduation rates. The widest equity gap is again observed between Black students and White students. The gap is initially 11.7 percentage points in 1st-year retention rates, eventually growing to 21.3 percentage points for the 6-year graduation rate. Pell recipients and male students exhibited the same pattern of lower rates at each level of progression with a widening gap. Hispanic students exhibited a higher 1st-year retention rate (0.6 percentage points higher than White students), but the gap disappears by the 2nd-year retention rate; Hispanic students had lower progression rates than White students at each subsequent year. The most unique pattern is demonstrated by veteran students, who demonstrated lower retention rates each year with a widening gap. That might be because they graduated faster, however, since they demonstrated a higher 4-year graduation rate (6.3 percentage points) that narrows but holds for 5-year graduation rates (0.7 percentage points). For all practical purposes, however, the gap has disappeared by the 6-year graduation rate, when their rate is essentially the same as nonveteran students (0.2 percentage points lower).

Table 3. Progression Rates for Univariate Student Populations

Student Population	1st-Year	2nd-Year	3rd-Year	4-Year	5-Year	6-Year
	Ret Rate	Ret Rate	Ret Rate	Grad Rate	Grad Rate	Grad Rate
Overall	68.4%	50.3%	37.0%	29.0%	38.2%	41.5%
First-Generation	66.8%	48.5%	34.5%	27.1%	34.4%	37.4%
Non-First-Generation	69.0%	50.9%	37.8%	29.6%	39.4%	42.8%
Hispanic	70.8%	52.4%	36.6%	29.6%	37.2%	40.7%
Black	58.5%	40.6%	28.9%	16.9%	23.0%	25.7%
White	70.2%	52.4%	39.8%	32.3%	43.5%	47.0%
Male	67.1%	49.5%	36.6%	25.7%	35.5%	39.1%
Female	69.6%	51.0%	37.3%	31.7%	40.5%	43.5%
Veteran	64.4%	40.3%	23.9%	34.2%	37.7%	40.2%
Nonveteran	68.0%	49.7%	36.1%	27.9%	37.0%	40.4%
Pell Recipient	65.2%	46.5%	32.2%	22.3%	29.6%	32.7%
Not a Pell Recipient	69.6%	52.1%	40.0%	29.8%	41.5%	45.4%

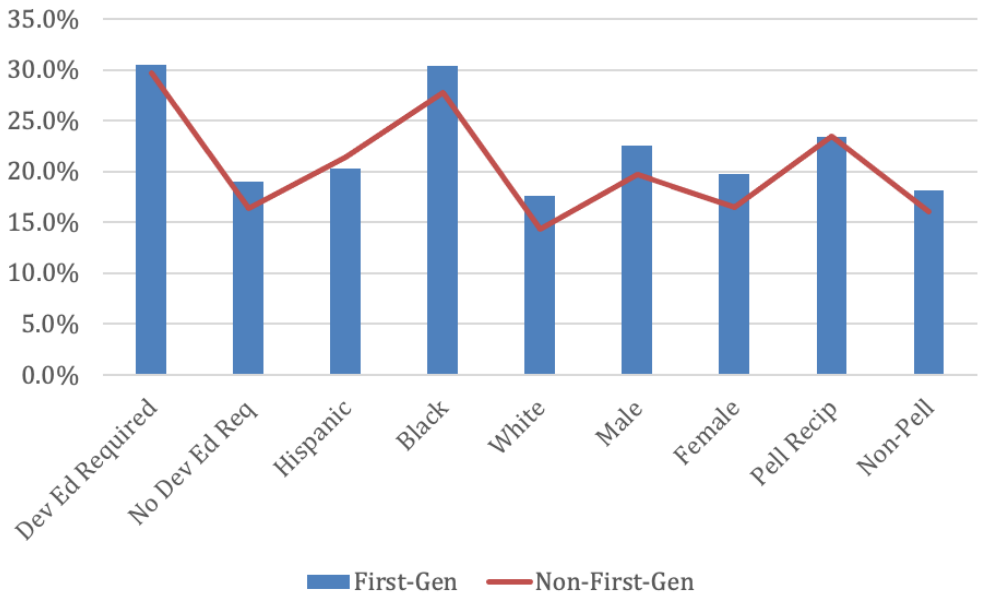
Table 4 lists the DFWI grades for the intersection ¬of first-generation students with various other traditionally underserved student populations in U.S. postsecondary education. As expected, given the existing literature and univariate results from this study, first-generation students demonstrated higher DFWI rates in most instances. In addition, the intersection of the first-generation and underserved students in most—but not all—instances, demonstrated the highest DFWI rates. The two highest instances of DFWI rates are found in first-generation developmental education students (30.5%) and first-generation Black students (30.4%). Additionally, non-first-generation nondevelopmental education, White, female, nonveteran, and non-Pell recipient students all demonstrated the lowest DFWI rates in each intersectional grouping. Among Hispanic students, however, non-first-generation students had higher DFWI rates, although both groups of Hispanic students had higher DFWI rates than either group of White students. Similarly, among Pell recipients there was no practical difference between first-generation and non-first-generation students' DFWI rates. Both groups had higher DFWI rates than non-Pell recipients, however. Figure 2 provides a visualization of the intersectionality of first-generation status and key student populations around course DFWI rates.

