

## Market Demand & Opportunity Analysis University of North Carolina Greensboro (UNCG)

August 3, 2023 (revised)<sup>1</sup>

The Market Demand and Opportunity (MDO) analysis is designed to provide forward-looking insight into the alignment between UNCG's current academic portfolio (all certificate and degree offerings) and expected employment opportunities in North Carolina over the next decade. The MDO analysis incorporates three different approaches to assess the alignment between UNCG's programs and projected labor market demand:

- **Program analysis** examines the North Carolina labor market demand and wages for occupations that map to existing UNCG programs.
- **Competitor analysis** examines the strength of similar program offerings at other four-year competitor institutions in North Carolina.
- **Gap analysis** identifies growing occupations for which UNCG does not currently offer programs, and the competitor landscape surrounding the programs to prepare students for these jobs.

### **Key highlights from these analyses show:**

- Two-thirds, or 121, of UNCG's academic programs are preparing students for occupations with a strong or moderate employment outlook and above median wages.
- Only about 20% of UNCG programs (39) have a weak employment outlook, but three-quarters of those programs (28) still prepare students for occupations with higher-than-median wages.
- The School of Nursing and the School of Business and Economics are most likely to offer programs (100% and 76%, respectively) that position graduates to access occupations with strong employment and wage opportunities.
- Programs with the weakest employment outlook are concentrated in the School of Music Department and the Consumer Apparel-Retail Studies Department in the School of Business and Economics.
- Thirty percent of UNCG's current programs (65) have a strong market position, with few competitor institutions offering similar programs, accompanied by evidence of robust student demand among the institutions that do offer those programs. In the Schools of Business and Economics and Education, more than 40% of the programs demonstrate a strong market position.
- Engineering programs (Civil, Industrial, and Mechanical) should be considered as a potential new investment area for UNCG since these high-wage occupations can expect strong employment growth in North Carolina.

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<sup>1</sup> This document replaces a previously shared version dated June 1, 2023. It removes recommendations to explore new academic programs related to substance abuse, behavioral disorder, and mental health counselors as UNCG already offers several programs. It also includes new methodological details in the appendix.

## North Carolina Statewide Employment Trends

North Carolina is projected to add 445,700 new jobs between 2021 and 2030, an increase of 9%. During this same period, more than 6.3 million job openings (705,600 annually) are projected from a combination of new job creation and workers leaving their current jobs as they exit the labor force or change occupations.

The fastest **new job growth** is in computer and mathematical occupations (21%) which includes college-level jobs, followed by healthcare support, personal care and service, and food preparation and serving occupations which primarily include non-college level jobs.

The greatest **number of job openings** over the next decade are expected in non-college level occupations, which tend to experience more worker turnover (see Figure 1). Among occupations with heavy concentrations of college-level jobs, those with the most job openings include management (36,400 annually), business and financial operations (36,000 annually), and educational instruction and library (30,400 annually).

### Program Analysis

The program analysis demonstrates how well UNCG's current academic programs serve the North Carolina state economy and the student populations enrolled post-graduation. In both the program and gap analyses, programs are organized into three employment categories:

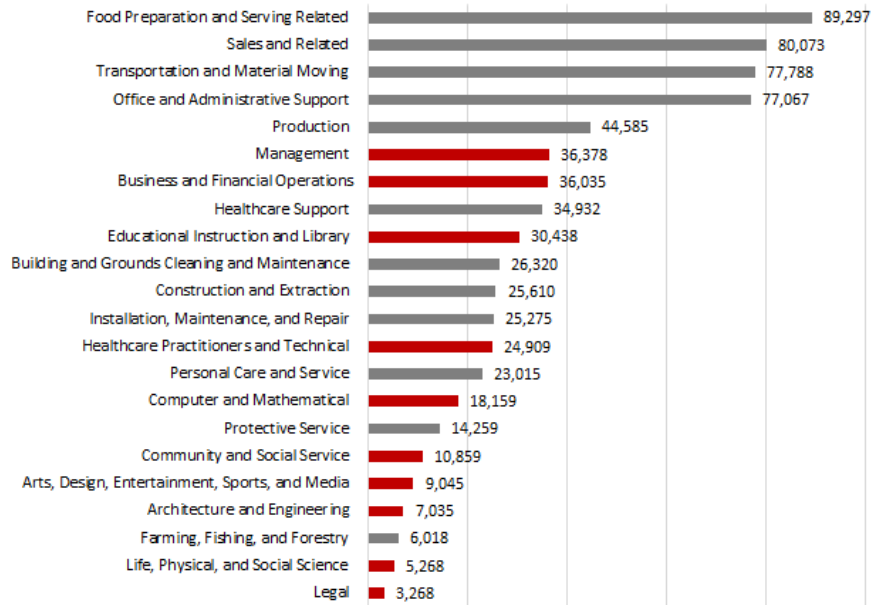
1. **Strong Employment Outlook** – at or above average new job growth *and* job openings
2. **Moderate Employment Outlook** - new job growth at or above average *and* below-average job openings **OR** below-average new job growth *and* job openings at or above average
3. **Weak Employment Outlook** - below average new job growth *and* below average job openings

and two wage areas:

