HOW FACULTY DIVERSITY AFFECTS UNDERREPRESENTED MINORITY (URM) STUDENT COMPLETION RATES AT COMMUNITY COLLEGES

A Study Using IPEDS Data

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Utah System of Higher Education

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- 23+ years in higher education in faculty and administrative roles in Washington and Utah
- Majority of career at Community Colleges
- Currently serving at the Utah System of Higher Education which is merging with the Utah System of Technical Colleges
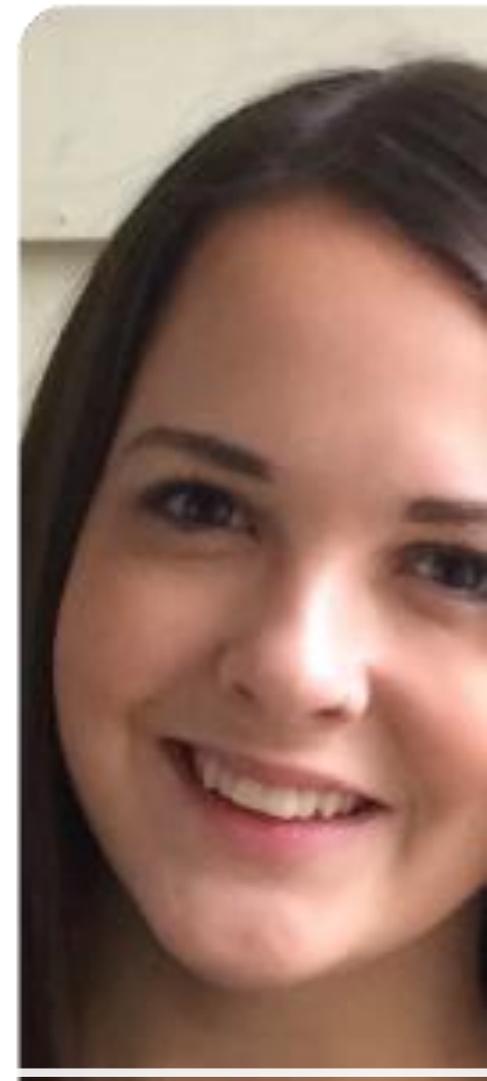
- Doctoral research completed in September, 2019 through City University of Seattle.
    - How Faculty Diversity affects underrepresented minority (URM) student completion rates at Community Colleges.
    - Thanks to IPEDS the study was possible and dissertation completed!

Daniel Eugene "Rudy" Ruettiger
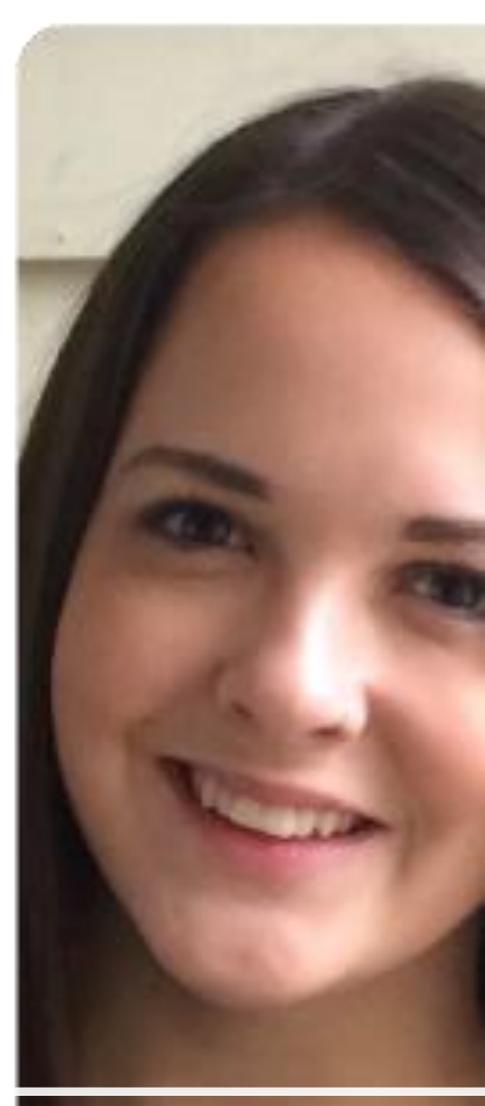
The Role of Community Colleges

