Deloitte.

rpk GROUP
from mission to market

THE burningglass INSTITUTE

THE UNIVERSITY OF NORTH CAROLINA SYSTEM

University of North Carolina System

Evaluation of University Programs

February 2024

version 4 |release date 2/23/24

Executive Summary | Observations

The North Carolina General Assembly directed the University of North Carolina Board of Governors ("BoG") to contract with an independent consultant to conduct an evaluation of current programs at each constituent institution of the University of North Carolina System ("UNC System") related to operational costs, student outcomes, and return on investment ("ROI") of each program.

The guide that follows this Executive Summary details the dashboards created to evaluate ROI from the perspective of three different stakeholder groups: each institution in the UNC System, UNC System students, and the State of North Carolina. You can find a pdf version of the System-Wide dashboards immediately following this executive summary, and the live dashboards on the following public web page: https://myinsight.northcarolina.edu/t/Public/views/UNCLandingPage/LandingPage

For context, the UNC System is composed of 16 universities each of which offers multiple degree programs at the undergraduate and graduate level. Analysts may wish to look at the ROI associated with individual degree programs at the institution level or examine ROI for a particular program of study offered across universities. This study allows for both sets of analyses. The set of data assessed examines 603 undergraduate programs of study across all institutions. These roll up into 206 unique undergraduate programs of study at the System level (designated as 6-digit Classification of Instructional Program (CIP) codes). These 206 undergraduate programs of study are classified into 29 undergraduate fields of study, represented by a 2-digit CIP code. In addition, the set of data assessed included 315 graduate programs of study that roll up into 167 unique graduate programs of study (6-digit CIP codes) at the System level. These 167 graduate programs are classified into 28 graduate fields of study (2-digit CIP code). The study excluded a set of professional programs of study across undergraduate and graduate programs. More information can be found in the Context and Key Considerations section of this report. The dashboards enable users to look at prior student outcomes across the System and at institutions at both the field of study and program of study level.

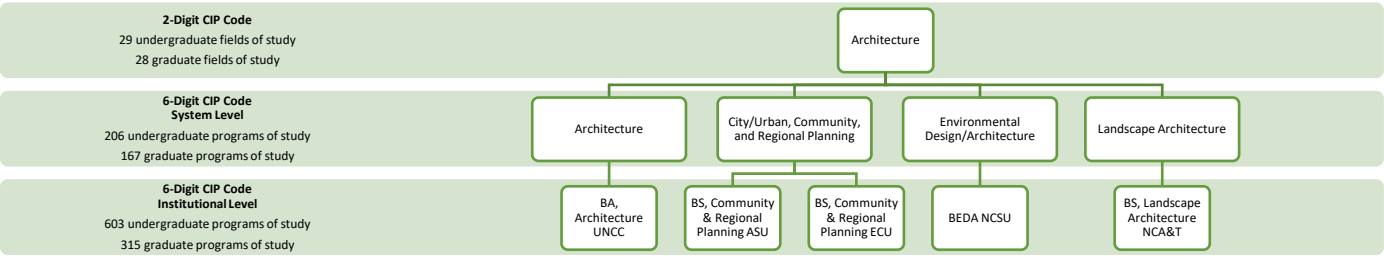


Figure 1. Example of program of study and field of study roll up.

Summary Observations

This study estimated return on investment (ROI) – the lifetime earnings minus the costs of college – for the 603 undergraduate programs of study and 315 graduate programs of study offered across the 16 System institutions between the years of 2015 to 2020. These ROI calculations are made by comparing the expected lifetime earnings of UNC graduates against the expected lifetime earnings of those without a college degree for undergraduate programs or with a bachelor's degree for graduate programs, as measured by the American Community Survey, in the state to isolate the additive (i.e., incremental) value of a UNC degree.

Across all programs, the data show that the median incremental lifetime ROI for an undergraduate student who completes a degree is $497,123 while the median incremental lifetime ROI for a graduate student who completes a degree is $919,422. Program-level findings include:

- Of the 918 programs examined at the institution level, 851 or **93% had a positive ROI** for students.
    - Of the undergraduate programs, 566 out of 603 or **94%, had a positive ROI** for students.
    - Of the graduate programs, 285 out of 315 or **91%, had a positive ROI** for students.
- Of the 315 graduate programs of study, 217 or **69% provided a median lifetime ROI greater than $500,000**.
- When looking at the highest ROI programs at the System level, the study finds that graduates of **29 of 206 undergraduate programs and 59 of 167 graduate programs earned a median lifetime ROI greater than $1M**. Many of these high-return programs are aligned to critical workforce needs in the state. The tables below detail those programs of study which are currently offered and return greater than $1M lifetime ROI. Note that additional programs with returns greater than $1M in ROI that are no longer active are excluded.

Undergraduate Programs of Study Graduates Pooled Across Institutions	**Median Lifetime ROI**	**2019-20 Enrollment**	**2019-20 Degree Conferrals**
Science Technologies/Technicians, Other	$2,287,841	71	16
Applied Mathematics, General	$2,005,483	630	78
Biostatistics	$1,963,757	120	13
Chemical Engineering	$1,670,307	602	131
Computer Engineering, General	$1,590,153	940	218
Genetics, General	$1,422,216	109	22

Undergraduate Programs of Study Graduates Pooled Across Institutions	**Median Lifetime ROI**	**2019-20 Enrollment**	**2019-20 Degree Conferrals**
Industrial Engineering	$1,410,242	515	124
Bioengineering and Biomedical Engineering	$1,409,583	877	206
Information Science/Studies	$1,408,264	226	42
Actuarial Science	$1,399,736	79	20
Electrical and Electronics Engineering	$1,393,913	1,272	213
Agricultural Teacher Education	$1,369,509	193	55
Statistics, General	$1,331,378	270	46
Poultry Science	$1,309,511	87	19
Construction Engineering	$1,289,670	66	13
Microbiology, General	$1,267,493	156	46
Logistics, Materials, and Supply Chain Management	$1,258,089	177	62
Environmental/Environmental Health Engineering	$1,205,852	145	33
Neuroscience	$1,163,339	620	33
Registered Nursing/Registered Nurse	$1,157,984	11,476	2,643
Civil Engineering, General	$1,143,980	1164	234
Construction Management, General	$1,114,482	537	98
Dental Hygiene/Hygienist	$1,091,964	111	31
Biochemistry	$1,062,517	646	97
Engineering, General	$1,060,357	2,922	251
Computer Science	$1,042,678	8,018	1,503
Wood Science and Wood Products/Pulp and Paper Technology/Technician	$1,027,258	248	53
Mechanical Engineering	$1,017,522	2,598	542
Agricultural Engineering	$1,007,270	193	56

Graduate Programs of Study Graduates Pooled Across Institutions	**Median Lifetime ROI**	**2019-20 Enrollment**	**2019-20 Degree Conferrals**
Dental Clinical Sciences, General	$4,803,939	95	25
Computer Engineering, General	$4,441,453	52	106
Health Professions and Related Clinical Sciences, Other	$3,682,670	85	18
Biotechnology	$3,538,235	56	21
Data Modeling/Warehousing and Database Administration	$3,120,656	322	157
Environmental/Environmental Health Engineering	$3,014,210	41	15
Civil Engineering, General	$2,623,825	202	107
Nursing Science	$2,523,851	125	56
Physician Associate/Assistant	$2,492,384	165	51
Computer and Information Systems Security/Auditing/Information Assurance	$2,491,787	83	42
Agricultural Engineering	$2,414,178	38	14
Information Technology	$2,410,172	184	84
Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing, Other	$2,381,423	789	184
Family Practice Nurse/Nursing	$2,366,781	739	196
Management Science	$2,142,352	1,883	797
Registered Nursing/Registered Nurse	$2,137,564	167	163
Accounting	$2,081,225	1,015	573

Graduate Programs of Study Graduates Pooled Across Institutions	Median Lifetime ROI	2019-20 Enrollment	2019-20 Degree Conferrals
Computer Science	$2,078,694	377	708
Management Sciences and Quantitative Methods, Other	$2,027,755	348	133
Electrical and Electronics Engineering	$2,004,151	407	232
Mechanical Engineering	$1,947,560	267	157
Bioengineering and Biomedical Engineering	$1,925,235	111	50
Engineering/Industrial Management	$1,853,575	123	25
Industrial Engineering	$1,750,104	122	88
Statistics, General	$1,738,470	155	104
Engineering, General	$1,649,681	67	21
Speech-Language Pathology/Pathologist	$1,592,616	92	36
Engineering/Engineering-Related Technologies/Technicians, Other	$1,580,100	52	16
Bioinformatics	$1,516,603	100	26
Health/Health Care Administration/Management	$1,491,410	114	227
School Psychology	$1,475,649	46	18
Business Administration and Management, General	$1,467,826	114	1,184
Medical Informatics	$1,462,096	17	53
Educational Leadership and Administration, General	$1,415,313	745	319
Biochemistry	$1,385,168	48	14
Professional, Technical, Business, and Scientific Writing	$1,383,938	15	23
Computer and Information Sciences, General	$1,375,055	139	24
Pharmaceutics and Drug Design	$1,373,682	92	29
Computer Systems Networking and Telecommunications	$1,368,478	307	139
Secondary School Administration/Principalship	$1,325,380	246	100
Respiratory Care Therapy/Therapist	$1,317,264	40	11
Business Administration, Management and Operations, Other	$1,312,873	99	20
Econometrics and Quantitative Economics	$1,291,820	0	36
Occupational Therapy/Therapist	$1,253,641	14	76
Industrial and Organizational Psychology	$1,235,213	39	23
Audiology/Audiologist and Speech-Language Pathology/Pathologist	$1,224,972	17	106
Biostatistics	$1,220,676	134	39
Elementary Education and Teaching	$1,201,909	216	82
Financial Mathematics	$1,185,726	126	69
Network and System Administration/Administrator	$1,179,118	117	45
Communication Sciences and Disorders, General	$1,148,561	17	75
Agricultural and Extension Education Services	$1,118,245	18	13
Public Health, General	$1,117,361	70	171
Manufacturing Engineering	$1,044,481	69	58
Economics, General	$1,043,301	161	43
Digital Communication and Media/Multimedia	$1,040,650	78	27
Health/Medical Psychology	$1,037,006	103	13
Educational Evaluation and Research	$1,031,410	66	14
Nuclear Engineering	$1,021,033	111	38

Executive Summary | Observations

A closer look at several programs identifies noteworthy data points over the timeframe of the study:

- 98% of Education programs of study (critical need job for NC) at the undergraduate and graduate level provided a positive ROI for students.
- 98% of Health Professions and Related programs of study (critical need job for NC) at the undergraduate and graduate level provided a positive ROI for students.
- Upward economic mobility for graduates is significant: 89.6% of low-income graduates (defined as those whose family income was in the lowest band at the time of enrollment) move up at least one income band as their careers progress.

Conclusion

This data set offers the UNC System the opportunity for further study of historical programs level outcomes, in the context of student needs, state needs and the results across different universities. This data set, and the ability to search and compare historical data, offers opportunities for the System, individual universities, and students to ask critical questions and inform decisions.

The System and its institutions might use this data to identify "bright spots" across programs—instances where a program at one institution offers a high return on investment when compared to its sister program at another institution. This would prompt a deeper examination of the context of the two data points: are the two programs offering different aid packages to students (thus lowering the investment for one group)? Are career placement or industry partnership different among the two institutions, (thus offering different earning opportunities to students)? Do students from the two institutions come from different socio-economic backgrounds (thus bringing different external supports, or perhaps starting from a different economic mobility tier)? Do more students than average (across the System) leave the state to pursue careers (thus narrowing the dataset and perhaps missing the full picture of ROI)? This dataset will offer the opportunity for institutions and the System to identify the programs and institutions where deeper examination may offer insight into changes that could benefit students and the state.

For students choosing to pursue a degree program within the UNC System, this series of Student ROI dashboards could be used help a student in the future to make data-informed decisions by using real profiles of UNC System graduates. The questions that these dashboards can help a prospective student answer could range from: What is the value of staying within North Carolina versus pursuing a degree outside of the State? Based on my profile, how much aid can I expect and what will be my net required investment? How does that required investment vary across universities and programs? Am I more likely to have greater career earnings by working for four years after high school or by attending college? How likely am I to get a job in a field aligned to my degree upon or shortly after graduation?

It is our expectation that these dashboards are not seen as an "answer," but rather are leveraged to enable the System, its institutions, and future students to better understand the right questions to ask and to enable analysts to review the data to inform decisions.

UNC Institutional Context Dashboard

Overview and Instructions

This page provides context and instruction for the UNC System Dashboard.

Dashboard Summary

The dashboard aims to respond to the legislative request to provide the number of faculty and staff employed for each program and the related costs to operate each program, inclusive of total staff compensation and benefits, facility costs, and any other related expenses, including overhead. It provides general context about the UNC System and the 16 constituent institutions.

This dashboard is part of a three-dashboard series that includes Institutional Context, Student ROI, and State ROI dashboards.

Dashboard Components

1. Summary:
Provides an overview of the key institutional context metrics

2. Operating Costs:
Provides the number of faculty and staff employed for each meta-department, as well as the related costs to operate each meta-department

3. Academic Production:
Provides an overview of credit hours and degrees produced by each meta-department

Assumptions & Methodology

Scope of Analysis

The following 16 UNC System institutions are in-scope for this analysis:

1. Appalachian State University
2. East Carolina University
3. Elizabeth City State University
4. Fayetteville State University
5. North Carolina A&T State University
6. North Carolina Central University
7. North Carolina State University
8. University of North Carolina at Asheville
9. University of North Carolina at Chapel Hill
10. University of North Carolina at Charlotte
11. University of North Carolina at Greensboro
12. University of North Carolina at Pembroke
13. University of North Carolina School of the Arts
14. University of North Carolina Wilmington
15. Western Carolina University
16. Winston-Salem State University

Note that UNC affiliates (e.g., UNC Health, PBS North Carolina, The North Carolina Arboretum, The University of North Carolina Press, The North Carolina State Education Assistance Authority) as well as UNC high schools and students (e.g., North Carolina School of Science and Mathematics) are out of scope for this analysis.

Additionally, Associates Degrees, Certificates, and the following terminal graduate degrees have been excluded from the analysis: Dentistry, Medical, Veterinary, Pharmacy, Law.

Meta-Departments

The unit of analysis for this dashboard is the 'Meta Department.' At each of the institutions within the UNC System, funds are expended at the department or cost center level, not the program or degree level. Therefore, capturing the 'cost' of any particular undergraduate or graduate degree requires significant and complex allocation decisions that cannot be accurately replicated in a uniform way across all institutions. Therefore, the unit of analysis needed to reflect the business practice of expenses being booked at the department level. Due to the level of autonomy at each institution to design their own academic structure, there is no standardization in departments across the institutions. Therefore, a meta-department structure was created to effectively map all existing institutional departments to a uniform set of meta-departments that sufficiently align similar disciplines and departments. Institutions were consulted about the mapping and provided feedback to ensure departments were mapped appropriately to their respective meta-department. The Military Science & Technology Meta-Department has been excluded from this analysis to reflect that this Meta-Department is partially driven by ROTC courses, which have Faculty/Staff that are externally funded.

Disclaimer: Costs & Credit Hours are functions of the General Ledger and Course Departments that are aligned to each Meta-Department. The way in which costs are booked to the General Ledger, and the structure of courses in Course Departments drive these metrics. Any structural or procedural changes to these processes or organization over time can result in impacts to the displayed metrics.

Operating Cost Categories

Institution costs of program delivery were accounted for using three categories - Direct Costs, Academic Overhead, and Indirect Costs:

• ***Direct Costs*** are dollars that are labeled as 'instruction' or 'academic support' (via the 'Program Code' in the finance datamart) and booked directly to an academic department, such as salaries for faculty who teach in the department.
• ***Academic Overhead Costs*** are composed of three expense types and are distributed on a per Student Credit Hour basis to each applicable meta-department. Overhead costs include:
1. Any expenses outside of instruction and academic support that are booked directly to an academic department, such as equipment purchases made by a department.
2. All unallocated College level expenses (e.g., expenses in the College of Arts & Sciences not directly tied to a Meta-Department, such as the salary for the Dean of the College)
3. All expenses with the "Instruction" or "Academic Support" Program Code found within non-academic units, such as the Provost's office or the library (this will vary by institution depending on business practices)
• ***Indirect Costs*** are university-wide expenses and do not tie directly to a Meta-Department or College and are not Coded to 'Instruction' or "Academic Support' - these can also be described as Institutional Overhead. Indirect costs are applied to Meta-Departments on a per-credit hour basis and are scaled to reflect the proportion of expenses an Institution uses to support Instruction and Student Services.

Additional Assumptions

1. Universe of expenses included in the analysis focuses around non-federal Unrestricted and General Funds, as well as non Grant & Contract restricted funds, to enable the analysis to focus on the cost of program delivery across the UNC System at the Meta-Department level. **Funds included in the analysis include**, but are not limited to: General Fund, Overhead Receipts, Unrestricted Contracts, Restricted Departmental Use, Restricted Research, Non-C&G, Restricted Scholarships & Fellowships. **Funds excluded from the analysis include**, but are not limited to: Agency Funds, Auxiliary Funds, Contracts & Grants, Endowment Funds, Independent Operations, Plant Funds.
2. Expenses associated with the following Program Codes excluded from the analysis: Area Health Education Centers (AHEC), UNC Center for Public Television, Community Services, MCNC Contract, NC Arboretum, Cooperative Extension Service, Agricultural Research Service.
3. Registration activity for **cross listed courses** is captured within the meta-department the student registered, while Faculty members are only counted in their Home Deparment.
4. Student credit hours are reflective of enrollment as of census. Post-census enrollment activity is not captured in this analysis. This determination mainly impacts UNC-CH Business and the MBA program has significant post-census activity. Other institutions and programs may be impacted to a smaller degree.

Data Sources

Finance Data Mart (FDM) - No FDM financial data for UNC-CH is available for FY2019
Human Resources Data Mart (HRDM)
Student Data Mart (SDM)

Institution Name: All UNC System Institutions

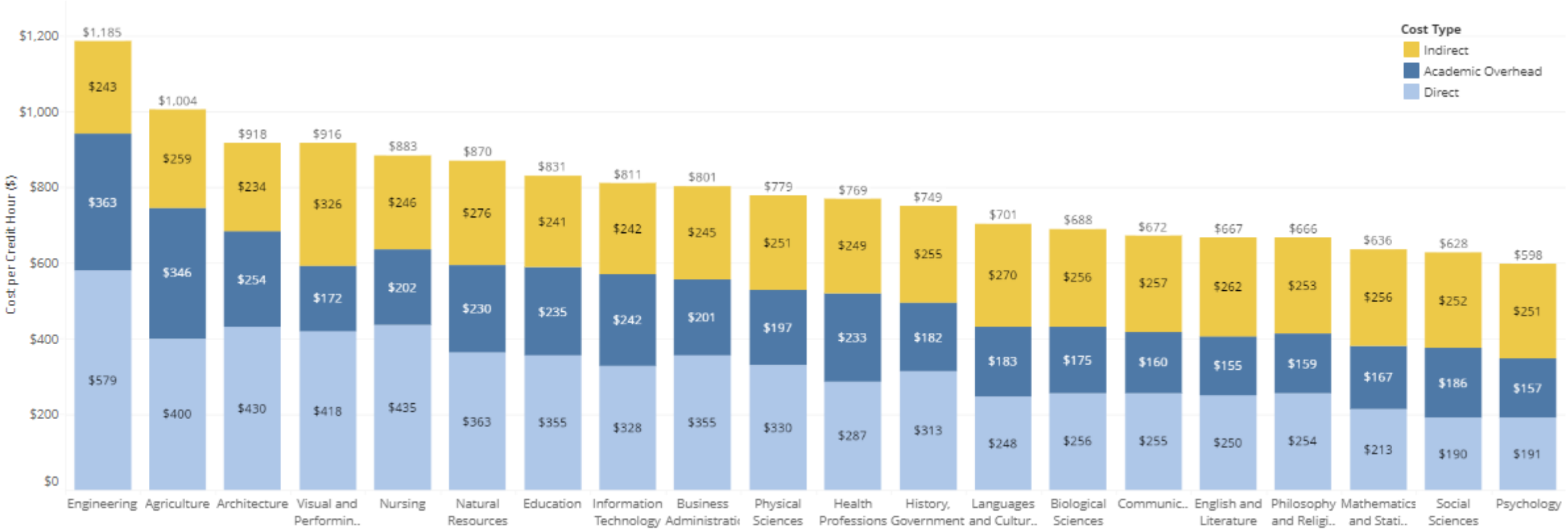
Academic Year: 2020-2021

All Summary Statistics

Faculty FTE	Total Credit Hours Produced	Annual Degrees Produced	Average Class Size	
12,771	5,459,944	57,153	Graduate	14.6
			Undergraduate	27.9

All Summary Visuals

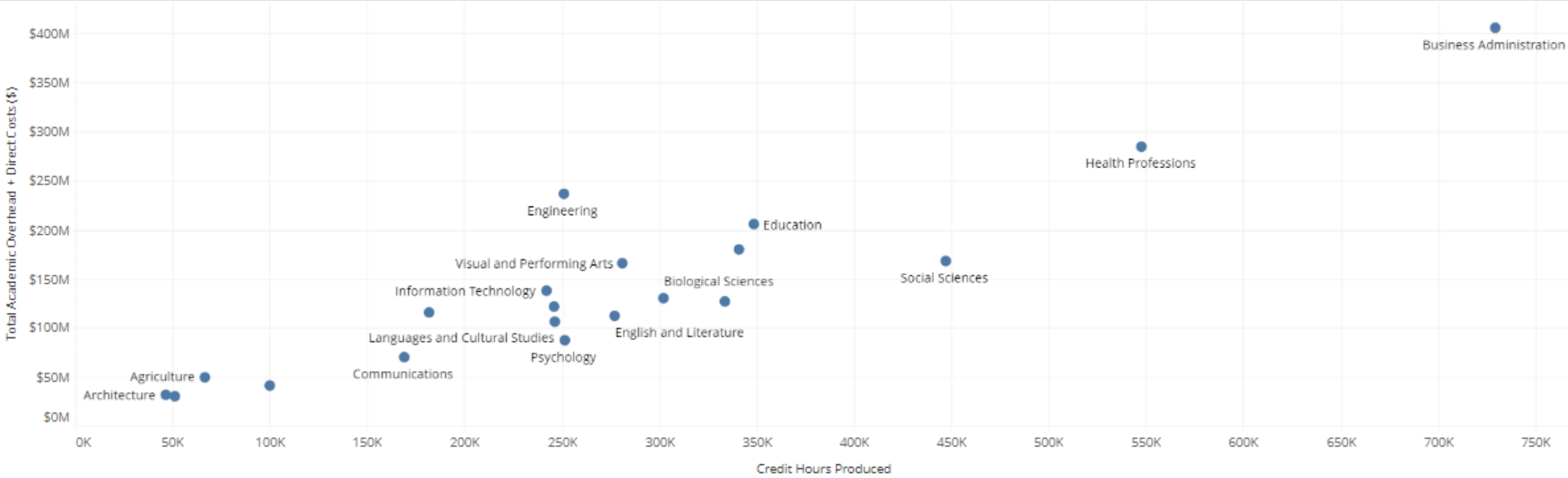
Cost per Credit Hour Produced by Meta-Department



Institution Name
All UNC System Institutions

Academic Year
2020-2021

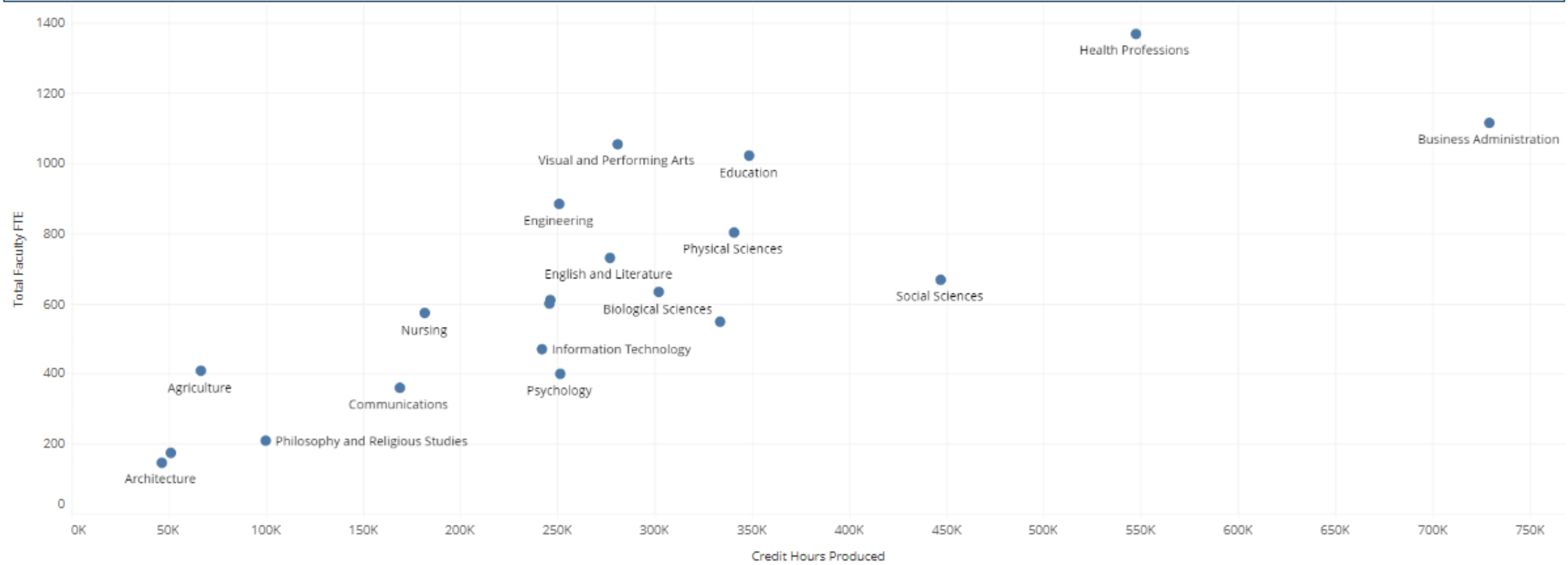
Total Academic Overhead + Direct Costs & Credit Hours Produced by Meta-Department



Institution Name
All UNC System Institutions

Academic Year
2020-2021

Faculty FTE & Credit Hours Produced by Meta-Department



THE UNIVERSITY OF NORTH CAROLINA SYSTEM

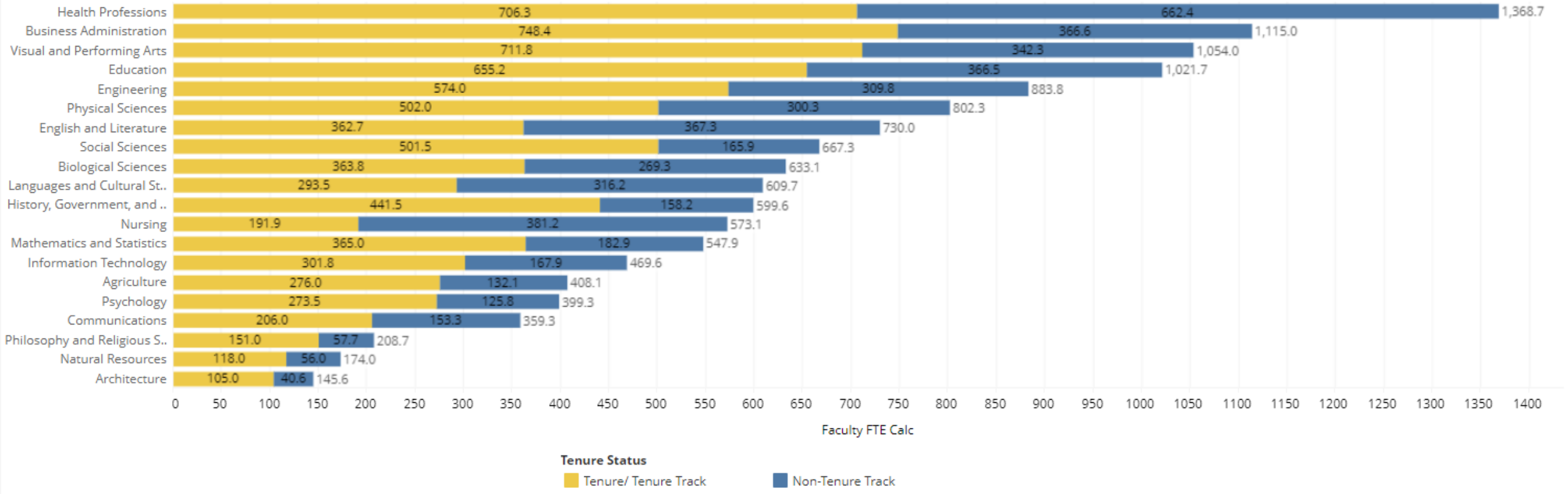
UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

All Number of Faculty & Staff Employed by Program

Faculty FTE by Meta-Department



Institution Name: All UNC System Institutions

Academic Year: 2020-2021

	Non-Tenure Track		Tenure/ Tenure Track		Grand Total
	Not on a Tenure Track	Phased Retirement	Permanent Tenure	Not Tenured but on Tenure Track	
Agriculture	130	3	210	66	408
Architecture	39	2	74	31	146
Biological Sciences	266	4	272	92	633
Business Administration	356	11	529	219	1,115
Communications	150	3	158	48	359
Education	359	8	438	217	1,022
Engineering	303	7	411	163	884
English and Literature	360	8	301	62	730
Health Professions	649	13	453	254	1,369
History, Government, and ..	155	3	349	93	600
Information Technology	165	3	206	96	470
Languages and Cultural St..	315	1	236	58	610
Mathematics and Statistics	180	3	275	90	548
Natural Resources	54	2	78	40	174
Nursing	379	2	87	105	573
Philosophy and Religious ..	56	2	124	27	209
Physical Sciences	295	6	391	111	802
Psychology	124	2	213	61	399
Social Sciences	162	4	350	151	667
Visual and Performing Arts	340	3	575	137	1,054
Grand Total	4,839	84	5,729	2,120	12,771

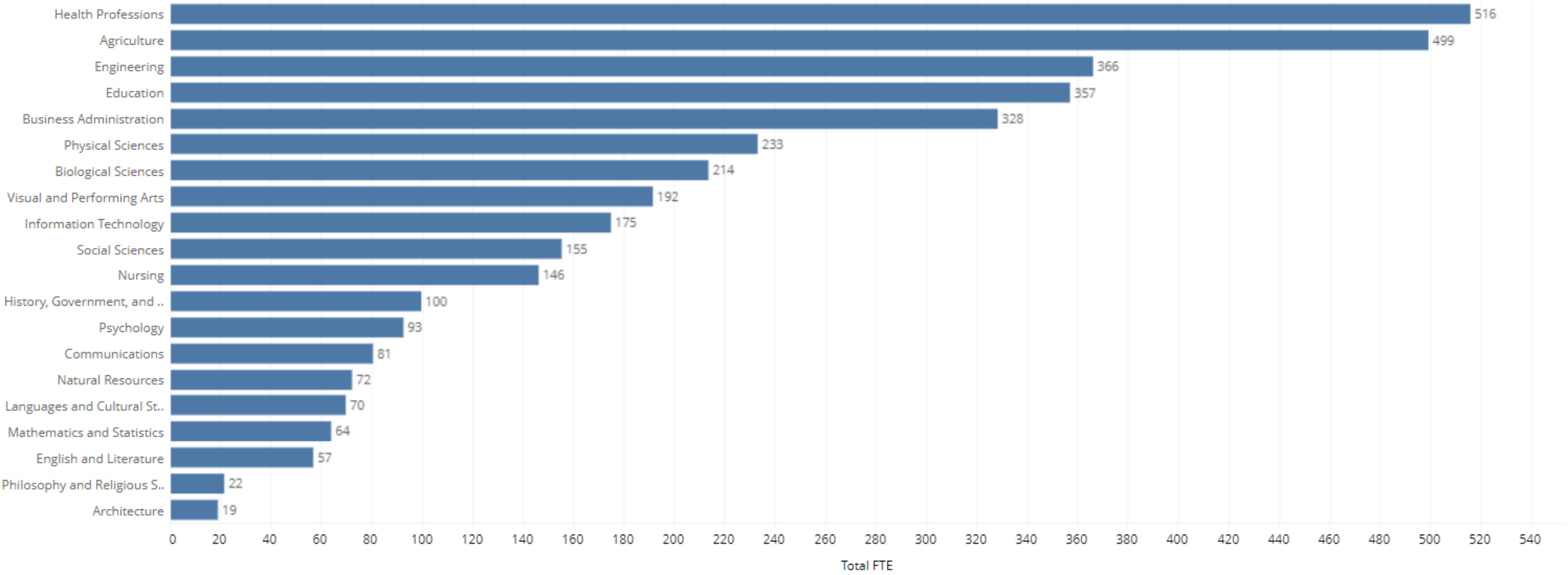
THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Staff FTE by Meta-Department



THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

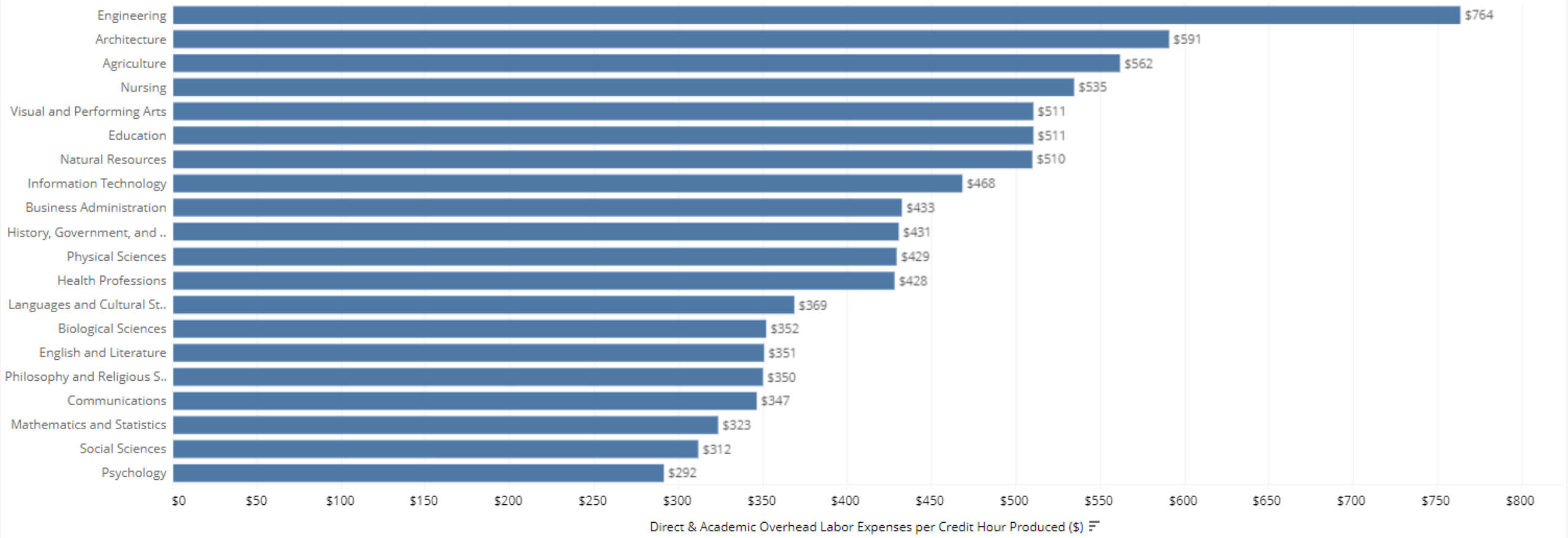
Academic Year: 2020-2021

All Operating Costs by Program

Direct & Academic Overhead Labor Expenses per Credit Hour Produced by Meta-Department

Total to per SCH Toggle

Direct & Academic Overhead Labor Expenses per Credit Hour Produced by Meta-Department



THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

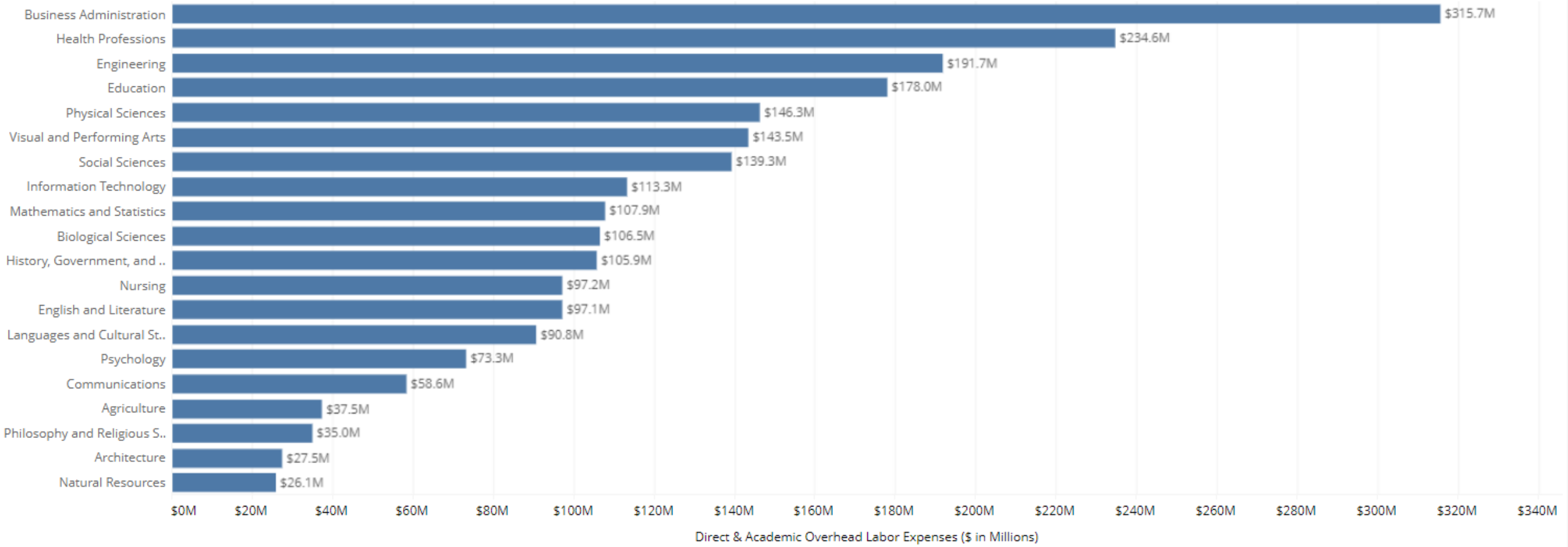
Academic Year: 2020-2021

All Operating Costs by Program

Direct & Academic Overhead Labor Expenses by Meta-Department

Total to per SCH Toggle

Direct & Academic Overhead Labor Expenses by Meta-Department



Institution Name

All UNC System Institutions

Academic Year

2020-2021

Cost Table Toggle (for Direct Costs, Academic Overhead, & Indirect Costs Table below)

per SCH

Direct Costs, Academic Overhead, & Indirect Costs by Meta-Department

Meta Dept	Direct	Academic Overhead	Indirect	Grand Total
Agriculture	$400	$346	$259	$1,004
Architecture	$430	$254	$234	$918
Biological Sciences	$256	$175	$256	$688
Business Administration	$355	$201	$245	$801
Communications	$255	$160	$257	$672
Education	$355	$235	$241	$831
Engineering	$579	$363	$243	$1,185
English and Literature	$250	$155	$262	$667
Health Professions	$287	$233	$249	$769
History, Government, and ..	$313	$182	$255	$749
Information Technology	$328	$242	$242	$811
Languages and Cultural St..	$248	$183	$270	$701
Mathematics and Statistics	$213	$167	$256	$636
Natural Resources	$363	$230	$276	$870
Nursing	$435	$202	$246	$883
Philosophy and Religious ..	$254	$159	$253	$666
Physical Sciences	$330	$197	$251	$779
Psychology	$191	$157	$251	$598
Social Sciences	$190	$186	$252	$628
Visual and Performing Arts	$418	$172	$326	$916
Overall Average	$311	$204	$255	$769

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Cost Table Toggle (for Direct Costs, Academic Overhead, & Indirect Costs Table below)

Amount

Direct Costs, Academic Overhead, & Indirect Costs by Meta-Department

Meta Dept	Direct	Academic Overhead	Indirect	Grand Total
Agriculture	$26.6M	$23.0M	$17.3M	$66.9M
Architecture	$20.0M	$11.8M	$10.9M	$42.7M
Biological Sciences	$77.3M	$53.0M	$77.5M	$207.7M
Business Administration	$258.9M	$146.8M	$178.8M	$584.4M
Communications	$43.2M	$27.0M	$43.4M	$113.6M
Education	$123.9M	$81.8M	$84.1M	$289.8M
Engineering	$145.5M	$91.1M	$60.9M	$297.4M
English and Literature	$69.3M	$43.0M	$72.6M	$184.9M
Health Professions	$157.1M	$127.5M	$136.3M	$420.9M
History, Government, and ..	$77.0M	$44.7M	$62.6M	$184.3M
Information Technology	$79.4M	$58.5M	$58.5M	$196.5M
Languages and Cultural St..	$61.2M	$45.2M	$66.4M	$172.8M
Mathematics and Statistics	$71.0M	$55.9M	$85.3M	$212.2M
Natural Resources	$18.6M	$11.8M	$14.1M	$44.5M
Nursing	$79.1M	$36.6M	$44.7M	$160.4M
Philosophy and Religious ..	$25.4M	$15.9M	$25.3M	$66.6M
Physical Sciences	$112.6M	$67.3M	$85.6M	$265.5M
Psychology	$48.0M	$39.5M	$63.0M	$150.5M
Social Sciences	$85.1M	$83.1M	$112.7M	$280.9M
Visual and Performing Arts	$117.5M	$48.4M	$91.5M	$257.4M
Grand Total	$1,696.5M	$1,112.1M	$1,391.6M	$4,200.1M

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Cost by Expense Type Toggle (for Labor & Non-Labor Expense table below)

per SCH

Labor & Non-Labor Expenses by Meta-Department

Meta Dept	Labor Expenses		Non-Labor Expenses						Transfers Out	Grand Total
	Salaries and Wages	Staff Benefits	Plant, Property, & Equipment	Scholarships & Fellowships	Services	Supplies & Materials	Utilities	Other Non-Labor	Inter-Institutional Transfers Out	
Agriculture	$516	$163	$48	$68	$111	$61	$16	$14	$8	$1,004
Architecture	$537	$164	$25	$68	$64	$32	$17	$7	$4	$918
Biological Sciences	$363	$110	$33	$61	$67	$24	$19	$6	$4	$688
Business Administration	$429	$121	$28	$72	$111	$14	$17	$5	$3	$801
Communications	$355	$110	$29	$72	$62	$17	$21	$4	$3	$672
Education	$479	$150	$30	$55	$75	$20	$17	$4	$2	$831
Engineering	$686	$192	$45	$66	$97	$63	$17	$12	$7	$1,185
English and Literature	$361	$112	$28	$64	$59	$15	$19	$5	$4	$667
Health Professions	$420	$128	$37	$63	$77	$19	$19	$3	$2	$769
History, Government, and ..	$419	$128	$26	$63	$66	$14	$19	$7	$7	$749
Information Technology	$452	$130	$33	$64	$79	$22	$20	$5	$5	$811
Languages and Cultural St..	$370	$118	$25	$73	$64	$15	$24	$6	$6	$701
Mathematics and Statistics	$340	$102	$26	$62	$58	$17	$19	$7	$5	$636
Natural Resources	$488	$147	$28	$83	$74	$25	$20	$4	$2	$870
Nursing	$498	$155	$43	$56	$83	$20	$18	$4	$4	$883
Philosophy and Religious ..	$356	$111	$26	$73	$59	$15	$21	$4	$1	$666
Physical Sciences	$422	$123	$39	$66	$69	$30	$20	$7	$4	$779
Psychology	$315	$94	$27	$61	$59	$14	$19	$4	$4	$598
Social Sciences	$329	$102	$29	$63	$63	$14	$21	$4	$3	$628
Visual and Performing Arts	$514	$161	$37	$74	$79	$22	$22	$4	$2	$916
Overall Average	$420	$126	$32	$65	$76	$21	$19	$5	$4	$769

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Cost by Expense Type Toggle (for Labor & Non-Labor Expense table below)

Amount

Labor & Non-Labor Expenses by Meta-Department

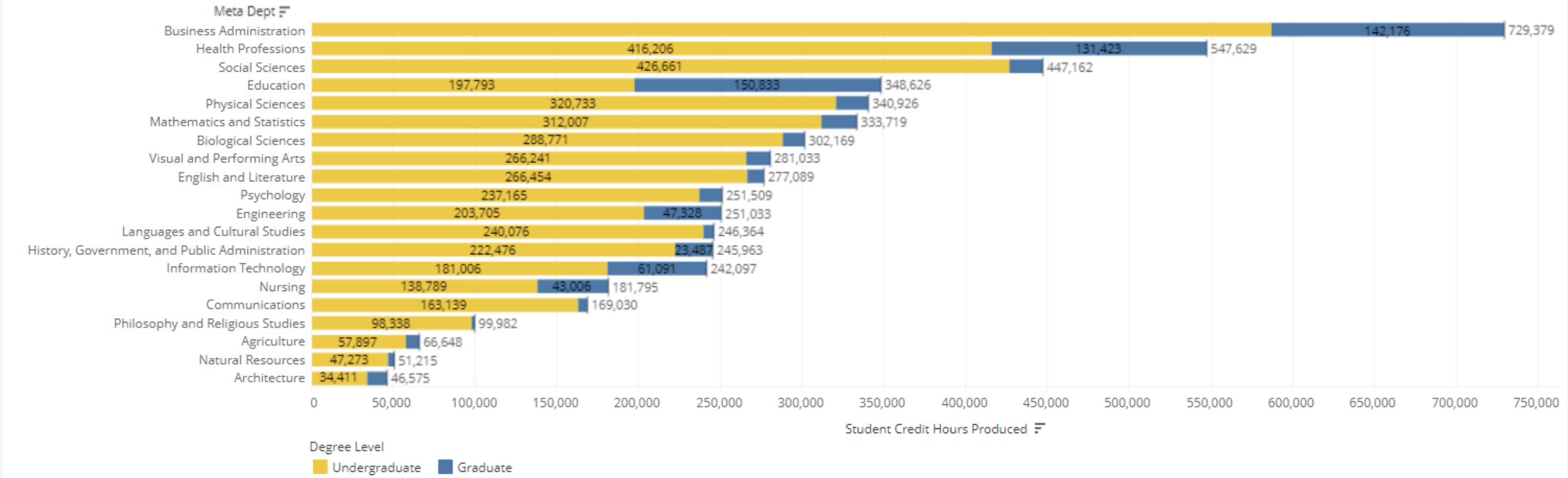
Meta Dept	Labor Expenses		Non-Labor Expenses						Transfers Out	Grand Total
	Salaries and Wages	Staff Benefits	Plant, Property, & Equipment	Scholarships & Fellowships	Services	Supplies & Materials	Utilities	Other Non-Labor	Inter-Institutional Transfers Out	
Agriculture	$34.4M	$10.8M	$3.2M	$4.5M	$7.4M	$4.1M	$1.1M	$0.9M	$0.6M	$66.9M
Architecture	$25.0M	$7.6M	$1.2M	$3.2M	$3.0M	$1.5M	$0.8M	$0.3M	$0.2M	$42.7M
Biological Sciences	$109.7M	$33.2M	$9.9M	$18.4M	$20.3M	$7.4M	$5.7M	$1.8M	$1.2M	$207.7M
Business Administration	$313.0M	$88.4M	$20.4M	$52.8M	$80.7M	$10.5M	$12.7M	$3.6M	$2.3M	$584.4M
Communications	$60.0M	$18.5M	$4.9M	$12.2M	$10.4M	$2.8M	$3.6M	$0.7M	$0.5M	$113.6M
Education	$166.9M	$52.2M	$10.6M	$19.0M	$26.2M	$7.1M	$5.9M	$1.3M	$0.7M	$289.8M
Engineering	$172.1M	$48.1M	$11.4M	$16.5M	$24.5M	$15.7M	$4.2M	$3.1M	$1.8M	$297.4M
English and Literature	$100.1M	$30.9M	$7.7M	$17.7M	$16.4M	$4.0M	$5.3M	$1.5M	$1.1M	$184.9M
Health Professions	$230.0M	$70.0M	$20.4M	$34.4M	$42.1M	$10.5M	$10.4M	$1.9M	$1.2M	$420.9M
History, Government, and ..	$103.1M	$31.5M	$6.5M	$15.6M	$16.3M	$3.5M	$4.6M	$1.6M	$1.6M	$184.3M
Information Technology	$109.4M	$31.5M	$8.1M	$15.6M	$19.1M	$5.4M	$4.7M	$1.3M	$1.2M	$196.5M
Languages and Cultural St..	$91.1M	$29.0M	$6.3M	$18.0M	$15.9M	$3.7M	$5.9M	$1.4M	$1.5M	$172.8M
Mathematics and Statistics	$113.4M	$34.1M	$8.6M	$20.8M	$19.5M	$5.6M	$6.4M	$2.2M	$1.8M	$212.2M
Natural Resources	$25.0M	$7.5M	$1.4M	$4.3M	$3.8M	$1.3M	$1.0M	$0.2M	$0.1M	$44.5M
Nursing	$90.6M	$28.2M	$7.9M	$10.2M	$15.2M	$3.6M	$3.3M	$0.7M	$0.7M	$160.4M
Philosophy and Religious ..	$35.6M	$11.1M	$2.6M	$7.3M	$5.9M	$1.5M	$2.1M	$0.4M	$0.1M	$66.6M
Physical Sciences	$143.9M	$42.0M	$13.1M	$22.3M	$23.5M	$10.2M	$6.7M	$2.2M	$1.4M	$265.5M
Psychology	$79.3M	$23.7M	$6.8M	$15.4M	$15.0M	$3.6M	$4.7M	$1.1M	$0.9M	$150.5M
Social Sciences	$147.0M	$45.5M	$13.1M	$28.2M	$28.3M	$6.4M	$9.3M	$1.6M	$1.3M	$280.9M
Visual and Performing Arts	$144.6M	$45.3M	$10.5M	$20.7M	$22.1M	$6.3M	$6.1M	$1.2M	$0.6M	$257.4M
Grand Total	$2,294.2M	$689.4M	$174.4M	$357.0M	$415.5M	$114.8M	$104.7M	$29.1M	$21.0M	$4,200.1M