1. **High Wage** - equal or exceeding the median annual wage
2. **Low Wage** - below median annual wage

Results from the program analysis show that the majority of UNCG's current academic programs (130 or 70%) have a strong or moderate employment outlook (see Table 1). These programs are equally distributed within these two employment outlook categories, and nearly all programs with strong employment outlook offer higher than median wages (34%), as do most programs with a moderate outlook (31%). Even programs with a weak employment outlook tend to offer high wages, but eight programs (4%) offer low wages and a weak employment outlook.

Figure 1: North Carolina Projected Annual Job Openings by Occupational Group, 2021-2030



Note: Red bars indicate the typical education level for that occupation includes a college degree.  
Source: rpk GROUP analysis of North Carolina Occupational Employment Projections, 2021-2030, North Carolina Department of Commerce.

**Table 1: Employment and Wage Outlook for UNCG Academic Programs**

Employment Outlook	Wage Category	Program Count	Program % Distribution
Strong Employment Outlook	High Wage	64	34%
	Low Wage	1	1%
<b>Strong Employment Outlook Total</b>		<b>65</b>	<b>35%</b>
Moderate Employment Outlook	High Wage	57	31%
	Low Wage	8	4%
<b>Moderate Employment Outlook Total</b>		<b>65</b>	<b>35%</b>
Weak Employment Outlook	High Wage	28	15%
	Low Wage	8	4%
	No Wage Category	3	2%
<b>Weak Employment Outlook Total</b>		<b>39</b>	<b>21%</b>
No Employment Category		17	9%
<b>No Employment Category Total</b>		<b>17</b>	<b>9%</b>
<b>Total</b>		<b>186</b>	<b>100%</b>
<b>Average New Job Growth in NC 9.1%   Average Annual Job Openings in NC 857   Median Annual Wage in NC \$47,745</b>			
<p>Note: The 'no employment category' includes 1) occupations without projections because they do not meet the North Carolina Department of Commerce's reporting threshold, or 2) occupations without a match in the Classification of Instructional Programs (CIP) – Standard Occupational Classification (SOC) crosswalk and a custom match could not be identified. All programs linked to the liberal arts index (occupations in which liberal arts graduates are often employed; see Appendix) are categorized as having a Strong Employment Outlook and High Wage; these programs are <b>not</b> included in this table.</p> <p>Source: rpk GROUP analysis of UNCG Academic Programs data and NC Department of Commerce Employment Projections, 2021-2030.</p>			

UNCG’s academic programs with the most promising employment outlook and high wages are found across six different colleges and at all award levels (See Table 2). Each of these programs prepares students for occupations where new job growth is projected to equal or exceed 25% and approximately 1,000 or more annual job openings.

Among the programs with the strongest outlook, bachelor’s and master’s degrees in **Computer Science** are linked to occupations where more than 10,000 job openings are expected annually. Master’s degrees in **Informatics & Analytics** and bachelor’s degrees in **Information Science** are both expected to provide access to occupations where more than 7,000 job openings are expected annually. Doctoral-level **Nursing** programs are preparing graduates for occupations projected to grow by 40% over the next decade and expected to offer about 1,100 job openings annually. Occupations tend to employ workers with different levels of educational preparation, so different degrees and certificates offered within similar programs may provide access to the same occupations. Differing education levels could lead to different levels of responsibility and wages earned within those occupations.

rpk GROUP compiled an index of jobs where liberal arts graduates have been historically employed (see Appendix, Table A1). UNCG graduates with liberal arts degrees (see Appendix, Table A2) can also expect to find strong employment opportunities in North Carolina. These occupations are collectively expected to grow 12.8% between 2021 and 2030 and offer 81,500 annual job openings, alongside above-median wages.

