

Benchmarking Plan Analyzing North Carolina State University's International Student Program

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Author Note

HIED 801 Benchmarking Report

Summary:

Below presents a benchmarking report using available data regarding North Carolina State University's (NCSU) international student program. This report could help NCSU through comparing similar institutions' international student programs with their own. Accepting and retaining international students is a way to enhance student diversity and bring in more out of state tuition. The intended audience for this report is admissions recruiters who work with prospective senior and junior high school international students and their parents.

Methodology:

This report draws on a variety of sources including the *Integrated Postsecondary Educational Data System* (IPEDS), College Results Online, the college's websites, and collegefacutal.com. I used Minitab software to generate descriptive statistics and graphs. North Carolina State University is represented first on individual value plots, and the comparison universities are listed below it in alphabetical order.

In my comparisons I looked at both box plots, histograms, dot plots, and individual value plots. Ultimately, I chose to use individual value plots because only thirteen institutions are evaluated in this study, so the histograms and box plots were often not detailed enough and often the dot plots lacked meaning. I chose individual value plots to represent the quantitative data because they are the most aesthetically pleasing and allow for the easiest comparison.

List of Specific Indicators:

1. Total international students, including undergraduate and graduate students, for each of the following years: (a) 2013, (b) 2014, (c) 2015, (d) 2016, (e) 2017, and the percentage of growth or decline between these years (2013-2017)
2. Number of students in each of the following categories: (a) Total undergraduate and graduate students, (b) Total international students, (c) Total undergraduate students, (d) Total international undergraduate students, (e) Percentage international student's make-up of the student body.
3. Out of state tuition without room and board percentage growth rates between 2017-2020.
4. Underrepresented minority 6-year graduation rate for students pursuing bachelor degrees in 2017.
5. Underrepresented minority 6-year enrollment for students pursuing bachelor degrees in 2017.
6. Overall Graduation and Transfer-out rates for students who began their studies in fall of 2018

7. Is the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) a requirement for international student acceptance? Are there additional resources such as classes or programs available to support learning English as a second language?

Rationale for my list of specific indicators:

1. Is NCSU increasing, decreasing, or stagnant in their admissions of international students.
2. This will provide a generalized look at the student body and give prospective students and idea of the size of institution and some idea of what opportunities will be available. More opportunities may be available at a larger university versus a smaller one.
3. How may out of state tuition be expected to change in upcoming years? Is it likely that NCSU will be attractive financially to potential incoming international students when compared to similar institutions?
4. How does NCSU compare to the comparison group in underrepresented minority student 6-year graduation rates? Although 6-year graduation rate data specific to international students was not available, using the underrepresented minority student data could reflect the presence of support, or lack of support, to this demographic. This could make NCSU a more or less attractive choice to potential incoming international students.
5. Similar to the rationale related to evaluating the underrepresented minority student 6-year retention rates, examining underrepresented minority retention rates could suggest the level of support and student involvement available for incoming international students. This could make NCSU a more or less attractive choice to potential incoming international students.
6. Evaluating Overall Graduation, transfer-out rates, and students still enrolled after 6 years could be an indicator of the effectiveness or inefficiency of support programs available to students. An international student may endure more challenges culturally than a student native to the university's country, so if the retention rate is high for all students, it is a strong indicator that students can find support during challenges. On the other hand, if the retention rate is low prospective students may have concerns about the support the institution can provide.
7. High TOEFL and IELTS scores are difficult to attain. Additionally, the test is expensive. This is a huge hoop to jump through if there is a university that requires substantially higher scores than a similar institution. If a student is struggling with their English ability but fulfills the other requirements for the university of their choice, additional resources to grow their English level during college could push them to apply to one institution over another.

Comparison Group:

North Carolina State University at Raleigh (NCSU)*

Auburn University (AU)

California Polytechnic State University-San Luis Obispo (Cal Poly)

Clemson University (Clemson)

Purdue University-Main Campus (Purdue)

Rutgers University-New Brunswick (Rutgers)

University at Buffalo (UB)

University of Colorado Boulder (CU)

University of Florida (UF)

University of Illinois at Urbana-Champaign (UIUC)

University of Minnesota-Twin Cities (UMN)

University of Pittsburgh-Pittsburgh Campus (Pitt)

University of Wisconsin-Madison (UW)

*Note: All institutions are listed in alphabetical order with the exception of NCSU which is listed first in all comparison figures.