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

All Student Credit Hours and Degrees Produced

Student Credit Hours Produced by Meta-Department



THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

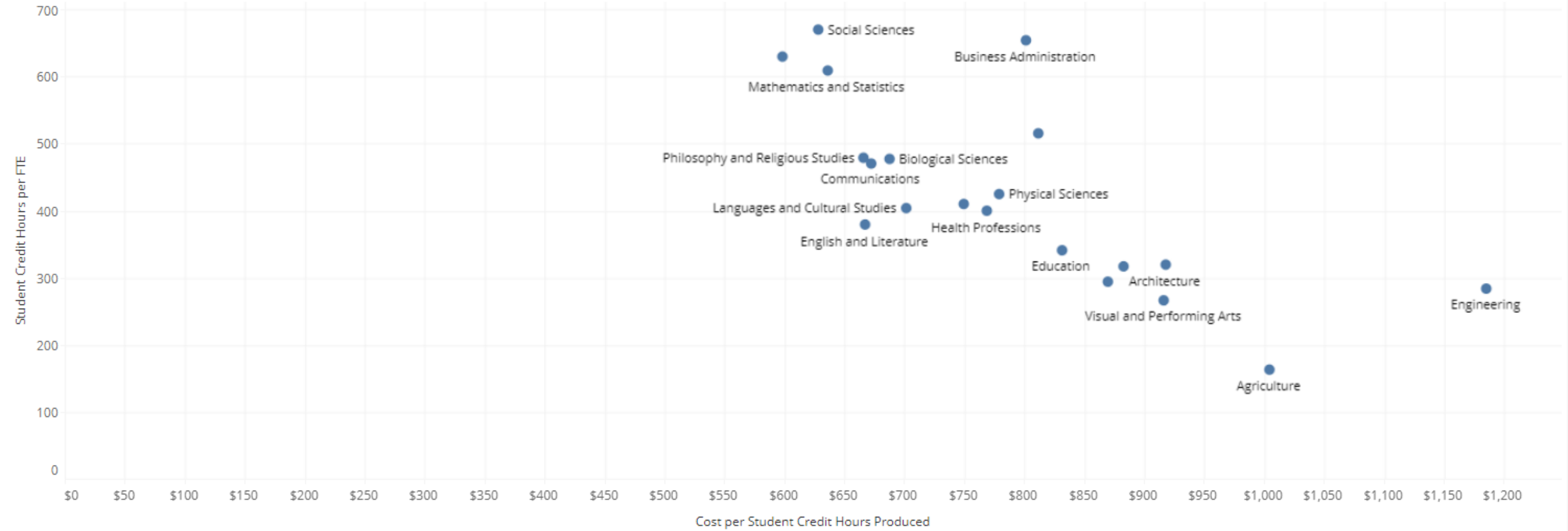
Academic Year: 2020-2021

Meta Dept	Total Student Credit Hours Produced	Faculty FTE	Student Credit Hours Produced per Faculty FTE
Agriculture	66,648	408	163
Architecture	46,575	146	320
Biological Sciences	302,169	633	477
Business Administration	729,379	1,115	654
Communications	169,030	359	470
Education	348,626	1,022	341
Engineering	251,033	884	284
English and Literature	277,089	730	380
Health Professions	547,629	1,369	400
History, Government, and ..	245,963	600	410
Information Technology	242,097	470	516
Languages and Cultural St..	246,364	610	404
Mathematics and Statistics	333,719	548	609
Natural Resources	51,215	174	294
Nursing	181,795	573	317
Philosophy and Religious ..	99,982	209	479
Physical Sciences	340,926	802	425
Psychology	251,509	399	630
Social Sciences	447,162	667	670
Visual and Performing Arts	281,033	1,054	267
Grand Total	5,459,944	12,771	428

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Student Credit Hour Cost & Faculty FTE Student Credit Production by Meta-Department



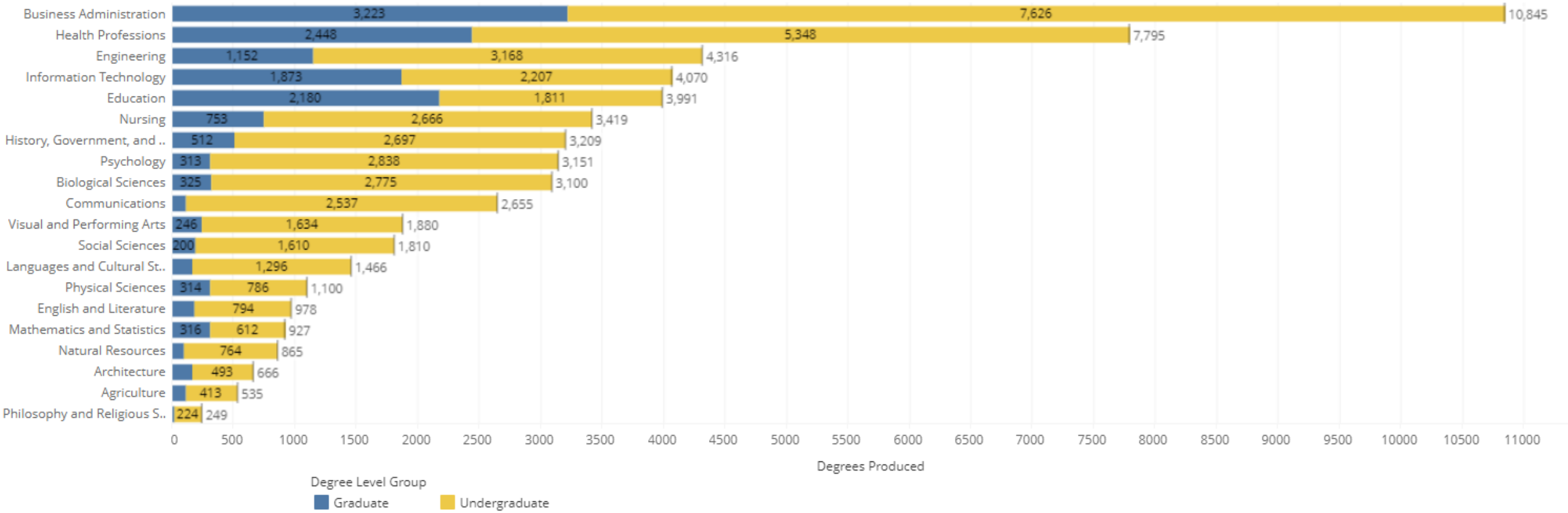
THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

Academic Year: 2020-2021

Degrees Produced by Meta-Department



Institution Name: All UNC System Institutions

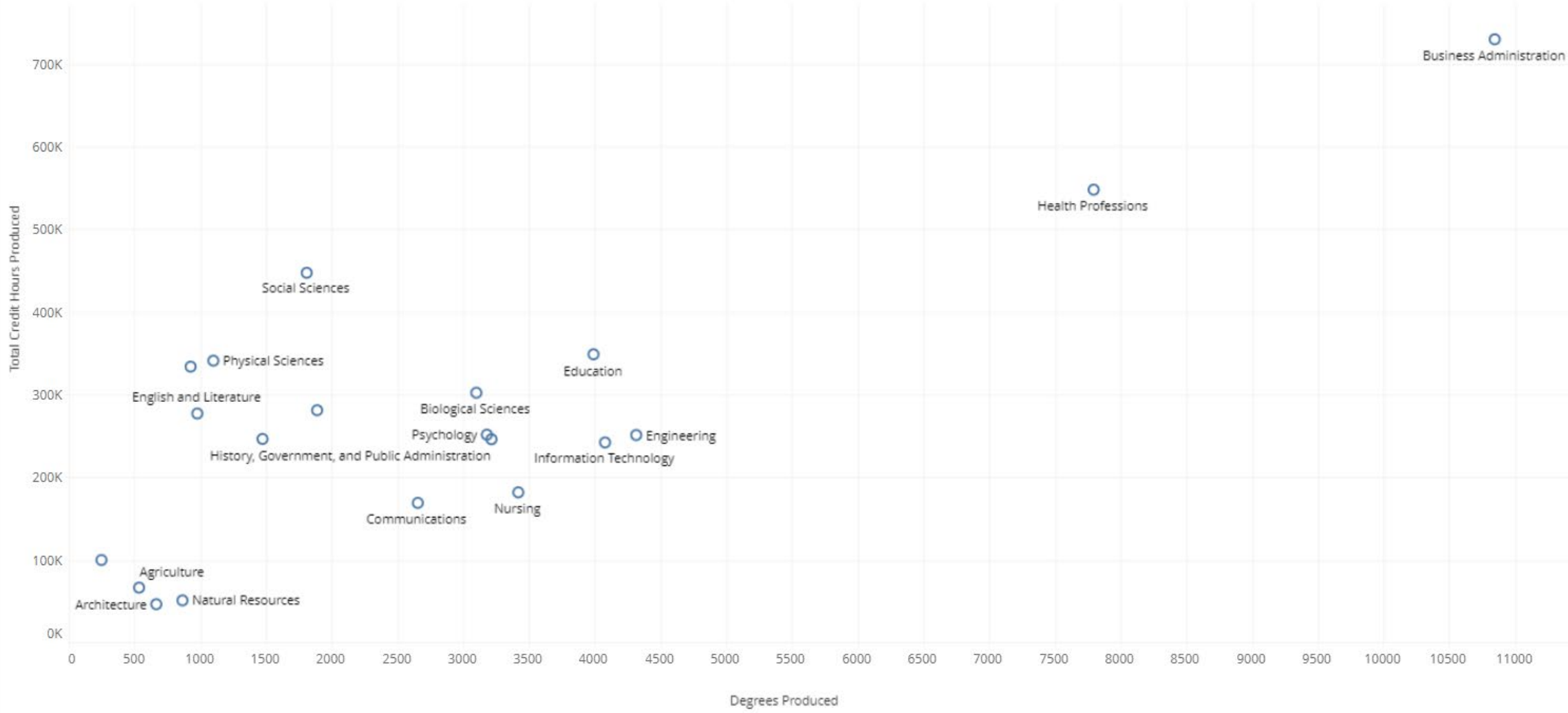
Academic Year: 2020-2021

Academic Production - Build Your Own Chart

Table Selection 1: Degrees Completers

Table Selection 2: Total Student Credit Ho...

Degree Level: (All)



UNC Undergraduate Student ROI Dashboard

Overview and Instructions

This page provides context and instruction for the UNC System Dashboard.

Dashboard Summary

This dashboard provides a detailed correlation between degree of study and career roles including information on expected lifetime career earnings, income bands and economic mobility, graduate degree attainment, and career fields based on the program of study, as defined by CIP code. This dashboard is part of a three-dashboard series that includes Institutional Context, Student ROI, and State ROI dashboards.

Dashboard Components

1. Summary:

Provides an overview of the number of students in each program, the composition of the student body, and key student success metrics

2. Investment:

Provides a breakdown of the student price to complete a degree, outlining the investment required from a student after considering financial aid and other discounts

3. Return:

Provides a detailed correlation between degree of study and career roles including information on expected lifetime career earnings, career field, and graduate degree attainment

4. ROI:

Provides a summary of average lifetime ROI, economic mobility ,and breakeven for student funding expenditures

Assumptions & Methodology

Scope of Analysis

The following 16 UNC System institutions are in-scope for this analysis:

1. Appalachian State University
2. East Carolina University
3. Elizabeth City State University
4. Fayetteville State University
5. North Carolina A&T State University
6. North Carolina Central University
7. North Carolina State University
8. University of North Carolina at Asheville
9. University of North Carolina at Chapel Hill
10. University of North Carolina at Charlotte
11. University of North Carolina at Greensboro
12. University of North Carolina at Pembroke
13. University of North Carolina School of the Arts
14. University of North Carolina Wilmington
15. Western Carolina University
16. Winston-Salem State University

Note that UNC affiliates (e.g., UNC Health, PBS North Carolina, The North Carolina Arboretum, The University of North Carolina Press, The North Carolina State Education Assistance Authority) as well as UNC high schools and students (e.g., North Carolina School of Science and Mathematics) are out of scope for this analysis.

Additionally, Associate Degrees, Certificates, and the following terminal graduate degrees have been excluded from the analysis: Dentistry, Medical, Veterinary, Pharmacy, Law.

Assumptions & Methodology

1. Program is defined by CIP code. Level I Field of Study reflects the 2 Digit CIP code while Level II reflects the 6 Digit CIP code within the selected Level I.
2. Academic year 2020-2021 is not included in the Student Dashboard. This year was in-progress when the data was received for the analysis and partial year data skewed the output.
3. In order to project Lifetime Earnings, wage ranks are calculated for each student based on their observed earnings from age 23 to 40 and compared against American Community Survey (ACS) data. A person's average wage rank within their demographic and educational group is constant over time.
4. We assume that people who drop out of our sample (perhaps because they leave the state or started self-employment) have expected earnings based on their demographic and educational group and past earnings. Similarly, we expect future wage profiles to have similar trajectories to past wage profiles.
5. Any record with no wage observations is dropped from the analysis.
6. Median wage data is the encompasses all completers from 2015 through 2020 as a single, consolidated cohort; the academic year filter does not change these numbers due to this approach. This decision was made to increase sample size and limit non-meaningful noise in the data between years of early career earnings.

Data Sources:

North Carolina Dept. of Commerce Wage Data
American Community Survey (ACS) Data
North Carolina Dept. of Commerce County Distress Tier Rankings
BGI Social Profile & Job Posting Data
UNC Student Data Mart (SDM)
UNC Bachelors Completers File
UNC Graduate Completers File

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Dashboard Data Filters

The following filters allow users to select various attributes of the population to further segment the data.

Note, selecting a filter is not required but doing so will dynamically update the graphics below. For example, selecting a *'Level 1 Field of Study'* will filter the charts to display more granular detail, the *'Level 2 Fields of Study'*, associated with the selected group.

Level 1 Field of Study: (All)

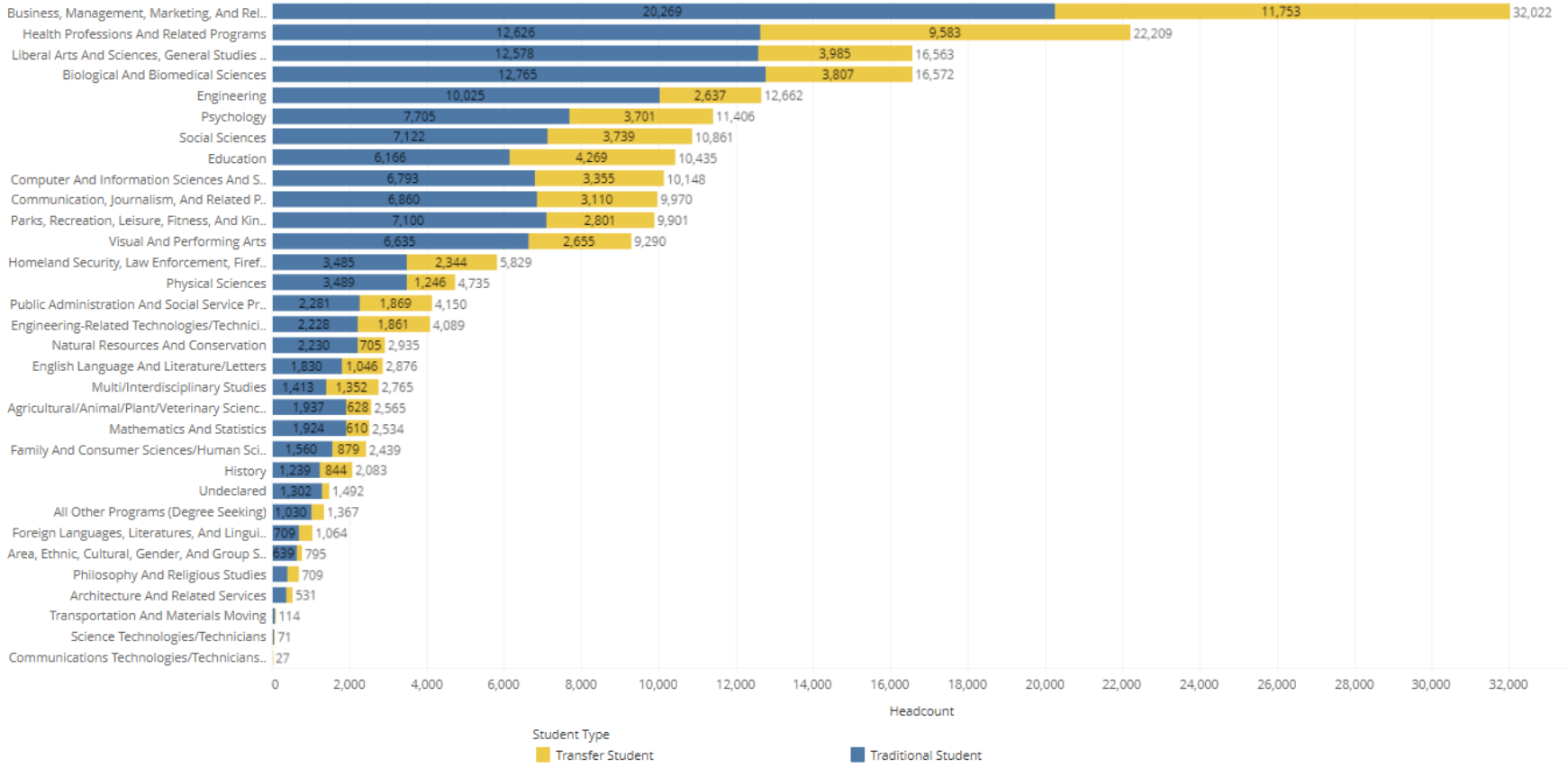
Residency: (All)

Degree Level: Undergraduate

Student Type: All Undergraduate

All Institutions Number & Composition of Students by Program

Count of Students by Major



Institution Name

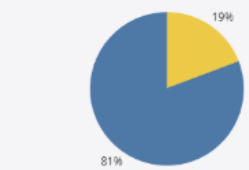
All UNC System Institutions

Academic Year

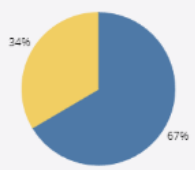
2019-2020

Student Composition

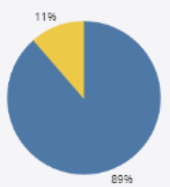
Degree Level



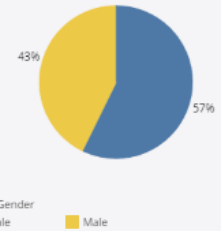
Student Type



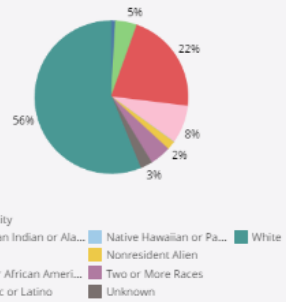
Student Residency



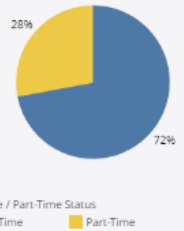
Student Gender



Student Race / Ethnicity

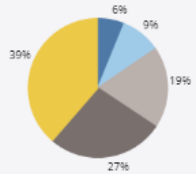


Full-Time / Part-Time Status

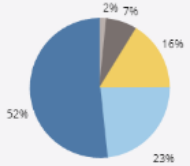


Income Band at Enrollment

Percent FAFSA Filers 64.3%



High School GPA Bands



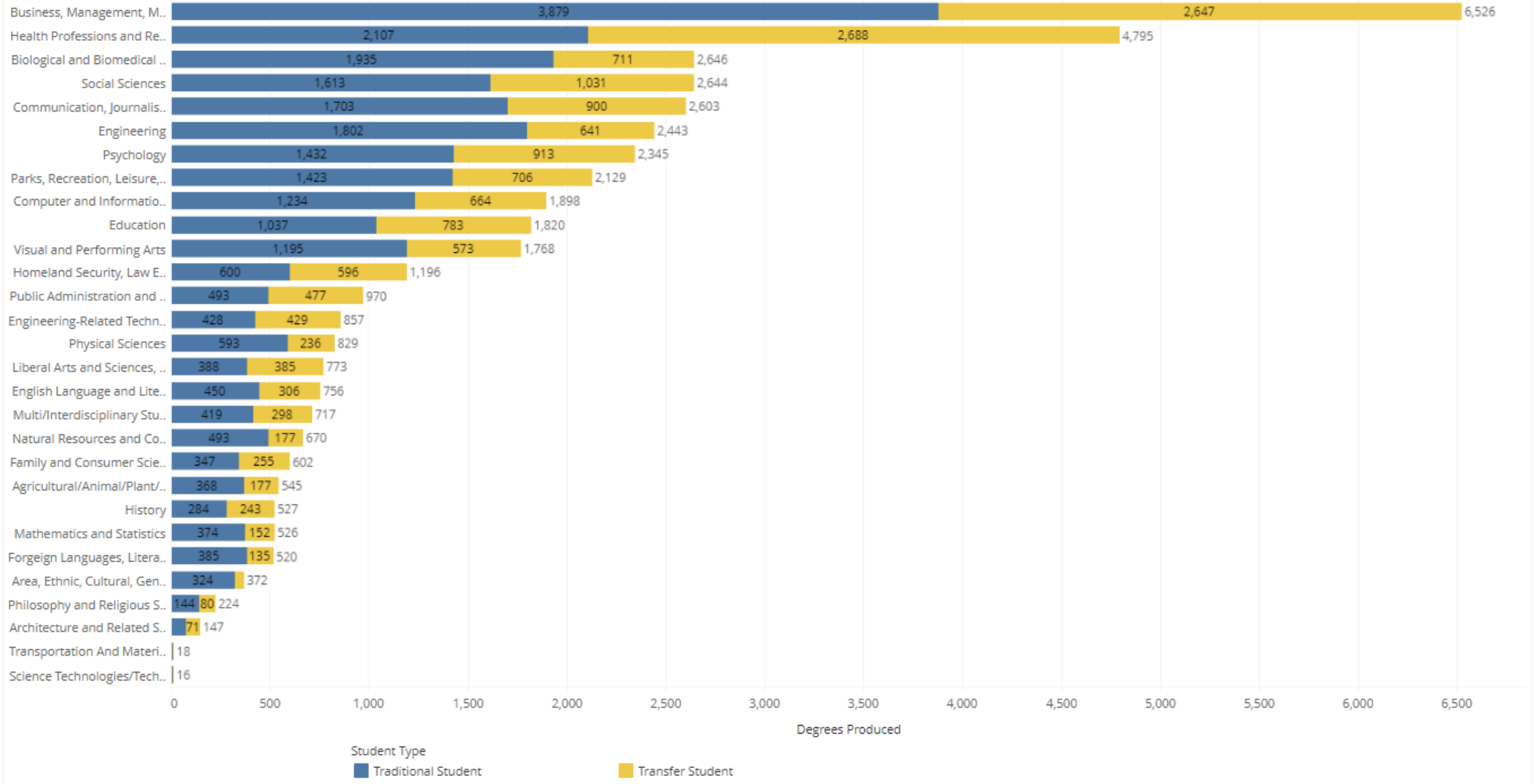
Multiple Majors

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

All Institutions Student Success Metrics by Program

Degree Completers



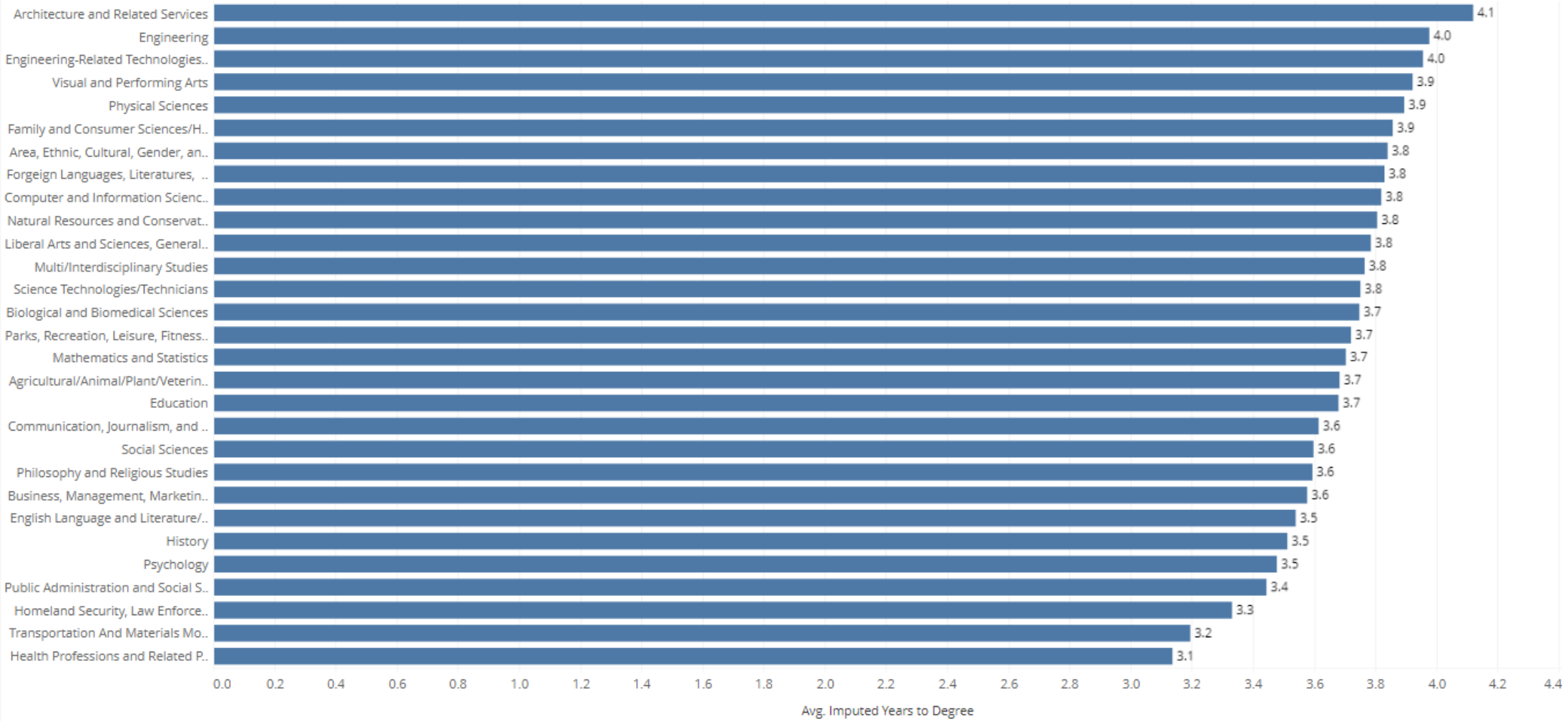
Institution Name: All UNC System Institutions

Academic Year: 2019-2020

All Undergraduate Average Time to Degree

Student Type - *Please note this filter works independently from the filter at the top of the page.*

All Undergraduate



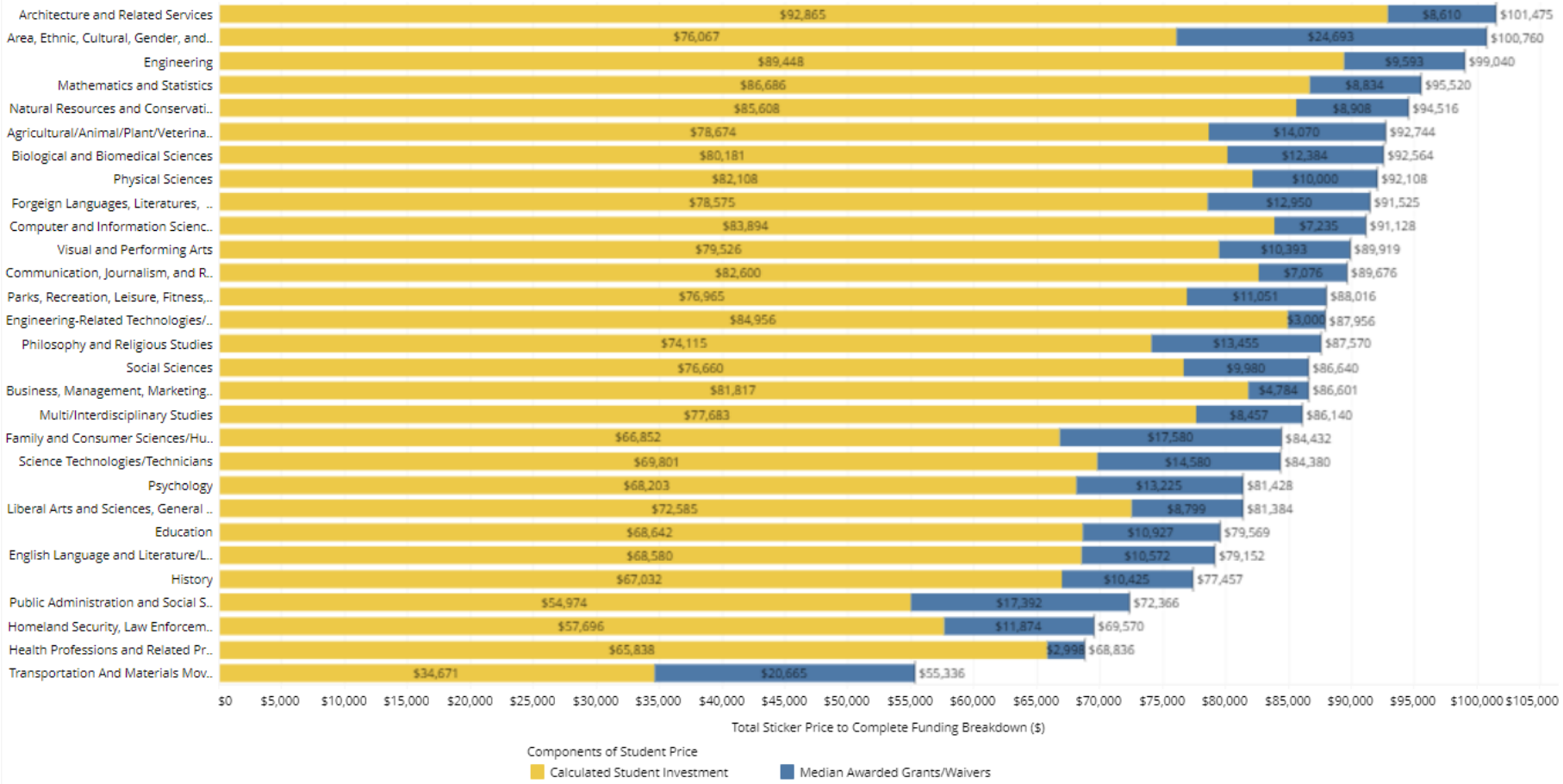
Institution Name: All UNC System Institutions

Academic Year: 2019-2020

All Institutions Median Student Investment by Program

Median Sticker Price to Completion		Median Awarded Grants & Waivers		Calculated Student Investment
$86,640	−	$8,190	=	$78,451

Student Price to Complete



Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Field of Study	Median Cost of Attendance	Median Imputed Years to Degree	Median Sticker Price to Completion	Median Awarded Grants/Waivers	Calculated Student Investment
Agricultural/Animal/Plant/..	$23,186	4.0	$92,744	$14,070	$78,674
Architecture and Related S..	$23,629	4.0	$101,475	$8,610	$92,865
Area, Ethnic, Cultural, Gen..	$25,190	4.0	$100,760	$24,693	$76,067
Biological and Biomedical ..	$23,814	4.0	$92,564	$12,384	$80,181
Business, Management, M..	$22,967	4.0	$86,601	$4,784	$81,817
Communication, Journalis..	$22,945	4.0	$89,676	$7,076	$82,600
Computer and Informatio..	$22,782	4.0	$91,128	$7,235	$83,894
Education	$22,136	4.0	$79,569	$10,927	$68,642
Engineering	$24,760	4.0	$99,040	$9,593	$89,448
Engineering-Related Tech..	$21,989	4.0	$87,956	$3,000	$84,956
English Language and Lite..	$22,298	4.0	$79,152	$10,572	$68,580
Family and Consumer Scie..	$20,916	4.0	$84,432	$17,580	$66,852
Forgeign Languages, Liter..	$23,277	4.0	$91,525	$12,950	$78,575
Health Professions and Re..	$21,708	3.5	$68,836	$2,998	$65,838
History	$21,662	3.5	$77,457	$10,425	$67,032
Homeland Security, Law E..	$21,402	3.5	$69,570	$11,874	$57,696
Liberal Arts and Sciences, ..	$20,346	4.0	$81,384	$8,799	$72,585
Mathematics and Statistics	$23,880	4.0	$95,520	$8,834	$86,686
Multi/Interdisciplinary Stu..	$22,999	4.0	$86,140	$8,457	$77,683
Natural Resources and Co..	$23,629	4.0	$94,516	$8,908	$85,608
Parks, Recreation, Leisure,..	$23,347	4.0	$88,016	$11,051	$76,965
Philosophy and Religious ..	$23,472	4.0	$87,570	$13,455	$74,115
Physical Sciences	$23,027	4.0	$92,108	$10,000	$82,108
Psychology	$22,850	4.0	$81,428	$13,225	$68,203
Public Administration and ..	$20,676	3.5	$72,366	$17,392	$54,974
Science Technologies/Tec..	$21,095	4.0	$84,380	$14,580	$69,801
Social Sciences	$22,968	4.0	$86,640	$9,980	$76,660
Transportation And Materi..	$19,834	2.8	$55,336	$20,665	$34,671
Visual and Performing Arts	$22,544	4.0	$89,919	$10,393	$79,526

Institution Name: All UNC System Institutions

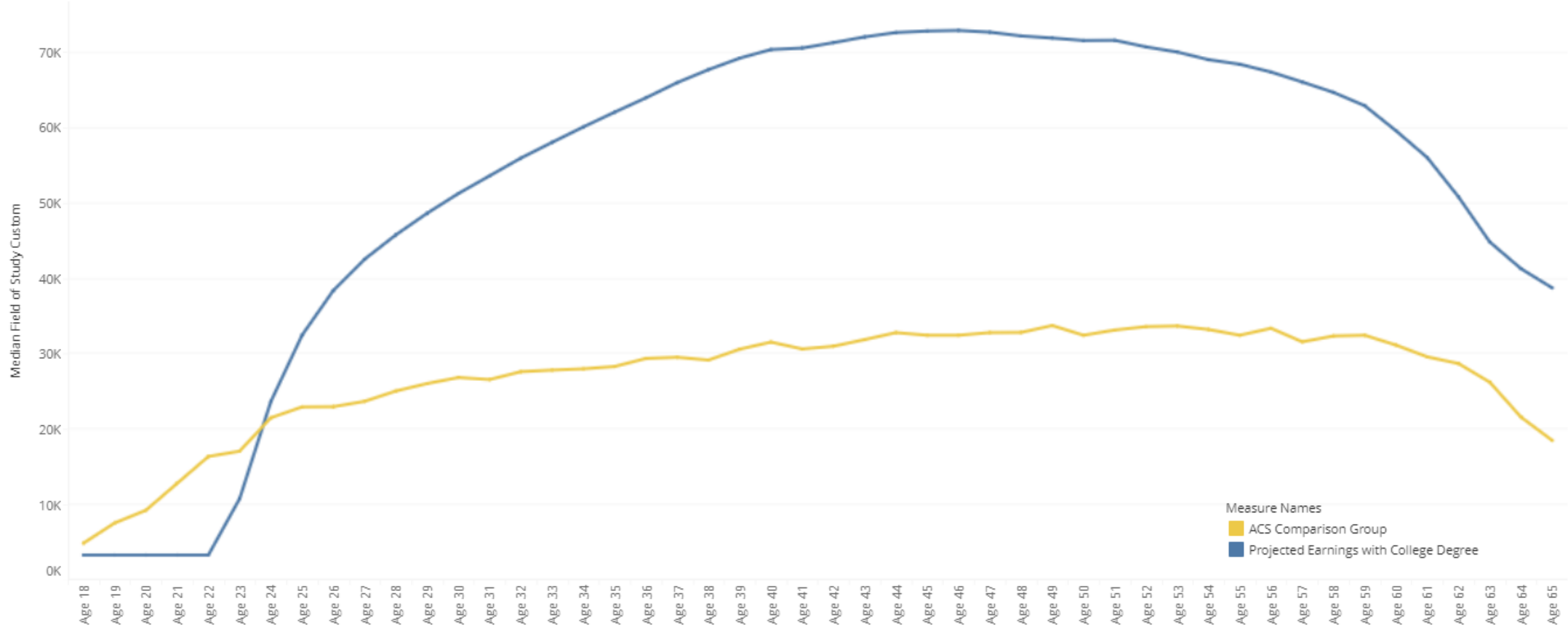
Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

All Institutions Student Career Outcomes

Median Lifetime Earnings with College Degree		Median Lifetime Earnings without College Degree		Calculated Incremental Lifetime Earnings
$1,235,777	−	$660,203	=	$575,574

Median Lifetime Earnings Trajectory

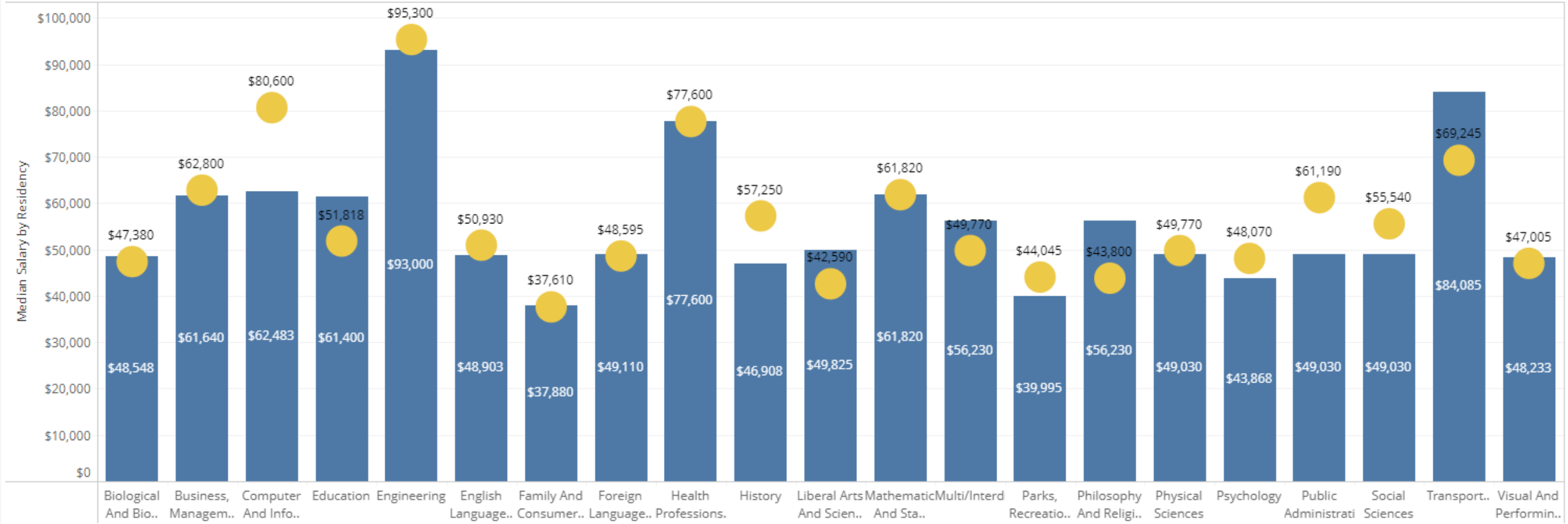


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

National Median Wages vs. North Carolina Median State Wages



Earnings Time Horizon: 1 Year

Measure Names: Median In-State Salary; Median National Salary

Institution Name: All UNC System Institutions

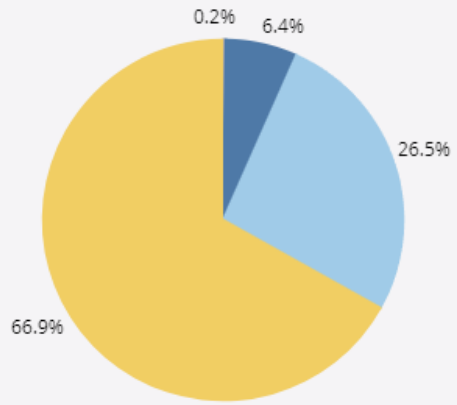
Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

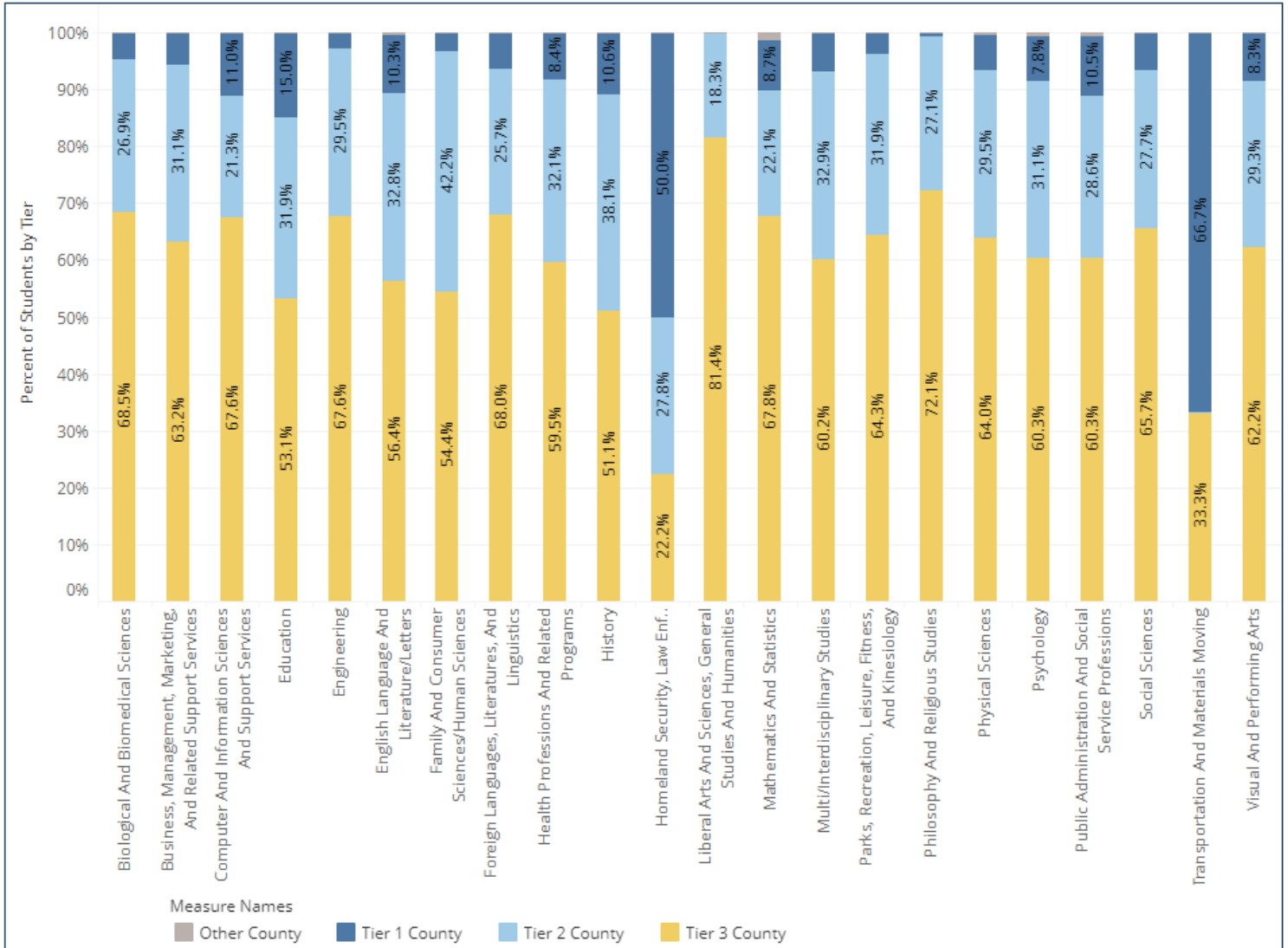
County Distress Rankings (Tiers)

Percent of Alumni by County Tier

Number of Years After Completion: 1 Year



Measure Names
Other County
Tier 1 County
Tier 2 County
Tier 3 County

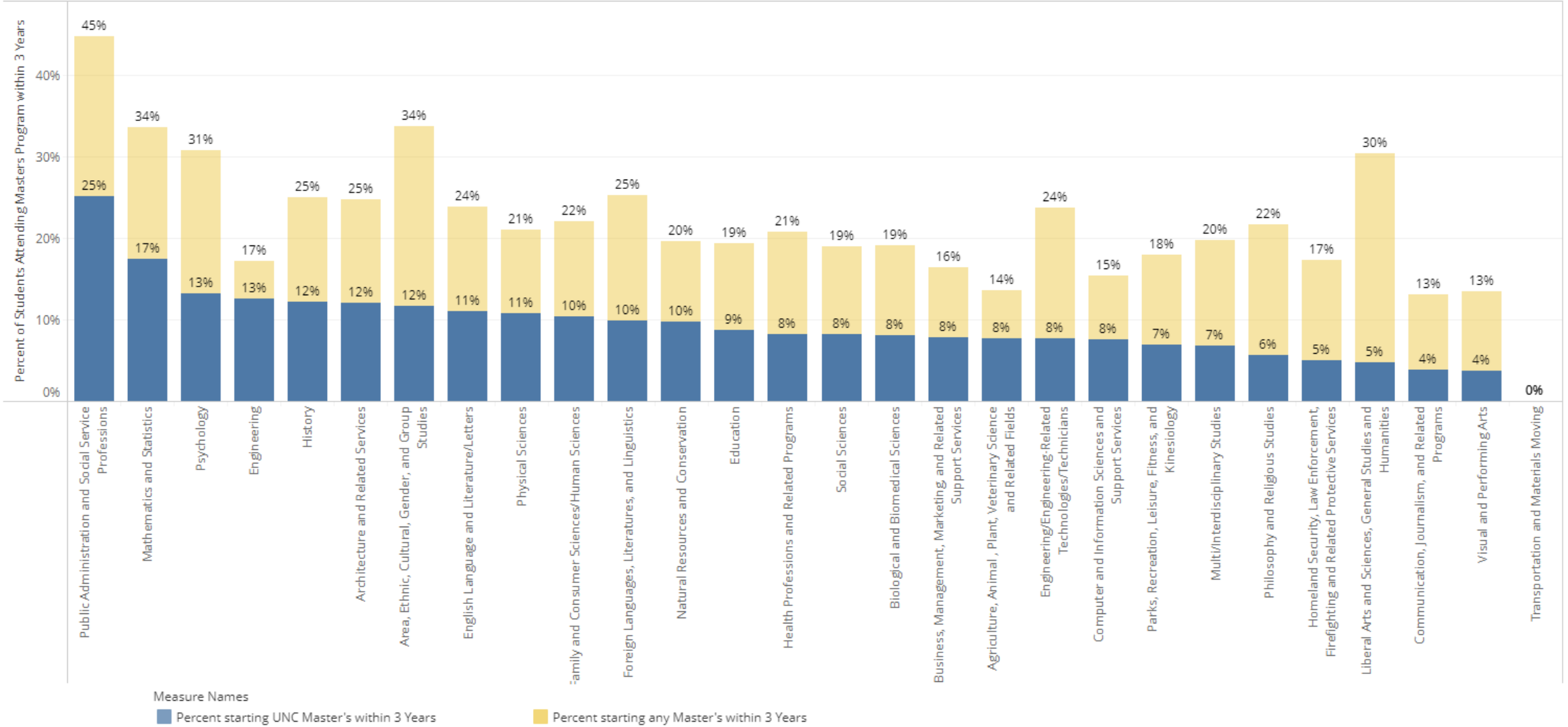


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Graduate Program Attendance

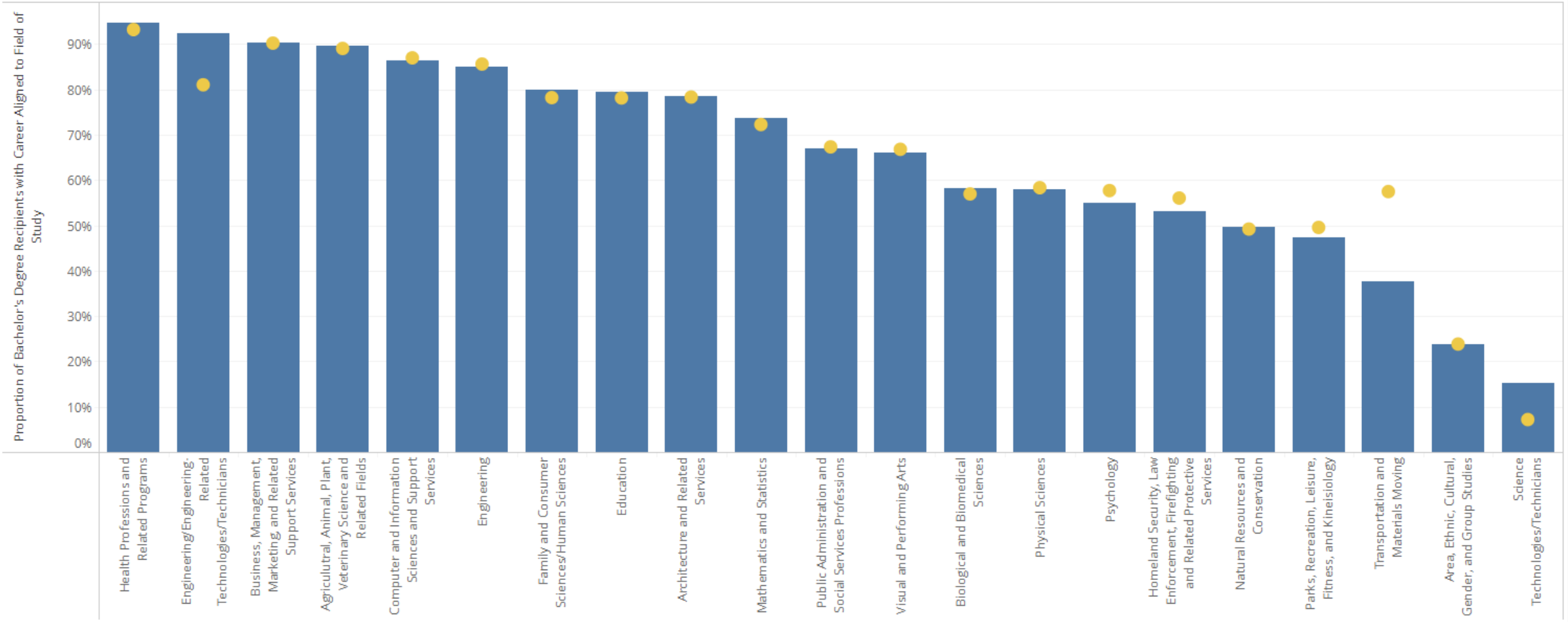


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Program of Study to Employment Alignment



Time Horizon

Year 1

NC Proportion of Bachelor's in Aligned Careers 1 year out

National Proportion of Bachelor's in Aligned Careers 1 year out

THE UNIVERSITY OF NORTH CAROLINA SYSTEM

UNC ROI Study of University Programs

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Dashboard Data Filters

The following filters allow users to select various attributes of the population to further segment the data.