**Table 2: Top 10 UNCG Programs with Strong Employment Outlook and High Wages**

College/School	Department	Program	Award	Projected New Job Growth 2021-2030	Projected Average Annual Job Openings 2021-2030	Median Annual Wage 2021
Nursing	Nursing	Doctor of Nursing Practice	Doctorate	40%	1,103	\$94,458
Nursing	Nursing	Nursing	Doctorate	40%	1,103	\$94,458
Business and Economics	Consumer Apparel-Retail Studies	Global Apparel Supply Chain Management	Certificate	36%	969	\$63,640
Business and Economics	Info Systems and Supply Chain Management	Supply Chain Management	Certificate	36%	969	\$63,640
Interdisciplinary	Health Management	Health Management	Master's	32%	1,776	\$99,630
Arts and Sciences	Informatics and Analytics	Informatics & Analytics	Master's	29%	7,802	\$112,989
Education	Library & Information Science	Information Science	Bachelor's	28%	7,684	\$112,252
Arts and Sciences	Computer Science	Computer Science	Master's	27%	10,827	\$109,386
Arts and Sciences	Computer Science	Computer Science	Bachelor's	27%	11,241	\$107,781
Health and Human Sciences	Public Health Education	Community Health Education	Doctorate	25%	1,468	\$105,250
Note: Programs aligned with occupations accessible to liberal arts graduates are not included in this table because none were in the top 10 ranking. Occupations may map to multiple programs because there are various degrees and programs that prepare students to access a particular occupation; in these instances, different programs may display the same employment and wage data. Source: rpk GROUP analysis of UNCG Academic Programs data and NC Department of Commerce Employment Projections, 2021-2030.						

UNCG also offers several programs with weak employment and earnings prospects (see Table 3). These programs are concentrated in the College of **Visual/Performing Arts** and the School of **Business and Economics**. Employment opportunities for certificates, master's and doctoral degrees in **music, performance, and study** have below average job growth, annual openings, and wages. Similarly, five programs offered in the department of **consumer apparel-retail studies** are preparing students across all degree levels for occupations with little expected growth.

**Table 3: UNCG Programs with Weak Employment Outlook and Low Wages**

College/School	Department	Program	Award	Projected New Job Growth 2021-2030	Projected Average Annual Job Openings 2021-2030	Median Annual Wage 2021
Visual/Performing Arts	School of Music	Music	Doctorate	8%	815	\$35,726
Visual/Performing Arts	School of Music	Performance	Master's	8%	815	\$35,726
Visual/Performing Arts	School of Music	Music Performance Study	Certificate	8%	529	\$ 14,442
Business and Economics	Consumer Apparel-Retail Studies	Consumer, Apparel, and Retail Studies	Bachelor's	1%	12	\$ 31,260
Business and Economics	Consumer Apparel-Retail Studies	Consumer, Apparel, and Retail Studies	Doctorate	1%	15	\$31,260
Business and Economics	Consumer Apparel-Retail Studies	Global Fashion Industry Management	Certificate	1%	12	\$31,260
Business and Economics	Consumer Apparel-Retail Studies	Retail Consumer Data Analytics	Certificate	1%	12	\$31,260
Business and Economics	Consumer Apparel-Retail Studies	Retail Studies	Master's	1%	12	\$31,260
Note: Occupations may map to multiple programs because there are various degrees and programs that prepare students to access a particular occupation; in these instances, different programs may display the same employment and wage data.						

As we look within individual UNCG schools, it's clear that all schools (except Nursing) offer programs with strong, moderate, and weak employment outlooks (see Table 4). All **Nursing** school programs are well-positioned to prepare graduates for occupations with strong employment opportunities and high wages. The School of **Business and Economics** also offers a high concentration of programs (74%) with similarly strong employment growth and wages.

The College of **Visual/Performing Arts** offers programs with a variety of employment outlooks, but about 60% of their programs are linked to occupations with a weak employment outlook; even so, half of those programs still offer high wages. The Joint School of **Nanoscience/Nanoengineering** is the only college or school without programs linked to occupations with a strong employment outlook; three out of seven programs it offers have a weak employment outlook, although all programs are linked to occupations that offer higher than median wages.

**Table 4: Employment and Wage Outlook Distribution Across Colleges and Schools (Program Count & Distribution)**

Employment Outlook	Wage Category	Arts and Sciences	Visual/Performing Arts	Health and Human Sciences	Nanoscience / Nano-engineering	Business and Economics	Education	Nursing
Strong Employment Outlook	High Wage	18 (35%)	1 (4%)	5 (15%)		26 (74%)	6 (21%)	8 (100%)
	Low Wage			1 (3%)				
Moderate Employment Outlook	High Wage	20 (38%)	4 (17%)	15 (44%)	2 (29%)	1 (3%)	16 (55%)	
	Low Wage	1 (2%)	1 (4%)	6 (18%)				
Weak Employment Outlook	High Wage	7 (13%)	8 (35%)	3 (9%)	3 (43%)	2 (6%)	5 (17%)	
	Low Wage		3 (13%)			5 (14%)		
	No Wage Category		3 (13%)					
No Employment Category	No Wage Category	6 (12%)	3 (13%)	4 (12%)	2 (29%)	1 (3%)	2 (7%)	
<b>Total</b>		<b>52 (100%)</b>	<b>23 (100%)</b>	<b>34 (100%)</b>	<b>7 (100%)</b>	<b>35 (100%)</b>	<b>29 (100%)</b>	<b>8 (100%)</b>

Note: There are 188 total programs shown in this table because two programs are affiliated with more than one college/school.