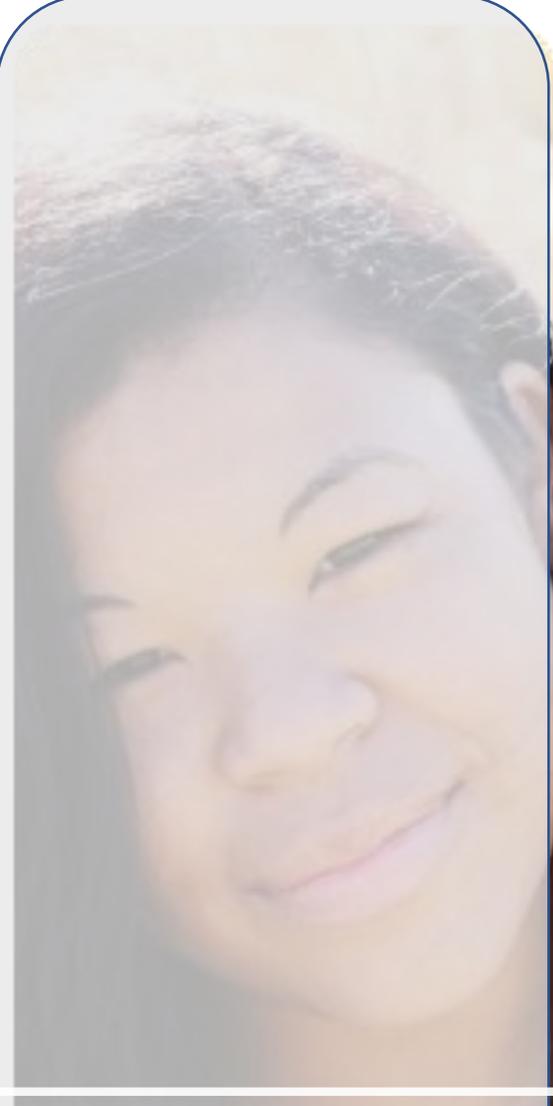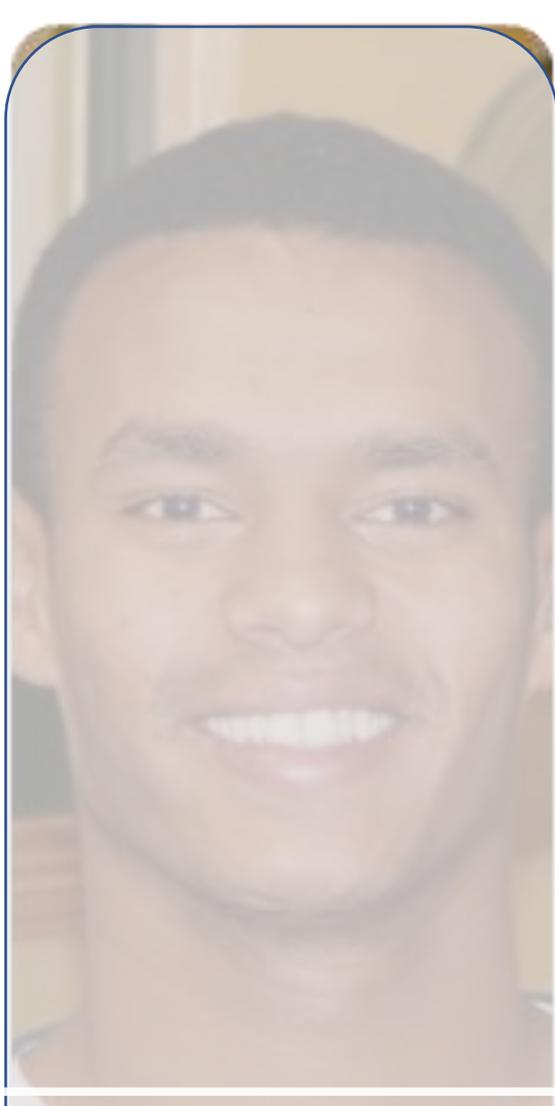Underrepresented Minority Students (URM) Graduation Rates

