

**North Dakota State Board of Higher Education**

May 17, 2023, Academic and Student Affairs Committee Meeting Minutes

The State Board of Higher Education Academic and Student Affairs Committee met on May 17<sup>th</sup> at 9:30 a.m. CT, via Teams.

Committee Chair Warford called the meeting to order at 9:30 a.m. CT.

SBHE Committee on Academic and Student Affairs members present:

Committee Chair Warford  
Mr. Kevin Black  
Ms. Sadie Hanson  
Dr. Lisa Montplaisir, Faculty Advisor

**BSC** – Dan Leingang **DCB** – Carmen Simone, Kayla O’Toole, **DSU** – John Miller, **LRSC** – President Darling, Lloyd Halvorson, **MaSU** –Brian Huschle, **MiSU** –Laura Geller, **NDSCS** – Lisa Karch, **NDSU** –David Bertolini, **UND** – Eric Link, Art Malloy, **VCSU** – Larry Brooks, **WSC** – President Hirning, Wanda Meyer.

Others present: **NDUS** – Chancellor Hagerott, Lisa Johnson, Katie Fitzsimmons, Claire Gunwall, Chris Pieske, Terry Meyer, **AG Counsel** – Meredith Larson.

1. **Agenda**

And

2. **Meeting Minutes**

Black moved, Hanson seconded, to approve the agenda and April 19, 2023, meeting minutes, as presented.

Hanson, Black, and Warford voted yes, motion passed.

3. **Policy 461 Digital Literacy**

Ms. Lisa Johnson explained that the Board passed the first reading of Policy 461, however, they requested it be recirculated through the process for further input/questions/concerns, prior to 2<sup>nd</sup> reading. The Academic and Student Affairs Council recommended amendments to sections 4.d and 4.e, but at the Cabinet meeting, those amendments were reinstated, at the Chancellor’s recommendation.

Member Black raised concerns with the language in specific areas, such as section 1 and the use of the word “must”. Mr. Black also noted the language in sections two and three; he requested removal of the word “designated” in 3d and additional language be included that clearly states that Policy 461 will not increase the number of credits required to graduate with an associate and/or baccalaureate degree. Member Black and campus representatives also raised concerns with section 4; they stated that SBHE Policies should not indicate learning outcomes and/or curriculum, and the inclusion of related careers is not applicable. During discussions, there were concerns with the intent of 4d, “foundational knowledge” and identifying “programming” is too specific and may not be applicable to all students and or courses in digital literacy. Member Black also requested Ms. Johnson to re-work section 6, the language and specific deadlines do not

allow the campuses any flexibility and he raised concerns that resources will be needed and how that will impact the campuses.

Black moved, Hanson seconded, to table Policy 461, until amendments discussed have been incorporated.

Chancellor Hagerott reiterated his support for policy 461, with options for some flexibility for campuses, he strongly supports the language in sections four and five. Member Black stated he would need assurance that there are guardrails that exist preventing program credit requirements from increasing, clarification/amended language in section 4e, and include options/exemption for campus with limited resources, at minimum an alternate path is it is a requirement.

Black and Hanson withdrew their motion to table.

Black moved, Hanson seconded, to recommend approval of first reading with the amendments, as discussed. Ms. Johnson will amend the policy as discussed and review it with committee members, prior to the SBHE meeting on May 23<sup>rd</sup>.

#### **Academic New Program Requests (final authorization at SBHE ASAC)**

##### **New Academic Program Request**

4. Bismarck State College
  - a. UG Certificate in Business End User Security
  - b. UG Certificate in Digital Forensics and Incident Response
  - c. UG Certificate in IT and Cybersecurity Governance
  - d. UG Certificate in Security Operations
  - e. UG Certificate in Software Analysis

Hanson moved, Black seconded, to approve BSC's academic requests, items 4 a – e.

Hanson, Black, and Warford voted yes, motion passed.

5. Minot State University
  - a. Minor in Leadership Studies

Black moved, Hanson seconded, to approve MiSU's academic request, item 5 a.

Hanson, Black, and Warford voted yes, motion passed.

6. University of North Dakota
  - a. UG Certificate in Public Health

Black moved, Hanson seconded, to approve UND's academic request, item 6 a.

Hanson, Black, and Warford voted yes, motion passed.

**Academic Program Termination (final authorization at SBHE ASAC)**

- 7. North Dakota state University
  - a. GR Certificate in Food Protection

Hanson moved, Black seconded, to approve NDSU's academic request, item 7 a.

Hanson, Black, and Warford voted yes, motion passed.

Approved June 21, 2023.

**NORTH DAKOTA  
STATE BOARD OF HIGHER EDUCATION  
Policy Manual**

**Policy:** 461 Digital Literacy

**Effective:** TBD, 2023

**NEW POLICY**

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1. **DEFINITION:**

- a. Digital literacy is the ability to use technology to find information, evaluate sources, create content, and communicate with others effectively. It's a skill set used to navigate the new technological paradigm in which society operates.
2. Each institution must have a digital literacy requirement for all associate and baccalaureate-level programs.
3. These requirements may be accomplished through any of the following instructional methods:
  - a. A specific course requirement ranging from 1-3 semester credits;
  - b. Adding or embedding within an existing course;
  - c. Presented through a series of self-paced modules with documentation of a completed series; or
  - d. Designated courses offered through the Dakota Digital Academy.
4. Learning outcomes include:
  - a. Evaluate and interpret the accuracy, credibility, and relevance of digital information;
  - b. Discuss the ways in which society and culture interact with digital technology;
  - c. Demonstrate the knowledge to use digital technology safely and ethically at a basic level;
  - d. Exhibit the ability to analyze, create, provide constructive feedback, or in some case, edit digital content
  - e. Discuss the applicability of digital literacy to the current and emerging workforce.
5. No additional credits are to be added to an associate or baccalaureate-level program of study as a result of this policy.
6. Documentation of a completed digital literacy requirement at a NDUS institution will be honored in transfer to another NDUS institution.
7. Each institution must meet the following program implementation deadlines:
  - a. By July 1, 2024, all institution academic catalogs and corresponding degree audit materials must reflect how students meet the digital literacy requirement;
  - b. By May 2026, first-year students with a term to enter of fall semester, 2024, graduating from an associate-level program must met the published digital literacy requirement.; and
  - c. By May 2028, first-year students with a term to enter of fall semester, 2024,

graduating from a baccalaureate-level program must have met the published digital literacy requirement.

- d. If campuses cannot identify the resources to implement the requirements of this policy, the Board shall be notified for further discussion.



## State Board of Higher Education Summary

**Title:** New Academic Program Requests for Bismarck State College (BSC):

- UG Certificate in Business End User Security
- UG Certificate in Digital Forensics and Incident Response
- UG Certificate in IT and Cybersecurity Governance
- UG Certificate in Security Operations
- UG Certificate in Software Analysis

**Proposed action:** BSC is seeking authorization to offer the above New Academic Programs.

**Background Information:**

- UG Certificate in Business End User Security: Today's employees are frequently confronted with cybersecurity threats to company and personal information, including phishing, data breaches, malware, etc. Cybersecurity awareness is considered an essential skill for business employees with all ranges of network access permissions from entry-level to executive-level personnel.
- UG Certificate in Digital Forensics and Incident Response: This certificate program provides significant experience performing multiple forms of digital forensics work, just as is done in a SOC or responding to an incident with an organization.
- UG Certificate in IT and Cybersecurity Governance: This certificate program addresses the managers of information technology/cybersecurity departments and programs. There is lower focus on technical skills and more emphasis on the business/management aspects.
- UG Certificate in Security Operations: With the Security Operations Center classroom being added to the new campus building, this provides an opportunity to incorporate SOC-related learning options for students.
- UG Certificate in Software Analysis: This certificate program provides students with the skills needed to analyze malware infections and obtain detailed information about how they work, where they came from, and how they were written.

**Financial matters:** Tuition revenue will be used for the funding source for the programs.

**Legal/policy matters:** State Board of Higher Education (SBHE) Policy 421 Academic Program Requests states: "SBHE shall approve the establishment of all new instructional programs granting academic credit leading to a degree or credential. The SBHE Academic and Student Affairs Committee (ASAC) shall have authority to approve all new academic program requests on behalf of the SBHE."

**Academic matters:** N/A

**Review Process:**

AAC	05/02/2023
Cabinet	05/10/2023
ASAC	05/17/2023

**Chancellor's recommendation:** Chancellor Hagerott recommends approval.

**Contact information:**

Dan Leingang, Vice President for Academic Affairs, 701-224-5525, [daniel.leingang@ndus.edu](mailto:daniel.leingang@ndus.edu)

# New Academic Program Request

**Institution:**

Bismarck State College

**Program Name:**

Business End User Security

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

11.0101

**Academic Program Code:**

UGBEU

**Academic Department/Division/College:**

Current and Emerging Technologies

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

Hybrid (on campus & distance)

Online Only

**Describe the delivery methods and location(s) to which the program will be delivered:**

The program will be offered either online or in face-to-face formats.

**Funding Source:**

Tuition Revenue

**Describe the funding source:**

Existing coursework leading to tuition revenues.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Undergraduate Program Certificate

**Does the program require a criminal background check described in NDUS Procedure 511?**

No



**Describe a brief description of the program:**

Today's employees are frequently confronted with cybersecurity threats to company and personal information, including phishing, data breaches, malware, etc. Cybersecurity awareness is considered an essential skill for business employees with all ranges of network access permissions from entry-level to executive-level personnel.

**Address student demand and employment availability for students completing the program:**

There is a demand in almost all career for individuals that understand information security. Growth is 2.0% in the region and 3.5% nationally for individuals with this skill set. There are 13,860 openings for individuals with these skills.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

Lightcast reporting as well as work with the Business and Industry Leadership Team in determining the needs of graduates from our programs. Since this is existing curriculum, the potential for current students enrolled in other programs is a potential market with up to 5-10 students annually seeking this certificate. External students may also enroll in this certificate, and only this certificate, which is expected to see 5-10 additional student enrollments.

**Describe how the program addresses the institutional strategic plan:**

This certificate provides learners with an affordable, flexible, high-quality, experiential learning enhanced by an on-campus management, finance, and other IT programs. It is a short-term, stackable certificate that is central to BSC's strategic goal of Linking Talent with Opportunity.

**Describe how the program addresses the NDUS strategic plan:**

This certificate addresses the NDUS Strategic Plan #6 Workforce Development. The certificate allows those in the workforce to obtain an additional skill set to compliment the skills they already possess. Additionally, the courses can be offered through the DDA which will also relate to # 4 Unified System by allowing others within the NDUS and Tribal Schools to work on the certificate through collaboration.

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

The program is 16 credits and could be completed in a semester if a student is enrolled at full-time levels, longer if enrolled at part-time.

**Identify the proposed program-level accreditation organization, if applicable:**

NA

# Certificate

Mari - prog

Program:

## Prescribed Technical Program Requirements

(may list in semester format if program is limited enrollment)

Course # and Title	Pre- and co-requisites	Credits
CIS 104 - Microcomputer Database		3
CIS 105. Microcomputer Spreadsheets		3
CIS 147. Principles of Information Security		3
CIS 164. Networking Fundamentals I		4
CIS 255. Computer and Network Security	CIS 147 or instructor Approval	3
	Total	16

## Required Program Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

## Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

Footnotes:

# Program Overview

Computer and Information Sciences, General

Lightcast Q1 2023 Data Set

February 2023

## Bismarck State College



1500 Edwards Avenue  
Bismarck, North Dakota 58506

# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2022

Job Postings Timeframe: Jun 2021 - May 2022

Programs:

Code	Description
11.0101	Computer and Information Sciences, General

Regions:


Code	Description
0	United States

Education Level: Any

Tuition Type: Tuition & Fees




Graduate Status: Undergraduate

Residency: In-State

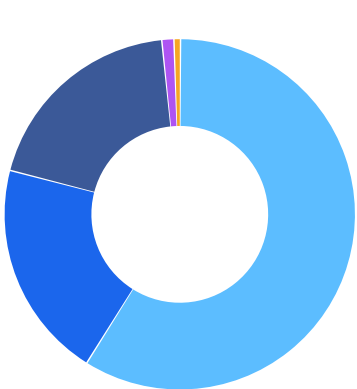
<div>849</div> <div>Institutions</div> <div>-8% Growth (2017-2021)</div>	<div>51,511</div> <div>Completions</div> <div>20% Growth (2017-2021)</div>	<div>Completions Distribution</div> <div>Average: 60.7</div> <div>1 </div> <div>Median: 18</div> <div>2,866</div>
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## Program Overview



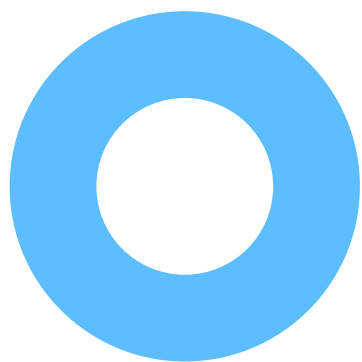
	Completions (2021)	% Completions	Institutions (2021)	% Institutions
 All Programs	51,511	100%	849	100%
 Distance Offered Programs	18,799	36%	225	27%
 Non-Distance Offered Programs	32,712	64%	688	81%

## Market Share by Institution Type



Institution Type	Completions (2021)	Market Share
 Public, 4-year or above	30,306	58.8%
 Private not-for-profit, 4-year or above	10,370	20.1%
 Public, 2-year	9,953	19.3%
 Private for-profit, 4-year or above	571	1.1%
 Other	311	0.6%

## Market Share by Program

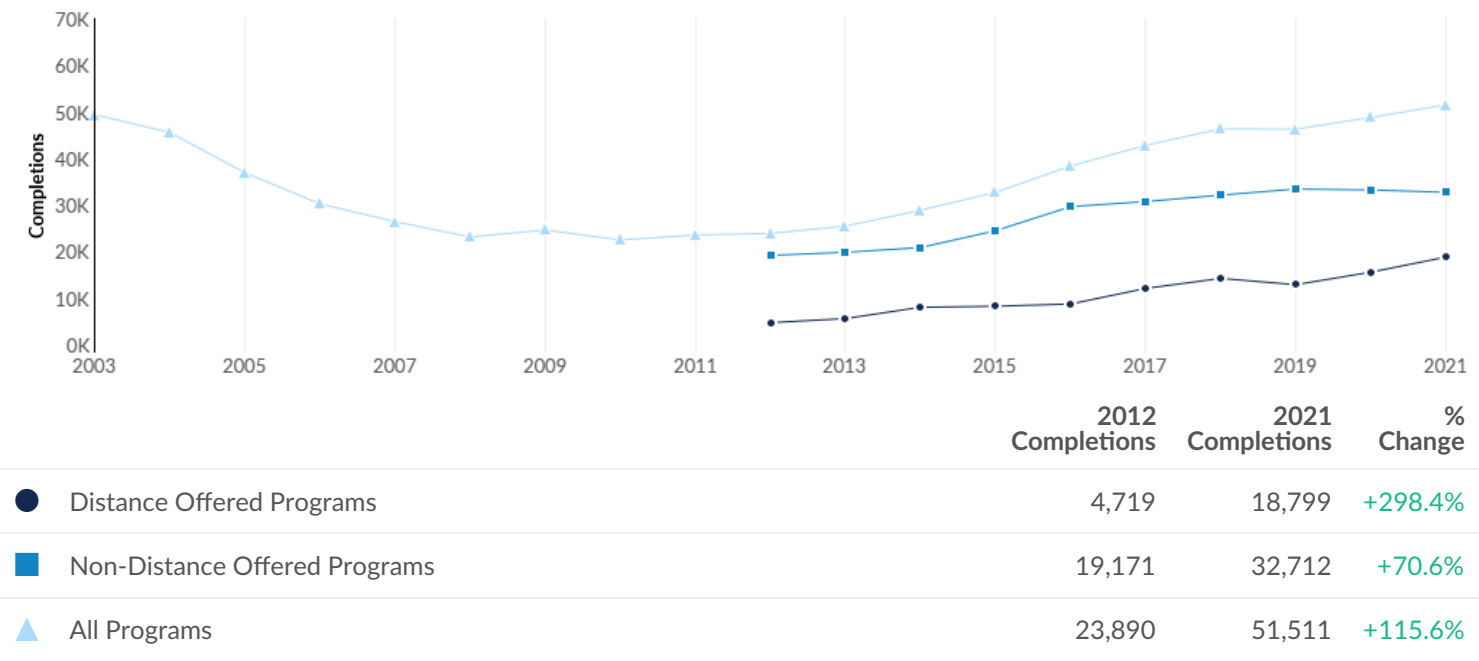


Program	Completions (2021)	Market Share
Computer and Information Sciences, General (11.0101)	51,511	100.0%

## Completions by Institution

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Georgia Institute of Technology-Main Campus	2,866	21.8%	5.6%	\$12,852	
Southern New Hampshire University	1,272	25.6%	2.5%	\$15,380	
The University of Texas at Dallas	1,077	1.8%	2.1%	\$14,564	
University of Wisconsin-Madison	1,011	9.5%	2.0%	\$10,720	
University of Michigan-Ann Arbor	946	2.9%	1.8%	\$17,193	
New York University	942	-3.0%	1.8%	\$56,500	
The University of Texas at Austin	863	7.6%	1.7%	\$11,752	
Jefferson Community and Technical College	854	-6.4%	1.7%	\$4,568	
Rutgers University-New Brunswick	753	8.8%	1.5%	\$15,804	
Northeastern University	724	14.4%	1.4%	\$57,592	

## Regional Trends



## Regional Completions by Award Level



## Similar Programs

135  
Programs (2021)

1.56M  
Completions (2021)

CIP Code	Program	Completions (2021)
24.0101	Liberal Arts and Sciences/Liberal Studies	366,667
52.0201	Business Administration and Management, General	351,860
24.0102	General Studies	129,753
11.0701	Computer Science	59,346
52.0101	Business/Commerce, General	55,970
52.1401	Marketing/Marketing Management, General	49,754
43.0104	Criminal Justice/Safety Studies	46,381
24.0199	Liberal Arts and Sciences, General Studies and Humanities, Other	37,634
30.9999	Multi-/Interdisciplinary Studies, Other	34,937
11.0103	Information Technology	31,478



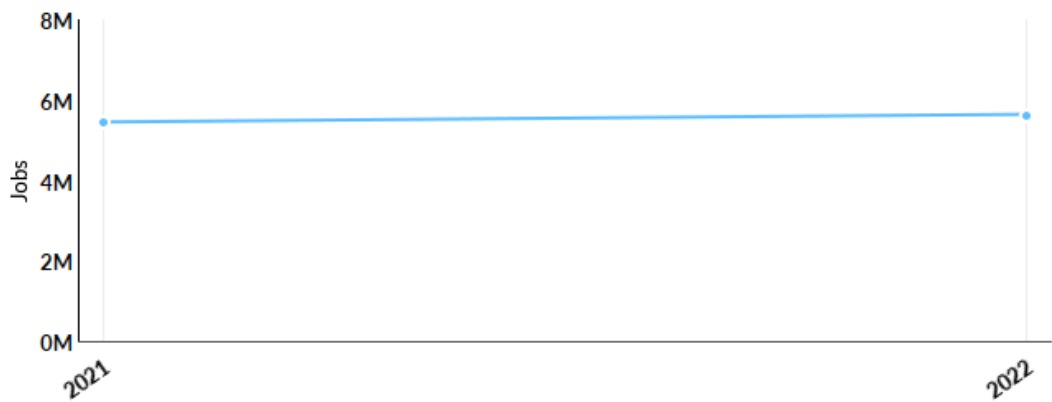
## Target Occupations

5.45M Jobs (2021)	+3.5% % Change (2021-2022)	\$46.37/hr \$96.5K/yr Median Earnings	601,688 Annual Openings
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Occupation	2021 Jobs	Annual Openings	Median Earnings	Growth (2021 - 2022)
Software Developers	1,452,426	174,186	\$57.88/hr	+5.29%
Computer User Support Specialists	712,287	76,690	\$23.95/hr	+2.72%
Computer Systems Analysts	539,594	54,752	\$47.63/hr	+2.78%
Computer and Information Systems Managers	515,862	57,845	\$76.17/hr	+3.78%
Computer Occupations, All Other	431,292	43,977	\$45.14/hr	+2.87%
Network and Computer Systems Administrators	337,352	30,846	\$38.66/hr	+1.96%
Software Quality Assurance Analysts and Testers	197,953	23,372	\$47.19/hr	+4.42%
Computer Network Support Specialists	188,668	19,773	\$30.18/hr	+2.09%
Computer Network Architects	177,278	15,850	\$57.82/hr	+2.15%
Computer Programmers	174,513	15,995	\$43.73/hr	+1.16%
Information Security Analysts	171,889	21,078	\$49.29/hr	+4.82%
Data Entry Keyers	160,289	22,107	\$17.10/hr	-0.33%
Web Developers	105,709	13,227	\$34.66/hr	+4.81%
Web and Digital Interface Designers	103,563	14,169	\$35.88/hr	+5.17%
Database Administrators	90,359	8,779	\$46.40/hr	+2.41%
Database Architects	51,945	5,361	\$59.13/hr	+2.98%
Computer and Information Research Scientists	34,486	3,681	\$63.22/hr	+3.50%

Growth

5,445,464	5,636,759	191,295	3.5%
2021 Jobs	2022 Jobs	Change (2021-2022)	% Change (2021-2022)

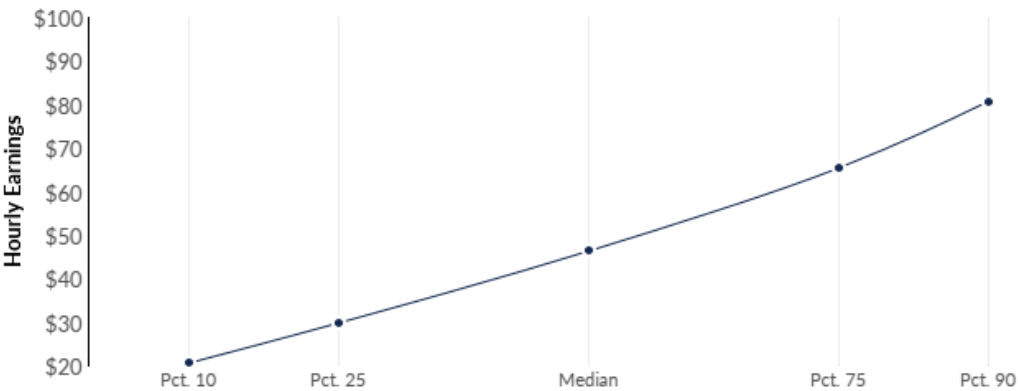


Occupation	2021 Jobs	2022 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	515,862	535,360	19,498	4%
Computer Systems Analysts (15-1211)	539,594	554,568	14,974	3%
Information Security Analysts (15-1212)	171,889	180,172	8,283	5%
Computer and Information Research Scientists (15-1221)	34,486	35,694	1,208	4%
Computer Network Support Specialists (15-1231)	188,668	192,617	3,949	2%
Computer User Support Specialists (15-1232)	712,287	731,677	19,390	3%
Computer Network Architects (15-1241)	177,278	181,090	3,812	2%
Database Administrators (15-1242)	90,359	92,541	2,182	2%
Database Architects (15-1243)	51,945	53,491	1,546	3%
Network and Computer Systems Administrators (15-1244)	337,352	343,964	6,612	2%
Computer Programmers (15-1251)	174,513	176,533	2,020	1%
Software Developers (15-1252)	1,452,426	1,529,195	76,769	5%
Software Quality Assurance Analysts and Testers (15-1253)	197,953	206,709	8,756	4%

Web Developers (15-1254)	105,709	110,789	5,080	5%
Web and Digital Interface Designers (15-1255)	103,563	108,915	5,352	5%
Computer Occupations, All Other (15-1299)	431,292	443,676	12,384	3%
Data Entry Keyers (43-9021)	160,289	159,766	-523	0%

# Percentile Earnings


<div>\$29.85/hr</div> <div>25th Percentile Earnings</div>	<div>\$46.37/hr</div> <div>Median Earnings</div>	<div>\$65.47/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$58.56	\$76.17	\$95.31
Computer Systems Analysts (15-1211)	\$37.04	\$47.63	\$61.12
Information Security Analysts (15-1212)	\$38.10	\$49.29	\$63.15
Computer and Information Research Scientists (15-1221)	\$47.66	\$63.22	\$78.98
Computer Network Support Specialists (15-1231)	\$23.43	\$30.18	\$38.75
Computer User Support Specialists (15-1232)	\$18.88	\$23.95	\$32.96
Computer Network Architects (15-1241)	\$40.12	\$57.82	\$73.03
Database Administrators (15-1242)	\$30.23	\$46.40	\$59.86
Database Architects (15-1243)	\$38.74	\$59.13	\$75.05
Network and Computer Systems Administrators (15-1244)	\$30.14	\$38.66	\$49.32
Computer Programmers (15-1251)	\$28.83	\$43.73	\$58.82
Software Developers (15-1252)	\$43.26	\$57.88	\$73.12
Software Quality Assurance Analysts and Testers (15-1253)	\$34.51	\$47.19	\$59.87

Web Developers (15-1254)	\$22.08	\$34.66	\$47.08
Web and Digital Interface Designers (15-1255)	\$23.71	\$35.88	\$57.71
Computer Occupations, All Other (15-1299)	\$28.93	\$45.14	\$60.94
Data Entry Keyers (43-9021)	\$13.93	\$17.10	\$18.99











## Job Postings Summary

<p>3.90M</p> <p>Unique Postings</p> <p>9.72M Total Postings</p>	<p>2 : 1</p> <p>Posting Intensity</p>  <p>Regional Average: 3 : 1</p>	<p>25 days</p> <p>Median Posting Duration</p> <p>Regional Average: 31 days</p>
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There were **9.72M** total job postings for your selection from June 2021 to May 2022, of which **3.90M** were unique. These numbers give us a Posting Intensity of **2-to-1**, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

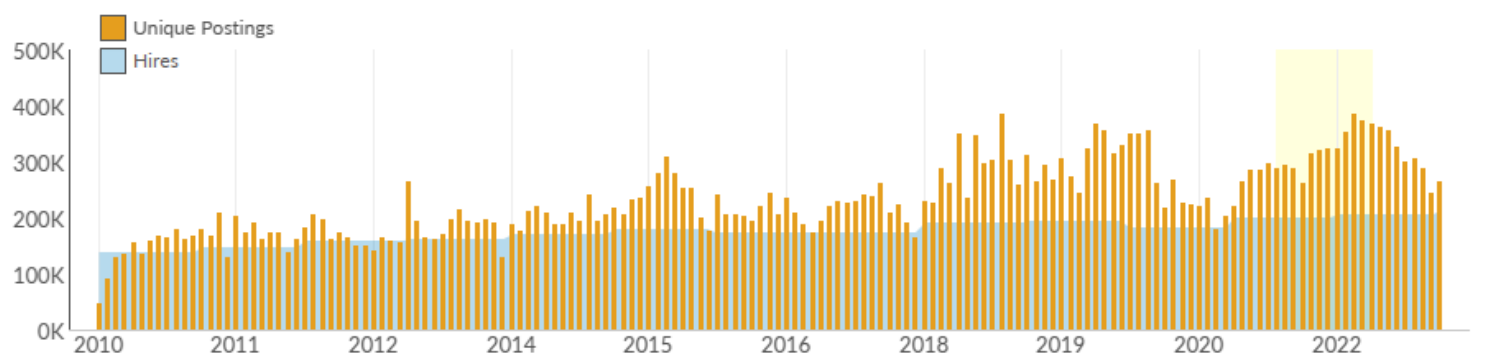
## Top Companies Posting

Company	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Randstad	155,720 / 69,119	2 : 1 	21 days
Robert Half	89,370 / 48,236	2 : 1 	26 days
Deloitte	84,063 / 42,617	2 : 1 	22 days
Humana	83,126 / 37,767	2 : 1 	34 days
Jobot	153,913 / 37,391	4 : 1 	25 days
Revature	163,818 / 34,716	5 : 1 	25 days
Amazon	111,082 / 33,852	3 : 1 	15 days
Cynet Systems	41,993 / 32,936	1 : 1 	14 days
CTG	39,578 / 32,186	1 : 1 	41 days
Elevance Health	55,739 / 30,456	2 : 1 	33 days

# Job Postings vs. Hires

<div>324,908</div> <div>Avg. Monthly Postings (Jun 2021 - May 2022)</div>	<div>202,523</div> <div>Avg. Monthly Hires (Jun 2021 - May 2022)</div>
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In an average month, there were 324,908 newly posted job postings for 17 Occupations, and 202,523 actually hired. This means there was approximately 1 hire for every 2 unique job postings for 17 Occupations.



Occupation	Avg Monthly Postings (Jun 2021 - May 2022)	Avg Monthly Hires (Jun 2021 - May 2022)
Software Developers	102,828	53,308
Computer Occupations, All Other	55,627	14,591
Computer User Support Specialists	34,346	28,764
Computer Systems Analysts	23,582	17,543
Web Developers	18,518	3,951
Information Security Analysts	15,670	7,509
Network and Computer Systems Administrators	12,408	10,527
Database Administrators	12,161	3,012
Software Quality Assurance Analysts and Testers	11,468	8,340
Computer Network Architects	8,499	5,782
Database Architects	8,177	1,857
Computer Programmers	6,871	4,981
Data Entry Keyers	5,640	12,632

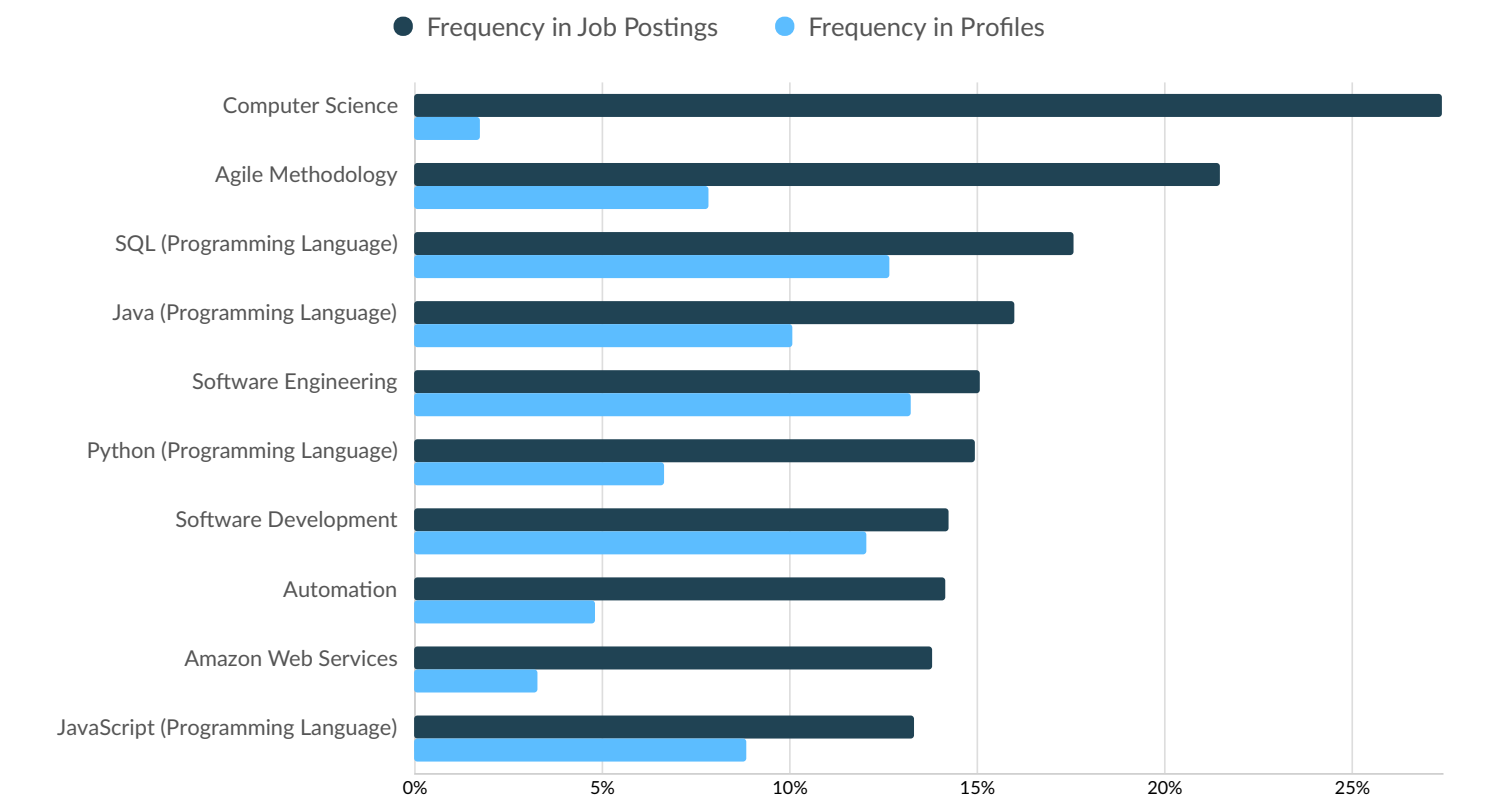
Computer and Information Systems Managers	3,916	17,632
Computer Network Support Specialists	2,414	6,657
Web and Digital Interface Designers	1,583	4,233
Computer and Information Research Scientists	1,200	1,203

## Top Posted Job Titles

Job Title	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Software Engineers	357,054 / 121,822	3 : 1 	25 days
Software Developers	107,799 / 38,563	3 : 1 	25 days
Java Developers	84,189 / 37,938	2 : 1 	21 days
Systems Engineers	93,562 / 36,974	3 : 1 	25 days
DevOps Engineers	78,072 / 35,551	2 : 1 	22 days
Data Engineers	72,262 / 33,015	2 : 1 	22 days
Systems Administrators	81,966 / 29,051	3 : 1 	25 days
Full Stack Developers	67,755 / 27,500	2 : 1 	24 days
Network Engineers	62,049 / 27,359	2 : 1 	23 days
.NET Developers	47,564 / 23,930	2 : 1 	21 days