Table 4. Course DFWI Rates for Intersection of First-Generation and Other Student Populations

Student Subpopulation	First-Generation DFWI	Non-First-Generation DFWI
Developmental Education Required	30.5%	29.7%
No Developmental Education Required	19.0%	16.4%
Hispanic	20.3%	21.4%
Black	30.4%	27.8%
White	17.6%	14.3%
Male	22.6%	19.7%
Female	19.8%	16.5%
Veteran	21.5%	20.4%
Nonveteran	21.0%	18.3%
Pell Recipient	23.4%	23.5%
Not a Pell Recipient	18.2%	16.1%

Note: DFWI = Ds, Fs, Waived, or Incomplete Grades.

Figure 2. Intersectionality of First-Generation Status and Key Student Populations for Course DFWI Rates



Note: Dev Ed Required = students for whom developmental education was required; No Dev Ed Req = students for whom developmental education was not required; Pell Recip = students who are Pell Grant recipients; Non-Pell = students who are not Pell Grant recipients; First-Gen = first-generation student; Non-First-Gen = non-first-generation student; DFWI = Ds, Fs, Waived, or Incomplete grades.

Table 5 lists the progression rates for the intersection of first-generation students with various other traditionally underserved student populations in U.S. postsecondary education. Following the pattern exhibited throughout this study, first-generation students in each grouping generally demonstrated the lowest progression rate at each yearly point but not in all instances, and the nature of the intersection between first-generation students and other underserved populations becomes more complex.

Table 5. Progression Rates for Intersection of First-Generation and Other Student

Student Population	1st-Year Ret Rate		2nd-Year Ret Rate		3rd-Year Ret Rate	
	First-Gen	Non-First-Gen	First-Gen	Non-First-Gen	First-Gen	Non-First-Gen
Hispanic	72.0%	70.1%	54.1%	51.4%	38.6%	35.5%
Black	56.5%	59.3%	38.9%	41.3%	27.4%	29.5%
White	66.9%	71.0%	48.5%	53.4%	34.9%	41.1%
Male	64.7%	67.8%	47.0%	50.3%	33.4%	37.6%
Female	68.3%	70.1%	49.7%	51.5%	35.4%	38.1%
Veteran	61.9%	65.3%	39.0%**	40.9%**	22.8%*	24.4%*
Nonveteran	67.0%	68.3%	48.7%	50.0%	34.5%	36.6%
Pell Recipient	66.0%	64.7%	47.8%	45.6%	33.5%	31.5%
Not a Pell Recipient	66.1%	70.4%	48.2%	53.0%	35.5%	41.0%
	4-Year Grad Rate		2-Year Grad Rate		6-Year Grad Rate	
	First-Gen	Non-First-Gen	First-Gen	Non-First-Gen	First-Gen	Non-First-Gen
Hispanic	29.1%	29.9%	36.9%+	37.3%+	41.3%**	40.4%**
Black	16.9%+	17.0%+	21.9%	23.4%	24.1%	26.4%
White	30.8%	32.7%	39.5%	44.5%	42.5%	48.1%
Male	23.8%	26.2%	31.0%	36.8%	33.8%	40.7%
Female	29.6%	32.5%	37.0%	41.8%	40.0%	44.8%
Veteran	32.2%	35.0%	36.3%*	38.2%*	39.0%+	40.7%+
Nonveteran	26.8%	28.3%	34.2%	37.9%	37.3%	41.4%
Pell Recipient	23.1%	21.7%	29.8%+	29.5%+	32.8%+	32.7%+
Not a Pell Recipient	27.4%	30.3%	36.2%	42.5%	40.0%	46.5%