Source: rpk GROUP analysis of UNCG Academic Programs data and NC Department of Commerce Employment Projections, 2021-2030.

## Competitor Analysis

The competitor analysis examines the market viability and opportunity of the academic programs currently offered by UNCG. Information from the National Student Clearinghouse was used to identify UNCG's 10 largest competitor institutions, all of which are located in North Carolina (see Appendix, Table A3). By connecting competitor program awards to similar programs at UNCG, the market saturation (number of competitors offering the program) and program demand (competitor growth in degree and certificates awards) can be assessed in the competitor space. Programs are organized into three categories informed by market saturation and competitor growth in degree and certificate awards:

1. **Strong Market Opportunity** - below 50% market saturation & at least 50% of competitors offering the program demonstrate positive growth
2. **Moderate Market Opportunity** - below 50% market saturation & less than 50% of competitors offering the program demonstrate positive growth **OR** Above 50% market saturation & at least 50% of competitors offering the program demonstrate positive growth

3. **Limited Market Opportunity** - above 50% market saturation & less than 50% of competitors offering the program demonstrate positive growth

Results from the competitor analysis show that 30% of UNCG’s current programs are strongly positioned to take advantage of market opportunities, with anticipated student interest and few offerings among competitor institutions (see Table 5). Two-thirds of these programs offer bachelor’s degree (11%) or postbaccalaureate certificates (9%). Another quarter of UNCG’s programs indicate moderate market opportunities, with most at the bachelor’s (11%) and master’s (9%) degree levels. Only 11% of UNCG’s programs are expected to have limited market opportunity because of strong competition or limited visible demand among the university’s competitors.

**Table 5: Market Opportunity for UNCG Academic Programs**

Market Opportunity	Award	Program Count	Program % Distribution
Strong Market Opportunity	Bachelor's	23	11%
	Postbaccalaureate certificate	20	9%
	Master's	14	7%
	Doctorate	8	4%
<b>Strong Market Opportunity Total</b>		<b>65</b>	<b>30%</b>
Moderate Market Opportunity	Bachelor's	24	11%
	Postbaccalaureate certificate	3	1%
	Master's	19	9%
	Post-master's certificate	1	0%
	Doctorate	9	4%
<b>Moderate Market Opportunity Total</b>		<b>56</b>	<b>26%</b>
Limited Market Opportunity	Bachelor's	14	7%
	Master's	9	4%
<b>Limited Market Opportunity Total</b>		<b>23</b>	<b>11%</b>
No Competitor Data	Bachelor's	4	2%
	Postbaccalaureate certificate	39	18%
	Master's	14	7%
	Post-master's certificate	3	1%
	Doctorate	11	5%
<b>No Competitor Data Total</b>		<b>71</b>	<b>33%</b>
<b>Total</b>		<b>215</b>	<b>100%</b>

Note: 'No Competitor Data' indicates a competitor could offer the program, but completions are <1 across FY18 – FY21; alternately, competitors may classify a similar program using a different CIP code.  
 Source: rpk GROUP analysis of IPEDS Completions Survey, 2018-2021.

In the School of **Business and Economics** more than 40% of the programs are expected to have a strong market position (see Table 6). In addition, 30% or more of programs offered in the College of **Arts and Sciences**, Schools of **Health and Human Sciences, Education**, and Joint School of **Nanoscience/Nanoengineering** are strongly positioned to serve student interested in the current market environment. The Colleges of **Arts and Sciences**, offers the greatest number of programs (12, or 17%) with the limited market opportunities because of low student demand or strong existing competition.