Rationale for my Comparison Group:

For this benchmarking report, I wanted to identify a set of institutions that North Carolina State University is similar to in size, goals, and student body, and this information is briefly presented in Figure F.1. The thirteen universities I have chosen for the comparison group are all in the public sector. All but AU, Research High, and Cal Poly, Masters Large, have a Carnegie classification of Research Very High. This suggests that the students they recruit may have academic goals aligned to research, and the faculty is probably composed of tenured or tenure track staff who also have a research focus. The locale is a mixture of large and small cities or suburbs. This could influence international student's choice of school as a large city may have more things to do, but this variable is not evaluated in this benchmark.

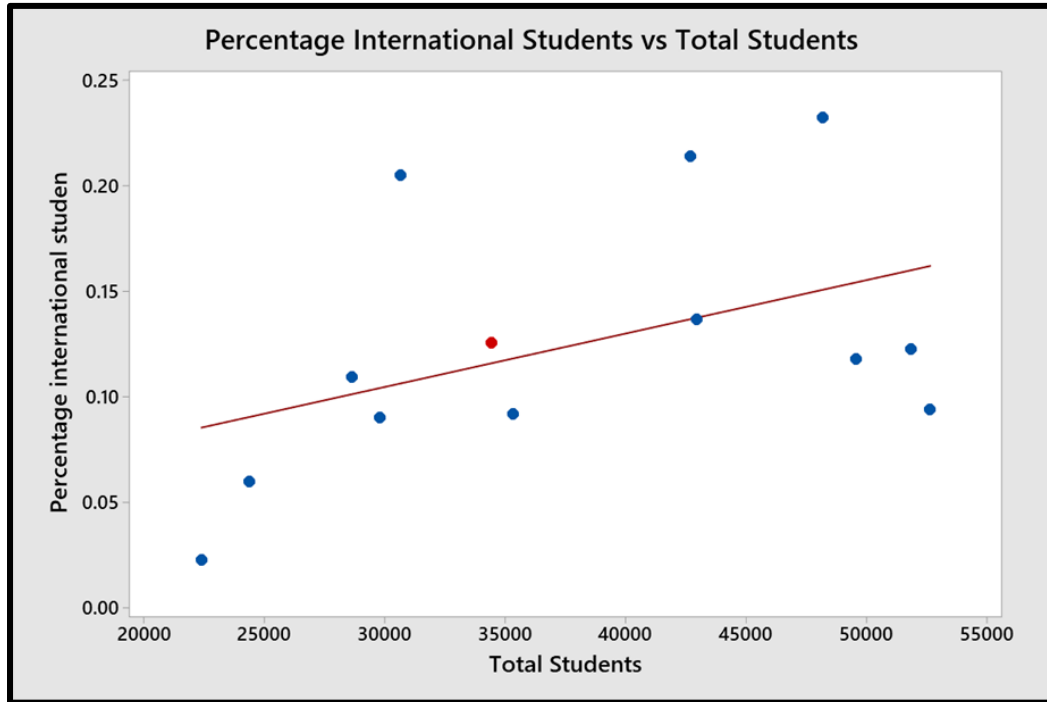
F.1

University	Location	Size (Undergrad FTE)	Undergrad Student To Faculty Ratio	Sector	Locale	Carnegie Class
North Carolina State University at Raleigh (NCSU)	Raleigh, NC	22112	8.6	Public	City: Large	Research Very High
Auburn University (AU)	Auburn, AL	21309	13.4	Public	City: Small	Research High
California Polytechnic State University-San Luis Obispo (Cal Poly)	San Luis Obispo, CA	19995	23.4	Public	Suburb: Small	Masters Large
Clemson University (Clemson)	Clemson, SC	18172	13.2	Public	Suburb: Large	Research Very High
Purdue University-Main Campus (Purdue)	West Lafayette, IN	30034	11.2	Public	City: Small	Research Very High
Rutgers University-New Brunswick (Rutgers)	New Brunswick, NJ	34887	8.7	Public	City: Small	Research Very High
University at Buffalo (UB)	Buffalo, NY	19465	11.4	Public	Suburb: Large	Research Very High
University of Colorado Boulder (CU)	Boulder, CO	26649	11.8	Public	City: Midsize	Research Very High
University of Florida (UF)	Gainesville, FL	32443	7.1	Public	City: Midsize	Research Very High
University of Illinois at Urbana-Champaign (UIUC)	Champaign, IL	33102	13.9	Public	City: Small	Research Very High
University of Minnesota-Twin Cities (UMN)	Minneapolis, MN	31707	5.6	Public	City: Large	Research Very High
University of Pittsburgh- Pittsburgh Campus (Pitt)	Pittsburgh, PA	18550	3.7	Public	City: Large	Research Very High
University of Wisconsin- Madison (UW)	Madison, WI	29538	6.4	Public	City: Large	Research Very High