Note, selecting a filter is not required but doing so will dynamically update the graphics below. For example, selecting a *'Level 1 Field of Study'* will filter the charts to display more granular detail, the *'Level 2 Fields of Study'*, associated with the selected group.

Field of Study: (All)

Residency: (All)

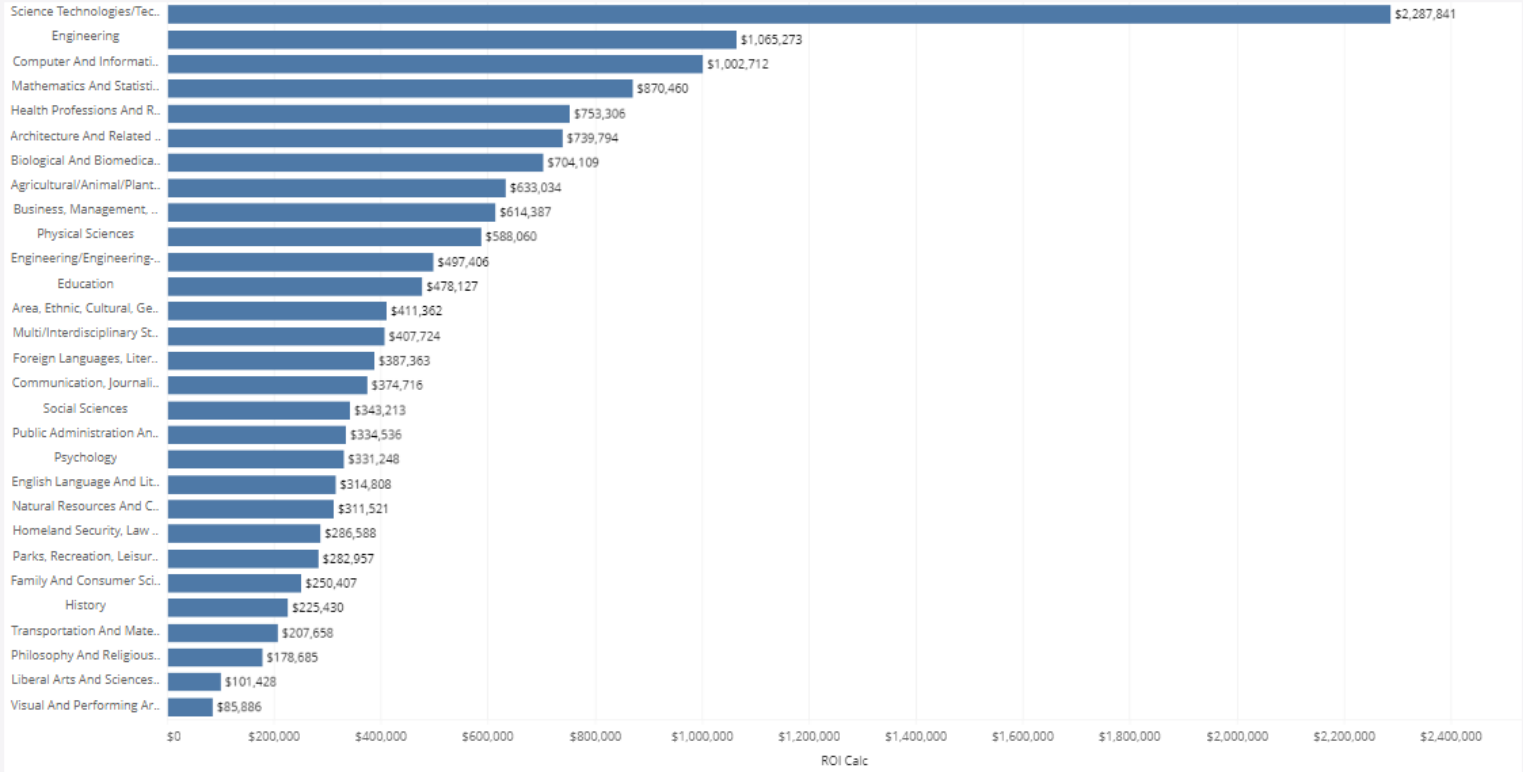
Degree Level: Undergraduate

Student Type: All Undergraduate

All Institutions ROI Overview

Calculated Incremental Lifetime Earnings		Calculated Student Investment		Calculated Lifetime Return on Investment
$575,574	−	$78,451	=	$497,123

Median Lifetime Return on Investment



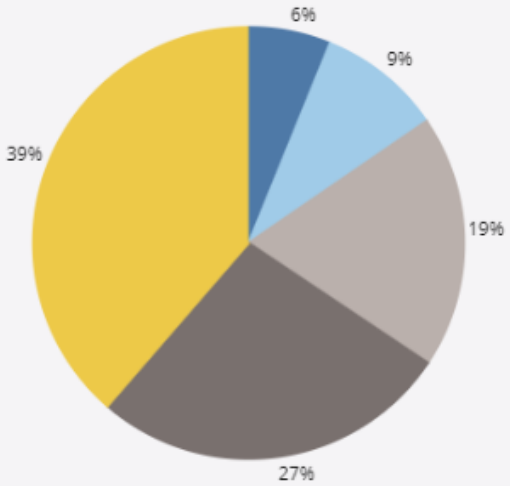
Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

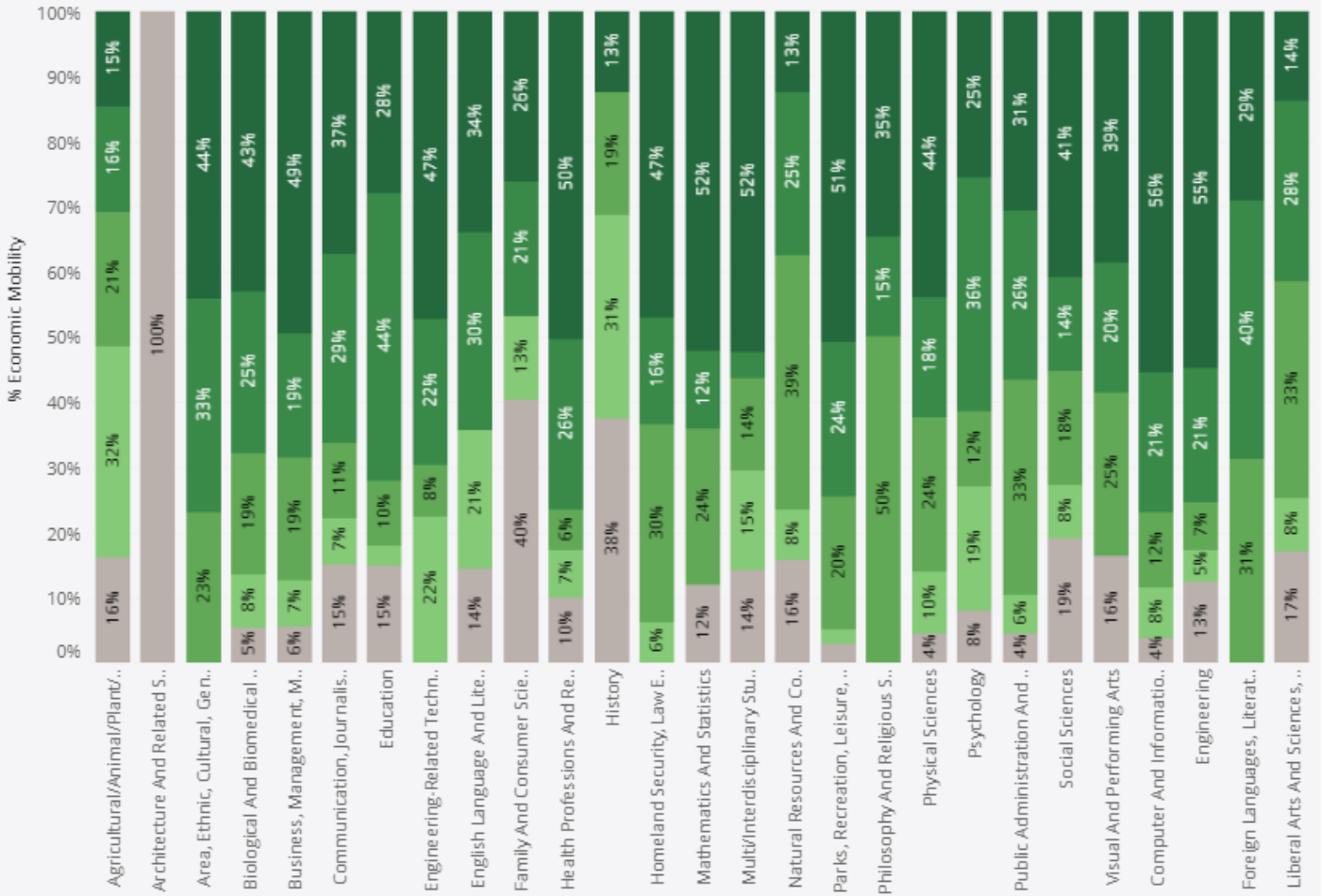
Income Band at Enrollment

Percent FAFSA Filers *64.3%*



Income Band
- Band 1: < $17,800
- Band 2: $17,800 - $31,000
- Band 3: $31,000 - $51,800
- Band 4: $51,800 - $91,300
- Band 5: $91,300+

Economic Mobility of Graduates



Student Income Band at Enrollment: Band 1: < $17,800

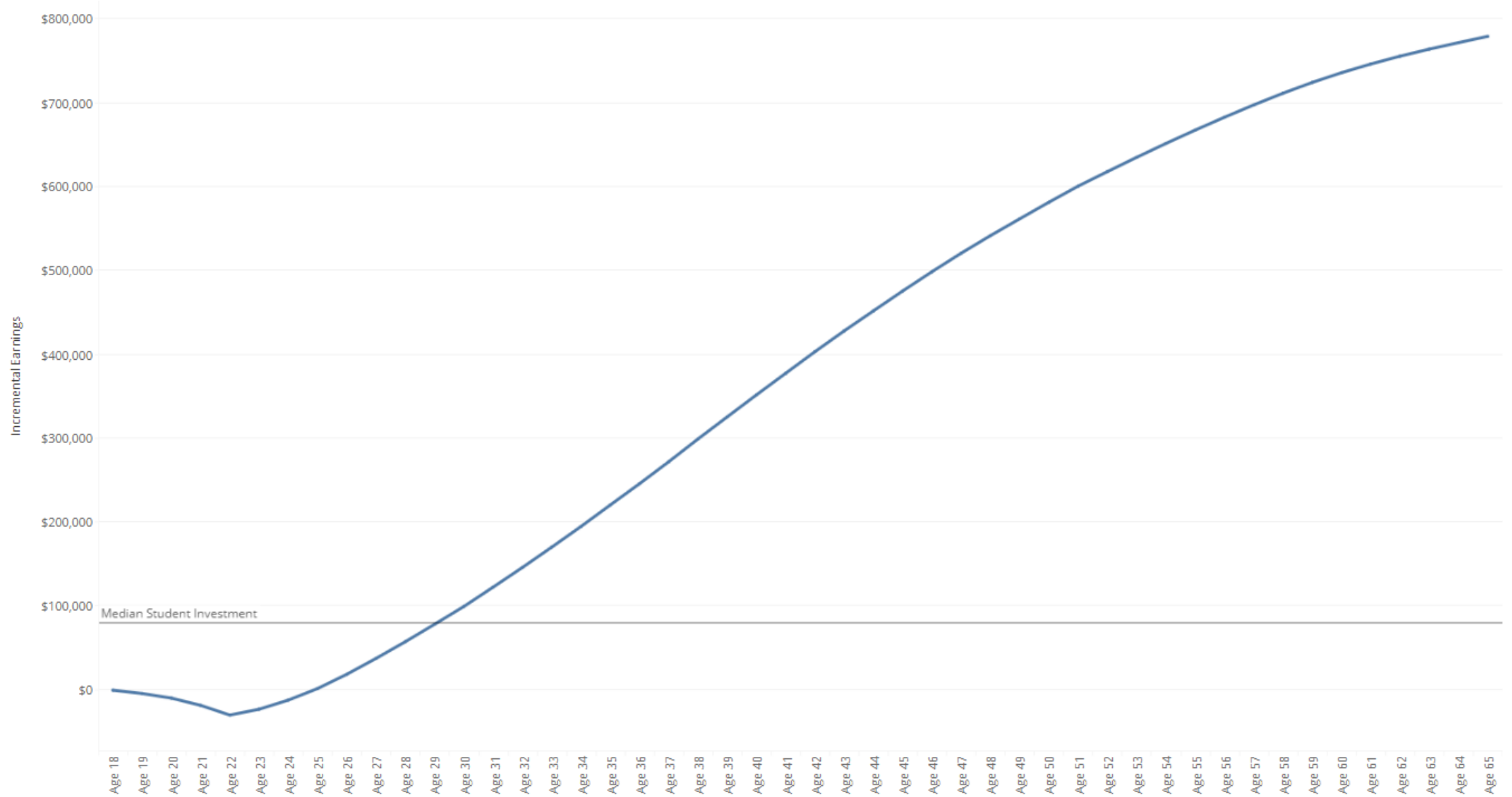
20-Year Economic Mobility
- Increased 4 Income Bands
- Increased 3 Income Bands
- Increased 2 Income Bands
- Increased 1 Income Band
- No Upward Mobility

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

All Institutions Student Breakeven Summary



UNC Graduate Student ROI Dashboard

Overview and Instructions

This page provides context and instruction for the UNC System Dashboard.

Dashboard Summary

This dashboard provides a detailed correlation between degree of study and career roles including information on expected lifetime career earnings, income bands and economic mobility, graduate degree attainment, and career fields based on the program of study, as defined by CIP code. This dashboard is part of a three-dashboard series that includes Institutional Context, Student ROI, and State ROI dashboards.

Dashboard Components

1. Summary:

Provides an overview of the number of students in each program, the composition of the student body, and key student success metrics

2. Investment:

Provides a breakdown of the student price to complete a degree, outlining the investment required from a student after considering financial aid and other discounts

3. Return:

Provides a detailed correlation between degree of study and career roles including information on expected lifetime career earnings, career field, and graduate degree attainment

4. ROI:

Provides a summary of average lifetime ROI, economic mobility ,and breakeven for student funding expenditures

Assumptions & Methodology

Scope of Analysis

The following 16 UNC System institutions are in-scope for this analysis:

1. Appalachian State University
2. East Carolina University
3. Elizabeth City State University
4. Fayetteville State University
5. North Carolina A&T State University
6. North Carolina Central University
7. North Carolina State University
8. University of North Carolina at Asheville
9. University of North Carolina at Chapel Hill
10. University of North Carolina at Charlotte
11. University of North Carolina at Greensboro
12. University of North Carolina at Pembroke
13. University of North Carolina School of the Arts
14. University of North Carolina Wilmington
15. Western Carolina University
16. Winston-Salem State University

Note that UNC affiliates (e.g., UNC Health, PBS North Carolina, The North Carolina Arboretum, The University of North Carolina Press, The North Carolina State Education Assistance Authority) as well as UNC high schools and students (e.g., North Carolina School of Science and Mathematics) are out of scope for this analysis.

Additionally, Associate Degrees, Certificates, and the following terminal graduate degrees have been excluded from the analysis: Dentistry, Medical, Veterinary, Pharmacy, Law.

Assumptions & Methodology

1. Program is defined by CIP code. Level I Field of Study reflects the 2 Digit CIP code while Level II reflects the 6 Digit CIP code within the selected Level I.
2. Academic year 2020-2021 is not included in the Student Dashboard. This year was in-progress when the data was received for the analysis and partial year data skewed the output.
3. In order to project Lifetime Earnings, wage ranks are calculated for each student based on their observed earnings from age 23 to 40 and compared against American Community Survey (ACS) data. A person's average wage rank within their demographic and educational group is constant over time.
4. We assume that people who drop out of our sample (perhaps because they leave the state or started self-employment) have expected earnings based on their demographic and educational group and past earnings. Similarly, we expect future wage profiles to have similar trajectories to past wage profiles.
5. Any record with no wage observations is dropped from the analysis.
6. Median wage data is the encompasses all completers from 2015 through 2020 as a single, consolidated cohort; the academic year filter does not change these numbers due to this approach. This decision was made to increase sample size and limit non-meaningful noise in the data between years of early career earnings.

Data Sources:

North Carolina Dept. of Commerce Wage Data
American Community Survey (ACS) Data
North Carolina Dept. of Commerce County Distress Tier Rankings
BGI Social Profile & Job Posting Data
UNC Student Data Mart (SDM)
UNC Bachelors Completers File
UNC Graduate Completers File

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Dashboard Data Filters

The following filters allow users to select various attributes of the population to further segment the data.

Note, selecting a filter is not required but doing so will dynamically update the graphics below. For example, selecting a *'Level 1 Field of Study'* will filter the charts to display more granular detail, the *'Level 2 Fields of Study'*, associated with the selected group.

Level 1 Field of Study: (All)

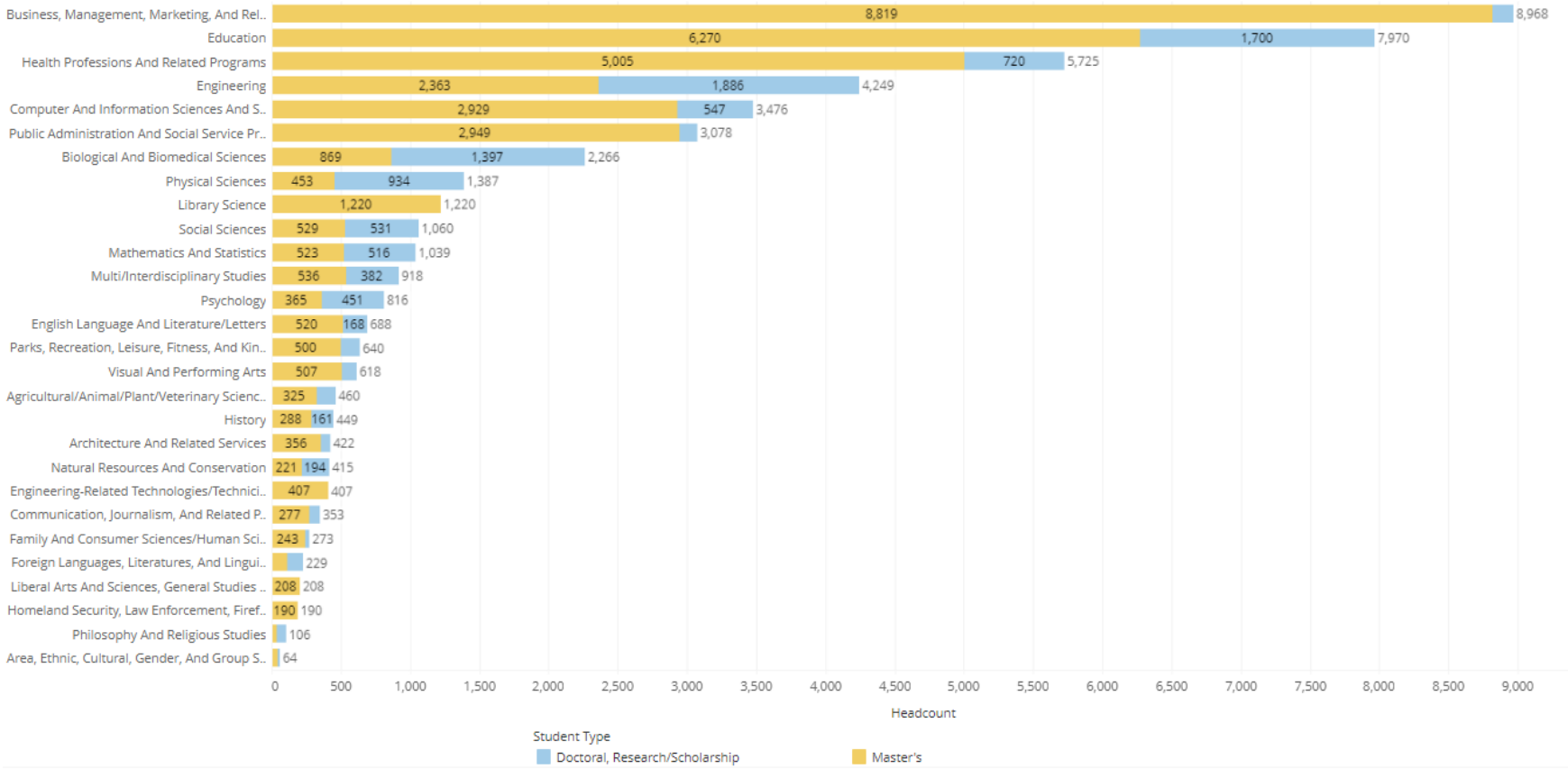
Residency: (All)

Degree Level: Graduate

Student Type: Graduate Student

All Institutions Number & Composition of Students by Program

Count of Students by Major



Institution Name

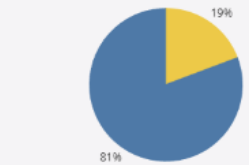
All UNC System Institutions

Academic Year

2019-2020

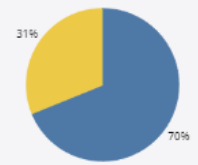
Student Composition

Degree Level

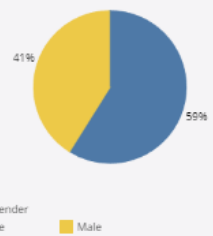


Student Type

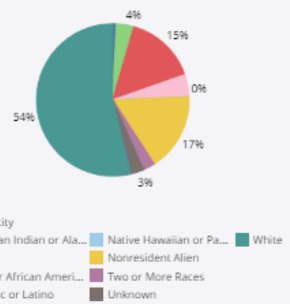
Student Residency



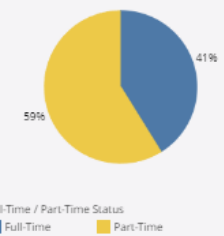
Student Gender



Student Race / Ethnicity

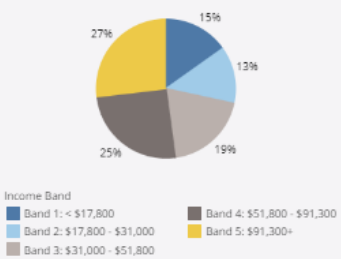


Full-Time / Part-Time Status



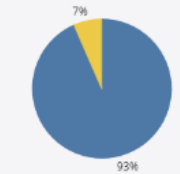
Income Band at Enrollment

Percent FAFSA Filers 71.3%



High School GPA Bands

Multiple Majors

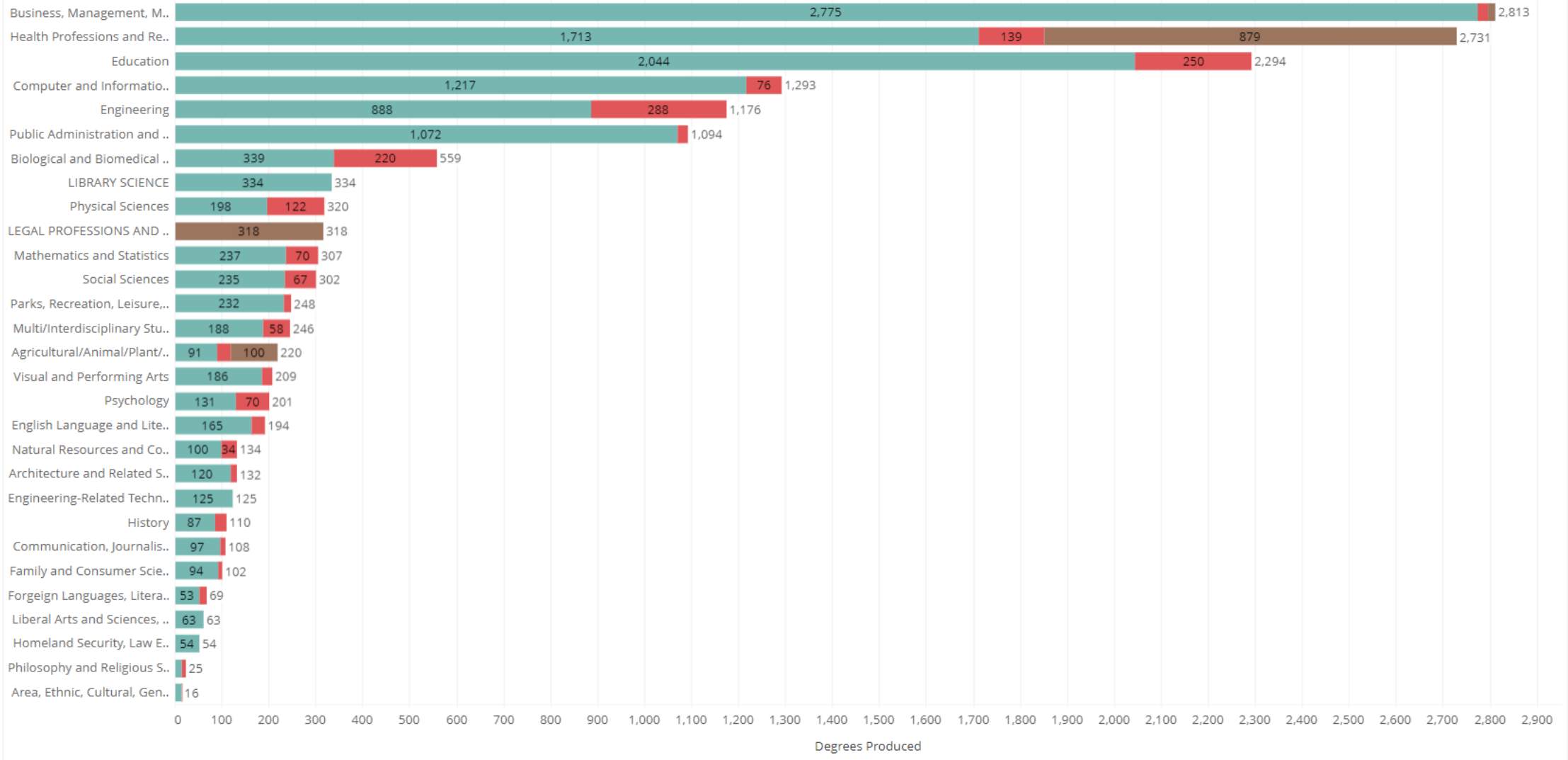


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

All Institutions Student Success Metrics by Program

Degree Completers



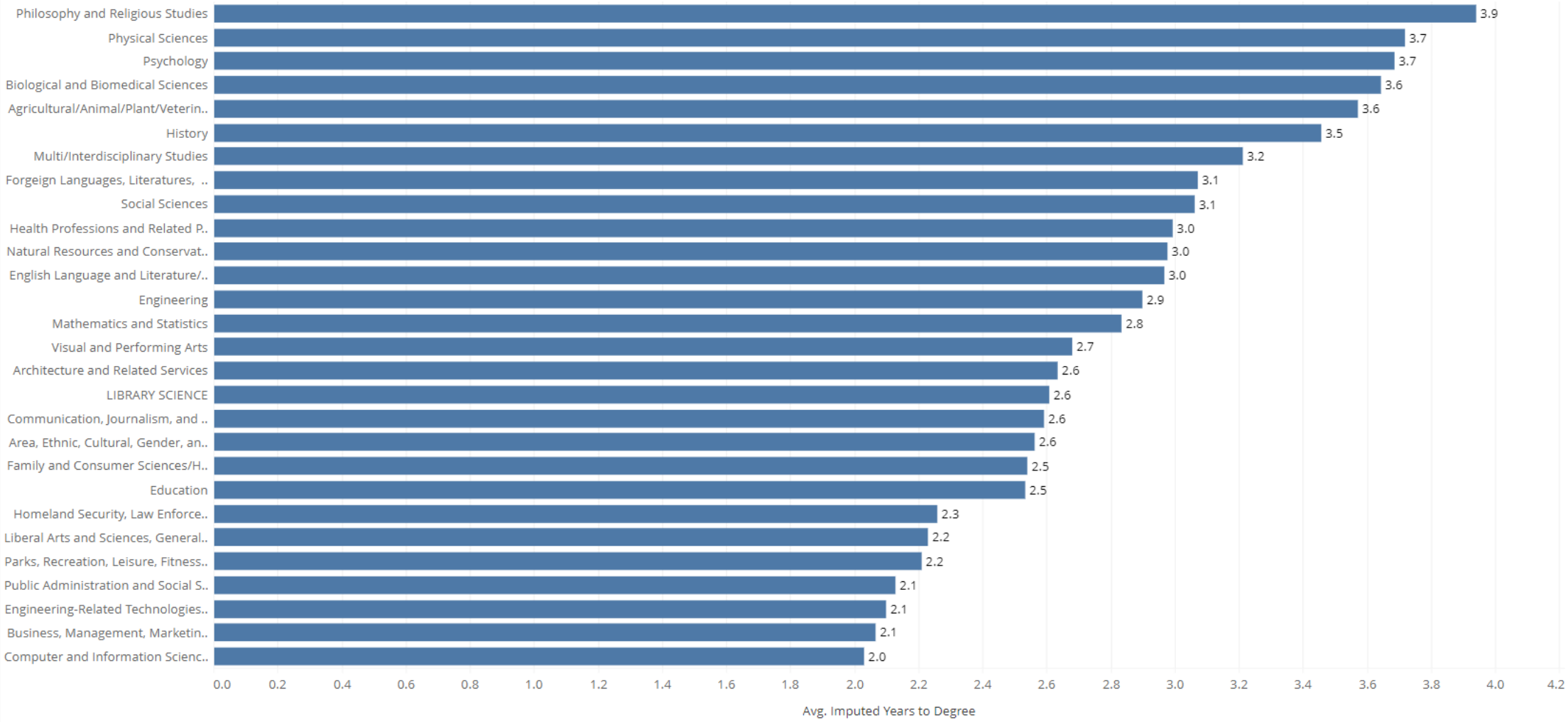
Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Graduate Student Average Time to Degree

Student Type - *Please note this filter works independently from the filter at the top of the page.*

Graduate Student



Institution Name
All UNC System Institutions

Academic Year
2019-2020

Dashboard Data Filters

The following filters allow users to select various attributes of the population to further segment the data.

Note, selecting a filter is not required but doing so will dynamically update the graphics below. For example, selecting a *'Level 1 Field of Study'* will filter the charts to display more granular detail, the *'Level 2 Fields of Study'*, associated with the selected group.

Field of Study
(All)

Residency
(All)

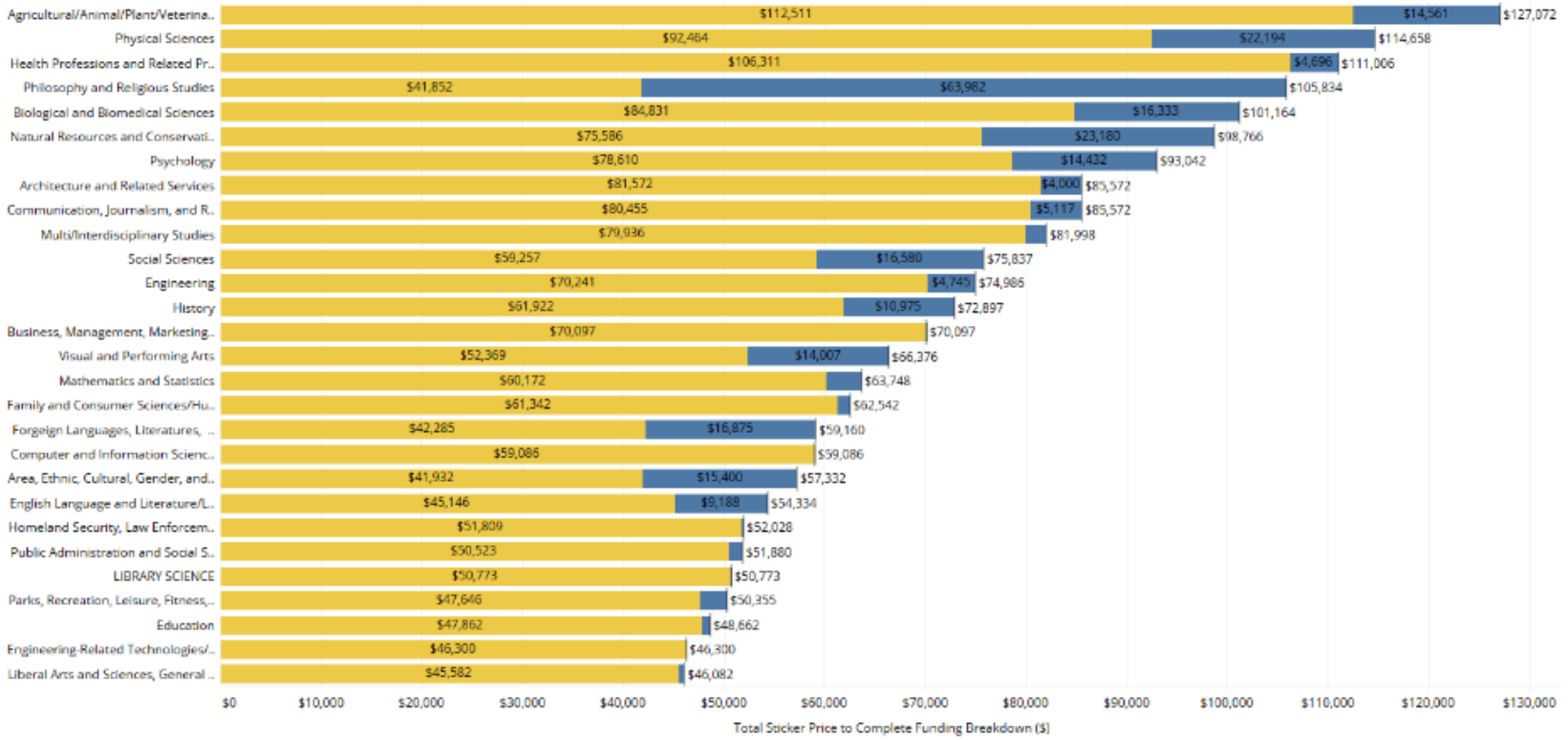
Degree Level
Graduate

Student Type
Graduate Student

All Institutions Median Student Investment by Program

Median Sticker Price to Completion		Median Awarded Grants & Waivers		Calculated Student Investment
$69,668	−	$2,000	=	$67,668

Student Price to Complete



Institution Name
All UNC System Institutions

Academic Year
2019-2020

Field of Study	Median Cost of Attendance	Median Imputed Years to Degree	Median Sticker Price to Completion	Median Awarded Grants/Waivers	Calculated Student Investment
Agricultural/Animal/Plant/..	$31,768	4.0	$127,072	$14,561	$112,511
Architecture and Related S..	$38,907	2.0	$85,572	$4,000	$81,572
Area, Ethnic, Cultural, Gen..	$23,918	2.0	$57,332	$15,400	$41,932
Biological and Biomedical ..	$28,000	3.0	$101,164	$16,333	$84,831
Business, Management, M..	$33,392	2.0	$70,097	$0	$70,097
Communication, Journalis..	$40,590	2.0	$85,572	$5,117	$80,455
Computer and Informatio..	$29,543	2.0	$59,086	$0	$59,086
Education	$23,685	2.0	$48,662	$800	$47,862
Engineering	$37,493	2.0	$74,986	$4,745	$70,241
Engineering-Related Tech..	$23,150	2.0	$46,300	$0	$46,300
English Language and Lite..	$25,682	2.0	$54,334	$9,188	$45,146
Family and Consumer Scie..	$24,395	2.5	$62,542	$1,200	$61,342
Forgeign Languages, Liter..	$26,683	2.0	$59,160	$16,875	$42,285
Health Professions and Re..	$37,002	2.5	$111,006	$4,696	$106,311
History	$26,679	2.0	$72,897	$10,975	$61,922
Homeland Security, Law E..	$20,853	2.0	$52,028	$219	$51,809
Liberal Arts and Sciences, ..	$23,041	2.0	$46,082	$500	$45,582
LIBRARY SCIENCE	$20,309	2.5	$50,773	$0	$50,773
Mathematics and Statistics	$29,125	2.0	$63,748	$3,576	$60,172
Multi/Interdisciplinary Stu..	$23,428	2.5	$81,998	$2,063	$79,936
Natural Resources and Co..	$40,590	2.0	$98,766	$23,180	$75,586
Parks, Recreation, Leisure,..	$23,837	2.0	$50,355	$2,709	$47,646
Philosophy and Religious ..	$43,630	2.5	$105,834	$63,982	$41,852
Physical Sciences	$32,574	3.0	$114,658	$22,194	$92,464
Psychology	$26,617	3.0	$93,042	$14,432	$78,610
Public Administration and ..	$25,940	2.0	$51,880	$1,357	$50,523
Social Sciences	$28,067	2.0	$75,837	$16,580	$59,257
Visual and Performing Arts	$31,489	2.0	$66,376	$14,007	$52,369

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Dashboard Data Filters

The following filters allow users to select various attributes of the population to further segment the data.

Note, selecting a filter is not required but doing so will dynamically update the graphics below. For example, selecting a *'Level 1 Field of Study'* will filter the charts to display more granular detail, the *'Level 2 Fields of Study'*, associated with the selected group.