**Table 6: Market Opportunity Distribution Across Colleges and Schools (Program Count and Distribution)**

Market Opportunity	Arts and Sciences	Visual/ Performing Arts	Health and Human Sciences	Nanoscience / Nano-engineering	Business and Economics	Education	Nursing
Strong Market Opportunity	21 (30%)	3 (10%)	13 (36%)	2 (29%)	15 (43%)	11 (38%)	
Moderate Market Opportunity	23 (32%)	10 (32%)	11 (31%)		4 (11%)	6 (21%)	3 (38%)
Limited Market Opportunity	12 (17%)	3 (10%)	1 (3%)		2 (6%)	4 (14%)	1 (13%)
No Competitor Data	15 (21%)	15 (48%)	11 (31%)	5 (71%)	14 (40%)	8 (28%)	4 (50%)
<b>Total</b>	<b>71 (100%)</b>	<b>31 (100%)</b>	<b>36 (100%)</b>	<b>7 (100%)</b>	<b>35 (100%)</b>	<b>29 (100%)</b>	<b>8 (100%)</b>

Note: 'No Competitor Data' indicates competitors could offer a program, but awards are <1 across FY18 – FY21; alternately, competitors may use a different CIP code to classify a similar program. There are 217 total programs shown in this table because two programs are affiliated with more than one college/school.  
 Source: rpk GROUP analysis of IPEDS Completions Survey, 2018-2021.

**Gap Analysis**

The gap analysis takes a statewide perspective on employment growth. It looks to identify occupations where strong or moderate job growth is expected in North Carolina, but UNCG does not offer any programs preparing students for those jobs. The gap analysis highlights areas of consideration for potential academic program development.

**Table 7: Occupations with Strong/Moderate Employment Outlook, High Wages, and No Affiliated UNCG Program**

Occupation Code (SOC)	Occupation	Typical Educational Requirement	Projected New Job Growth 2021-2030	Projected Average Annual Job Openings 2021-2030	Median Annual Wage 2021
29-1071	Physician Assistants	Master's	29%	624	\$107,330
29-1123	Physical Therapists	Doctoral/ Professional	19%	532	\$79,240
17-2112	Industrial Engineers	Bachelor's	16%	818	\$81,380
17-2051	Civil Engineers	Bachelor's	14%	1,107	\$78,960
17-2141	Mechanical Engineers	Bachelor's	12%	711	\$79,570
23-1011	Lawyers	Doctoral/ Professional	11%	1,133	\$105,140
29-2010	Clinical Laboratory Technologists and Technicians	Bachelor's	9%	1,077	\$48,000

Note: Table includes high-wage occupations with a strong employment outlook, and high-wage occupations with a moderate employment outlook where new job growth is above average and annual job openings are greater than 500. Occupations accessible with a liberal arts degree are excluded from this table.  
 Source: rpk GROUP analysis of UNCG Academic Programs data and NC Department of Commerce Employment Projections, 2021-2030.

The gap analysis reveals eight occupations at various degree levels that could be candidates for program consideration (see Table 7). The occupations are centered in **health care, engineering, and the legal field**. Development of these programs may require creating new colleges, schools, or departments since few are aligned with existing UNCG schools.

In the health field, **Physician Assistants** and **Physical Therapists** both require graduate-level programs, while **Clinical Laboratory Technologists and Technicians** typically earn bachelor's degrees. Within engineering, **Civil and Mechanical Engineers** are expected to offer strong employment opportunities and require only bachelor's degree programs. While **Lawyers** will have similar opportunities, preparing students for those opportunities would require the creation of a post-graduate professional school.



This analysis also considered other state colleges and universities that may already offer programs preparing students for these jobs. It includes the same ten institutions included in the competitor analysis (see Appendix, Table A3). The data show that very few UNCG competitors, generally one or two institutions, offer the programs that will prepare students for these growing occupations. Only one program, a physical therapist doctoral degree, was offered by almost half of the competitor institutions (see Table 8).

**Table 8: Competitor Analysis for Areas Identified as UNCG Program Gaps**

Occupation	Programs Linked to Occupation	UNCG Competitors Offering the Program	Average Awards per Year	Number of Competitors by Growth Trend 2017-2021		
				Positive	None	Negative
<b>Strong Employment Outlook</b>						
Civil engineers	Civil Engineering, General - Bachelor's	2	118	2	0	0
	Civil Engineering, General - Master's	2	41	2	0	0
	Construction Engineering - Bachelor's	1	16	0	1	0
	Construction Engineering - Master's	1	4	1	0	0
Clinical laboratory technologists and technicians	Clinical Laboratory Science/Medical Technology/Technologist - Bachelor's	3	25	2	0	1
	Clinical Laboratory Science/Medical Technology/Technologist - Master's	1	5	0	0	1
Lawyers	Law – Doctorate/Professional	2	162	0	0	2
	Programs for Foreign Lawyers - Master's	1	2	0	0	1
<b>Moderate Employment Outlook</b>						
Industrial engineers	Engineering/Industrial Management - Bachelor's	1	15	1	0	0
	Engineering/Industrial Management - Master's	2	20	1	0	1
	Industrial Engineering - Bachelor's	1	92	1	0	0
	Industrial Engineering - Master's	1	56	1	0	0
	Manufacturing Engineering - Master's	1	43	1	0	0
	Systems Engineering - Bachelor's	1	47	0	0	1
Mechanical engineers	Mechanical Engineering - Bachelor's	2	236	1	0	1
	Mechanical Engineering - Master's	2	63	1	0	1
	Mechanical Engineering – Postbaccalaureate certificate	1	1	1	0	0
Physical therapists	Kinesiotherapy/Kinesiotherapist - Master's	1	13	0	0	1
	Physical Therapy/Therapist - Doctorate	4	34	2	1	1
Physician assistants	Physician Associate/Assistant - Master's	2	26	1	0	1
<i>Source: rpk GROUP analysis of NC Department of Commerce Employment Projections, 2021-2030 and IPEDS Completions Survey, 2017-2021.</i>						