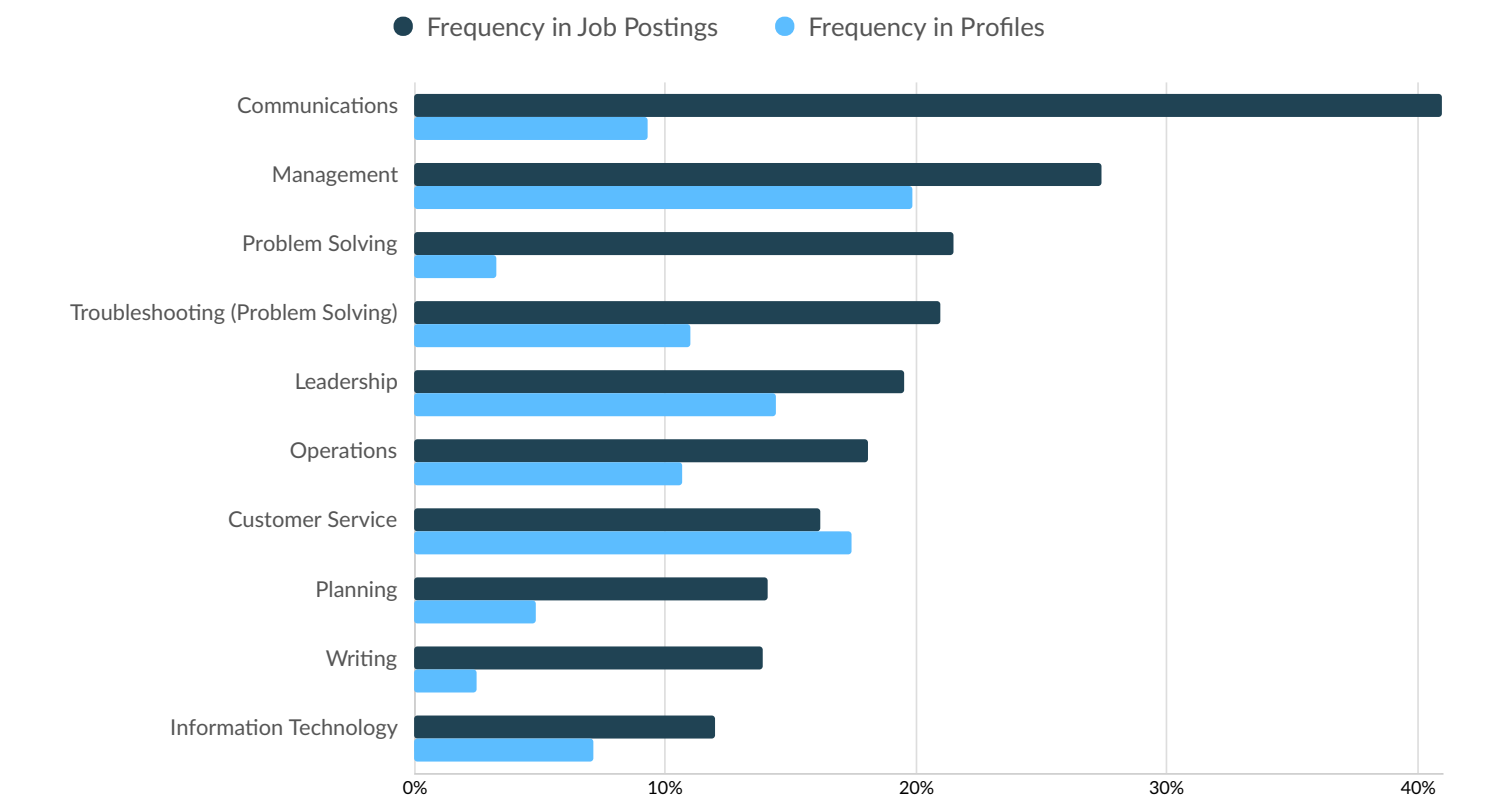


# Top Specialized Skills



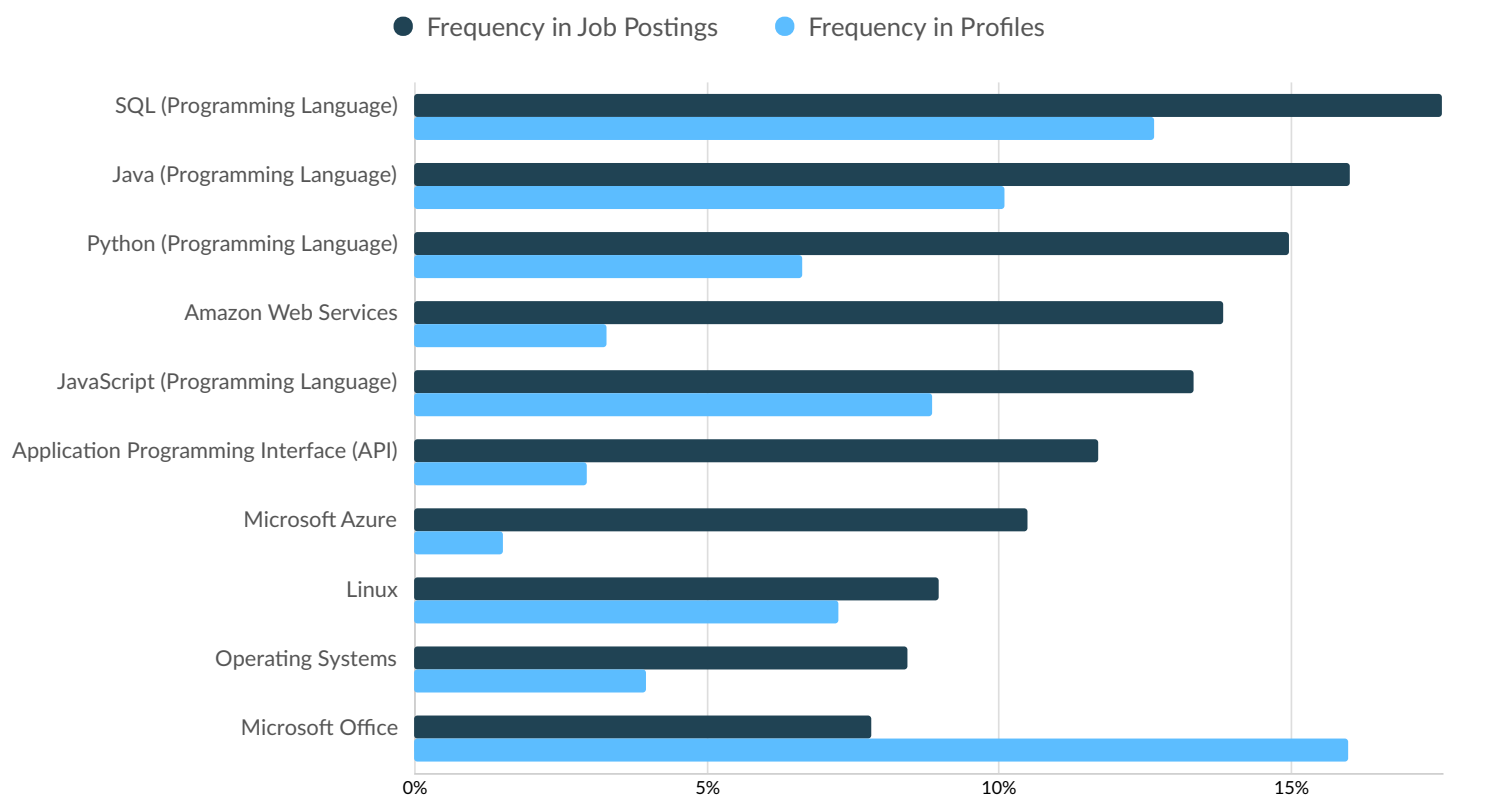
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Computer Science	1,069,236	27%	138,311	2%
Agile Methodology	838,681	22%	611,066	8%
SQL (Programming Language)	685,871	18%	988,550	13%
Java (Programming Language)	624,444	16%	787,394	10%
Software Engineering	588,969	15%	1,034,423	13%
Python (Programming Language)	583,710	15%	518,647	7%
Software Development	555,929	14%	941,595	12%
Automation	552,173	14%	376,576	5%
Amazon Web Services	539,551	14%	255,771	3%
JavaScript (Programming Language)	520,635	13%	690,858	9%

# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	1,599,077	41%	725,771	9%
Management	1,068,977	27%	1,552,336	20%
Problem Solving	839,977	22%	256,138	3%
Troubleshooting (Problem Solving)	819,501	21%	861,715	11%
Leadership	762,341	20%	1,123,209	14%
Operations	706,597	18%	832,411	11%
Customer Service	630,824	16%	1,362,240	17%
Planning	549,915	14%	376,440	5%
Writing	543,116	14%	194,909	2%
Information Technology	468,293	12%	555,383	7%

# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
SQL (Programming Language)	685,871	18%	988,550	13%
Java (Programming Language)	624,444	16%	787,394	10%
Python (Programming Language)	583,710	15%	518,647	7%
Amazon Web Services	539,551	14%	255,771	3%
JavaScript (Programming Language)	520,635	13%	690,858	9%
Application Programming Interface (API)	456,756	12%	231,466	3%
Microsoft Azure	409,820	11%	118,695	2%
Linux	349,732	9%	566,523	7%
Operating Systems	329,614	8%	310,268	4%
Microsoft Office	304,588	8%	1,246,453	16%

## Top Qualifications

Qualification	Postings with Qualification
Security Clearance	123,905
Certified Information Systems Security Professional	96,611
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	93,513
Secret Clearance	91,088
Project Management Professional Certification	66,519
CompTIA Security+	64,767
CompTIA A+	57,652
Cisco Certified Network Associate	50,692
GIAC Certifications	43,403
Master Of Business Administration (MBA)	39,014

# Appendix A

## Program Selection Details

CIP Code	Program Name
11.0101	Computer and Information Sciences, General

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; North Dakota Job Service; South Dakota Department of Labor and Regulation

# New Academic Program Request

**Institution:**

Bismarck State College

**Program Name:**

Digital Forensics and Incident Response

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

43.0403

**Academic Program Code:**

UGDFI

**Academic Department/Division/College:**

Current and Emerging Technologies

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

Hybrid (on campus & distance)

Online Only

**Describe the delivery methods and location(s) to which the program will be delivered:**

The program will be offered either online or in face-to-face formats.

**Funding Source:**

Tuition Revenue

**Describe the funding source:**

Existing coursework leading to tuition revenues.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Undergraduate Program Certificate

**Does the program require a criminal background check described in NDUS Procedure 511?**

No

**Describe a brief description of the program:**

Another key skill of the Security Operations Center is that of digital forensics. This certificate program provides significant experience performing multiple forms of digital forensics work, just as is done in a SOC or responding to an incident with an organization. Courses include: CIS 241 Digital Forensics Fundamentals, CIS 165 Networking Fundamentals II, CIS 164 Networking Fundamentals I, CIT 380 Network Forensics, CIT 341 Mobile Forensics, CIT 342 Memory Forensics

**Address student demand and employment availability for students completing the program:**

Graduates working in industry indicated the types of knowledge and classes that would help them in their security analyst positions, working in ND SOCs. Advisory Board members were also consulted. Working with NDIT and Palo Alto Networks also helped to shape the need for the certificate program, as well as the course contents.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

Business and Industry Leadership Team (BILT) members were consulted. Working with NDIT and Palo Alto Networks also helped to shape the need for the certificate program, as well as the course contents. Both have expressed that they will engage their employees in seeking the certifications and possible adjunct support. Enrollment is expected to be between 5-10 students per year.

**Describe how the program addresses the institutional strategic plan:**

The Digital Forensics and Incident Response certificate provides learners with an affordable, flexible, high-quality, experiential learning enhanced by an on-campus security operations center (SOC). It is a short-term, stackable certificate that is central to BSC's strategic goal of Linking Talent with Opportunity.

**Describe how the program addresses the NDUS strategic plan:**

This certificate addresses the NDUS Strategic Plan #6 Workforce Development. The certificate allows those in the workforce to obtain an additional skill set to compliment the skills they already possess. Additionally, the courses can be offered through the DDA which will also relate to # 4 Unified System by allowing others within the NDUS and Tribal Schools to work on the certificate through collaboration.

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

The program is 29 credits so it may take up to a year at full-time levels or longer as a part-time student.

**Identify the proposed program-level accreditation organization, if applicable:**

NA



# Certificate

## Program: Digital Forensics and Incident Response

Mari - My c

CIS 147 is a

### Prescribed Technical Program Requirements

(may list in semester format if program is limited enrollment)

Course # and Title	Pre- and co-requisites	Credits
CIS 147 Principles of Information Security		3
CIS 164. Networking Fundamentals I		4
CIS 165. Networking Fundamentals II	CIS 164	4
CIS 241. Digital Forensics Fundamentals	CIS 147 or instr approval	3
CIS 255 Computer and Network Security	CIS 147 or instr approval	3
CIT 320. Disaster Recovery & Incident Response	CIS 255 or instr approval	3
CIT 341 Mobile Forensics Fundamentals	CIS 241	3
CIT 342 Memory Foresics Fundamentals	CIS 241	3
CIT 380 Network Foresics	CIS 165	3
	<b>Total</b>	<b>29</b>

### Required Program Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	<b>Total</b>	

### Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	<b>Total</b>	

Footnotes:

# Program Overview

## Computer Systems Analysis/Analyst

Lightcast Q1 2023 Data Set

February 2023

### Bismarck State College



1500 Edwards Avenue  
Bismarck, North Dakota 58506

# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2022

Job Postings Timeframe: Jun 2021 - May 2022

Programs:

Code	Description
11.0501	Computer Systems Analysis/Analyst

Regions:

Code	Description
0	United States

Education Level: Any

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

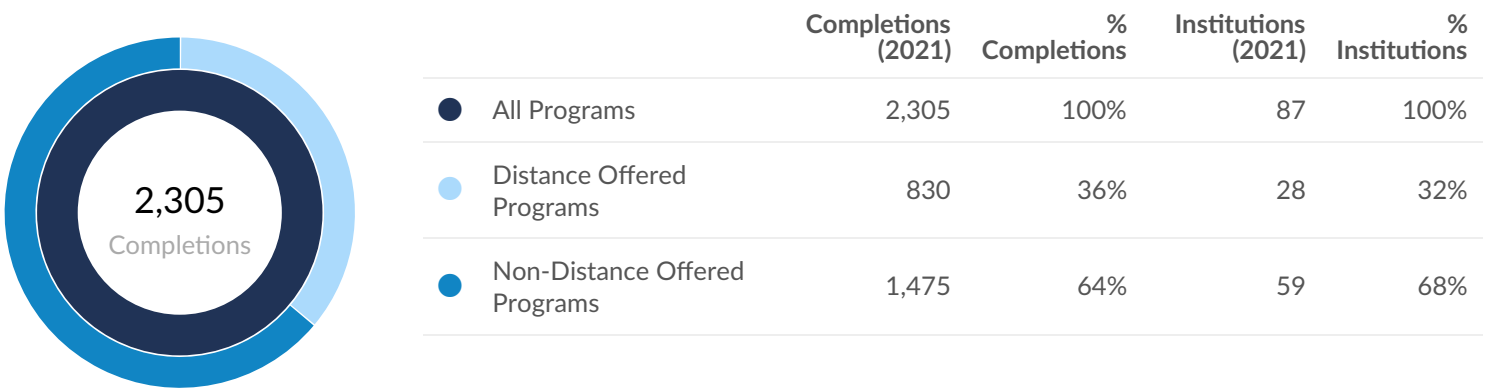
Residency: In-State

87  
Institutions  
-6% Growth (2017-2021)

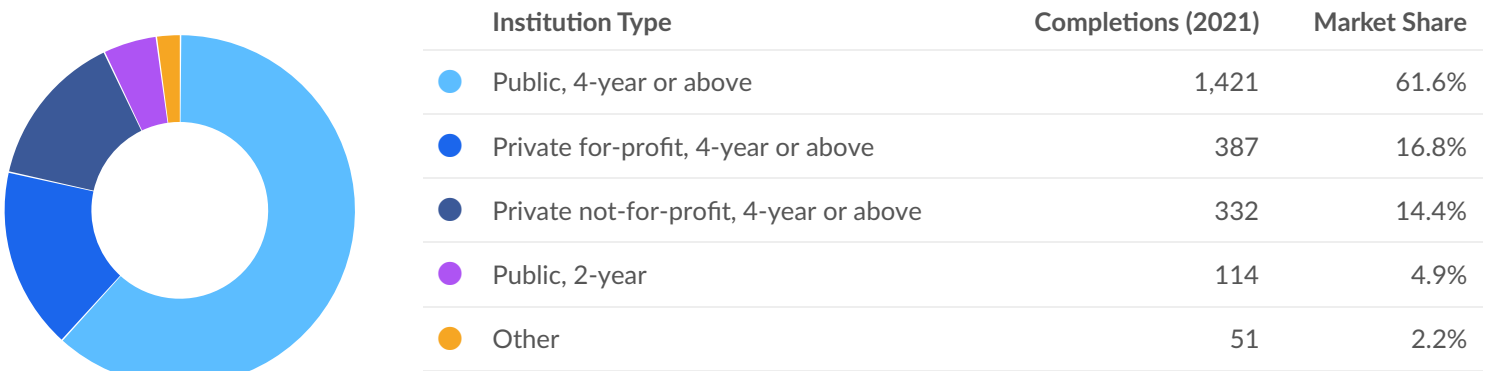
2,305  
Completions  
-21% Growth (2017-2021)

Completions Distribution  
Average: 26.5  
1 | Median: 7 | 180

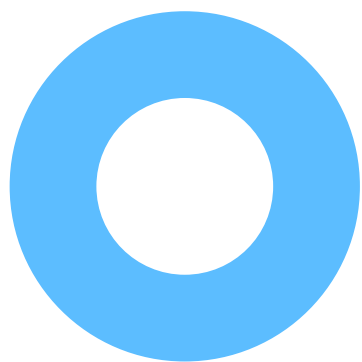
Program Overview



Market Share by Institution Type



## Market Share by Program

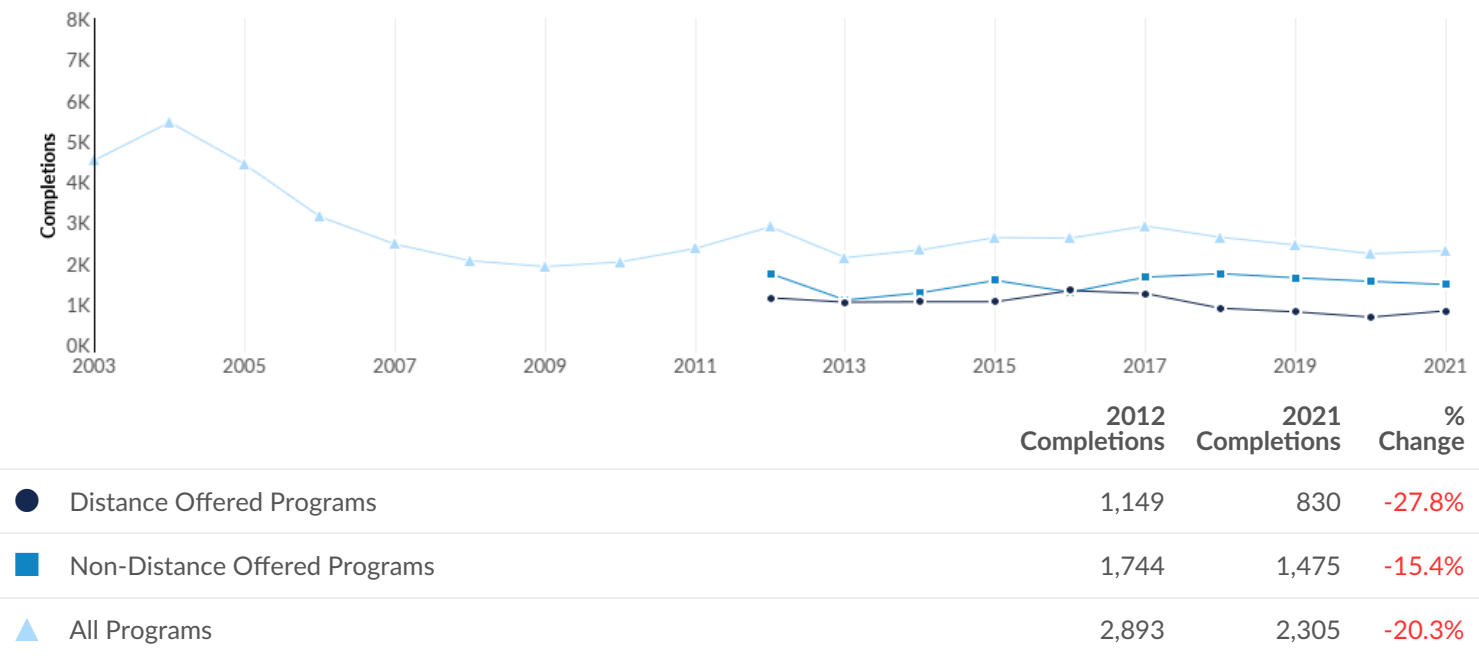


Program	Completions (2021)	Market Share
Computer Systems Analysis/Analyst (11.0501)	2,305	100.0%

## Completions by Institution

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
University of Florida	180	13.2%	7.8%	\$6,381	
Valencia College	167	47.8%	7.2%	\$2,474	
University of South Florida	164	9.3%	7.1%	\$6,410	
University of Houston	160	-2.4%	6.9%	\$9,699	
DeVry University-Illinois	150	-25.0%	6.5%	\$15,032	
University of Minnesota-Twin Cities	143	-6.5%	6.2%	\$15,254	
University of Chicago	121	348.1%	5.2%	\$60,963	
Sinclair Community College	102	4.1%	4.4%	\$4,329	
University of Illinois Chicago	82	3.8%	3.6%	\$15,603	
University of Phoenix-Arizona	59	20.4%	2.6%	\$9,552	

## Regional Trends



## Regional Completions by Award Level



## Similar Programs

104  
Programs (2021)

932,439  
Completions (2021)

CIP Code	Program	Completions (2021)
52.0201	Business Administration and Management, General	351,860
11.0701	Computer Science	59,346
52.0101	Business/Commerce, General	55,970
11.0101	Computer and Information Sciences, General	51,511
52.1401	Marketing/Marketing Management, General	49,754
11.0103	Information Technology	31,478
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	22,799
11.0401	Information Science/Studies	18,279
52.0299	Business Administration, Management and Operations, Other	14,224
11.0901	Computer Systems Networking and Telecommunications	14,182

# Target Occupations

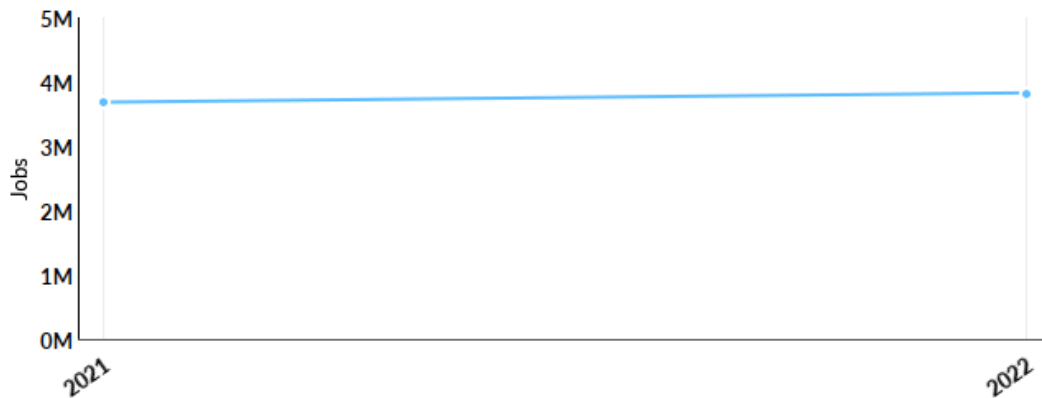
3.68M Jobs (2021)	+3.9% % Change (2021-2022)	\$54.29/hr \$112.9K/yr Median Earnings	407,577 Annual Openings
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Occupation	2021 Jobs	Annual Openings	Median Earnings	Growth (2021 - 2022)
Software Developers	1,452,426	174,186	\$57.88/hr	+5.29%
Computer Systems Analysts	539,594	54,752	\$47.63/hr	+2.78%
Computer and Information Systems Managers	515,862	57,845	\$76.17/hr	+3.78%
Computer Occupations, All Other	431,292	43,977	\$45.14/hr	+2.87%
Software Quality Assurance Analysts and Testers	197,953	23,372	\$47.19/hr	+4.42%
Computer Network Support Specialists	188,668	19,773	\$30.18/hr	+2.09%
Computer Network Architects	177,278	15,850	\$57.82/hr	+2.15%
Database Administrators	90,359	8,779	\$46.40/hr	+2.41%
Database Architects	51,945	5,361	\$59.13/hr	+2.98%
Computer and Information Research Scientists	34,486	3,681	\$63.22/hr	+3.50%



## Growth

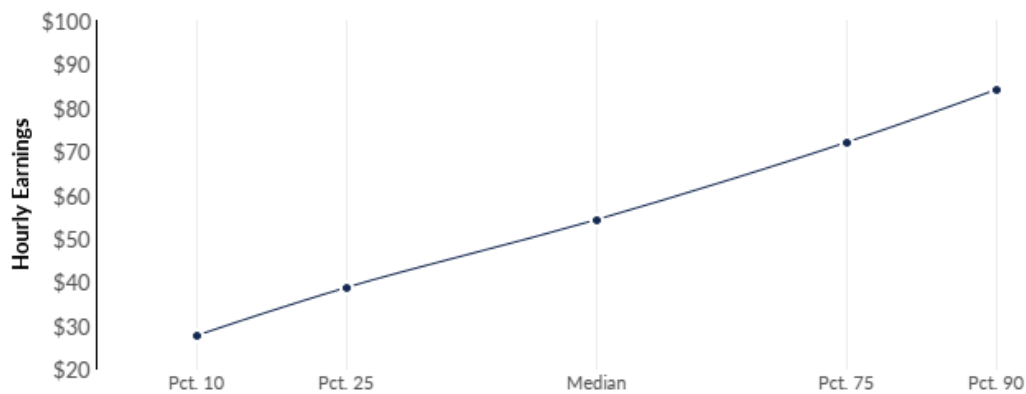
3,679,862	3,824,942	145,080	3.9%
2021 Jobs	2022 Jobs	Change (2021-2022)	% Change (2021-2022)



Occupation	2021 Jobs	2022 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	515,862	535,360	19,498	4%
Computer Systems Analysts (15-1211)	539,594	554,568	14,974	3%
Computer and Information Research Scientists (15-1221)	34,486	35,694	1,208	4%
Computer Network Support Specialists (15-1231)	188,668	192,617	3,949	2%
Computer Network Architects (15-1241)	177,278	181,090	3,812	2%
Database Administrators (15-1242)	90,359	92,541	2,182	2%
Database Architects (15-1243)	51,945	53,491	1,546	3%
Software Developers (15-1252)	1,452,426	1,529,195	76,769	5%
Software Quality Assurance Analysts and Testers (15-1253)	197,953	206,709	8,756	4%
Computer Occupations, All Other (15-1299)	431,292	443,676	12,384	3%


# Percentile Earnings

<div>\$38.71/hr</div> <div>25th Percentile Earnings</div>	<div>\$54.29/hr</div> <div>Median Earnings</div>	<div>\$72.08/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$58.56	\$76.17	\$95.31
Computer Systems Analysts (15-1211)	\$37.04	\$47.63	\$61.12
Computer and Information Research Scientists (15-1221)	\$47.66	\$63.22	\$78.98
Computer Network Support Specialists (15-1231)	\$23.43	\$30.18	\$38.75
Computer Network Architects (15-1241)	\$40.12	\$57.82	\$73.03
Database Administrators (15-1242)	\$30.23	\$46.40	\$59.86
Database Architects (15-1243)	\$38.74	\$59.13	\$75.05
Software Developers (15-1252)	\$43.26	\$57.88	\$73.12
Software Quality Assurance Analysts and Testers (15-1253)	\$34.51	\$47.19	\$59.87
Computer Occupations, All Other (15-1299)	\$28.93	\$45.14	\$60.94











## Job Postings Summary

<div>2.76M</div> <div>Unique Postings</div> <div>6.58M Total Postings</div>	<div>2 : 1</div> <div>Posting Intensity</div> <div></div> <div>Regional Average: 3 : 1</div>	<div>24 days</div> <div>Median Posting Duration</div> <div>Regional Average: 31 days</div>
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There were 6.58M total job postings for your selection from June 2021 to May 2022, of which 2.76M were unique. These numbers give us a Posting Intensity of 2-to-1, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

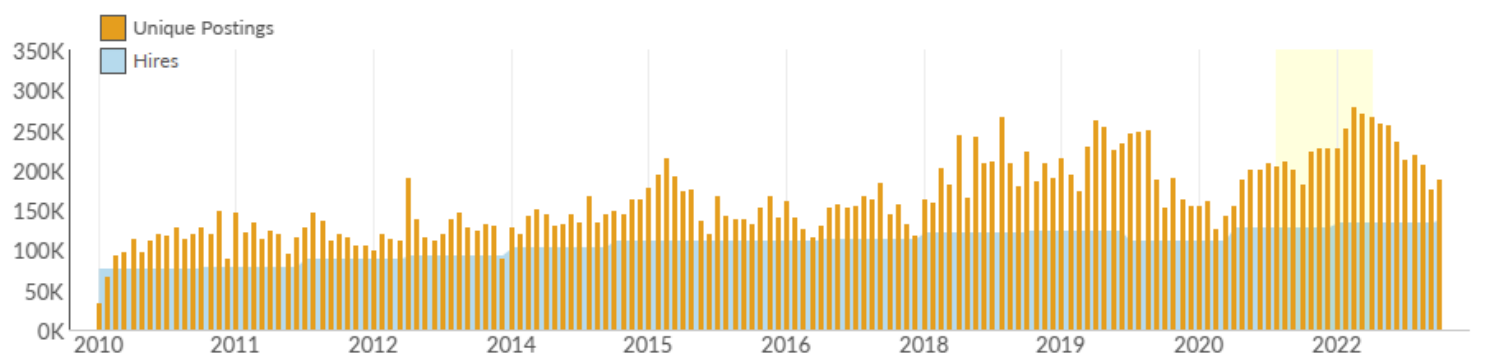
## Top Companies Posting

Company	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Randstad	111,747 / 50,655	2 : 1 	21 days
Deloitte	72,020 / 36,307	2 : 1 	22 days
Humana	71,458 / 32,233	2 : 1 	34 days
Jobot	120,480 / 29,304	4 : 1 	25 days
Amazon	97,003 / 28,751	3 : 1 	15 days
Cynet Systems	32,867 / 25,987	1 : 1 	14 days
CTG	31,970 / 25,878	1 : 1 	47 days
Elevance Health	41,887 / 23,443	2 : 1 	31 days
Kforce	62,379 / 22,528	3 : 1 	23 days
Robert Half	40,794 / 22,327	2 : 1 	25 days

# Job Postings vs. Hires











<div>229,872</div> <div>Avg. Monthly Postings (Jun 2021 - May 2022)</div>	<div>129,926</div> <div>Avg. Monthly Hires (Jun 2021 - May 2022)</div>
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In an average month, there were 229,872 newly posted job postings for 10 Occupations, and 129,926 actually hired. This means there was approximately 1 hire for every 2 unique job postings for 10 Occupations.