Some College No Degree

URM students can lack sense of belonging

WELCOME NEW FACULTY

Diverse Faculty & Sense of Belonging

Higher Ed

LEGISLATION

POLICY

REGULATION

PUBLIC OPINION

COURT DECISIONS

Research Questions

1. To what degree are there diverse full- and part-time faculty among community colleges?

2. To what degree has there been a change in diverse full-and part-time faculty among community colleges?

3. What is the relationship between the total number of racial/ethnic minorities in *full-time* faculty positions at a community college and the graduation rates of URM students?

4. What is the relationship between the total number of racial/ethnic minorities in *full-time* faculty positions at a community college and the graduation rates of non-URM students?

5. What is the relationship between the total number of racial/ethnic minorities in *part-time* faculty positions at a community college and the graduation rates of URM students?

6. What is the relationship between the total number of racial/ethnic minorities in part-time faculty positions at a community college and the graduation rates of non-URM students?

Hypotheses

- When the diversity of *full-time* faculty increases, the completion rate of first-time, full-time URM students changes significantly:
    - H_0= URM completion rates do not change.
    - H_α= URM completion rates change with statistical significance $P \leq 0.05$.

- When the diversity of *full-time* faculty increases, the completion rate of first-time, full-time non-URM students changes significantly:
    - H_0= non-URM completion rates do not change.
    - H_α=non-URM completion rates change with statistical significance $P \leq 0.05$.

- When the diversity of *part-time* faculty increases, the completion rate of first-time, full-time URM students changes significantly:
    - H_0= URM completion rates do not change.
    - H_α= URM completion rates change with statistical significance $P \leq 0.05$.

- When the diversity of *part-time* faculty increases, the completion rate of first-time, full-time non-URM students changes significantly:
    - H_0= non-URM completion rates do not change.
    - H_α= non-URM completion rates change with statistical significance $P \leq 0.05$.

Participants

- IPEDS reporting years between 2012 and 2017 due to the changes in reporting of ethnicity/race within the IPEDS data set for both faculty and students.

- Full-time faculty ethnicity and race.

- Part-time faculty ethnicity and race.

- Public, open-access, two-year degree-granting institutions.

- Minority and non-minority students as represented by annual cohort groups of first-time, full-time college attendees between 2012 and 2017.

- Completion rate of first-time and full-time URM and non-URM students year over year between 2012 and 2017.

- Institutions receiving Title IV federal student aid

Definition of URM

- "Nonresident aliens, [r]ace and ethnicity unknown, Hispanics of any race, and for non-Hispanics only, the additional categories of American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White and [t]wo or more races" (National Center for Education Statistics [NCES], n.d.).

Institutional Data by the Bureau of Economic Analysis Region

States by Bureau of Economic Analysis Region	Number of Institutions	Enrollment Within Region
New England (CT, ME, MA, NH, RI, VT)	27	143,047
Mideast (DE, DC, MD, NJ, NY, PA)	59	514,881
Great Lakes (IL, IN, MI, OH, WI)	37	352,339
Plains (IA, KS, MN, MO, NE, ND, SD)	63	288,394
Southeast (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)	136	593,503
Southwest (AZ, NM, OK, TX)	76	728,062
Rocky Mountains (CO, ID, MT, UT, WY)	14	78,077
Far West (AK, CA, HI, NV, OR WA)	102	1,117,885
Totals	514	3,870,188