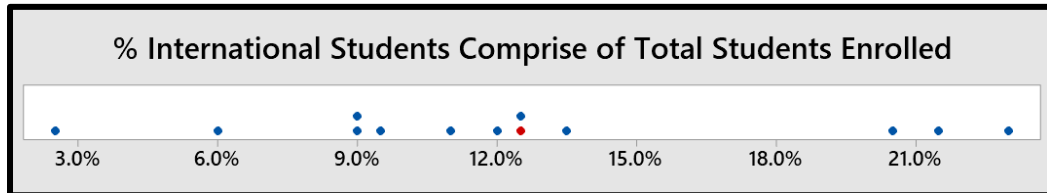
Major Findings:

1. Figure F.2 and F.3 reflect the percentage of international students vs. total student body for institutions in the comparison group. NCSU is represented as a red point in both of these figures.

F.2



F.3



- In this situation, the null hypothesis is that there is no linear relationship between the size of student body and the percentage of international students. The alternate hypothesis is that there is a linear relationship between the size of student body and the percentage of international students. Because the p-value is larger than 0.05 we fail to reject the null hypothesis. (Penn week 9 pg. 7)
- In future research I would like to investigate what variables could be good predictors for a university’s percentage of international students. Although I could not find positive correlation in my current data set, I could investigate the institution’s national ranking verses percentage of international students.
- Total Students is not a predictor for the percentage of international students based on the ANOVA table in figure F.4 (Penn Week 8 pg. 4).

F.4

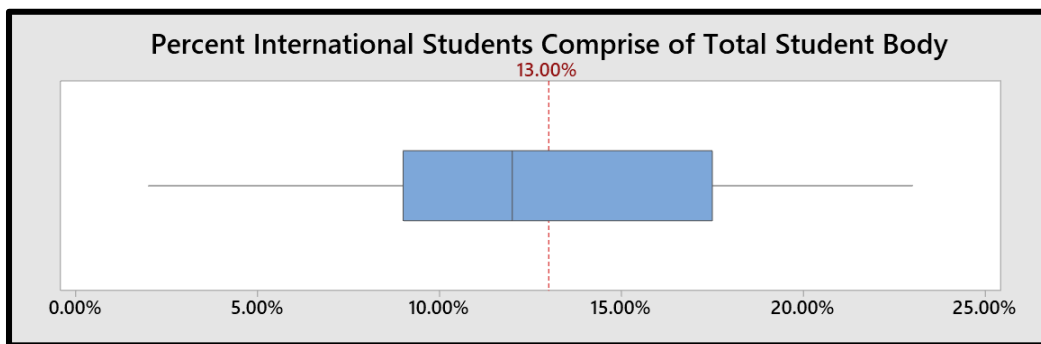
Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	0.008634	0.008634	2.67	0.131
Total Students	1	0.008634	0.008634	2.67	0.131
Error	11	0.035621	0.003238		
Total	12	0.044255			

2. Figure F.5 reflects the raw data pertaining to student population within the comparison groups, while Figure F.6 reflects that at 13% international student body population, NCSU is slightly above average.