Field of Study: (All)

Residency: (All)

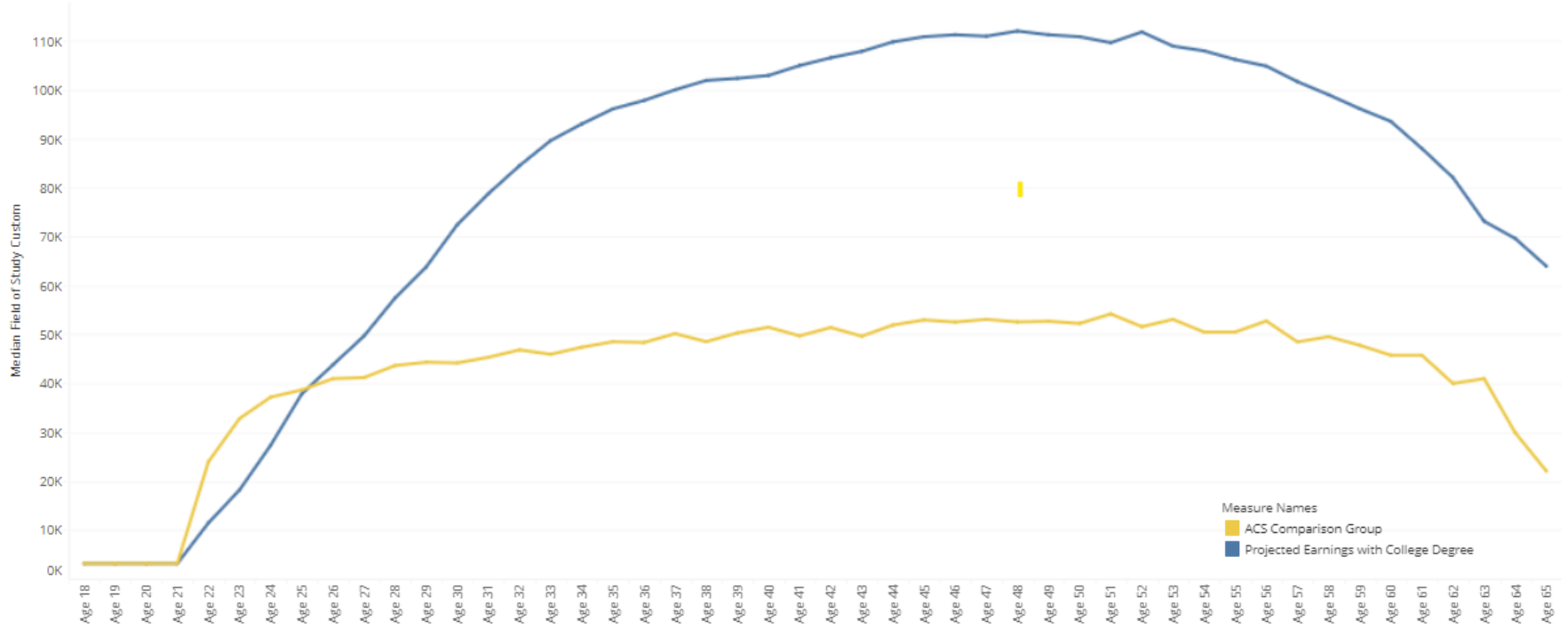
Degree Level: Graduate

Student Type: Graduate Student

All Institutions Student Career Outcomes

Median Lifetime Earnings with College Degree		Median Lifetime Earnings without College Degree		Calculated Incremental Lifetime Earnings
$2,112,066	−	$1,124,976	=	$987,090

Median Lifetime Earnings Trajectory

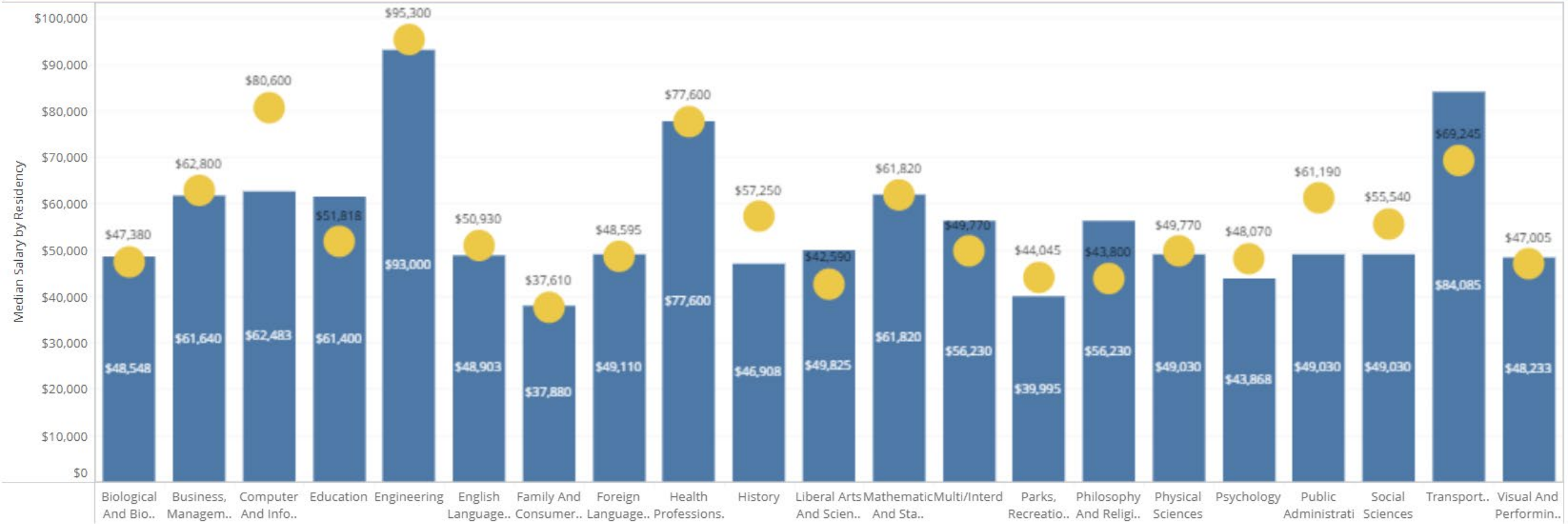


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

National Median Wages vs. North Carolina Median State Wages



Earnings Time Horizon: 1 Year

Measure Names: Median In-State Salary; Median National Salary

Institution Name: All UNC System Institutions

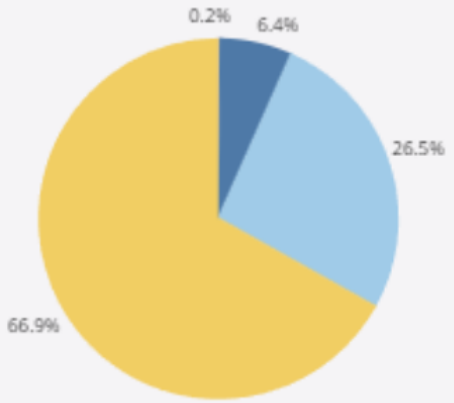
Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

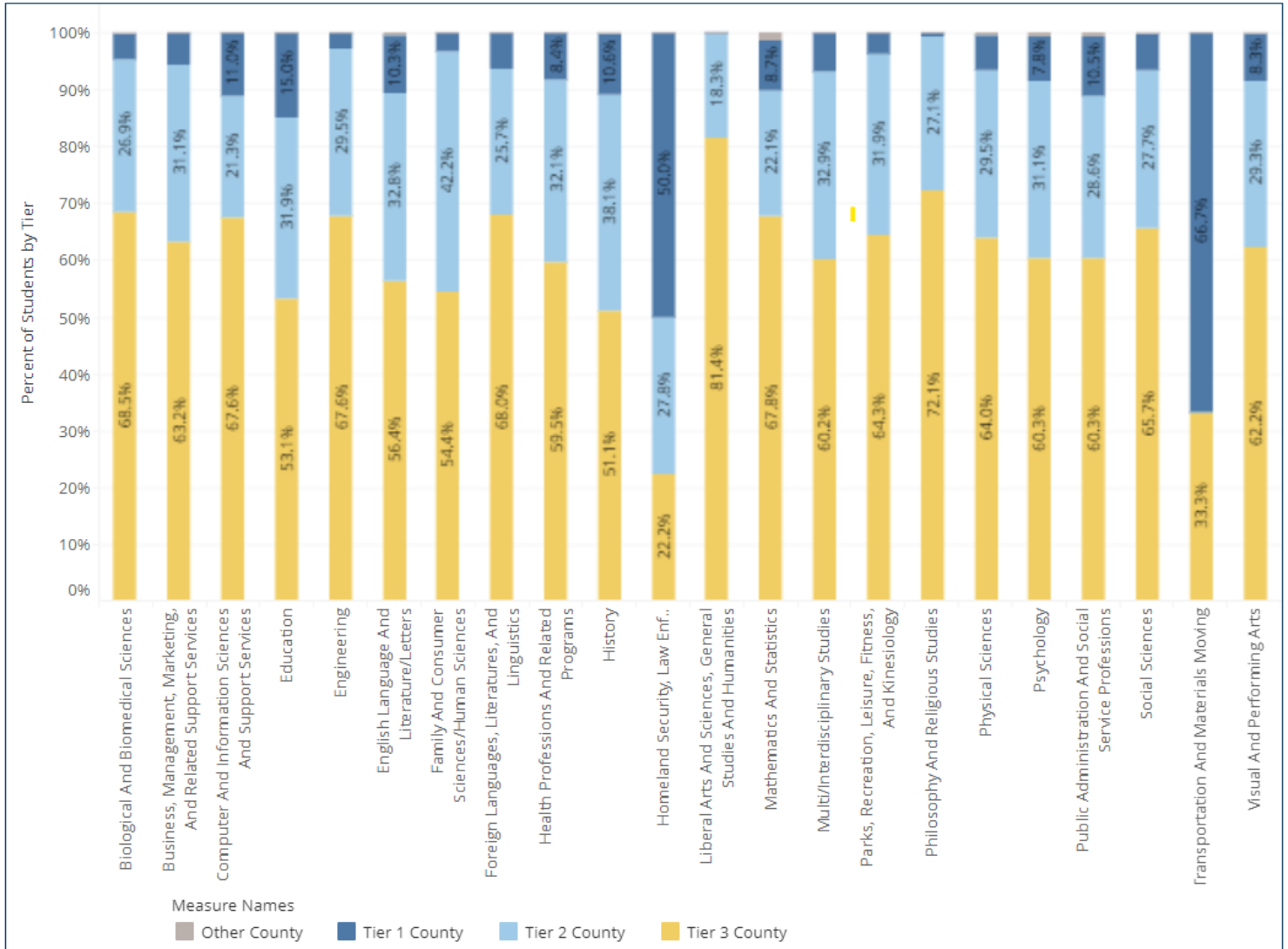
County Distress Rankings (Tiers)

Percent of Alumni by County Tier

Number of Years After Completion: 1 Year



Measure Names
- Other County
- Tier 1 County
- Tier 2 County
- Tier 3 County

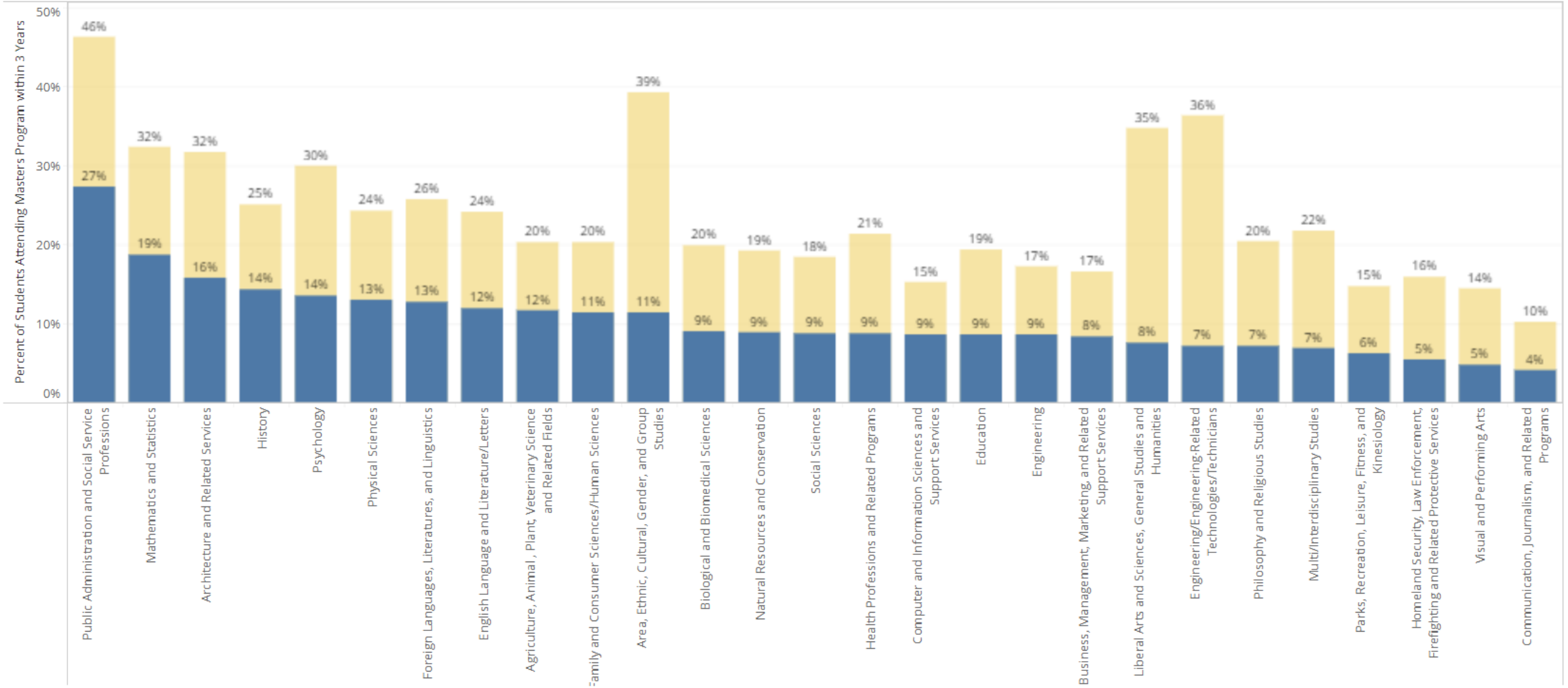


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Graduate Program Attendance

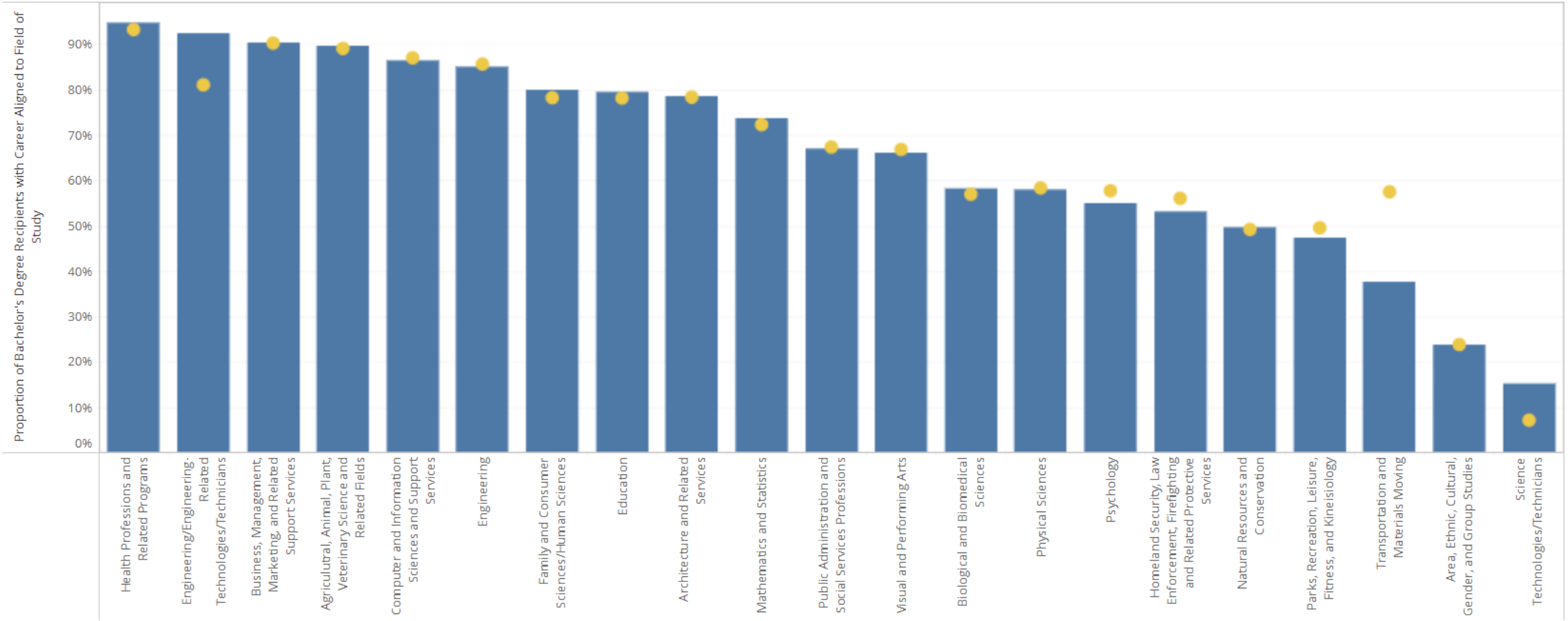


Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

Program of Study to Employment Alignment



Time Horizon

Year 1

NC Proportion of Bachelor's in Aligned Careers 1 year out

National Proportion of Bachelor's in Aligned Careers 1 year out

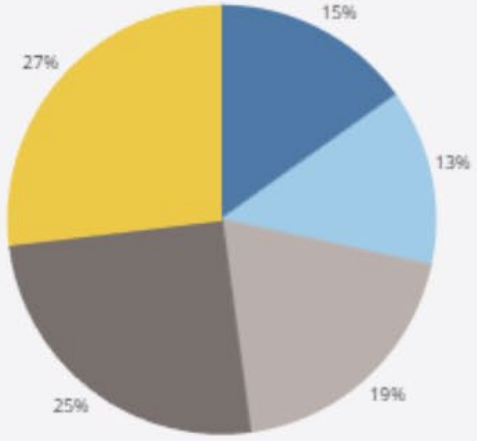
Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

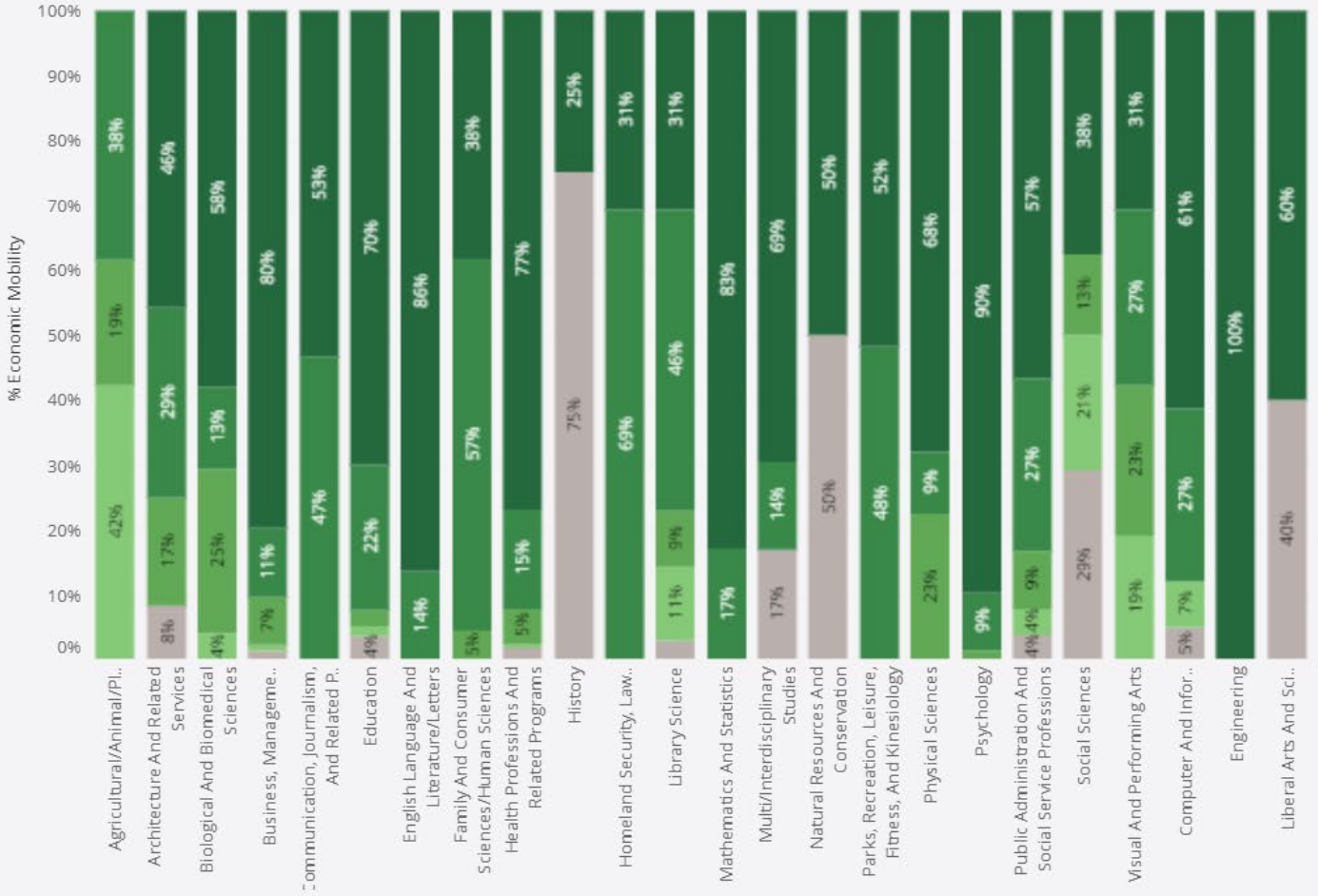
Income Band at Enrollment

Percent FAFSA Filers 71.3%



Income Band
- Band 1: < $17,800
- Band 2: $17,800 - $31,000
- Band 3: $31,000 - $51,800
- Band 4: $51,800 - $91,300
- Band 5: $91,300+

Economic Mobility of Graduates



Student Income Band at Enrollment: Band 1: < $17,800

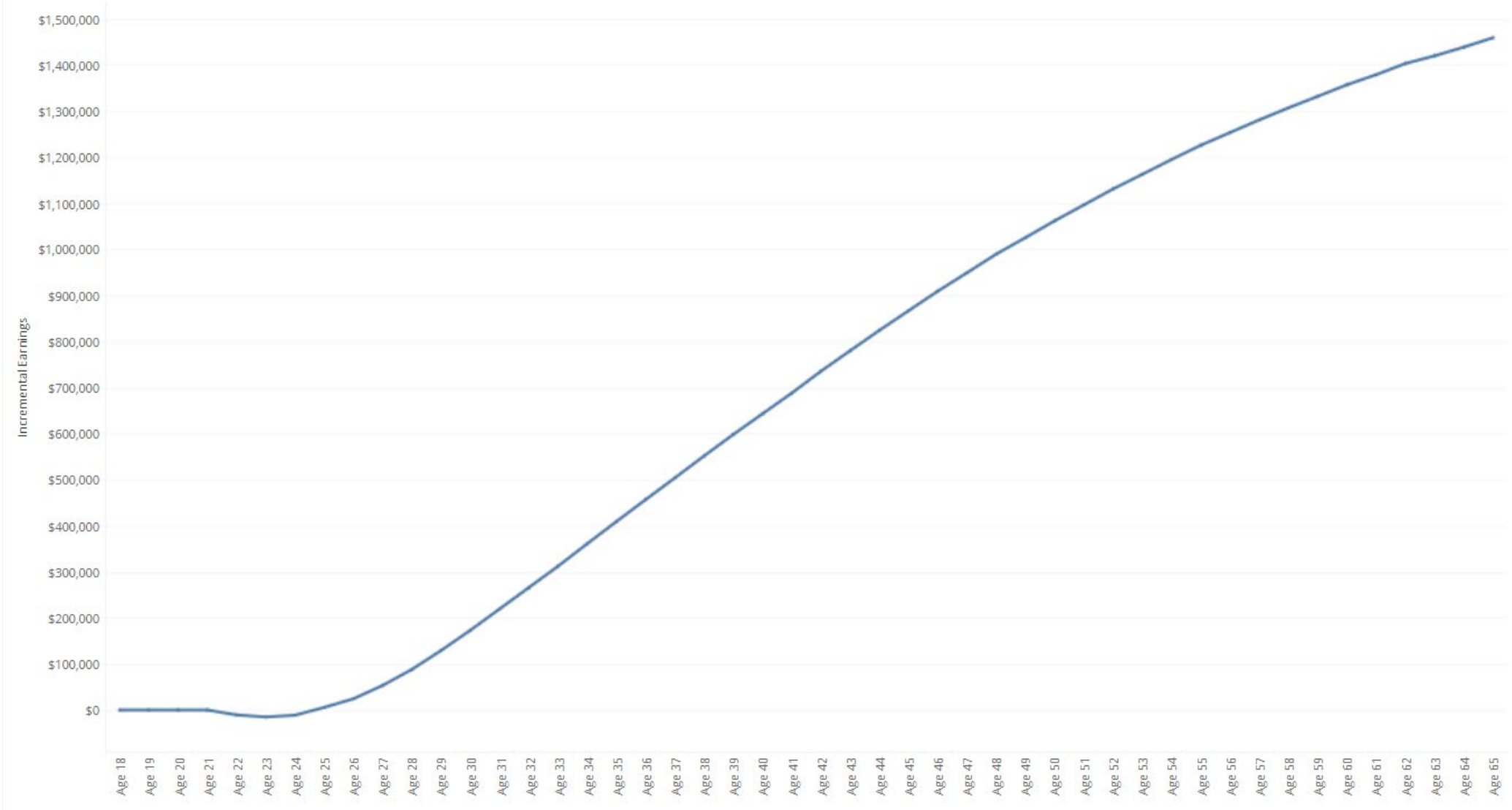
20-Year Economic Mobility
- Increased 4 Income Bands
- Increased 3 Income Bands
- Increased 2 Income Bands
- Increased 1 Income Band
- No Upward Mobility

Institution Name: All UNC System Institutions

Academic Year: 2019-2020

Comparison Group Selection: ACS Comparison

All Institutions Student Breakeven Summary



UNC State ROI Dashboard

Overview and Instructions

This page provides context and instruction for the UNC System Dashboard.

Dashboard Summary

This dashboard provides a high-level overview of ROI for the state by looking at the incremental gain in lifetime earnings for the student for each incremental dollar invested by the state. This additional spending power might equate to additional tax, welfare, and other gains for the state. The dashboard also provides key contextual information on key industry trends, state migration, and high demand occupations. This dashboard is part of a three-dashboard series that includes Institutional Context, Student ROI, and State ROI dashboards.

Dashboard Components

1. Summary:

Provides an overview of the alignment of graduates with current and forecasted industry employment demand

2. Government Investment:

Provides a breakdown of the state of North Carolina's investment in each Institution through Appropriations and Financial Aid Grants

3. Instructional ROI:

Provides a summary of average incremental lifetime earnings of students for every state appropriation dollar invested, as well as information about state migration and high demand occupations

Assumptions & Methodology

Scope of Analysis

Following 16 UNC System institutions are in-scope for this analysis:

1. Appalachian State University
2. East Carolina University
3. Elizabeth City State University
4. Fayetteville State University
5. North Carolina A&T State University
6. North Carolina Central University
7. North Carolina State University
8. University of North Carolina at Asheville
9. University of North Carolina at Chapel Hill
10. University of North Carolina at Charlotte
11. University of North Carolina at Greensboro
12. University of North Carolina at Pembroke
13. University of North Carolina School of the Arts
14. University of North Carolina Wilmington
15. Western Carolina University
16. Winston-Salem State University

Note that UNC affiliates (e.g., UNC Health, PBS North Carolina, The North Carolina Arboretum, The University of North Carolina Press, The North Carolina State Education Assistance Authority) as well as UNC high schools and students (e.g., North Carolina School of Science and Mathematics) are out of scope for this analysis.

Additionally, Associate Degrees, Certificates, and the following terminal graduate degrees have been excluded from the analysis: Dentistry, Medical, Veterinary, Pharmacy, Law.

Assumptions & Methodology:

1. State Appropriation are amounts received by the institution through acts of a state legislative body, except grants and contracts and capital appropriations. Funds reported in this category are for meeting current operating expenses, not for specific projects or programs. These funds do not include any additional COVID-related funding.
2. Job Demand: LinkedIn job posting data is utilized and demand is characterized by whether or not the job requires a Bachelor's degree. Projected demand utilizes UNC statewide employment projections for each field of study. To determine the projected demand for workers with a Bachelor's, the UNC statewide employment estimate is multiplied by the proportion of workers within a field of study required to have a Bachelor's. The percent of jobs within each field of study requiring a Bachelor's is determined by using federal statistics (ONET data).
3. Incremental cost per graduate was determined using the state incremental SCH funding formula. Undergraduate students were assumed to complete 33% of institutional credits across departments to fulfill general education requirements. These credits were assessed at a rate using a weighted per credit average cost across all fields of study per institution. 66% of undergraduate credits were assessed at the rate tied to the student's field of study. 100% of credits for graduate students were assumed at the rate of their field of study.
4. Due to Job postings behavior within Educational occupations, there is a lack of data through traditional posting sites leading to significant underreporting of the demand within the group. Due to this data limitati..

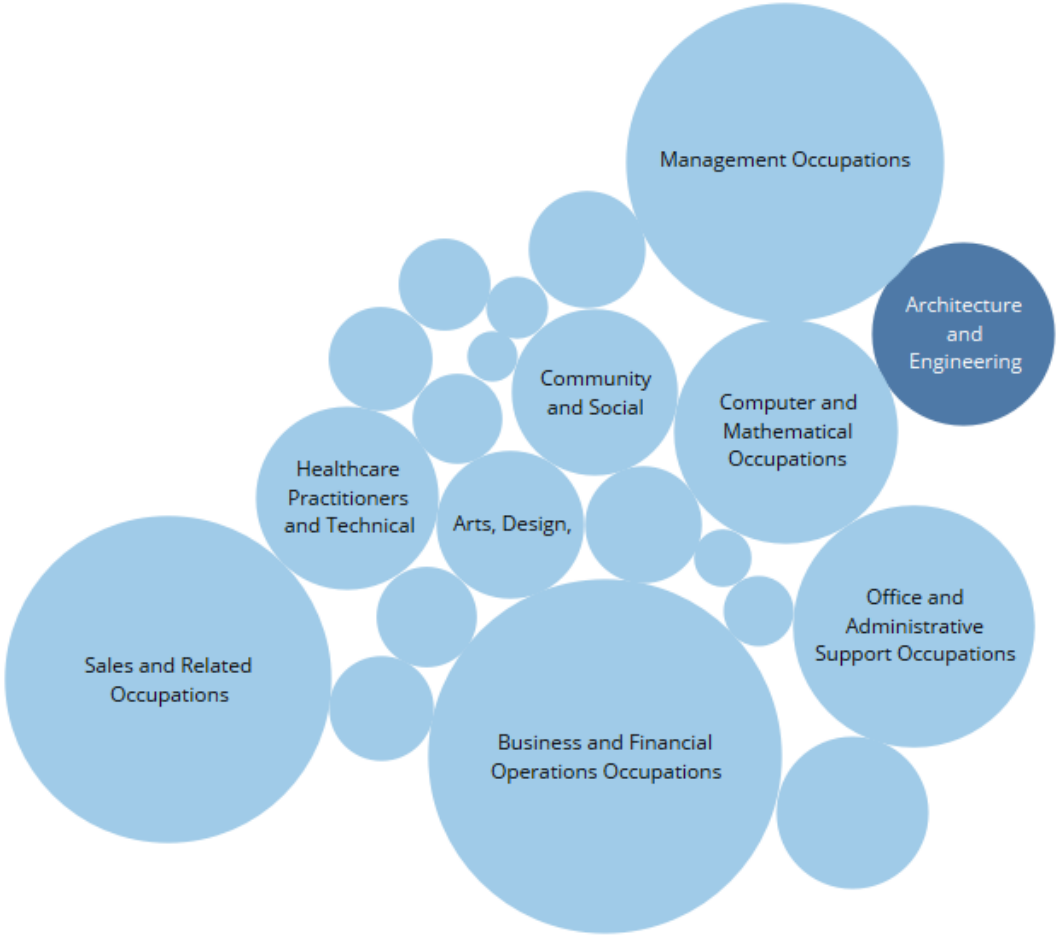
Data Sources:

Dept. of Commerce Wage Data
LinkedIn Job Posting Data
UNC System Historical State Appropriation Funding Data
ONET Data
UNC Student Data Mart (SDM)
UNC Statewide Employment Estimate
IPEDS

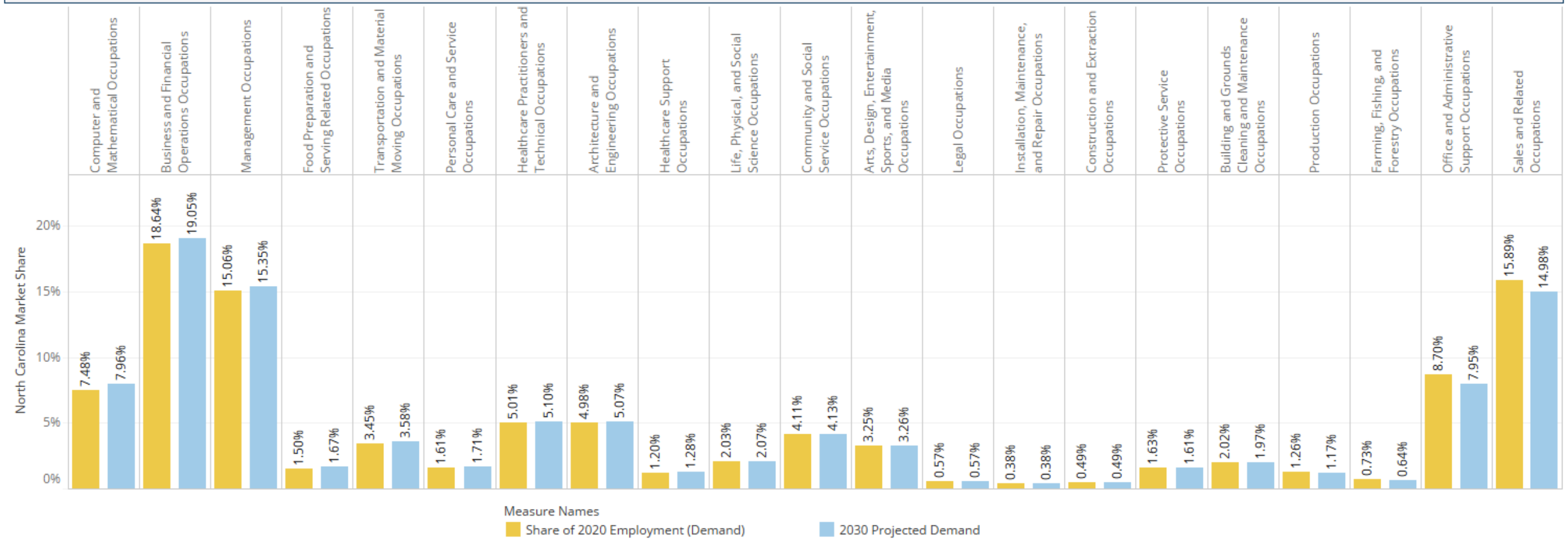
State and UNC System Alignment with Industry Demand

2020 Occupational Group Share in North Carolina

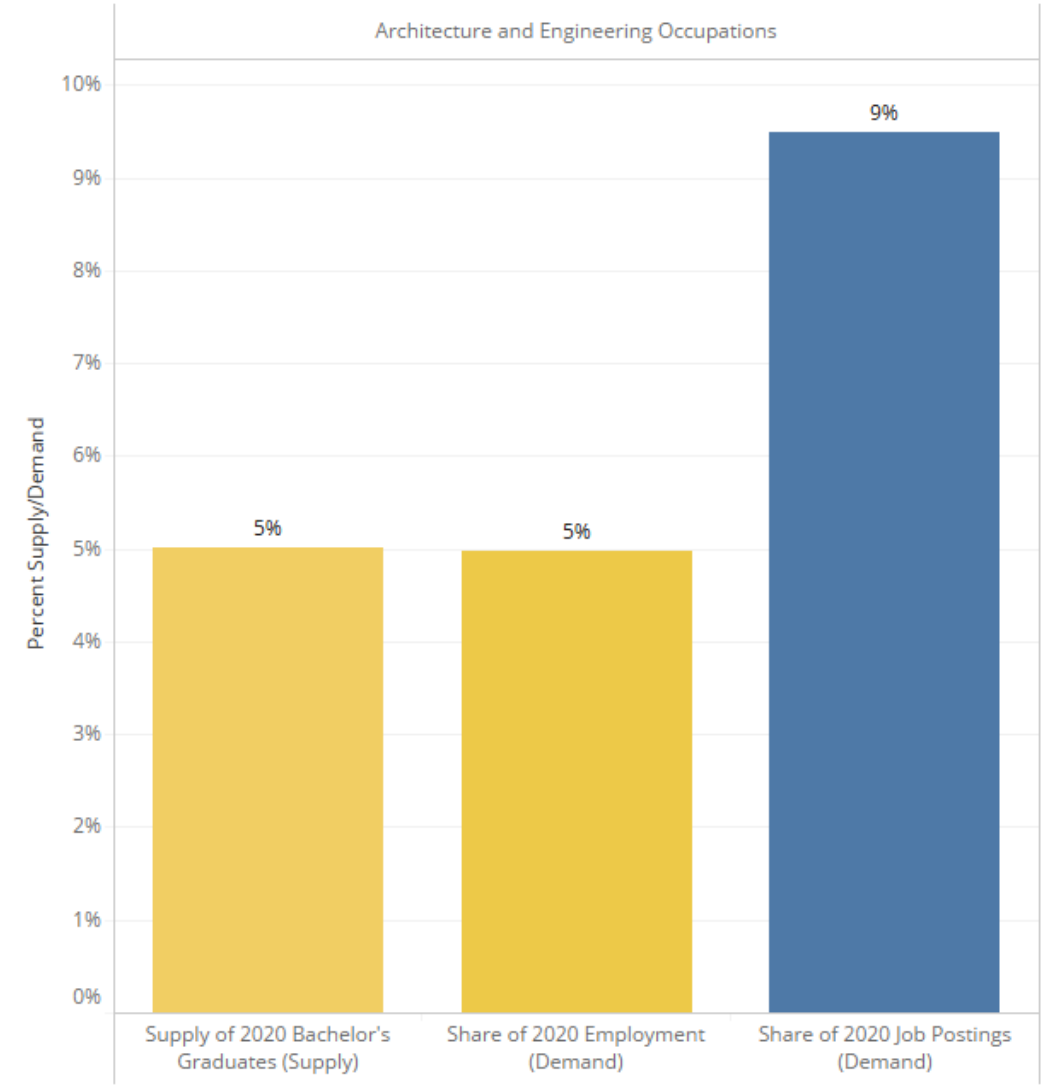
Employment vs. Postings Share
Employment Share

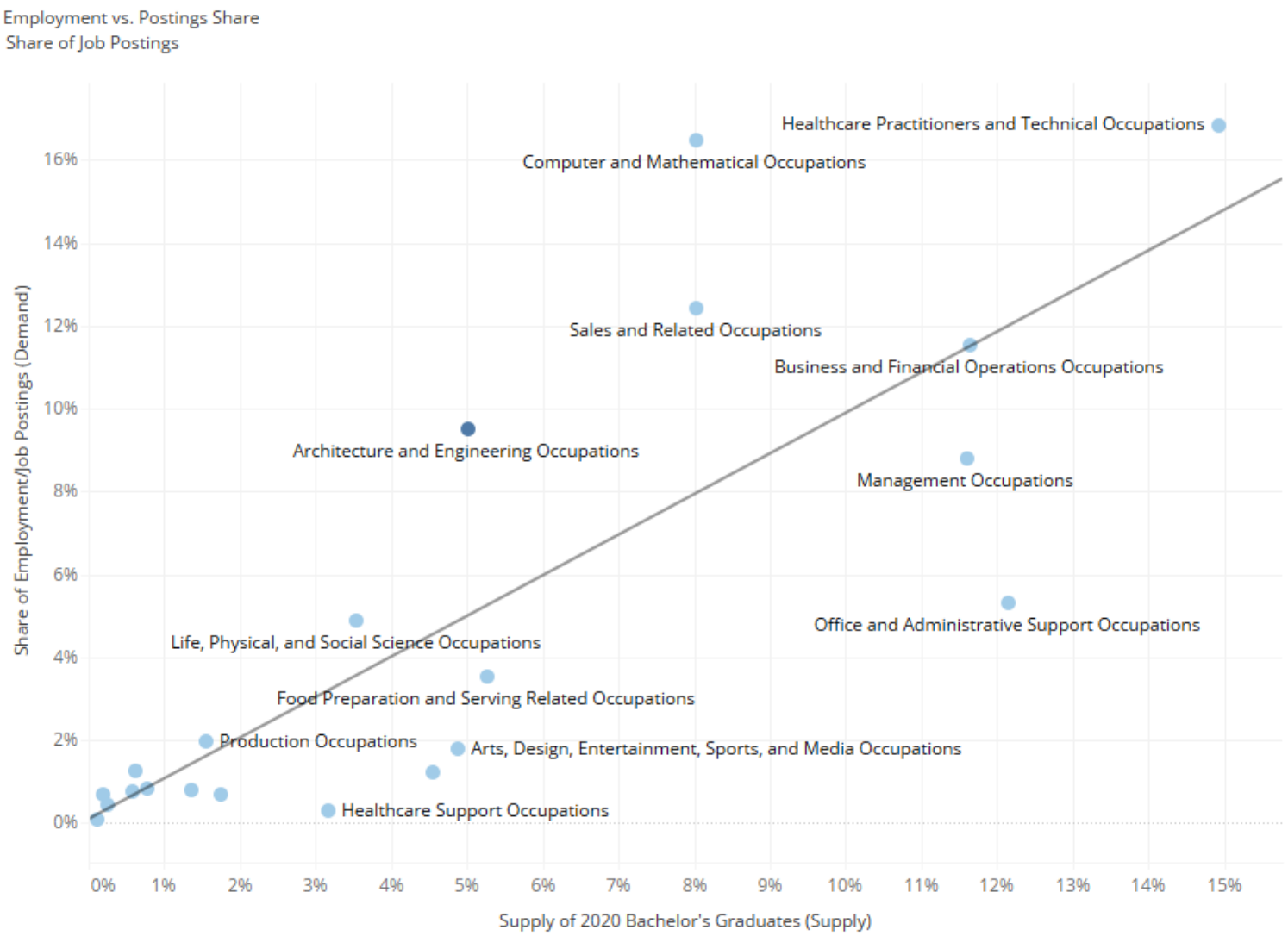


2020 vs. 2030 Occupational Group Share in North Carolina



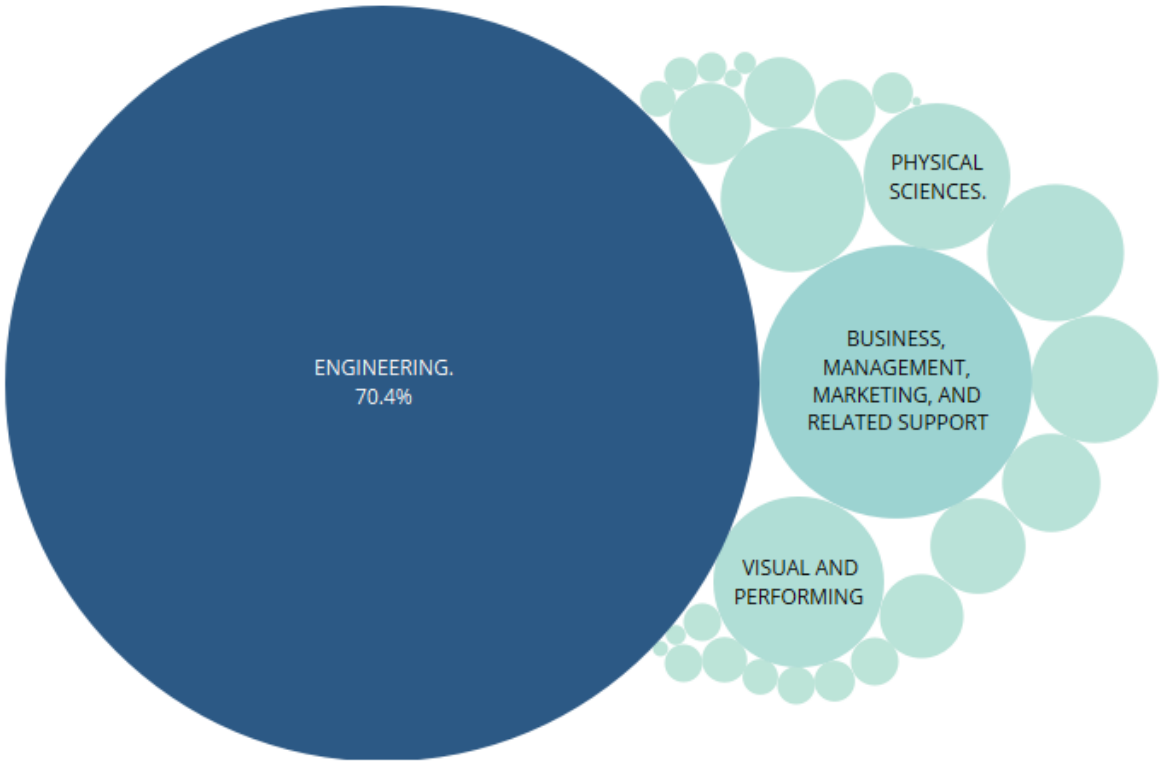
Supply of UNC Bachelor's Graduates vs. North Carolina Employment Demand by Occupational Group





UNC Graduate Field of Study within Occupational Area

Years After Completion
1 Year



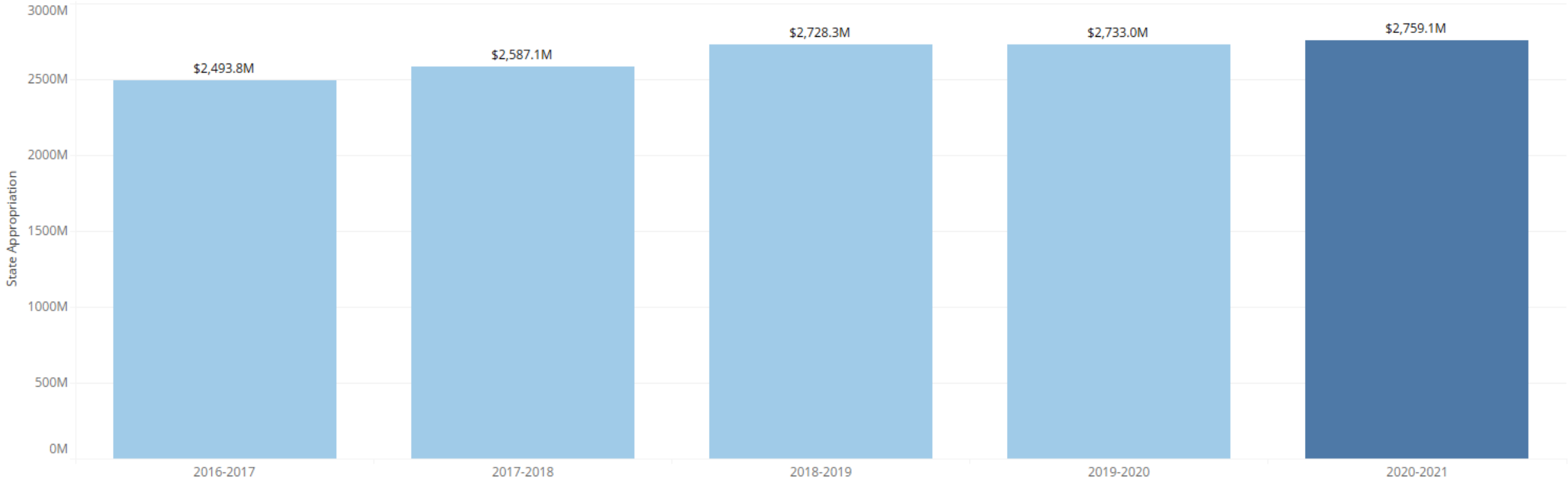
Institution Name
All UNC System Institutions

Academic Year
2020-2021

All State Appropriations

State Appropriations Investment	Share of Total UNC System State Appropriations	Share of Total UNC System Graduates
$2,759,129,639	100.0%	100.0%

