Leveraging IPEDS Data for the MHEC Interactive Dashboard

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Midwestern Higher Education Compact (MHEC)

Shaun Williams-Wyche
Associate Director of Research and Data Analysis
shaunw@mhec.org

Aaron Horn
Associate Vice President of Research
aaronh@mhec.org

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# Outline of Presentation

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Organizational Context

What is MHEC?

- The Midwestern Higher Education Compact

  - regional compact among 12 states created through state legislation: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

  - founded in 1991 to assist Midwestern states in advancing higher education through interstate cooperation and resource sharing

  - MHEC's statutory authority allows it to operate as a governmental agency of each member state

  - The states are the members of the compact
    - the public and private not-for-profit postsecondary institutions in those states are eligible to participate in the compact's activities.

  - Core functions: Convenings; Policy Initiatives; Research; Cost-Savings Contracts

Regional Compacts for Higher Ed
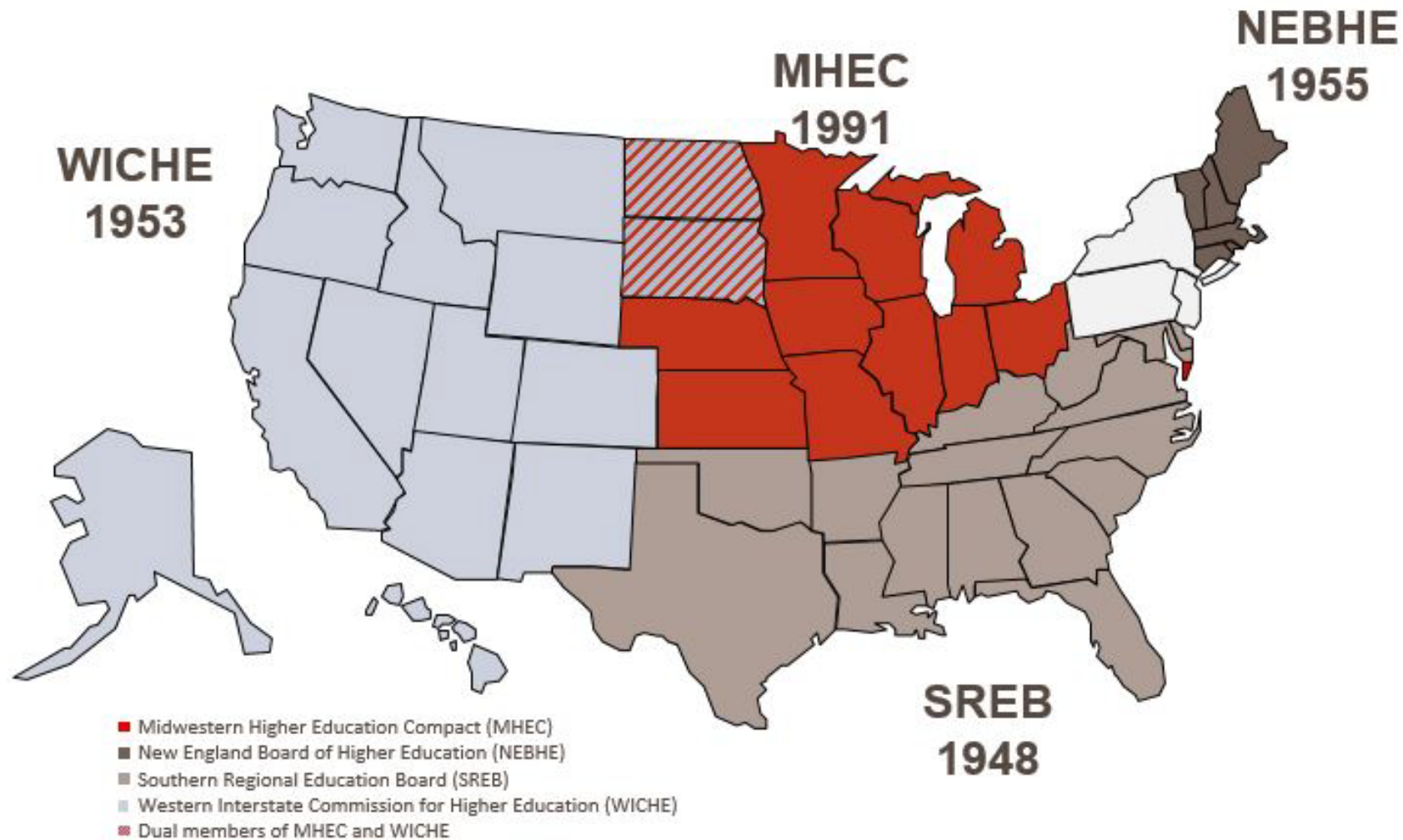
MHEC Research Mission and Issue Areas

Principal aim: To inform institutional and state efforts in improving postsecondary policies, practices, and outcomes.