Institutional Data by Urban-Centric Local Categories

Population Description	Population Definition	Total Number of Institutions	Total Enrollment
City: Large	Inside an urbanized area & principal city with 250,000+	74	1,194,068
City: Midsize	Inside an urbanized area & principal city with 100,00-250,000	42	435,008
City: Small	Inside an urbanized area & principal city with ≤100,000	62	398,950
Suburb: Large	Outside a principal city and inside an urbanized area with 250,000+	90	977,850
Suburb: Midsize	Outside a principal city and inside an urbanized area with 100,00-250,000	17	146,739
Suburb: Small	Outside a principal city and inside an urbanized area with ≤100,000	11	51,233
Town: Fringe	Within an urban cluster and ≤10 miles from an urbanized area	9	37,217
Town: Distant	Inside an urban cluster that is >10 miles and ≤35 miles from an urbanized area	46	151,499
Town: Remote	Inside an urban cluster >35 miles from urbanized area	62	150,404
Rural: Fringe	≤5 miles from the urbanized area and ≤2.5 miles from an urban cluster	79	276,054
Rural: Distant	>5 miles but ≤25 miles from an urbanized area & >2.5 miles but ≤10 miles from an urban cluster	17	43,922
Rural: Remote	>25 miles from an urbanized area & >10 miles from an urban cluster	5	7,244
Totals		514	3,870,188

Generating a Diversity Score

1

Determine the percentages of each ethnic/racial category for both full- and part-time faculty from all reporting institutions within the data set using an Excel formula, dividing the number of faculty in each category of race/ethnicity by the total number of faculty to create the percentage.

2

The standard deviation of the percentages within both full- and part-time faculty were calculated. The standard deviation was calculated using the STDEV function within Excel.

3

A diversity score was calculated to serve as an easily identifiable number for each institution across each reporting year.

4

The change in diversity at each institution was calculated by subtracting the 2012 diversity score from the 2017 diversity score. If the change produced a negative number, it represented a loss of diverse faculty during the study period. A zero indicated no change in diversity, and a positive number indicated an increase in diversity.

5

This change in diversity was then correlated with the completion data produced in the student data set.

Research Question 1: Most Representatively Diverse Institutions in 2017: Full-Time and Part-Time

Institutional ID	Institution Name	Staff Teaching Status	Diversity Score
101499	Jefferson Davis Community College	Part-time, Instructional staff	92
117715	Los Angeles Southwest College	Part-time, Instructional staff	92
113856	East Los Angeles College	Part-time, Instructional staff	91
115861	Imperial Valley College	Part-time, Instructional staff	91
195988	Sullivan County Community College	Part-time, Instructional staff	91
117724	Los Angeles Trade Technical College	Full-time, Instructional staff	89
113856	East Los Angeles College	Full-time, Instructional staff	88
117690	Los Angeles Harbor College	Full-time, Instructional staff	87
223524	Brookhaven College	Full-time, Instructional staff	86
108667	College of Alameda	Full-time, Instructional staff	86

Least Representatively Diverse Institutions in 2017: Full-Time and Part-Time

| Institutional ID	Institution Name	Staff Teaching Status	Diversity Score
106625	Black River Technical College	Part-time, Instructional Staff	59
176798	Cape Girardeau Career and Technology Center	Part-time, Instructional Staff	59
191612	Herkimer County Community College	Part-time, Instructional Staff	59
173805	Itasca Community College	Part-time, Instructional Staff	59
200192	Lake Region State College	Part-time, Instructional Staff	59
172918	Alexandria Technical and Community College	Full-time, Instructional Staff	59
201283	Belmont College	Full-time, Instructional Staff	59
176798	Cape Girardeau Career and Technology Center	Full-time, Instructional Staff	59
428708	Eastern West Virginia Community and Technical College	Full-time, Instructional Staff	59
161192	Kennebec Valley Community College	Full-time, Instructional Staff	59

Research Question 2: *Change in Full-Time and Part-Time Faculty Diversity Score Between 2012 and 2017*

Faculty Type	Increased	Decreased	Stayed the Same
Full-Time	241 (47%)	164 (32%)	109 (21%)
Part-Time	239 (47%)	181 (36%)	89 (17%)

Research Question 3-6

3. What is the relationship between the total number of racial/ethnic minorities in *full-time* faculty positions at a community college and the graduation rates of URM students?
4. What is the relationship between the total number of racial/ethnic minorities in *full-time* faculty positions at a community college and the graduation rates of non-URM students?
5. What is the relationship between the total number of racial/ethnic minorities in *part-time* faculty positions at a community college and the graduation rates of URM students?
6. What is the relationship between the total number of racial/ethnic minorities in part-time faculty positions at a community college and the graduation rates of non-URM students?