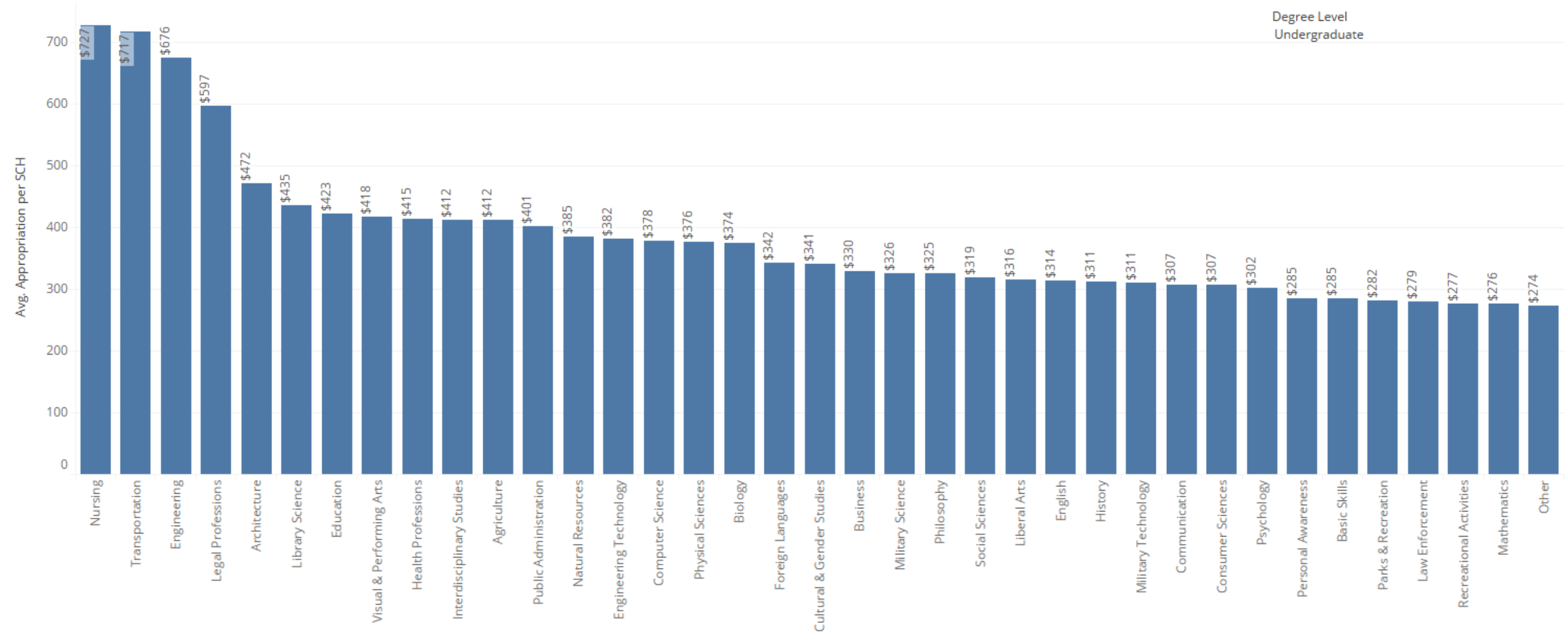
State Appropriations



Institution Name
All UNC System Institutions

Academic Year
2020-2021

State Appropriation per Incremental Student Credit Hour

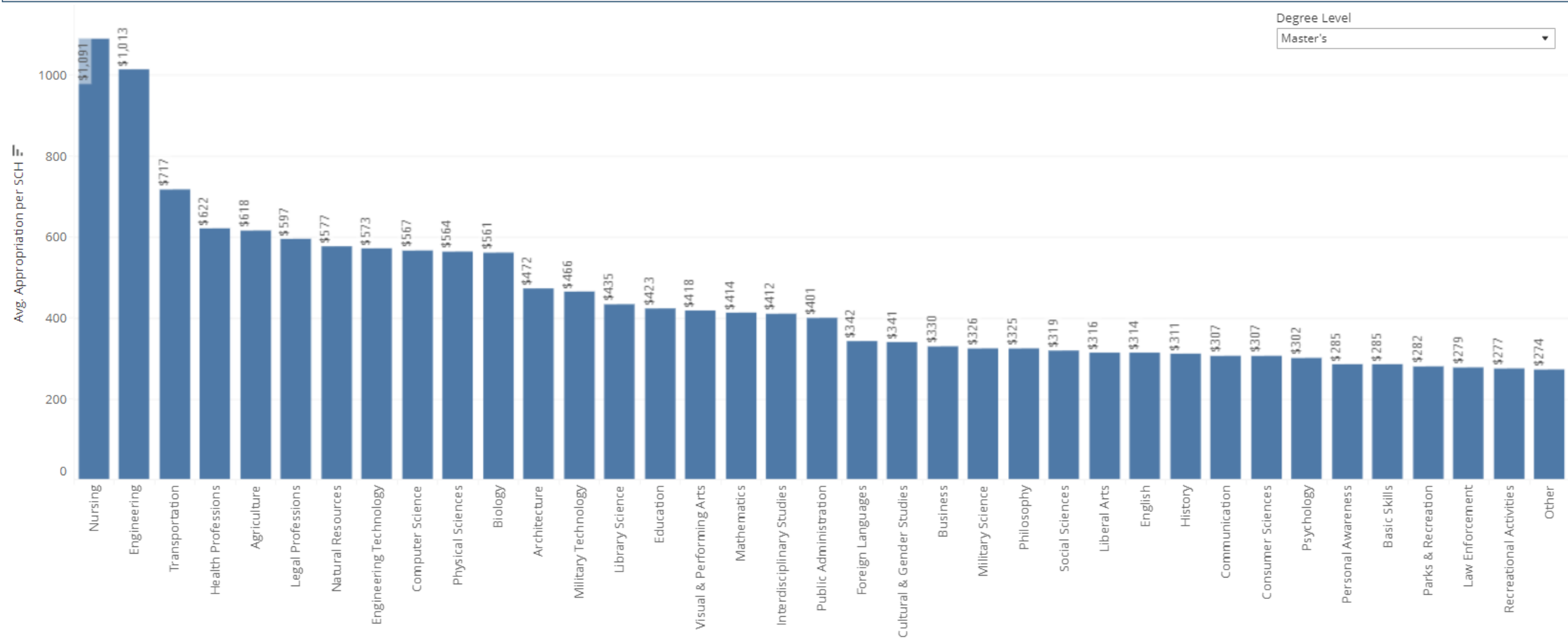


Institution Name
All UNC System Institutions

Academic Year
2020-2021

State Appropriation per Incremental Student Credit Hour

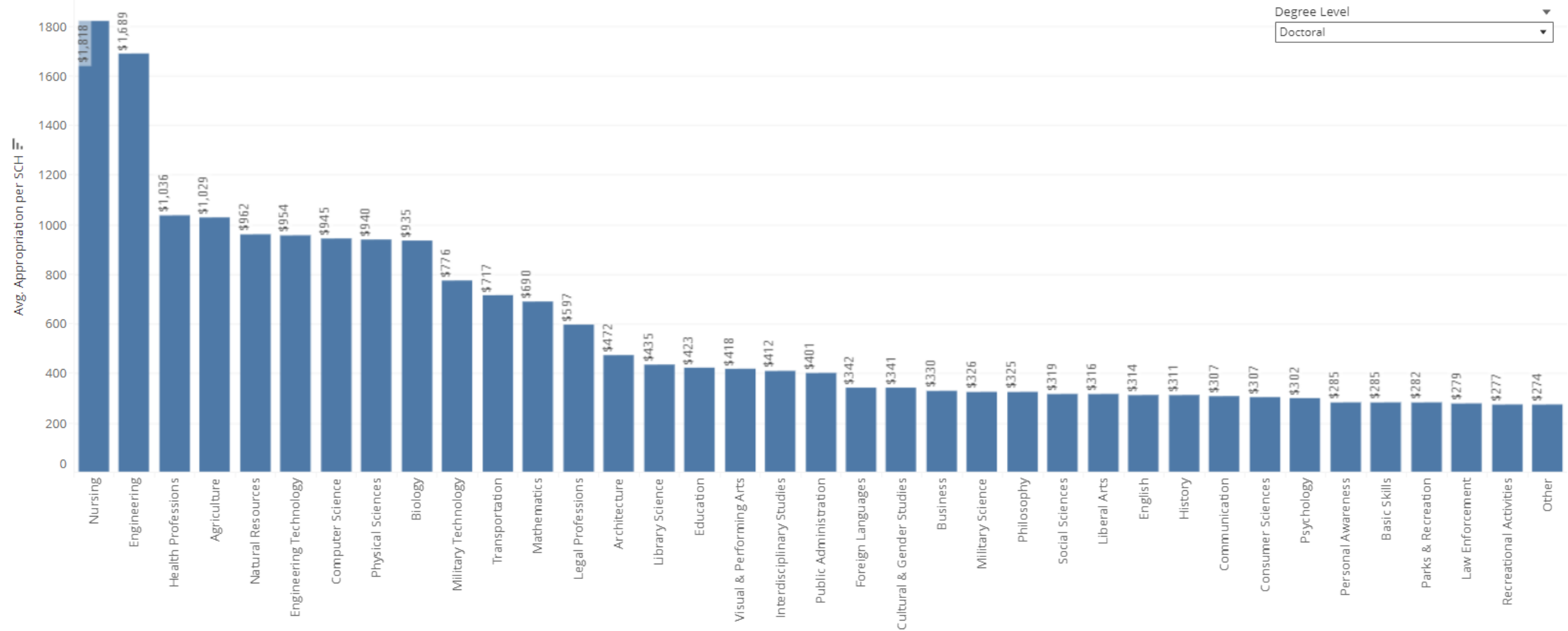
Degree Level
Master's



Institution Name
All UNC System Institutions

Academic Year
2020-2021

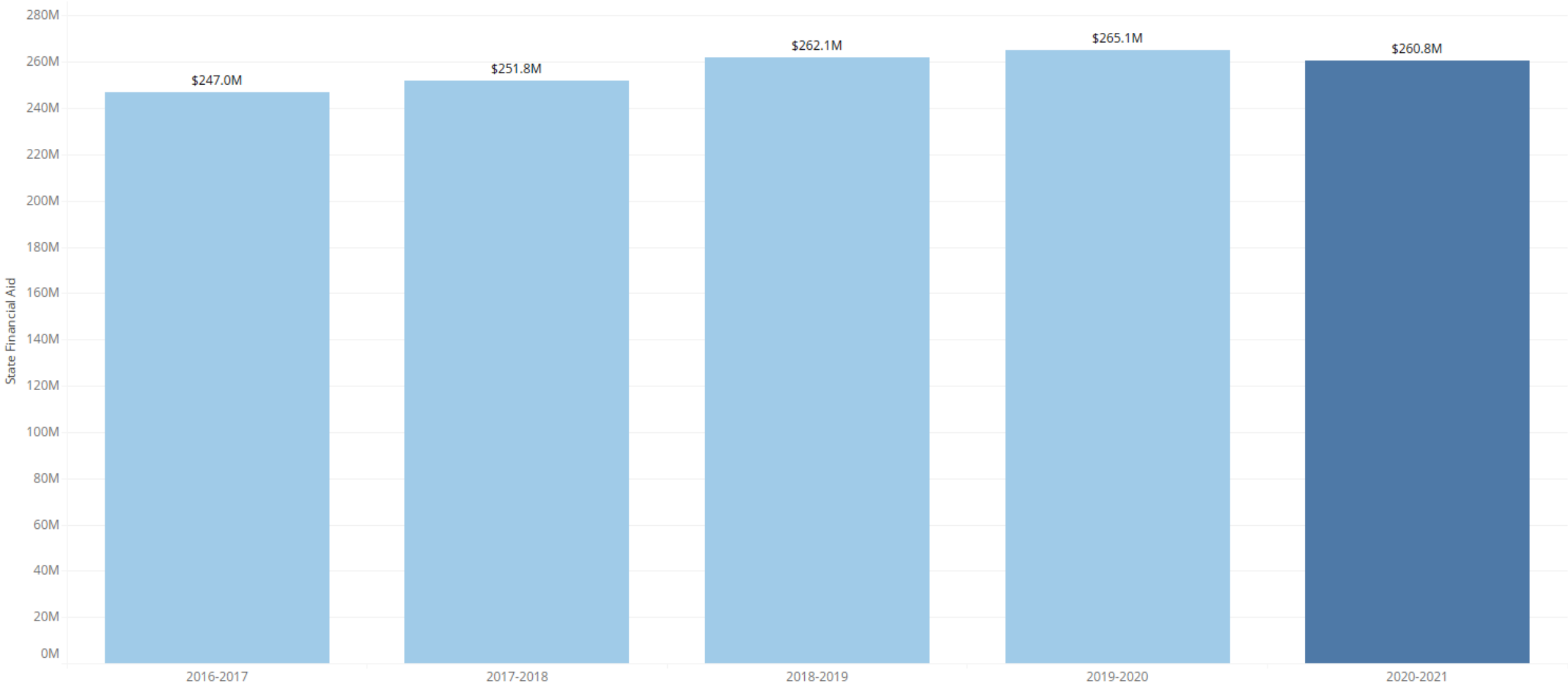
State Appropriation per Incremental Student Credit Hour



Institution Name
All UNC System Institutions

Academic Year
2020-2021

State Aid Investment

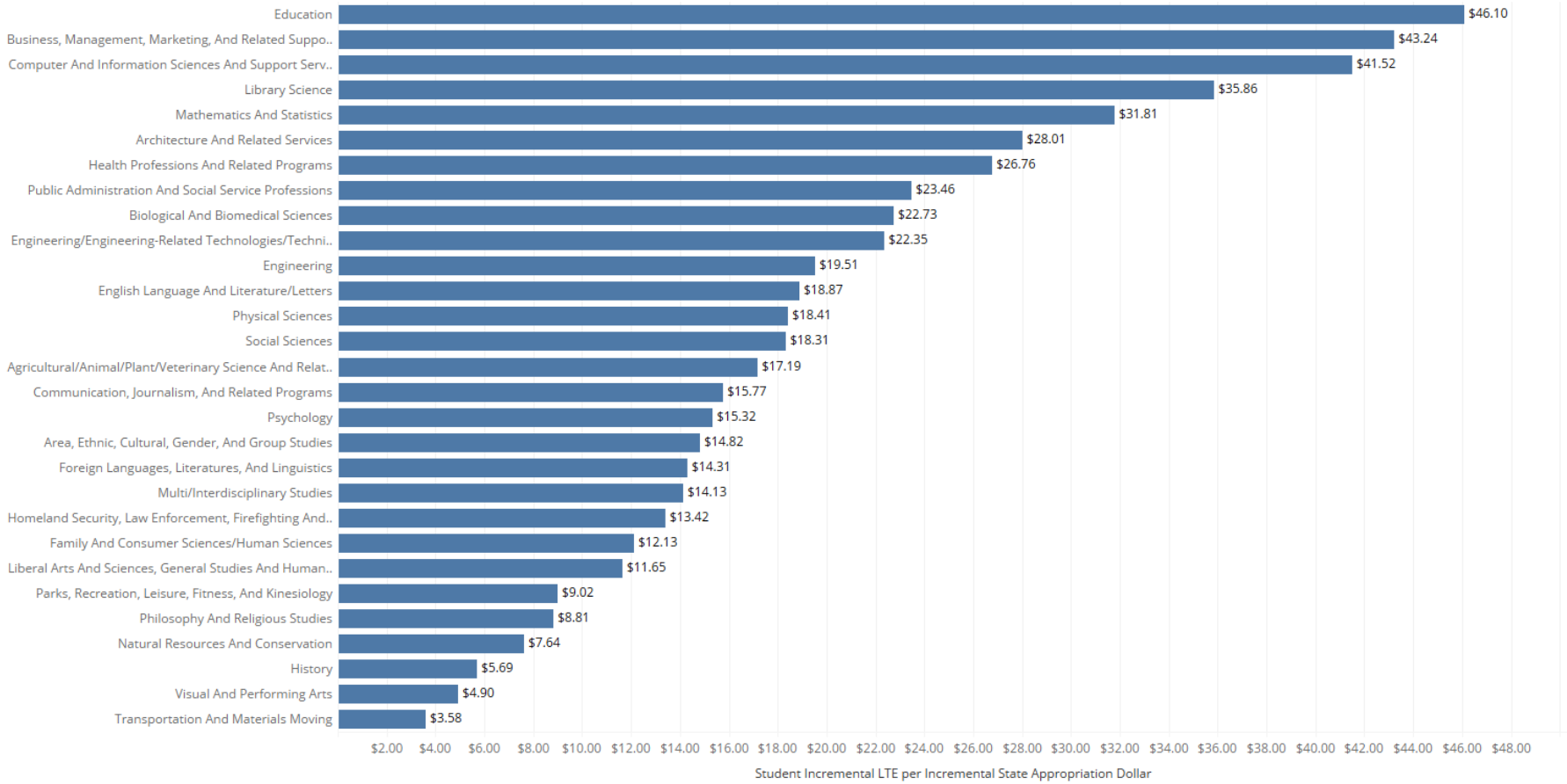


Institution Name	Academic Year	Counterfactual Selection
All UNC System Institutions	2020-2021	ACS Comparison

All State Return on Investment

Median Incremental Lifetime Earnings to the Student	÷	Median Incremental Cost per Graduate to the State	=	Incremental LTE per Incremental State Dollar
$809,616		$35,088		$23.07

All Student Incremental Lifetime Earnings per Incremental State Appropriation Dollar



Institution Name
All UNC System Institutions

Academic Year
2020-2021

Counterfactual Selection
ACS Comparison

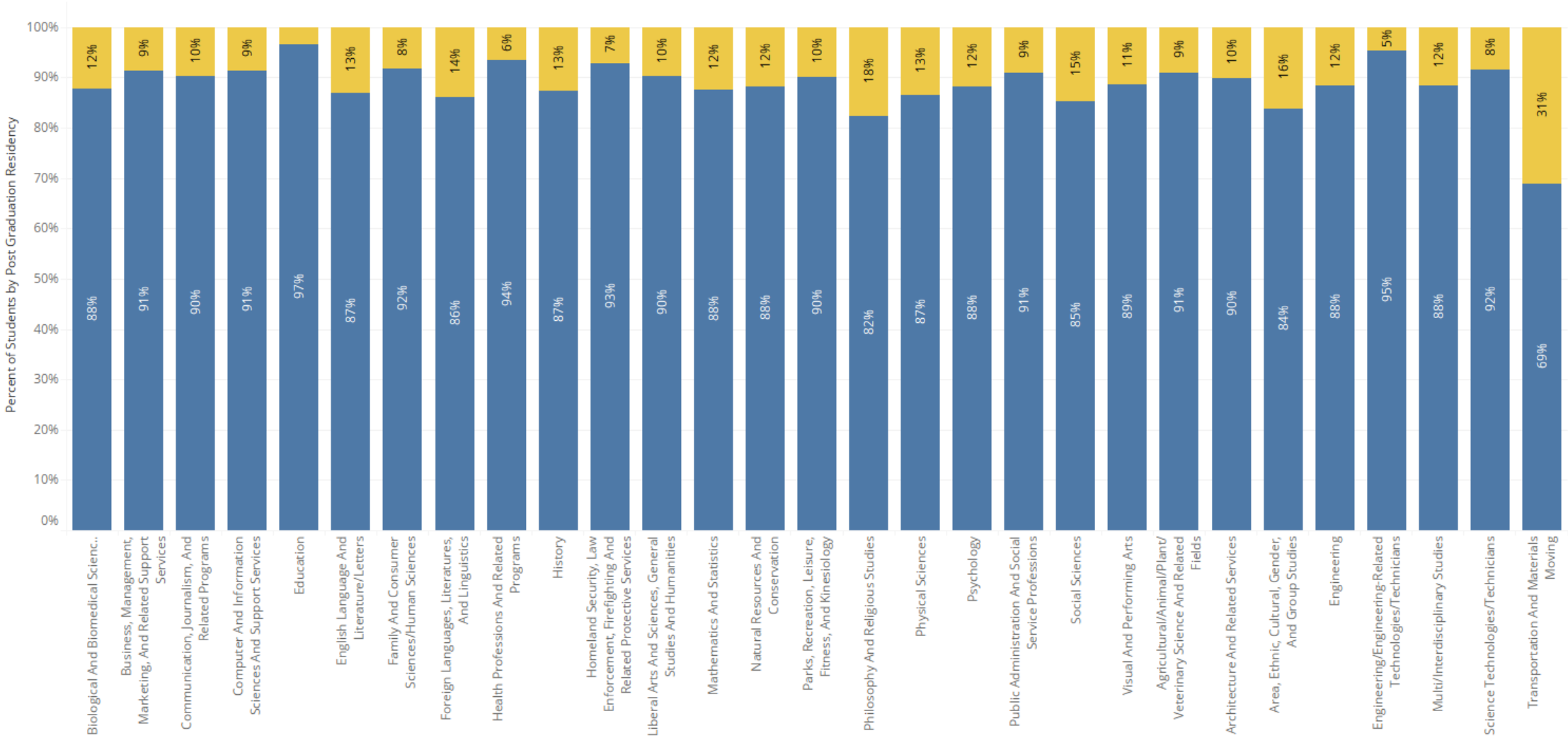
All State Migration

Years After Graduation
1

Student Residency at Enrollment
All

Degree Level
Undergraduate

Retention Status
Left North Carolina
Retained in North Carolina



Institution Name
All UNC System Institutions

Academic Year
2020-2021

Counterfactual Selection
ACS Comparison

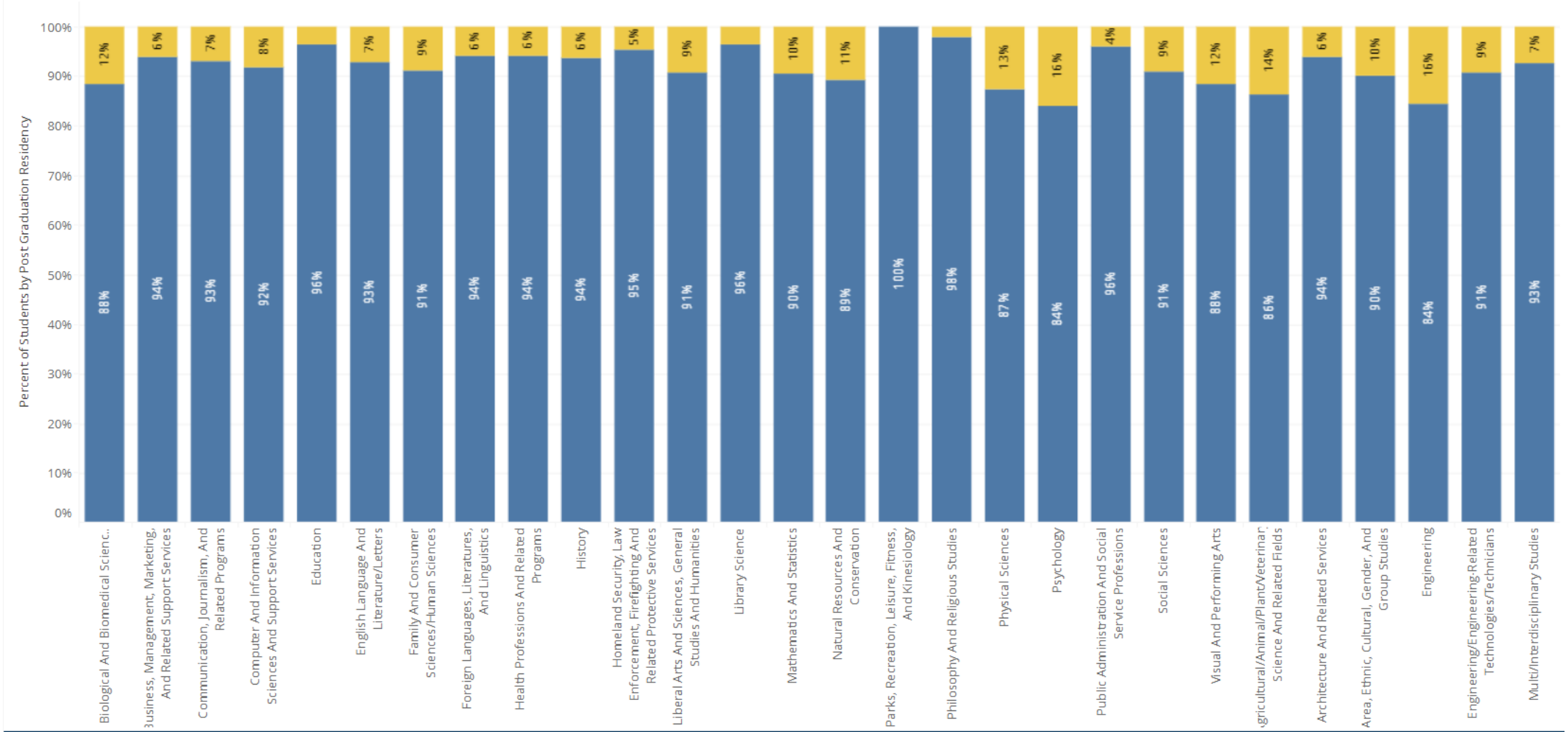
All State Migration

Years After Graduation: 1

Student Residency at Enrollment: (All)

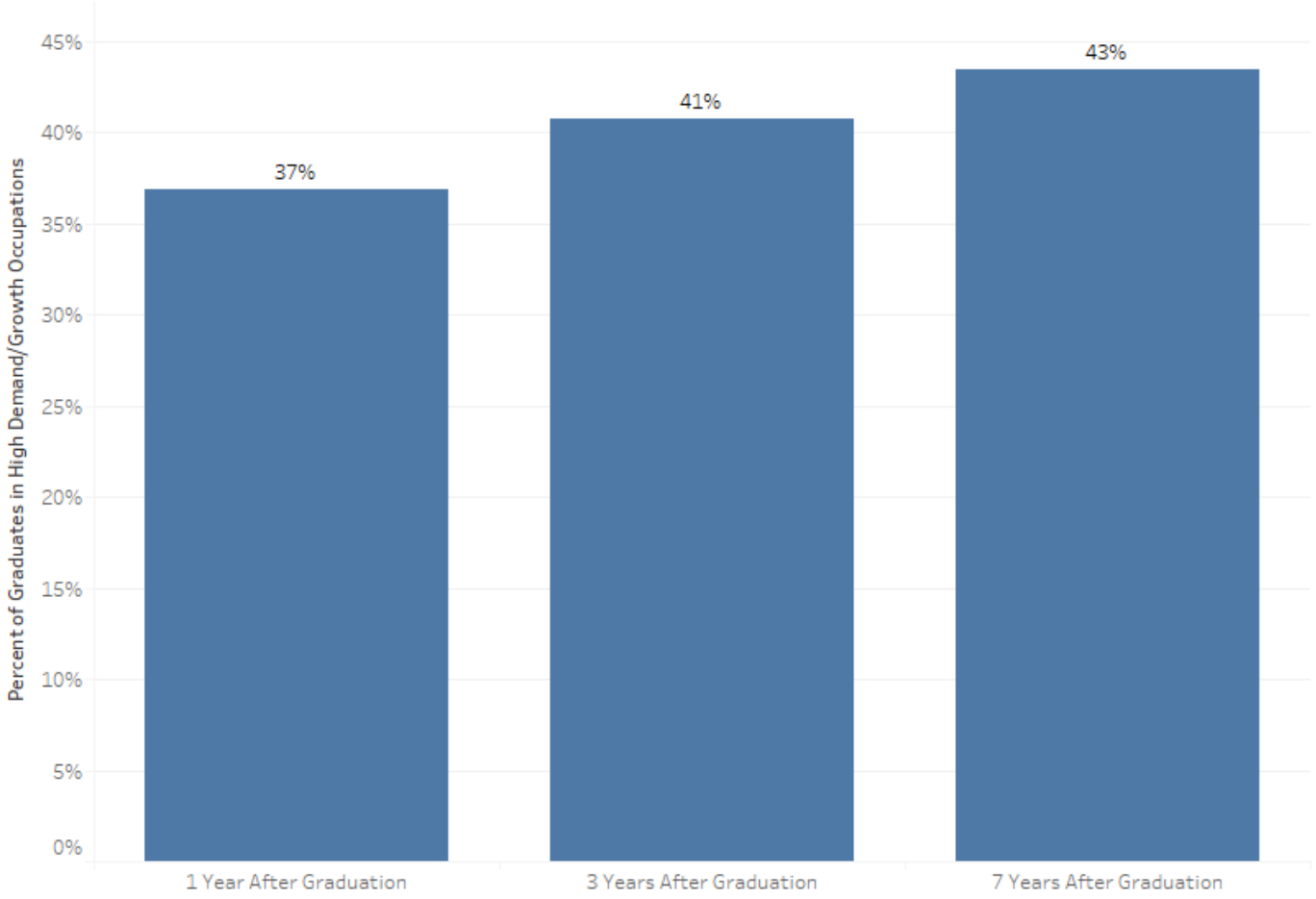
Degree Level: Graduate

Retention Status: Left North Carolina; Retained in North Carolina



Institution Name	Academic Year	Counterfactual Selection
All UNC System Institutions	2020-2021	ACS Comparison

Share of Graduates in High Demand/Growth Occupations



High Demand/Growth Occupation List

Accountants and Auditors
Aerospace Engineers
Agents and Business Managers of Artists, Performers, and Athletes
Architects, Except Landscape and Naval
Athletic Trainers
Bioengineers and Biomedical Engineers
Buyers and Purchasing Agents
Career/Technical Education Teachers, Postsecondary
Chemical Engineers
Child, Family, and School Social Workers
Civil Engineers
Clergy
Clinical Laboratory Technologists and Technicians
Coaches and Scouts
Compensation, Benefits, and Job Analysis Specialists
Compliance Officers
Computer and Information Systems Managers
Computer Occupations, All Other
Computer Systems Analysts
Construction Managers
Cost Estimators
Credit Counselors
Data Scientists and Mathematical Science Occupations, All Other
Diagnostic Medical Sonographers
Educational Instruction and Library Workers, All Other
Electrical and Electronics Drafters
Electrical Engineers
Elementary School Teachers, Except Special Education
Film and Video Editors
Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other
Financial Examiners
Financial Managers
Forensic Science Technicians
General and Operations Managers
Geoscientists, Except Hydrologists and Geographers
Graphic Designers
Human Resources Specialists
Industrial Engineers

Table of Contents

Preamble **3**

Introduction and Purpose **5**

Executive Insights **6**

Dashboard Development and Methodology **9**

Project Governance 9

Approach to Analysis 10

Context and Key Considerations 12

Legislative Mandate Responses **15**

1. The Number of Students within Each Program 15

2. The Number of Faculty and Staff Employed within Each Program 17

3. The Related Instructional Costs to Operate Each Program 18

4. A detailed correlation between degree of study and career roles and associated expected starting compensation, as well as expected career earnings 20

5. Detailed ROI for Each Program 22

6. ROI for State Funding Expenditures 22

7. ROI for Student Funding Expenditures 23

Dashboard Guide and Analysis **24**

Institutional Context Dashboards 24

Student ROI Dashboards 29

State ROI Dashboards 37

Moving Forward **43**

Appendix 1: About Deloitte and Our Partners **45**

About Deloitte 45

About Our Partners 48

Appendix 2: Governance Group Members **50**

Preamble

This report explores a number of dimensions to address how the University of North Carolina System is performing on its promises of preparing students for rewarding careers, building a highly competitive workforce for the State, and delivering positive return on investment (ROI) for students and the State. Rapid change in the North Carolina economy and in the talent that this economy is comprised of places new demands on the State's higher education infrastructure. The sectors, occupations, skills, and credentials that define the opportunity landscape for graduates are a set of dynamic considerations that require continuous adaptation. In that context, enhancing student outcomes and program ROI hinges on awareness of and alignment with that evolving landscape.

The importance of the UNC System in preparing talent to power North Carolina's economy is illustrated by several major trends:

Rising Demand for an Educated Workforce

North Carolina's job market is growing fast, with 302,000 new jobs projected between 2018 and 2028; however, the contours of that growth will reshape the distribution of work across occupations. Specifically, North Carolina's job market has seen a marked shift in demand towards jobs which usually require a college degree. An analysis of North Carolina's occupation growth projections shows us that occupations that require a master's, doctorate, or professional degree are expected to experience the fastest annual growth and occupations requiring a bachelor's degree are projected to grow faster than degree-optional jobs. This trend is most visible when considering the projected growth and decline of various sectors in North Carolina through 2028. While sectors such as Professional, Scientific, and Technical Services (+15.8%), Health Care and Social Assistance (+13.7%), and Management of Companies and Enterprises (+12.0%) are expected to exhibit some of the fastest job growth in North Carolina.

Rapidly Growing Skills are Transforming How Work is Done

The pace of change in North Carolina is set not only by industry growth and the emergence of new jobs, but also by how new technologies and evolving skill requirements are transforming the way current jobs are done. Since 2017, 37% of the top skills that workers need to perform the average job nationwide have been replaced, ranging from the growing requirement that designers have data skills; to data scientists being required to have business skills; to tech workers being expected to swap out known languages for the latest platforms. For example, demand for workers with knowledge of Cloud Solutions has grown 350% in prevalence in North Carolina over the past 5 years, with much of this demand in jobs outside of traditional tech industries. Demand for those who have product management skills has grown more than 150% across the board, while foundational or human skills such as teaching, initiative, leadership, and communication have all seen demand more than double. If higher education programs lag these changes, graduates may not have the skills to land a job while, for the economy, the workforce we have may no longer be the workforce we need going forward.

Importantly, it is not just that new skills are storming the stage. As illustrated above, work is increasingly blending skills from across domains, for example requiring workers outside the tech world to acquire coding or data skills. Over the past decade, the share of marketing jobs requiring data skills has grown 50% while the number of occupations with significant demand for creativity skills has risen over 400%, including many tech jobs. For workers, these kinds of fundamental changes challenge traditional learn-as-you go approaches. For graduates, this creates an imperative to acquire skills from across academic silos.

Emerging technologies once on the frontiers of innovation are moving from Silicon Valley to Main Street. One in eight job openings last year required one of four rapidly emerging skills: Artificial Intelligence/Machine Learning (AI/ML),

Cloud computing, product management, or social media. 16% of manufacturing sector postings and even 8% of retail openings now require one of these four skills while demand for these skills has surged beyond just tech hubs.

The Nature of the Workforce is Changing

Job growth in North Carolina is highly concentrated geographically; over two-thirds (72%) of the new jobs projected in the State through 2028 will be created in the Charlotte, Raleigh, and Durham regions. Illustrating this point, in 2020 North Carolina saw net inflow of approximately 61,000 new residents, 60% of whom moved to Charlotte, Raleigh, and Durham, which represent less than 40% of the State's population. These areas are seeing high talent in-migration, but little internal upward mobility for existing workers; while good jobs are being created and filled, fewer workers are being "pulled up" into better jobs as part of this growth than is seen in other MSAs nationally.

North Carolina's skills-base also is taking on a two-speed nature; the cities with the skills powering the growth of future industries, and the cities without those skills. Overall, North Carolina lags in the specialized skills needed to power frontier industries. Forthcoming Burning Glass Institute research indicates that, while North Carolina ranks #15 among states in the strength of its tech skill base, the State ranks #34 for the skills needed for Green Jobs and #44 for Advanced Manufacturing. While the Raleigh, Durham, and Charlotte MSAs are all among the top 20 nationally for the skills needed to support these growing industries, the rest of the State is lagging far behind.

Challenges in the Alignment Between Supply & Demand

While job creation in North Carolina is expected to disproportionately favor those with degrees, higher education enrollments have begun to decline. From Fall 2021 to Fall 2022, enrollments declined for the first time in many years across the UNC System (by 2%) despite an increased enrollment share of out-of-State students. New graduate student enrollment declined almost 8% despite the growing North Carolina population. While 2022 brought some recovery, shifting demographics (including a falling birthrate) mean that high school graduations both nationwide and in North Carolina are expected to peak in 2025/2026. Thereafter, graduations are expected to decline for the following decade or more, stabilizing at about 114,000 high school graduations per year in North Carolina, a 5.8% decline from peak graduations.

In many critical fields, the pipeline of talent into the market is insufficient. For example, amidst a rising tide of supply chain shortages, 20,000 logisticians (i.e., coordinators of the life cycle of products that oversee purchasing, transportation, inventory, and warehousing of consumer goods) are expected to exit the workforce each year and, over and above replacing them, 5,600 new logisticians will be needed each year. Yet, nationally, only 10,000 logistics degrees are conferred annually.

A rapidly changing skills landscape, widespread labor shortages, and declining enrollments highlight the critical need for the UNC system to be dynamic in equipping students – the present and future members of North Carolina's workforce – with the skills and education needed to power the future of the State's economy. A continued focus on outcomes will be necessary to rise to the imperative set by this confluence of trends.

Introduction and Purpose

In November 2021, the North Carolina General Assembly directed the University of North Carolina Board of Governors ("BoG") to contract with an independent consultant to conduct an evaluation of current programs at each constituent institution of the University of North Carolina System ("UNC System") related to operational costs, student outcomes, and return on investment ("ROI") of each program. This assessment is designed to evaluate ROI from the perspective of three different stakeholder groups: each institution in the UNC System, UNC System students, and the State of North Carolina. Specifically, the request from the General Assembly included the following mandates:

1. The number of students in each program
2. The number of faculty and staff employed for each program
3. The related costs to operate each program, inclusive of total staff compensation and benefits, facility costs, and any other related expenses, including overhead
4. A detailed correlation between degree of study and directly related career roles and associated expected starting compensation, as well as expected career earnings for students upon completion of those programs
5. A detailed ROI for each program
6. ROI for State funding expenditures
7. ROI for student funding expenditures

After a request for proposals process, the UNC System Office selected Deloitte Consulting LLP ("Deloitte"), a global professional services firm dedicated to solving its clients most complex and unique challenges. Higher education has been a priority sector for Deloitte since the firm began supporting colleges and universities in 1913. Since then, Deloitte's Higher Education practice has cultivated strong relationships with a diverse array of institutions, including university systems, public and private colleges, community colleges, and all Carnegie classifications of research institutions. Deloitte has completed 900+ projects with over 250 higher education institutions, including all 10 of the top 10 universities and 65 of the top 100 universities, according to *U.S. News & World Report* rankings.

Deloitte was proud to partner with two firms for this assessment: rpk GROUP and the Burning Glass Institute ("BGI"). rpk GROUP's focus on maximizing Mission, Market, and Margin® for its clients has made the firm a recognized leader in defining the future of higher education and work. rpk GROUP focuses on business model design, sustainable innovation frameworks, strategic partnerships, and academic administrative reviews, and the firm was instrumental in defining the team's approach to academic costing for this engagement. BGI engages with their clients at the intersection of learning and work by advancing data-driven research on the future of work and workers. BGI works with a wide range of stakeholders from educators to employers to policymakers to develop solutions that build mobility, opportunity, and equity through skills. BGI's ability to connect academic programming with student outcomes was critical to building the team's analyses focused on the ROI of higher education for both students and the State of North Carolina.

Throughout this report, references to the "Deloitte team" or "project team" encompass the collective work of Deloitte, rpk GROUP, and BGI. More information about Deloitte, rpk GROUP, and BGI can be found within Appendix 1.

It is with pride that we, Deloitte, and our partners collectively submit this report to the General Assembly and the University of North Carolina System. We are all appreciative of the partnerships we have forged over the past year with the System Office and all 16 constituent universities. Both the System Office and the constituent universities graciously dedicated their time serving on the Steering Committee and the Advisory Committee, reviewing data, providing feedback, attending meetings, and completing surveys. The dashboards prepared through this work are a result of the willingness of stakeholders within the System Office and on every campus to engage in the process, dedicating time, knowledge, and expertise to guide and enhance our work.

Executive Insights

Chartered by the North Carolina General Assembly in 1789, the University of North Carolina was the first public university in the United States and the only public university to graduate students in the 1700s. Over 200 years later, the UNC System is now composed of 16 constituent universities and the NC School of Science and Mathematics.[1] The UNC System is led by the UNC Board of Governors whose purpose is to relentlessly pursue achievement of the System's four fundamental objectives:

1. Foster the development of a well-planned and coordinated system of higher education
2. Improve the quality of education
3. Extend educational benefits beyond campus borders
4. Encourage efficient and effective use of the State's resources

To better understand the impact of the State's investments, the North Carolina General Assembly funded this study to analyze and evaluate post-secondary academic degree programs offered at each of the UNC System's 16 constituent universities and provide quantitative measures to determine the return on investment from multiple stakeholder perspectives. Below is a summary of findings from the analysis.

The UNC System produces a significant number of graduates across a wide array of programs annually. The UNC System enrolls over 260,000 undergraduate and graduate students across its 16 campuses and employs nearly 13,000 faculty.[2] The System graduates well over 50,000 students per year, including 57,240[3] degree conferrals in Academic Year 2020-2021. One year after graduation, the State retains within its borders 82% or more of bachelor's degree recipients in 28 of the 29 fields of study[4] shown within this report (at least 84% of graduate degree recipients remain in state across all fields of study), adding to North Carolina's rich, productive economy. The UNC System has also structured its program offerings to align closely with demand for employment. Business Administration, Health Professions, and Engineering are the most common degrees for UNC System graduates, accounting for 40.2% of degrees conferred in Academic Year 2020-2021, while the most in-demand job postings are in the following industries: Healthcare Practitioners and Technical Occupations; Computer and Mathematical Occupations; Sales and Related Occupations; and Business and Financial Operations Occupations. With these data, the State ROI dashboards could be used in the future to help current and prospective students align their field of study with their intended profession based on the profiles of previous graduates.

The UNC System directs $4.2 billion in resources toward instruction. Costs related to instruction fell slightly (less than 0.5%) from academic year 2019-2020 to a total of $4.2 billion in academic year 2020-2021. Salaries, wages, and benefits for both faculty and staff constitute 71% of the instructional expenses while the remaining 29% is directed toward scholarships and fellowships, supplies and services, utilities, plant and equipment, and other non-compensation expenses. To keep tuition costs low for students and provide the most affordable education the State can offer, the UNC System prioritizes operational efficiency and financial flexibility across its 16 campuses.[5] The System, through support from the State legislature and under the leadership of System President Peter Hans, has

[1] The NC School of Science and Mathematics is not included in this study.

[2] Faculty FTE totals do not include the Military Science and Technology meta-department as those faculty are funded using external sources. In addition, the totals do not include faculty that are not tied directly to a meta-department (e.g., they are tied to a college or institution) and do not include staff, teaching assistants, graduate research assistants, or other student workers. Finally, UNCSA's categorizations of faculty differ from the other universities in the UNC System and have been manually updated in collaboration with UNCSA to fit the definitions of tenure track and non-tenure track faculty that are commonly used across the System.

[3] Undergraduate students are only counted once based on their first major and the following terminal degrees have been excluded: Dentistry, Medical, Veterinary, Pharmacy, and Law.

[4] Fields of study are aligned to CIP codes.

[5] Source: "Affordability and Efficiency." northcarolina.edu/impact/affordability-efficiency.

built robust programs such as the NC Promise and the Fixed Tuition Program that increase educational access, reduce student debt, and ultimately boost the State's economy. The data within the Institutional Context dashboard series allows for meaningful comparisons of the UNC System's instructional costs across programs and campuses. These analyses can support educational leaders across the System in learning best practices and sparking dialogue in order to continue to remove barriers to educational access and keep tuition rates low for all students.

Through Fall 2021, student enrollments continued to break records in each year.[6] As a result of student enrollment growth, the System's two most important revenue sources, State appropriations and tuition revenues, have increased. State appropriations have risen at an average annual rate of 2.6% from academic year 2016-2017 to a total of $2.8 billion[7] in academic year 2020-2021, while tuition revenues have been boosted by record setting enrollments in each academic year from Fall 2014 to Fall 2021. Of the more than 260,000 students enrolled within the System, 85.5% are State residents while the remaining students hail from other states or abroad. Although in-State students are the primary engine behind UNC's enrollment growth and associated tuition and appropriations revenues, forecasts of high school graduates in the State are projected to decline after 2025/2026.[8]

The value of a UNC Degree is convincing when measured against individuals who did not complete degrees. The data show that the median *incremental* lifetime return on investment for an undergraduate student that completes a degree is $497,123 while the median *incremental* lifetime return on investment for a graduate student that completes a degree is $919,422. The term "incremental" is used here as these ROI calculations are made by comparing the expected lifetime earnings of UNC graduates against the expected lifetime earnings of non-graduates in the state to isolate the additive (i.e., incremental) value of a UNC degree. These figures are based on comparing UNC graduates to populations within the American Community Survey ("ACS") data set (more information on the ACS data set can be found in the Student ROI dashboard series).

UNC degrees provide economic mobility for graduates. The data within the Student ROI dashboards demonstrate that a UNC degree holds significant value in the job market as (1) UNC graduates earn substantially more than non-graduates and (2) a UNC degree is an affordable investment when measured against the projected returns. These two factors allow 89.6% of low-income graduates[9] to experience some degree of economic mobility, meaning they are able to move up at least one income band as their careers progress compared to the family income band they started in upon enrollment. Through programs such as the NC Promise and the Fixed Tuition Program, the State has made efforts to remove barriers to access, and students from lower socioeconomic backgrounds have the opportunity to further their education and not be limited by program costs (noting that other barriers exist for many students). The data within the Student ROI dashboard series show that regardless of socioeconomic background, the vast majority of students will at least move up one income band over a 20-year period as a result of having earned a UNC degree.

The average student breaks even on their educational investment in under 10 years. Student debt continues to be a prevalent issue within higher education and has come under increased scrutiny during the COVID-19 pandemic as many borrowers have struggled to pay back their loans resulting in a pause from the U.S. Department of Education on student loan repayment, interest accrual, and debt collections. According to the Education Data Initiative, 47.9 million borrowers have student loan debt totaling up to $1.75 trillion.[10] The data within the Student ROI Dashboard series can support State and academic leaders across the System in better understanding the effect

[6] According to the 2022 UNC System Fall Enrollment Report, enrollment fell in Fall of 2022. This report considers data through Fall of 2021.

[7] State appropriations are amounts received by the UNC System through the State legislature except for grants and contracts and State capital appropriations.

[8] Source: "High School Graduates Profile for North Carolina" https://knocking.wiche.edu/wp-content/uploads/sites/10/2020/12/North-Carolina-Profile.pdf.

[9] Low-income here is defined as students with an income of less than $17,800 at time of enrollment.

[10] Source: "Student Loan Debt Statistics." educationdata.org/student-loan-debt-statistics.

of debt on UNC graduates as the dashboards allow viewers to see the average time a student needs to break even on their investment in education as a result of his/her career earnings. The dashboard can further be filtered by institution and/or field of study to understand the student investment for distinct populations. The dashboards show that for both undergraduate and graduate programs, UNC graduates in aggregate are on average able to break-even on their educational investments in less than 10 years.

The State's investments in the UNC System help boost lifetime earnings of graduates. In Academic Year 2020-2021, the State of North Carolina invested approximately $2.8 billion in the UNC System as leaders across the State promote the need for a well-educated population to fuel economic growth and productivity. Demand for jobs requiring a bachelor's degree in North Carolina is growing and has resulted in Statewide programs like myFutureNC which is dedicated to ensuring that by 2030, two million North Carolinians will have a high-quality credential or postsecondary degree (there are 1.3 million currently).[11] The State ROI Dashboard series shows for each incremental dollar that the State provides in appropriations, a graduate earns $23.07 more in incremental earnings. This increased purchasing power for graduates (multiplied across hundreds of thousands of graduates) can lead to benefits for the State such as increased tax revenues, new businesses, new jobs, and a host of social goodwill such as philanthropic giving.

[11] Source: "Our Mission." myfuturenc.com/about.

Dashboard Development and Methodology

Project Governance

Given the complexity of the analyses conducted over the course of the engagement and the number of parties and campuses involved, the first step of the team's methodology focused on assembling a Steering Committee, an Advisory Committee, and a Data Owners Group to guide and vet the outputs of the engagement and assist with data collection. In formulating these committees, the Deloitte team placed an intentional emphasis on bringing together System executives, data owners, academics, administrators, and faculty to gather multidimensional perspectives and voices on how to define the various metrics that serve as inputs and outputs for the dashboards.

Creating an open and collaborative environment was a critical factor in generating impactful outcomes. We worked diligently to ensure diverse voices and points of view were heard and respected. This step was crucial to gain consensus at key milestones from all involved parties to propel the project forward. The table below provides a high-level breakdown of how the Deloitte team collaborated with UNC:

Deloitte Team's Role	Collaborative Role	UNC's Role
• Provide analytical, financial, and industry insights • Provide leadership with an objective, external perspective • Synthesize information into insights • Conduct supporting research and analysis • Develop impactful findings and deliverables	• Work in a spirit of candor • Act collaboratively to ensure team members and stakeholders are informed, included, and heard • Share concerns and proactively address risks together	• Commit time, energy, and resources • Provide relevant academic and functional expertise • Provide access to stakeholders and requested data • Serve in primary role for communications • Make all final decisions and approve dashboard framework

In order to collaborate effectively as a cohesive team, we asked UNC to assign team members and resources throughout the duration of the project. We worked closely with UNC leadership to identify the appropriate team members and structure to fit UNC's resource availability. Below are the key roles and governing bodies that oversaw progress and execution of deliverables for this engagement along with their specific responsibilities.

UNC Role	Responsibilities
Executive Sponsor [Decision Authority]	• Chairs the Steering Committee • Provides overarching guiding principles for the engagement and the vision for project success • Resolves escalated project issues • Serves as the key decision maker with guidance and recommendations sourced through the Steering Committee
Steering Committee [Decision Authority]	• Champions the project across the UNC System • Supports the Deloitte team in confirming the approach, communicating the project to the relevant stakeholders, and providing support if issues arise throughout the project • Provides periodic, high-level guidance on project approach

UNC Role	Responsibilities
	• Signs off on deliverables/project milestones
Advisory Council [Provides Input]	• Attends executive update meetings corresponding with project milestones to provide institution-specific perspective • Reviews deliverables and provides input to the project team
Engagement Manager and Project Coordinator	• Provides on-going status to all parties at UNC • Supports project delivery and quality control • Supports the Deloitte team with establishing and managing the project details, deliverables, schedules, and tasks • Anticipates and resolves issues that could impact the project budget, schedule, scope, or quality • Confirms all appropriately skilled resources are available for the project and escalates issues in a timely manner • Coordinates and schedules project meetings with relevant stakeholder and subject matter experts
System Data Owners	• Provide institutional context, data, and supporting documentation • Participate in meetings to review and clarify data provided • Provide feedback at interim checkpoints

Approach to Analysis

Upon establishment of a robust governance structure during Project Launch to approve completion of key milestones and guide the engagement outputs, the Deloitte team launched a phased methodology built around the concept of continuous improvement and refinement. The approach below was designed to encourage collaborative, working relationships and strategically built teams of university leaders and stakeholders to advise on each phase of the project, while ultimate decision authority for metrics included in the dashboards rested with the System Office.