Focal areas for applied research and data analysis:

1. **College Readiness and Enrollment**
2. **Affordability and Finance**
3. **Student Engagement and Success**
4. **Performance, Value, and Accountability**: performance indicators for evaluating institutions and PK-16 systems
   - Higher Education in Focus / Annual State Performance Update
   - Interactive Dashboard

Interactive Dashboard Background

Key Functions

- The MHEC Interactive Dashboard provides data and key performance indicators relevant to the goal of increasing postsecondary educational attainment rates.

- Indicators are publicly available for all 50 states, thereby allowing entities across the country to benefit from this regional initiative.

- The dashboard provides interactive ways to explore IPEDS data at a state, regional, and national level.

Stakeholders

- The dashboard provides relevant data to a variety of stakeholders:

  - Legislators and legislative staff
  - State agency heads and staff
  - Institutional and system leaders
  - Association leaders and staff
  - Regional compact staff
  - Journalists
  - Higher education researchers, faculty, and graduate students
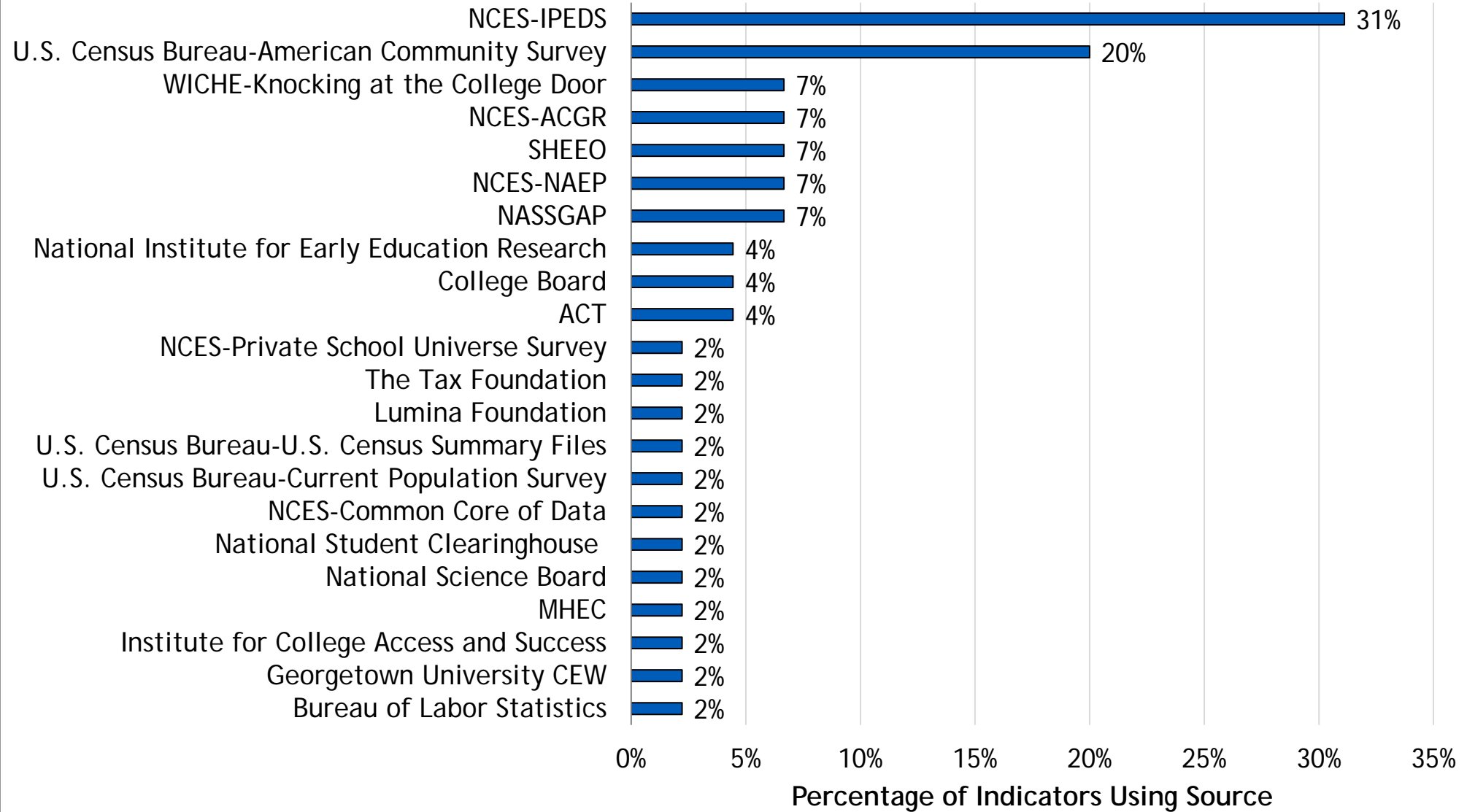
Indicator Categories