Note: + No statistical significance, * $p < 0.05$, ** $p < 0.01$, all others significant at $p < 0.001$; Ret Rate = retention rate; Grad Rate = graduation rate. First-Gen = first-generation student; Non-First-Gen = non-first-generation student.

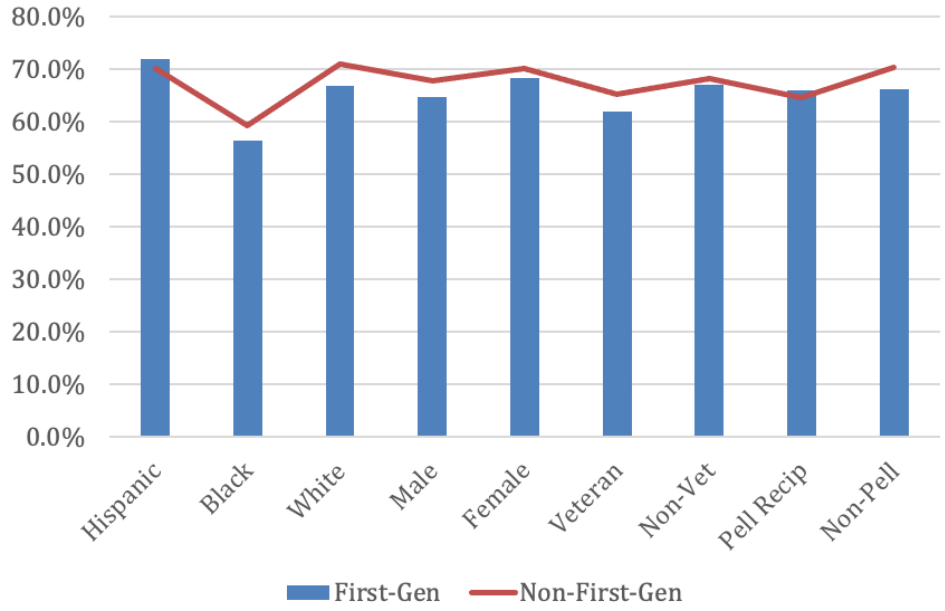
Among Black students and male students, first-generation students demonstrated the lowest progression rate at each year point compared to White and female students, respectively. The only exception is that there was no statistical difference in the 4-year graduation rates demonstrated by Black first-generation and Black non-first-generation students.

Pell recipients had lower progression rates each year, and non–Pell recipient non-first-generation students always demonstrated the highest progression rate. However, first-generation Pell recipients' 1st-, 2nd-, 3rd-year retention rates, and 4-year graduation rates, were higher than non-first-generation Pell recipients' rates, and there were no statistical differences between their 5- and 6-year graduation rates.

Among veteran students, the first-generation veteran students demonstrated the lowest progression rates at the 1st-, 2nd-, and 3rd-year retention rates. Veteran students had higher graduation rates regardless of first-generation status, however, except for non-first-generation nonveteran students, who had the highest 6-year graduation rate. Also, the 6-year graduation rate difference between first-generation and non-first-generation veterans was not statistically significant.