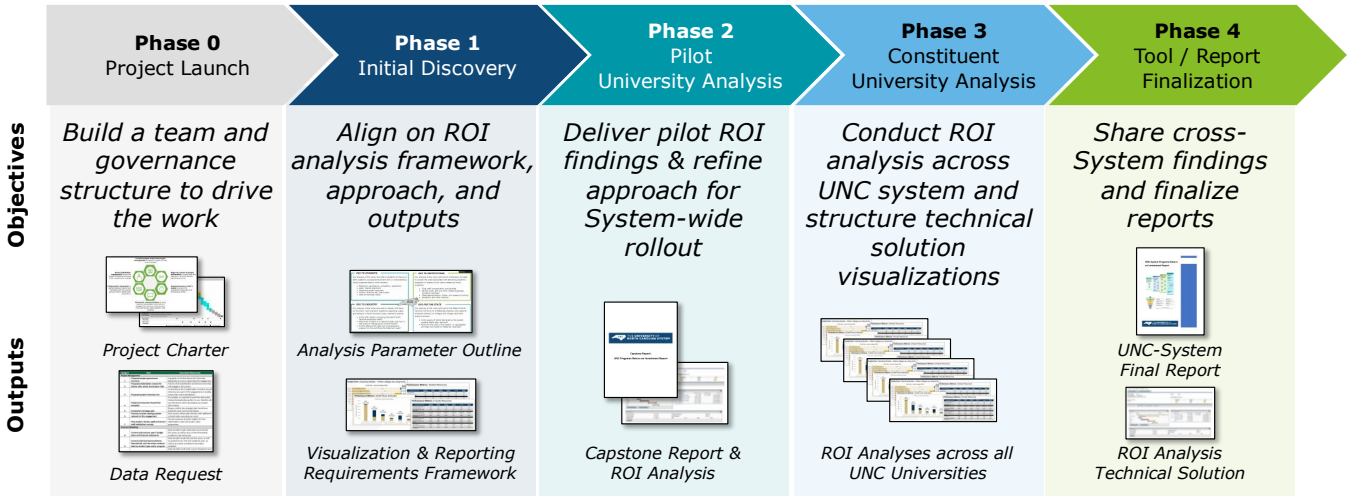


Figure 1: Summary Project Approach

Phase 1 – Initial Discovery: The initial discovery phase of this engagement focused on two goals: (1) collect information to better inform how to calculate return on investment and (2) build consensus among UNC System Office and constituent institution leadership on a common analytical framework which properly, consistently, and fairly accounts for differences across institutions. To achieve these goals, the team employed a set of guiding principles that served as guardrails for the work and helped support decision-making. The three guiding principles employed were:

1. Adhere to legislative mandates
2. Prioritize replicability and data availability over manual processes and one-off customizations
3. Allow for meaningful comparisons across all UNC constituent universities

With those guardrails in place, Phase 1 commenced with a series of interviews first with the Steering Committee members and subsequently with leaders from each of the 16 constituent universities. The focus of these interviews was to understand the current context of the System and its individual universities and to begin a dialogue focused on understanding the complexities that exist at the program level, how UNC's data and chart of accounts are organized, how data are stored and maintained, and how each institution currently approaches measuring ROI. As a result of these conversations and our concurrent review of the requested data, Phase 1 concluded with a draft analytical framework defining each metric required by the General Assembly and an approach to modeling and calculating the required outputs.

Phase 2 – Pilot University Analysis: Our approach to determining the return on investment for programs, State funding expenditures, and student expenditures combined customized research and data analytics to help UNC understand the impact of its academic program offerings and how those offerings align with market demand. Our approach to the analysis, confirmed during the Initial Discovery Phase, was tested at three pilot universities (North Carolina State University, University of North Carolina at Greensboro, and North Carolina A&T State University) and served as a proof of concept before structuring the analyses at the remaining 13 constituent universities.

For the UNC System to respond to the request of the General Assembly and fully understand the value each of its colleges provides, we used a multi-faceted approach that analyzed the return on investment for three key stakeholder groups: UNC System Institutions, UNC System students, and the State of North Carolina. The following table indicates examples of these data and measures, which were refined over the course of the pilot phase.

ROI for:	Inputs	Outputs
Students	• Number of students within each program • Career outcomes • Student costs: tuition, fees, financial aid, room and board • Student debt and projected earnings	• Median student career earnings • Median student investment in degree • Median student ROI for degree • Economic mobility of graduates • Time to break even on investment
Programs	• General Ledger financial data • Programmatic costs from program cost model by meta-department • Numbers of faculty and staff • Meta-department catalog	• Student credit hours produced by meta-department • Degrees produced by meta-department • Faculty and Staff by meta-department • Cost per credit hour analysis by meta-department

ROI for:	Inputs	Outputs
State Government	• Labor market alignment • State appropriations to the System	• Incremental lifetime earnings per incremental State appropriation dollar • In-State retention of graduates • Share of graduates in high demand fields

At key milestones throughout the engagement, the team presented its analysis structure, data visualizations, and findings to the Advisory Council for review and to the Steering Committee for final approval. During these sessions, we refined the analysis and data visualization approach to produce the outputs the General Assembly sought to understand. Given that these outputs will be utilized to glean insights from each institution in the System, our intention was to create a common, easily interpreted approach that would be useful for each institution in the future and that could be summarized through the creation of this Final Report.

Phase 3 – Constituent University Analysis: After the team concluded its pilot university analysis, we began the process of applying the framework and discoveries to the remaining constituent universities within the System. The team conducted a kick-off meeting and individual review sessions with all 16 institutions, collecting feedback from over 100 stakeholders. Additional feedback mechanisms included office hours, discovery meetings, survey tools, and open email correspondence. The team collaborated with the UNC System Steering Committee and Advisory Committee to verify and review discoveries in real time.

Phase 4 – Tool / Report Finalization: Over the course of Phases 2 and 3 of the project, Deloitte compiled its analyses and pertinent data sets such as UNC System data, BGI's proprietary workforce data, and NC Tower data from the NC Department of Commerce into an evaluation model that feeds data visualizations into a Tableau solution readily accessible to the UNC System Office. The analysis is represented through three series of dashboards aimed at presenting the outputs of the ROI analyses from each user perspective. Finally, a summary of the dashboards was compiled into this report marking the conclusion of the Deloitte team's engagement with the UNC System.

Context and Key Considerations

Given that this analysis involved 16 different constituent universities each with their own unique cost structures, organizational structures, missions, and approach to teaching and learning, there are several considerations to keep top of mind as the analyses presented in this report are explored in greater detail.

1. The analyses in the dashboards were conducted for the express purpose of meeting the requirements as instructed by the General Assembly. As analyzing academic ROI is a prevalent discussion topic within higher education, numerous other tools and methods have been employed by other parties (universities, consulting firms, research firms, etc.) to conduct similar analyses. The data contained within these dashboards should only be used to provide meaningful comparisons among universities within the UNC System and should not be compared to similar metrics contained within studies such as the Delaware Cost Study, the College Scorecard, or any other ROI study. Given that the analyses shown in this report were tailored to the General Assembly's instructions to the System, the distinctiveness of UNC's constituent universities and the rich student, staffing, and financial data available at the System level, comparisons to other studies will not be "apples-to-apples" and could lead to inaccurate conclusions.

2. The analyses were developed to focus on instructional and programmatic costs. Faculty across the UNC constituent institutions generally have three key roles: (1) instruction, (2) research, and (3) service to the public and engagement with the surrounding community. This report is intended to analyze institutional, student, and State

outcomes as they relate to the costs of instruction, and we must acknowledge that outcomes related to research, and public service have been excluded from the report.

3. The Institutional Context Dashboard breaks down instructional costs for each campus and program and defines the ROI for each institution as the academic output created through investments in instruction. To arrive at fully loaded instructional costs for each institution, the team first identified the "universe of dollars" that institutions have discretion to spend to support the delivery of academic programs, excluding dollars such as those that are used towards restricted research and auxiliaries. This universe of expenses was then separated into three cost buckets: direct costs, academic overhead costs, and indirect costs (for detail regarding assumptions and definitions related to the cost buckets, please see the Dashboard Guide and Analysis section of this report). Discussions regarding efficiencies of various programs and universities should not be based solely on a program's costs, but rather should be coupled with other measures of instructional / academic outcomes (in this report: student credit hours generated and degrees conferred) and assessed within the context of each institution.

4. Meta-department mappings were developed to make comparisons between institutions; however, the taxonomy has limitations. Meta-departments classify programs into groups such that all disciplines can be mapped and compared on a similar basis across the UNC System. The 20 meta-departments found in the dashboards were employed as the unit of measure for all institutional context analyses. Although the meta-department mappings were reviewed and approved as the unit of measurement, the UNC System is composed of 16 different constituent universities, each with their own department structure, academic portfolio, and approach to booking expenses within the General Ledger. Much has been done to reconcile these differences through the meta-department mappings, but the data housed in these dashboards should be considered within the unique context of each institution. To keep the dashboards accurate moving forward, meta-department mappings will need to be consistently updated for each constituent university. The Military Science & Technology meta-department has been excluded from this analysis to reflect that this meta-department is partially driven by ROTC courses, which have faculty and staff that are externally funded. Similarly, associate's degrees and terminal degrees including Dentistry, Medical, Veterinary, Pharmacy, and Law have been excluded.

5. The Student ROI Dashboard inputs are quantitative in nature and do not reflect other qualitative factors that could make up Student ROI. To ensure replicability and data consistency, System-level data was utilized in this study, and thus, data availability is limited to metrics tracked across the System, which does not include qualitative metrics for measuring Student ROI. The "return" portion of the ROI equation examines the monetary return from an individual's lifetime career earnings based on his/her field of study and the manner in which a student's degree and career path can contribute to his/her social mobility. It is important to note that a holistic measure of a student's return on investment could also include qualitative measures such as career readiness and agility, civic engagement, mental wellbeing, and other factors that could not be reflected in the dashboards due to a lack of consistent data across UNC institutions.

6. The Student ROI analysis is based on several key assumptions and has its limitations. To measure ROI for students attending a degree program, the team developed a standardized methodology, which compares the student investment (based on total cost of attendance) with incremental lifetime earnings (from the age of 18 to 65). Applying a standardized framework to 16 unique institutions naturally comes with limitations, since each institution is distinct in the way it operates. While the quantitative outputs provide directional guidance, they are intended to be interpreted holistically with the other components of this dashboard.

The analysis includes several key assumptions such as the comparison group, the base year range for lifetime earnings, adjustments for inflation, and other assumptions. It is critical to fully understand all assumptions before drawing conclusions.

- Wage data utilizes the Department of Commerce's NC Tower dataset. This dataset tracks wages for individuals by industry and quarter for employees covered by North Carolina's unemployment insurance laws. The dataset therefore excludes three important groups: individuals working outside the State of North Carolina, those who are self-employed, and those working for the federal government including military.
- Earnings figures have been adjusted for inflation and are reported in today's dollar amounts.
- Lifetime earnings are modeled based on historical data available. The projection methodology assigns a wage rank to each individual based on where observed wages rank in comparison to the individual's cohort. This ranking is carried forward and compared to the observable wages across the life cycle of historical records.

7. The State ROI Dashboards do not represent a comprehensive economic impact study. The State ROI Dashboard series focuses on the alignment of graduates with industry demand and the incremental earnings a graduate receives for each additional dollar in appropriations from the State. This study does not attempt to quantify the additional revenue that the State receives through the System operating sixteen different campuses, the revenue and returns generated by the approximately $2 billion in sponsored research dollars that the UNC System institutions attract, or the societal impact of staff, faculty, and students engaging with the community, volunteering, giving philanthropically, or creating social goodwill through other means.

8. The dashboards have numerous drilldown capabilities, but in cases where only a small number of students are represented, outcomes are not displayed. Each dashboard series comes with several drilldown features so the dashboard viewer can understand outcomes for distinct populations (e.g., individuals within each institution, individuals with the same field of study, in-State vs. out-of-State students, and traditional vs. transfer students, among others). However, at times, based on the filters chosen, the population sample can be so small such that the outcomes and metrics can become skewed, show high variability, and potentially raise concerns about data privacy and identity protection. For this reason, when the sample size of the filtered population is less than 10 individuals, results have been excluded from the dashboards (i.e., the dashboard will appear blank).

Data Collected:

The data necessary to calculate return on investment for each institution, UNC students, and the State were sourced through the UNC System's data marts, BGI's proprietary workforce datasets, ACS data, and NC Tower data from the North Carolina Department of Commerce. Below are the four terrains in which data was collected.

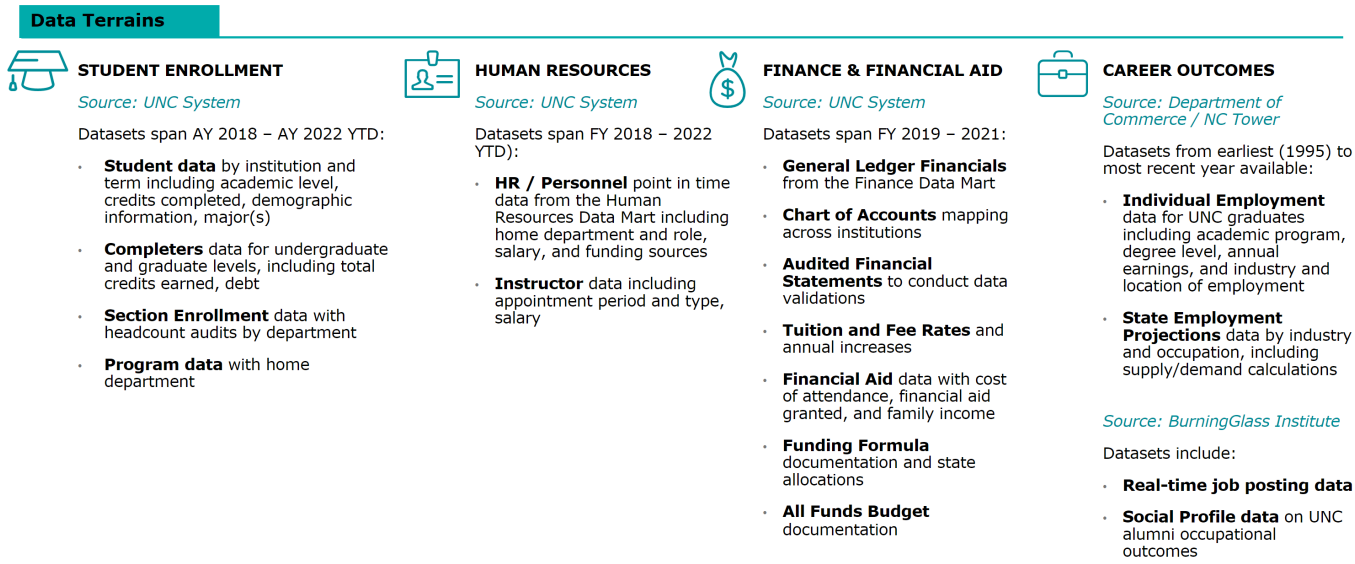


Figure 2: Data Sources and Inputs

A key area of focus for the Deloitte team was establishing a cadence of continuous review cycles and providing all UNC stakeholders with ample opportunities for feedback. While all feedback was considered and weighed in collaboration with the UNC System Executives, not all feedback could be incorporated mainly due to two overarching reasons:

1. Data did not exist to complete the requested analysis, or the analysis would not be replicable (e.g., the approach relies upon significant manual adjustments)
2. Consistent methodologies could not be applied to all campuses

The table below offers a summary of the types of measures that are included in this analysis and the types of measures that could not be included in the analysis due to limiting factors. We recognize the importance and value that the excluded measures could have brought to this ROI analysis, and we understand that ROI is more than just money earned compared to money invested.

Included Measures	Excluded Measures
• Contextual data about each program including number of students, faculty, and staff • Cost analysis including costs of instruction by meta-department, costs to student, and State funding appropriation by institution • Student outcomes including completion rates, career outcomes, and earnings • Institutional outcomes including credit hours and degrees produced • State outcomes include alignment with labor demand and retention of talent in-State.	• Student perceptions of career readiness and value of degree • Civic outcomes including community engagement, volunteerism, and voting participation • Physical and mental wellbeing outcomes for students and graduates • Institutional connectedness including alumni engagement and giving

Keeping these important considerations in mind, the succeeding sections of this report are intended to directly answer each mandate of the General Assembly in sequential order and explain in detail what is represented on each tab of each dashboard series.

Legislative Mandate Responses

1. The Number of Students within Each Program

In academic year 2019-2020, the UNC System enrolled a record-breaking 246,164 students[12] composed of 81% undergraduates (198,722[12]) and 19% graduates (47,442[12]). The enrollment of the UNC System as a whole increased each year to new highs from Fall 2014 to Fall 2021.[13] Of the 246,164[12] students, 85% are in-State residents and 15% are out-of-State students. For context, as of Fall 2021, the BoG had established a cap of 25% for the percent of non-resident students at each HBCU within the System and a cap of 18% for all other institutions (UNCSA is exempt from this policy).[14] North Carolina State University is the largest university in the System with an enrollment of 36,310[12] as

[12] Counts of students do not include students in associate's degrees, the Military Science and Technology meta-department, and certificate programs. In addition, students in the following terminal degrees have been excluded: Dentistry, Medical, Veterinary, Pharmacy, and Law. Counts of students do not total the sum of enrollment shown in the Student Dashboard as students are counted in each status, program, and demographic category they appear in throughout the academic year. For example, if a student changes majors during the academic year, the dashboard counts them in each major.

[13] According to the 2022 UNC System Fall Enrollment Report, enrollment fell in Fall of 2022. This report considers data through Fall of 2021.

[14] Source: "2021 UNC System Fall Enrollment Report." https://www.northcarolina.edu/wp-content/uploads/reports-and-documents/academic-affairs/unc-system-fall-enrollment-report-2021.pdf.

of academic year 2019-2020, closely followed by UNC-Charlotte with 31,002[12] students and UNC-Chapel Hill with an enrollment of 28,696[12] students. Although enrollments have been steadily rising within the System, projections from the Western Interstate Commission for Higher Education ("WICHE") show that enrollment headwinds could be on the horizon. WICHE projects that high school graduates in North Carolina will increase until 2025/2026 with a record of 120,990 graduates per year, before falling to 112,250 graduates per year by 2037.

UNC System Undergraduate Students

For undergraduates, Business, Management, Marketing, and Related Support Services is the most popular field of study in the System with 32,022 students enrolled, exceeding the 2nd most popular field of study, Health Professions by nearly 10,000 students, and the 3rd most popular field of study Biology and Biomedical Sciences by over 15,000 students. The large numbers of business students are driven by 4,655 students enrolled at East Carolina University, 4,178 students enrolled at UNC Charlotte, and 3,750 students at Appalachian State University. For more detail regarding enrollment at each institution or within each field of study, please see the Student ROI Dashboard series.

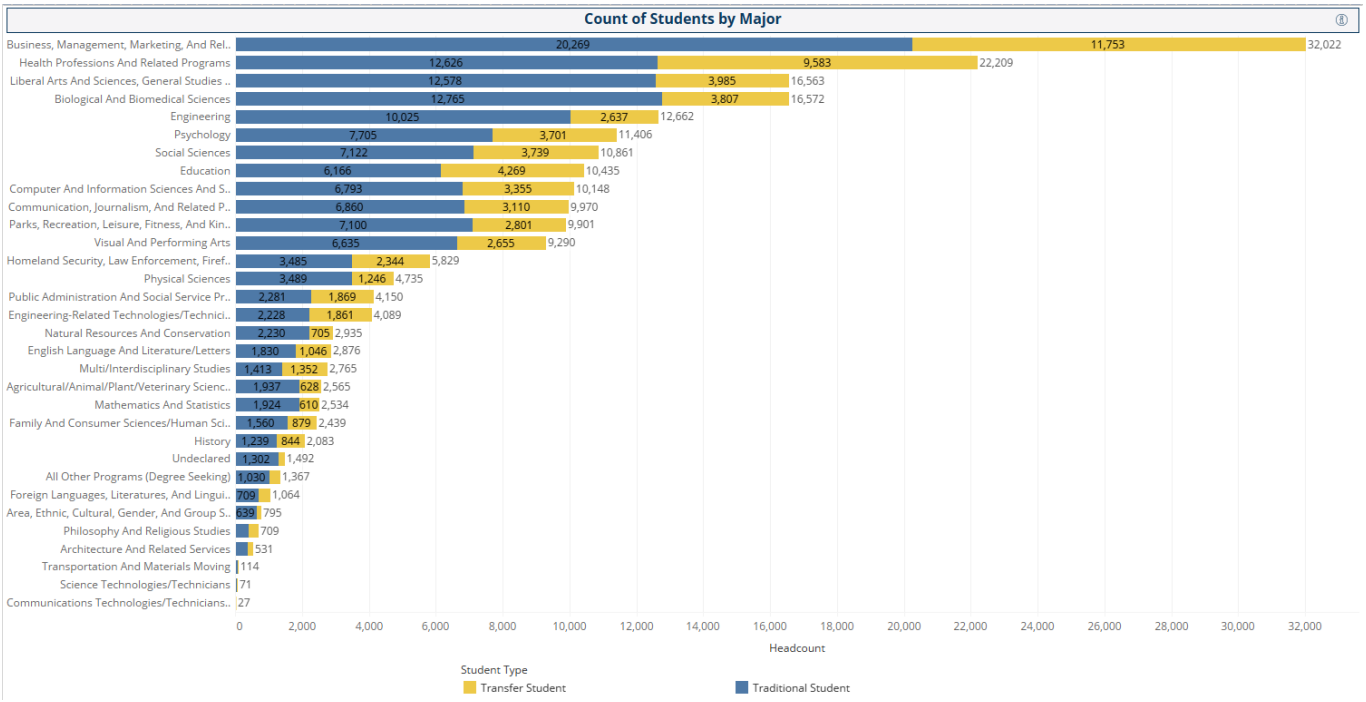


Figure 3: Counts of Undergraduate Students by Major (AY 2019 – 2020)

UNC System Graduate Students

For graduate students, the most common fields of study are Business, Management, Marketing, and Related Support Services with 8,968 students, followed by Education with 7,970 students and Health Professions with 5,725 students[12]. Out-of-State students are more common in the graduate programs, especially in business, engineering, and computer science programs, as 31% reside outside of North Carolina compared to just 11% for undergraduates. NC State (11,015) and UNC-Chapel Hill (8,780) have the largest graduate program enrollments within the System and account for 41.7% of all graduate enrollments[12].

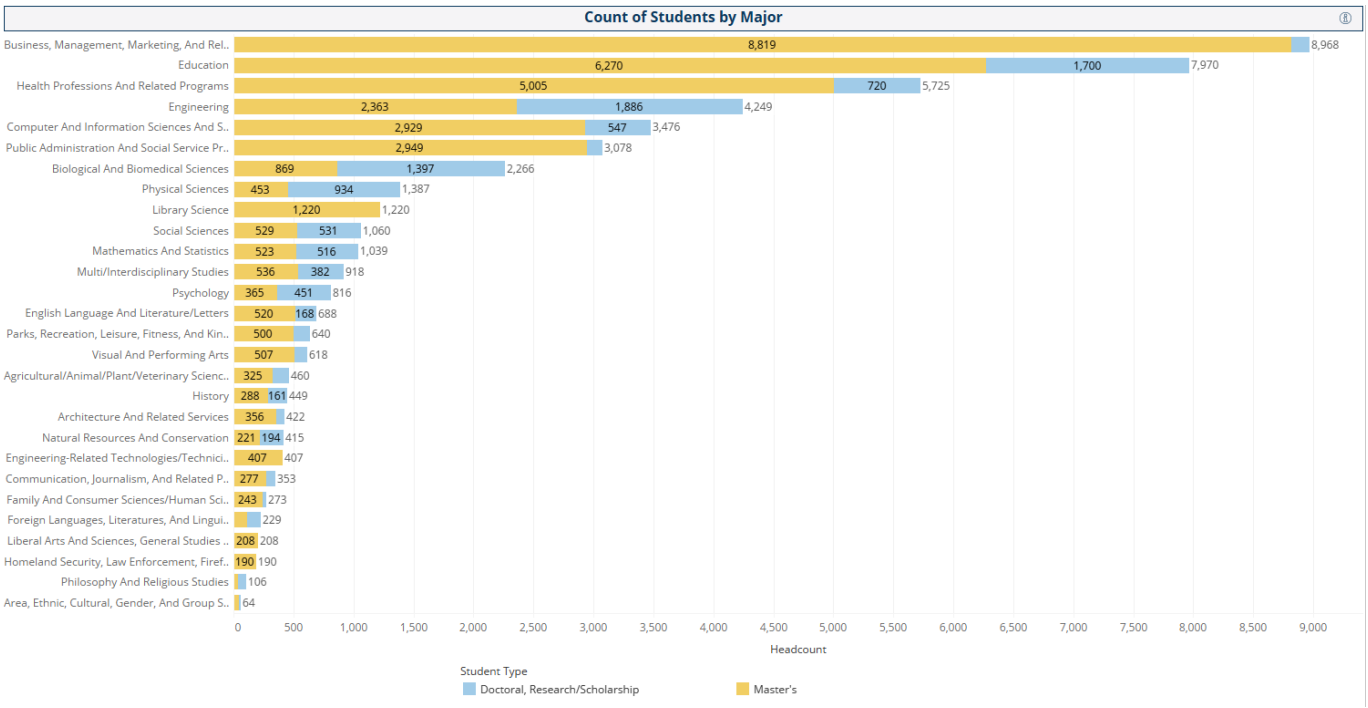


Figure 4: Counts of Graduate Students by Major (AY 2019 – 2020)

2. The Number of Faculty and Staff Employed within Each Program

Faculty Employed within Each Program

The UNC System employed 12,771 faculty FTE[15] in academic year 2020-2021, with 7,849 of the faculty FTE (61.5%) classified as tenured or on a tenure-track while the remaining 4,922 faculty FTE (38.5%) are not tenured or are not on a tenure track. Of the 20 meta-departments captured in the graph below, the largest meta-department, Health Professions, holds the greatest number of faculty with 1,369 (10.7% of all faculty) followed closely by Business Administration with 1,115 faculty (8.7% of all faculty). Faculty within each meta-department can teach or contribute outside of their home meta-department, but the figures displayed in the dashboard refer only to the faculty's home department. For example, if a faculty is assigned to the Health Professions meta-department and also teaches or has other responsibilities within the Biological Sciences, that faculty member is counted once in Health Professions and is not counted again in Biological Sciences. The range of faculty at each institution is 113 at the lower bound (ECSU) to 2,142 (NC State) at the upper bound. For additional details behind the construction of meta-departments, please see the Context and Key Considerations section of this report.

[15] Faculty FTE totals do not include the Military Science and Technology meta-department as those faculty are funded using external sources. In addition, the totals do not include faculty that are not tied directly to a meta-department (e.g., they are tied to a college or institution) and do not include staff, teaching assistants, graduate research assistants, or other student workers. Finally, UNCSA's categorizations of faculty differ from the other universities in the UNC System and have been manually updated in collaboration with UNCSA to fit the definitions of tenure track and non-tenure track faculty that are commonly used across the System.

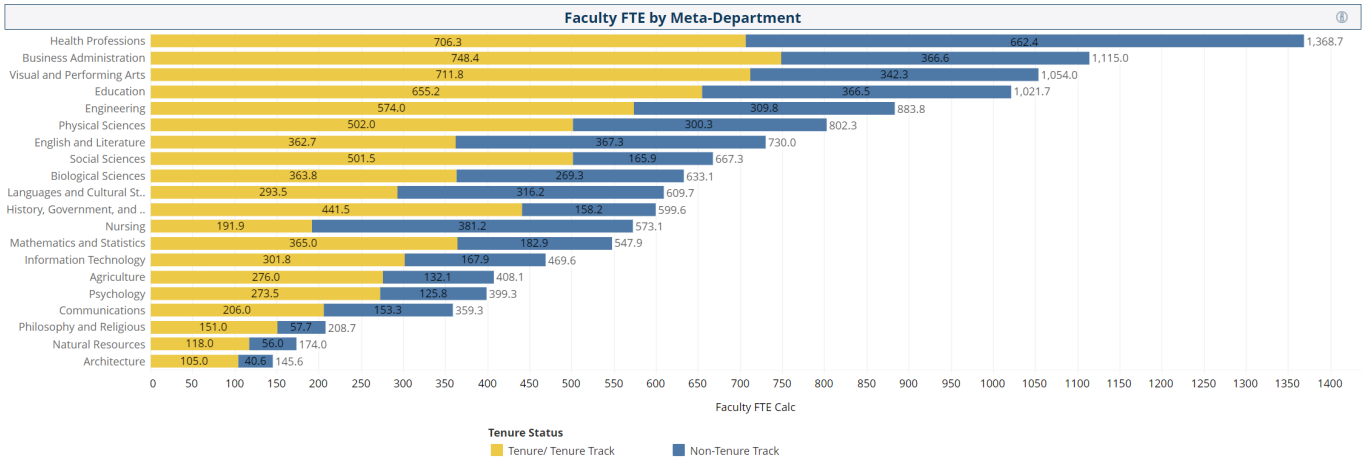


Figure 5: Faculty FTE by Meta-Department (AY 2020 – 2021)

Staff Employed within Each Program

In addition to 12,771 faculty, the UNC System also employs 3,758 staff FTE to support campus academic functions.[16] The counts of staff FTE shown below only include staff directly assigned to a meta-department and do not include teaching assistants, graduate research assistants, or any other type of student worker. The graph below shows that the greatest number of staff are aligned to health professions and agriculture (includes NCSU agriculture extension) meta-departments with each meta-department carrying approximately 500 staff. For more information on the numbers of faculty and staff employed within each program or at each institution within the UNC System please turn to the Institutional Context Dashboard series.

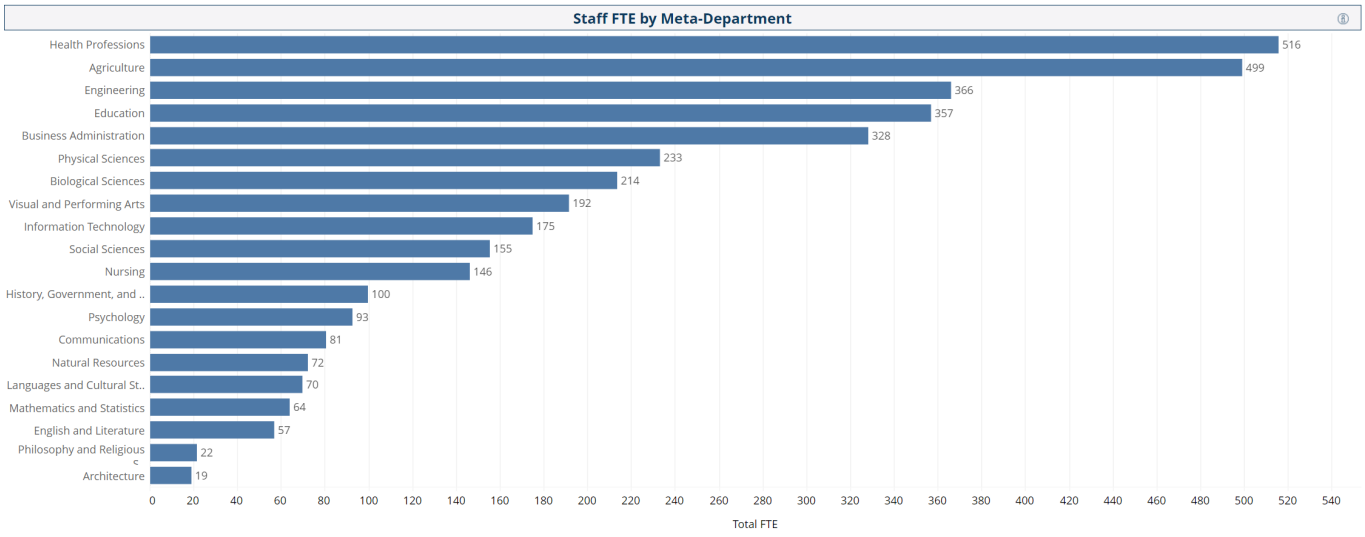


Figure 6: Staff FTE by Meta-Department (AY 2020 – 2021)

3. The Related Instructional Costs to Operate Each Program

In absolute terms, the UNC System directed $4.2 billion of its costs to instruction in Academic Year 2020-2021 inclusive of all direct expenses, academic overheard, and indirect costs (please find a detailed list of assumptions related to these types of costs found in the Dashboard Guide and Analysis section of this report). Of the $4.2 billion

[16] Staff FTE shown here include only staff associated with the delivery of academic programs and exclude large numbers of staff in other administrative roles.

in instructional costs spent in Academic Year 2020-2021, $3.0 billion was directed toward salaries, wages, and benefits for faculty and staff. The remaining $1.2 billion was utilized to cover non-labor expenses such as plant, property, and equipment, scholarships and fellowships, services, supplies and materials, utilities, and other. The table below shows that the Business Administration, Health Professions, Engineering, and Education meta-departments accounted for 37.9% of total instructional costs within the System.

Labor & Non-Labor Expenses by Meta-Department

Meta Dept	Labor Expenses		Non-Labor Expenses						Transfers Out	Grand Total
	Salaries and Wages	Employee Benefits	Plant, Property, & Equipment	Scholarships & Fellowships	Services	Supplies & Materials	Utilities	Other Non-Labor	Inter-Institutional Transfers Out	
Agriculture	$34.4M	$10.8M	$3.2M	$4.5M	$7.4M	$4.1M	$1.1M	$0.9M	$0.6M	$66.9M
Architecture	$25.0M	$7.6M	$1.2M	$3.2M	$3.0M	$1.5M	$0.8M	$0.3M	$0.2M	$42.7M
Biological Sciences	$109.7M	$33.2M	$9.9M	$18.4M	$20.3M	$7.4M	$5.7M	$1.8M	$1.2M	$207.7M
Business Administration	$313.0M	$88.4M	$20.4M	$52.8M	$80.7M	$10.5M	$12.7M	$3.6M	$2.3M	$584.4M
Communications	$60.0M	$18.5M	$4.9M	$12.2M	$10.4M	$2.8M	$3.6M	$0.7M	$0.5M	$113.6M
Education	$166.9M	$52.2M	$10.6M	$19.0M	$26.2M	$7.1M	$5.9M	$1.3M	$0.7M	$289.8M
Engineering	$172.1M	$48.1M	$11.4M	$16.5M	$24.5M	$15.7M	$4.2M	$3.1M	$1.8M	$297.4M
English and Literature	$100.1M	$30.9M	$7.7M	$17.7M	$16.4M	$4.0M	$5.3M	$1.5M	$1.1M	$184.9M
Health Professions	$230.0M	$70.0M	$20.4M	$34.4M	$42.1M	$10.5M	$10.4M	$1.9M	$1.2M	$420.9M
History, Government, and ..	$103.1M	$31.5M	$6.5M	$15.6M	$16.3M	$3.5M	$4.6M	$1.6M	$1.6M	$184.3M
Information Technology	$109.4M	$31.5M	$8.1M	$15.6M	$19.1M	$5.4M	$4.7M	$1.3M	$1.2M	$196.5M
Languages and Cultural St..	$91.1M	$29.0M	$6.3M	$18.0M	$15.9M	$3.7M	$5.9M	$1.4M	$1.5M	$172.8M
Mathematics and Statistics	$113.4M	$34.1M	$8.6M	$20.8M	$19.5M	$5.6M	$6.4M	$2.2M	$1.8M	$212.2M
Natural Resources	$25.0M	$7.5M	$1.4M	$4.3M	$3.8M	$1.3M	$1.0M	$0.2M	$0.1M	$44.5M
Nursing	$90.6M	$28.2M	$7.9M	$10.2M	$15.2M	$3.6M	$3.3M	$0.7M	$0.7M	$160.4M
Philosophy and Religious ..	$35.6M	$11.1M	$2.6M	$7.3M	$5.9M	$1.5M	$2.1M	$0.4M	$0.1M	$66.6M
Physical Sciences	$143.9M	$42.0M	$13.1M	$22.3M	$23.5M	$10.2M	$6.7M	$2.2M	$1.4M	$265.5M
Psychology	$79.3M	$23.7M	$6.8M	$15.4M	$15.0M	$3.6M	$4.7M	$1.1M	$0.9M	$150.5M
Social Sciences	$147.0M	$45.5M	$13.1M	$28.2M	$28.3M	$6.4M	$9.3M	$1.6M	$1.3M	$280.9M
Visual and Performing Arts	$144.6M	$45.3M	$10.5M	$20.7M	$22.1M	$6.3M	$6.1M	$1.2M	$0.6M	$257.4M
Grand Total	$2,294.2M	$689.4M	$174.4M	$357.0M	$415.5M	$114.8M	$104.7M	$29.1M	$21.0M	$4,200.1M

Figure 7: Labor and Non-Labor Expenses by Meta-Department (AY 2020 – 2021)

To allow for better comparisons across the System and across programs, the project team normalized the instructional cost data by analyzing program costs on a per credit basis. For academic year 2020-2021, the average cost to generate a credit hour within the UNC System was $769, inclusive of direct costs, academic overhead, and indirect costs. This average cost per credit hour is a slight increase from the observed average cost per credit of $756 in academic year 2019-2020. For more detail on the costs to produce a credit hour within each meta-department or within each university, please see the Institutional Context Dashboard series.

Direct Costs, Academic Overhead, & Indirect Costs by Meta-Department				
Meta Dept	Direct	Academic Overhead	Indirect	Grand Total
Agriculture	$400	$346	$259	$1,004
Architecture	$430	$254	$234	$918
Biological Sciences	$256	$175	$256	$688
Business Administration	$355	$201	$245	$801
Communications	$255	$160	$257	$672
Education	$355	$235	$241	$831
Engineering	$579	$363	$243	$1,185
English and Literature	$250	$155	$262	$667
Health Professions	$287	$233	$249	$769
History, Government, and ..	$313	$182	$255	$749
Information Technology	$328	$242	$242	$811
Languages and Cultural St..	$248	$183	$270	$701
Mathematics and Statistics	$213	$167	$256	$636
Natural Resources	$363	$230	$276	$870
Nursing	$435	$202	$246	$883
Philosophy and Religious ..	$254	$159	$253	$666
Physical Sciences	$330	$197	$251	$779
Psychology	$191	$157	$251	$598
Social Sciences	$190	$186	$252	$628
Visual and Performing Arts	$418	$172	$326	$916
Grand Total	$311	$204	$255	$769

Figure 8: Cost per Credit Composition by Meta-Department (AY 2020 – 2021)

4. A detailed correlation between degree of study and career roles and associated expected starting compensation, as well as expected career earnings

To understand the correlation between degree of study and career roles, the team sought to analyze what proportion of UNC bachelor's degree recipients have received jobs aligned to their field of study at key time intervals post-graduation (1 year, 3 years, and 7 years). The proportion of UNC bachelor's degree recipients in jobs aligned to their degree of study was then compared to the national proportion of bachelor's degree recipients in jobs aligned to their degree of study. As displayed in the chart below, students considering attending or already enrolled within a UNC System institution can estimate the likelihood of entering into a career aligned to their field of study through the Student ROI Dashboard series. What is also compelling about the data is that the UNC proportion of graduates with careers aligned to their field of study closely mirrors that of the national proportion of graduates. As expected, programs of study that are highly specialized toward specific jobs like Health Professions, Engineering, and Business all show a high likelihood (greater than 90%) of graduates entering a field closely aligned to their field of study within one year of graduating. Of the 21 fields of study shown in the chart below[17], graduates of 17 of the programs have a 50% or higher chance of entering a career aligned to their program of study within one year, which closely follows the national trend. Moreover, the data show that three- and seven-years post-graduation, there is even greater degree of alignment between the program of study and the field of employment. Although it is common for students to choose career paths outside their field of study, these data suggest that students who do choose a career centered around their field of study have the required skills for success in that career.

[17] Liberal arts/non-professionally focused CIP codes have been excluded from the Program of Study to Employment Alignment metric. These excluded CIP codes include Communications, Journalism, and Related Programs: Foreign Languages, Literatures, and Linguistics; English Language and Literature/Letters; Liberal Arts and Sciences, General Studies, and Humanities; Multi/Interdisciplinary Studies; Philosophy and Religious Studies; and Social Sciences and History.

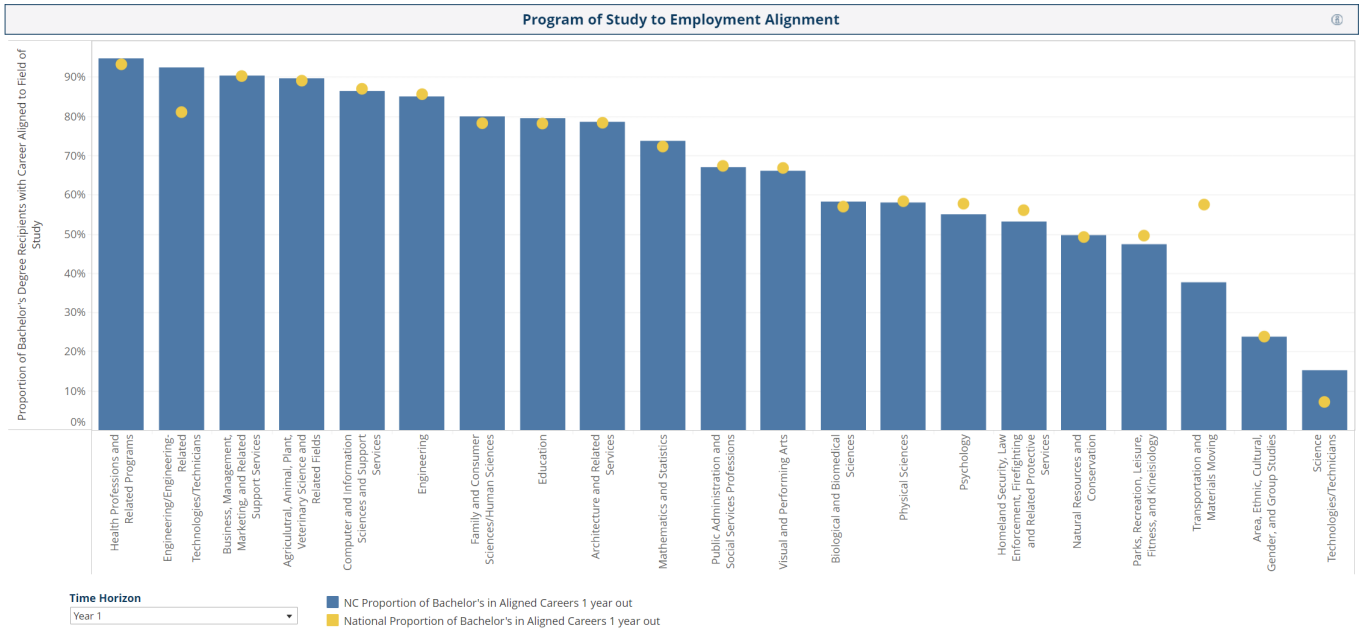


Figure 9: Undergraduate Program of Study to Employment Alignment One Year Post-Graduation

In addition to showing the program of study to employment alignment, this analysis also forecasts the median compensation of graduates during each year of their careers (including median starting compensation). From this calculation, we can determine graduates' cumulative lifetime earnings (for both undergraduate and graduate degrees) depending on their field of study. These calculations are shown in the illustrative equations below. The calculations utilize comparison groups to determine the incremental earnings and true ROI. The comparison group leverages ACS data. Undergraduate students are measured against ACS data for individuals with some college/no degree or no college while graduate students are compared against those with a bachelor's degree in the same field of study. The data below show that undergraduate degree holders from the UNC System can estimate that they will earn $575,574 more over the course of their careers than individuals who did not earn a college degree, while graduate degree holders will earn $987,090 more than individuals with a bachelor's degree but no graduate degree. For nearly all undergraduate fields of study that the UNC System offers, graduates in aggregate can expect to make at least $200,000 more over the course of their careers than other individuals in North Carolina (ACS dataset) that did not receive a college education.

Undergraduate lifetime earnings

Median Lifetime Earnings with College Degree		Median Lifetime Earnings without College Degree		Calculated Incremental Lifetime Earnings
$1,235,777	−	$660,203	=	$575,574

Graduate lifetime earnings

Median Lifetime Earnings with College Degree		Median Lifetime Earnings without College Degree		Calculated Incremental Lifetime Earnings
$2,112,066	−	$1,124,976	=	$987,090

5. Detailed ROI for Each Program

As each of the sixteen institutions considers resource allocation differently (e.g., distinct budget models and funding formulas), the project team defined the ROI for each program as the academic outcomes that result from investments in instruction. The three means of measuring programmatic ROI for this study are two measures of academic production, namely, student credit hours generated and degrees conferred coupled with the economic ROI for students (i.e., a student's lifetime earnings less the investment required to complete the degree). While academic production is detailed below, student ROI is outlined in the Student ROI Dashboard series. In total for Academic Year 2020-2021, the UNC System generated approximately 5.5 million student credit hours and conferred 57,153 degrees across the 20 meta-departments. [18] The graphs show credit hours and degree completers for each meta-department arranged in descending order.

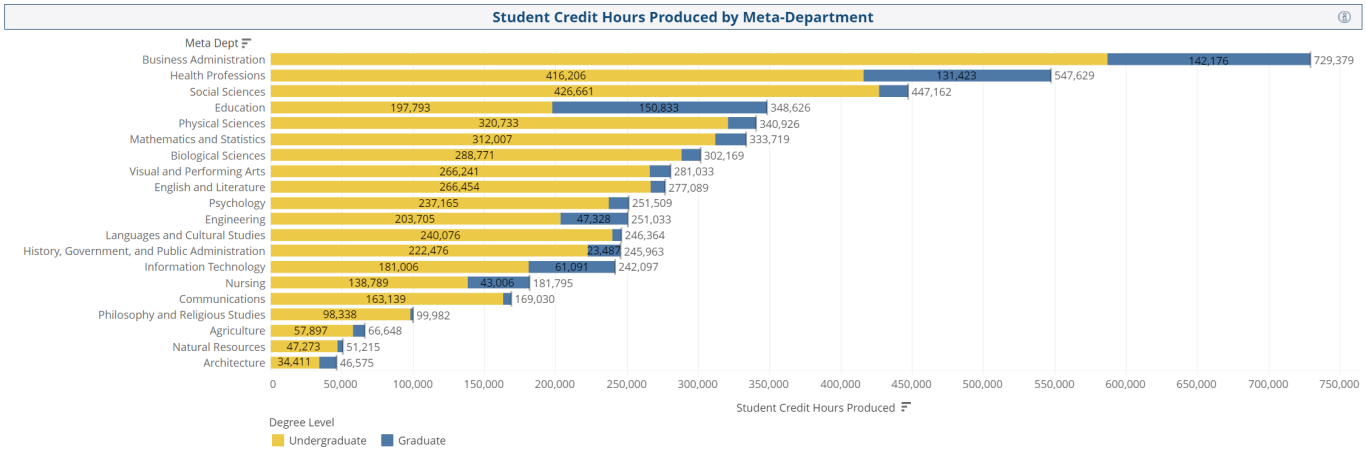


Figure 10: Student Credit Hours Produced by Meta-Department (AY 2020 – 2021)

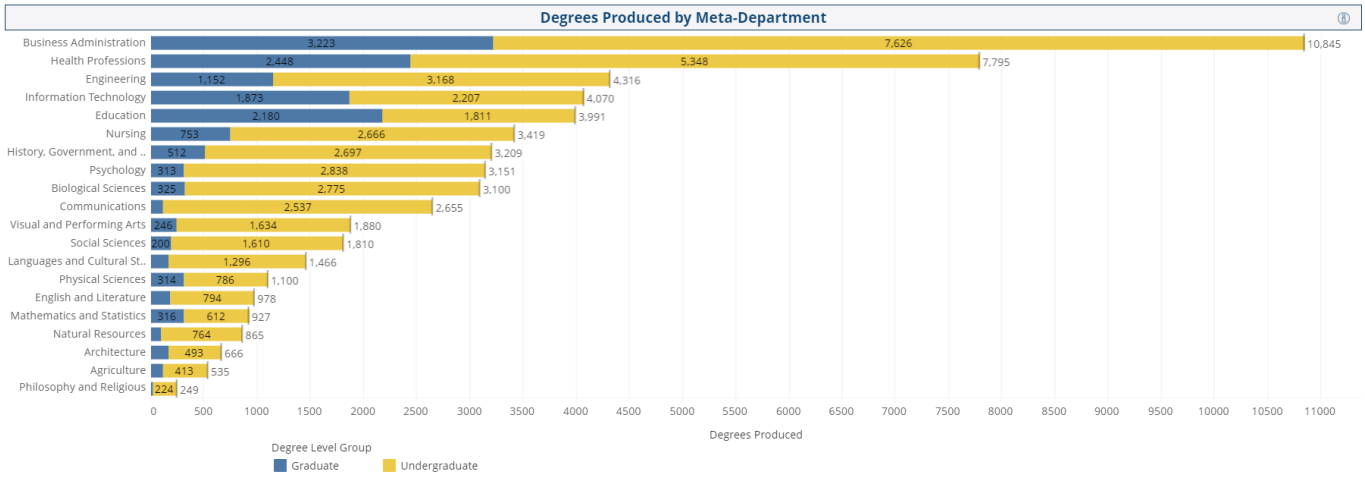


Figure 11: Degrees Conferred by Meta-Department (AY 2020 – 2021)

6. ROI for State Funding Expenditures

The ROI for State funding expenditures is defined as the incremental lifetime earnings of UNC graduates per incremental State appropriation dollar. The equation below shows that for Academic Year 2020-2021, a student's

[18] Student credit hours produced and degrees conferred exclude the Military Science and Technology meta-department, associate's degrees, and the following terminal degrees: Dentistry, Medical, Veterinary, Pharmacy, and Law.

lifetime earnings increased $23.07 *for every dollar* of incremental State support.[19] This additional income or purchasing power for North Carolina graduates flows into the State economy, producing monetary benefits from increased taxes, spending power, and societal benefits from community and charitable contributions. More detail regarding these calculations can be found within the State ROI dashboard series.