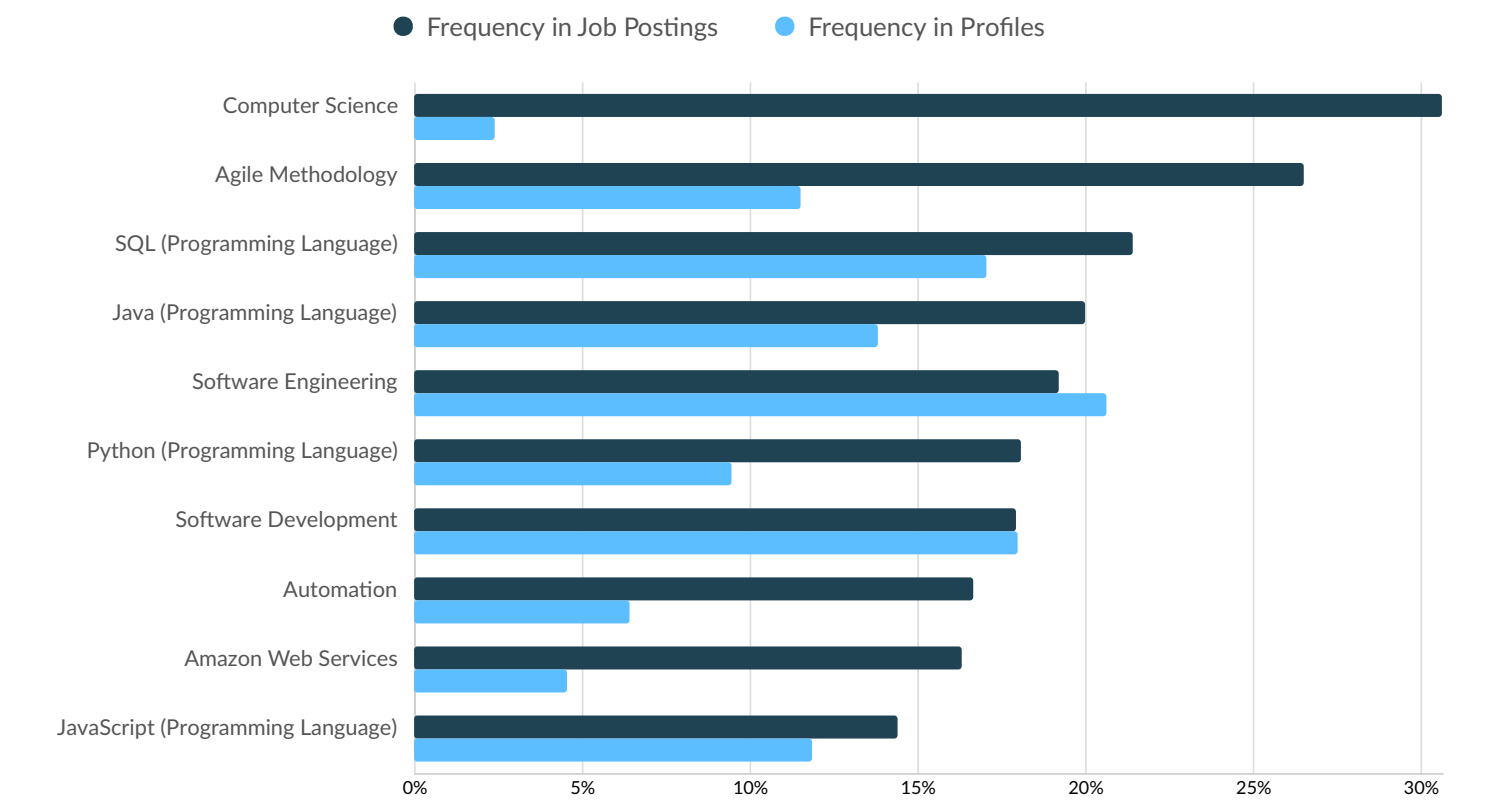


Occupation	Avg Monthly Postings (Jun 2021 - May 2022)	Avg Monthly Hires (Jun 2021 - May 2022)
Software Developers	102,828	53,308
Computer Occupations, All Other	55,627	14,591
Computer Systems Analysts	23,582	17,543
Database Administrators	12,161	3,012
Software Quality Assurance Analysts and Testers	11,468	8,340
Computer Network Architects	8,499	5,782
Database Architects	8,177	1,857
Computer and Information Systems Managers	3,916	17,632
Computer Network Support Specialists	2,414	6,657
Computer and Information Research Scientists	1,200	1,203

## Top Posted Job Titles

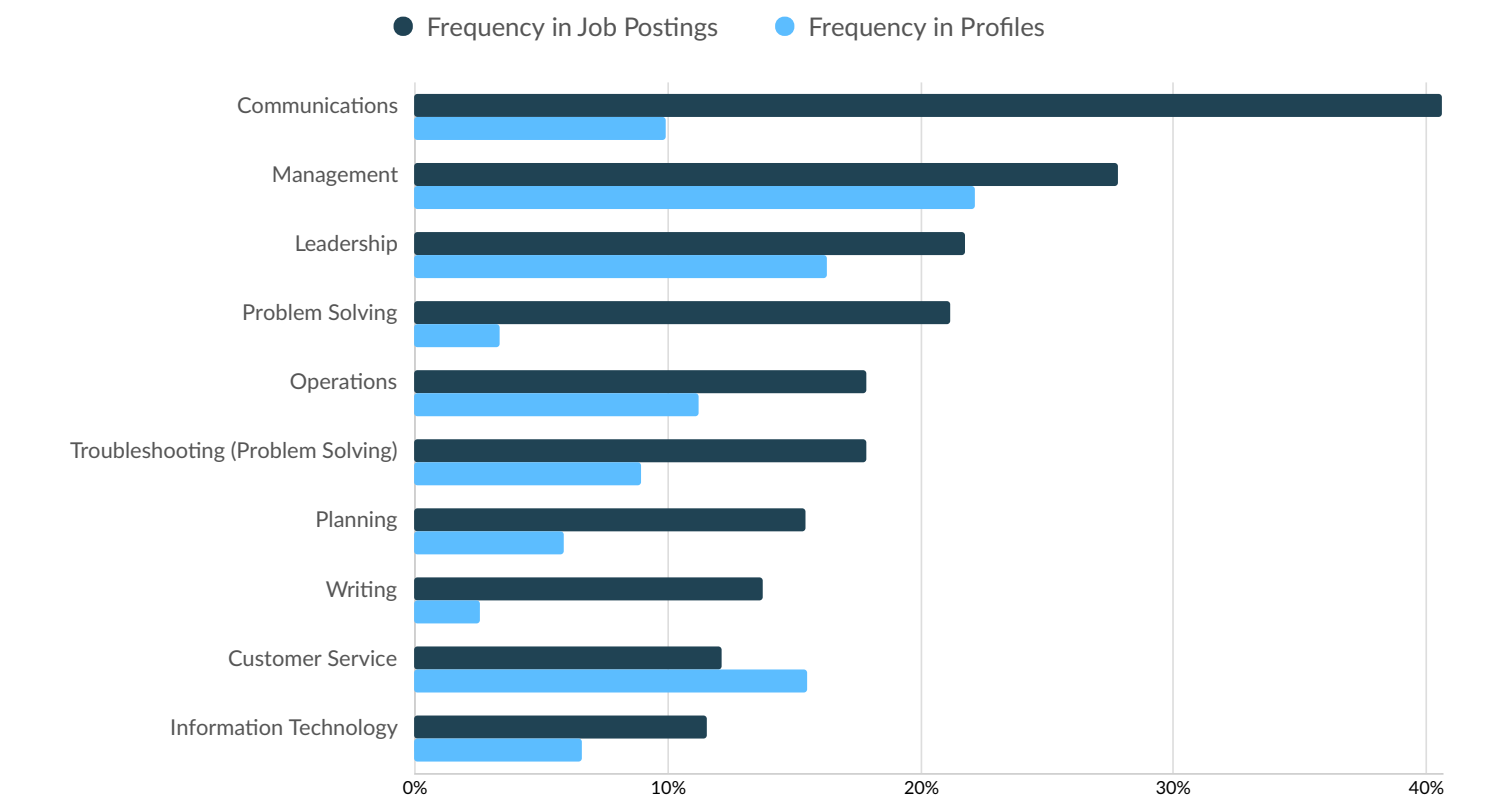
Job Title	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Software Engineers	356,976 / 121,755	3 : 1 	25 days
Software Developers	107,267 / 38,327	3 : 1 	25 days
Java Developers	84,034 / 37,853	2 : 1 	21 days
Systems Engineers	93,395 / 36,878	3 : 1 	25 days
DevOps Engineers	77,281 / 35,164	2 : 1 	22 days
Data Engineers	72,252 / 33,008	2 : 1 	22 days
Network Engineers	61,563 / 27,173	2 : 1 	23 days
Full Stack Developers	61,518 / 24,876	2 : 1 	24 days
.NET Developers	46,709 / 23,404	2 : 1 	22 days
Business Systems Analysts	53,797 / 23,139	2 : 1 	26 days

# Top Specialized Skills



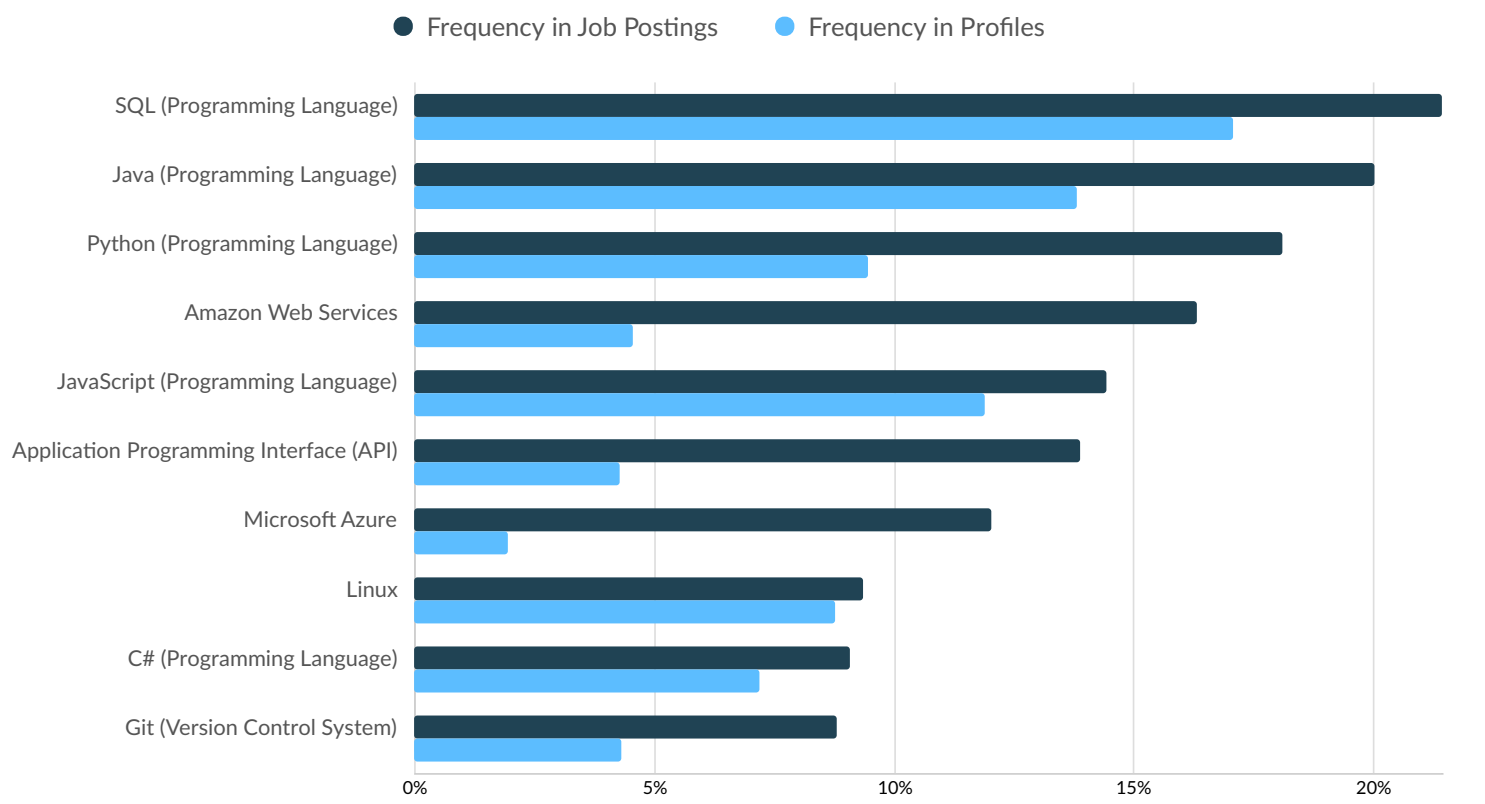
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Computer Science	845,728	31%	113,499	2%
Agile Methodology	731,444	27%	540,507	12%
SQL (Programming Language)	591,228	21%	800,147	17%
Java (Programming Language)	552,756	20%	647,089	14%
Software Engineering	530,111	19%	967,931	21%
Python (Programming Language)	499,240	18%	442,621	9%
Software Development	495,129	18%	842,091	18%
Automation	460,160	17%	301,256	6%
Amazon Web Services	450,740	16%	213,181	5%
JavaScript (Programming Language)	397,787	14%	556,663	12%

# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	1,121,005	41%	465,187	10%
Management	768,140	28%	1,037,738	22%
Leadership	601,592	22%	764,012	16%
Problem Solving	584,429	21%	159,808	3%
Operations	493,907	18%	527,237	11%
Troubleshooting (Problem Solving)	493,706	18%	419,510	9%
Planning	427,376	15%	275,803	6%
Writing	379,511	14%	121,561	3%
Customer Service	335,479	12%	727,809	16%
Information Technology	319,339	12%	311,255	7%

# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
SQL (Programming Language)	591,228	21%	800,147	17%
Java (Programming Language)	552,756	20%	647,089	14%
Python (Programming Language)	499,240	18%	442,621	9%
Amazon Web Services	450,740	16%	213,181	5%
JavaScript (Programming Language)	397,787	14%	556,663	12%
Application Programming Interface (API)	383,163	14%	200,018	4%
Microsoft Azure	332,398	12%	92,283	2%
Linux	258,279	9%	411,012	9%
C# (Programming Language)	250,406	9%	337,899	7%
Git (Version Control System)	242,793	9%	201,845	4%



## Top Qualifications

Qualification	Postings with Qualification
Security Clearance	87,616
Secret Clearance	63,814
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	61,336
Project Management Professional Certification	60,536
Master Of Business Administration (MBA)	33,486
Certified Information Systems Security Professional	31,465
Cisco Certified Network Associate	30,488
CompTIA Security+	27,103
Certified Scrum Master	26,872
Cisco Certified Network Professional	23,140

# Appendix A

## Program Selection Details

CIP Code	Program Name
11.0501	Computer Systems Analysis/Analyst

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; North Dakota Job Service; South Dakota Department of Labor and Regulation

# New Academic Program Request

**Institution:**

Bismarck State College

**Program Name:**

IT and Cybersecurity Governance

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

11.1099

**Academic Program Code:**

UGICG

**Academic Department/Division/College:**

Current and Emerging Technologies

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

Hybrid (on campus & distance)

Online Only

**Describe the delivery methods and location(s) to which the program will be delivered:**

It will be offered in online and face-to-face formats

**Funding Source:**

Tuition Revenue

**Describe the funding source:**

This program consists of existing coursework so new tuition revenues will be used to support the certificate.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Undergraduate Program Certificate

**Does the program require a criminal background check described in NDUS Procedure 511?**

No

**Describe a brief description of the program:**

This certificate program addresses the managers of information technology/cybersecurity departments and programs. There is far lower focus on technical skills and more emphasis on the business/management aspects. Classes include CIT 320 Disaster Recovery & Incident Response, CIT 381 IT Project Management, CIT 340 IT Policies & Procedures, CIT 345 Cybersecurity Governance, CIT 440 Cybersecurity Program Concepts, CIT 445 Information Assurance & Risk Management

**Address student demand and employment availability for students completing the program:**

There is an increase of 2.1% in the region and 3.5% nationwide for IT Governance individuals. The Cybersecurity BILT expressed a need for cyber professionals that have the skill set obtained through this certificate.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

Building and Industry Leadership Team meetings have expressed the need for this certificate with additional support provided by NDI and Palo Alto Networks. Enrollments are expected to be at 5 students per year that will either enroll only for this certificate or earn the certificate as they complete their BAS degree.

**Describe how the program addresses the institutional strategic plan:**

The IT and Cybersecurity Governance certificate provides learners with an affordable, flexible, high-quality certificate to enhance their skill set. Stackable certificates are a pillar of BSC's strategic initiatives focused on Linking Talent with Opportunity.

**Describe how the program addresses the NDUS strategic plan:**

This certificate addresses the NDUS Strategic Plan #6 Workforce Development. The certificate allows those in the workforce to obtain an additional skill set to complement the skills they already possess. Additionally, the courses can be offered through the DDA which will also relate to # 4 Unified System by allowing others within the NDUS and Tribal Schools to work on the certificate through collaboration.

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

The certificate is 17 credits which could be completed within a semester if enrolled at full-time level or longer if enrolled at part-time.

**Identify the proposed program-level accreditation organization, if applicable:**

NA

# Certificate

Mari - Fixed prerequisite to match catalog.

## Program: IT & Cybersecurity Governance

### Prescribed Technical Program Requirements

(may list in semester format if program is limited enrollment)

Course # and Title	Pre- and co-requisites	Credits	Semester	Modality
CIT 320 Disaster Recovery & Incident Response		3	Fall	Online
CIT 340 IT Policies and Procedures		3	Fall	Online
CIT 345 Cybersecurity Governance	CIT 340	3	Spring	Online
CIT 381 IT Project Management		3	Spring	Online
CIT 440 Cybersecurity Program Concepts		3	Fall	Online
CIT 445 Information Assurance & Risk Assessment	CIT 440	3	Spring	Online
	Total	18		

### Required Program Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

### Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

Footnotes:

# Program Overview

Computer/Information Technology Services Administration and Management, Other

Lightcast Q1 2023 Data Set

February 2023

## Bismarck State College



1500 Edwards Avenue  
Bismarck, North Dakota 58506

# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2022

Job Postings Timeframe: Jun 2021 - May 2022

Programs:

Code	Description
11.1099	Computer/Information Technology Services Administration and Management, Other

Regions:

Code	Description	Code	Description
27	Minnesota	38	North Dakota
30	Montana	46	South Dakota

Education Level: Any

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

Residency: In-State



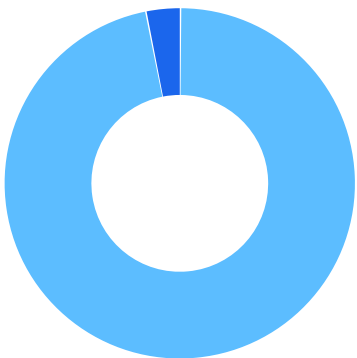
<div>2</div> <div>Institutions</div> <div>-33% Growth (2017-2021)</div>	<div>63</div> <div>Completions</div> <div>-41% Growth (2017-2021)</div>	<div>Completions Distribution</div> <div> <div>Average: 31.5</div> <div>Median: 31.5</div> </div> <div>2 ————— 61</div>
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## Program Overview



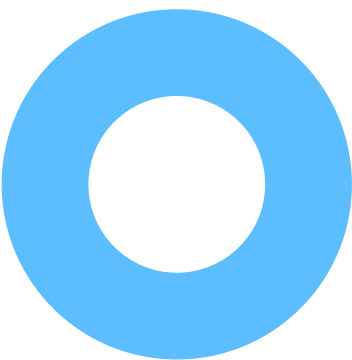
	Completions (2021)	% Completions	Institutions (2021)	% Institutions
● All Programs	63	100%	2	100%
● Distance Offered Programs	63	100%	2	100%
● Non-Distance Offered Programs	0	0%	0	0%

## Market Share by Institution Type



Institution Type	Completions (2021)	Market Share
● Private not-for-profit, 4-year or above	61	96.8%
● Private for-profit, 4-year or above	2	3.2%

# Market Share by Program

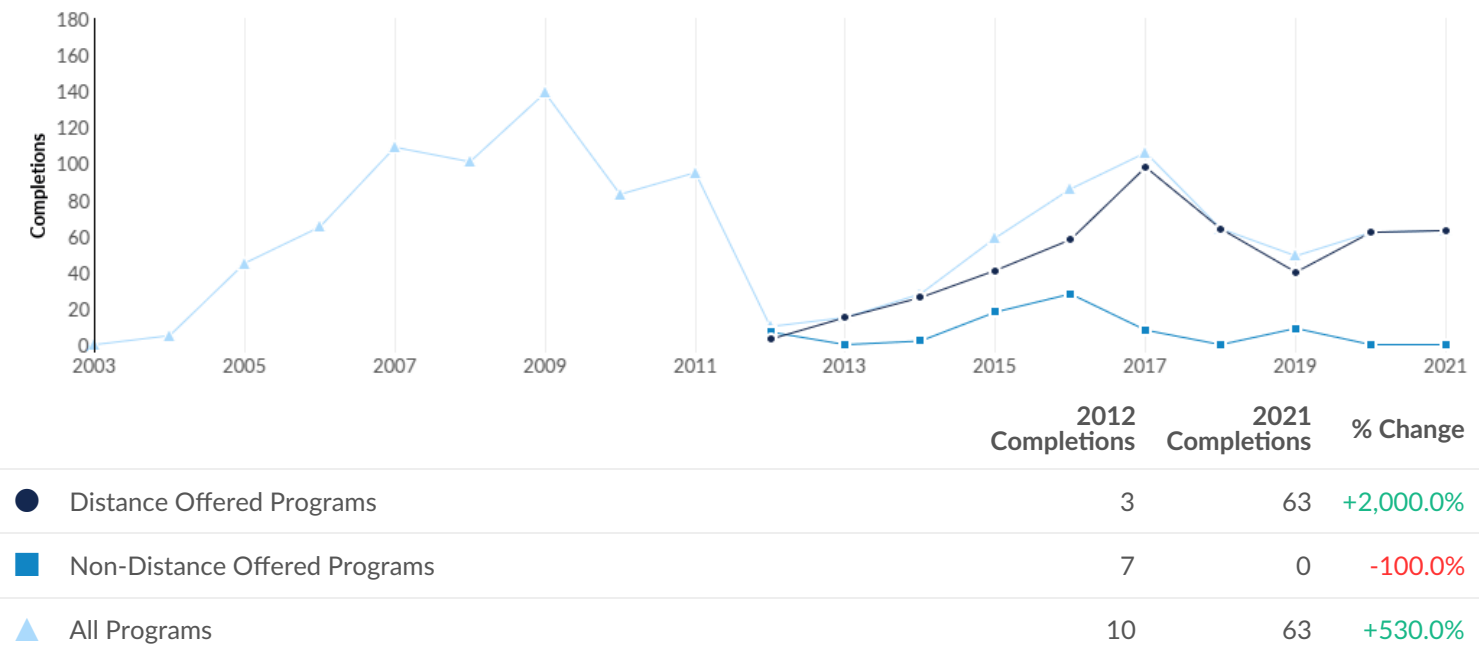


Program	Completions (2021)	Market Share
Computer/Information Technology Services Administration and Management, Other (11.1099)	63	100.0%

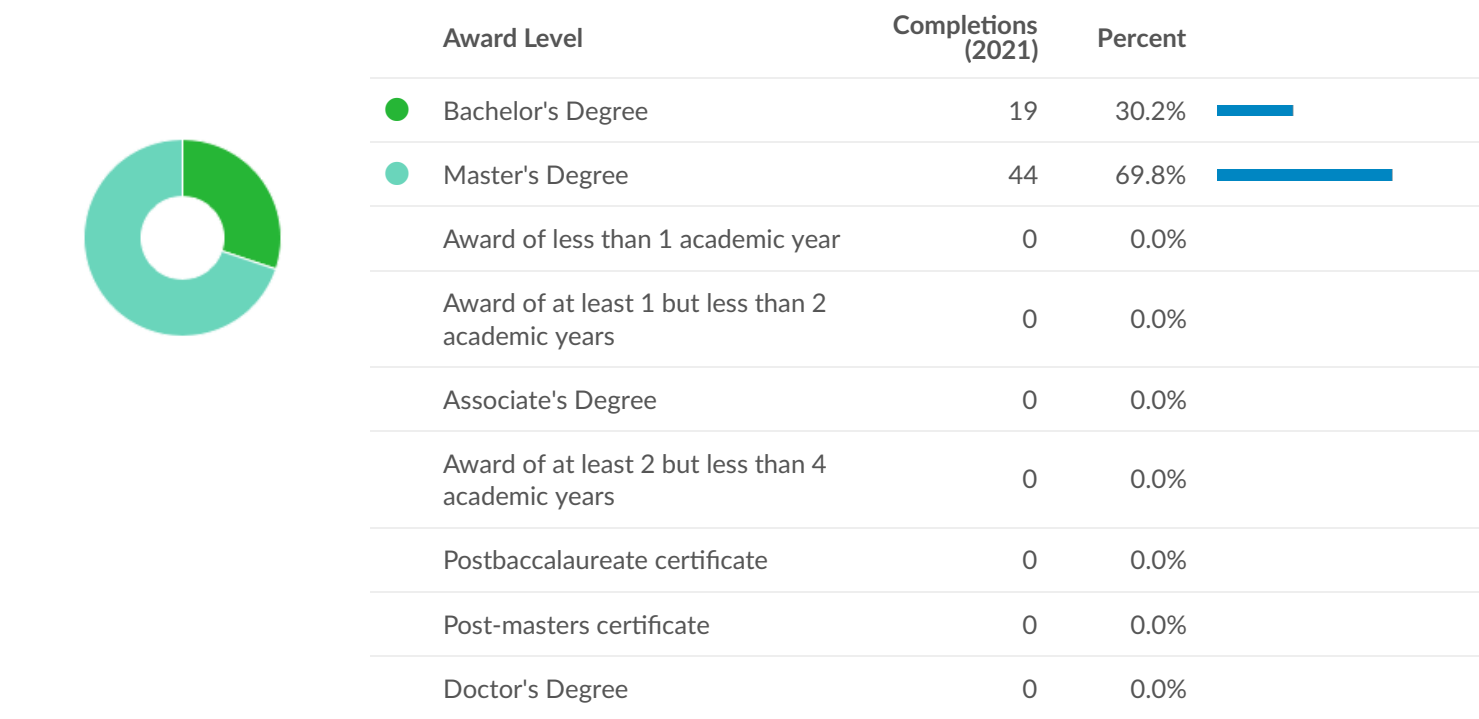
## Completions by Institution

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Concordia University-Saint Paul	61	35.6%	96.8%	\$23,900	
Capella University	2	-88.2%	3.2%	\$14,148	

# Regional Trends



# Regional Completions by Award Level



## Similar Programs

<div>121</div> <div>Programs (2021)</div>		<div>33,285</div> <div>Completions (2021)</div>
CIP Code	Program	Completions (2021)
52.0201	Business Administration and Management, General	7,464
24.0101	Liberal Arts and Sciences/Liberal Studies	7,167
11.0701	Computer Science	1,704
52.1401	Marketing/Marketing Management, General	1,485
30.9999	Multi-/Interdisciplinary Studies, Other	1,339
52.0101	Business/Commerce, General	1,148
43.0104	Criminal Justice/Safety Studies	1,050
24.0102	General Studies	1,043
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	764
11.0101	Computer and Information Sciences, General	631

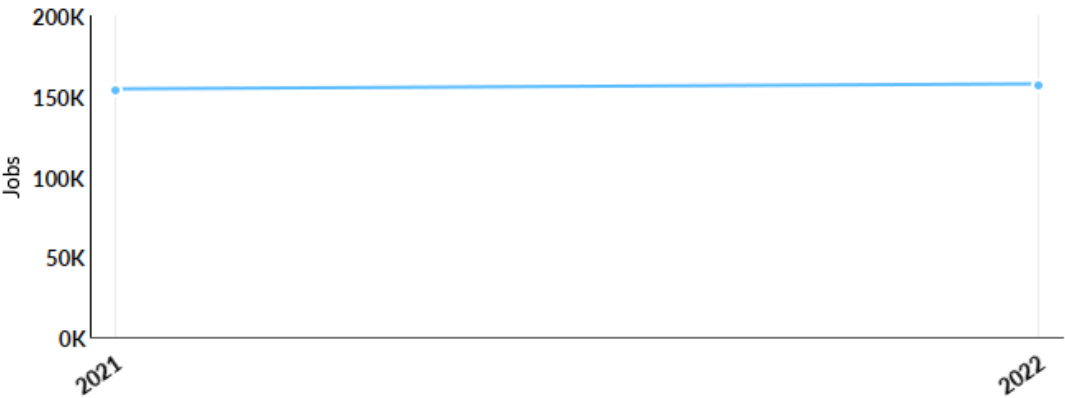
## Target Occupations

<p>154,209</p> <p>Jobs (2021)</p> <p>8% <b>below</b> National average</p>	<p><b>+2.1%</b></p> <p>% Change (2021-2022)</p> <p>Nation: <b>+3.5%</b></p>	<p>\$42.27/hr \$87.9K/yr</p> <p>Median Earnings</p> <p>Nation: \$47.51/hr; \$98.8K/yr</p>	<p>14,862</p> <p>Annual Openings</p>
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Occupation	2021 Jobs	Annual Openings	Median Earnings	Growth (2021 - 2022)	Location Quotient (2021)
Software Developers	43,522	4,383	\$48.00/hr	<b>+3.23%</b>	1.05
Project Management Specialists	19,055	2,047	\$39.06/hr	<b>+2.53%</b>	0.84
Computer User Support Specialists	17,643	1,680	\$26.39/hr	<b>+1.33%</b>	0.87
Computer Systems Analysts	17,248	1,465	\$46.88/hr	<b>+0.96%</b>	1.12
Computer and Information Systems Managers	11,462	1,154	\$71.07/hr	<b>+2.65%</b>	0.78
Computer Network Support Specialists	10,693	955	\$29.16/hr	<b>-0.16%</b>	1.99
Network and Computer Systems Administrators	8,727	706	\$39.05/hr	<b>+0.74%</b>	0.91
Computer Occupations, All Other	7,334	725	\$35.81/hr	<b>+2.62%</b>	0.60
Computer Network Architects	4,785	373	\$52.51/hr	<b>+0.94%</b>	0.95
Information Security Analysts	3,663	414	\$47.22/hr	<b>+3.90%</b>	0.75
Computer Programmers	3,614	308	\$38.21/hr	<b>-0.11%</b>	0.73
Software Quality Assurance Analysts and Testers	2,910	340	\$43.26/hr	<b>+3.81%</b>	0.52
Database Administrators	2,256	189	\$44.07/hr	<b>+1.02%</b>	0.88
Database Architects	1,042	89	\$57.48/hr	<b>+1.34%</b>	0.70
Computer and Information Research Scientists	253	34	\$62.78/hr	<b>+5.93%</b>	0.26

Growth

154,209 2021 Jobs	157,385 2022 Jobs	3,176 Change (2021-2022)	2.1% % Change (2021-2022)
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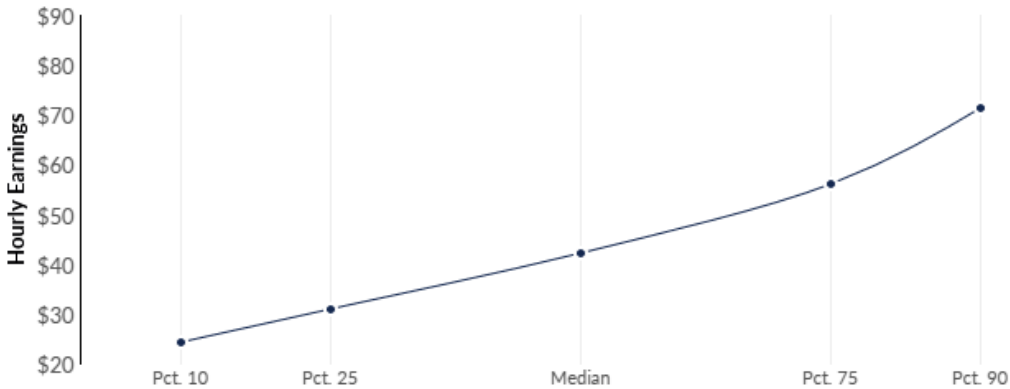


Occupation	2021 Jobs	2022 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	11,462	11,766	304	3%
Project Management Specialists (13-1082)	19,055	19,537	482	3%
Computer Systems Analysts (15-1211)	17,248	17,414	166	1%
Information Security Analysts (15-1212)	3,663	3,806	143	4%
Computer and Information Research Scientists (15-1221)	253	268	15	6%
Computer Network Support Specialists (15-1231)	10,693	10,676	-17	0%
Computer User Support Specialists (15-1232)	17,643	17,878	235	1%
Computer Network Architects (15-1241)	4,785	4,830	45	1%
Database Administrators (15-1242)	2,256	2,279	23	1%
Database Architects (15-1243)	1,042	1,056	14	1%
Network and Computer Systems Administrators (15-1244)	8,727	8,792	65	1%
Computer Programmers (15-1251)	3,614	3,610	-4	0%
Software Developers (15-1252)	43,522	44,926	1,404	3%
Software Quality Assurance Analysts and Testers (15-1253)	2,910	3,021	111	4%

Computer Occupations, All Other (15-1299)	7,334	7,526	192	3%
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# Percentile Earnings

<div>\$31.03/hr</div> <div>25th Percentile Earnings</div>	<div>\$42.27/hr</div> <div>Median Earnings</div>	<div>\$56.17/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$55.15	\$71.07	\$79.84
Project Management Specialists (13-1082)	\$31.90	\$39.06	\$49.18
Computer Systems Analysts (15-1211)	\$36.66	\$46.88	\$56.99
Information Security Analysts (15-1212)	\$37.42	\$47.22	\$57.88
Computer and Information Research Scientists (15-1221)	\$57.59	\$62.78	\$63.51
Computer Network Support Specialists (15-1231)	\$23.34	\$29.16	\$37.37
Computer User Support Specialists (15-1232)	\$20.12	\$26.39	\$30.75
Computer Network Architects (15-1241)	\$48.02	\$52.51	\$64.99
Database Administrators (15-1242)	\$32.60	\$44.07	\$57.93
Database Architects (15-1243)	\$48.40	\$57.48	\$72.77
Network and Computer Systems Administrators (15-1244)	\$30.61	\$39.05	\$47.26
Computer Programmers (15-1251)	\$30.34	\$38.21	\$47.10
Software Developers (15-1252)	\$37.55	\$48.00	\$61.25



Software Quality Assurance Analysts and Testers (15-1253)	\$32.15	\$43.26	\$48.30
Computer Occupations, All Other (15-1299)	\$22.78	\$35.81	\$52.71










## Job Postings Summary

<p>96,641</p> <p>Unique Postings</p> <p>212,483 Total Postings</p>	<p>2 : 1</p> <p>Posting Intensity</p>  <p>Regional Average: 3 : 1</p>	<p>29 days</p> <p>Median Posting Duration</p> <p>Regional Average: 33 days</p>
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There were 212,483 total job postings for your selection from June 2021 to May 2022, of which 96,641 were unique. These numbers give us a Posting Intensity of 2-to-1, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

## Top Companies Posting

Company	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Randstad	7,684 / 3,140	2 : 1 	20 days
UnitedHealth Group	8,989 / 3,078	3 : 1 	27 days
Humana	5,990 / 2,753	2 : 1 	39 days
Wells Fargo	10,188 / 2,143	5 : 1 	34 days
US Bank	3,115 / 1,579	2 : 1 	36 days
Robert Half	1,971 / 1,306	2 : 1 	30 days
CTG	1,513 / 1,229	1 : 1 	47 days
General Dynamics	1,763 / 1,198	1 : 1 	60 days
Revature	2,983 / 967	3 : 1 	21 days

Genesis10

1,517 / 942

2 : 1

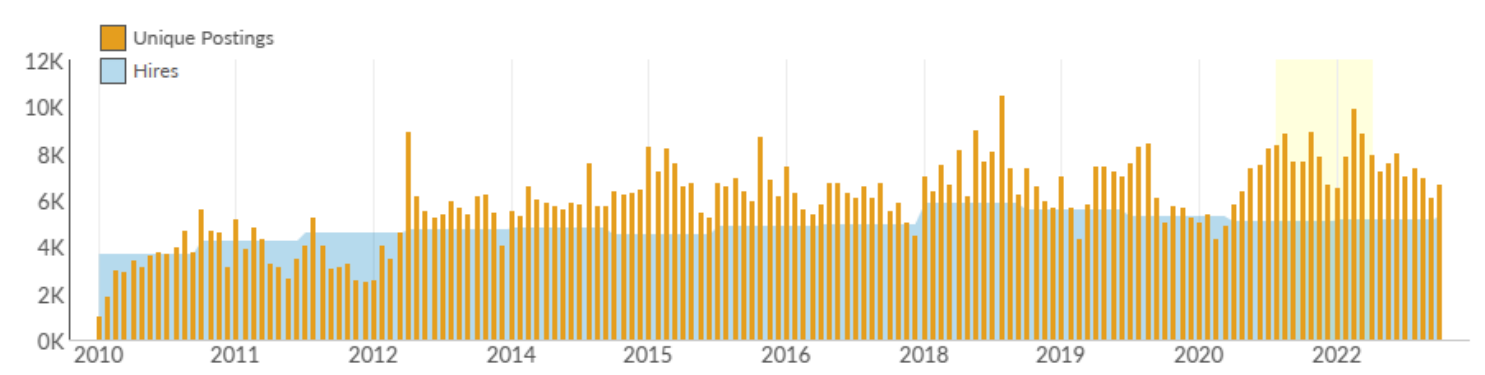


40 days

# Job Postings vs. Hires

8,053	5,139
Avg. Monthly Postings (Jun 2021 - May 2022)	Avg. Monthly Hires (Jun 2021 - May 2022)











In an average month, there were 8,053 newly posted job postings for 15 Occupations, and 5,139 actually hired. This means there was approximately 1 hire for every 2 unique job postings for 15 Occupations.