F.5

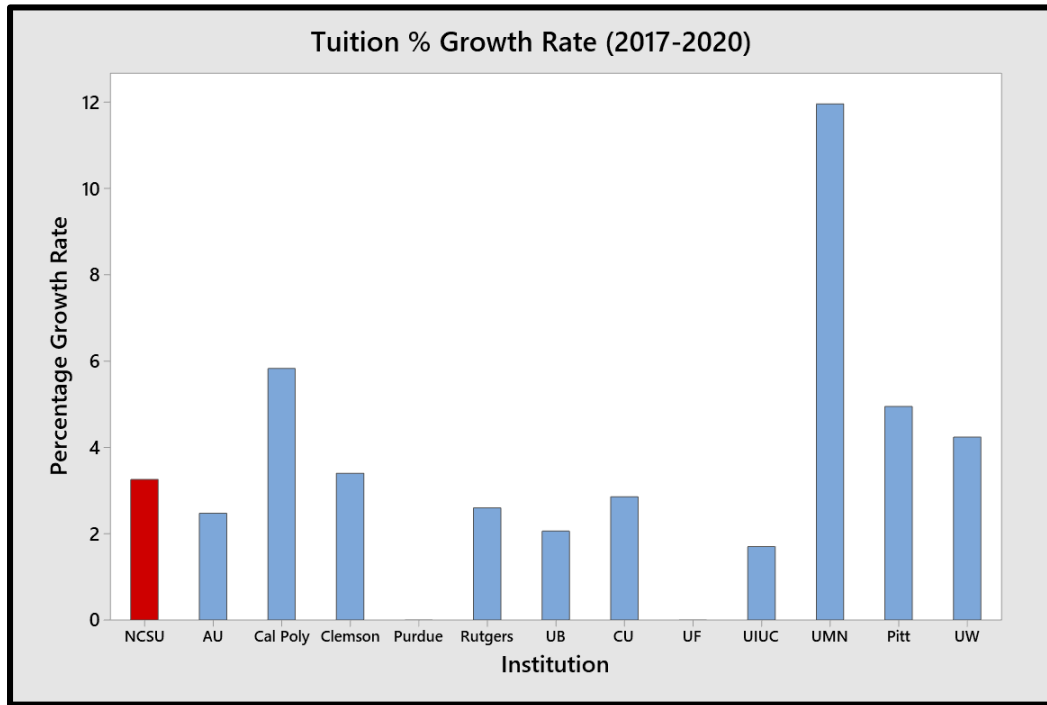
Institution	Total Students	Total International Students	Total Undergrad Students	Total International Undergraduate Students	% International Students Comprise of Student Body
NCSU	34432	4328	24150	1137	13%
AU	29776	2688	23964	1374	9%
Cal Poly	22370	512	21351	467	2%
Clemson	24387	1455	19402	182	6%
Purdue	42682	9134	-	-	21%
Rutgers	49577	5843	35641	3212	12%
UB	30648	6289	21020	3343	21%
CU	35338	3254	29056	2064	9%
UF	52669	4945	35247	887	9%
UIUC	48216	11198	33955	5548	23%
UMN	51848	6363	35433	3090	12%
Pitt	28642	3129	19326	803	11%
UW	42977	5885	31358	3181	14%

F.6



3. Out of state tuition without room and board percentage growth rates between 2017-2020.

F.7



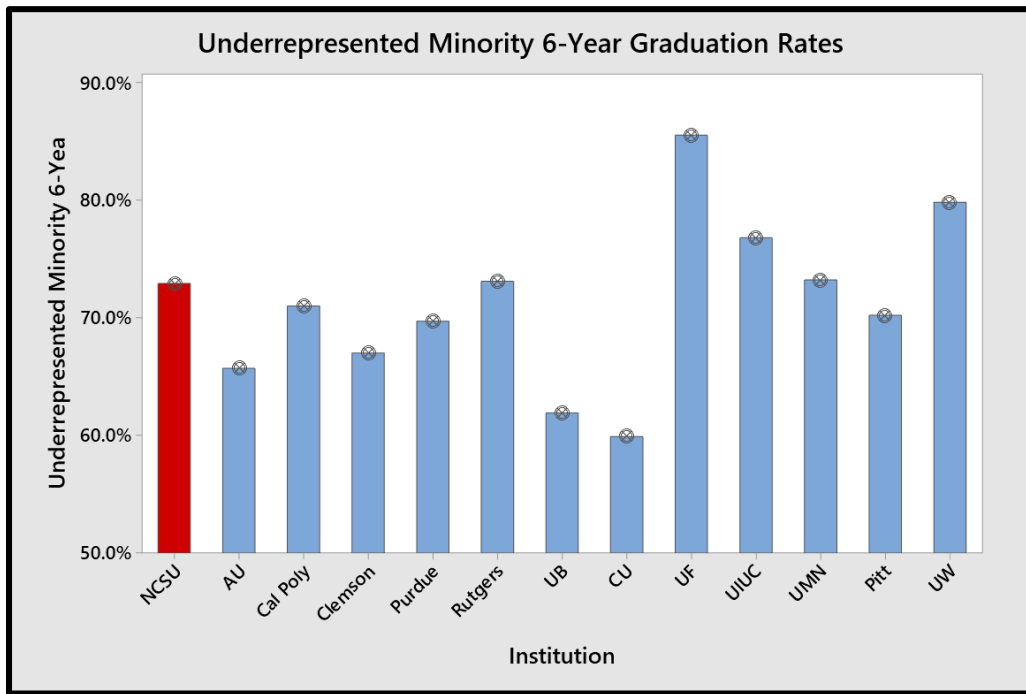
F.8

Statistics								
Variable	N	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Percentage Growth Rate	13	3.485	3.050	0.000	1.880	2.855	4.591	11.950