Research Question 3: Change in <u>full-time</u> faculty diversity and the relationship to the completion of <u>URM</u> students
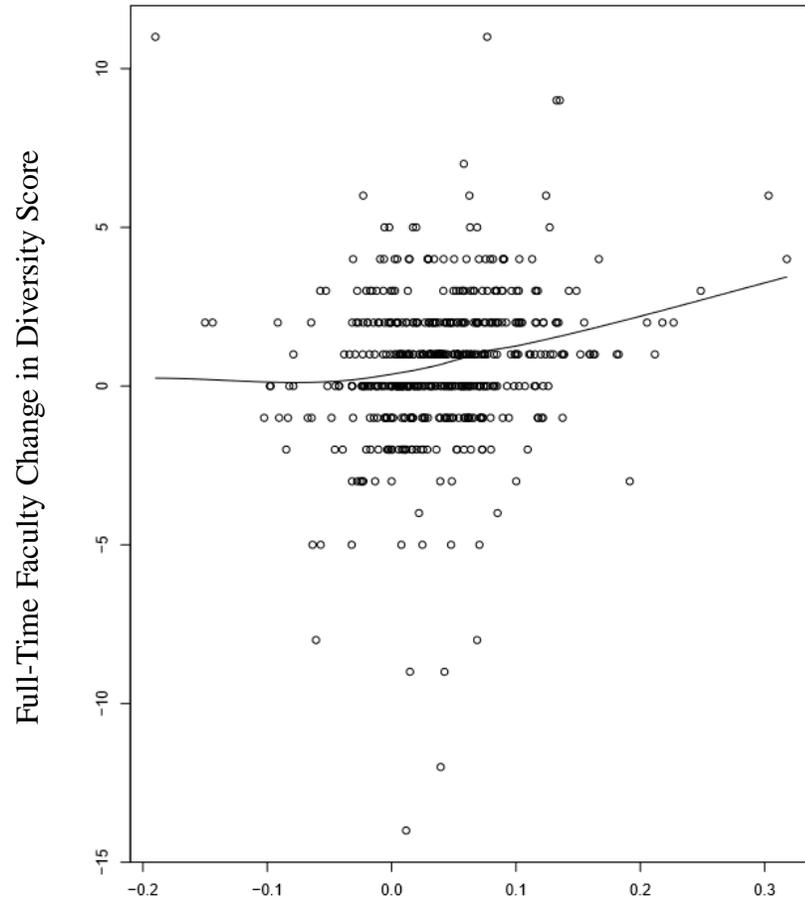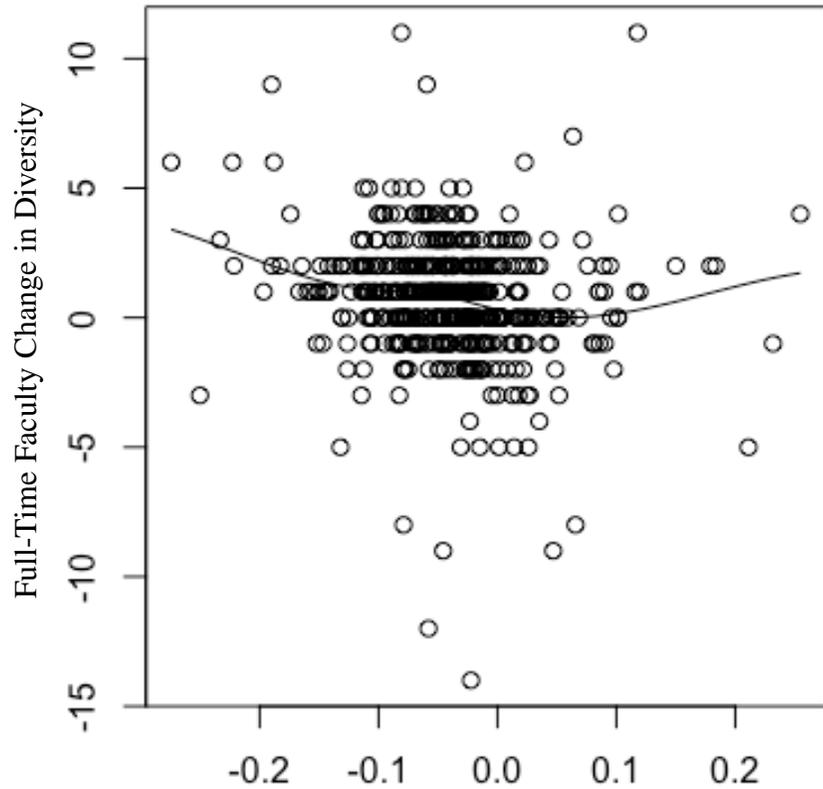