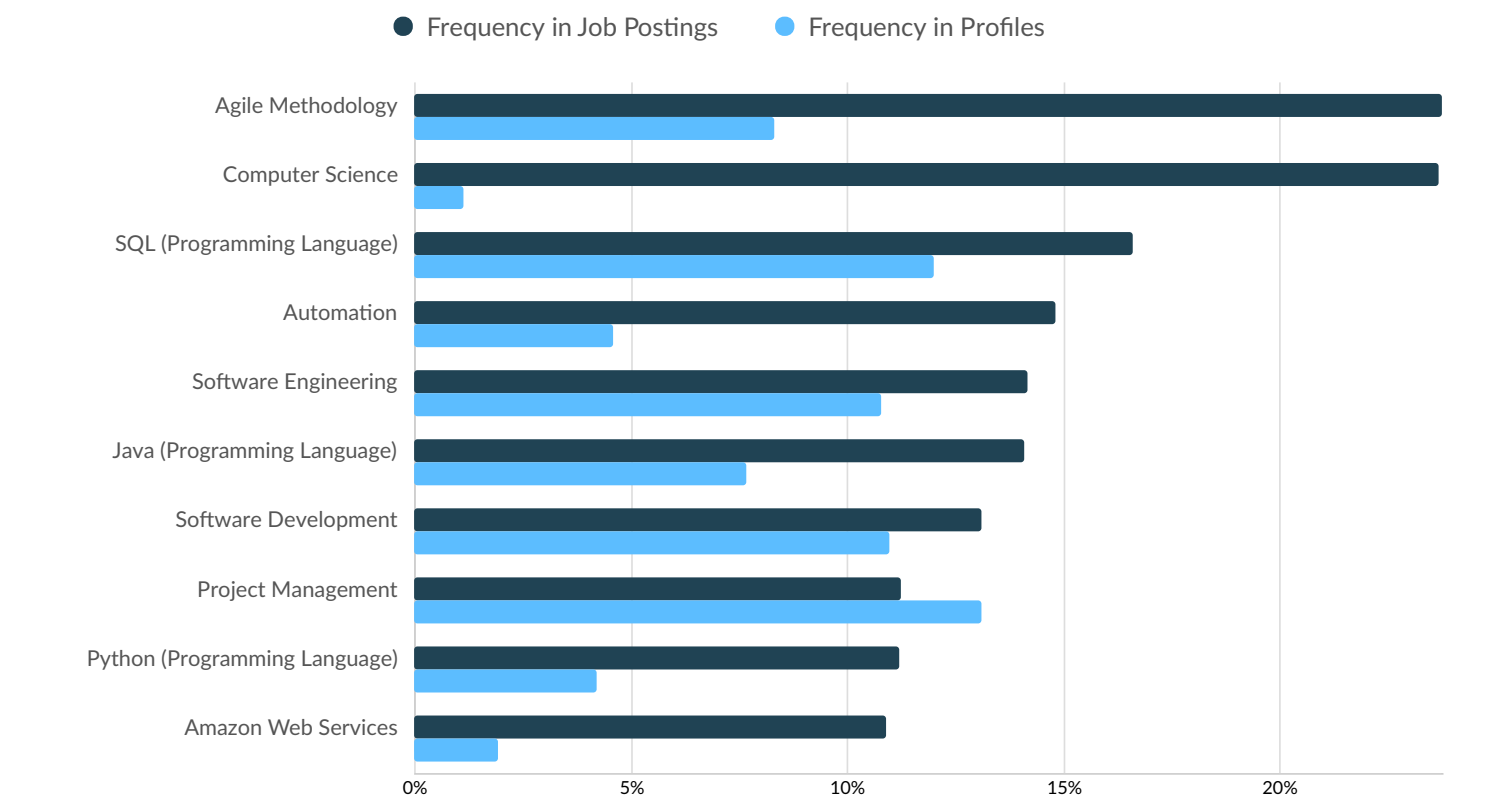
Occupation	Avg Monthly Postings (Jun 2021 - May 2022)	Avg Monthly Hires (Jun 2021 - May 2022)
Software Developers	2,555	1,415
Computer Occupations, All Other	1,354	255
Computer User Support Specialists	914	638
Computer Systems Analysts	669	500
Project Management Specialists	609	781
Information Security Analysts	326	147
Software Quality Assurance Analysts and Testers	311	118
Database Administrators	284	66
Network and Computer Systems Administrators	267	251
Computer Network Architects	220	136
Database Architects	196	32
Computer Programmers	167	96

Computer and Information Systems Managers	104	364
Computer Network Support Specialists	52	331
Computer and Information Research Scientists	26	13

## Top Posted Job Titles

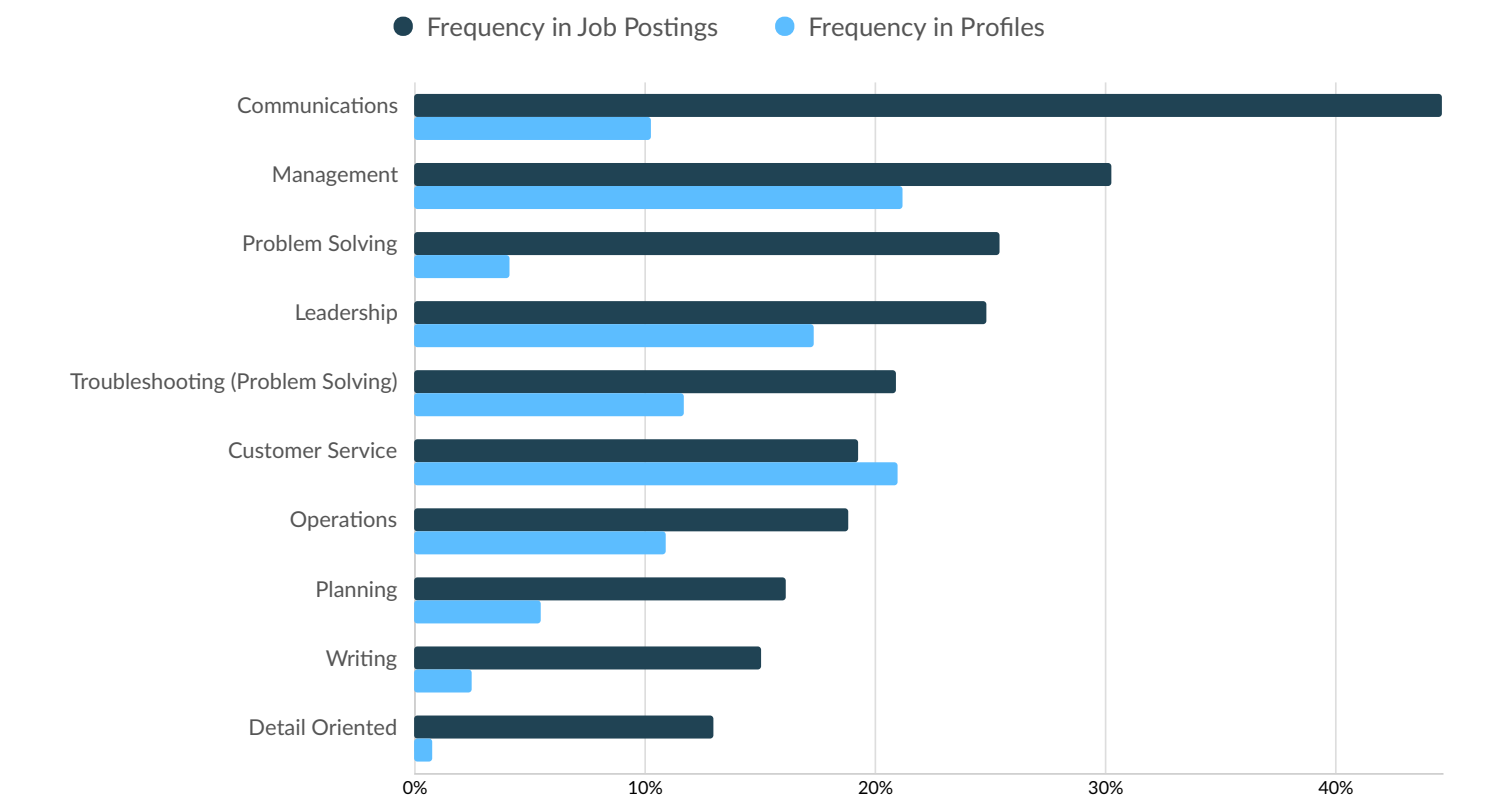
Job Title	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Software Engineers	7,609 / 3,027	3 : 1 	27 days
Project Managers	5,359 / 2,546	2 : 1 	32 days
Software Developers	2,330 / 1,112	2 : 1 	28 days
Business Systems Analysts	2,230 / 930	2 : 1 	26 days
Java Developers	1,681 / 903	2 : 1 	21 days
Scrum Masters	1,594 / 789	2 : 1 	25 days
Data Engineers	1,562 / 788	2 : 1 	21 days
Full Stack Developers	1,618 / 684	2 : 1 	26 days
DevOps Engineers	1,189 / 654	2 : 1 	24 days
Systems Engineers	1,294 / 611	2 : 1 	30 days

# Top Specialized Skills



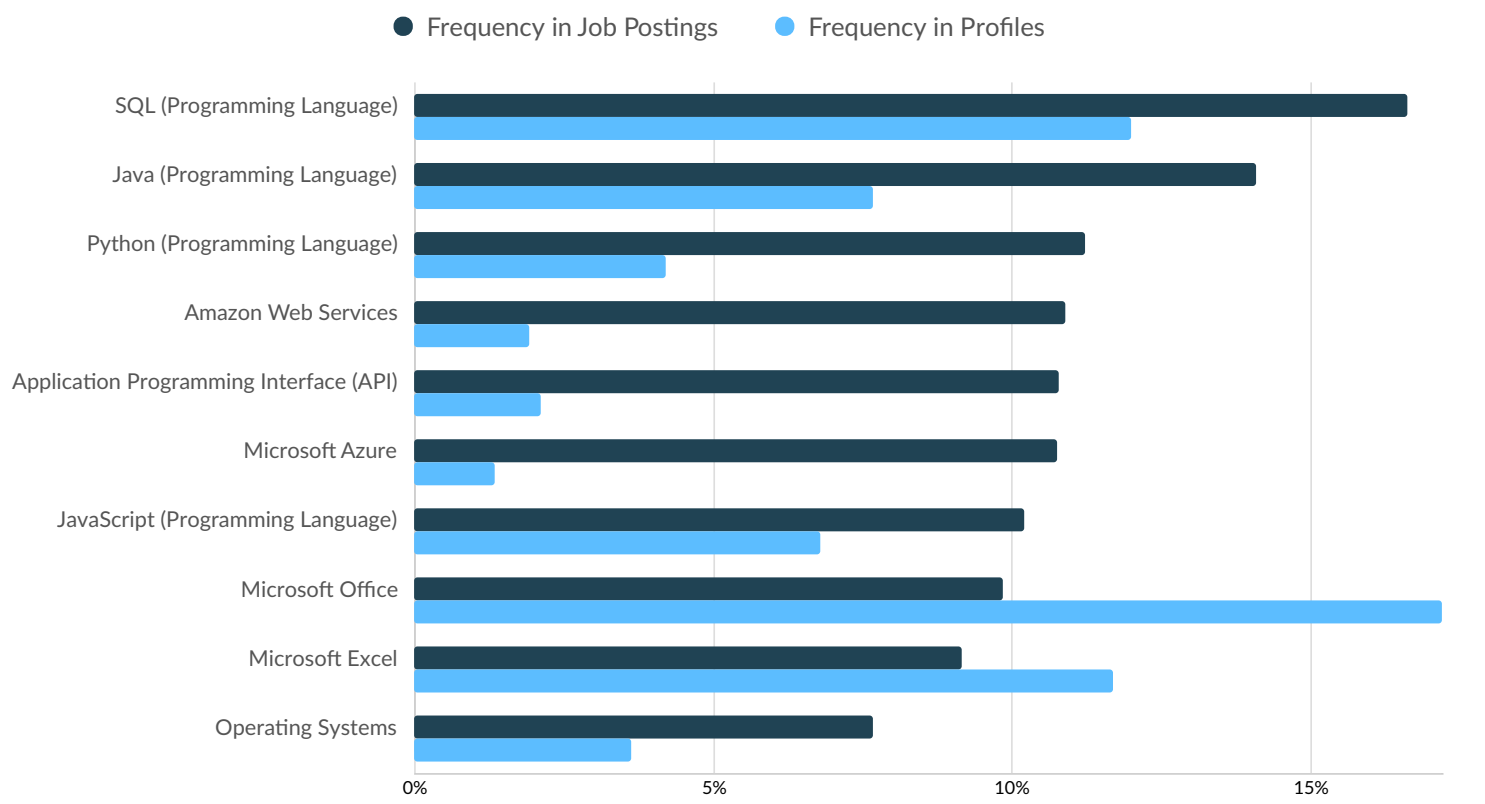
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Agile Methodology	22,963	24%	16,347	8%
Computer Science	22,907	24%	2,265	1%
SQL (Programming Language)	16,056	17%	23,531	12%
Automation	14,325	15%	9,006	5%
Software Engineering	13,718	14%	21,143	11%
Java (Programming Language)	13,623	14%	15,037	8%
Software Development	12,682	13%	21,526	11%
Project Management	10,886	11%	25,733	13%
Python (Programming Language)	10,852	11%	8,248	4%
Amazon Web Services	10,530	11%	3,793	2%

# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	43,134	45%	20,196	10%
Management	29,276	30%	41,537	21%
Problem Solving	24,587	25%	8,065	4%
Leadership	24,026	25%	34,064	17%
Troubleshooting (Problem Solving)	20,188	21%	22,887	12%
Customer Service	18,605	19%	41,158	21%
Operations	18,209	19%	21,387	11%
Planning	15,585	16%	10,775	5%
Writing	14,569	15%	4,900	3%
Detail Oriented	12,589	13%	1,546	1%

# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
SQL (Programming Language)	16,056	17%	23,531	12%
Java (Programming Language)	13,623	14%	15,037	8%
Python (Programming Language)	10,852	11%	8,248	4%
Amazon Web Services	10,530	11%	3,793	2%
Application Programming Interface (API)	10,414	11%	4,152	2%
Microsoft Azure	10,400	11%	2,652	1%
JavaScript (Programming Language)	9,862	10%	13,292	7%
Microsoft Office	9,525	10%	33,700	17%
Microsoft Excel	8,844	9%	22,918	12%
Operating Systems	7,414	8%	7,137	4%

## Top Qualifications

Qualification	Postings with Qualification
Project Management Professional Certification	3,019
Certified Information Systems Security Professional	2,003
CompTIA A+	1,258
Master Of Business Administration (MBA)	1,181
Cisco Certified Network Associate	943
Certified Scrum Master	940
Security Clearance	873
Certified Information Security Manager	872
CompTIA Security+	864
Certified Information System Auditor (CISA)	860



# Appendix A

## Program Selection Details

CIP Code	Program Name
11.1099	Computer/Information Technology Services Administration and Management, Other

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; North Dakota Job Service; South Dakota Department of Labor and Regulation

# New Academic Program Request

**Institution:**

Bismarck State College

**Program Name:**

Security Operations

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

11.1003

**Academic Program Code:**

UGSO

**Academic Department/Division/College:**

Current and Emerging Technologies

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

Hybrid (on campus & distance)

Online Only

**Describe the delivery methods and location(s) to which the program will be delivered:**

The program would be open to online and face-to-face delivery

**Funding Source:**

Tuition Revenue

**Describe the funding source:**

Existing coursework (for the most part) leading to tuition revenues.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Undergraduate Program Certificate

**Does the program require a criminal background check described in NDUS Procedure 511?**

No

**Describe a brief description of the program:**

With the Security Operations Center classroom being added to the new campus building, this provides an opportunity to incorporate SOC-related learning options for students. The curriculum will include CIS 241 Digital Forensics Fundamentals, CIS 274 Cybersecurity Operations, CIT 320 Disaster Recovery & Incident Response, CIT 380 Network Forensics, CIT 480 Cyber Threat Hunting, CIT 497 Cooperative Education/Internship (requiring work in the SOC classroom)

**Address student demand and employment availability for students completing the program:**

Business and Industry Leadership Team (BILT) members were consulted. Working with NDIT and Palo Alto Networks also helped to shape the need for the certificate program, as well as the course contents. Regional growth is 1.7% while national growth is 3.0%. There are roughly 8,143 job opening yearly.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

Business and Industry Leadership Team (BILT) members were consulted. Working with NDIT and Palo Alto Networks also helped to shape the need for the certificate program, as well as the course contents. Both have expressed that they will engage their employees in seeking the certifications and possible adjunct support. Enrollment is expected to be between 5-10 students per year.

**Describe how the program addresses the institutional strategic plan:**

The Digital Forensics and Incident Response certificate provides learners with an affordable, flexible, high-quality, experiential learning enhanced by an on-campus security operations center (SOC). It is a stackable certificate that is central to BSC's strategic goal of Linking Talent with Opportunity.

**Describe how the program addresses the NDUS strategic plan:**

This certificate addresses the NDUS Strategic Plan #6 Workforce Development. The certificate allows those in the workforce to obtain an additional skill set to compliment the skills they already possess. Additionally, the courses can be offered through the DDA which will also relate to # 4 Unified System by allowing others within the NDUS and Tribal Schools to work on the certificate through collaboration.

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

The program is 27 credits so it may take up to a year at full-time levels or longer as a part-time student.

**Identify the proposed program-level accreditation organization, if applicable:**

NA

# Certificate

Mari - Char

## Program: Security Operations

### Prescribed Technical Program Requirements

(may list in semester format if program is limited enrollment)

Course # and Title	Pre- and co-requisites	Credits
CIS 147 Principles of Information Security		3
CIS 164 Networking Fundamentals I		4
CIS 165 Networking Fundamentals II	CIS 164	4
CIS 241 Digital Forensics Fundamentals		3
CIS 274 Cybersecurity Operations	CIS 147 or Instructor Approval	3
CIT 320 Disaster Recovery & Incident Response		3
CIT 380 Network Forensics	CIS 165	3
CIT 480 Cyber Threat Hunting	CIT 380	3
CIT 497 Cooperative Education/Internship	CIT 480	1
	Total	27

### Required Program Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

### Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
	Total	

Footnotes:

# Program Overview

Computer and Information Systems Security/Auditing/Information Assurance

Lightcast Q1 2023 Data Set

February 2023

## Bismarck State College



1500 Edwards Avenue  
Bismarck, North Dakota 58506

# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2022

Job Postings Timeframe: Jun 2021 - May 2022

Programs:

Code	Description
11.1003	Computer and Information Systems Security/Auditing/Information Assurance

Regions:

Code	Description	Code	Description
27	Minnesota	38	North Dakota
30	Montana	46	South Dakota

Education Level: Any

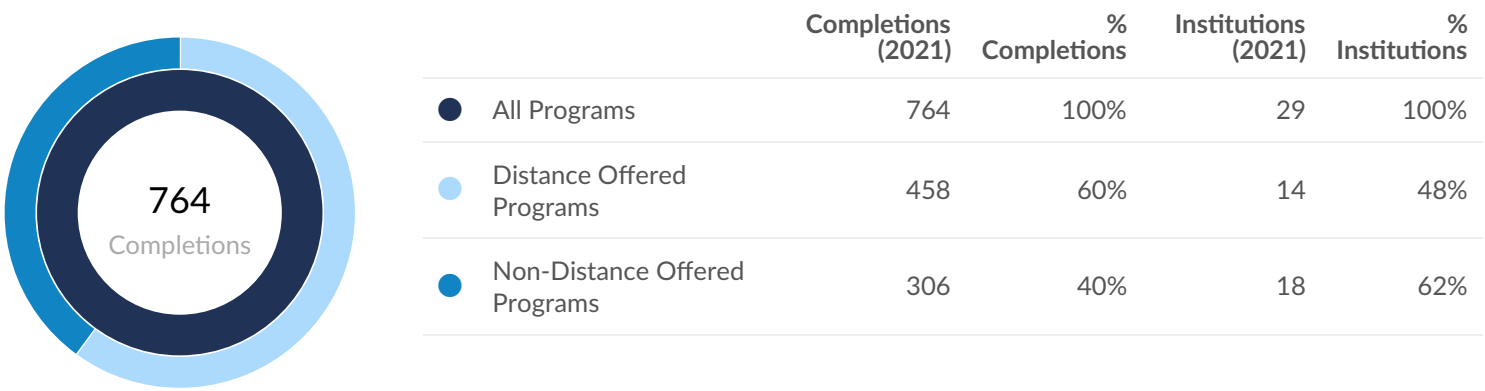
Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

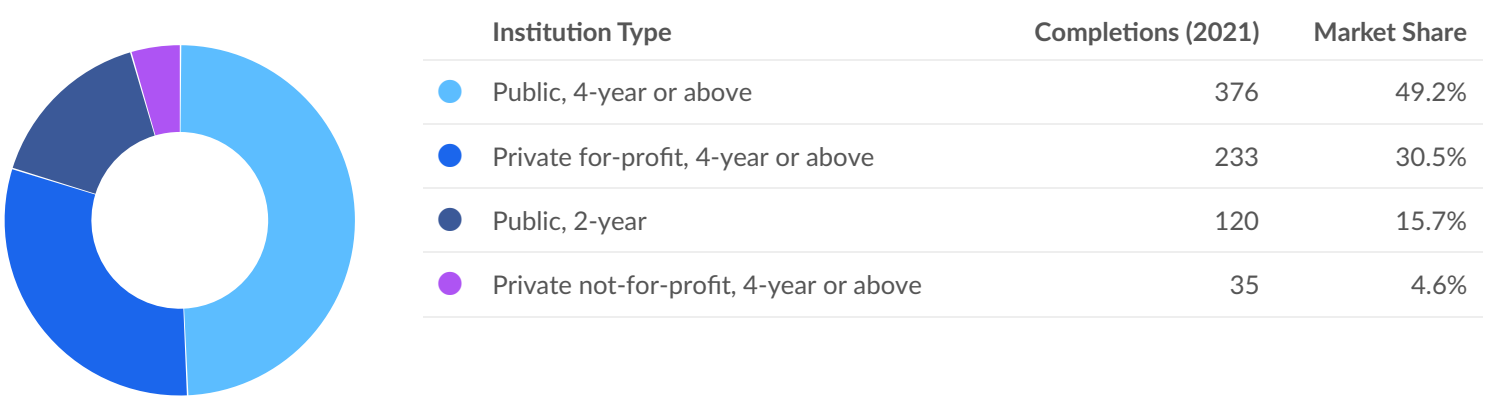
Residency: In-State

<div>29</div> <div>Institutions</div> <div>32% Growth (2017-2021)</div>	<div>764</div> <div>Completions</div> <div>61% Growth (2017-2021)</div>	<div>Completions Distribution</div> <div> <div>Average: 26.3</div> <div>1   211</div> <div>Median: 9</div> </div>
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## Program Overview

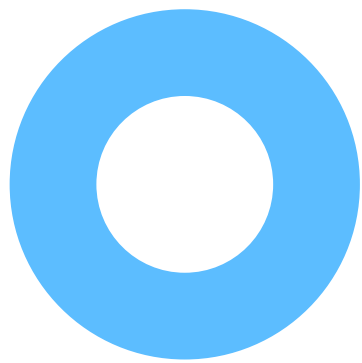


## Market Share by Institution Type





## Market Share by Program

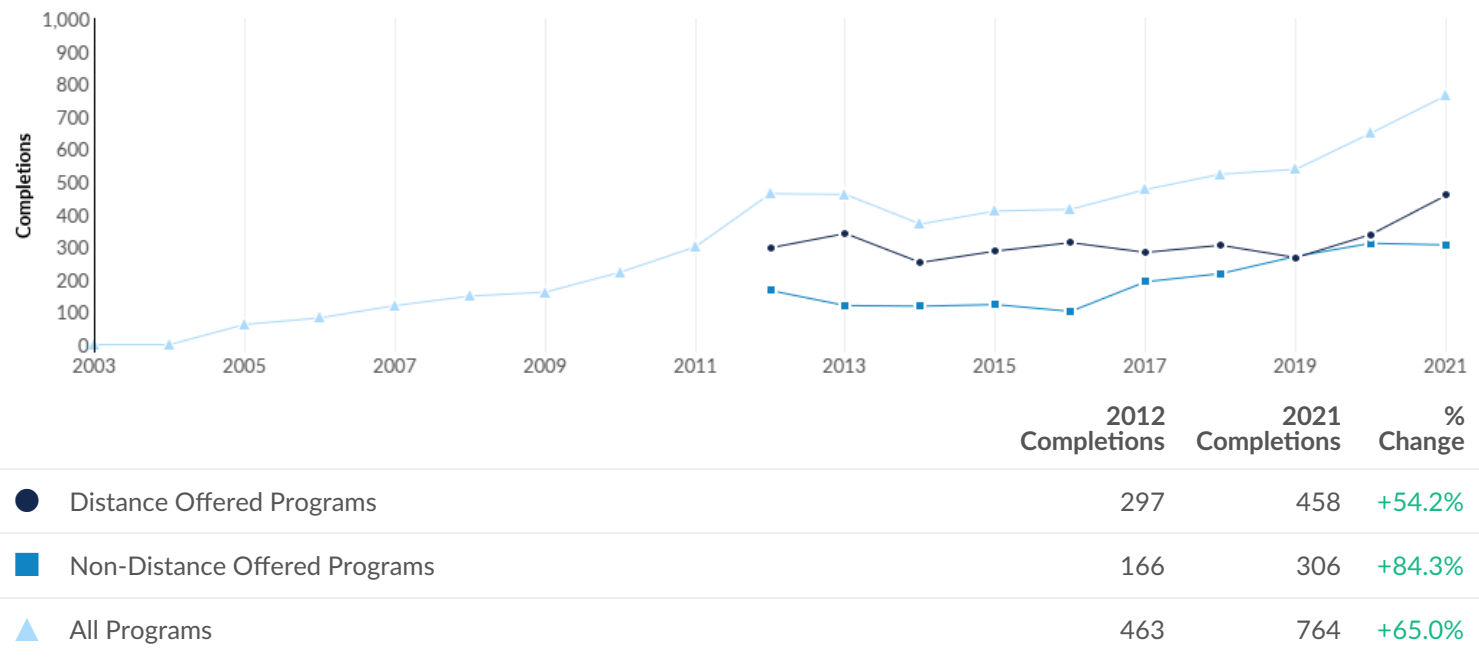


Program	Completions (2021)	Market Share
Computer and Information Systems Security/Auditing/Information Assurance (11.1003)	764	100.0%

## Completions by Institution

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Capella University	211	17.9%	27.6%	\$14,148	
Saint Cloud State University	167	13.6%	21.9%	\$9,170	
Dakota State University	123	15.0%	16.1%	\$9,633	
Metropolitan State University	32	23.1%	4.2%	\$9,394	
Saint Mary's University of Minnesota	30	Insf. Data	3.9%	\$39,410	
Century College	19	-13.6%	2.5%	\$5,907	
University of North Dakota	17	750.0%	2.2%	\$10,596	
Minneapolis Community and Technical College	17	54.5%	2.2%	\$5,906	
Minnesota State University-Mankato	16	23.1%	2.1%	\$9,146	
Anoka-Ramsey Community College	13	160.0%	1.7%	\$5,515	

## Regional Trends



## Regional Completions by Award Level



Award Level	Completions (2021)	Percent
Award of less than 1 academic year	40	5.2%
Award of at least 1 but less than 2 academic years	18	2.4%
Associate's Degree	89	11.6%
Bachelor's Degree	343	44.9%
Postbaccalaureate certificate	22	2.9%
Master's Degree	185	24.2%
Doctor's Degree	67	8.8%
Award of at least 2 but less than 4 academic years	0	0.0%
Post-masters certificate	0	0.0%

## Similar Programs

134  
Programs (2021)

38,151  
Completions (2021)

CIP Code	Program	Completions (2021)
52.0201	Business Administration and Management, General	7,464
24.0101	Liberal Arts and Sciences/Liberal Studies	7,167
26.0101	Biology/Biological Sciences, General	2,434
51.0701	Health/Health Care Administration/Management	1,833
11.0701	Computer Science	1,704
52.1401	Marketing/Marketing Management, General	1,485
52.0101	Business/Commerce, General	1,148
43.0104	Criminal Justice/Safety Studies	1,050
24.0102	General Studies	1,043
27.0101	Mathematics, General	826

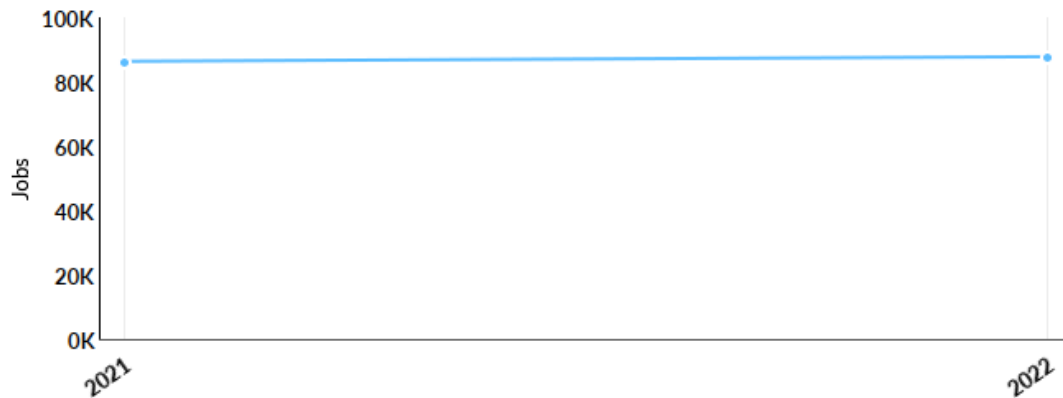
## Target Occupations

<p>86,305</p> <p>Jobs (2021)</p> <p>8% <b>below</b> National average</p>	<p><b>+1.7%</b></p> <p>% Change (2021-2022)</p> <p>Nation: <b>+3.0%</b></p>	<p>\$43.49/hr \$90.5K/yr</p> <p>Median Earnings</p> <p>Nation: \$48.14/hr; \$100.1K/yr</p>	<p>8,143</p> <p>Annual Openings</p>
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Occupation	2021 Jobs	Annual Openings	Median Earnings	Growth (2021 - 2022)	Location Quotient (2021)
Project Management Specialists	19,055	2,047	\$39.06/hr	<b>+2.53%</b>	0.84
Computer Systems Analysts	17,248	1,465	\$46.88/hr	<b>+0.96%</b>	1.12
Computer and Information Systems Managers	11,462	1,154	\$71.07/hr	<b>+2.65%</b>	0.78
Computer Network Support Specialists	10,693	955	\$29.16/hr	<b>-0.16%</b>	1.99
Network and Computer Systems Administrators	8,727	706	\$39.05/hr	<b>+0.74%</b>	0.91
Computer Occupations, All Other	7,334	725	\$35.81/hr	<b>+2.62%</b>	0.60
Computer Network Architects	4,785	373	\$52.51/hr	<b>+0.94%</b>	0.95
Information Security Analysts	3,663	414	\$47.22/hr	<b>+3.90%</b>	0.75
Database Administrators	2,256	189	\$44.07/hr	<b>+1.02%</b>	0.88
Statisticians	1,080	116	\$36.37/hr	<b>+3.24%</b>	1.09

## Growth

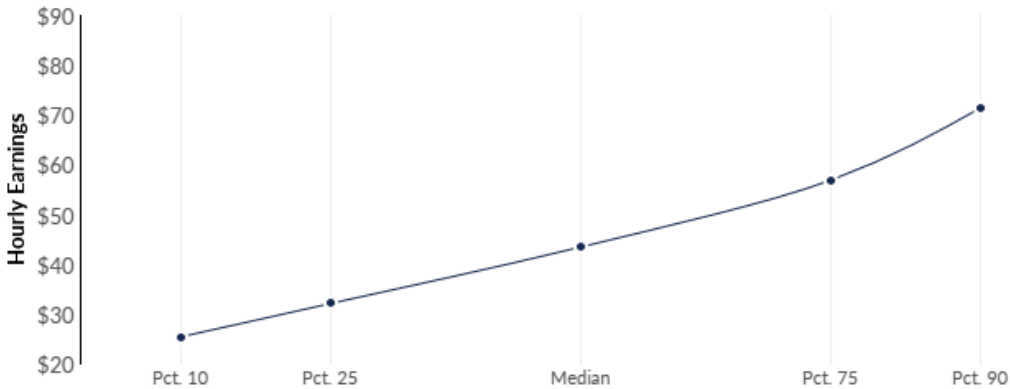
86,305 2021 Jobs	87,741 2022 Jobs	1,436 Change (2021-2022)	1.7% % Change (2021-2022)
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Occupation	2021 Jobs	2022 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	11,462	11,766	304	3%
Project Management Specialists (13-1082)	19,055	19,537	482	3%
Computer Systems Analysts (15-1211)	17,248	17,414	166	1%
Information Security Analysts (15-1212)	3,663	3,806	143	4%
Computer Network Support Specialists (15-1231)	10,693	10,676	-17	0%
Computer Network Architects (15-1241)	4,785	4,830	45	1%
Database Administrators (15-1242)	2,256	2,279	23	1%
Network and Computer Systems Administrators (15-1244)	8,727	8,792	65	1%
Computer Occupations, All Other (15-1299)	7,334	7,526	192	3%
Statisticians (15-2041)	1,080	1,115	35	3%


# Percentile Earnings

<div>\$32.13/hr</div> <div>25th Percentile Earnings</div>	<div>\$43.49/hr</div> <div>Median Earnings</div>	<div>\$56.93/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$55.15	\$71.07	\$79.84
Project Management Specialists (13-1082)	\$31.90	\$39.06	\$49.18
Computer Systems Analysts (15-1211)	\$36.66	\$46.88	\$56.99
Information Security Analysts (15-1212)	\$37.42	\$47.22	\$57.88
Computer Network Support Specialists (15-1231)	\$23.34	\$29.16	\$37.37
Computer Network Architects (15-1241)	\$48.02	\$52.51	\$64.99
Database Administrators (15-1242)	\$32.60	\$44.07	\$57.93
Network and Computer Systems Administrators (15-1244)	\$30.61	\$39.05	\$47.26
Computer Occupations, All Other (15-1299)	\$22.78	\$35.81	\$52.71
Statisticians (15-2041)	\$29.54	\$36.37	\$47.86











## Job Postings Summary

<div>47,310</div> <div>Unique Postings</div> <div>101,040 Total Postings</div>	<div>2 : 1</div> <div>Posting Intensity</div> <div></div> <div>Regional Average: 3 : 1</div>	<div>29 days</div> <div>Median Posting Duration</div> <div>Regional Average: 33 days</div>
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There were **101,040** total job postings for your selection from June 2021 to May 2022, of which **47,310** were unique. These numbers give us a Posting Intensity of **2-to-1**, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

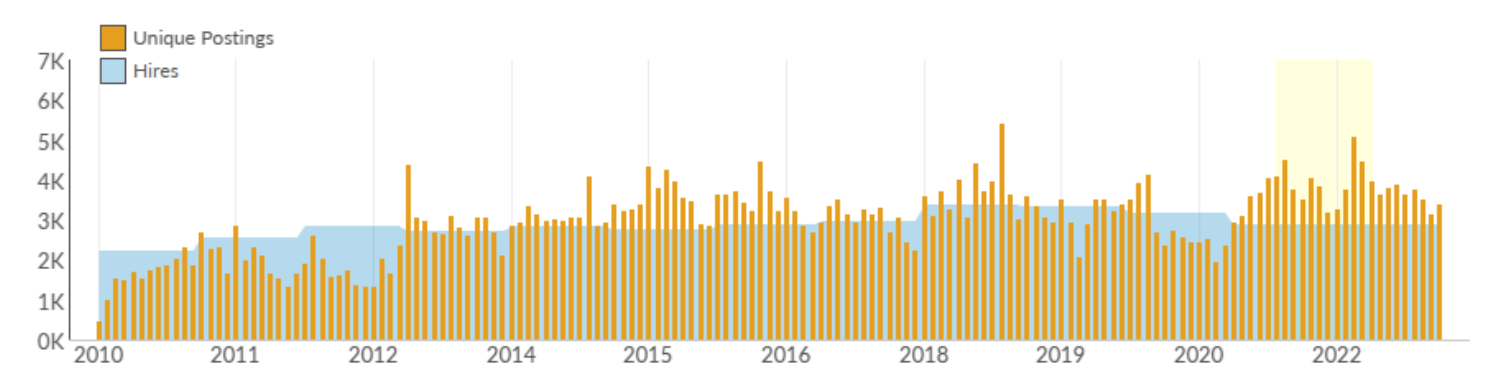
## Top Companies Posting

Company	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Humana	3,057 / 1,449	2 : 1 	38 days
Randstad	2,901 / 1,204	2 : 1 	22 days
UnitedHealth Group	3,257 / 1,184	3 : 1 	24 days
Wells Fargo	5,363 / 1,113	5 : 1 	33 days
US Bank	1,469 / 728	2 : 1 	39 days
CTG	782 / 647	1 : 1 	51 days
GPAC	1,315 / 634	2 : 1 	38 days
General Dynamics	954 / 631	2 : 1 	60 days
Robert Half	920 / 610	2 : 1 	30 days
ASGN	812 / 458	2 : 1 	16 days

# Job Postings vs. Hires

<div>3,943</div> <div>Avg. Monthly Postings (Jun 2021 - May 2022)</div>	<div>2,871</div> <div>Avg. Monthly Hires (Jun 2021 - May 2022)</div>
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In an average month, there were 3,943 newly posted job postings for 10 Occupations, and 2,871 actually hired. This means there was approximately 1 hire for every 1 unique job posting for 10 Occupations.