7. ROI for Student Funding Expenditures

After analyzing UNC graduates' incremental lifetime earnings against comparison groups and the graduates' total investment in their college educations (less any gift aid), the true return on investment for earning a degree within any institution and any program in the System can be calculated. As shown below, the UNC System across all 16 institutions has demonstrated the value of higher education as undergraduate and graduate program graduates each see sizable returns on their investments. Moreover, the returns on investment for students who paid higher tuition for their education as out-of-State students are still significant. The illustrative equations below show that UNC System bachelor's degree holders will earn a return on their investment of $497,123 while graduate degree holders will see an ROI of $919,422. More detail regarding these calculations can be found in the Student ROI dashboard series.

Undergraduate Student ROI

Graduate Student ROI

[19] Incremental state support utilizes the per credit hour rate at which the General Assembly funds new credit hours at an institution. It does not dictate how the appropriation is spent and therefore does not align to the institutions operating cost amounts.

Dashboard Guide and Analysis

The analysis conducted by Deloitte, rpk GROUP, and BGI is arranged into three separate dashboards each showing a different stakeholder's perspective of ROI. The dashboards and the types of analysis that are included within each is shown below.

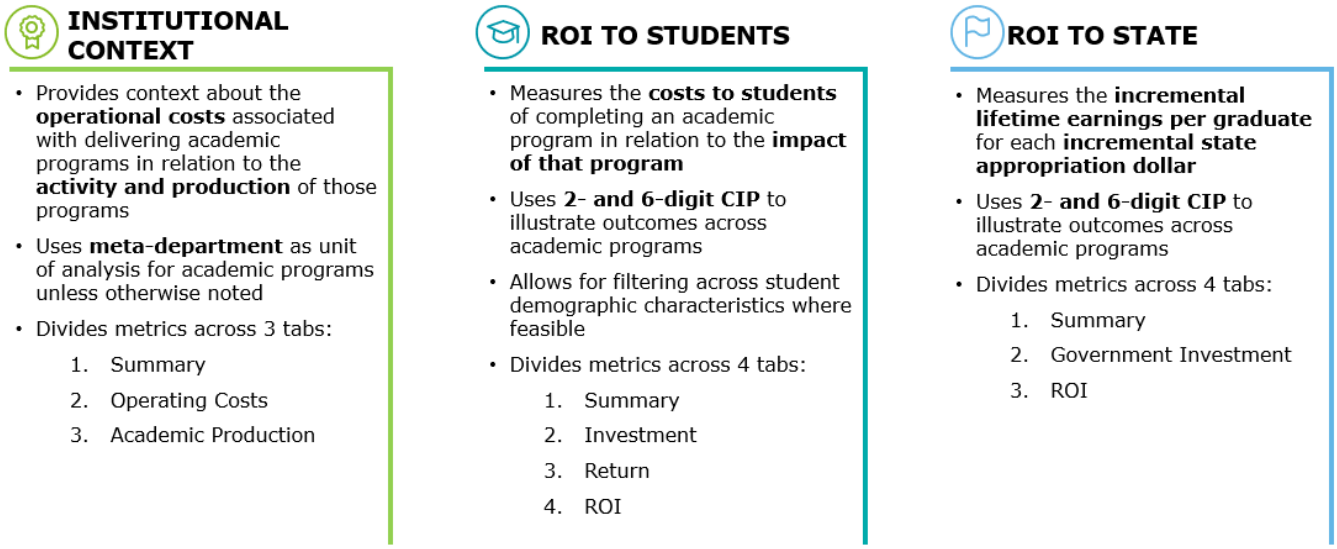


Figure 12: Dashboard Summaries

Institutional Context Dashboards

The Institutional Context Dashboard seeks to understand the investment that the UNC System makes to provide a world-class education to its students and how those investments translate into measurements of academic production, namely student credit hours and degrees conferred.

The Institutional Context Dashboard begins with summary descriptive statistics about the UNC System's constituent universities before exploring the costs to operate each program at each institution and ultimately demonstrating the level of academic production from each institution. Before reviewing the data in the dashboards, it is important that we define the metrics and clearly state the assumptions used to complete the analysis.

The following assumptions underlie the Institutional Context Dashboard analysis:

1. Constituent Universities. All 16 universities that comprise the UNC System are included in this analysis. Please note, however, that UNC affiliates (UNC Health, PBS North Carolina, The North Carolina Arboretum, The University of North Carolina Press, The North Carolina State Education Assistance Authority) and UNC high school students (e.g., North Carolina School of Science and Mathematics) are considered out of scope. Additionally, associate's degrees and the following terminal graduate degrees have been excluded: Dentistry, Medical, Veterinary, Pharmacy, Law.

2. Programs. The constituent universities of the UNC System do not track or record costs at the program level, but instead tie expenses to departments. Programs can be consistently connected using a standard coding, but departments, academic structures, and business practices related to booking expenses vary significantly across institutions. This variation makes it difficult to assume that a department at one institution aligns with a department at the other 15 institutions even if the departments carry the same name. As such, to assess "programs," meta-departments were used to better align departments across the 16 institutions in the UNC System. "Meta-

departments" are high-level department classifications that are standardized across all institutions and used to complete the analysis. All individual departments at member institutions are mapped to a meta-department based on a comprehensive methodology developed in partnership with the institutions. While department names may not map one-to-one, each department has been accounted for and bucketed into one of the 20 meta-departments. The Military Science & Technology meta-department has been excluded from this analysis to reflect that this meta-department is partially driven by ROTC courses, which carry externally funded faculty and staff.

3. Expense Inclusions and Exclusions. The universe of expenses included in the analysis focuses on non-federal Unrestricted and General Funds, as well as non-Grant & Contract restricted funds, to enable the analysis to focus on the cost of program delivery across the UNC System at the meta-department level.

- Funds included in the analysis include General Fund - State Appropriations and Tuition Receipts, General Fund - Other State Receipts, General Fund – Other, Overhead Receipts, Unrestricted Contracts, Unrestricted Endowment Income, Other Institutional Trusts, Restricted for Departmental Use, Restricted for Specific Programs, Restricted Other, Restricted Professorships, Restricted Research Non-C&G, Restricted Scholarships and Fellowships, and Restricted Institutional Trusts.
- Funds excluded from the analysis include General Fund – Federal, Contracts and Grants - Federal, Contracts and Grants - State and Local, Contracts and Grants - Private, Auxiliary Funds, Loan Funds, Endowment Funds, Independent Operations, Agency Funds, and Plant Funds.[20]
- Expenses associated with the following Program Codes are excluded from the analysis: Area Health Education Centers (AHEC), UNC Center for Public Television, Community Services, MCNC Contract, NC Arboretum, Cooperative Extension Service, Agricultural Research Service.

4. Operating Costs Categories. To properly account for the costs of program delivery, institutional expenses were classified into the following three categories:

- **Direct Costs** are expenses directly labeled as "instruction" or "academic support" (via the "Program Code" in the finance data mart) and booked directly to an academic department, such as salaries for faculty who teach in the department.
- **Academic Overhead Costs** are composed of three expense types and are distributed on a per Student Credit Hour basis to each applicable meta-department. Overhead costs include:
    - Any expenses outside of "instruction" and "academic support" that are booked directly to an academic department, such as equipment purchases made by a department
    - All unallocated College level expenses (e.g., expenses in the College of Arts & Sciences not directly tied to a meta-department)
    - All expenses with "Instruction" or "Academic Support" Program Codes within non-academic units.
- **Indirect Costs** include university-wide expenses which do not tie directly to a meta-department or College and are not coded to "Instruction" or "Academic Support." These can also be described as Institutional Overheard. Indirect costs are applied to meta-departments on a per-credit hour basis and are scaled to reflect the proportion of expenses an Institution uses to support Instruction and Student Services. As with all cost-bucket categories, only those dollars in the included set of Funds, Accounts, and Programs are part of the analysis. These specific exclusions help to identify the dollars the University has discretion over to spend in support of the delivery of academic programs.

Data Sources:

- Financial Data Mart ("FDM")
- Human Resources Data Mart ("HRDM")

[20] Funds here are described in detail for replicability purposes

- Student Data Mart ("SDM")

Summary Dashboard

The first dashboard within the set of Institutional Context Dashboards is a summary dashboard that is intended to present the viewer with a variety of metrics to provide context and a backdrop for the cost metrics housed within the dashboards. The descriptive statistics that are included in the dashboard summary are as follows:

- **Faculty FTE:** FTE numbers are derived using HRDM's FTE definition and are not headcount figures; these totals only include faculty directly assigned to a meta-department.
- **Total Credit Hours Produced:** includes all credit hours except Dentistry, Medical, Veterinary, Pharmacy, and Law.
- **Annual Degrees Produced:** includes all degree types except Dentistry, Medical, Veterinary, Pharmacy, and Law.
- **Average Class Size:** so as not to skew the data, practicums, clinical, internships, field experiences, cooperative education, recitals, performance, ensemble individual study, student teaching, dissertations, and thesis course formats were excluded for the average class size calculation. These smaller course sizes account for approximately 5% of all student credit hours produced.

After providing the summary statistics, the dashboard takes the viewers through analyses of the costs linked to each meta-department before demonstrating the level of academic production that occurs from those expenditures.

Operating Costs Dashboard

A key mandate from the General Assembly for this study was to examine the instructional operating costs of each program within the UNC System. When looking across the UNC System, the analysis finds that the average cost per credit hour to operate each meta-department is $769, which includes direct costs, academic overheard costs, and indirect costs. Engineering serves as the range high at $1,185 per credit and Psychology serves as the range low at $598. In aggregate, this translates to $4.2 billion in resources directed toward instruction across the 16 institutions. The chart below shows each meta-department's average cost per credit, inclusive of direct costs, academic costs, and indirect costs.

Direct Costs, Academic Overhead, & Indirect Costs by Meta-Department

Meta Dept	Direct	Academic Overhead	Indirect	Grand Total
Psychology	$191	$157	$251	$598
Social Sciences	$190	$186	$252	$628
Mathematics and Statistics	$213	$167	$256	$636
Philosophy and Religious ..	$254	$159	$253	$666
English and Literature	$250	$155	$262	$667
Communications	$255	$160	$257	$672
Biological Sciences	$256	$175	$256	$688
Languages and Cultural St..	$248	$183	$270	$701
History, Government, and ..	$313	$182	$255	$749
Health Professions	$287	$233	$249	$769
Physical Sciences	$330	$197	$251	$779
Business Administration	$355	$201	$245	$801
Information Technology	$328	$242	$242	$811
Education	$355	$235	$241	$831
Natural Resources	$363	$230	$276	$870
Nursing	$435	$202	$246	$883
Visual and Performing Arts	$418	$172	$326	$916
Architecture	$430	$254	$234	$918
Agriculture	$400	$346	$259	$1,004
Engineering	$579	$363	$243	$1,185
Grand Total	$311	$204	$255	$769

Figure 13: Cost per Credit by Meta-Department (AY 2020 – 2021)

As a reminder, due to the customized methodology, availability of data that is far more granular than what is available from federal sources, and some institution-specific decisions regarding inclusion/exclusion of funds, it would be inappropriate to compare the costs to produce a credit found here with other studies within higher education. Similarly, the average cost per credit focuses solely on instruction (research and public service are excluded) and should not be compared one-to-one to the tuition rates of the constituent universities. Each institution within the System utilizes State appropriation dollars, tuition revenue, and other sources of revenue that faculty and staff source to support funding for teaching and learning, thus making tuition rate an unequal comparison to the instructional cost to produce credits.

Although ample information can be gleaned from analyzing each meta-department individually, the academic offerings of the UNC System or of each individual institution should be thought of as a portfolio of programs. Through a portfolio approach, the System or each university should seek to understand and stay informed of the drivers of costs rather than simply trying to minimize costs. To illustrate this, note that, in the graph below, Engineering stands out as an expensive program to operate. Given these high costs relative to the other programs, one may be led to believe that Engineering programs are somehow inefficient, but the costs of Engineering may be high for any number of reasons, which could include sizable investments aligned with a growth strategy, the need for specialized equipment, high proportions of tenured faculty to non-tenured faculty, etc. While it is always beneficial to look for ways to improve productivity, when conducting a cost to educate analysis, it is important to identify what drives costs and to understand that many programs have different cost structures.

Breaking down costs by meta-department across institutions can lead to valuable discussions about the internal economy of each institution and how academic leaders seek to guide and shape their academic portfolios. When examining the academic portfolio, deans and other academic leaders may consider the following questions among others:

For high-cost programs:

- Do we understand and are we comfortable with the drivers of costs?
- Do we have lower-cost programs that can reasonably subsidize high-cost programs in a sustainable manner?

- Is enrollment or student credit hour production falling, possibly creating the need for further subsidization?
- Are these programs critical to the mission of the institution (e.g., necessary for providing general education requirements)?
- Do these programs meet a specific need within the workforce?
- Do these programs offer the institution a clear competitive advantage?
- Do these programs generate additional supplemental revenue (e.g., ticket sales, lab fees, program fees)?

For low-cost programs:

- What can be learned from programs with low costs and potentially applied to programs with higher costs?
- Are the low costs due to operational efficiencies or might they signal deteriorating quality?
- Is revenue growing in these programs such that they can effectively subsidize higher cost programs?
- Is there demand for these programs? Is enrollment growing? Have we tapped the right student populations and marketing channels?

The questions above do not consider the program's costs in isolation, but rather consider student credit hour production, market demand, faculty productivity, revenue generation, and a range of other factors. As such, the Institutional Context Dashboards include many of these factors to present a holistic view of the instructional costs to operate each program so each institution can make data-informed decisions to guide and adjust their academic portfolios as needed.

Academic Production Dashboard

As mentioned in the previous section, the UNC System expended $4.2 billion on instruction in Academic Year 2020-2021, which includes the expenses for 12,771 faculty and 3,759 staff. With that investment, the System produced 5.5 million student credit hours with each faculty member producing 428 credits on average. In addition to the student credit hours produced, the System also conferred 57,153 degrees, with Business Administration serving as the most popular field of study with 10,845 degrees closely followed by Health Professions with 7,795 degrees. In total, Health Professions and Business Administration accounted for 32% of all degrees and 23% of all student credit hours produced.

As part of the legislative State mandate, the project team calculated the total number of credit hours produced by each program and the number of faculty and staff housed within each program. From these data, the team then calculated the average student credit hours produced per faculty FTE. Below is a table that shows the average credit hours produced per faculty FTE arranged in descending order with Social Sciences faculty FTE producing 670 student credit hours per year on average at the higher bound and Agriculture FTE producing 163 student credits hours per FTE on average at the lower bound.

Meta Dept	Total Student Credit Hours Produced	Faculty FTE Calc	Student Credit Hours Produced per Faculty FTE
Social Sciences	447,162	667	670
Business Administration	729,379	1,115	654
Psychology	251,509	399	630
Mathematics and Statistics	333,719	548	609
Information Technology	242,097	470	516
Philosophy and Religious ..	99,982	209	479
Biological Sciences	302,169	633	477
Communications	169,030	359	470
Physical Sciences	340,926	802	425
History, Government, and ..	245,963	600	410
Languages and Cultural St..	246,364	610	404
Health Professions	547,629	1,369	400
English and Literature	277,089	730	380
Education	348,626	1,022	341
Architecture	46,575	146	320
Nursing	181,795	573	317
Natural Resources	51,215	174	294
Engineering	251,033	884	284
Visual and Performing Arts	281,033	1,054	267
Agriculture	66,648	408	163
Grand Total	5,459,944	12,771	428

Figure 14: Student Credit Hours Produced per Faculty FTE by Meta-Department (AY 2020 – 2021)

There can be a range of reasons why the average credit hours produced per FTE in one meta-department may be higher than that of another meta-department. Some programs, such as the hard sciences, require smaller lab sessions, whereas other courses (e.g., college algebra), can be effectively taught in large lecture halls. Other potential reasons for variation in student credit hours per faculty FTE could include average section size, program growth trends, the ratio of tenure track vs. non-tenure track faculty, and academic course load policies, among other factors. In addition to instruction, faculty at universities across the UNC System have numerous responsibilities and dedicate their time to activities that include research, public service, academic advising, administrative functions, running specialized centers, and other institution-specific roles. To accomplish all responsibilities, faculty may receive "course releases" for their assignments outside of teaching, which can lead to variability in the average number of credit hours each faculty produces. Having these data available is a manner by which System leaders, university leaders, deans, and faculty can make long-term strategic decisions to benefit all stakeholders.

Student ROI Dashboards

The purpose of the Student ROI Dashboard series is to quantify the value of a UNC degree by calculating the expected lifetime earnings of UNC graduates based on their field of study and comparing those earnings to the earnings of individuals who have not received a UNC degree. These incremental lifetime earnings from attainment of the degree are then compared to the student's investment to understand the ROI of a UNC degree from a student perspective.

The following assumptions underlie the Student ROI analysis:

Lifetime Earnings Calculation:

- The goal of the lifetime earnings profiles is to estimate student wages from when a student starts school to when they turn 65. As most students in the sample have not yet turned 65, we must estimate what their future wages will be. To do so, the Burning Glass methodology:
    - Uses data from the UNC system and the American Community Survey (ACS) to create generic wage profiles for workers aged 18 to 65 based on demographics (sex, race, and ethnicity) and schooling (degree level attempted, if degree was attained, major, and school). The following steps detail how these generic wage profiles are created:
        - UNC wage data is used for workers aged 23-40 and for these ages, the 1st to 99th percentile for each demographic/schooling group was identified to approximate the overall distribution of wages. As wage data for younger ages are scarce and can be unreliable, wages

for ages 18-22 and all pre-graduation wages are imputed as a function of the estimated time four-year students work while in school multiplied by the North Carolina minimum wage.

- For ages over 40, wage observations exist but are earned by non-traditional students who graduated later in life. Thus, these wages are noticeably lower that other students' wages. Instead of these wages, North Carolina wage profiles from ACS are used. These data are organized such that a 1st – 99th percentile distribution of wage profiles for each demographic and schooling group for ages 41-65 can be created. To match the wage levels seen in the UNC data, the wage ratio at age 40 between the UNC and ACS data is applied to every age afterwards.

- The generic wage profiles are used to estimate missing wage observations within the dataset. For each year after graduation, a worker's observed wages are compared to others in the same age/demographic/schooling bucket to assign the wages a percentile ranking. The average percentile rank observed is then applied to all future missing wages creating a wage profile for every worker that is a combination of actual wages and imputed wages.
- To arrive at discounted lifetime earnings, the wages starting from the age of enrollment are summed, discounting each year by 3% to place all wages in present value. All wages are in real 2021 dollars.

ACS Counterfactual Calculation:

- The goal of the ACS counterfactual is to use worker wages in the American Community Survey (ACS) from North Carolina as the counterfactual for UNC graduates to understand the incremental lifetime earnings of a UNC graduate.
- For UNC graduates with a bachelor's degree, the relevant counterfactual is workers with a high school diploma or some college.
- For workers with a master's or doctoral degree, the relevant counterfactual is workers with a bachelor's degree.
- Workers are divided into groups based on sex and race/ethnicity. For each group, the median wage at every age 18-65 (first dropping wages less than $100 a year) is calculated.
- To arrive at counterfactual discounted lifetime earnings, all counterfactual wages starting from the age of enrollment are summed, discounting each year by 3% to place all wages in present value terms.

BGI Counterfactual Calculation for Bachelor's Degrees:

- The goal of the BGI counterfactual for bachelor's degrees is to use the wages of students who drop out of UNC schools as the counterfactual for UNC graduates. Specifically, students who enrolled in UNC schools but dropped out within 2 years and never enrolled in another UNC school or attained a BA degree according to National Clearinghouse Data are used. The idea is that, as these students attended the same schools, these workers will have similar observed and unobserved characteristics to students who went on to graduate.
- The rich UNC data also allows the model to control for important factors that are not in the ACS data, such as parental income and high school test scores. Wage profiles of students in the counterfactual sample were calculated using the same methodology outlined in the *Lifetime Earnings Calculation* above.
- To construct a UNC graduate's counterfactual wage profile, a regression is run for each age and school combination to estimate wages based on if the student graduated or not, controlling for demographics (sex, race/ethnicity, etc.), background (FAFSA information, high school test scores, etc.), major, and other observables.
- Then a worker's counterfactual wage for each age is estimated by predicting what their wages would have been if they did not graduate but otherwise had the same observable characteristics.

- To arrive at counterfactual discounted lifetime earnings for each individual worker, all counterfactual wages starting from the age of enrollment are summed, discounting each year by 3% to place everything in present value terms.

BGI Counterfactual Calculation for Graduate Degrees:

- The goal of the BGI counterfactual for graduate degrees is to use the wages of UNC graduates who attain BAs from the same schools and majors but do not go onto grad school in the UNC system as the counterfactual for UNC graduates. A similar process as above is followed to predict counterfactual wages for graduate degree holders, with a few exceptions.
- First, the same background information for graduate students such as FAFSA and high school test scores is not available. Second, instead of comparing wages between graduate degree recipients and those who drop out, wages are compared to individuals who earn a bachelor's but do not enroll in a graduate program within the UNC system. Finally, these analyses are run on the combined group of master's and doctoral degree recipients to ensure a large sample size.
- Once these changes are made, a similar method to above is followed: a regression is run for each age and school combination to estimate wages based on if a student received a graduate degree, controlling for demographics (sex, race/ethnicity, etc.), bachelor's degree (school and major), graduate major, and other observables.
- Estimates are used from these models to determine the counterfactual wage at each age group. Counterfactual wages starting from the age of enrollment are summed and discount each year by 3% to identify the present value.

Student ROI Calculation:

- To calculate return on investment (ROI) for a given counterfactual, the counterfactual lifetime earnings and program costs are subtracted from the actual discounted lifetime earnings.
- Since all wages are already in real 2021 dollars and future wages are discounted to the present, this gives the expected real present value of this program for this student. Program level ROI estimates are calculated using the median values for all students in a program.

The following data sources underlie the Student ROI analysis:

- Dept of Commerce Wage Data
- BGI Proprietary LinkedIn Profile Data
- BGI Proprietary Job Vacancy Postings Data
- UNC Student Data Mart ("SDM")
- American Community Survey Data

Summary Dashboard

The first dashboard within the set of UNC Student ROI Dashboards is a summary dashboard that provides the following descriptive statistics:

- Enrolled students by program of study
- Student composition figures, including degree level, student type, residency, gender, race/ethnicity, full-time vs. part-time status, income band at time of enrollment, high school GPA bands, and the percent of students who purse a single major vs. those with multiple majors
- Degree completers by program of study
- Average time (years) to complete a degree by program of study

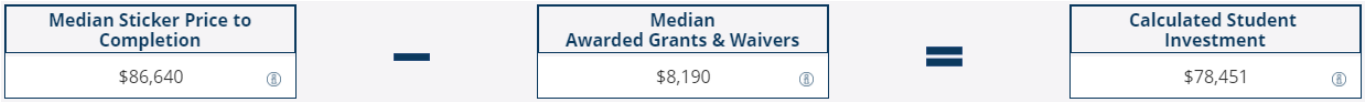
Similar to the Institutional Context Dashboard series, the Student ROI summary dashboard is useful in setting context and allows the viewer to understand the student demographics of a particular institution or of the UNC System as a whole, what degrees are most common, and how long the average student takes to complete a degree.

Investment Dashboard

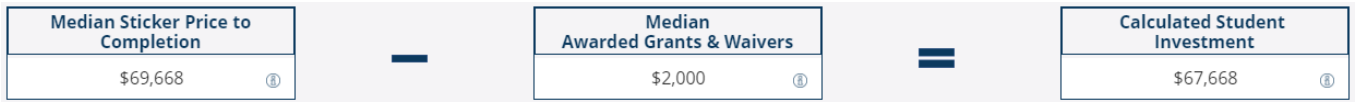
After the summary dashboard to provide descriptive statistics and context, two dashboards follow, one focused on students' "investment" in their education and the other focused on students' "return." These two dashboards both ultimately flow into the final ROI dashboard, which presents the median calculated lifetime return on investment for a student that graduates from the UNC System.

To calculate a student's return on investment for his/her undergraduate or graduate education, the dashboard first explores the median student investment net of aid received. The calculations for the median student investment for both undergraduates and graduates are shown below:

Undergraduate Student Investment (Academic Year 2019-2020):



Graduate Student Investment (Academic Year 2019-2020):



Components of Calculated Student Investment

- **Median Sticker Price to Completion is** defined as the median annual cost of attendance by institution, residency, career, and field of study multiplied by the imputed time to degree. Time to degree is calculated as the average number of fall and spring terms divided by two.
- **Median Awarded Grants and Waivers** outlines the median financial aid (grants, waivers, and other funds) received by all students and does not include loans or work study.
- **Calculated Student Investment**: defined as the median sticker price to completion less the median awarded grants and waivers. This figure represents the costs covered by loans and the assumed cost the student paid out-of-pocket or through private funding. Interest on loans is not included within this calculation but is an added investment outside the bounds of this study.

In the aggregate, the calculated student investment for an undergraduate and graduate degrees in academic year 2019-2020 are reasonably close as undergraduate students' median investment totals $78,451 and the median investment for graduate students total $67,688. While the median total cost of attendance for undergraduate students is higher than that of graduate students, undergraduates on average spend more time earning their degrees and undergraduates also receive median grants and waivers of $8,190 compared to $2,000 for graduate students.

It is advised that when reviewing student investments in education that the dashboard user also reviews the investments for both in-State and out-of-State students separately as tuition rates vary greatly across the two groups. For undergraduates, the net investment for in-State students is $74,472 compared to $142,519 for out-of-State students, an increase of more than $68,000 for the degree. For graduate students, the calculated student investment for in-State students is $58,354 compared to $82,853 for out-of-State students. These figures reported here are in aggregate for all programs and for the entire university System. Nevertheless, the dashboards offer functionality for

the user to enter specific student characteristics (undergraduate vs. graduate; resident vs. non-resident), degree program, and college to better understand the expected level of aid versus the required out-of-pocket expenses.

Return Dashboard

The other key component of the ROI equation is the return or, in the case of this study, the expected lifetime earnings a student can expect by pursuing a particular program at a particular university within the UNC System. Although understanding the lifetime earnings of students is worthwhile, the true value of this ROI calculation is the ability to distinguish between those students that complete degrees at UNC System institutions and those that do not. With data for these two groups, we can calculate the *incremental* lifetime earnings that can be primarily attributed to completing a UNC degree (i.e., earnings above what would be observed for individuals without a UNC degree). To understand the incremental lifetime earnings, the team established two "comparison groups" to measure against that are defined below. For simplicity, all numbers and charts in this report reference the ACS data (unless specifically noted) and UNC non-completers data can be found in the Student ROI Dashboard series.

1. American Community Survey (ACS) Comparison group utilizes the North Carolina wages from the American Community Survey. Undergraduate degree recipients are compared against individuals with "no college" or "some college/no degree." Graduate degree recipients are compared against individuals who have earned a bachelor's degree and no other postsecondary education. The ACS data contains controls for gender and race to measure expected lifetime earnings.

2. UNC Non-Completers Comparison group leverages individuals who enrolled within a specific UNC institution for less than four semesters and did not complete a degree. UNC undergraduate non-completers have not received a bachelor's degree at any other institution but may have received an associate's degree. Non-completers from graduate programs utilize the undergraduate degree completers as the comparison group. The non-completers comparison group uses real UNC profiles so that it can control for incoming academic skills, family income, and other demographic differences in student populations by institution.

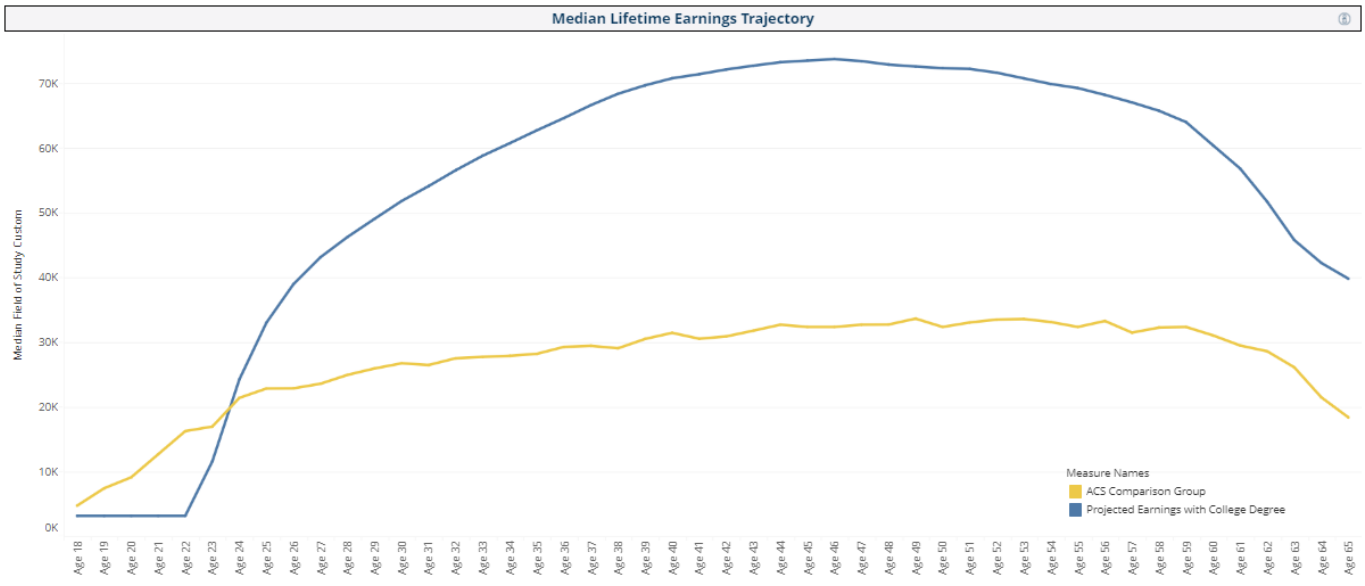


Figure 15: Undergraduate Incremental Lifetime Earnings vs. ACS Comparison Group

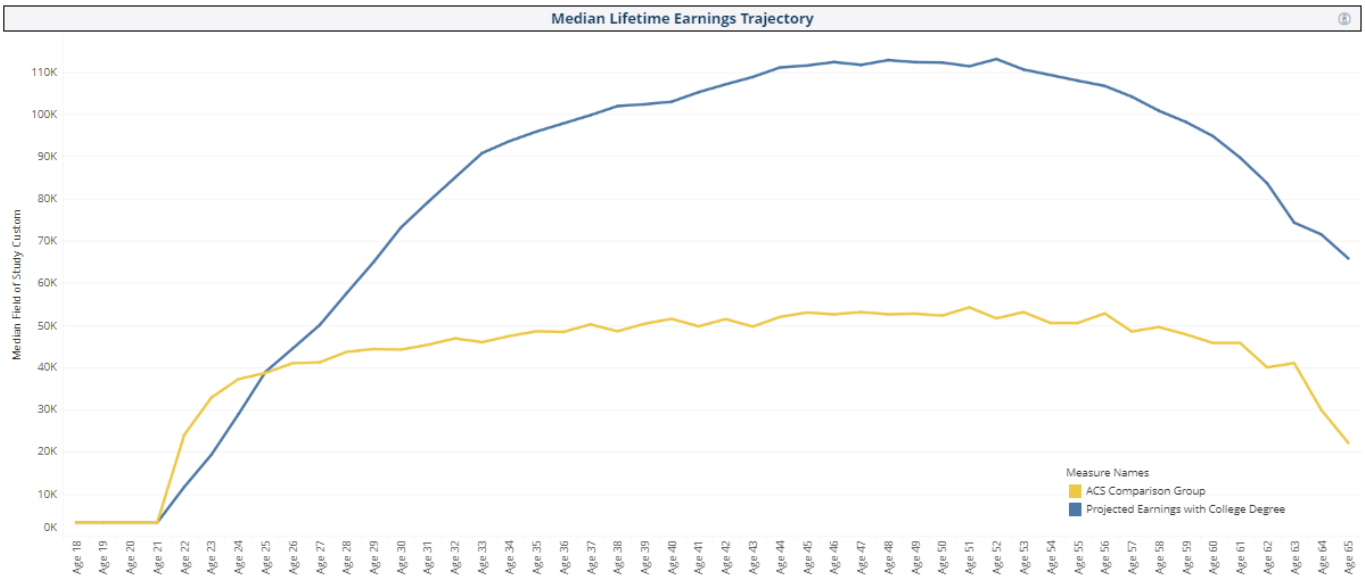


Figure 16: Graduate Incremental Lifetime Earnings vs. ACS Comparison Group

The charts above show that the median bachelor's degree graduate from the UNC System earns approximately $575,574 more than the subset of ACS individuals who did not attend college or attended some college but did not complete a degree (that figure is $268,578 when comparing to the UNC non-completers). A similar trend holds true for graduate students. Individuals that graduate with a graduate degree from the UNC System are expected to earn approximately $987,090 more (median graduate) than those with only a bachelor's degree ($1,122,950 compared to UNC undergraduate degree holders from the same institution and field of study without a graduate degree).

The incremental differences in lifetime earnings of UNC graduates versus the comparison groups demonstrate the value that a degree from the UNC System holds in the market. Upon graduation from both undergraduate and graduate programs, UNC System graduates earn more than their comparison groups and the gap between the graduates and the comparison groups generally widens as the UNC graduates' careers progress, signifying that not only is the UNC System preparing students to earn higher starting salaries, but the graduates also have critical skills that accelerate the growth curve of their lifetime earnings.

Before subtracting the investment from a graduate's incremental lifetime earnings to calculate the overall return on investment of a college degree from a student perspective, it is important to also note the ability of a UNC degree to provide economic mobility for graduates. The table below shows the degree of economic mobility that undergraduates coming from a household with a gross income of less than $17,800 who graduate from a UNC System university will experience on average 20-years post-graduation. For low-income students (defined here as students with an income of less than $17,800 at time of enrollment), 89.6% experienced some economic mobility meaning they moved up at least one their income band from where they started over a 20-year period. 42.2% of all low-income students rose four income bands leading to a yearly income of $91,300 or greater after 20 years while 65.4% of low-income students rose at least 3 bands to an income of more than $51,800 per year. This data demonstrates that by removing barriers to access, the State of North Carolina and the UNC System have ensured that students from disadvantaged socioeconomic backgrounds have a high likelihood of upward economic mobility if they complete a degree. These dashboards can be a useful tool in the future for students to visualize the long-term benefits of attending a four-year college versus the immediate monetary benefit of entering the workforce after high school.

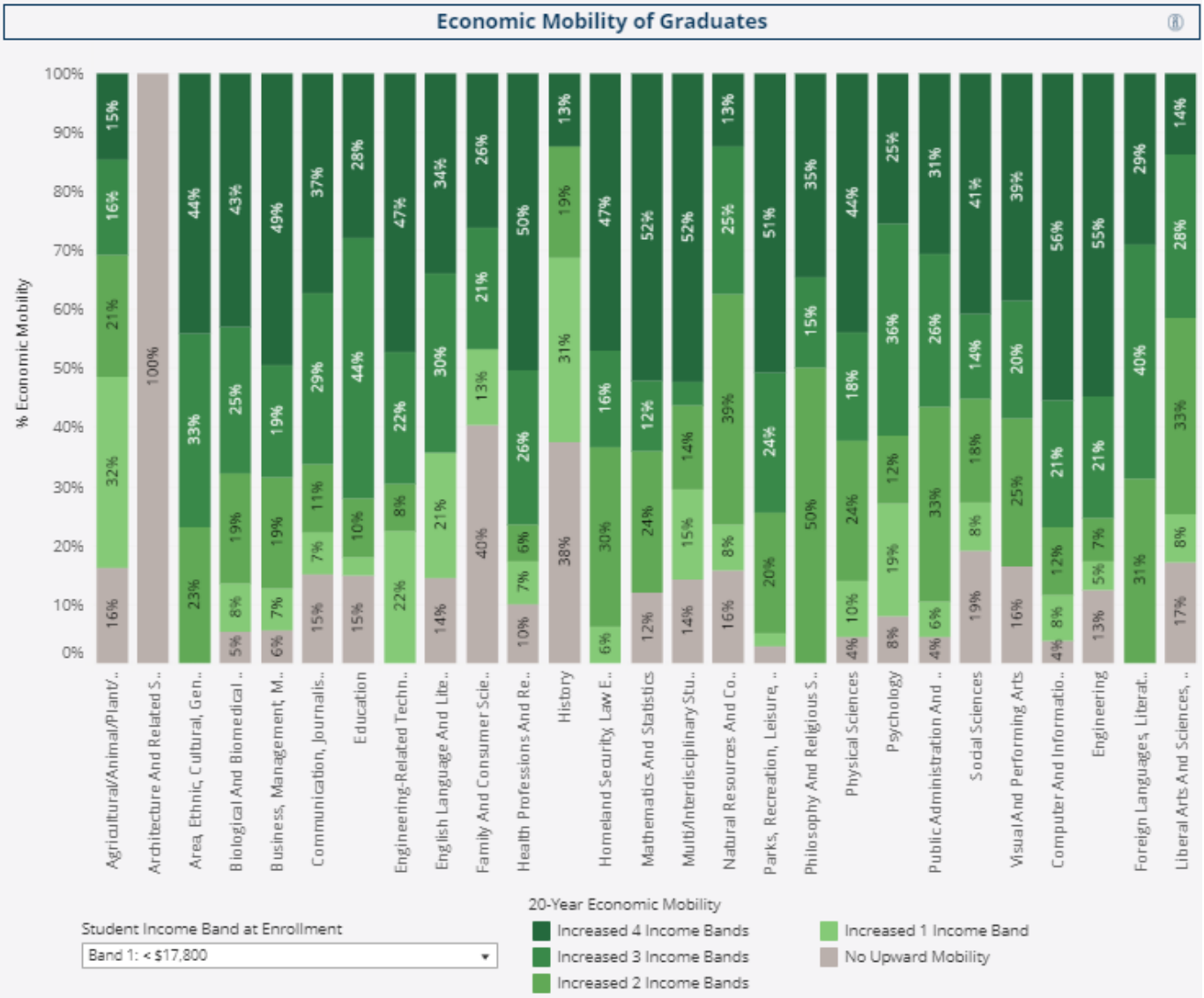


Figure 17: Economic Mobility of Undergraduates Post-Graduation with Income of Less Than $17,800 at Time of Enrollment

Student ROI Dashboard:

The final dashboard of the Student ROI dashboard series details the median ROI that a student can expect from attending a UNC System university and earning an undergraduate or graduate degree.

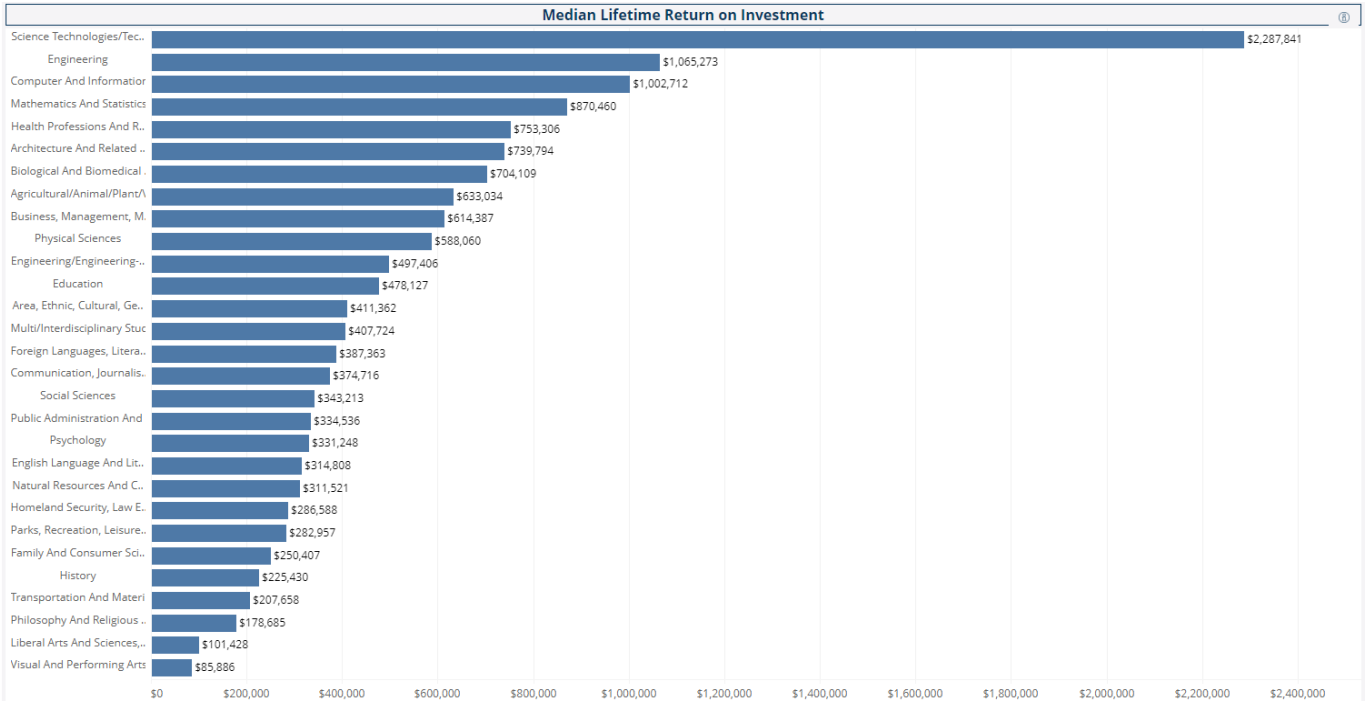


Figure 18: Undergraduate Return on Investment vs. ACS Comparison Group

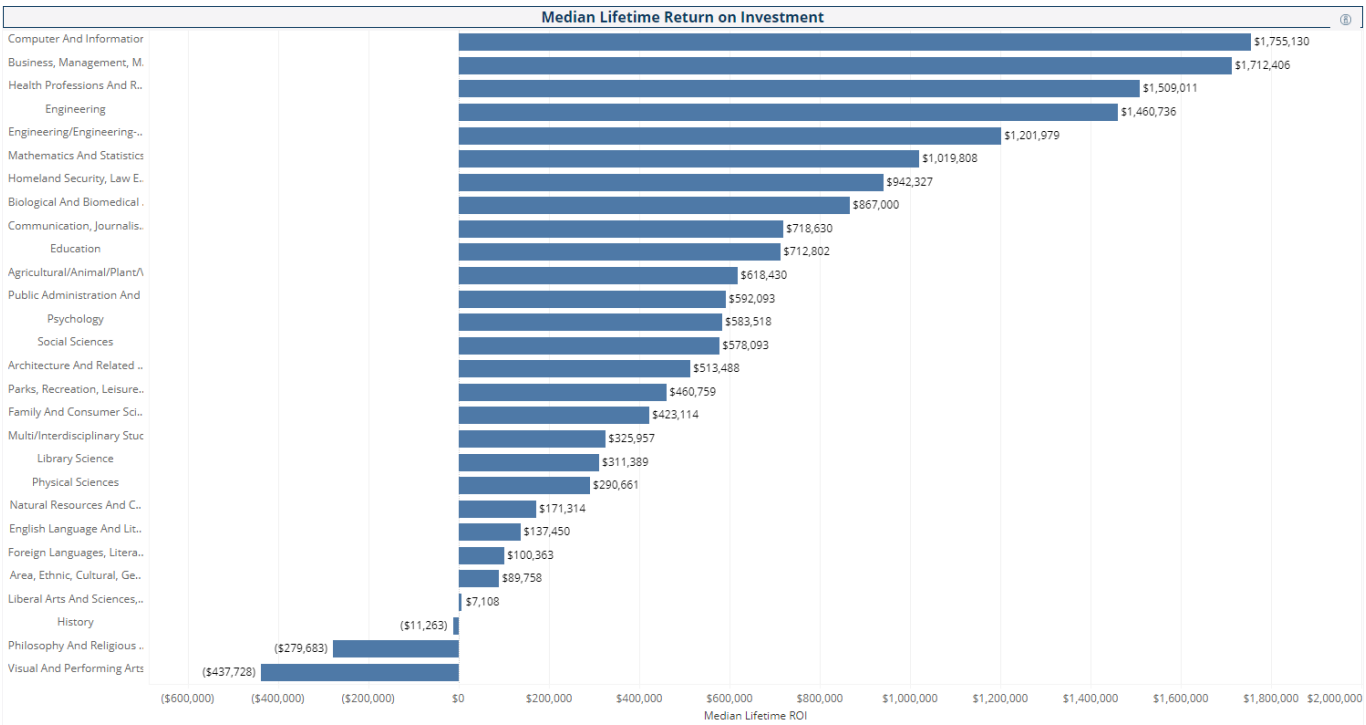


Figure 19: Graduate Return on Investment vs. ACS Comparison Group

Based on the lifetime return on investment of $497,123 for undergraduates ($524,580 in-State; $361,611 out-of-State) and $919,422 for graduates ($960,257 in-State; $384,140 out-of-State), the case for a UNC System education is convincing. Based on the lifetime earnings curves, we see that a UNC System education prepares students for careers in their respective fields as the yearly growth of their earnings exceeds that of the comparison groups. Not only does

the degree assist with job placement out of college, but UNC graduates are able to quickly grow their starting compensation to breakeven in approximately ten years or less for both undergraduates and graduates.

For students choosing to pursue a degree program within the UNC System, this series of Student ROI dashboards could be used to help a student in the future to make data-informed decisions by using real profiles of UNC System graduates. The questions that these dashboards can help a prospective student answer are numerous and include the following:

- What is the value of staying within North Carolina versus pursuing a degree outside of the State?
- How does my net investment in education change for different schools within the UNC System?
- How should I think about saving money in the early stages of my career to afford graduate school?
- Am I more likely to have greater career earnings by working for four years after high school or by attending college?
- How can a college degree change my socioeconomic status?
- How likely am I to get a job in a field aligned to my degree upon or shortly after graduation?

State ROI Dashboards

The purpose of the State ROI dashboard series is to provide an overview of the Return on Investment for the State of North Carolina generated by the 16 institutions in the UNC System. The intent of this State ROI dashboard is not to provide a full economic analysis, but rather ROI is defined as the incremental lifetime earnings a student can expect for each incremental State appropriation dollar. The increased lifetime earnings as a result of State funding for higher education create a plethora of benefits for the State including a higher paid, highly educated workforce, additional tax revenues as a result of increased incomes, more money flowing through the State's economy, creation of jobs and businesses, increases in philanthropy, and increases in community engagement. This dashboard series also provides contextual information on key industry trends, State migration, and high demand occupations.

The following assumptions underlie the State ROI analysis:

- State appropriations are amounts received by the institution through acts of the State legislative body, except grants and contracts and capital appropriations. These funds do not include any additional COVID-related funding.
- BGI's proprietary job vacancy data is used to characterize current demand for workers. We assume demand for undergraduate workers comes only from job postings that specify a bachelor's degree. Projected demand utilizes UNC Statewide employment projections for each field of study. To determine the projected demand for workers with a Bachelor's, the NC Statewide employment estimate is multiplied by the proportion of workers within a field of study required to have a Bachelor's. The percent of jobs within each field of study requiring a bachelor's is determined by using federal statistics (ONET data). LinkedIn profile data is utilized to model occupations of graduates after degree completion by field of study.
- Incremental cost per graduate was determined using the State incremental SCH funding formula. The incremental SCH funding formula is the funding rate by which the State allocates appropriation dollars based on changes in student credit hours produced in addition to the base appropriation. In order to estimate the cost per graduate to the State, undergraduate students were assumed to complete 33% of institutional credits across departments to fulfill general education requirements. These credits were assessed at a rate using a weighted per credit average cost across all fields of study per institution. 66% of undergraduate credits were assessed at the rate tied to the student's field of study. 100% of credits for graduate students were assumed at the rate of their field of study.