Indicators are organized within seven categories:

1. **Context**: demographics of high school graduates, interstate migration of college students

2. **Preparation**: pre-college academic achievement and completion

3. **Participation**: college enrollment of selected populations

4. **Affordability:** net price, savings, debt, ability to pay

5. **Completion:** retention, graduation, credentials

6. **Finance:** expenditures for pre-k, k-12, and higher education (institutions and grant aid)

7. **Benefits:** unemployment rate, earnings difference, tax revenue, attainment levels

- Several of these areas also portray a subcategory highlighting opportunity and achievement gaps by income, race, and ethnicity.

Filters and Features

- Common filters on specific dashboards

  - Data year
  - Geographical entity: state, region, nation
  - Institutional sector
  - Race/ethnicity
  - Income group

- Common features

  - Visualize as bar chart, line graph, map, and table
  - Share
  - Download as PPT or PDF

Sources of Dashboard Indicators

Source	Percentage of Indicators Using Source
NCES-IPEDS	31%
U.S. Census Bureau-American Community Survey	20%
WICHE-Knocking at the College Door	7%
NCES-ACGR	7%
SHEEO	7%
NCES-NAEP	7%
NASSGAP	7%
National Institute for Early Education Research	4%
College Board	4%
ACT	4%
NCES-Private School Universe Survey	2%
The Tax Foundation	2%
Lumina Foundation	2%
U.S. Census Bureau-U.S. Census Summary Files	2%
U.S. Census Bureau-Current Population Survey	2%
NCES-Common Core of Data	2%
National Student Clearinghouse	2%
National Science Board	2%
MHEC	2%
Institute for College Access and Success	2%
Georgetown University CEW	2%
Bureau of Labor Statistics	2%

Dashboard software

- Data analysis and combination: Microsoft Excel and SAS

- Dashboard building: Tableau

- Website Design: External agency

Institutional Universe

- Institutional universe
  - Title IV institutions
  - Public two-year institutions
  - Public four-year institutions
  - Private not-for-profit four-year institutions

- Classifying mixed baccalaureate/associate's institutions
  - If number of bachelors awarded is greater than the number of associate degrees awarded, institution is considered a four-year institution for that year, and vice versa.

Process for using IPEDS Data

1. Download data from IPEDS site using Custom Data Files option
2. Combine files using SAS (if necessary)
3. Run pivot tables and create variables in Excel
4. Create tables at geographical unit level
5. Reformat and export to Tableau

Context
Indicators using IPEDS Data

Student Migration Indicators

- **Background:** State policymakers and institutional leaders are interested in student migration due to its implications for educational revenue, future taxpayer revenue, and future workforce

  - Data on student migration also informs potential benefits of regional tuition reciprocity agreements for students and institutions.

- Indicators:

  - Interstate Migration
  - College Location
  - College enrollment only includes high school graduates who enrolled in a postsecondary institution within 12 months of graduating from high school or receiving a GED diploma.

Interstate migration

- **Total in-migration** reflects the total number of out-of-state first-time freshmen enrolled in a particular state.

$Total\ in-migration = Total\ first-year\ students\ in\ state\ X\ -\ Total\ first-year\ resident\ students\ in\ state\ X$

- **Total out-migration** reflects the total number of state residents who enrolled out of state as first-time freshmen.