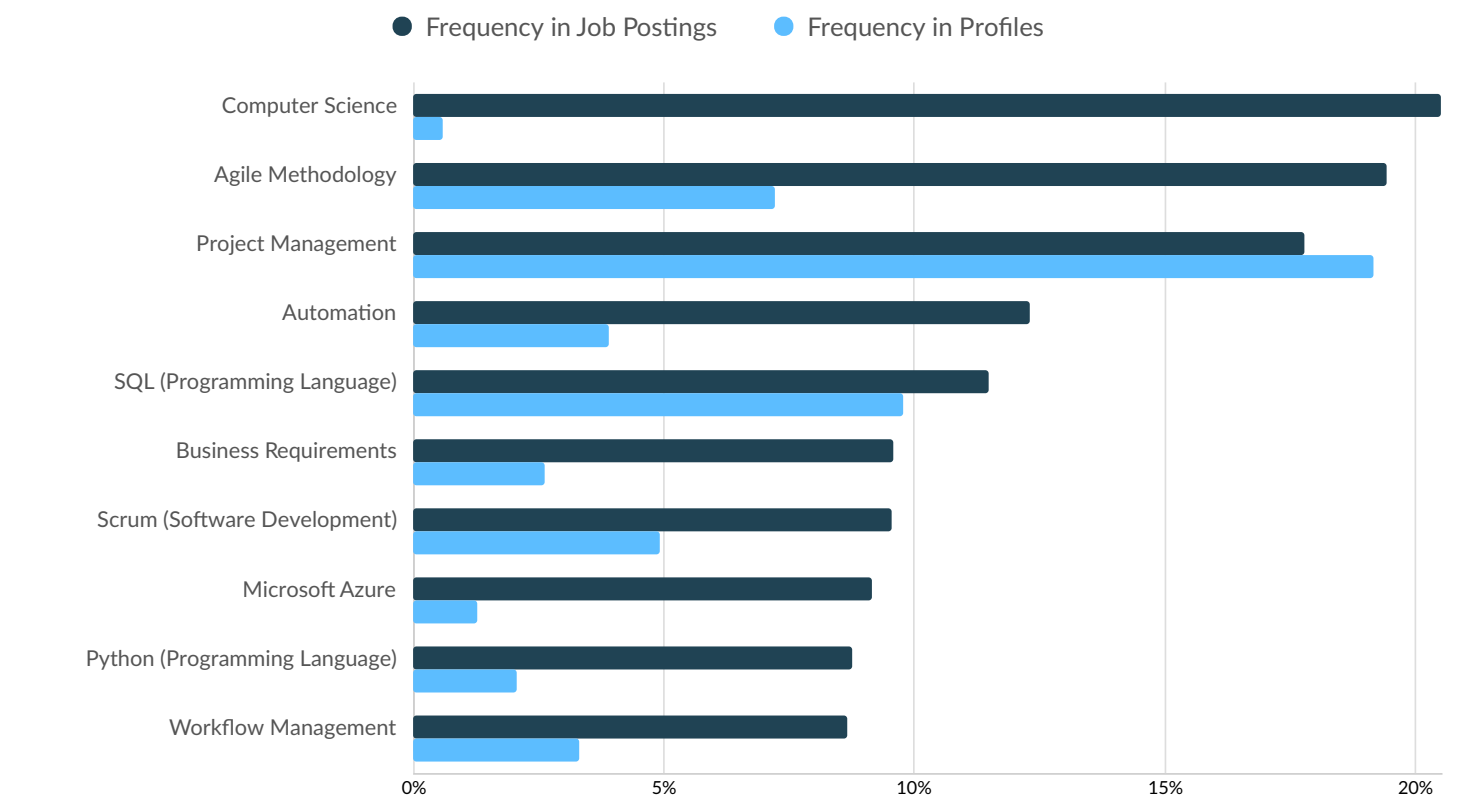
Occupation	Avg Monthly Postings (Jun 2021 - May 2022)	Avg Monthly Hires (Jun 2021 - May 2022)
Computer Occupations, All Other	1,354	255
Computer Systems Analysts	669	500
Project Management Specialists	609	781
Information Security Analysts	326	147
Database Administrators	284	66
Network and Computer Systems Administrators	267	251
Computer Network Architects	220	136
Computer and Information Systems Managers	104	364
Statisticians	58	42
Computer Network Support Specialists	52	331



## Top Posted Job Titles

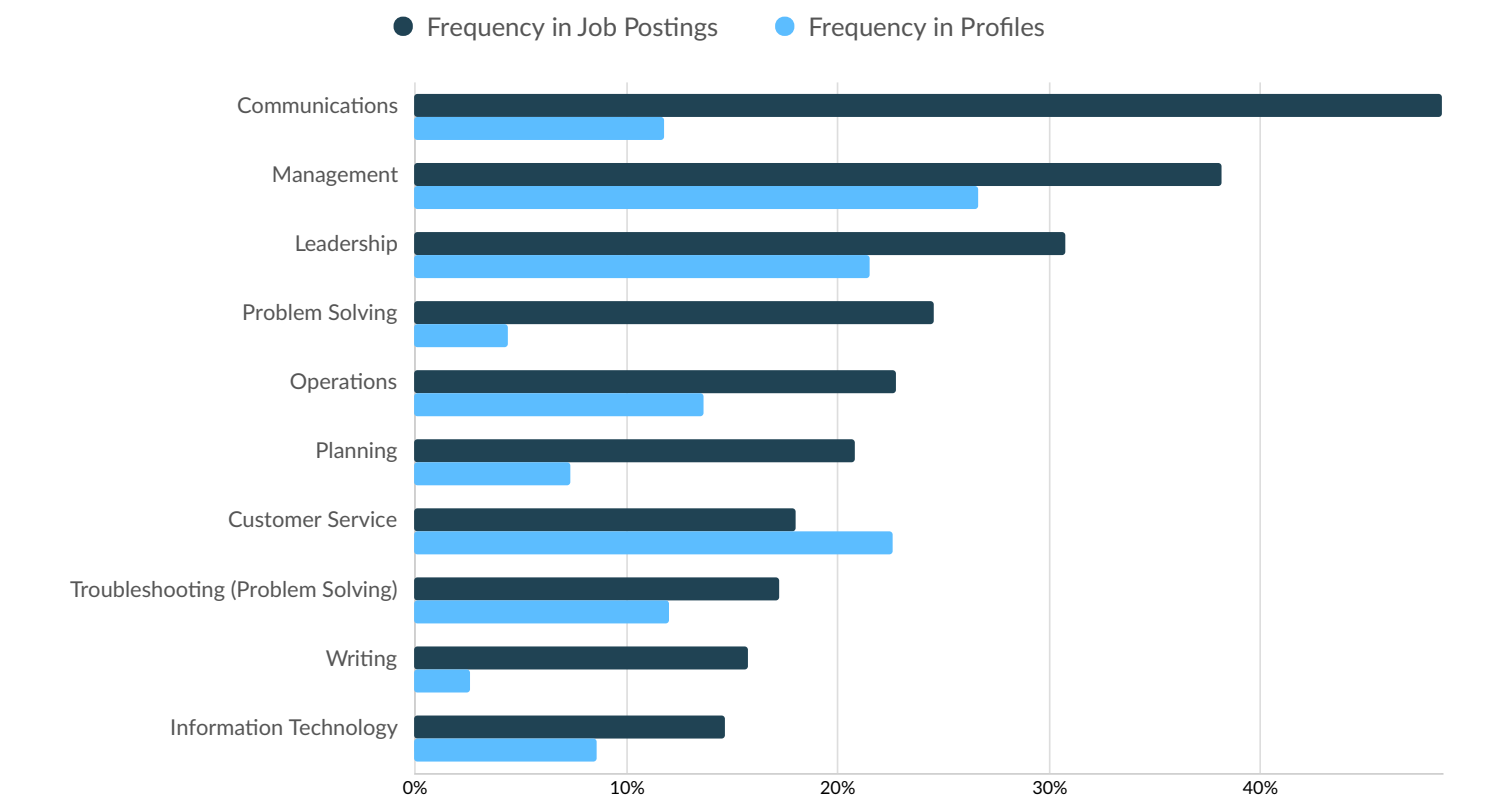
Job Title	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Project Managers	5,359 / 2,546	2 : 1 	32 days
Business Systems Analysts	2,228 / 929	2 : 1 	26 days
Data Engineers	1,546 / 781	2 : 1 	21 days
Scrum Masters	1,581 / 781	2 : 1 	25 days
Systems Engineers	1,304 / 613	2 : 1 	30 days
Systems Administrators	1,513 / 570	3 : 1 	30 days
Solutions Architects	935 / 528	2 : 1 	22 days
IT Project Managers	1,036 / 518	2 : 1 	32 days
Network Engineers	889 / 492	2 : 1 	26 days
Human Resources Project Managers	721 / 402	2 : 1 	28 days

# Top Specialized Skills



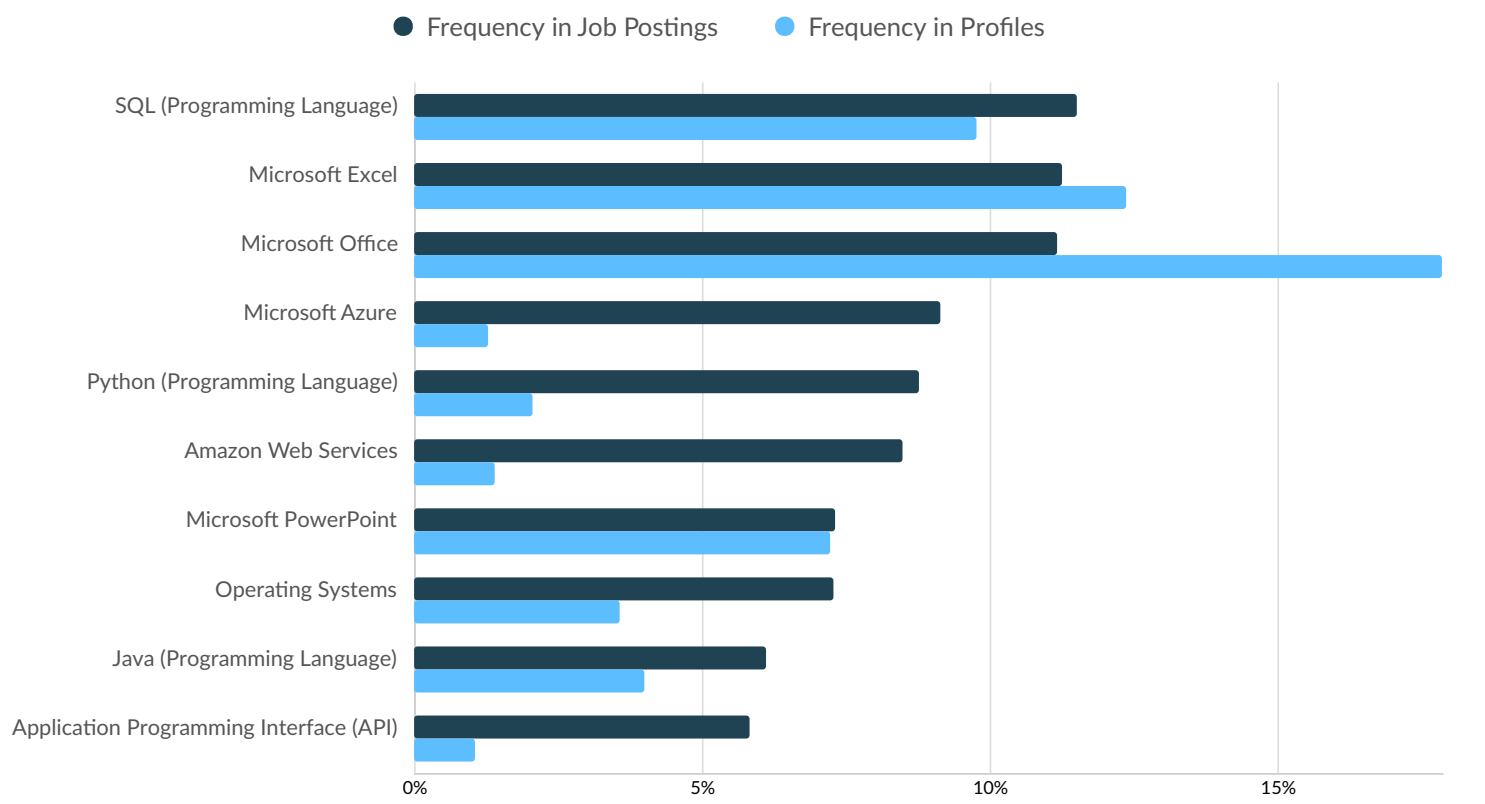
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Computer Science	9,715	21%	625	1%
Agile Methodology	9,196	19%	7,754	7%
Project Management	8,431	18%	20,590	19%
Automation	5,834	12%	4,190	4%
SQL (Programming Language)	5,448	12%	10,491	10%
Business Requirements	4,538	10%	2,834	3%
Scrum (Software Development)	4,526	10%	5,292	5%
Microsoft Azure	4,333	9%	1,365	1%
Python (Programming Language)	4,152	9%	2,214	2%
Workflow Management	4,099	9%	3,558	3%

# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	22,992	49%	12,639	12%
Management	18,077	38%	28,627	27%
Leadership	14,550	31%	23,097	22%
Problem Solving	11,619	25%	4,790	4%
Operations	10,788	23%	14,703	14%
Planning	9,870	21%	7,948	7%
Customer Service	8,535	18%	24,292	23%
Troubleshooting (Problem Solving)	8,173	17%	12,927	12%
Writing	7,477	16%	2,842	3%
Information Technology	6,956	15%	9,282	9%

# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
SQL (Programming Language)	5,448	12%	10,491	10%
Microsoft Excel	5,331	11%	13,287	12%
Microsoft Office	5,288	11%	19,157	18%
Microsoft Azure	4,333	9%	1,365	1%
Python (Programming Language)	4,152	9%	2,214	2%
Amazon Web Services	4,020	8%	1,512	1%
Microsoft PowerPoint	3,457	7%	7,770	7%
Operating Systems	3,454	7%	3,840	4%
Java (Programming Language)	2,897	6%	4,289	4%
Application Programming Interface (API)	2,765	6%	1,139	1%

## Top Qualifications

Qualification	Postings with Qualification
Project Management Professional Certification	2,785
Certified Information Systems Security Professional	1,764
Certified Scrum Master	863
Master Of Business Administration (MBA)	798
Certified Information Security Manager	794
Certified Information System Auditor (CISA)	756
Cisco Certified Network Associate	699
GIAC Certifications	683
CompTIA Security+	613
ITIL Certifications	486

# Appendix A

## Program Selection Details

CIP Code	Program Name
11.1003	Computer and Information Systems Security/Auditing/Information Assurance

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; North Dakota Job Service; South Dakota Department of Labor and Regulation

# New Academic Program Request

**Institution:**

Bismarck State College

**Program Name:**

Software Analysis

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

11.0401

**Academic Program Code:**

UGSA

**Academic Department/Division/College:**

Current and Emerging Technologies

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

Hybrid (on campus & distance)

Online Only

**Describe the delivery methods and location(s) to which the program will be delivered:**

The program would be open to online and face-to-face delivery

**Funding Source:**

Tuition Revenue

**Describe the funding source:**

Existing coursework leading to tuition revenues.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Undergraduate Program Certificate

**Does the program require a criminal background check described in NDUS Procedure 511?**

No



**Describe a brief description of the program:**

One of the key roles in Security Operations performs software and malware analysis. This certificate program provides students with the skills needed to analyze malware infections and obtain detailed information about how they work, where they came from, and how they were written. Courses in the certificate program include CSCI 160 Computer Science I, CSCI 174 Intermediate C++, CSCI 250 Assembly Language, CIT 350 Software Security, CIT 355 Software Reverse Engineering, CIT 455 Malware Analysis

**Address student demand and employment availability for students completing the program:**

Business and Industry Leadership Team (BILT) members were consulted. Working with NDIT and Palo Alto Networks also helped to shape the need for the certificate program, as well as the course contents. There is a 3.1% growth in the region and a 4.5% growth nationwide.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

BILT demand as well as industry partners NDIT and Palo Alto Networks have indicated a strong need for this certificate in the region.

**Describe how the program addresses the institutional strategic plan:**

The Software Analysis certificate is an affordable, flexible, and high-quality way to obtain additional skills for the IT professional. It is a short-term, stackable certificate that is central to BSC's strategic goal of Linking Talent with Opportunity.

**Describe how the program addresses the NDUS strategic plan:**

This certificate addresses the NDUS Strategic Plan #6 Workforce Development. The certificate allows those in the workforce to obtain an additional skill set to complement the skills they already possess. Additionally, the courses can be offered through the DDA which will also relate to #4 Unified System by allowing others within the NDUS and Tribal Schools to work on the certificate through collaboration.

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

The certificate is 22 credits and could be completed within a semester if enrolled at full-time level; however, it is expected to take longer if a student is part-time enrolled.

**Identify the proposed program-level accreditation organization, if applicable:**

NA

# Certificate

Mari - Mad

## Program: Software Analysis

### Prescribed Technical Program Requirements

(may list in semester format if program is limited enrollment)

Course # and Title	Pre- and co-requisites	Credits
CIS 185 Introduction to Programming		3
CSCI 160 Computer Science I	CIS 185 or instructor approval.	4
CSCI 174 Intermediate C++	Pre - CSCI 160 and Co - CSCI 161	3
CSCI 250 Assembly Language	CSCI 160 or Departmental Approval	3
CIT 350 Software Security	CSCI 174	3
CIT 355 Software Reverse Engineering	CSCI 250	3
CIT 455 Malware Analysis	CIT 355	3
Total		22

### Required Program Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
Total		

### Electives (This section is optional)

Course # and Title	Pre- and co-requisites	Credits
Total		

# Program Overview

Information Science/Studies

Lightcast Q1 2023 Data Set

February 2023

## Bismarck State College



1500 Edwards Avenue  
Bismarck, North Dakota 58506

# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2022

Job Postings Timeframe: Jun 2021 - May 2022

Programs:

Code	Description
11.0401	Information Science/Studies

Regions:

Code	Description	Code	Description
27	Minnesota	38	North Dakota
30	Montana	46	South Dakota

Education Level: Any

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

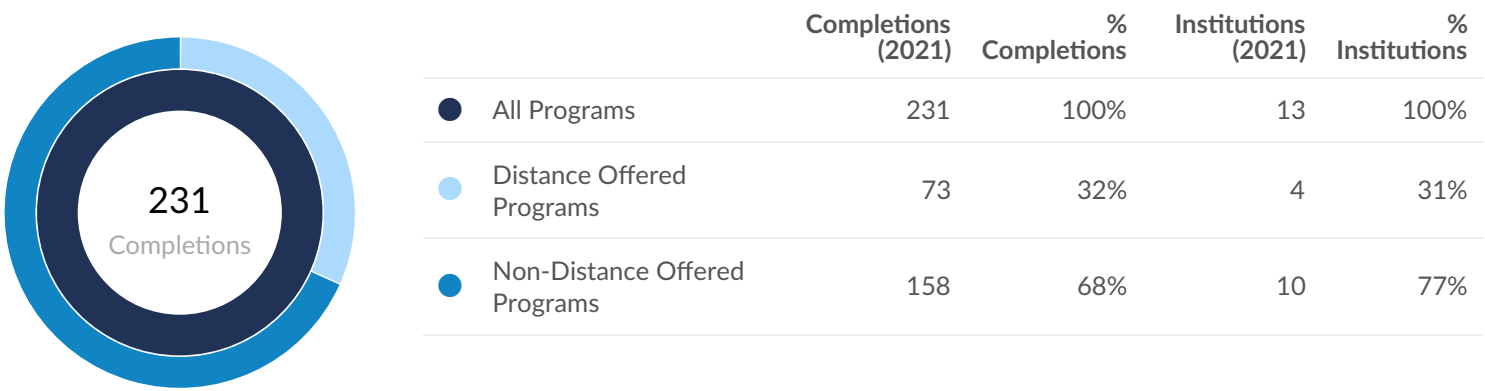
Residency: In-State

13  
Institutions  
0% Growth (2017-2021)

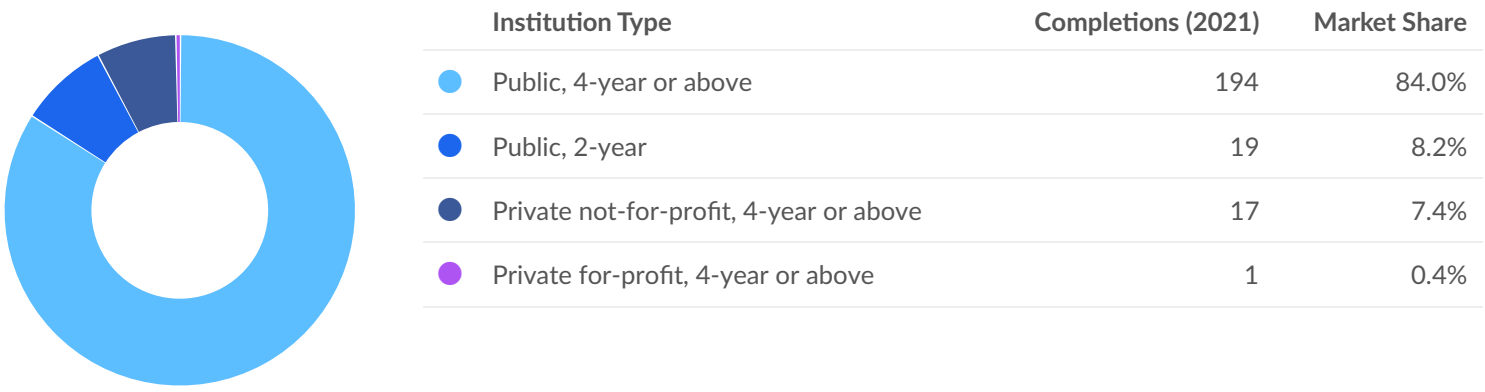
231  
Completions  
19% Growth (2017-2021)

Completions Distribution  
Average: 17.8  
Median: 11  
1 ————— 66

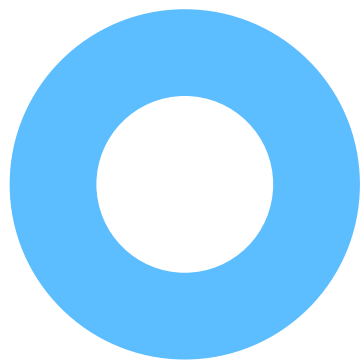
Program Overview



Market Share by Institution Type



## Market Share by Program

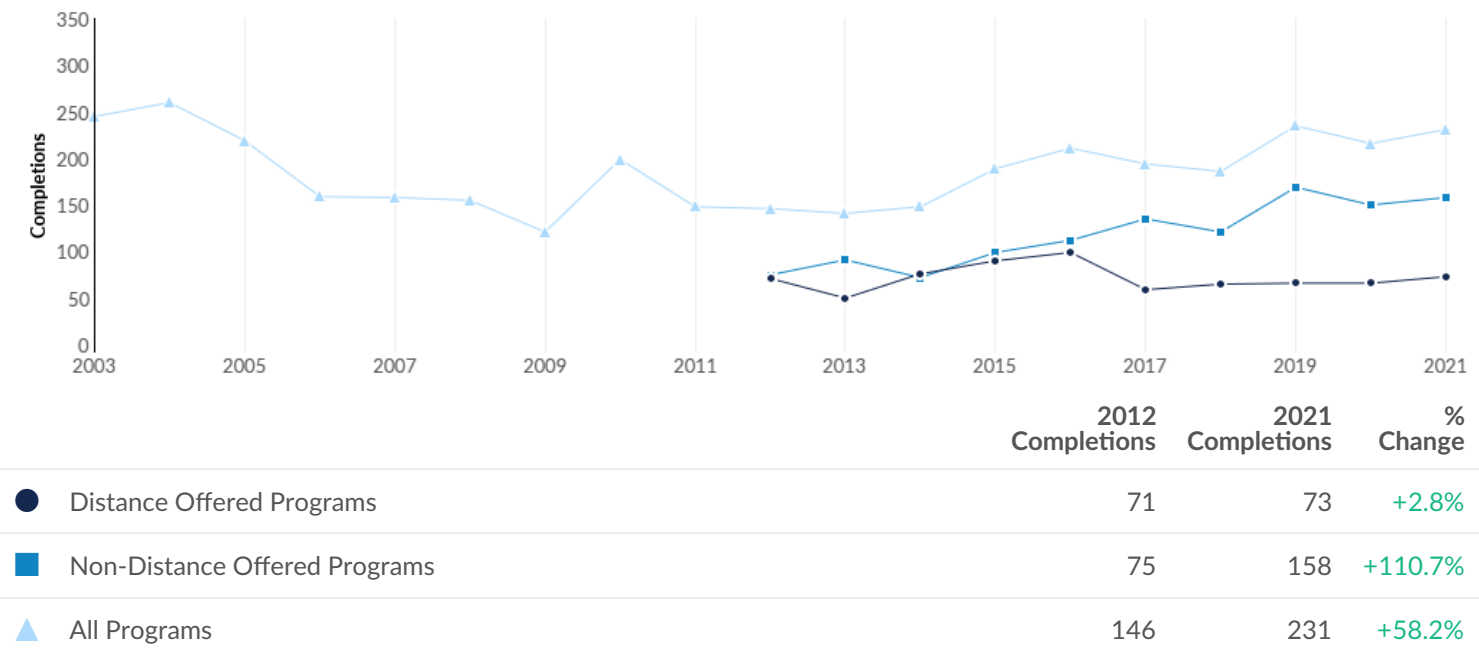


Program	Completions (2021)	Market Share
Information Science/Studies (11.0401)	231	100.0%

## Completions by Institution

Institution	Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Dakota State University	66	1.5%	28.6%	\$9,633	
Metropolitan State University	51	-7.3%	22.1%	\$9,394	
Minnesota State University Moorhead	35	20.7%	15.2%	\$9,468	
University of Minnesota-Twin Cities	23	53.3%	10.0%	\$15,254	
The University of Montana	16	0.0%	6.9%	\$7,492	
Saint Mary's University of Minnesota	13	-31.6%	5.6%	\$39,410	
Century College	11	57.1%	4.8%	\$5,907	
Alexandria Technical & Community College	4	300.0%	1.7%	\$5,910	
Normandale Community College	4	300.0%	1.7%	\$5,789	
University of Northwestern-St Paul	4	Insf. Data	1.7%	\$34,180	

## Regional Trends



## Regional Completions by Award Level



## Similar Programs

136  
Programs (2021)

29,416  
Completions (2021)

CIP Code	Program	Completions (2021)
52.0201	Business Administration and Management, General	7,464
26.0101	Biology/Biological Sciences, General	2,434
52.0301	Accounting	2,045
11.0701	Computer Science	1,704
52.1401	Marketing/Marketing Management, General	1,485
52.0101	Business/Commerce, General	1,148
43.0104	Criminal Justice/Safety Studies	1,050
27.0101	Mathematics, General	826
11.1003	Computer and Information Systems Security/Auditing/Information Assurance	764
11.0101	Computer and Information Sciences, General	631



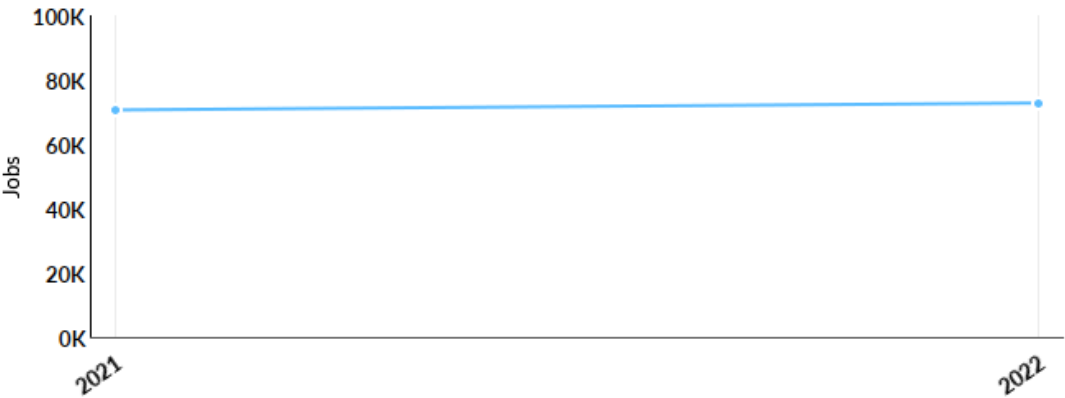
## Target Occupations

<p>70,555</p> <p>Jobs (2021)</p> <p>13% <b>below</b> National average</p>	<p><b>+3.1%</b></p> <p>% Change (2021-2022)</p> <p>Nation: <b>+4.5%</b></p>	<p>\$48.99/hr \$101.9K/yr</p> <p>Median Earnings</p> <p>Nation: \$56.86/hr; \$118.3K/yr</p>	<p>7,196</p> <p>Annual Openings</p>
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Occupation	2021 Jobs	Annual Openings	Median Earnings	Growth (2021 - 2022)	Location Quotient (2021)
Software Developers	43,522	4,383	\$48.00/hr	<b>+3.23%</b>	1.05
Computer and Information Systems Managers	11,462	1,154	\$71.07/hr	<b>+2.65%</b>	0.78
Computer Occupations, All Other	7,334	725	\$35.81/hr	<b>+2.62%</b>	0.60
Information Security Analysts	3,663	414	\$47.22/hr	<b>+3.90%</b>	0.75
Software Quality Assurance Analysts and Testers	2,910	340	\$43.26/hr	<b>+3.81%</b>	0.52
Biological Scientists, All Other	1,332	137	\$36.20/hr	<b>-0.15%</b>	0.90
Computer and Information Research Scientists	253	34	\$62.78/hr	<b>+5.93%</b>	0.26
Statistical Assistants	78	9	\$26.25/hr	<b>+1.28%</b>	0.39

Growth

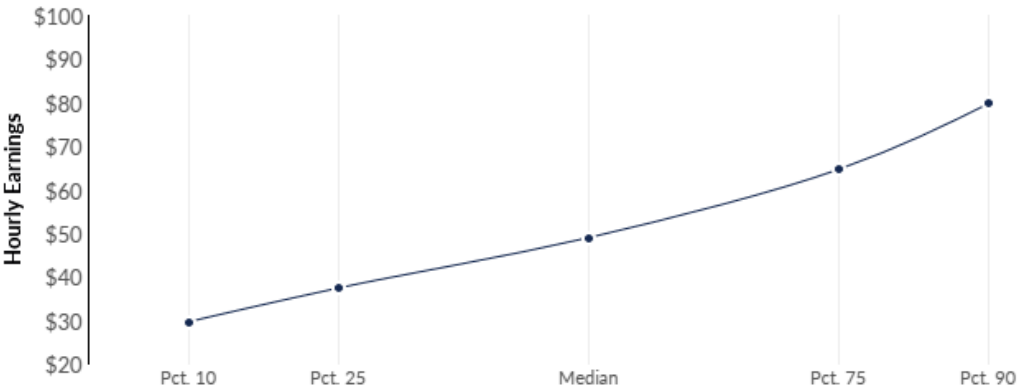
70,555 2021 Jobs	72,721 2022 Jobs	2,166 Change (2021-2022)	3.1% % Change (2021-2022)
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Occupation	2021 Jobs	2022 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	11,462	11,766	304	3%
Information Security Analysts (15-1212)	3,663	3,806	143	4%
Computer and Information Research Scientists (15-1221)	253	268	15	6%
Software Developers (15-1252)	43,522	44,926	1,404	3%
Software Quality Assurance Analysts and Testers (15-1253)	2,910	3,021	111	4%
Computer Occupations, All Other (15-1299)	7,334	7,526	192	3%
Biological Scientists, All Other (19-1029)	1,332	1,330	-2	0%
Statistical Assistants (43-9111)	78	79	1	1%


# Percentile Earnings

<div>\$37.44/hr</div> <div>25th Percentile Earnings</div>	<div>\$48.99/hr</div> <div>Median Earnings</div>	<div>\$64.70/hr</div> <div>75th Percentile Earnings</div>
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Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$55.15	\$71.07	\$79.84
Information Security Analysts (15-1212)	\$37.42	\$47.22	\$57.88
Computer and Information Research Scientists (15-1221)	\$57.59	\$62.78	\$63.51
Software Developers (15-1252)	\$37.55	\$48.00	\$61.25
Software Quality Assurance Analysts and Testers (15-1253)	\$32.15	\$43.26	\$48.30
Computer Occupations, All Other (15-1299)	\$22.78	\$35.81	\$52.71
Biological Scientists, All Other (19-1029)	\$27.95	\$36.20	\$44.88
Statistical Assistants (43-9111)	\$18.16	\$26.25	\$37.85











## Job Postings Summary

<div>56,424</div> <div>Unique Postings</div> <div>123,716 Total Postings</div>	<div>2 : 1</div> <div>Posting Intensity</div> <div></div> <div>Regional Average: 3 : 1</div>	<div>27 days</div> <div>Median Posting Duration</div> <div>Regional Average: 33 days</div>
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There were 123,716 total job postings for your selection from June 2021 to May 2022, of which 56,424 were unique. These numbers give us a Posting Intensity of 2-to-1, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

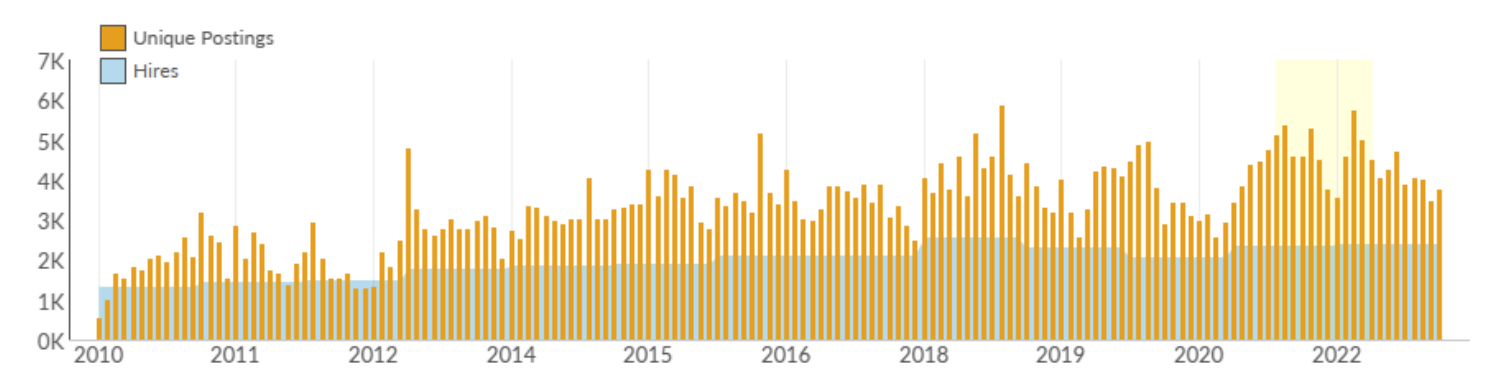
## Top Companies Posting

Company	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Randstad	5,491 / 2,238	2 : 1 	20 days
UnitedHealth Group	6,232 / 2,126	3 : 1 	28 days
Humana	4,133 / 1,860	2 : 1 	43 days
Wells Fargo	8,256 / 1,653	5 : 1 	34 days
US Bank	2,107 / 1,106	2 : 1 	36 days
General Dynamics	1,156 / 818	1 : 1 	60 days
Revature	1,770 / 704	3 : 1 	21 days
CTG	876 / 694	1 : 1 	52 days
Target	2,778 / 638	4 : 1 	18 days
Genesis10	948 / 622	2 : 1 	40 days

Job Postings vs. Hires











4,702	2,365
Avg. Monthly Postings (Jun 2021 - May 2022)	Avg. Monthly Hires (Jun 2021 - May 2022)

In an average month, there were 4,702 newly posted job postings for 8 Occupations, and 2,365 actually hired. This means there was approximately 1 hire for every 2 unique job postings for 8 Occupations.