- Due to data limitations, the Education Occupational Group has been excluded from the industry supply and demand graphics.

The following data sources underlie the State ROI analysis:

- Dept of Commerce Wage Data
- BGI Proprietary LinkedIn Profile Data
- BGI Proprietary Job Vacancy Postings Data
- UNC System Historical State Appropriation Funding Data
- ONET Data
- UNC Student Data Mart
- UNC Statewide Employment Estimate
- The Integrated Postsecondary Education Data System

Summary Dashboard

The summary dashboard of the State ROI Dashboard series provides an overview of how UNC System fields of study align with the demands of the workforce through answering key questions such as:

- What is the employment share for a given occupational employment group (2020 data)?
- What percent of job postings are in a given occupational employment group (2020 data)?
- For each occupational employment group, will employment increase or decrease by 2030?
- How many job openings exist in a specific occupation compared to all job openings in North Carolina?
- Does the supply of UNC degree completers align with the occupational demand as measured by job postings?
- How does the supply of UNC degree completers align with occupational demand measured by employment?
- What are the most common fields of study for employees within a certain industry?

To demonstrate an example of how these questions can be answered, “Business and Financial Operations Occupations” has been selected as the industry of employment from a comprehensive drop-down menu within the dashboards and is shown in the graph below as the dark blue circle. The bubbles shown in the graph represent the various occupational groups within North Carolina and the size of the bubble corresponds to the number of people employed within that occupational group. From this summary view, the dashboard viewer can place the employment numbers for Business and Financial Operations, our selected example, in context with the employment share of other occupational groups in North Carolina and see that Business and Financial Operations is one of the largest occupational employment groups along with Management Occupations and Sales and Related Occupations.

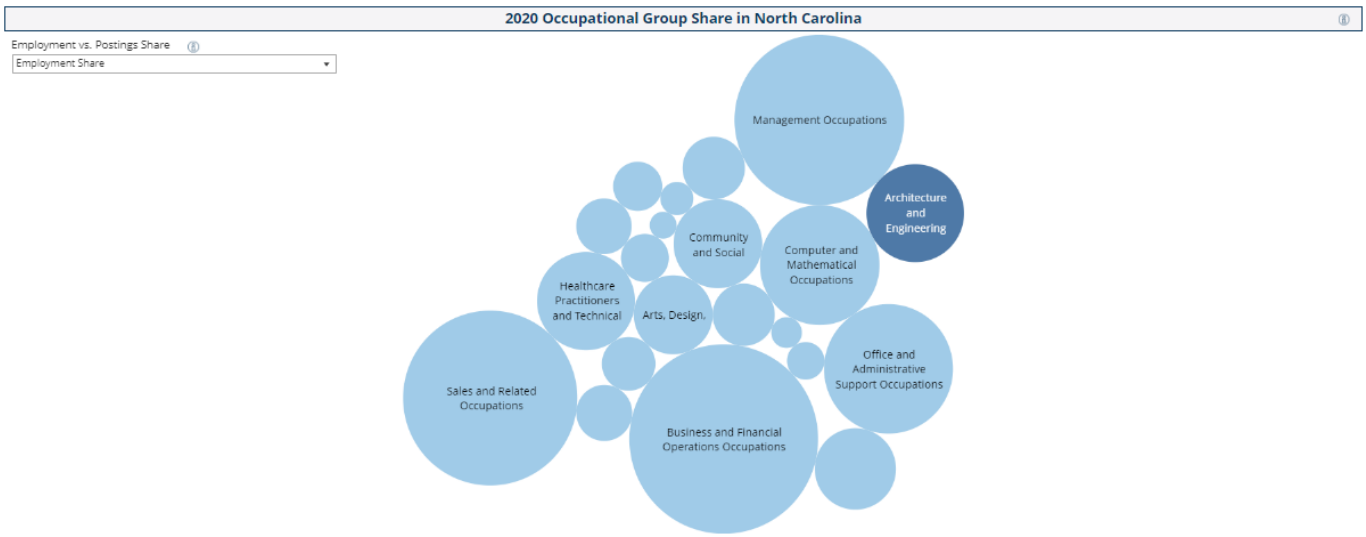


Figure 20: Share of Employment by Occupational Group (2020)

Although, Business and Financial Operations is in-demand now (2020 data), students beginning to explore college and deans and academic leaders planning their curricula and approach to programming will want to understand if the field will be in demand in the future. The summary dashboard provides an estimate of the expected growth/decline in the share of the North Carolina market by Occupational Group from 2020 to 2030. The yellow bars display the current employment share of each occupational group now (aligned with the bubble chart above) and the blue bars show the projected employment share in 2030. These data are based on projections by the US Department of Labor, utilize North Carolina Statewide Occupation data, and are limited to jobs requiring a bachelor's degree. Education is not included as an Occupational Group due to limited data availability. With the chart below, the dashboard viewer can see that Business and Financial Operations Occupations has the largest share of employment now at 18.6% and is expected to grow its employment share to 19.1% by 2030.

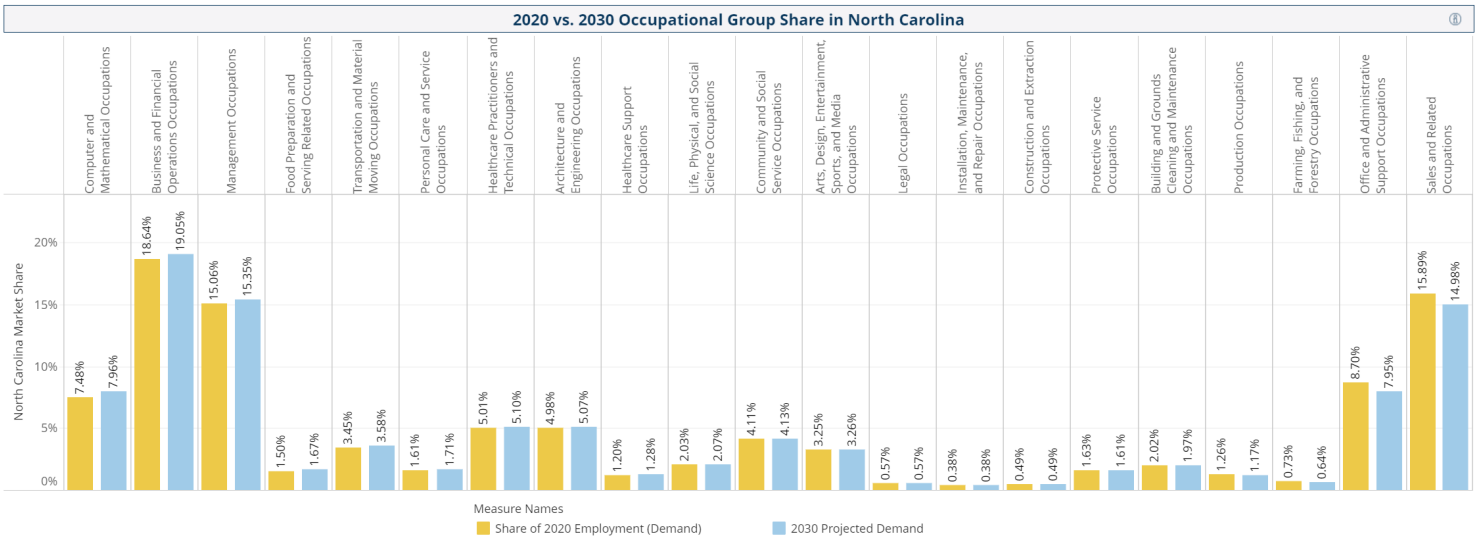


Figure 21: Employment Share by Occupation Group in 2020 vs. Expected Employment Share in 2030

Given that Business and Financial Operations is such a large part of the job market and demand is expected to increase over a ten-year time horizon, the General Assembly and the leaders of the UNC System and its universities will also want to understand if the supply of graduates from the UNC System is aligned to the demand of the job

market across each occupational group. The graph below looks at the supply of graduates versus the demand of North Carolina jobs. In this case, the supply is measured as the proportion of UNC System degrees by CIP code (major) while demand is measured as the proportion of job postings by occupational group in North Carolina. Continuing with the example of Business and Financial Operations, 12% of all students graduating from UNC receive degrees in a CIP code aligned with Business and Financial Operations while 12% of all new job postings requiring a bachelor's degree are in the Business and Financial Operations occupational employment group. This finding signifies there is alignment between the supply of graduating students and the demand in the job market.

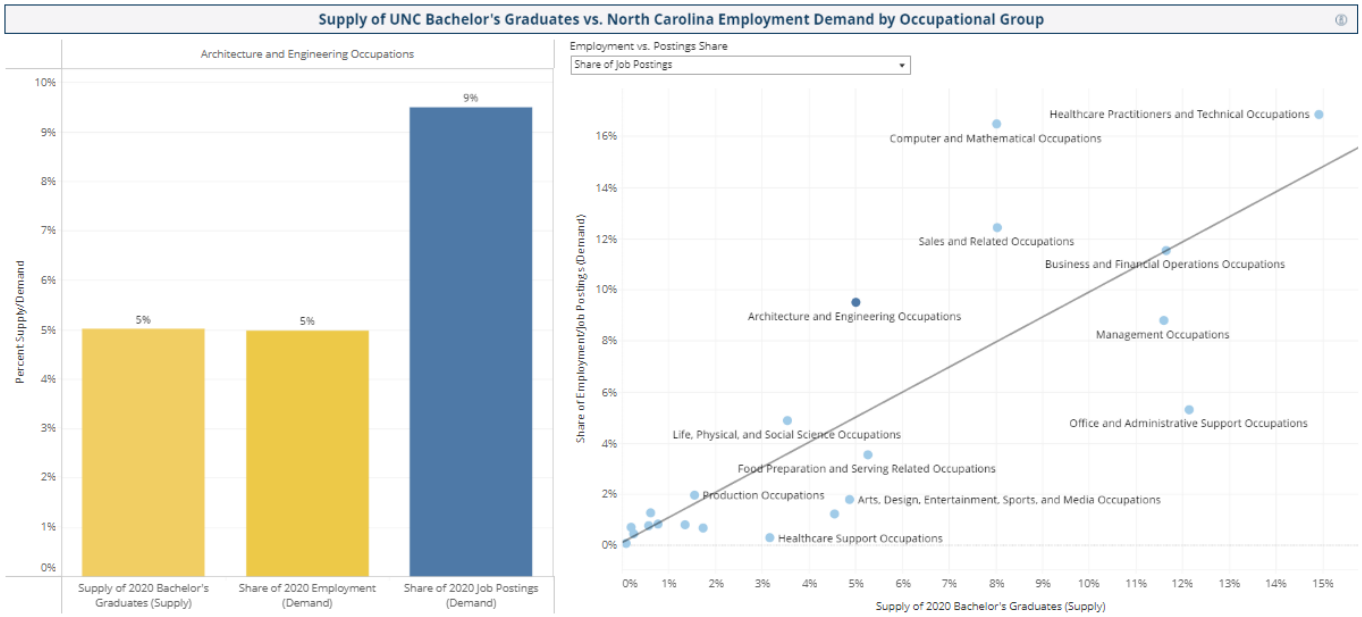


Figure 22: Supply of UNC Bachelor's Graduates vs. North Carolina Employment Demand by Occupational Group

Government Investment Dashboard

Following the summary dashboard is a government investment dashboard with the purpose of outlining (1) State appropriations (inclusive of State aid) that are directed to the UNC System and each constituent university and (2) the amount of aid needed to fund an additional credit hour within each program. In academic year 2020-2021, the North Carolina legislature appropriated $2.8 billion (including $260.8 million of State aid to students in the form of grant aid, loans, waivers, and other funds). Since academic year 2016-2017, State appropriations have risen at an average annual rate of 2.6%.

North Carolina has a long history of State support for public higher education, resulting in the System's ability to keep tuition rates low. These two revenue sources have brought a world-class faculty to North Carolina and have supported access and affordability for many generations of North Carolinians. For most of the System's history, these two revenue sources were the primary revenues that supported System operations. Both revenues are considered State General Fund revenues that are governed by strong regulations for budgeting.

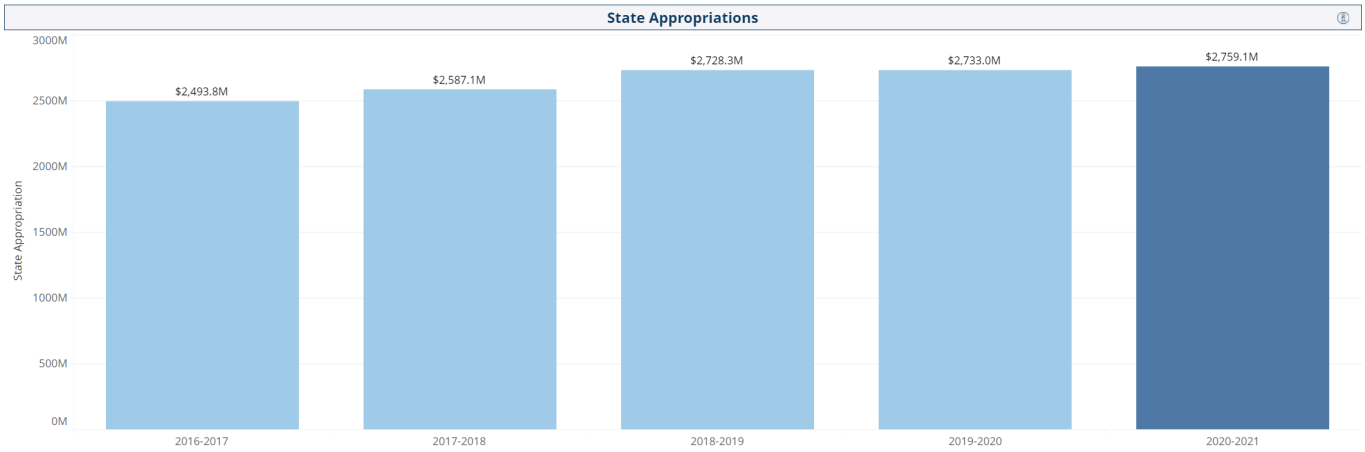


Figure 23: State Appropriations for the UNC System (AY 2017 – AY 2021)

The following graph is based on the State funding formula for each institution within the System and shows the rates at which the State would fund an incremental student credit hour within each CIP department. This graph does not dictate how the System would expend the funding but aligns with the General Assembly's expectations around costs by institution, degree level, and field of study as categorized by CIP code.

State Appropriation per Incremental Student Credit Hour (Undergraduate)

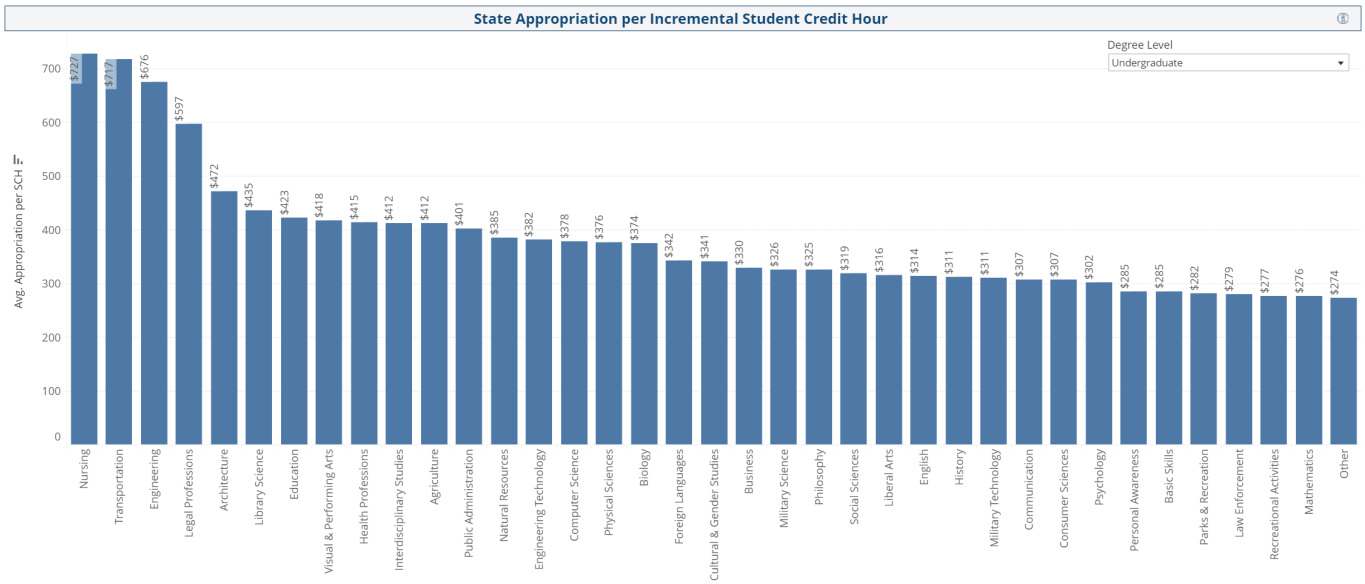


Figure 24: Incremental State Appropriations per Incremental Student Credit Hour

Government ROI Dashboard

The government return dashboard in the State ROI Dashboard series calculates the incremental lifetime earnings that a UNC System graduate will receive per incremental State appropriation dollar. This metric is defined as the median incremental lifetime earnings of a student (lifetime earnings of graduate less the earnings of a non-graduate) divided by the median incremental cost per graduate to the State. Median incremental cost per graduate is calculated utilizing incremental State appropriation per student credit hour amounts multiplied by the number of institutional credits completed for degree recipients. These rates are applied to 66% of an undergraduate's credits at the rate aligned to their field of study and 33% to the weighted average rate across all fields of study to simulate general

education course completion. Graduate students are assessed with 100% of their credits aligned to their field of study. In short, this metric can show the State how much more in lifetime earnings a student should receive for each additional dollar appropriated. For academic year 2020-2021, the incremental lifetime earnings per incremental State dollar was $23.07.

From these incremental earnings per student, the State receives several benefits as these appropriation dollars help support a higher earning, more educated workforce. Through these data, we have seen that a more educated workforce leads to higher wages in nearly every field of study. The U.S. Bureau of Labor Statistics also finds that as educational attainment rises, so too do overall earnings. These benefits also go further than economic returns. The Economic Policy Institute finds that higher levels of education also correspond to improved health and lower rates of mortality, and lower rates of crime. It is also important that there may be cases where the direct economic return to students and the State is smaller than average, but the occupations performed by graduates are critical to the health, education, and welfare of the State's population. These benefits are not captured here but must be acknowledged in discussion about the State's role in subsidizing higher education.

Although this study is not meant to serve as a full economic impact analysis, given these findings, there is a clear business case for states to make sure that all residents, including those from lower socioeconomic or disadvantaged backgrounds, have access to education. Earlier in this report, the project team detailed the power of a UNC education to enable economic mobility. When a state removes barriers to access and pushes for college affordability, the result can often times be a stronger, more productive workforce that drives economic output and prosperity so that all residents can reap the benefits.

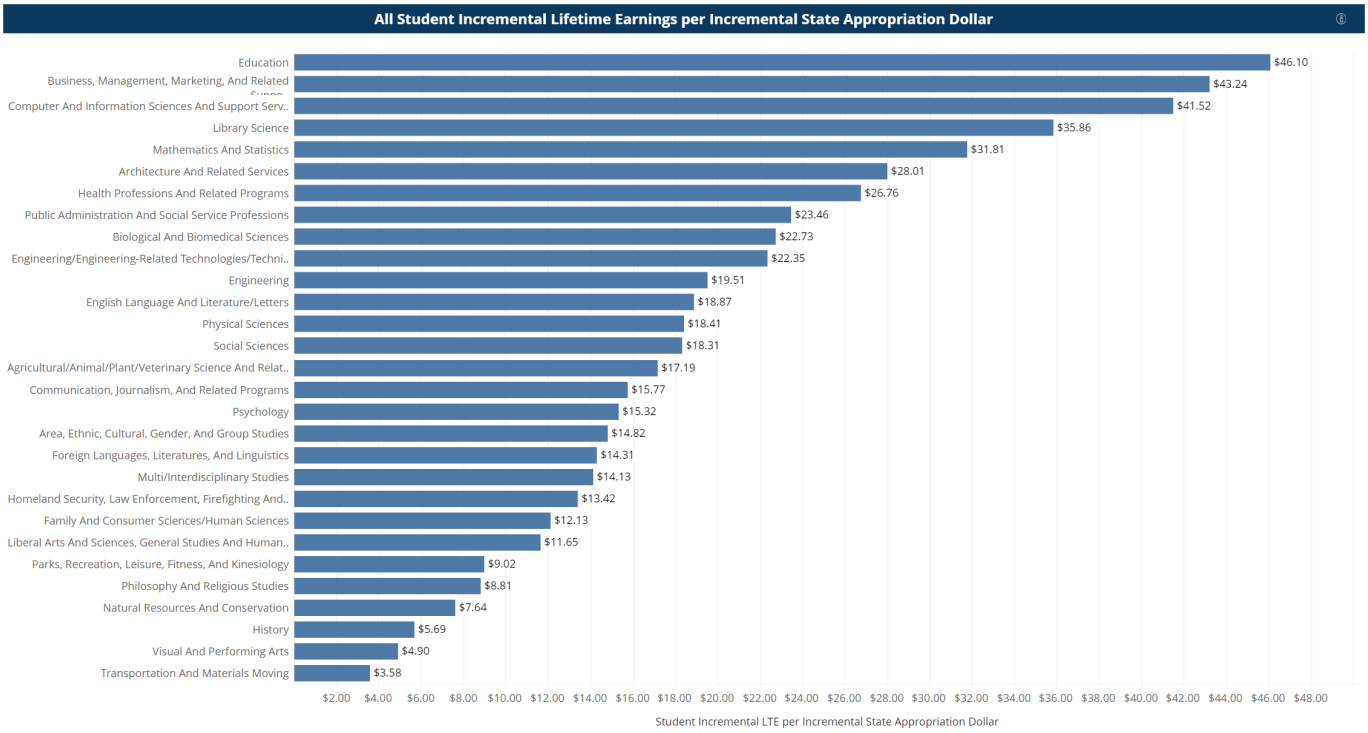


Figure 25: All Student Incremental Lifetime Earnings per Incremental State Appropriation Dollar

Moving Forward

Together with the Institutional Context, Student ROI, and State ROI Dashboard series, we hope that this report demonstrates a point in time view of metrics that can be used to evaluate the ROI of education delivered within the UNC System from multiple different stakeholder perspectives. Each of the constituent universities is distinct in the way they code expenses in the general ledger, organize departments, and deliver academic programs meaning that the context under which each institution operates matters. The dashboards are meant to be used as living tools that the General Assembly can use to help spark data-informed conversations with both the System Office and the constituent universities that make up the University of North Carolina and have limited value in isolation without institutional context and conversation. These dashboards can help the General Assembly, the System Office, and university leaders to come together and explore the drivers of costs at each institution, the relationship between fields of study and graduate employment, how higher education degree attainment affects lifetime earnings, and how State appropriations support student outcomes.

During the course of this project, the Deloitte team utilized centralized data from the UNC System data marts, proprietary data sets from BGI, the American Community Survey data, and workforce data from the NC Department of Commerce. To update the dashboards annually to incorporate the latest data and examine trend lines, the General Assembly in coordination with the System Office will need to consider a systematic methodology for data refreshes along with several other key opportunities to automate processes. These opportunities shown below will help institutional leaders further understand their data, understand their responsibilities in the data collection process, and avoid confusion related to metric outputs:

- Coordination with the Department of Commerce to receive regular updates in file formats that can feed the dashboards
- Exploration of data sharing agreements with the Internal Revenue Service to establish robust earnings data to capture earnings for populations that are not included in the NC Tower data such as out-of-State earnings, self-employed earnings, and federal government wages
- Establishment of an academic costing model committee that frequently updates meta-department structures, provides guidance for alignment of procedures related to expense booking, and oversees the exclusion/inclusion of cost components to help speed up (and ideally automate) the construction of academic costs models at each of the constituent universities
- Development of enhanced and refined centralized data collection as the central data marts are still relatively new that will include greater depth of analysis and additional time series analyses to understand how UNC is adapting to trends in education

Creating and updating the dashboards will involve many different stakeholder groups including the State legislature, the System Office, and each campus. Thus, an intentional focus on data collection, integration, and automation will bring together the dashboards faster and allow stakeholders to spend more time analyzing data as opposed to collecting data. Higher education is shifting rapidly as a result of evolving demographic and economic forces and there is an increased focus on how institutions demonstrate the value of the programs they deliver; therefore, a robust plan for dashboard refreshes will allow educational leaders to utilize the data before it becomes stale.

As conversations are held across the State regarding the results of analysis, new ideas for metrics and data sources will emerge and the General Assembly will need to consider how inclusion of those metrics may support the advancement of the UNC mission and vision. Through this engagement, the Deloitte team finalized the metrics for this first release of the dashboard in concert with the System Office, but the Advisory Committee (made up of academic leaders across campuses) all have provided additional topics for consideration in future releases. Common themes from the conversations with the Advisory Committee included:

- Inclusion of surveys and qualitative data related to alumni engagement, career readiness, mental health, and community engagement and other topics to support the student ROI evaluation
- Inclusion of institutional and student outcomes as they relate to research and public service
- Inclusion of revenues to assess profitability of programs

To conclude this report, we would again like to thank all the stakeholders within the System Office and the constituent universities who helped support this analysis. We hope that they see how their feedback and guidance came to life through the creation of the dashboards and this report. Educational leaders are constantly being challenged by new dynamics within higher education, and we hope that this report can serve as a starting point in creating dialogue in support of advancing the mission of the UNC System.

Appendix 1: About Deloitte and Our Partners

Deloitte is proud to partner with rpk GROUP and the Burning Glass Institute to deliver this report to the General Assembly and the UNC System Office.

About Deloitte

In the United States, Deloitte provides industry-leading consulting, risk and financial advisory, audit, and tax services to many of the world's most esteemed organizations. Deloitte Consulting serves eighty percent of the world's largest organizations. Building on more than 175 years of service, we aim to be the best at all that we do to help clients realize their ambitions, to make a positive difference in society, and to maximize the success of our people. This drive fuels the commitment and humanity that run deep through our every action.

Deloitte's Higher Education Practice

Institutions of higher education face ongoing challenges, including changing enrollment demographics, skyrocketing costs, intense competition, increased regulations, limited public funding, uncertain economic factors, and recently, an unprecedented public health crisis. Universities, colleges, and systems of higher education choose Deloitte to help address these challenges because of the depth and breadth of resources and experiences we bring to assist our higher education clients. The firm has delivered more than 100 years of service to higher education and has worked with more than 500 higher education institutions.

*We serve **more than 500 institutions of higher education** including:*

- *10 of the top 10 universities*
- *24 of the top 25*
- *65 of the top 100*

according to current U.S. News and World Report National University rankings.

For decades we have worked closely with higher education clients on their most pressing issues, including workforce strategies, strategic data modeling and analytics, business process re-engineering, financial sustainability and growth, ERP implementation, IT transformation, academic strategy, enrollment management, and student success. We have cultivated a broad comprehension of, and admiration for, the academic mission and shared governance culture of higher education institutions and systems. Our value comes from working with hundreds of institutions facing serious challenges and bringing that experience to you as a trusted advisor. Further, many of our team members have served in leadership roles at universities across the country.

We have helped organizations both within higher education and across industries capitalize on the disruptive trends reshaping our world, transforming their workforces into dynamic engines of future innovation. The pandemic blend of onsite, remote, and hybrid work is more than just a set of preferences and policy decisions: it is an unprecedented opportunity to rethink the nature of work and how we make learning happen for all students. Deloitte continues to help major organizations transition efficiently to hybrid operating models that combine onsite and remote work as they seek to balance their desire to improve the talent experience with their need to increase productivity.

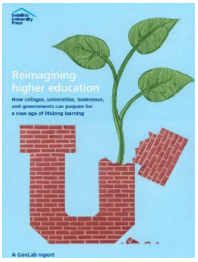
Work with Higher Education Systems

Dallas College
Louisiana Community and Technical College System
Massachusetts System of Public Higher Education
Minnesota State System
Pennsylvania's State System of Higher Education
Texas A&M System
University System of Arkansas
University of Tennessee System
Virginia Community College System

To help colleges and universities contend with strategic and operational challenges, Deloitte founded the Center for Higher Education Excellence. Through the Center, we engage the higher education community through forums and immersive lab sessions to increase collaboration and knowledge sharing in teaching, learning, and research. Some of the Center's recent research and thought leadership includes:

Success by design: Colleges and universities face challenges with student persistence and completion, as well as shifting demographic trends. However, through Deloitte's flexible framework, institutions can design programs and services that promote student success.

The future(s) of public higher education: How can U.S. state universities meet growing demands for relevance even as they face a funding squeeze? Here are five innovative ways that stakeholders can collaborate to deliver an effective yet affordable educational experience.



Reimagining Higher Education: Fracture lines can be seen across American higher education. Colleges, universities, businesses, and governments can prepare for a new age of lifelong learning and make American higher education more accessible, affordable, and relevant.

Deloitte's Analytics Leadership

For decades, Deloitte has helped higher education institutions solve the industry's most complex challenges by leveraging data-informed strategies and analytics. Deriving value from data is critical for institutions seeking to enhance their enrollment, student success, academic, and research outcomes. Deloitte has built an entire practice dedicated to the management and distillation of data to help clients unlock this value. We are continuously recognized as a market leader in data management and analytics and employ more than 3,200 professionals with this expertise.

Deloitte's expertise in analytics has been recognized time and again by experts, including seven consecutive years as Gartner's top-ranked Data and Analytics Service Provider, a leader in Gartner's Enterprise Insights Service Provider list, and IDC's leader in Business Analytics Consulting. Our core analytics capabilities are further augmented with proprietary data assets, tools, and accelerators which provide new and valuable insights to our clients including our Candidate360™ student lifecycle analytics solution and our proprietary PeoplePrism™ data set:

Gartner Magic Quadrant for Data & Analytics

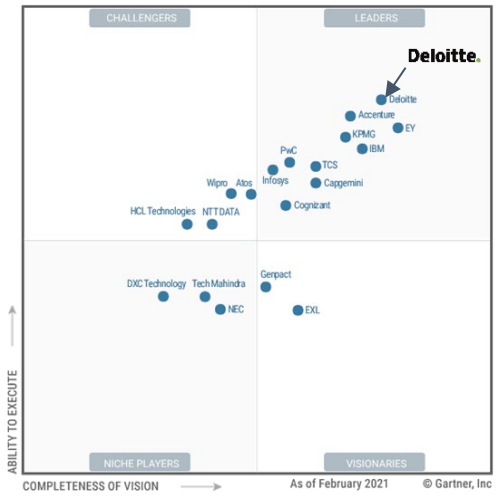


Figure 26: Deloitte's Positioning in Gartner Magic Quadrant

Deloitte's PeoplePrism™ data provides unique and compelling insights into the behavior patterns of households to augment and enhance UNC's existing data.

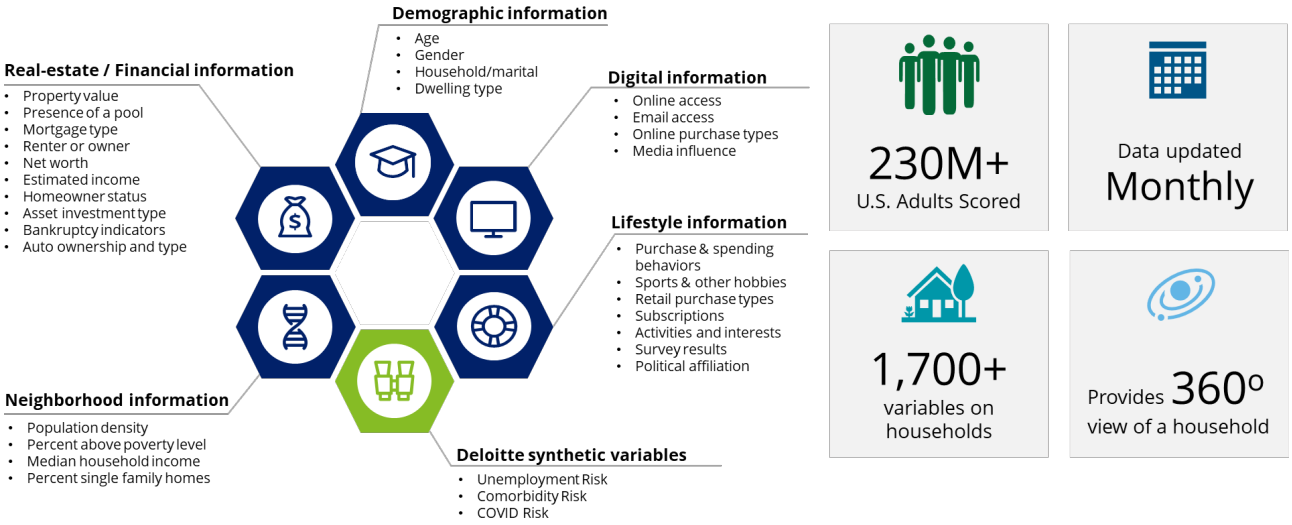


Figure 27: Summary of Deloitte's PeoplePrism data

We are also focused on the curation and development of data sources related to higher education and other sectors —a capability that will be significant in our work with the University. As an example, Deloitte launched DataUSA in April 2016 through a partnership among Deloitte, MIT Media Labs, and Datawheel. Data USA is the most comprehensive visualization engine of US public data. Located in a central database, free to access, and easy to navigate, the solution allows institutions to quickly analyze a large number of data points from workforce demographics to industry-specific compensation and job demand. The high-powered tool enables organizations to quickly develop marketplace insights that would previously have taken significant manpower to compile, normalize, and compute the data – ultimately leading to faster business decisions based on reliable information. Beyond this public example, we have extensive experience curating workforce and higher education data though both publicly available sources (as with DataUSA) as well as through proprietary datasets held within the firm and accessed through partnerships.

Deloitte's Future of Work Institute for Higher Education

Our recent development of the Future of Work Institute provides student-level and national insights and training on the intentional transition of students into an ever-evolving workforce. Rooted in a curriculum of interactive labs and independent research and exploration, the Future of Work Institute draws on the expertise of seasoned, career-oriented university executives from across the country to build workshops, trainings, knowledge, and insights into how students can design lives and careers in authentic, mindful, and proactive ways. Launched in 2020 and piloted with seven universities in the Fall of 2021, the Future of Work Institute labs allow Deloitte to explore the boundary of employer-university relationships, develop cutting-edge models of professional development for students, and help students define a coherent vision for themselves as dynamic individuals positioned to make an impact in their professional lives after graduation.

Deloitte's Commitment to North Carolina

Deloitte enjoys a strong working relationship with both the State of North Carolina and businesses that call the State home. We have over 2,100 professionals living and working across North Carolina, with offices in Raleigh, Charlotte, Greensboro, and Morrisville and have a 20-year history working with State agencies in North Carolina. Beginning with the first Enterprise Resource Planning system in NC, we have since successfully delivered multiple large system

integration projects including the State's pension system (ORBIT), the Statewide HR/Payroll and Shared System (BEACON), a benchmarking analysis, NCGEAR, the State's cloud service broker project, a Statewide Longitudinal Data System (CEDARS), a Security Information and Event Management (SEIM) solution, and cyber risk assessment services. We are proud to state that all projects were delivered on time, with a high degree of fidelity, and on or under budget.

Similarly, we are proud to benefit from UNC's dedication to its students' success by recruiting more than 1,100 current Deloitte professionals that have graduated from the UNC System including representation from all sixteen institutions. In the past year alone, Deloitte hired 368 UNC alumni as campus and experienced hires. Your alumni help build the backbone of Deloitte offices in Charlotte, Rosslyn, Raleigh, and Atlanta and many become leaders at our firm: Deloitte currently has 92 senior-level leaders that graduated from the UNC System.

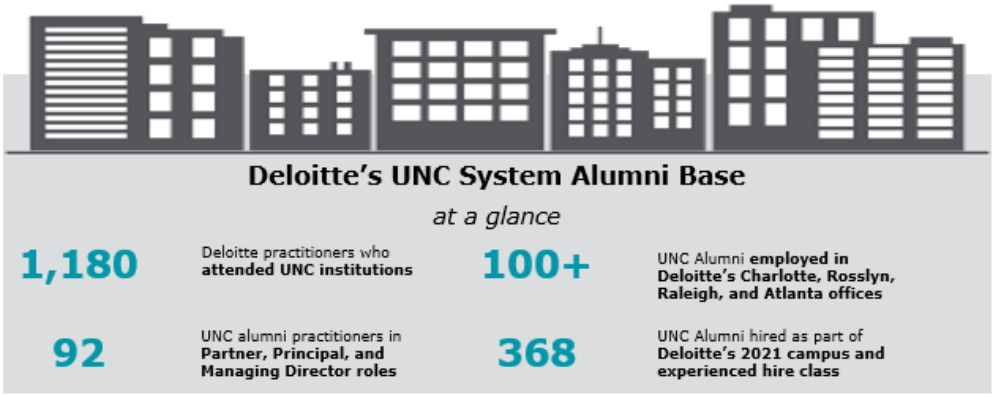


Figure 28: Summary of Deloitte's UNC System Alumni Base

About Our Partners

Our partners for this engagement bring custom methodologies, unique experiences, and access to proprietary data to augment Deloitte's capabilities and bring the best possible solution to UNC. We are very pleased to bring the combined power of both rpk GROUP and the Burning Glass Institute to answer the requests of the General Assembly

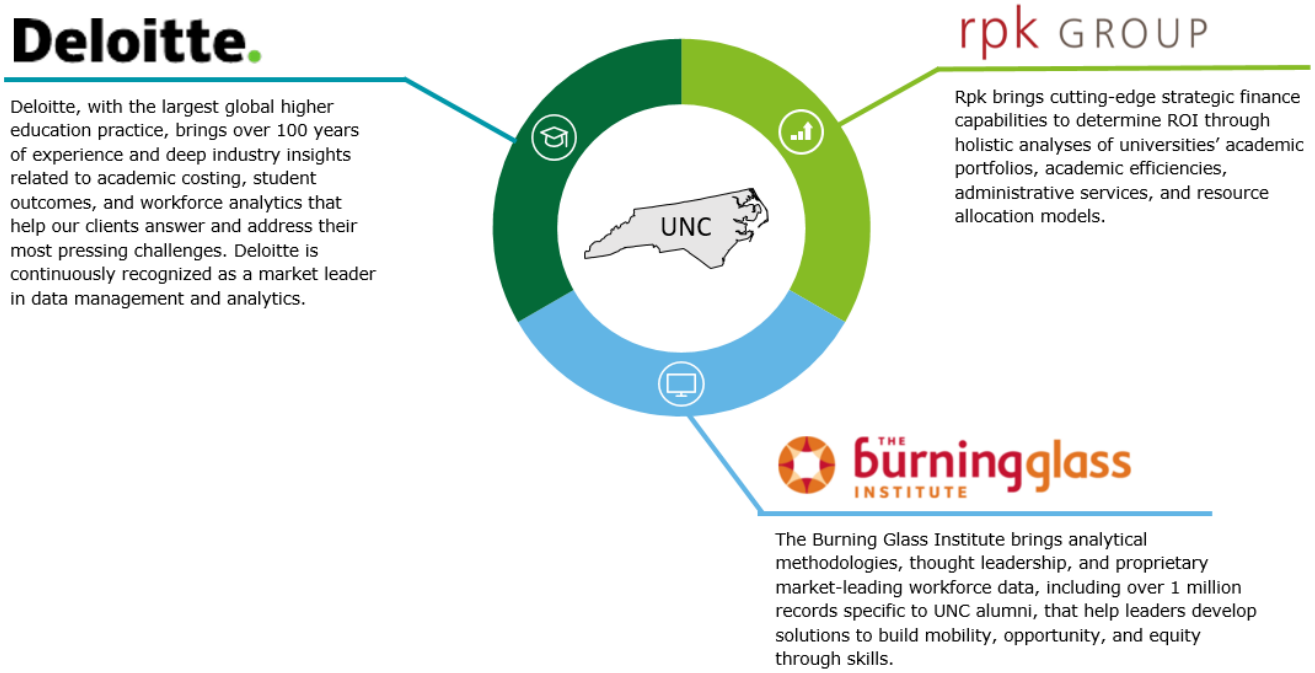


Figure 29: Deloitte and its Engagement Partners

About rpk GROUP

rpk GROUP ("rpk") is a leading mid-size national consulting firm supporting colleges and universities, systems, and nonprofits with their growth and resource allocation (and reallocation) strategies. Our firm has worked with institutions and postsecondary education systems nationwide and internationally, helping them to combine cutting-edge research on higher education strategic finance with systems change. This combination of a research focus around new business models, and an ability to work with higher education institutions and systems to implement best practices emerging from this research, makes rpk GROUP unique among consulting practices. rpk's work has supported the application of a new return on investment lens (ROI) at its institutional and system partners. Most recently, this work supported the University of Kansas in a holistic analysis of its academic portfolio, academic efficiencies, administrative services, and resource allocation model. The ROI lens is also currently being utilized at East Carolina University in support of greater transparency around its business model and the creation of performance metrics.

rpk GROUP's past Higher Education and related work includes:

- Vermont State Colleges System
- University System of Maryland
- SUNY System
- West Virginia Higher Education Policy Commission
- The University of Texas at Austin
- University of South Carolina
- EDUCAUSE
- Bill and Melinda Gates Foundation
- University of Kansas

About Burning Glass Institute

Situated at the intersection of learning and work, the Burning Glass Institute (BGI) advances data-driven research and practice on the future of work and workers. We work with educators, employers, and policymakers to develop solutions that build mobility, opportunity, and equity through skills.

Today's job market is being reshaped by unprecedented dynamism, with significant implications for our society. 30% of the average job's skills have been replaced over the past decade, challenging higher education to keep up and threatening the industry with the prospect of a major talent disruption. **How can companies and communities ensure that the workforce they have can be the workforce they need for the future?** In this context, the Burning Glass Institute's work is increasingly urgent. Industry suffers severe talent shortages even as many workers remain stuck on a treadmill of low-wage employment. Companies struggle to attract diverse workers even as many talent pools go underleveraged. Colleges and universities too often fail to align their programs with labor market demand, leading to disappointing outcomes for graduates and poor returns on education and training investments for students and the public alike. Meanwhile, the sizeable opportunity and growing need to support workers in acquiring new skills throughout their careers go unaddressed amidst declining higher education enrollments. The impact of these problems extends beyond individual employers or institutions. The inability to predict and build pipelines for future talent needs challenges the competitiveness of regions, sectors, and nations.

Through our expertise in mining new datasets for actionable insight, the Burning Glass Institute's research draws attention to pressing problems and frames the potential for new approaches. Through project-based engagement, focused working groups, and data sharing collectives, we bring forward solutions that are high-impact and replicable.

The Institute's leadership invented the field of real-time labor market analysis, a breakthrough innovation that transformed the way employers, education institutions, policy makers, and workers understand, plan for, and connect with the world of work. As such, our work leverages our direct access to and intimate familiarity with the comprehensive and uniquely insightful data of market leader Lightcast. While static data sources such as the Bureau of Labor Statistics provide useful but dated market trends through a survey-based approach, Burning Glass's datasets deliver a real-time view into job market changes happening today.

Appendix 2: Governance Group Members

Steering Committee Members

The Steering Committee was composed of eight leaders from the System office joined by Jenna Bryant who helped manage the project:

Jenna Bryant

Engagement Manager

David English

Senior VP for Academic Affairs and Chief Academic Officer

Daniel Harrison

Senior Associate VP for Academic and Regulatory Affairs

Jennifer Haygood

Senior VP for Finance and Administration and Chief Financial Officer

Andrew P. Kelly

Senior Vice President for Strategy and Policy

Diane Marian

Vice President for Data and Analytics

Lindsay McCollum

Vice President for Finance and Budget

Michael Vollmer

Chief Operating Officer

Rondall Rice

Executive Director for Operations & Administration

Advisory Committee Members

The Advisory Committee was comprised of leaders from across the campuses, encompassing a wide range of viewpoints and perspectives:

Anthony Artimisi
Winston-Salem State University
Interim Associate Provost for Academic Strategy and Institutional Effectiveness

Carol Burton
Western Carolina University
Vice Provost for Academic Affairs

Sarah Carrigan
North Carolina Central University
Associate Vice Chancellor for Institutional Research

Amy Hertel
UNC Chapel Hill
Executive Vice Provost

Tim Ives
UNC System
Faculty Assembly Representative

Jeff Konz
UNC Asheville
Director of Institutional Research

Nicole Lucas
Fayetteville State University
Associate Vice Chancellor for Institutional Effectiveness / Institutional Research

Andy Mauk
UNC Wilmington
Associate Provost Institutional Research and Planning

Mike McKenzie
Appalachian State University
Vice Provost for Academic Program Development and Strategic Initiatives

Elizabeth Normandy
UNC Pembroke
Associate Vice Chancellor of Planning and Accreditation

Margery Overton
North Carolina State University
Senior Vice Provost for Institutional Strategy and Analysis

Gloria Payne
Elizabeth City State University
Vice Provost

Jodi Pettazzoni
UNC Greensboro
Associate Vice Provost and Director and SACSCOC Liaison

Patrick Sims
UNC School of the Arts
Executive Vice Chancellor and Provost

Arwin Smallwood
North Carolina A&T State University
Interim Vice Provost for Undergraduate Education

Gregory Weeks
UNC Charlotte
Associate Dean, College of Liberal Arts and Sciences

Ying Zhou
East Carolina University
Associate Provost for Institutional Planning, Assessment, and Research

Data Owners Group

The data owners group helped the team collect and evaluate the data within each constituent university setting.

McKinney Austin
North Carolina State University
Director of Institutional Analytics

Karen Blackwell
UNC Greensboro
Director of Institutional Research and Enterprise Data Management

Elizabeth Davis
UNC School of the Arts
Interim Senior Director of Institutional Research and Planning

Sandra Davis
North Carolina Central University
Director of Institutional Studies

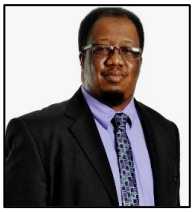
Lily Hwang
North Carolina A&T State University
Director of Institutional Research

Beverly King
East Carolina University
Director of Institutional Research

Jeff Konz
UNC Asheville
Director of Institutional Research

Heather Langdon
Appalachian State University
Executive Director of Institutional Research

Tim Metz
Western Carolina University
Assistant Vice Chancellor for Institutional Planning and Effectiveness



Willie Moore
Fayetteville State University
Director and Chief Data Officer of Institutional Research

Becky Mussat-Whitlow
Winston-Salem State University
Director of Institutional Effectiveness and Planning, Institutional Assessment, and Research

Fred Okanda
Elizabeth City State University
Director of Office of Institutional Effectiveness, Research, and Assessment

Rob Ricks
UNC Chapel Hill
Director of External Reporting

Michael Smith
UNC Wilmington
Director of Institutional Research and Analytics

Wayne Stone
UNC Charlotte
Senior Director for Institutional Research

Chunmei Yao
UNC Pembroke
Director of Institutional Research

Errata Table

Date	Update	Version
November 20, 2023	Final data update and refresh pre-publication	Version 2
November 20, 2023	Addressed data typo in executive summary	Version 3
February 29, 2024	Updated footnote [12] to describe student count methodology in the report and dashboard. The initial calculations were summarized at the student ID and institution-levels. The revised calculations have been updated to summarize the data by student ID, institution, and field of study as well as to reconcile the alignment of 2- and 6-digit CIP codes. These calculations include student investment, earnings data, and return on investment. This is reflected in a median incremental lifetime return on investment for an undergraduate degree-completing student of $497,123 and median incremental lifetime return on investment for a graduate degree-completing student of $919,422, a change from $494,091 and $930,515, respectively. This calculation change also carries through to the calculation of student investment (page 32), program counts (executive summary document) and to the charts, graphs, and exhibits. Updated degree production totals (page 28) to correct typo in prior version of report. Updated photos of Tim Metz and Karen Blackwell.	Version 4