URM Change in Completion Rate

Correlation 0.1942235

Residual	
Min	-0.278975
Median	-0.002802
Max	0.262039
Coefficients	
Intercept	0.036830
Estimate standard error	0.002602
P value	0.000000
D score change	0.004742
Estimate standard error	0.001058
P value	0.000000
Results	
Residual standard error	0.0567
Multiple R-squared	0.03772
Adjusted R-squared	0.03584
F statistic	20.07
P value	0.00000921

Research Question 4: Change in <u>full-time</u> faculty diversity score and the relationship to <u>non-URM</u> student completion


Non-URM Change in Completion Rate

Correlation -0.1640627

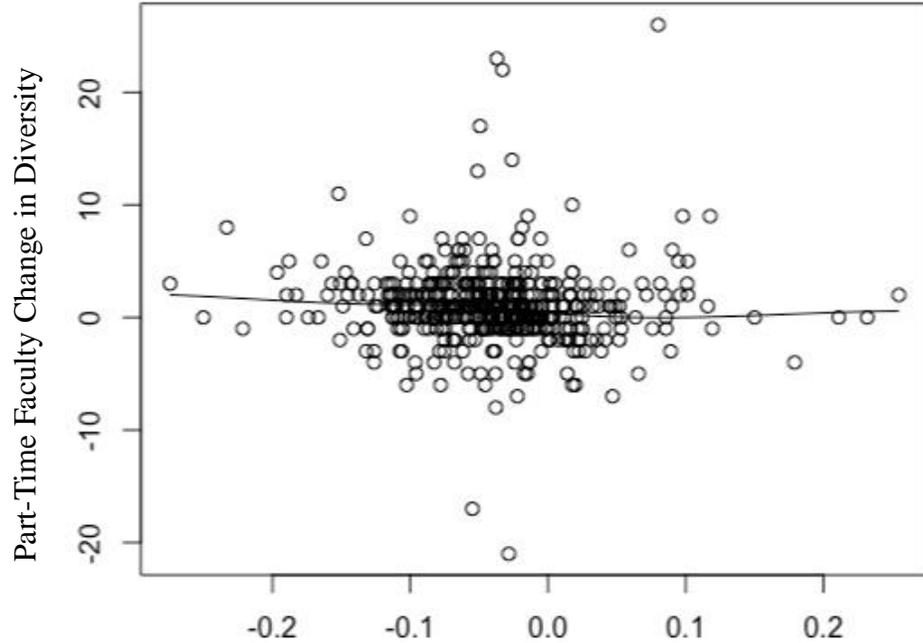| Residual	
Minimum	-0.227202
Median	-0.000596
Maximum	0.308514
Coefficients	
Intercept	-0.036163
Estimate standard error	0.002895
P value	0.000000
D score change	-0.004392
Estimate standard error	0.001174
P value	0.000204
Results	
Residual standard error	0.06261
Multiple R-squared	0.02692
Adjusted R-squared	0.02499
F statistic	14
P value	0.0002041