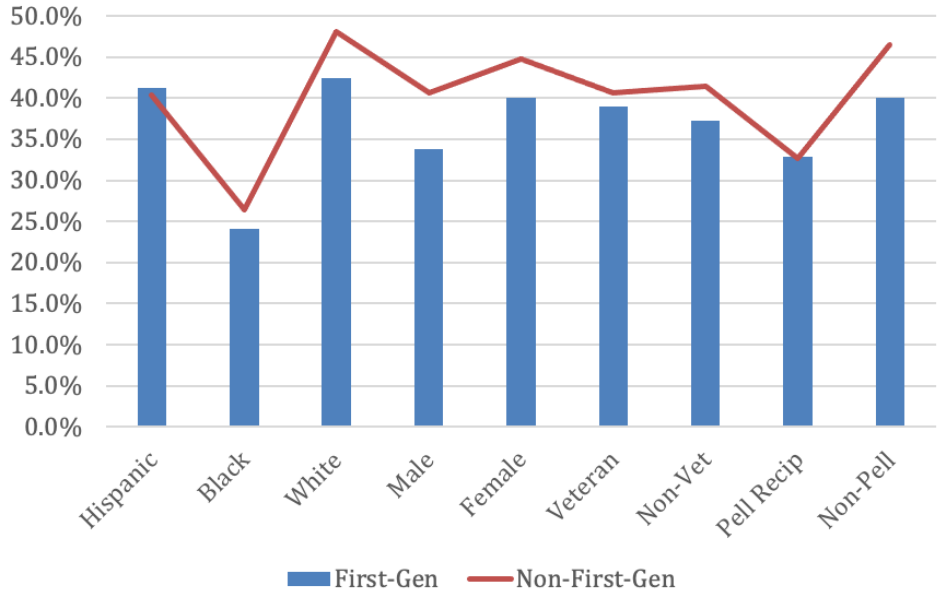
Finally, Hispanic students demonstrated the most complex pattern. First-generation Hispanic students usually had higher progression rates than non-first-generation Hispanic students, except in 4-year graduation rates, where they were lower, and in 5-year graduation rates, where the difference was not statistically significant. Additionally, first-generation Hispanic students had the highest 1st- and 2nd-year retention rates when compared to first- and non-first-generation White students. Finally, non-first-generation Hispanic students' retention rates (1st-, 2nd-, and 3rd-year) were higher than first-generation White students, but their graduation rates were all lower. Figures 3 and 4 provide a visualization of the intersection of first-generation status and various student populations around 1st-year retention and 6-year graduation rates.

Figure 3. Intersectionality of First-Generation Status and Key Student Populations for 1st-Year Retention



Note: Non-Vet = students who are not military veterans; Pell Recip = students who are Pell Grant recipients; Non-Pell = students who are not Pell Grant recipients; First-Gen = first-generation student; Non-First-Gen = non-first-generation student.

Figure 4. Intersectionality of First-Generation Status and Key Student Populations for 6-Year Graduation Rates



Note: Non-Vet = students who are not military veterans; Pell Recip = students who are Pell Grant recipients; Non-Pell = students who are not Pell Grant recipients; First-Gen = first-generation student; Non-First-Gen = non-first-generation student.

The results for the logistic regression equations for each student success outcome are listed in Table 6. All seven of the regressions are statistically significant and demonstrate acceptable goodness of fit. When considered together with all the other variables in the multicorrelational relationships, all parameters' relationships are in the expected direction based on the univariate relationships demonstrated in this study, with the exception that being White was associated with a greater likelihood of not being retained in your first or second year, and not graduating in your fourth year when considered in conjunction with all the other parameters in the equation. All the individual variables are statistically significant predictors in each equation.

Table 6. Logistic Regression Results for Student Success Variables

	DFWI (DFWI = 1) Chi sq = 1087986 Hosmer Lemeshow = 21931		**1st-Year Retention** (not retained = 1) Chi sq = 15454 Hosmer Lemeshow = 669		**2nd-Year Retention** (not retained = 1) Chi sq = 12156 Hosmer Lemeshow = 889	
Variable	B	Sig	B	Sig	B	Sig
First Generation (FG = 0)	–.044	< .001	–.060	< .001	–.027	< .001
Dev Ed (Dev Ed = 0)	–.599	< .001				
Veteran (Vet = 0)	–.061	< .001	–.328	< .001	–.511	< .001
Pell Award (Pell = 0)	–.200	< .001	–.106	< .001	–.129	< .001
Hispanic (Hisp = 1)	.153	< .001	–.072	< .001	–.138	< .001
Black (Black = 1)	.514	< .001	.555	< .001	.435	< .001
White (White = 1)	–.078	< .001	.106	< .001	.010	< .001
Male (Male = 1)	.251	< .001	.135	< .001	.083	< .001
	3rd-Year Retention (not retained = 1) Chi sq = 10048 Hosmer Lemeshow = 1034		**4-Year Graduation** (not graduated = 1) Chi sq = 16549 Hosmer Lemeshow = 286		**5-Year Graduation** (not graduated = 1) Chi sq = 19216 Hosmer Lemeshow = 593	
Variable	B	Sig	B	Sig	B	Sig
First Generation (FG = 0)	–.022	< .001	–.010	< .001	–.072	< .001
Veteran (Vet = 0)	–.662	< .001	.164	< .001	–.111	< .001
Pell Award (Pell = 0)	–.213	< .001	–.238	< .001	–.323	< .001
Hispanic (Hisp = 1)	–.124	< .001	.016	< .001	–.036	< .001
Black (Black = 1)	.338	< .001	.863	< .001	.781	< .001
White (White = 1)	–.110	< .001	.103	< .001	–.112	< .001
Male (Male = 1)	.058	< .001	.317	< .001	.249	< .001