The **civil, mechanical, and industrial engineering** programs produce the largest number of degrees across the competitors, along with **law** programs. While this signals that sizable programs already exist elsewhere in the state, the trend among degree completions in the engineering programs is largely positive, suggesting there is strong student demand. However, all the competitors offering law programs showed a negative trend in completions, suggesting weak student demand.

## Conclusion



The MDO analysis collectively shows that the majority of UNCG's academic programs are strongly or moderately aligned with expected employment opportunities in North Carolina over the next decade. And regardless of the employment outlook, 88% of UNCG programs are expected to provide students with access to occupations that offer above median wages. Programs with the strongest employment outlook are concentrated in Nursing, Business and Economics, and Computer Science. However, the School of Business and Economics, along with the School of Visual/Performing Arts, also offers multiple programs with poor employment prospects over the next decade.

An examination of programs offered by UNCG's competitors indicates that 30% of UNCG's programs are expected to offer strong market opportunities going forward, meaning the current competitor landscape is not currently saturated and there is evidence of student demand. The strongest opportunities for continued or increased investment in current UNCG programs are among the bachelor's degree program offerings, and particularly in the Schools of Business and Economics, and Education. The College of Arts and Sciences offers a variety of programs with strong and moderate market opportunities, but also houses the largest number of programs with weak market opportunities.

UNCG could consider adding new bachelor's degree programs in civil, industrial, and mechanical engineering to prepare students for these engineering jobs, which are projected to offer high wages and strong employment opportunities over the next decade. However, those new programs would be a significant investment for UNCG.

## ***Appendix***

The goal of the MDO's **program analysis** is to determine how well programs currently offered at UNCG serve 1) the North Carolina state economy and 2) the student populations enrolled post-graduation. The MDO **gap analysis** uses the same information but examines it from a different perspective and identifies 1) the occupations offering the greatest well-paid employment opportunities in North Carolina over the next decade, and 2) whether UNCG currently offers programs to prepare students for those jobs.

The **competitor analysis** also examines the landscape outside of UNCG by looking at which other higher education competitor institutions may be offering similar academic programs and evaluating the comparative strength of those programs. This information 1) identifies programs in which UNCG may or may not have a competitive advantage, and 2) identifies potential areas of market growth or market saturation, which can inform decisions around investments in current or new academic programs.

### ***Program and Gap Analysis Methodology***

The MDO analysis uses publicly available employment projections and wage data and connects it to academic programs at UNCG using a CIP-SOC<sup>2</sup> crosswalk produced by the U.S. Department of Education (DOE). The publicly available CIP-SOC crosswalk provides the underlying framework for the MDO analysis. All occupations linked to UNCG program CIP codes come directly from the DOE's CIP-SOC crosswalk.

Accurate program CIP codes are critical to ensuring the MDO produces robust projections of the labor market opportunities available to program graduates. rpk GROUP reviewed the UNCG program names and CIP codes to identify potential mis-coded programs, and multiple degree programs with the same CIP code. Program descriptions and curriculums were then reviewed on UNCG's website, and in limited instances, rpk changed UNCG CIP codes used in the MDO analysis to better reflect the program content.

rpk GROUP created an enhanced version of the DOE's CIP-SOC crosswalk by adding information on the education and work experiences representative of each occupation. This information is produced by the U.S. Bureau of Labor Statistics (BLS). The enhanced crosswalk adds two important features to the MDO analysis. First, it prevents degree programs from matching to occupations that require significant work experience which new college graduates are unlikely to have (e.g., CEOs, CFOs, Legislators). Second, it improves the matching between degree programs and the education levels required in various occupations; it excludes CIP-SOC matches where there are wide disparities (e.g., bachelor's degree programs are not matched to occupations that require doctoral degrees, such as postsecondary teachers).