- With an average tuition growth rate of 3.26% between the years of 2017-2020, North Carolina State University has an average yearly tuition growth rate that is higher than the median of the institutions in its comparison group.
- When this data is arranged from smallest to largest NCSU is ranked 5th out of the thirteen comparison schools for out of state tuition in 2019-2020. NCSU is ranked 8th out of the 13 comparison schools in regards to out of state tuition percent growth rate from 2017-2020.

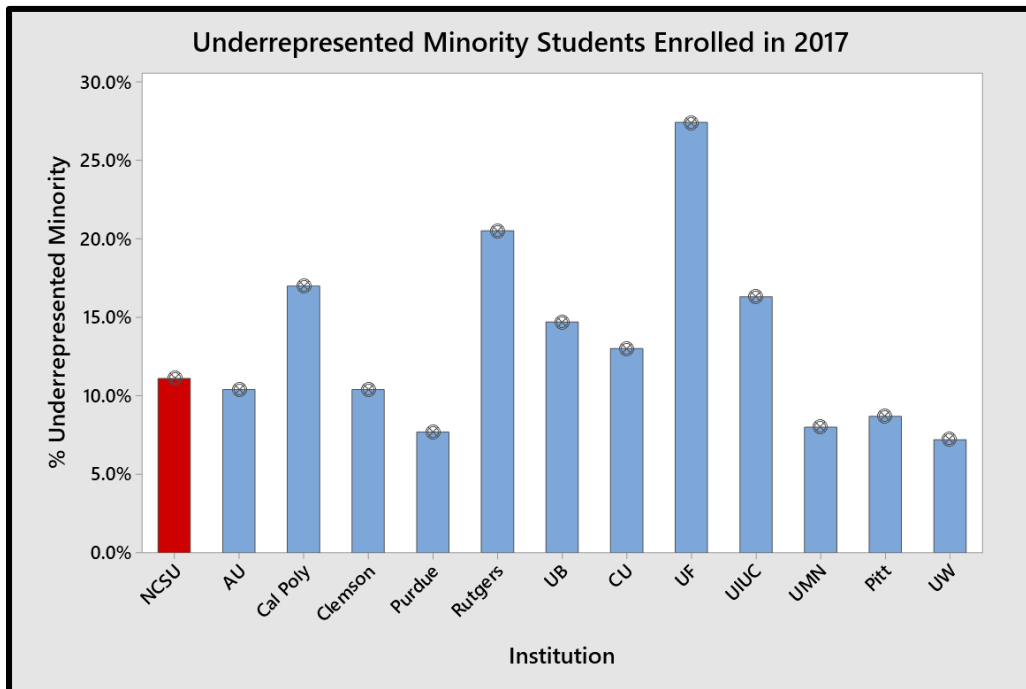
- Underrepresented minority 6-year graduation rate for students pursuing bachelor degrees in 2017.

F.9



- Underrepresented minority enrollment for students pursuing bachelor degrees in 2017.