	6-Year Graduation (not graduated = 1) Chi sq = 15694 Hosmer Lemeshow = 707	
Variable	B	Sig
First Generation (FG = 0)	–.066	< .001
Veteran (Vet = 0)	–.182	< .001
Pell Award (Pell = 0)	–.343	< .001
Hispanic (Hisp = 1)	–.085	< .001
Black (Black = 1)	.760	< .001
White (White = 1)	–.145	< .001
Male (Male = 1)	.207	< .001

Note: Dev Ed = students for whom developmental education was required

Examination of the regression coefficients indicate that being a Black student demonstrates the strongest relationship in the multicorrelational equation with each dependent variable consistently, with the exception that needing developmental education demonstrates the strongest relationship with DFWI grades. Pell-recipient status also consistently demonstrates a strong negative relationship with the dependent variables in each multicorrelational relationship. When considered with all the other variables within the regression equations, first-generation status typically accounts for one of the weakest relationships with the various dependent variables. First-generation status is a statistically significant predictor in each of the equations, however, even when considered with the other historically underserved populations, such that being a first-generation student is associated with a greater likelihood of earning a DFWI grade, and not being retained or graduating at each progression point when considered with the other identifiers of historically underserved students in U.S. postsecondary education.

LIMITATIONS

Several limitations exist within the present study that allow for the opportunity of expansion of the research. Institutions in the present study were allowed to define first-generation status at the institutional level; while all institutions interviewed indicated they used the same definition, not every institution was interviewed in the research, leading the results to suffer from the exact lack of a national standard that is identified in the present findings. Future research would benefit from the ability to examine student outcomes at each institution by both nationally recognized definitions. Additionally, the present study chose to focus on student progression irrelevant of institutional type. While this benefits the generalizability of the results across the postsecondary education landscape, it does not acknowledge the differential student experience that occurs across different sectors of U.S. higher education, in particular the distinction between 2- and 4-year institutions. The examination of institutional type as a covariate would greatly

expand the research; perhaps there are sectors of the postsecondary environment that demonstrate they are serving first-generation students better than others, leading to potential models of exemplar practice to replicate. Finally, the study was limited by the number of student characteristic variables available across most institutions. Future research would benefit from the further inclusion of more-nuanced variables of student academic preparation, greater indicators of student socioeconomic status, and data on students' academic discipline.

DISCUSSION

This study adds to the literature highlighting the inequitable outcomes for first-generation students in U.S. higher education, demonstrates the large level of intersectionality between first-generation status and other traditionally underserved student populations and how that intersectionality relates to student outcomes, and demonstrates the ongoing need to establish a national standard definition, or definitions, of first-generation status. The lack of a national standard leads to inconsistent reporting of student outcomes, which in turn contributes to a lack of highlighting a large student population that demonstrates higher risk of attrition in U.S. higher education. This lack of consistent insight into the population can ultimately impact the level of effort directed at this large, underserved student population. Without a consistent national standard for defining and tracking first-generation students it can lead to a lower level of focus on the inequitable outcomes of first-generation students as compared to those seen in other consistently reported student populations such as those delineated by race and ethnicity or Pell status.