The employment and wage data are from North Carolina's Department of Commerce and the analysis metrics include: 2021-2030 projected new job growth, 2021-2030 projected average annual job openings, and 2021 median annual wages. The occupational wage data represents the median wage for all workers in an occupation; differential wages for workers employed in the same occupation but with varying levels of educational attainment are not available in the projections data.

The North Carolina occupational employment and wage data were attached to the enhanced CIP-SOC crosswalk by SOC code, and then the UNCG academic programs were attached by CIP code. The analyses were conducted at the six-digit

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<sup>2</sup> 'CIP' codes are standard 'classification of instructional programs' codes assigned to each program. 'SOC' codes are 'standard occupational codes' assigned to all occupations. This analysis uses the current 2020 CIP codes and 2018 SOC codes.

CIP code and degree level (bachelor’s degree, postbaccalaureate certificate, master’s degree, post-master’s certificate, and doctorate degree).

*Liberal Arts Index*

rpk GROUP's Liberal Arts Index accounts for the varied employment opportunities available to liberal arts graduates and incorporated it into the custom CIP-SOC crosswalk. The method identifies ‘liberal arts’ programs, identifies jobs accessible to students with liberal arts degrees (see Table A1), and applies the index to all identified liberal arts programs at the bachelor’s degree award level (see Table A2).

**Table A1: rpk GROUP Liberal Arts Index Occupations (Bachelor’s Degrees)**

Advertising and promotions managers	Mental health counselors
Sales managers	Substance abuse, behavioral disorder, and mental health counselors
Administrative services managers	Mental health and substance abuse social workers
Education administrators, preschool and childcare center/program	Child, family, and school social workers
Education administrators, all other	Social workers, all other
Medical and health services managers	Health educators
Social and community service managers	Probation officers and correctional treatment specialists
Managers, all other	Community and social service specialists, all other
Agents and business managers of artists, performers, and athletes	Religious workers, all other
Buyers and purchasing agents	Arbitrators, mediators, and conciliators
Buyers and purchasing agents, farm products	Paralegals and legal assistants
Wholesale and retail buyers, except farm products	Legal support workers, all other
Purchasing agents, except wholesale, retail, and farm products	Career/technical education teachers, postsecondary
Compliance officers	Preschool teachers, except special education
Cost estimators	Kindergarten teachers, except special education
Human resources specialists	Elementary school teachers, except special education
Labor relations specialists	Middle school teachers, except special and career/technical education
Logisticians	Career/technical education teachers, middle school
Management analysts	Secondary school teachers, except special and career/technical education
Meeting, convention, and event planners	Career/technical education teachers, secondary school
Fundraisers	Adult basic education, adult secondary education, and English as a second language instructors
Compensation, benefits, and job analysis specialists	Teachers and instructors, all other, except substitute teachers
Training and development specialists	Substitute teachers, short-term
Market research analysts and marketing specialists	Teachers and instructors, all other
Business operations specialists, all other	Museum technicians and conservators
Property Appraisers and Assessors	Education instruction and library workers, all other
Appraisers and assessors of real estate	Fine artists, including painters, sculptors, and illustrators
Budget analysts	Special effects artists and animators
Credit analysts	Fashion designers
Financial analysts	Graphic designers
Personal financial advisors	Set and exhibit designers
Insurance underwriters	Designers, all other
Financial examiners	Actors
Credit counselors	Producers and directors
Loan officers	Coaches and scouts
Tax examiners and collectors, and revenue agents	Music directors and composers
Financial specialists, all other	Broadcast announcers and radio disc jockeys
Computer systems analysts	
Information security analysts	

Computer programmers Software developers Software quality assurance analysts and testers Web developers Database administrators Network and computer systems administrators Computer network support specialists Computer occupations, all other Operations research analysts Miscellaneous mathematical science occupations Mathematical science occupations, all other Foresters Geographers Forensic science technicians Substance abuse and behavioral disorder counselors Clergy Directors, religious activities, and education	News Analysts, Reporters, and Journalists Public relations specialists Editors Technical writers Writers and authors Interpreters and translators Broadcast technicians Sound engineering technicians Camera operators, television, video, and film Film and video editors Securities, commodities, and financial services sales agents Sales representatives, wholesale and manufacturing, technical and scientific products Sales engineers Proofreaders and copy markers Statistical assistants
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**Table A2: UNCG Liberal Arts Bachelor’s Degree Programs**

African American and African Diaspora Studies Anthropology Art Arts Administration Classical Studies Communication Studies Dance (Choreography and Performance) Dance Studies Drama English Geography History Integrated Professional Studies Interior Architecture Languages, Literatures, and Cultures	Liberal and Interdisciplinary Studies Media Studies Music Peace and Conflict Studies Performance Philosophy Political Science Psychology Religious Studies Social Work Sociology Spanish Studio Art Women’s, Gender, and Sexuality Studies
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***Competitor Analysis Methodology***

The competitor analysis includes institutions identified from UNCG-provided data originally obtained from the National Student Clearinghouse. Ten competitors were identified based on the number of students who applied and were accepted to UNCG but did not attend, and instead enrolled in other institutions. While not intentionally limited to North Carolina, UNCG’s largest competitors were located within the state (see Table A3).