Research Question 5: Change in <u>part-time</u> faculty diversity score and <u>URM</u> student completion
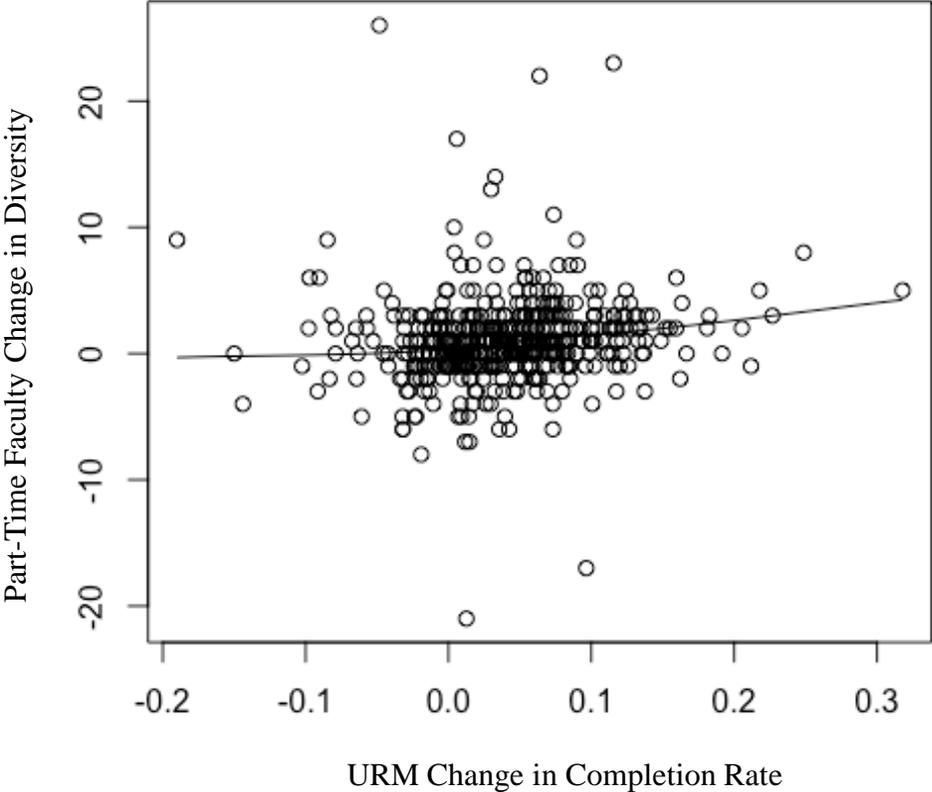
Correlation 0.1263611

Residual	
Minimum	-0.245931
Median	-0.000991
Maximum	0.269991
Coefficients	
Intercept	0.0377219
Estimate standard error	0.0025985
P value	0.000000
D score change	0.0020248
Estimate standard error	0.0007066
P value	0.000000
Results	
Residual standard error	0.05622
Multiple R-squared	0.01597
Adjusted R-squared	0.01402
F statistic	8.21
P value	0.00438

Research Question 6: Change in part-time faculty diversity score and non-URM student completion rate

Non-URM Change in Completion Rate

Correlation -0.04416988

Residual	
Minimum	-0.233293
Median	-0.002182
Maximum	0.295131
Coefficients	
Intercept	-0.0388008
Estimate standard error	0.0028927
P value	0.000000
D score change	-0.0007746
Estimate standard error	0.0007835
P value	0.323
Results	
Residual standard error	0.06222
Multiple R-squared	0.001951
Adjusted R-squared	-4.512
F statistic	0.9774
P value	0.3233

Underrepresented Minority Students (URM)

Recommendations for Future Studies

The Future of Community Colleges