$Total\ out-migration = Total\ first-year\ students\ with\ residency\ in\ state\ X\ -\ Total\ first-year\ resident\ students\ in\ state\ X$

- **Net in-migration** reflects the difference between the total in-migration and the total out-migration in a particular state.

$$Net\ in-migration = Total\ in-migration\ -\ Total\ out-migration$$

- **Adjusted out-migration** shows the total number of first-time freshmen from a particular state who enrolled at an out-of-state institution per 100 first-time freshmen of that state.

$$Adjusted\ out-migration = \frac{Total\ out-migration}{Total\ first-year\ resident\ students\ in\ state\ X\ +\ Total\ out-migration} * 100$$

College Location

Percentage of first-time freshmen who recently graduated from high school within a particular state and enrolled at:

(a) an in-state postsecondary institution,

$$\frac{Total\ first-year\ resident\ students\ in\ state\ X}{Total\ first-year\ students\ with\ residency\ in\ state\ X}$$

(b) an out-of-state postsecondary institution within the Midwest, and

$$\frac{Total\ first-year\ students\ enrolled\ out\ of\ state\ within\ the\ Midwest}{Total\ first-year\ students\ with\ residency\ in\ state\ X}$$

(c) an out-of-state postsecondary institution outside of the Midwest.

$$\frac{Total\ first-year\ students\ enrolled\ outside\ of\ the\ Midwest}{Total\ first\ year\ students\ with\ residency\ in\ state\ X}$$

Participation
Indicators using IPEDS Data

Direct Enrollment

- **Background:** Postponed college enrollment well after high school graduation may lead to obstacles to degree completion, such as diminishing academic skills and knowledge as well as the adoption of competing roles and obligations (e.g., work, family).

- Direct enrollment: the percentage of high school graduates who enroll in a postsecondary institution within 12 months of graduating from high school or receiving a GED diploma.

$$Direct\ enrollment\ = \frac{Total\ first-year\ students}{Total\ public\ high\ school\ graduates[\text{NCES}-\text{ACGR}]\ +\ Total\ private\ high\ school\ graduates[\text{NCES}-\text{PSS, WICHE}]}$$

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Affordability
Indicators using IPEDS Data

Affordability Indicators

- **Background**: Given particular tuition rates, costs of living, and grant aid, state policy can be informed by showing:

    1. The degree to which levels of student aid are affecting the net price students ultimately pay.
    2. If the net price of college is low enough that families could conceivably save to cover the cost of attendance for two or four years of college.
    3. The affordability of the net price relative to different income levels.

- Indicators:

    - Net Price for median income families
    - Saving for College
    - Ability to Pay

Net Price

The average net price a median-income family must pay for one year of full-time enrollment at a public two- or four-year institution.

$$Average\ net\ price\ median\ income_i$$

Where

$Average\ net\ price_1\ if\ Median\ income$[U.S. Census Bureau−ACS] $= \$30{,}001\ to\ \$48{,}000$

$Average\ net\ price_2\ if\ Median\ income$[U.S. Census Bureau−ACS] $= \$48{,}001\ to\ \$75{,}000$

$Average\ net\ price_3\ if\ Median\ income$[U.S. Census Bureau−ACS] $= \$75{,}001\ to\ \$110{,}000$

$Average\ net\ price_4\ if\ Median\ income$[U.S. Census Bureau−ACS] $= \$110{,}001\ or\ over$

Saving for College

Another indicator of college affordability is whether families can save enough money over time to pay for two years of full-time enrollment at public two-year institution or four years of full-time enrollment at a public four-year institution.

- Two investment scenarios (10-year vs. 18-year) are shown for a 529 college savings plan that obtains a five percent rate of return.

- This calculation assumes the average net price at a public institution for the state's median family income; a five percent college cost inflation rate; no current savings; and a five percent rate of return.

Ability to Pay by Family Income

- Measures the percentage of family income needed to pay the net price of full-time enrollment

- Presented for families with median income and families with low income, which is defined as an income equal to the federal poverty level for a family of four ($25,750 in 2019).

$$Ability\ to\ pay\ MI = \frac{Average\ net\ price_i}{Median\ income[\text{U.S. Census Bureau}-\text{ACS}]}$$

$$Ability\ to\ pay\ LI = \frac{Average\ net\ price_i}{Income\ at\ poverty\ level[\text{U.S. Census Bureau}]}$$

Ability to Pay by Race/Ethnicity

Presented for families with median income in each racial and ethnic group.

$$Ability \ to \ pay = \frac{Average \ net \ price_i}{Median \ income[\text{U.S. Census Bureau}-\text{ACS}]_k}$$