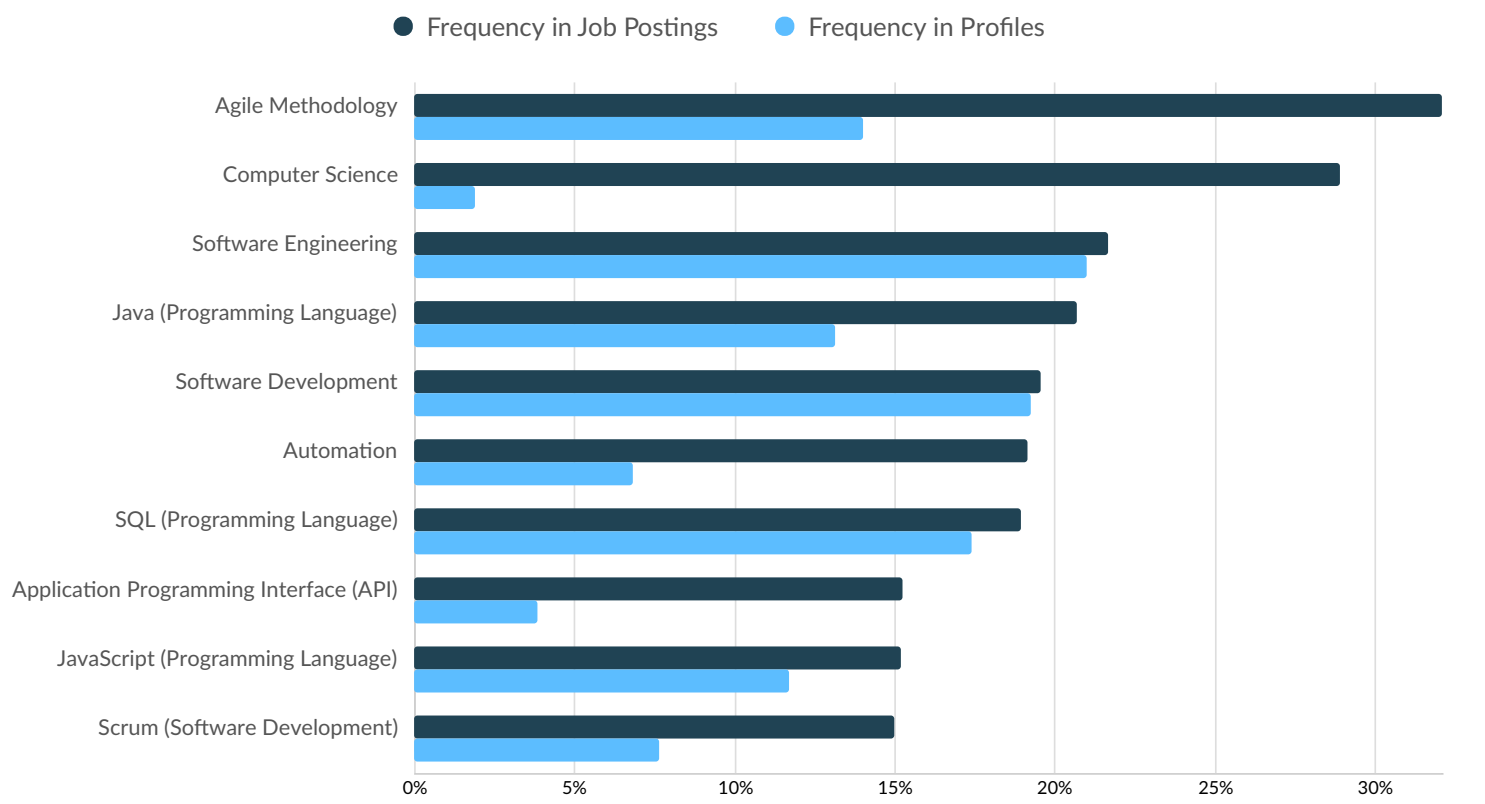


Occupation	Avg Monthly Postings (Jun 2021 - May 2022)	Avg Monthly Hires (Jun 2021 - May 2022)
Software Developers	2,555	1,415
Computer Occupations, All Other	1,354	255
Information Security Analysts	326	147
Software Quality Assurance Analysts and Testers	311	118
Computer and Information Systems Managers	104	364
Biological Scientists, All Other	27	51
Computer and Information Research Scientists	26	13
Statistical Assistants	0	3

## Top Posted Job Titles

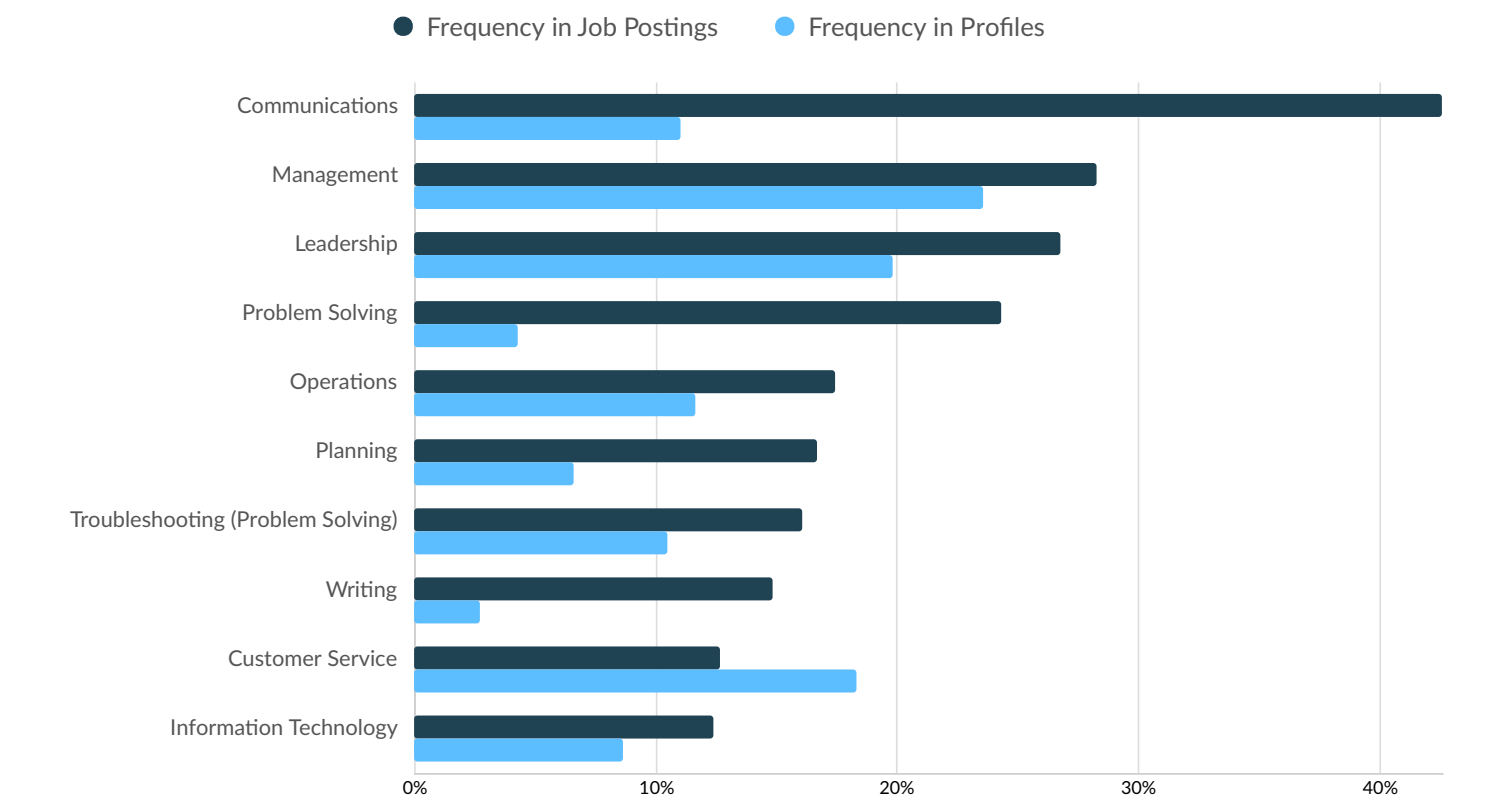
Job Title	Total/Unique (Jun 2021 - May 2022)	Posting Intensity	Median Posting Duration
Software Engineers	7,609 / 3,027	3 : 1 	27 days
Software Developers	2,324 / 1,107	2 : 1 	28 days
Java Developers	1,681 / 903	2 : 1 	21 days
Scrum Masters	1,594 / 789	2 : 1 	25 days
Full Stack Developers	1,400 / 658	2 : 1 	26 days
DevOps Engineers	1,168 / 642	2 : 1 	24 days
Systems Engineers	1,137 / 589	2 : 1 	30 days
Solutions Architects	986 / 558	2 : 1 	23 days
Principal Software Engineers	1,045 / 485	2 : 1 	27 days
.NET Developers	833 / 476	2 : 1 	22 days

# Top Specialized Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Agile Methodology	18,112	32%	12,874	14%
Computer Science	16,324	29%	1,740	2%
Software Engineering	12,242	22%	19,236	21%
Java (Programming Language)	11,679	21%	12,045	13%
Software Development	11,037	20%	17,641	19%
Automation	10,805	19%	6,251	7%
SQL (Programming Language)	10,691	19%	15,983	17%
Application Programming Interface (API)	8,599	15%	3,513	4%
JavaScript (Programming Language)	8,564	15%	10,721	12%
Scrum (Software Development)	8,467	15%	7,010	8%

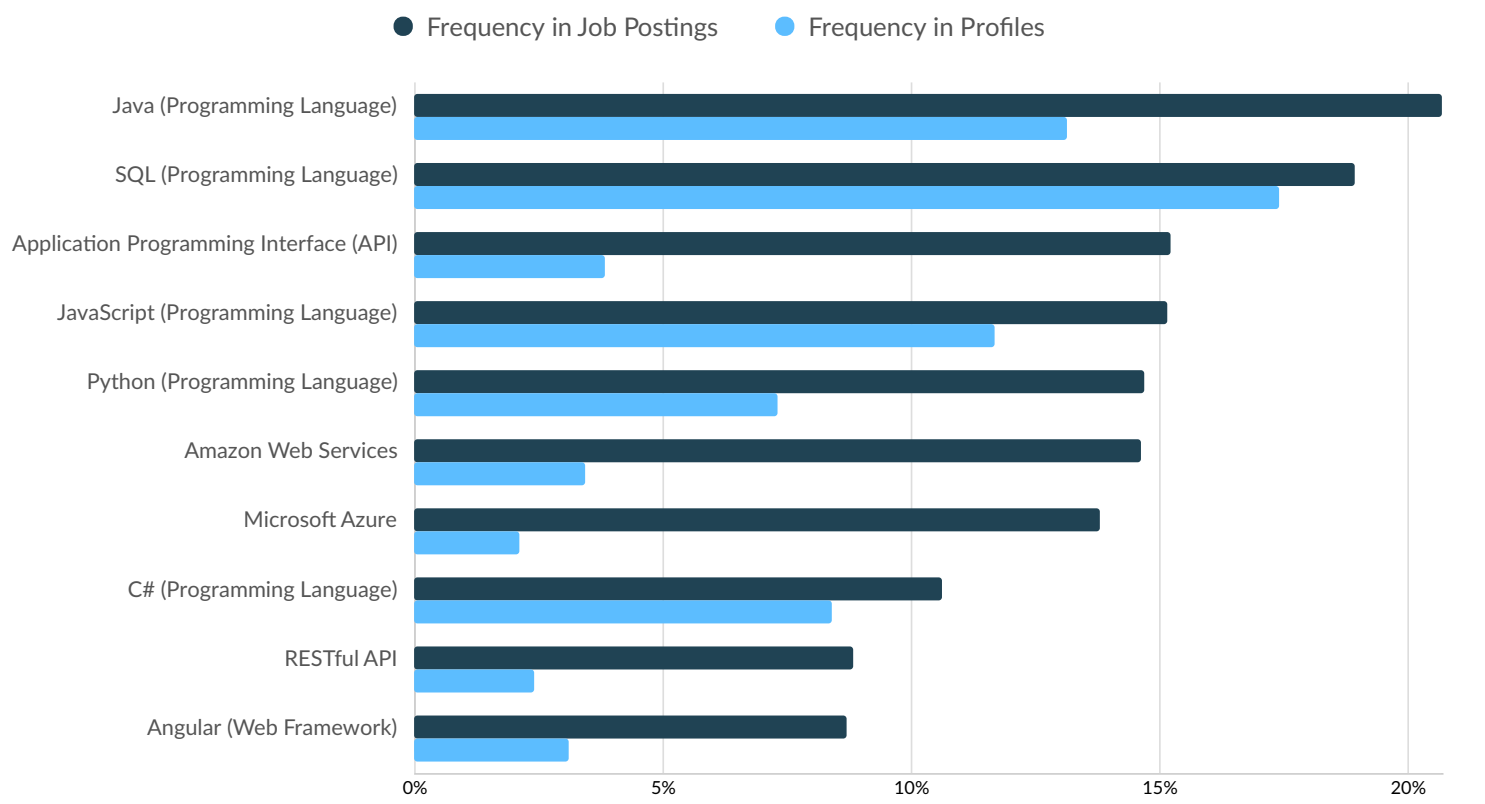
# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	24,035	43%	10,115	11%
Management	15,974	28%	21,592	24%
Leadership	15,105	27%	18,197	20%
Problem Solving	13,716	24%	3,948	4%
Operations	9,858	17%	10,684	12%
Planning	9,416	17%	6,033	7%
Troubleshooting (Problem Solving)	9,062	16%	9,602	10%
Writing	8,373	15%	2,498	3%
Customer Service	7,153	13%	16,815	18%
Information Technology	7,004	12%	7,920	9%



# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Java (Programming Language)	11,679	21%	12,045	13%
SQL (Programming Language)	10,691	19%	15,983	17%
Application Programming Interface (API)	8,599	15%	3,513	4%
JavaScript (Programming Language)	8,564	15%	10,721	12%
Python (Programming Language)	8,296	15%	6,714	7%
Amazon Web Services	8,254	15%	3,167	3%
Microsoft Azure	7,787	14%	1,957	2%
C# (Programming Language)	6,003	11%	7,697	8%
RESTful API	4,988	9%	2,207	2%
Angular (Web Framework)	4,906	9%	2,854	3%

## Top Qualifications

Qualification	Postings with Qualification
Certified Information Systems Security Professional	1,816
Project Management Professional Certification	1,286
Master Of Business Administration (MBA)	826
Certified Scrum Master	818
Certified Information Security Manager	811
Certified Information System Auditor (CISA)	771
GIAC Certifications	744
Security Clearance	616
CompTIA Security+	597
Secret Clearance	399

# Appendix A

## Program Selection Details

CIP Code	Program Name
11.0401	Information Science/Studies

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; North Dakota Job Service; South Dakota Department of Labor and Regulation



## State Board of Higher Education Summary

**Title:** New Academic Program Requests for Minot State University (MiSU):  
Minor in Leadership Studies

**Proposed action:** MiSU is seeking authorization to offer the above New Academic Program.

**Background Information:** The Leadership Studies Minor is an interdisciplinary program which focuses on the development of skills that can be applied to a wide range of organizations, including business, government, health care, non-profit, or educational institutions and prepares students for leadership roles within their professions and their communities. The learning goals of the program are to 1) prepare participants for leadership roles and processes in 21<sup>st</sup> century society; and 2) develop cognitive and interpersonal leadership skills.

**Financial matters:** Funding is through the generous donation of alumnus Roger Looyenga and the Looyenga Leadership Center at Minot State University receives \$100,000 annually. Those funds cover salary and benefits for the program director.

**Legal/policy matters:** State Board of Higher Education (SBHE) Policy 421 Academic Program Requests states: "SBHE shall approve the establishment of all new instructional programs granting academic credit leading to a degree or credential. The SBHE Academic and Student Affairs Committee (ASAC) shall have authority to approve all new academic program requests on behalf of the SBHE."

**Academic matters:** N/A

**Review Process:**

AAC	05/02/2023
Cabinet	05/10/2023
ASAC	05/17/2023

**Chancellor's recommendation:** Chancellor Hagerott recommends approval.

**Contact information:**

Laurie Geller, Vice President for Academic Affairs, 701-858-3329, [laurie.geller@ndus.edu](mailto:laurie.geller@ndus.edu)

# New Academic Program Request

**Institution:**

Minot State University

**Program Name:**

Leadership Studies

**Degree Types:**

Minor Program

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-03-07

**CIP Code:**

52.0213

**Academic Program Code:**

ND-MN-LEAD

**Academic Department/Division/College:**

Leadership Studies/Looyenga Leadership Center/Academic Affairs

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

On Campus

**Describe the delivery methods and location(s) to which the program will be delivered:**

This program would be offered in person on campus.

**Funding Source:**

Tuition Revenue

Through the generous donation of alumnus Roger Looyenga the Looyenga Leadership Center at Minot State University receives \$100,000 annually. That money covers salary and benefits for the program director.

**Describe the funding source:**

The Leadership Center and Leadership Studies were made possible by a generous alumni donation. That donation covers the salary and benefits for the program director.

**Is the program eligible for Financial Aid?**

Yes

**Degree Types eligible for Financial Aid:**

Minor Program

**Does the program require a criminal background check described in NDUS Procedure 511?**

No

**Describe a brief description of the program:**

The Minot State University Leadership Studies Minor is an interdisciplinary program which focuses on the development of skills that can be applied to a wide range of organizations, including business, government, health care, non-profit, or educational institutions and prepares students for leadership roles within their professions and their communities. The learning goals of the program are to: 1) prepare participants for leadership roles and processes in 21st century society; and 2) develop cognitive and interpersonal leadership skills.

**Address student demand and employment availability for students completing the program:**

Minot State started a concentration in leadership studies two years ago and has seen modest growth in the program. Students have indicated a desire for more courses and a minor in leadership. According to Workplace Basics: The Competencies Employers Want, by the Georgetown University Center on Education and the Workforce, leadership ranks fourth among competencies employers are seeking, falling behind only communication, teamwork, and customer service.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

The National Association of Colleges and Employers conducts a yearly survey of career competencies employers value most. Leadership has regularly finished among the top competencies on that list, with the related skills of problem solving, teamwork/collaboration, and communication also highly ranked. In the NACE 2022 Student Survey, employers felt that less than 30% of new graduates were proficient in leadership skills, the lowest score in any of the targeted 8 competencies. This indicates that students need to be developing these skills to a higher level while in college in order to be best prepared for the workforce. A January 2023 Gallup poll found that a lack of leadership is viewed as the most important problem facing the country today. Further, a study by Ben Winchester at the University of Minnesota found that North Dakota has the highest demand for leaders per capita in the country. Many of the occupations listed in the Top 10 North Dakota High Priority Occupations, especially nurses and teachers, regularly utilize skills that are enhanced in Leadership Studies. The literature supports the need for programs that develop leadership skills. For example, Kouzes and Posner (2016) asserted there is a leadership shortage in the world, partially due to "insufficient training and experiences" (p. xv). Thornton (2018) echoed this assertion by specifically indicating that 77% of organizations were currently reporting a leadership gap. Furthermore, 63% of Millennials indicated "their leadership skills were not being fully developed" (Thornton, 2018). Therefore, offering students an opportunity to formally learn about leadership and enhance their leadership development would help to address both the shortage of capable leaders and the current underdevelopment of leadership skills. Additionally, studying leadership will prepare students with the knowledge and competencies necessary for any field or career, as it is necessary for organizational/group guidance, direction, function, adaptation, communication, and so on (Antonakis & Day, 2018). Sources: Antonakis, J., & Day, D.V. (Eds). (2018). The nature of leadership. (3rd ed.) Thousand Oaks, CA: SAGE Publications Kouzes, J.M, & Posner, B.Z. (2016). Learning leadership: The five fundamentals of becoming an exemplary leader. San Francisco, CA: The Leadership Challenge: A Wiley Brand Thornton, B. (2018, Feb. 8). 7 statistics you can't ignore about leadership development. Inspire. Retrieved from <https://blog.inspiresoftware.com/7-statistics-leadership-development> According to the Lightcast report, there will be an 8% increase in demand in the region in related occupations over the next five years. It is anticipated that the Minor in Leadership Studies could enroll approximately 20 students within the first five years.

**Describe how the program addresses the institutional strategic plan:**

Minot State University is a public university dedicated to excellence in education, scholarship, and

community engagement achieved through rigorous academic experiences, active learning environments, commitment to public service, and a vibrant campus life. The Roger & Ann Looyenga Leadership Center is dedicated to the leadership development and personal growth of Minot State students. Through courses, co-curricular programming, and engagement with community partners, students are able to enhance their leadership skills and competencies while at the University, preparing them for future personal development and success as professionals and as citizens serving and strengthening their communities. This program plays to the mission of Minot State University by preparing leaders to be engaged and impactful in their communities. In addition, the MSU Strategic Plan Empowering Generations, calls for the development and implementation of new programs (Goal 1, Objective 1, Action Step 4).

**Describe how the program addresses the NDUS strategic plan:**

This program would allow students in the central region of the state easy access to leadership studies, meeting goal 2 of the NDUS strategic plan, "Responsive: Provide access to programs people want, where and when they need them." In addition, the entire purpose of the minor is to prepare students for success, which is goal 3 of the NDUS plan. The proposed program meets the positive economic impact vision of the State Board of Higher Education by providing students in the region access to a high-quality, affordable education at Minot State University for Leadership Studies.

**Are there similar programs that exist within NDUS or state?**

Yes

**Identify similar programs that exist within NDUS or state:**

University of Jamestown – Minor - Character in Leadership University of North Dakota – Minor - Leadership

**Briefly discuss if and how the program duplicated similar NDUS programs:**

This program is quite similar to those offered elsewhere in the state, in that it offers a selection of courses and training designed to assist students to serve as leaders in their professions and communities. Each of the programs includes required introductory courses plus topics in ethics and communication.

**Briefly justify the duplication of existing program(s) in NDUS or state:**

The other existing programs are both located on the eastern edge of the State of North Dakota. Minot State University is more centrally located. In addition, as these programs are minors, they are not necessarily attracting students to campus, but instead are enhancing the student academic experience and allowing students to customize their education to best suit their future plans. The need for leadership is statewide and across multiple disciplines.

**Discuss whether the potential students will be drawn from the same population as those in existing program in NDUS or state:**

It is unlikely that any student would select a campus based on a minor. Therefore, the addition of this program should not adversely impact any other campus or program.

**Discuss whether a collaborative program has been considered with an institution where the program exists:**

As this is intended to be an on-campus program, and the other existing programs are several hours away, no collaboration was considered.

**How will tuition be charged:**

Base rate

**Is this the same tuition model method as the existing NDUS program:**

Yes

**What is the length of the program?**



Due to the current scheduling of the required courses, this program would require at least three semesters to complete, and more likely would require at least two full academic years.

**Identify the proposed program-level accreditation organization, if applicable:**

N/A

## **Proposed Minor in Leadership Studies at Minot State University**

18 credits total

Complete each of the following (9 credits):

- LEAD 101 Introduction to Leadership (3)  
or HON 250H Foundations of Leadership (3)
- LEAD 201 Collaborative Leadership (3)
- LEAD 301 Experiences in Leadership (3)  
or BUS 495 Seminars in Leadership Development (3)

Complete 9 credits in at least 2 departments from the following:

- COMM 212 Interpersonal Communication (3)
- COMM 316 Group Dynamics (3)
- COMM 318 Organizational Communication (3)
- LEAD 199 Special Topics in Leadership (1-6)
- LEAD 211 Leadership in the Movies (3)
- PHIL 210 Ethics (3)
- SOC 201 Social Problems (3)
- SOC 275 Contemporary Community Issues (3)

## Organizational Leadership (52.0213)

## Contents

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Appendix A (Occupations) .....	21

## About Lightcast

Lightcast is a labor market analytics firm that is passionate about providing meaningful data for colleges and their students.

Our data is trusted by a breadth of users including researchers at colleges and universities, economic development organizations, and Fortune 500 companies.

Lightcast data offers a three-pronged approach to labor market information:

1. Our traditional LMI combines dozens of government sources from agencies like the Bureau of Economic Analysis, U.S. Census Bureau, and Bureau of Labor Statistics into one dataset that details industries, occupations, demographics, academic programs, and more.
2. Lightcast's job posting analytics give a real-time look into the needs of employers in today's labor market. Each month, millions of postings are scraped from employer sites and job boards, de-duplicated, and compiled into an actionable dataset.
3. Lightcast also leverages workforce profiles—an innovative database of more than 100 million resumés and professional profiles that are aggregated from the open web. These profiles unify information for workers—such as education, employment history, skills, and more—to reveal robust detail on what is happening in today's workforce.

Together, these data related to labor market demand, relevant skills, and the competitive landscape help colleges and universities make informed decisions about their program offerings.

## Program Definition

Institution:

Code	Description
200253	Minot State University

Program in Question:

Code	Description
52.0213	Organizational Leadership

# Competitive Landscape

Institution Sectors:

Description
Public, 4-year or above
Private not-for-profit, 4-year or above
Private for-profit, 4-year or above
Public, 2-year
Private not-for-profit, 2-year

Description
Private for-profit, 2-year
Public, less-than-2-year
Private not-for-profit, less-than-2-year
Private for-profit, less-than-2-year

Education Levels:

Description
Award of less than 1 academic year

Program Type:

Description
Distance Offered (Includes Hybrid & Mixed Modality Programs)

Description
Non-Distance Offered Programs

Region:

Code	Description
0	United States

Student Charges Type:Tuition & Fees

Student Charges Grad Status:Undergraduate











Student Charges Residency:In-State

## Program Overview



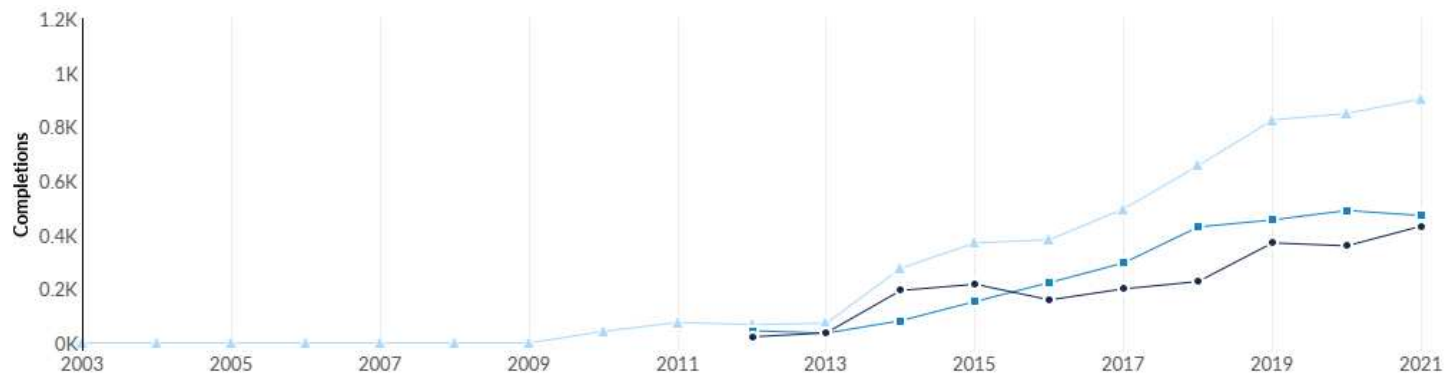
	Completions (2021)	% Completions	Institutions (2021)	% Institutions
● All Programs	903	100%	46	100%
● Distance Offered Programs	432	48%	26	57%
● Non-Distance Offered Programs	471	52%	20	43%

## Completions by Institution

Institution	Award of less than 1 academic year Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
Boise State University	125	9.6%	13.8%	\$8,060	
University of Georgia	97	7.8%	10.7%	\$12,068	
Arizona State University Campus Immersion	96	29.7%	10.6%	\$11,348	
Ohio State University-Main Campus	84	42.4%	9.3%	\$11,936	
Western Kentucky University	74	13.8%	8.2%	\$10,992	
Youngstown State University	37	5.7%	4.1%	\$9,372	
American College of Financial Services	36	16.1%	4.0%	N/A	
Arkansas Tech University	35	9.4%	3.9%	\$7,900	
Rio Salado College	33	10.0%	3.7%	\$2,070	
GateWay Community College	33	-50.0%	3.7%	\$2,070	



## Regional Trends



	2012 Completions	2021 Completions	% Change
Distance Offered Programs	22	432	+1,863.6%
Non-Distance Offered Programs	45	471	+946.7%
All Programs	67	903	+1,247.8%

## Labor Market Demand

Labor Market Area Selection:

Code	Description
0	United States

Target Occupations:

15 items selected. See Appendix A for details.