F.10

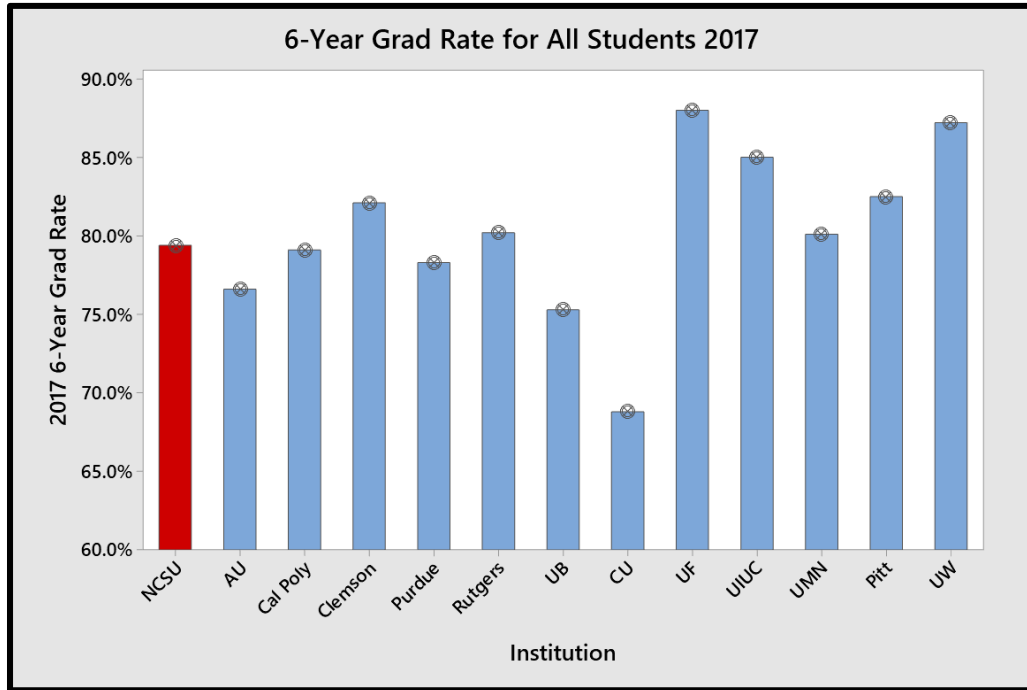


- At NCSU, the graduation rate for underrepresented minority students, illustrated in Figure F.9, is 72.9% and slightly higher than the median of 71.0%.

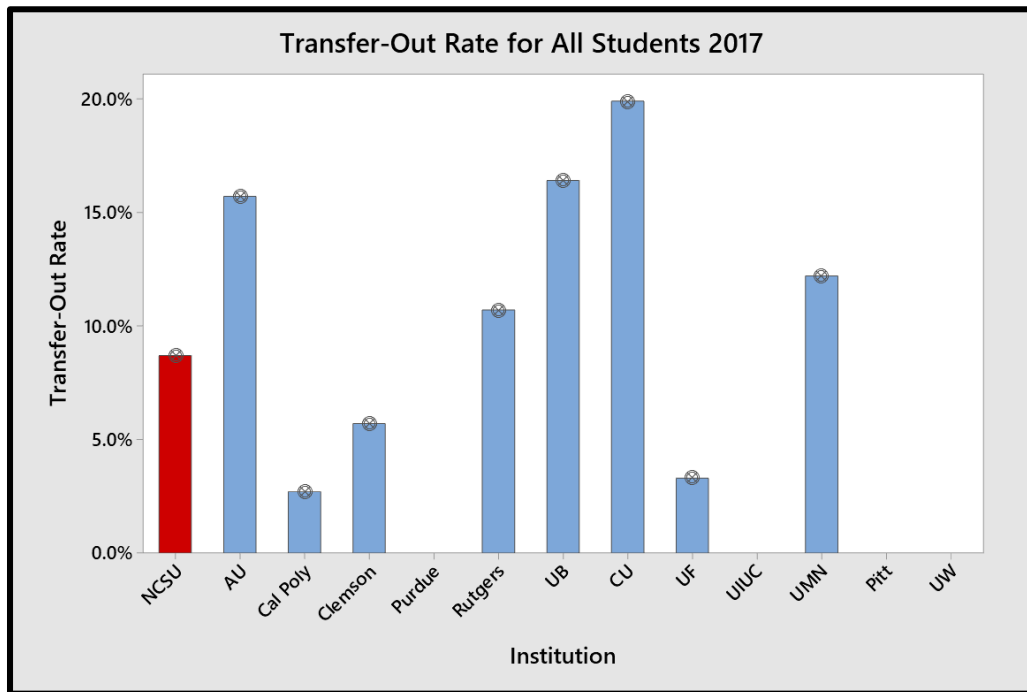
- The percentage of underrepresented minority students enrolled in 2017, illustrated in Figure F.10, at NCSU is 11.1%, which is the median of the 13 institutions in this benchmark.