Where

$Median \ income_1 = American \ Indian \ median \ income$
$Median \ income_2 = Asian \ median \ income$
$Median \ income_3 = Black \ median \ income$
$Median \ income_4 = Latino \ median \ income$
$Median \ income_5 = Native \ Hawaiian/Other \ Pacific \ Islander \ median \ income$
$Median \ income_6 = Other \ race \ median \ income$
$Median \ income_7 = Two \ or \ more \ races \ median \ income$
$Median \ income_8 = White \ median \ income$
$Median \ income_9 = Underrepresented \ minority \ median \ income$

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Completion
Indicators using IPEDS Data

Completion Indicators

- **Background:** Degree completion indicators have been widely adopted as indicators of institutional effectiveness in state and national accountability measures, accreditation regulations, and institutional performance reports.

- Indicators:

  - Retention Rates
  - On-Time Graduation Rates
  - Three- and Six-Year Completion Rates

Retention

First-time, full-time students who are enrolled at an institution for two consecutive fall terms.

$$Retention = \frac{Full-time\ students\ enrolled\ the\ following\ fall}{Total\ number\ of\ full-time\ students\ enrolled\ in\ the\ fall}$$

On-Time Graduation

Represents completion of a bachelor's degree within four years at four-year institutions.

- Accounts for first-time, full-time, baccalaureate-seeking students who enter during the fall and graduate from their first institution.

$$On-time\ graduation\ = \frac{Number\ in\ cohort\ receiving\ bachelor's\ degree\ in\ 4\ years\ or\ less}{Total\ bachelor's\ degree-seeking\ cohort}$$

Graduation Rates by Family Income and Race/Ethnicity

- Graduation rates at two-year colleges are measured by the proportion of first-time, full-time certificate/degree-seeking students in the fall cohort who completed an associate degree or certificate at the first public two-year college within three years (also counts students who transferred to another institution).

- Graduation rates at four-year institutions are defined by first-time, full-time, bachelor's degree-seeking students in the fall cohort who completed a bachelor's degree at the first four-year institution within six years (without accounting for transfer to another institution).

- The completion gap by income is estimated by comparing graduation rates among federal Pell Grant recipients and non-Pell recipients.

$$Graduation\ rate = \frac{Number\ receiving\ degree/certificate\ in\ 3\ years\ or\ less\ +\ Number\ transfering\ in\ 3\ years\ or\ less}{Total\ degree/certificate-seeking\ cohort}$$

$$Graduation\ rate = \frac{Number\ receiving\ bachelor's\ degree\ in\ 6\ years\ or\ less}{Total\ bachelor's\ degree-seeking\ cohort}$$

Finance
Indicators using IPEDS Data

Finance Indicators

- **Background:** State appropriations may influence the effectiveness and competitiveness of institutions as well as tuition rates. The receipt of grant aid has been linked with higher rates of college enrollment and degree completion.

- Indicators:

  - Institutional Funding
  - State/Federal Grant Aid Commitment

Institutional Funding

State and local appropriations are examined for public two- and four-year institutions *in relation to* educational expenditures, which reflect the total amount spent on instruction, student services, and academic support.

$$Appropriations = \frac{State\ appropriations\ +\ Local\ appropriations}{12\ month\ FTE\ enrollment}$$

$$Expenses = \frac{Instruction\ +\ Academic\ support\ +\ Student\ services}{12\ month\ FTE\ enrollment}$$

State/Federal Aid Commitment

Measured by total state need-based aid relative to Pell Grant aid.

Final Remarks

Examples of utilizing IPEDS data to inform policy discussions

- **Midwest Student Exchange Program**: To what extent are students migrating within the Midwest vs. leaving the Midwest?

- **South Dakota Joint Committee on Appropriations**: How many high school graduates migrate out of and into South Dakota to attend a postsecondary institution?

- **Missouri General Assembly Joint Committee on Education**: How do Missouri state appropriations per FTE for two- and four-year institutions compare with bordering states?

- **North Dakota State Auditor's Office**: How has differential tuition for non-resident students changed over time and how does the tuition premium in North Dakota compare with other states?

Future Possibilities and Directions

- Inclusion of institution-level data

- Adding private not-for-profit institutions to more indicators

- Future Indicators:

  - Fall Enrollment
  - Total Cost of Attendance
  - Net Price at Each Family Income Level
  - Pell, State, and Institutional Grant Aid per Full-time Student by Sector

Questions?