In support of the need for a consistent standard, nearly all the institutions interviewed in the research collected data that would allow them to use multiple definitions of first-generation status to align with different purposes at the institution. While every institution interviewed submitted first-generation status using the definition "neither parent had earned a bachelor's degree," the definition commonly found in the literature (Engle & Tinto, 2008; Pike & Kuh, 2005; RTI International, 2019a, 2019b, 2019c; Thayer, 2000), it is worth noting that nearly all institutions in the study indicated that they also use the other existing definition from the literature: "neither parent had any postsecondary experience" (Chen, 2005; Redford & Mulvaney Hoyer, 2017). Given the preponderance of institutions that collect data in a fashion that allows them to report on either definition it seems reasonable that student data could be reported nationally for both definitions, allowing for a more nuanced examination of student behavior for both groups. Without a standard, however, it is likely that institutions will continue to use multiple definitions for different purposes making the consistent tracking of students at a national level more challenging and limiting the exposure to the challenges faced by first-generation students.

It is also worth noting that most of the institutions interviewed in this research chose to collect data on first-generation status at the time of application rather than relying on the FAFSA information that is used in the NCES longitudinal data studies that inform several of the national research studies on first-generation students (Chen, 2005; Redford & Mulvaney Hoyer, 2017; RTI International, 2019a, 2019b, 2019c). The fact that most institutions collected first-generation data at the time of application rather than using the FAFSA is a clear disconnect between the literature and how institutions are using the data, and indicates that the literature might be missing a significant portion of

students in the research on first-generation status. This disconnect also points to the need for the NCES to collect first-generation data as a part of the IPEDS process so that these competing definitional needs could be resolved when researchers examine a population that constitutes a significant portion of postsecondary enrollment, and clearly demonstrates a need for services directed at its success.

The results of the study align with previous research indicating that first-generation students are a population more likely to struggle in postsecondary education. As in previous research, first-generation students in this study earned more DFWI grades (Engle & Tinto, 2008; Weston et al., 2019), were less likely to be retained (RTI International 2019c), and were less likely to graduate (Redford & Mulvaney Hoyer, 2017; RTI International, 2019c). This study also clearly demonstrates the intersectionality of first-generation students with other student populations that have been traditionally underserved in U.S. higher education and thus are more likely to be at risk of not being successful, aligning with the previous literature indicating first-generation students were more likely to be Hispanic (Redford & Mulvaney Hoyer, 2017; RTI International, 2019a), Black (Redford & Mulvaney Hoyer, 2017; RTI International, 2019a), less likely to be White (Redford & Mulvaney Hoyer, 2017; RTI International, 2019a), more likely to be veterans (RTI International, 2019a), and more likely to be from low-income families (Redford & Mulvaney Hoyer, 2017; RTI International, 2019a). It adds to these findings by also demonstrating that first-generation students were more likely to be required to enroll in developmental education courses.

While the patterns can sometimes be complex, the results of this study also indicate that, most commonly, students who are both first-generation students and members of other higher-risk student populations are at even greater risk of struggling at their institutions. The results of the cross-tabular analysis and the logistic regression equations demonstrated that, while several indicators exhibit a stronger negative relationship with student outcomes—in particular being Black, needing developmental education, and being a Pell recipient—first-generation status was always predictive of the likelihood of a student being less successful, even when considered with all the other indicators of higher-risk populations examined in this research. These results demonstrate the need to consider the intersectionality of first-generation status when examining student success on campuses as it is a contributing factor to the risk of a student being less successful at their institution.

The results from this study point to the need to better serve first-generation students in postsecondary education. The need becomes even more compelling when considering the potential size of the student population, sitting in the range of one out of every four students. The results of the study also indicate the present challenge in consistently identifying first-generation students to better understand the scope of their experience in higher education. A national standard for defining first-generation status would benefit both the study of the students' experience, but also the ability to better direct services at a large student population that is less likely to succeed and then to ultimately examine the impact of those services on first-generation student success with the goal of ultimately helping more students earn degrees. As with all student-level data related to identification of a student and how it relates to their academic record, there is the need for ongoing security for the data and training for the proper use of sensitive information. However, ignoring an enormous portion

of the higher education student population that clearly demonstrates a higher risk of not being successful, and thus not serving those students, would be far more problematic and negligent by institutions of higher education.

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