Degree Levels:Any

Completions Year (default):2021

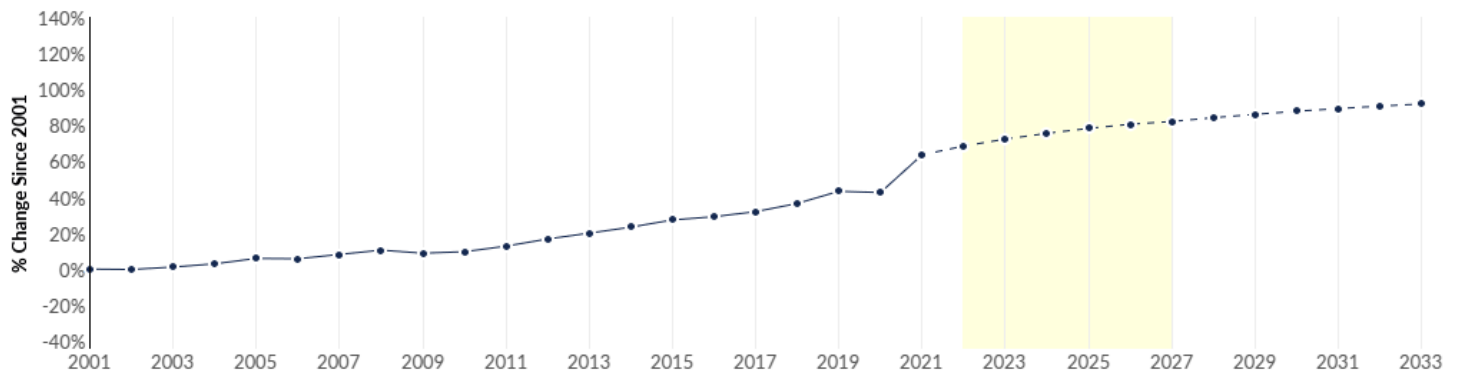
Jobs Year (default):2022

## Target Occupations

7.52M Jobs (2022)	+8.1% % Change (2022-2027)	\$50.83/hr \$105.7K/yr Median Earnings	781,470 Annual Openings
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Occupation	2022 Jobs	Annual Openings	Median Earnings	Growth (2022 - 2027)
General and Operations Managers	3,284,647	345,096	\$46.92/hr	+7.41%
Management Analysts	1,017,230	117,815	\$44.68/hr	+10.12%
Financial Managers	761,927	77,363	\$62.84/hr	+11.76%
Sales Managers	496,138	48,531	\$60.70/hr	+6.37%
Financial and Investment Analysts	324,708	30,085	\$43.93/hr	+8.17%
Marketing Managers	320,968	35,232	\$62.82/hr	+9.26%
Chief Executives	292,965	25,263	\$76.29/hr	+4.32%
Administrative Services Managers	243,358	24,353	\$48.11/hr	+6.94%
Human Resources Managers	189,524	19,143	\$60.26/hr	+7.18%
Transportation, Storage, and Distribution Managers	164,399	16,991	\$46.86/hr	+8.63%
Financial Specialists, All Other	138,593	13,246	\$35.13/hr	+6.63%
Facilities Managers	110,780	10,851	\$47.02/hr	+6.80%
Purchasing Managers	76,313	7,493	\$60.62/hr	+6.09%
Public Relations Managers	67,768	6,781	\$60.41/hr	+7.73%
Fundraising Managers	31,736	3,229	\$48.46/hr	+8.24%

## Regional Trends



Region	2022 Jobs	2027 Jobs	Change	% Change
● Region	7,521,054	8,131,439	610,385	8.1%

## Occupation Gender Breakdown



Gender	2022 Jobs	2022 Percent	
● Males	4,536,499	60.3%	<div style="width: 60.3%;"></div>
● Females	2,984,554	39.7%	<div style="width: 39.7%;"></div>

## Occupation Age Breakdown




	Age	2022 Jobs	2022 Percent	
	14-18	3,332	0.0%	
	19-24	191,425	2.5%	
	25-34	1,465,266	19.5%	
	35-44	2,022,577	26.9%	
	45-54	1,894,313	25.2%	
	55-64	1,459,461	19.4%	
	65+	484,681	6.4%	

## Occupation Race/Ethnicity Breakdown



	Race/Ethnicity	2022 Jobs	2022 Percent	
	White	5,434,502	72.3%	
	Hispanic or Latino	795,076	10.6%	
	Black or African American	554,690	7.4%	
	Asian	553,926	7.4%	
	Two or More Races	148,911	2.0%	
	American Indian or Alaska Native	22,760	0.3%	
	Native Hawaiian or Other Pacific Islander	11,187	0.1%	

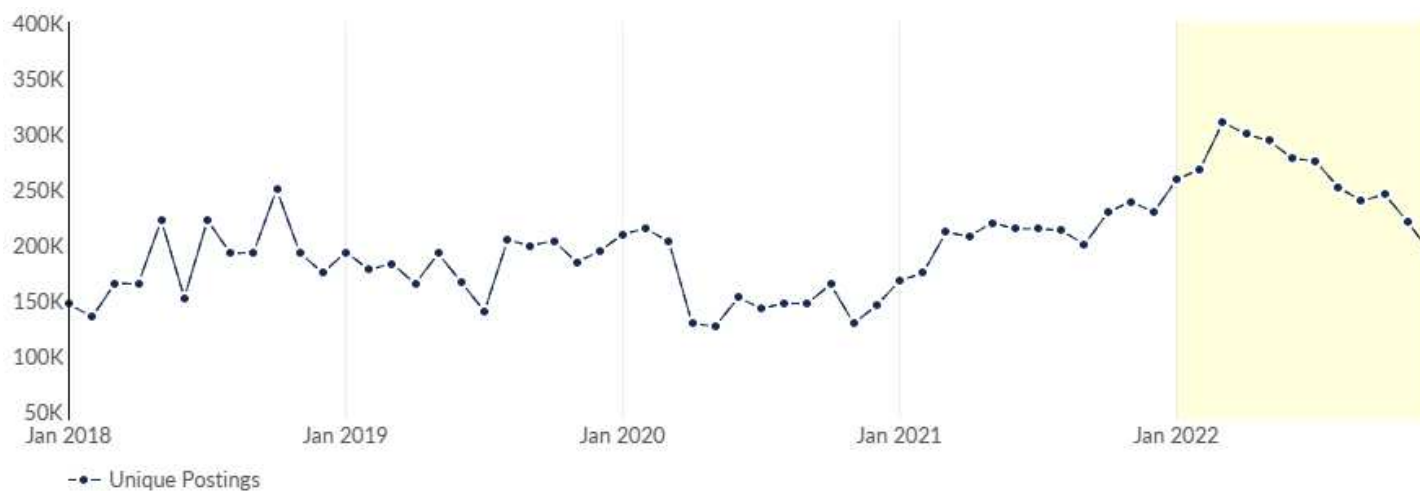
## Job Postings Summary

<p>3.13M</p> <p>Unique Postings</p> <p>7.53M Total Postings</p>	<p>2 : 1</p> <p>Posting Intensity</p>  <p>Regional Average: 3 : 1</p>	<p>28 days</p> <p>Median Posting Duration</p> <p>Regional Average: 28 days</p>
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There were **7.53M** total job postings for your selection from January 2022 to December 2022, of which **3.13M** were unique. These numbers give us a Posting Intensity of **2-to-1**, meaning that for every 2 postings there is 1 unique job posting.

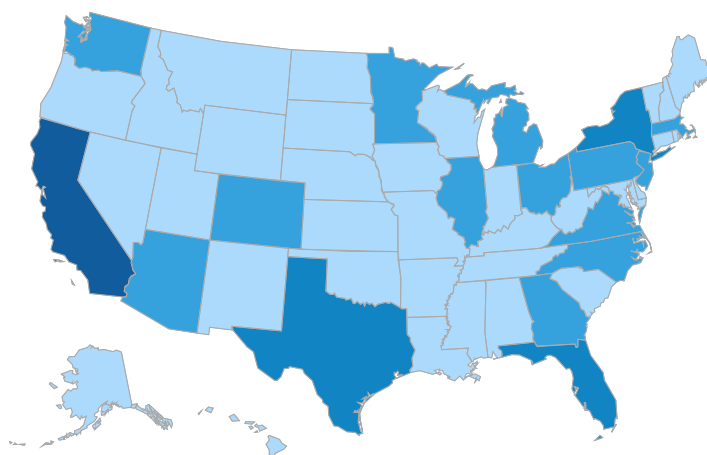
This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

## Unique Postings Trend



Month	Unique Postings	Posting Intensity
Dec 2022	192,799	2 : 1
Nov 2022	220,436	2 : 1
Oct 2022	245,287	2 : 1
Sep 2022	239,249	2 : 1
Aug 2022	251,696	2 : 1
Jul 2022	275,228	3 : 1
Jun 2022	277,630	3 : 1
May 2022	293,585	3 : 1
Apr 2022	299,427	2 : 1
Mar 2022	310,299	2 : 1
Feb 2022	268,038	2 : 1
Jan 2022	258,562	2 : 1











## Job Postings Regional Breakdown













State	Unique Postings (Jan 2022 - Dec 2022)
California	438,010
Texas	266,793
New York	195,243
Florida	177,650
Illinois	144,203












## Top Companies Posting

Company	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Deloitte	47,902 / 29,312	2 : 1 	23 days
Robert Half	42,456 / 29,201	1 : 1 	31 days
KPMG	109,120 / 26,897	4 : 1 	23 days
Randstad	41,740 / 26,107	2 : 1 	26 days
Elevance Health	44,118 / 25,013	2 : 1 	27 days
JPMorgan Chase	77,541 / 24,929	3 : 1 	28 days
Amazon	45,755 / 21,750	2 : 1 	33 days
Walmart	58,417 / 20,661	3 : 1 	28 days
Wells Fargo	80,343 / 19,060	4 : 1 	27 days
Citigroup	41,597 / 17,394	2 : 1 	23 days











## Top Cities Posting

City	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
New York, NY	285,665 / 137,062	2 : 1 	29 days
Chicago, IL	160,484 / 71,199	2 : 1 	25 days
Los Angeles, CA	181,627 / 58,786	3 : 1 	27 days
San Francisco, CA	155,111 / 55,476	3 : 1 	27 days
Atlanta, GA	100,929 / 49,207	2 : 1 	27 days
Houston, TX	111,561 / 46,527	2 : 1 	27 days
Boston, MA	96,108 / 44,416	2 : 1 	26 days
Dallas, TX	110,695 / 42,738	3 : 1 	29 days
Washington, DC	85,173 / 40,091	2 : 1 	27 days
Austin, TX	84,706 / 36,129	2 : 1 	28 days

## Top Posted Occupations

Occupation (SOC)	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
General and Operations Managers	1,527,527 / 560,406	3 : 1 	28 days
Marketing Managers	932,255 / 439,087	2 : 1 	27 days
Sales Managers	900,457 / 412,657	2 : 1 	27 days
Management Analysts	899,768 / 392,793	2 : 1 	26 days
Financial Managers	884,421 / 377,536	2 : 1 	28 days
Financial and Investment Analysts	546,107 / 234,887	2 : 1 	27 days
Human Resources Managers	412,694 / 160,630	3 : 1 	28 days
Transportation, Storage, and Distribution Managers	406,012 / 139,655	3 : 1 	29 days
Public Relations Managers	300,794 / 128,912	2 : 1 	30 days
Administrative Services Managers	216,431 / 85,553	3 : 1 	29 days

## Top Posted Job Titles

Job Title	Total/Unique (Jan 2022 - Dec 2022)	Posting Intensity	Median Posting Duration
Financial Analysts	131,340 / 57,615	2 : 1 	28 days
Business Analysts	122,208 / 57,012	2 : 1 	25 days
Operations Managers	146,616 / 48,159	3 : 1 	29 days
Product Managers	86,213 / 40,936	2 : 1 	24 days
Controllers	91,682 / 39,252	2 : 1 	30 days
Human Resources Managers	99,815 / 36,963	3 : 1 	28 days
General Managers	70,867 / 26,760	3 : 1 	31 days
Sales Managers	58,849 / 25,323	2 : 1 	28 days
Business Development Managers	50,156 / 23,465	2 : 1 	27 days
Marketing Managers	44,699 / 21,400	2 : 1 	30 days

## Rank as a Talent Provider

Lightcast's workforce profile data shows Minot State University has 2,185 alumni working regionally in the 15 occupations selected. These 2,185 alumni represent 0.01% of regional profiles working in these occupations, which ranks your institution >1,000 among regional talent providers.

<p>2,185</p> <p>Your Alumni in Region Working in Target Occupations</p>	<p>0.01%</p> <p>Percent of Regional Profiles Working in Target Occupations</p>	<p>&gt;1,000</p> <p>Your Rank as a Regional Talent Provider</p>
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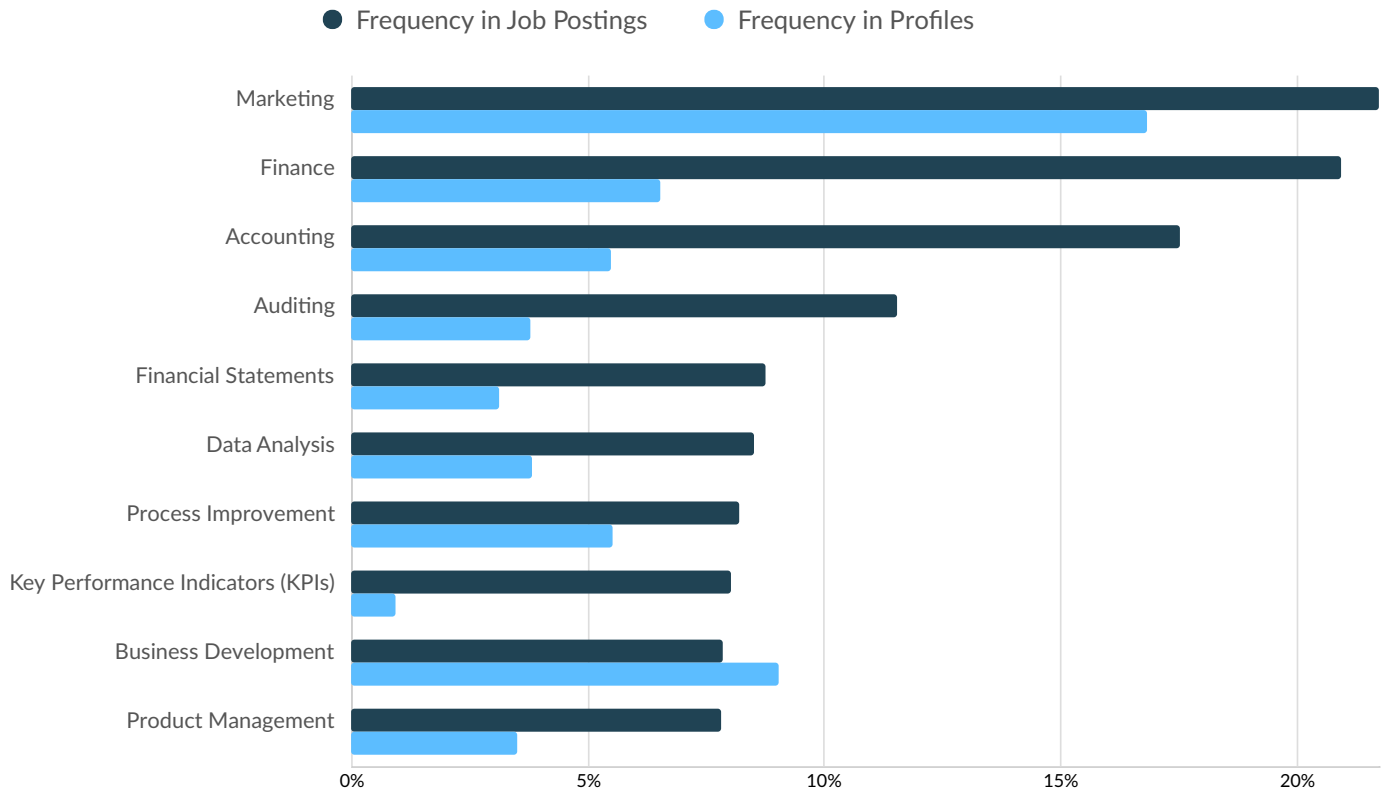
## Top Talent Providers

The top regional institutions supplying the labor market with workers employed in the target occupations listed above, based on Lightcast's workforce profile data.

School	Profiles	Percent
University of Phoenix-Arizona	189,286	0.77%
New York University	130,932	0.53%
University of California-Los Angeles	127,690	0.52%
Harvard University	127,415	0.52%
Pennsylvania State University-Main Campus	121,051	0.49%
The University of Texas at Austin	116,608	0.47%
University of Maryland-College Park	108,549	0.44%
Arizona State University Campus Immersion	104,509	0.42%
University of California-Berkeley	100,933	0.41%
University of Michigan-Ann Arbor	99,966	0.40%

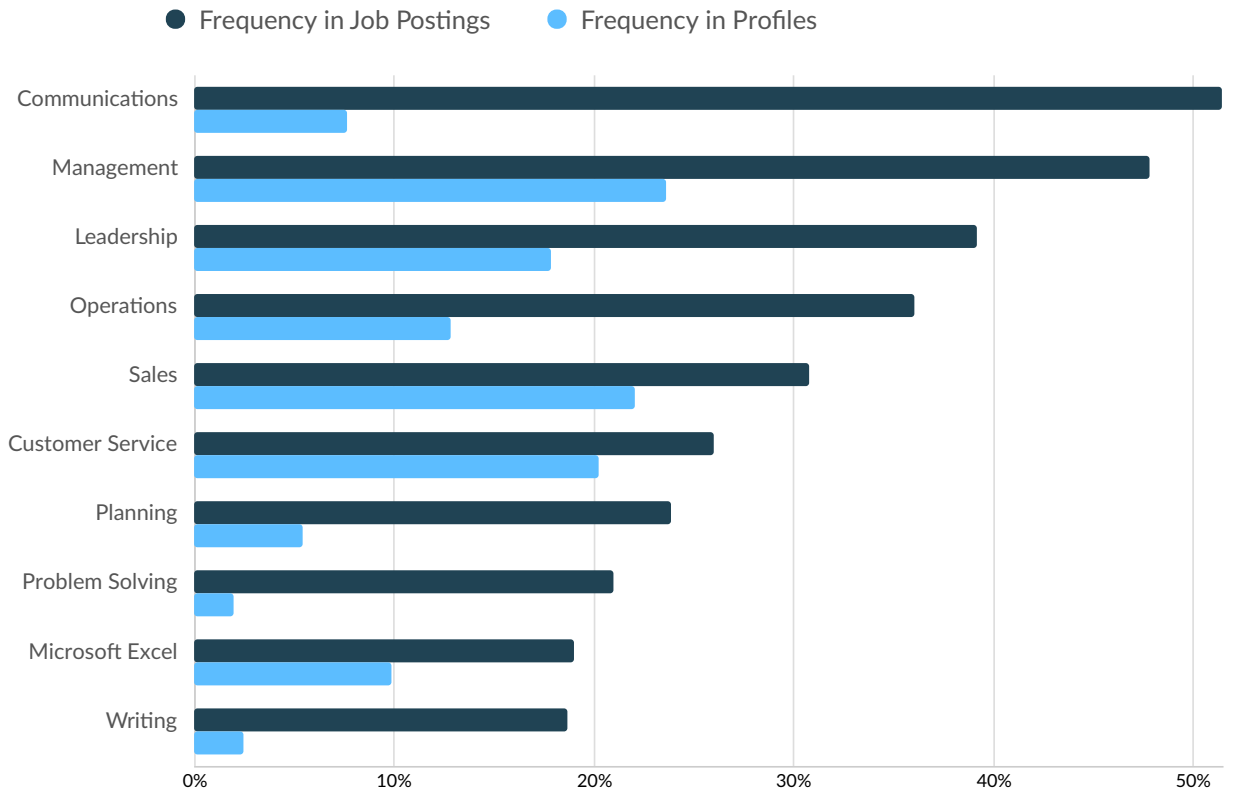
## Relevant Skills

### Top Specialized Skills



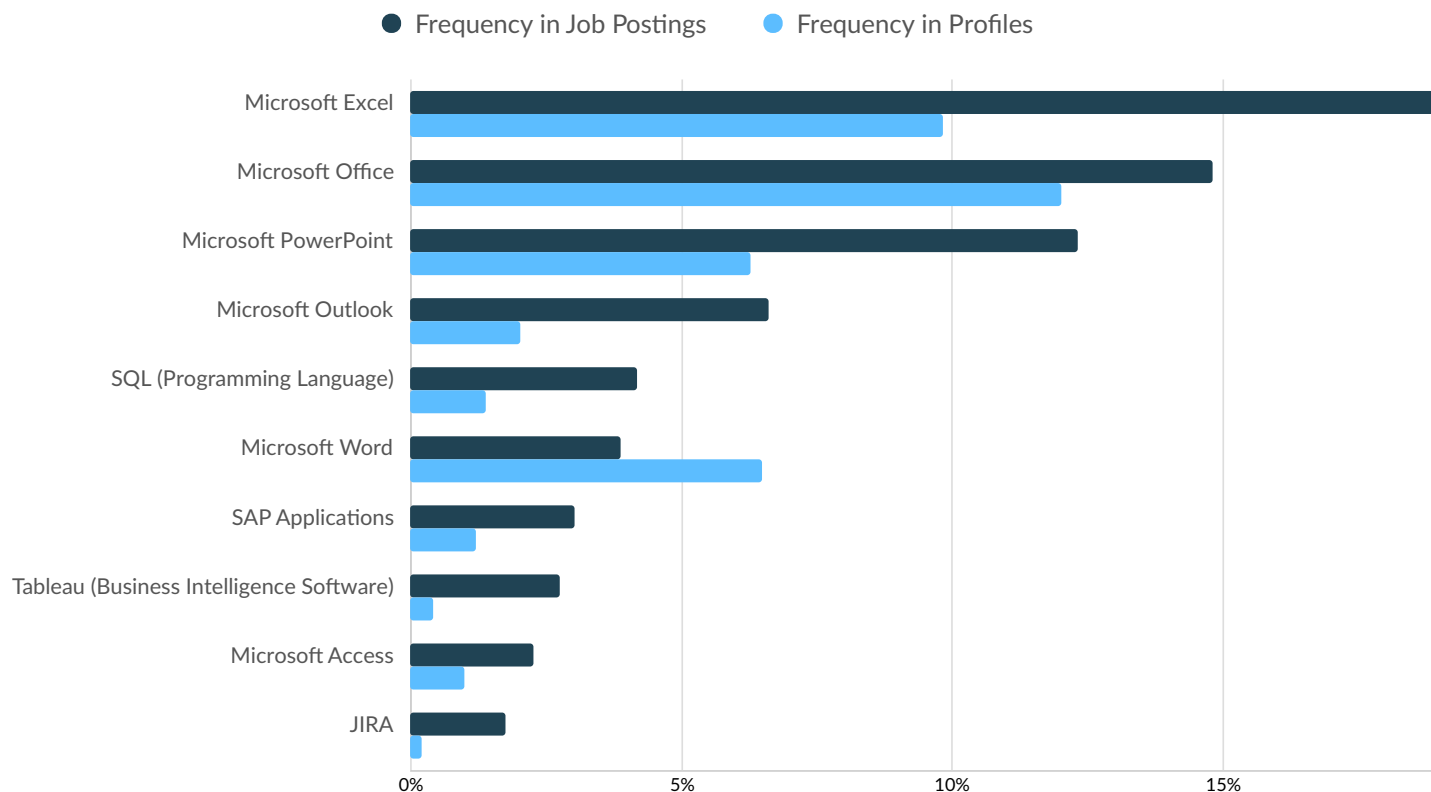
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Marketing	680,984	22%	3,754,546	17%
Finance	655,837	21%	1,457,188	7%
Accounting	549,230	18%	1,226,100	6%
Auditing	361,349	12%	842,914	4%
Financial Statements	274,433	9%	700,853	3%
Data Analysis	266,756	9%	856,426	4%
Process Improvement	256,626	8%	1,229,196	6%
Key Performance Indicators (KPIs)	252,147	8%	207,756	1%
Business Development	246,434	8%	2,012,650	9%
Product Management	244,788	8%	779,557	3%

## Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	1,612,273	51%	1,707,575	8%
Management	1,500,002	48%	5,262,689	24%
Leadership	1,227,202	39%	3,989,501	18%
Operations	1,130,537	36%	2,862,914	13%
Sales	964,967	31%	4,911,905	22%
Customer Service	813,956	26%	4,516,271	20%
Planning	747,034	24%	1,212,810	5%
Problem Solving	656,758	21%	442,707	2%
Microsoft Excel	594,884	19%	2,195,343	10%
Writing	586,557	19%	547,538	2%

## Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Microsoft Excel	594,884	19%	2,195,343	10%
Microsoft Office	464,779	15%	2,681,247	12%
Microsoft PowerPoint	385,961	12%	1,399,429	6%
Microsoft Outlook	207,264	7%	456,926	2%
SQL (Programming Language)	131,044	4%	312,606	1%
Microsoft Word	121,512	4%	1,447,601	6%
SAP Applications	94,956	3%	273,046	1%
Tableau (Business Intelligence Software)	86,817	3%	93,042	0%
Microsoft Access	71,199	2%	221,783	1%
JIRA	55,504	2%	50,013	0%

## Top Qualifications

Qualification	Postings with Qualification
Master Of Business Administration (MBA)	216,733
Certified Public Accountant	82,297
Security Clearance	32,287
Project Management Professional Certification	30,120
Professional in Human Resources	29,804
Senior Professional In Human Resources	24,663
Chartered Financial Analyst	23,559
Secret Clearance	16,696
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	14,910
Registered Nurse (RN)	13,186



## Appendix A (Occupations)

Code	Description
11-3012	Administrative Services Managers
11-1011	Chief Executives
11-1021	General and Operations Managers
11-2021	Marketing Managers
11-2022	Sales Managers
11-2032	Public Relations Managers
11-2033	Fundraising Managers
11-3013	Facilities Managers

Code	Description
11-3031	Financial Managers
11-3061	Purchasing Managers
11-3071	Transportation, Storage, and Distribution Managers
11-3121	Human Resources Managers
13-1111	Management Analysts
13-2051	Financial and Investment Analysts
13-2099	Financial Specialists, All Other



## State Board of Higher Education Summary

**Title:** Academic Program Terminations for the North Dakota State University (NDSU):  
GR Certificate in Food Protection

**Proposed motion or action:** NDSU is seeking authorization to terminate the above Academic Programs.

**Background Information:** Several faculty participating in the program have left NDSU. The program coordinator stepped down and a replacement could not be found.

**Legal/policy issues or implications:** NA

**Academic issues or implications:** There are currently no students in the certificate program.

**Review Process:**

AAC	05/02/2023
Cabinet	05/10/2023
ASAC	05/17/2023

**Chancellor's recommendation:** Chancellor Hagerott recommends approval.

**Contact information:**

David Bertolini, Provost, 701-231-8932, [david.bertolini@ndus.edu](mailto:david.bertolini@ndus.edu)

# Academic Program Termination

**Institution:**

North Dakota State University

**Program Name:**

Food Protection

**Degree Types:**

Graduate Program Certificate

**CIP Code:**

01.1099

**Semester of Program Termination:**

Summer

**Year of Program Termination:**

2023

**Other Participating Institutions:**

Not Applicable

**Has an Academic Program Inactivation form previously been completed?**

No

**Describe the rationale for making the program termination:**

Several faculty participating in the program have left NDSU. The program coordinator stepped down and a replacement could not be found.

**Briefly describe how the institution plans to "teach out" any students remaining in the program:**

There are currently no students in the certificate program.

**Describe how the program is related to the workforce needs in North Dakota, and how these needs will be met by the state if the program is terminated:**

There have been few completions of the certificate in the last 10 years. Lightcast reports that there are 20 jobs in ND for the associated occupation in 2022 with a 10-yr prediction of 15 jobs in ND in 2032, a decrease of -24%.



## State Board of Higher Education Summary

**Title:** New Academic Program Requests for the University of North Dakota (UND):  
UG Certificate in Public Health

**Proposed motion or action:** UND is seeking authorization to offer the above New Academic Programs.

**Background Information:** The Undergraduate Certificate in Public Health is offered as part of the Bachelor of Science in Public Health Education program. It is designed for individuals wishing to obtain formal training in public health, yet do not want to pursue an undergraduate degree. This includes individuals who are currently employed in the field of public health and health care, who have job-specific skills yet no formal educational preparation.

**Financial issues or implications:** Courses offered for the Certificate in Public Health are already offered and instructed by Public Health Education faculty. No additional resources or funding are necessary.

**Legal/policy issues or implications:** State Board of Higher Education (SBHE) Policy 421 Academic Program Requests states: "SBHE shall approve the establishment of all new instructional programs granting academic credit leading to a degree or credential. The SBHE Academic and Student Affairs Committee (ASAC) shall have authority to approve all new academic program requests on behalf of the SBHE."

**Review Process:**

AAC	05/02/2023
Cabinet	05/10/2023
ASAC	05/17/2023

**Chancellor's recommendation:** Chancellor Hagerott recommends approval.

**Contact information:**

Eric Link, Vice President for Academic Affairs/Provost, 701-777-2167, [eric.link@ndus.edu](mailto:eric.link@ndus.edu)

# New Academic Program Request

**Institution:**

University of North Dakota

**Program Name:**

Certificate in Public Health

**Degree Types:**

Undergraduate Program Certificate

**What day did AAC review the Academic Program Exploration Notice for this New Academic Program?**

2023-04-04

**CIP Code:**

51.2201

**Academic Program Code:**

CERT-PH

**Academic Department/Division/College:**

College of Education & Human Development, Public Health

**Semester of Program:**

Fall

**Year of Program:**

2023

**Other Participating Institutions:**

Not Applicable

**Delivery Method:**

Online Only

On Campus

**Describe the delivery methods and location(s) to which the program will be delivered:**

Courses offered for the Certificate in Public Health are offered both online and on-campus. Students may complete requirements in both formats.

**Funding Source:**

Courses offered for the Certificate in Public Health are already offered and instructed by Public Health Education faculty. No additional resources or funding are necessary.

**Describe the funding source:**

Courses offered for the Certificate in Public Health are already offered and instructed by Public Health Education faculty. No additional resources or funding are necessary.

**Is the program eligible for Financial Aid?**

No

**Does the program require a criminal background check described in NDUS Procedure 511?**

No

**Describe a brief description of the program:**

The Undergraduate Certificate in Public Health is offered as part of the Bachelor of Science in Public Health Education program. It is designed for individuals wishing to obtain formal training in public health, yet do not want to pursue an undergraduate degree. This includes individuals who are currently employed in the field of public health and health care, who have job-specific skills yet no formal educational preparation.

**Address student demand and employment availability for students completing the program:**

Market analyses provide a compelling and growing need for public health professionals across the community, region, state, and nation, with a particularly positive employment outlook. U.S. Bureau of Labor Statistics data indicate a significantly greater than average employment growth for health-focused occupations, including community health workers, health educators, medical and health services managers, and mental health counselors. More specifically, data project a growth of 25% in the field of substance abuse counseling, and 32% for public health administrators through 2029.

**Describe how this need was assessed and indicate sources for data used and indicated anticipated enrollment rates for the first five years:**

U.S. Bureau of Labor Statistics and North Dakota Labor Market data indicated significant public health employment needs in the coming decade. Likewise, labor market analyses reflect disparities in education and salary levels among those in entry-level positions in the field. The provision of an undergraduate Certificate in Public Health would permit entry-level employees the opportunity to enhance educational experience without the need for four-year degree completion. It is anticipated that ten new students will be added to the certificate program annually.

**Describe how the program addresses the institutional strategic plan:**

The Undergraduate Certificate in Public Health will address the university's 'Learning' component by offering diverse academic and professional development experiences for those currently employed across the state and region. Student-based discovery may then be extended to the state's public health workforce.

**Describe how the program addresses the NDUS strategic plan:**

The opportunity to engage currently employed individuals in further academic preparation has the capacity to enhance workforce development (Goal #5) in a growing field, in a manner, through the availability of online learning, that is responsive to student needs (Goal #2).