The competitor analysis uses publicly available data on degrees and certificates awarded from the Integrated Postsecondary Education Data System (IPEDS). The data on competitor awards is connected to academic programs currently offered at UNCG, as well as programs identified in the gap analysis as potential opportunities for new program creation. The unit of analysis and the connection point between UNCG programs and competitor programs is the 6-digit CIP code plus the type of award (bachelor’s degree, postbaccalaureate certificate, master’s degree, post-master’s certificate, or doctoral/professional degree).

**Table A3: UNCG Competitor Analysis Institutions**

<b>UNCG Competitor Institutions</b>	<b>Number UNCG Applicants (Entering into the 2022 Cohort Year) Who Enrolled at Competitor Four-Year Institutions</b>
Appalachian State University	571
East Carolina University	522
Fayetteville State University	84
North Carolina Central University	123
North Carolina State University at Raleigh	564
University of North Carolina at Chapel Hill	980
University of North Carolina at Charlotte	420
University of North Carolina Wilmington	261
Western Carolina University	166
Winston-Salem State University	92

For each program, analysis metrics include market saturation and program demand calculated using 2018-2021 IPEDS degree and certificate awards data.

- Market Saturation = # institutions offering program/10
- Program Demand = Ratio of competitors offering the program demonstrating positive growth

Seventy of UNCG’s program offerings were not offered as competing programs by the 10 competitor institutions (see Table A4).

**Table A4: UNCG Academic Programs Without Competitor Data**

Analytical Instrumentation - Certificate	Human Development and Family Studies - Doctorate
Consumer, Apparel, and Retail Studies - Doctorate	Genetic Counseling - Master's
Global Fashion Industry Management - Certificate	Informatics & Analytics - Master's
Retail Consumer Data Analytics - Certificate	Interior Architecture - Master's
Retail Merchandising Management - Certificate	International Business - Master's
Retail Studies - Master's	Global Studies - Certificate
Applied Statistics - Master's	Information Systems - Doctorate
Athlete Well-Being - Certificate	Advanced Materials - Certificate
Chemistry and Biochemistry - Doctorate	Medical Science - Certificate
Synthetic Biology - Certificate	Music Education - Certificate
Economics - Doctorate	Historical Keyboard Performance - Certificate
Leadership in Infant and Toddler Learning - Certificate	Jazz Studies - Certificate
Communication Sciences and Disorders - Doctorate	Music - Doctorate
Computational Mathematics - Doctorate	Music Education - Doctorate
Information Systems and Supply Chain Management - Bachelor's	Music Technology - Certificate
Information Technology Development - Certificate	Music Composition - Certificate
Information Technology Management - Certificate	Music Theory - Certificate
Special Endorsement in Computer Education - Certificate	Music Theory - Master's
Dance - Certificate	Music Theory Pedagogy - Certificate
Dance - Master's	Ethnomusicology - Certificate
Business Analytics - Certificate	Musicology - Certificate
Dance Education - Master's	Advanced Practice Foundations - Certificate
Birth-Kindergarten Initial Licensure - Certificate	Nursing - Certificate
Birth-Kindergarten Interdisciplinary Studies in Education and Development - Master's	Nursing - Master's
Quantitative Business Economics - Certificate	Nursing Leadership and Management - Certificate
	Dietetic Internship - Certificate

Instructional Coaching - Certificate Interpreting, Deaf Education and Advocacy Services - Bachelor's Educational Assessment - Certificate Educational Research, Measurement, and Evaluation - Doctorate Educational Research, Measurement, and Evaluation - Master's e-Learning - Certificate Environmental Humanities - Certificate Kinesiology - Doctorate Historic Preservation - Certificate Human Development and Family Studies - Bachelor's	Nanoscience - Certificate Urban and Economic Development - Certificate Workplace Wellness - Certificate Languages, Literatures, and Cultures - Master's Cultural Foundations and Social Justice Education - Certificate Geography, Secondary Education - Bachelor's Climate Justice - Certificate Sustainability - Certificate Taxation - Certificate Women's, Gender, and Sexuality Studies - Master's
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