6. Overall Graduation and Transfer-out rates for students in 2017

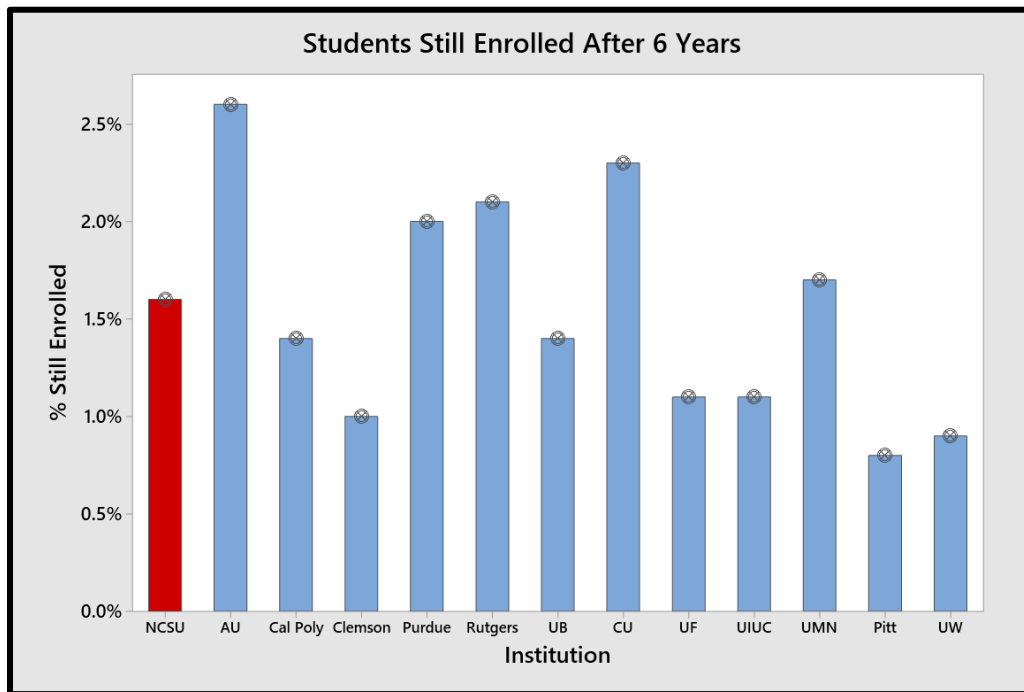
F.11



F.12



F.13



F.14

Statistics								
Variable	N	Mean	StDev	Minimum	Q1	Median	Q3	Maximum
Underrepresented Minority 6-Yea	13	0.7128	0.0699	0.5990	0.6635	0.7100	0.7500	0.8550
% Underrepresented Minority	13	0.1326	0.0588	0.0720	0.0835	0.1110	0.1665	0.2740
2017 6-Year Grad Rate	13	0.8020	0.0512	0.6880	0.7745	0.8010	0.8375	0.8800
Transfer-Out Rate	9	0.1059	0.0604	0.0270	0.0450	0.1070	0.1605	0.1990
% Still Enrolled	13	0.01538	0.00572	0.00800	0.01050	0.01400	0.02050	0.02600

- Figures F.11, F.12, and F.13 illustrate that NCSU has a slightly higher than average retention rate, but a slightly lower than average graduation rate. This suggests that students are staying in school but not necessarily graduating on time.

7. High TOEFL scores are difficult to get. The test is expensive. This is a huge hoop to jump through if there is a university that requires this but a similar one does not. If a student is struggling with their English ability but fulfills the other requirements for this university, additional resources to grow their English level during college could push them to apply to one college over another.

- All schools in this comparison group accept TOEFL scores within the range of 79 being the lowest score accepted and 100 is the highest lowest score accepted. IETLS of 6-7
- Only two schools do not offer ESL intensive English classes, Clemson and California Polytechnical University, this has a correlation to the total percent of the student body comprised of international students, as these two schools also have the lowest percentage

in this category. Both of these indicators suggest that they do not actively recruit international students.

Conclusion:

This report is intended to provide benchmarking data for admissions officers and recruiters who work with prospective international students. Through comparing the intended indicators, recruitment staff can focus on the positive aspects of the college and offer a general overview of what international students can expect when attending North Carolina State University. It also will provide data that can be used to see if the university is on the right trajectory to be compared to their peer universities, or provide warning if they are not aligning with their peer universities but are instead aligning with “rear-view” schools. (Penn State, Trainer, n.d)

The most difficult part of this report was finding a way to visually present the data that clearly reflected a statistical relationship. Drawing meaning from the various statistical tests was also difficult as I am not yet experienced in this skill. I enjoyed learning more about Minitab through this assignment, and I found that its output of basic statistics was clear enough that I could compare NCSU’s data to examples in the class. I am beginning to feel more comfortable with the process of taking raw data from IPEDS and other sources and using simple statistics to draw meaning from it.