**Are there similar programs that exist within NDUS or state?**

No

**What is the length of the program?**

1 year

**Identify the proposed program-level accreditation organization, if applicable:**

n/a

Course List

<b>Code</b>	<b>Title</b>	<b>Credits</b>
<a href="#"><u>PHE 101</u></a>	Introduction to Public Health	3
<a href="#"><u>PHE 103</u></a>	Introduction to Global Health	3
<a href="#"><u>PHE 303</u></a>	Organization and Administration of Community Health Programs	3
<a href="#"><u>PHE 308</u></a>	Health Policy, Law, and Ethics	3
Course List		

# Program Overview

## Public Health

Lightcast Q1 2023 Data Set

March 2023

University of North Dakota



North Dakota 58202



# Parameters

Completions Year: 2021

Jobs Timeframe: 2021 - 2032

Job Postings Timeframe: Jan 2021 - Dec 2022

Programs:

Code	Description
51.22	Public Health

Regions:

Code	Description	Code	Description
8	Colorado	31	Nebraska
17	Illinois	38	North Dakota
19	Iowa	46	South Dakota
27	Minnesota	55	Wisconsin
30	Montana	56	Wyoming

Education Level:

Description
Bachelor's degree

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

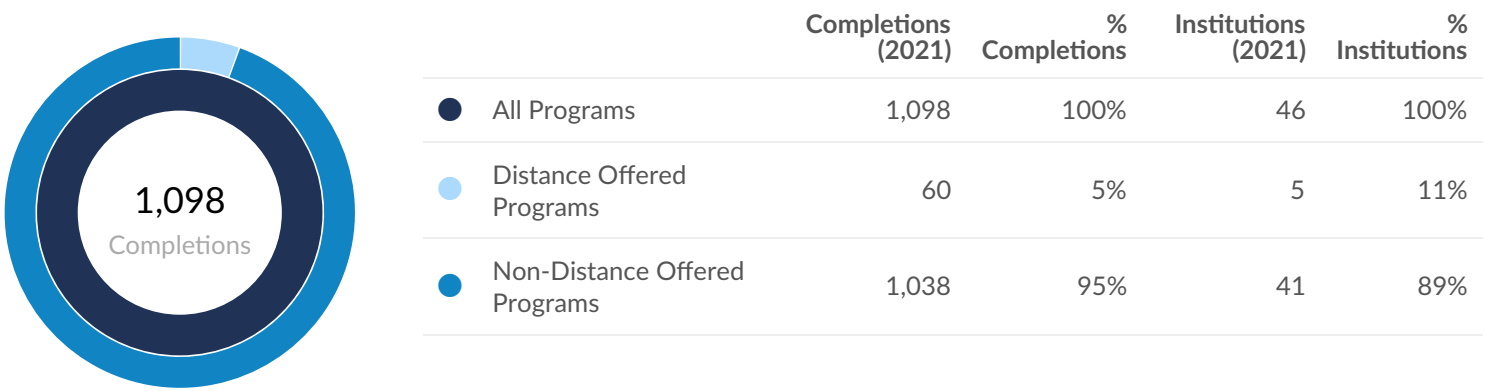
Residency: In-State

46  
Institutions  
48% Growth (2017-2021)

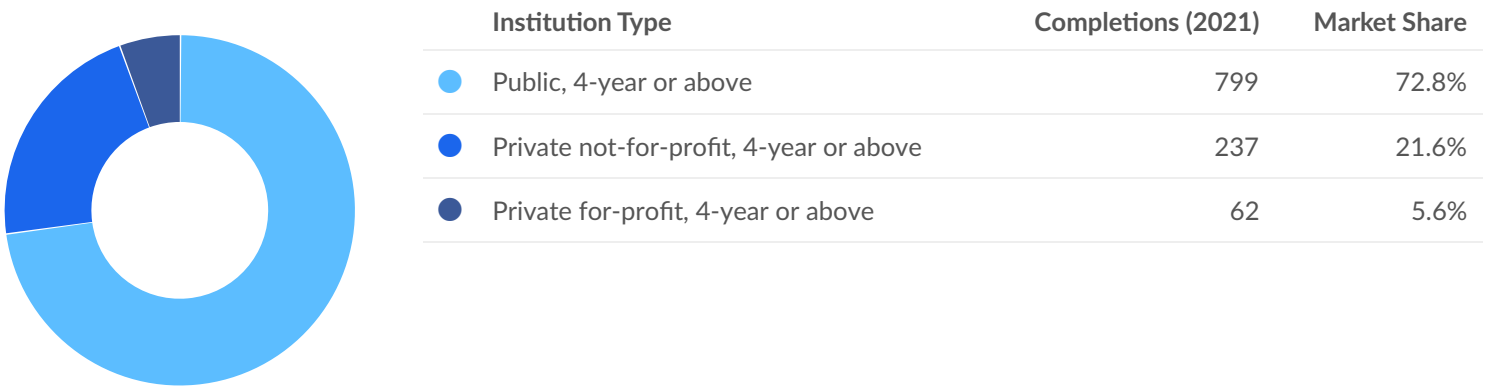
1,098  
Completions  
15% Growth (2017-2021)

Completions Distribution  
Average: 23.9  
1 —||— 203  
Median: 16.5

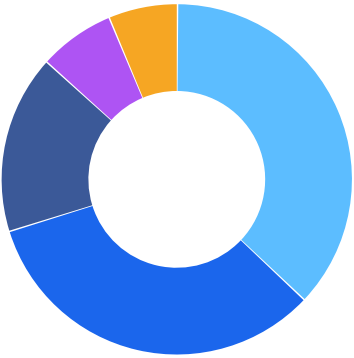
Program Overview



Market Share by Institution Type





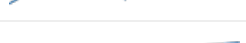










































# Market Share by Program




Program	Completions (2021)	Market Share
Community Health and Preventive Medicine (51.2208)	406	37.0%
Public Health, General (51.2201)	364	33.2%
Public Health Education and Promotion (51.2207)	181	16.5%
International Public Health/International Health (51.2210)	77	7.0%
Other	70	6.4%

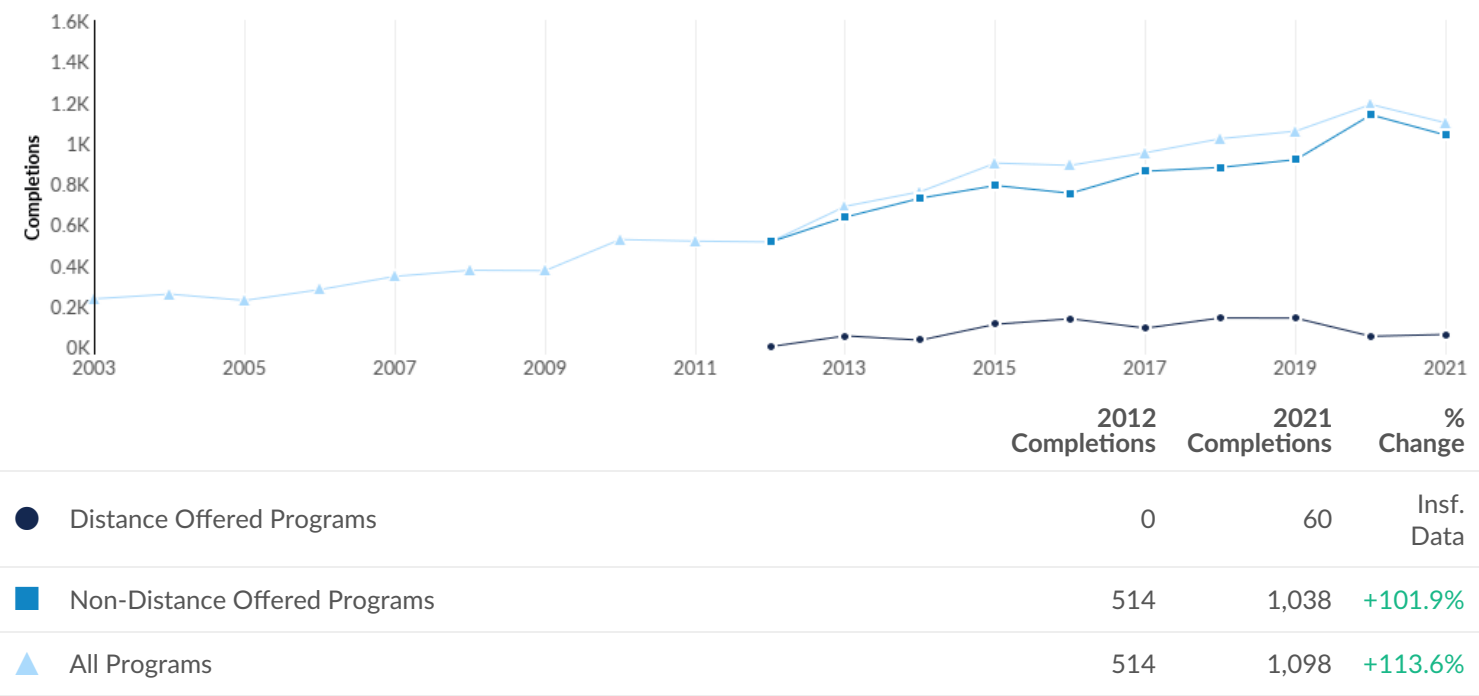
## Completions by Institution

Institution	Bachelor's Degree Completions (2021)	Growth % YOY (2021)	Market Share (2021)	IPEDS Tuition & Fees (2021)	Completions Trend (2017-2021)
University of Illinois Urbana-Champaign	203	5.2%	18.5%	\$17,634	
University of Wisconsin-La Crosse	74	32.1%	6.7%	\$9,195	
University of Iowa	65	38.3%	5.9%	\$9,942	
Northwestern University	61	64.9%	5.6%	\$60,768	
St Catherine University	53	-25.4%	4.8%	\$35,532	
Governors State University	53	6.0%	4.8%	\$10,108	
Northern Illinois University	46	-17.9%	4.2%	\$14,738	
University of Illinois Chicago	40	37.9%	3.6%	\$15,603	
University of Northern Iowa	38	-9.5%	3.5%	\$9,053	
Walden University	33	22.2%	3.0%	\$10,459	
Southern Illinois University-Edwardsville	30	-21.1%	2.7%	\$11,496	
Illinois State University	28	-34.9%	2.6%	\$13,968	
University of Nebraska at Omaha	26	23.8%	2.4%	\$8,136	
Winona State University	26	36.8%	2.4%	\$10,184	
University of Minnesota-Duluth	22	-24.1%	2.0%	\$13,850	
Fort Lewis College	22	-26.7%	2.0%	\$9,004	
Capella University	21	75.0%	1.9%	\$14,148	
University of St Thomas	20	-62.3%	1.8%	\$48,329	
Carroll University	18	350.0%	1.6%	\$35,140	
South Dakota State University	18	28.6%	1.6%	\$9,299	
Saint Cloud State University	17	-15.0%	1.5%	\$9,170	
Northeastern Illinois University	17	0.0%	1.5%	\$12,064	

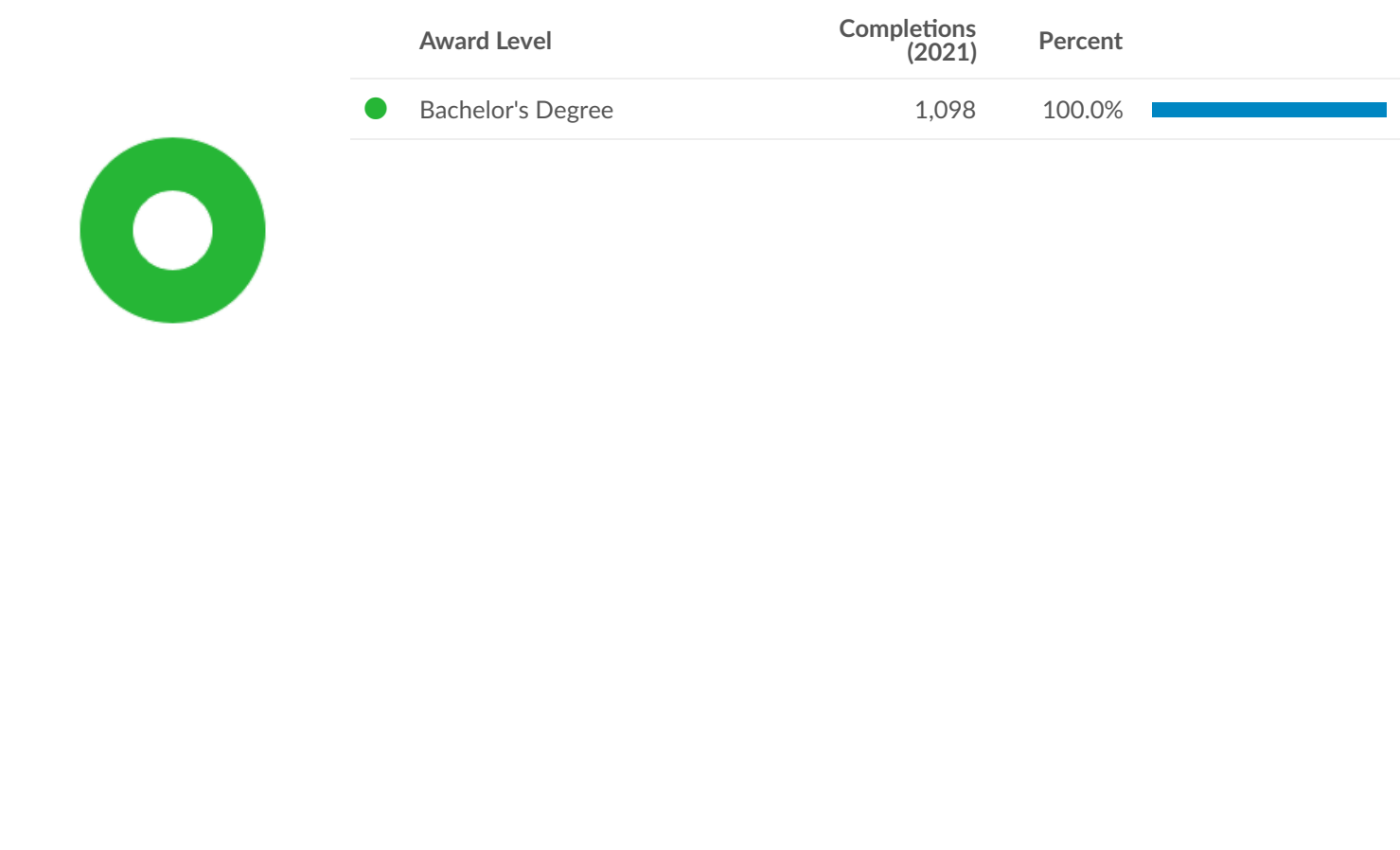
University of North Dakota	17	183.3%	1.5%	\$10,596	
Union College	16	6.7%	1.5%	\$26,060	
Montana Technological University	16	-50.0%	1.5%	\$7,346	
Augustana College	12	-25.0%	1.1%	\$46,189	
Carroll College	10	-23.1%	0.9%	\$38,106	
University of Wisconsin-Eau Claire	10	0.0%	0.9%	\$8,874	
University of Wisconsin-Milwaukee	9	Insf. Data	0.8%	\$9,610	
Saint Mary's University of Minnesota	9	-25.0%	0.8%	\$39,410	
Colorado State University-Fort Collins	9	-50.0%	0.8%	\$12,188	
Bryant & Stratton College-Wauwatosa	8	60.0%	0.7%	\$19,520	
Concordia University-Saint Paul	8	-52.9%	0.7%	\$23,900	
Wartburg College	8	14.3%	0.7%	\$47,500	
Creighton University	5	66.7%	0.5%	\$44,524	
Bemidji State University	5	-28.6%	0.5%	\$9,806	
Bradley University	4	33.3%	0.4%	\$36,360	
University of Wisconsin-Oshkosh	4	-20.0%	0.4%	\$7,733	
Allen College	3	-57.1%	0.3%	\$19,718	
Concordia University-Nebraska	3	200.0%	0.3%	\$36,310	
Loyola University Chicago	3	Insf. Data	0.3%	\$47,808	
Western Illinois University	3	-57.1%	0.3%	\$13,297	
Mercy College of Health Sciences	2	Insf. Data	0.2%	\$19,754	
Mount Mercy University	1	Insf. Data	0.1%	\$36,540	
The University of Montana	1	Insf. Data	0.1%	\$7,492	

Bellevue University	1	Insf. Data	0.1%	\$8,310	
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## Regional Trends



## Regional Completions by Award Level



## Similar Programs

347

Programs (2021)

179,625

Completions (2021)

CIP Code	Program	Bachelor's Degree Completions (2021)
51.3801	Registered Nursing/Registered Nurse	28,248
52.0201	Business Administration and Management, General	15,735
42.0101	Psychology, General	12,661
26.0101	Biology/Biological Sciences, General	8,948
52.0301	Accounting	6,325
52.0801	Finance, General	5,918
52.1401	Marketing/Marketing Management, General	5,820
11.0701	Computer Science	5,031
45.1001	Political Science and Government, General	4,450
43.0104	Criminal Justice/Safety Studies	3,724



# Target Occupations


*\*Filtered by the proportion of the national workforce in these occupations with a Bachelor's degree*

<p>347,769</p> <p>Jobs (2021)*</p> <p>4% <i>below</i> National average*</p>	<p>+15.9%</p> <p>% Change (2021-2032)*</p> <p>Nation: +19.4%*</p>	<p>\$35.91/hr \$74.7K/yr</p> <p>Median Earnings</p> <p>Nation: \$36.17/hr; \$75.2K/yr</p>	<p>38,473</p> <p>Annual Openings*</p>
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Occupation	2021 Jobs*	Annual Openings*	Median Earnings	Growth (2021 - 2032)*	Location Quotient (2021)*
Market Research Analysts and Marketing Specialists	60,639	7,953	\$31.83/hr	+22.93%	1.12
Management Analysts	54,631	6,126	\$44.74/hr	+14.50%	1.04
Managers, All Other	38,441	3,916	\$43.61/hr	+17.79%	0.87
Postsecondary Teachers	33,747	3,646	\$35.70/hr	+12.47%	1.04
Financial and Investment Analysts	19,427	1,771	\$41.03/hr	+13.30%	0.94
Public Relations Specialists	17,274	1,849	\$29.41/hr	+13.97%	0.88
Medical and Health Services Managers	16,146	1,906	\$47.03/hr	+30.50%	0.90
Compliance Officers	14,450	1,326	\$34.02/hr	+8.91%	0.82
Medical Secretaries and Administrative Assistants	12,910	1,722	\$18.08/hr	+11.32%	0.91
Computer Occupations, All Other	12,831	1,242	\$39.90/hr	+19.24%	0.64
Human Resources Managers	10,691	1,025	\$57.49/hr	+8.26%	1.14
Administrative Services Managers	10,617	1,016	\$49.01/hr	+8.84%	1.04
Financial Specialists, All Other	6,394	597	\$33.99/hr	+9.93%	0.90
Environmental Scientists and Specialists, Including Health	5,827	632	\$35.78/hr	+11.33%	0.95
Healthcare Social Workers	5,454	612	\$28.66/hr	+13.09%	0.91
Legislators	4,722	407	\$15.08/hr	+4.00%	1.79
Eligibility Interviewers, Government Programs	4,702	514	\$23.22/hr	+7.10%	0.66
Public Relations Managers	4,095	400	\$56.10/hr	+11.38%	0.91

Occupational Health and Safety Specialists	3,884	477	\$37.58/hr	+12.13%	0.81
Community Health Workers	2,683	376	\$19.54/hr	+21.24%	0.88
Health Education Specialists	2,673	334	\$26.98/hr	+10.66%	0.98
Statisticians	1,683	190	\$37.67/hr	+32.44%	1.05
Advertising and Promotions Managers	1,562	200	\$47.12/hr	+16.84%	0.71
Occupational Health and Safety Technicians	1,112	134	\$28.52/hr	+8.99%	1.13
Physicists	715	59	\$68.52/hr	+2.94%	1.28
Epidemiologists	311	30	\$34.04/hr	+29.26%	1.11
Genetic Counselors	149	13	\$39.37/hr	+19.46%	1.06

## Job Postings Summary

<p>1.02M</p> <p>Unique Postings</p> <p>2.61M Total Postings</p>	<p>3 : 1</p> <p>Posting Intensity</p>  <p>Regional Average: 3 : 1</p>	<p>29 days</p> <p>Median Posting Duration</p> <p>Regional Average: 30 days</p>
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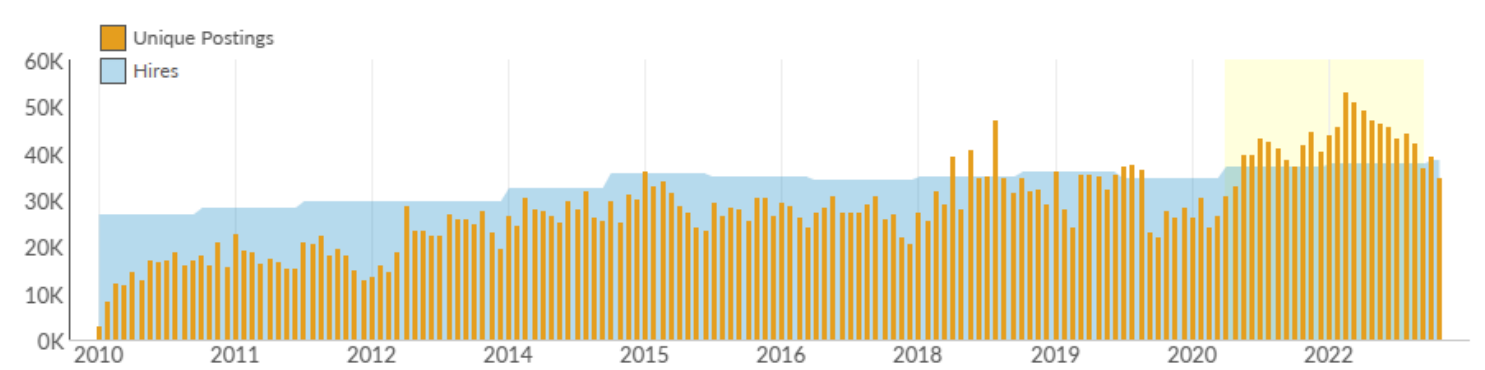
There were 2.61M total job postings for your selection from January 2021 to December 2022, of which 1.02M were unique. These numbers give us a Posting Intensity of 3-to-1, meaning that for every 3 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

# Job Postings vs. Hires

42,391	37,337
Avg. Monthly Postings (Jan 2021 - Dec 2022)	Avg. Monthly Hires (Jan 2021 - Dec 2022)











In an average month, there were 42,391 newly posted job postings for 27 Occupations, and 37,337 actually hired. This means there was approximately 1 hire for every 1 unique job posting for 27 Occupations.













Occupation	Avg Monthly Postings (Jan 2021 - Dec 2022)	Avg Monthly Hires (Jan 2021 - Dec 2022)
Managers, All Other	7,957	2,182
Computer Occupations, All Other	7,046	1,203
Medical and Health Services Managers	5,925	1,982
Management Analysts	3,324	4,609
Market Research Analysts and Marketing Specialists	2,966	5,387
Postsecondary Teachers	2,788	8,222
Medical Secretaries and Administrative Assistants	2,257	3,565
Financial and Investment Analysts	2,166	1,075
Human Resources Managers	1,513	1,046
Public Relations Specialists	1,136	1,250
Public Relations Managers	1,121	275
Compliance Officers	845	1,141
Administrative Services Managers	797	1,103

Occupational Health and Safety Specialists	512	579
Health Education Specialists	507	316
Healthcare Social Workers	372	776
Statisticians	289	176
Environmental Scientists and Specialists, Including Health	164	369
Occupational Health and Safety Technicians	156	159
Eligibility Interviewers, Government Programs	151	455
Financial Specialists, All Other	141	446
Community Health Workers	81	399
Advertising and Promotions Managers	68	108
Physicists	48	127
Epidemiologists	32	48
Genetic Counselors	29	12
Legislators	0	0

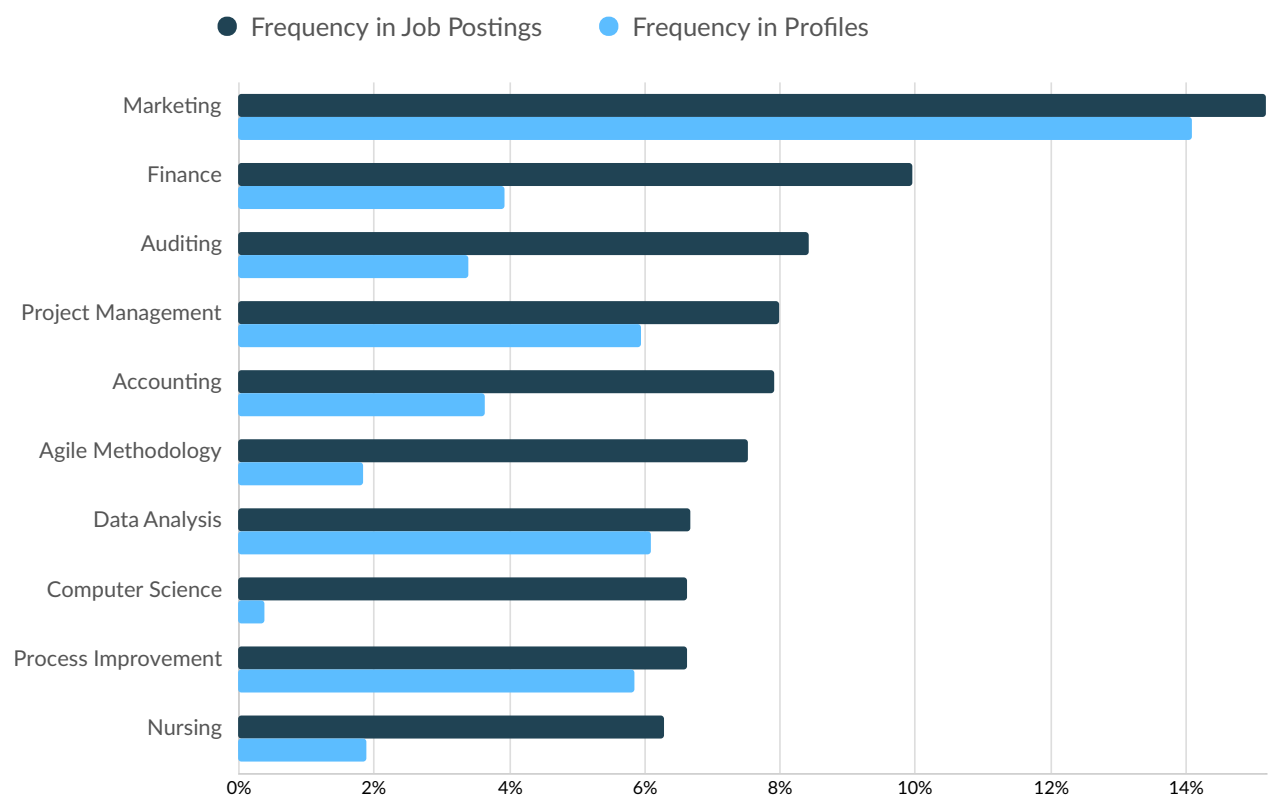
## Top Companies Posting

Company	Total/Unique (Jan 2021 - Dec 2022)	Posting Intensity	Median Posting Duration
Robert Half	16,446 / 8,615	2 : 1 	30 days
Randstad	16,572 / 8,117	2 : 1 	21 days
Wells Fargo	36,179 / 7,956	5 : 1 	31 days
Elevance Health	14,290 / 7,801	2 : 1 	31 days
UnitedHealth Group	21,149 / 7,373	3 : 1 	25 days
Humana	15,463 / 6,909	2 : 1 	36 days
Deloitte	8,995 / 5,501	2 : 1 	21 days
University of Chicago	13,402 / 4,860	3 : 1 	36 days
Guidehouse	5,830 / 4,584	1 : 1 	33 days
University of Colorado	11,417 / 4,214	3 : 1 	25 days

## Top Posted Job Titles

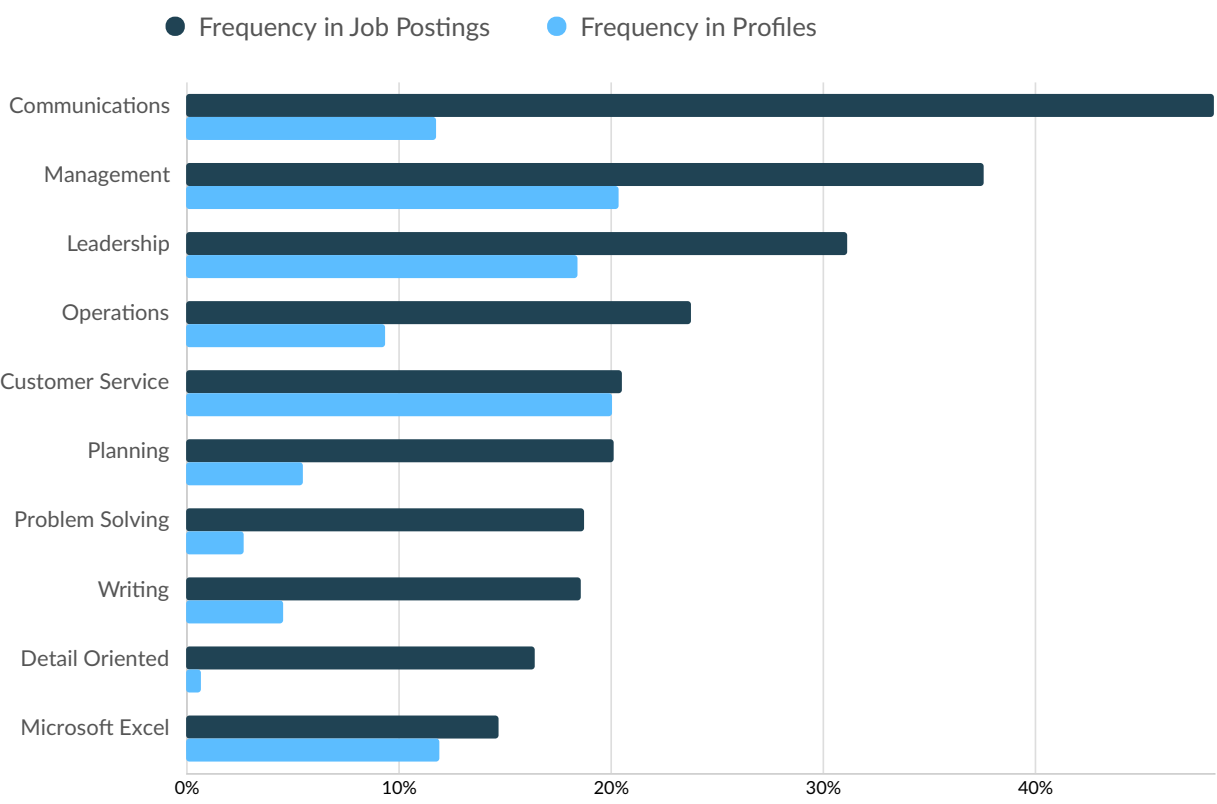
Job Title	Total/Unique (Jan 2021 - Dec 2022)	Posting Intensity	Median Posting Duration
Financial Analysts	37,633 / 15,166	2 : 1 	30 days
Business Analysts	32,440 / 15,091	2 : 1 	24 days
Systems Engineers	29,160 / 10,182	3 : 1 	24 days
Program Managers	22,208 / 9,224	2 : 1 	29 days
Human Resources Managers	24,743 / 9,169	3 : 1 	29 days
Project Coordinators	18,985 / 7,604	2 : 1 	30 days
Directors of Nursing	18,387 / 6,888	3 : 1 	30 days
Medical Receptionists	24,067 / 5,963	4 : 1 	32 days
Scrum Masters	13,125 / 5,918	2 : 1 	24 days
Solutions Architects	12,093 / 5,905	2 : 1 	25 days

# Top Specialized Skills



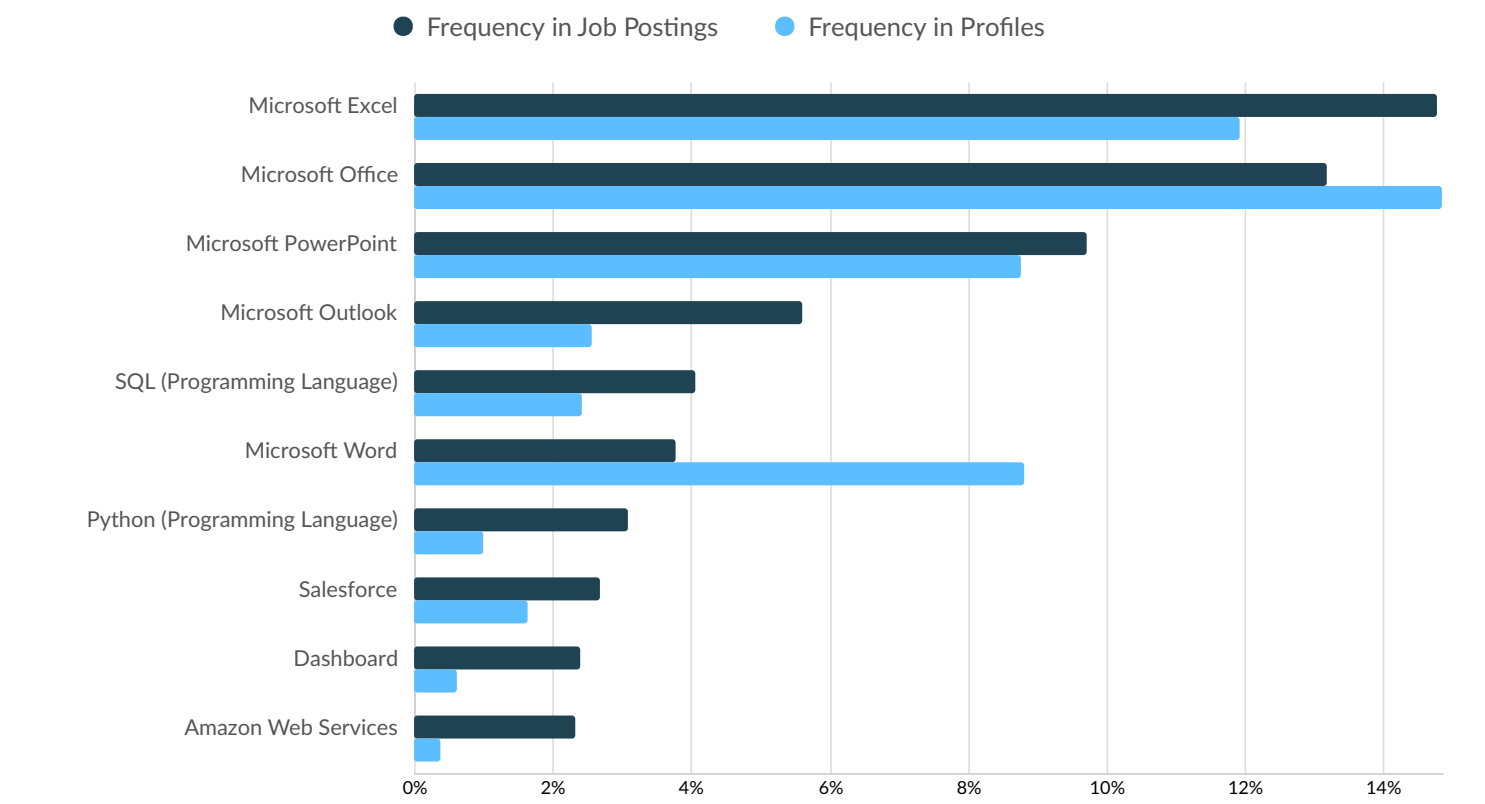
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Marketing	154,572	15%	205,466	14%
Finance	101,285	10%	57,362	4%
Auditing	85,889	8%	49,723	3%
Project Management	81,424	8%	86,746	6%
Accounting	80,735	8%	53,122	4%
Agile Methodology	76,671	8%	26,834	2%
Data Analysis	67,900	7%	88,932	6%
Computer Science	67,493	7%	5,708	0%
Process Improvement	67,419	7%	85,296	6%
Nursing	64,160	6%	27,685	2%

# Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Communications	492,720	48%	172,261	12%
Management	382,044	38%	297,593	20%
Leadership	316,645	31%	268,418	18%
Operations	242,010	24%	136,626	9%
Customer Service	208,665	21%	292,303	20%
Planning	205,105	20%	80,249	6%
Problem Solving	190,942	19%	40,070	3%
Writing	189,064	19%	66,908	5%
Detail Oriented	167,215	16%	10,349	1%
Microsoft Excel	150,120	15%	173,766	12%

# Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles
Microsoft Excel	150,379	15%	173,766	12%
Microsoft Office	134,050	13%	216,517	15%
Microsoft PowerPoint	98,852	10%	127,780	9%
Microsoft Outlook	57,025	6%	37,373	3%
SQL (Programming Language)	41,415	4%	35,414	2%
Microsoft Word	38,511	4%	128,360	9%
Python (Programming Language)	31,474	3%	14,424	1%
Salesforce	27,361	3%	23,782	2%
Dashboard	24,438	2%	9,135	1%
Amazon Web Services	23,805	2%	5,450	0%



## Top Qualifications

Qualification	Postings with Qualification
Valid Driver's License	65,811
Registered Nurse (RN)	51,244
Master Of Business Administration (MBA)	30,401
Project Management Professional Certification	21,813
Basic Life Support (BLS) Certification	18,562
Cardiopulmonary Resuscitation (CPR) Certification	18,050
Security Clearance	15,003
Board Certified/Board Eligible	9,309
Licensed Clinical Social Worker (LCSW)	9,225
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	9,053

# Appendix A

## Program Selection Details

CIP Code	Program Name
51.22	Public Health

# Appendix B - Data Sources and Calculations

## Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

## Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

## Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

## Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

## State Data Sources

This report uses state data from the following agencies: Colorado Department of Labor and Employment; Illinois Department of Employment Security; Iowa Workforce Development; Minnesota Department of Employment and Economic Development; Montana Department of Labor and Industry; Nebraska Department of Labor, NEworks; North Dakota Job Service; South Dakota Department of Labor and Regulation; Wisconsin Department of Workforce Development; Wyoming Department of Workforce Services