I also enjoyed learning about the purpose of a benchmarking reports. I do feel like I’ve gained some understanding of NCSU’s international student climate in comparison to similar universities. Collecting the data and processing it was time consuming and difficult because often data was missing for one university but available for the rest of the institutions. I frequently needed to find new sources to hunt missing data down. Overall, I am interested in the data and the software I used, and I look forward to learning more about them.

References

- Auburn University. (n.d.). Retrieved March 11, 2020, from <http://www.auburn.edu/>
- Auburn University. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=100858
- Auburn University International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/auburn-university/student-life/international/>
- California Polytechnic State University - San Luis Obispo International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/california-polytechnic-state-university-san-luis-obispo/student-life/international/>
- California Polytechnic State University-San Luis Obispo. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=110422
- Clemson University. (n.d.). Retrieved March 11, 2020, from <http://www.clemson.edu/>
- Clemson University. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=217882
- Clemson University International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/clemson-university/student-life/international/>
- Home: University of Pittsburgh. (n.d.). Retrieved March 11, 2020, from <http://www.pitt.edu/>
- Learn by Doing. (n.d.). Retrieved March 11, 2020, from <http://www.calpoly.edu/>
- NC State University. (n.d.). Retrieved February 15, 2020, from <http://www.ncsu.edu/>
- North Carolina State University at Raleigh. (n.d.). Retrieved February 15, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=199193
- North Carolina State University International. (2020, February 7). Retrieved February 15, 2020, from <https://www.collegefactual.com/colleges/north-carolina-state-university-at-raleigh/student-life/international/#secCountryDeepDive>
- Penn State World Campus. (n.d.). Lesson 5: Benchmarking and Performance indicators. In HIED 801: *Foundations of Institutional Research: Spring 2020*. Retrieved from <https://psu.instructure.com/courses/2043985/modules/items/27822759>
- Purdue University. (n.d.). Purdue University. Retrieved March 11, 2020, from <http://www.purdue.edu/>
- Purdue University - Main Campus International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/purdue-university-main-campus/student-life/international/>
- Purdue University-Main Campus. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=243780

- Rodriguez, J. (n.d.). Intensive English. Retrieved March 11, 2020, from <https://reli.rutgers.edu/programs/intensive-english#:~:text=>
- Rutgers University - New Brunswick International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/rutgers-university-new-brunswick/student-life/international/>
- Rutgers University-New Brunswick. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=186380
- University at Buffalo. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=196088
- University at Buffalo International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-at-buffalo/student-life/international/#secCountryDeepDive>
- University of Colorado Boulder. (n.d.). Retrieved March 17, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=126614
- University of Colorado Boulder. (n.d.). Retrieved March 17, 2020, from <https://www.colorado.edu/>
- University of Colorado Boulder International. (2020, February 7). Retrieved March 17, 2020, from <https://www.collegefactual.com/colleges/university-of-colorado-boulder/student-life/international/>
- University of Florida. (n.d.). Retrieved March 11, 2020, from <http://www.ufl.edu/>
- University of Florida. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=134130
- University of Florida International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-of-florida/student-life/international/>
- University of Illinois at Urbana-Champaign. (n.d.). Retrieved March 11, 2020, from <http://www.illinois.edu/>
- University of Illinois at Urbana-Champaign. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=145637
- University of Minnesota. (n.d.). University of Minnesota Twin Cities. Retrieved March 11, 2020, from <http://www.twin-cities.umn.edu/>
- University of Minnesota - Twin Cities International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-of-minnesota-twin-cities/student-life/international/>
- University of Minnesota-Twin Cities. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=174066

University of Pittsburgh - Pittsburgh Campus International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-of-pittsburgh-pittsburgh-campus/student-life/international/>

University of Pittsburgh-Pittsburgh Campus. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=215293

University of Wisconsin - Madison International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-of-wisconsin-madison/student-life/international/>

University of Wisconsin - Madison International. (2020, February 7). Retrieved March 11, 2020, from <https://www.collegefactual.com/colleges/university-of-wisconsin-madison/student-life/international/>

University of Wisconsin-Madison. (n.d.). Retrieved March 11, 2020, from https://nces.ed.gov/globallocator/col_info_popup.asp?ID=240444

University of Wisconsin–Madison. (n.d.). Retrieved March 11, 2020, from <http://www.wisc.edu/>

Welcome to the University at Buffalo. (2020, March 9). Retrieved March 11, 2020, from <http://www.buffalo.edu/>