PathTech LIFE

Understanding pathways in advanced technologies.

Final Report
Attachment 5

Selected Conference Presentations
Years 3 and 4 (Sept 2017 – August 2019)

Year 3:

Tyson, Will and Edward C. Fletcher. 2017. "PathTech LIFE: Informing Targeted Research and Best Practices." Presentation at the Advanced Technological Education Principal Investigators Conference, October 23-25, Washington, DC.

Tyson, Will and Lakshmi Jayaram. 2018. "Personal and Professional Motivations of Enrollment in Community College Advanced Technology Program." Paper presented at the Annual Meetings of the Southern Sociological Society, April 4-7, New Orleans, LA.

Tyson, Will and Lakshmi Jayaram. 2018. "PathTech LIFE: Findings from a National Survey of Advanced Technology Students." Paper presented at the High Impact Technology Exchange Conference, July 23-26, Miami, FL.

Year 4:

Tyson, Will, Lakshmi Jayaram, and Danielly Orozco. 2018. "Applied Research 101 – PathTech LIFE and LISTEN Research in Action." High Impact Workshop conducted at the Advanced Technological Education Principal Investigators Conference, October 24-26, Washington, DC.

Tyson, Will and Lakshmi Jayaram. 2019. "Knowledge and Utilization of Campus Resources and Program Satisfaction Among Community College Technician Education." Paper presented at the Annual Meetings of the Southern Sociological Society, April 10-13. Atlanta, GA.

Birds of a Feather: PathTech LIFE: Informing Targeted Research and Best Practices
Track 4. Advancing Innovation through STEM Research and Evaluation

Talking Points for Breakout Sessions

Introduction and Overview (Will)

- Findings Presentations (10 min)
    - Wave 2 Update
- How can my institution get involved in PathTech LIFE? (5 min)
    - Contact Ben Reid, External Communication Coordinator
    - Identify classes/students to whom survey may be administered
    - Survey administered online, 15 minutes, high response rates
    - Student & College Incentives
- What are successful strategies for distributing the survey? (Ben + active program head)
    - Do we have an active program head who can speak to this issue?
    - Establish contact by email and phone
    - Offer incentives
    - Follow up/stay in touch with programs – request and implement feedback from community college partners

Breakout Session #1 (15 min)

Group 1 (Eddie + Lakshmi)

- Research methods and survey design and next steps -
    - Designing a mixed methods approach to understanding pathways?
        - The purpose of PathTech LIFE is to better understand the pathways that characterize technician workforce development.
            - We are studying people, their backgrounds, life experiences, educational and occupational contexts, as well as their aspirations and goals.
                - Surveys
                    - Provide cross-sectional data to capture a snapshot of student's experiences in their programs, as well as their motivations for enrollment and plans afterwards.
                - Interviews
                    - Provide life history data, process information (e.g. sequencing, cycling, school-to-work transitions, etc).
                - Administrative Data

- Provide programmatic understanding, information about initiatives related to recruitment, enrollment, retention, and completion, faculty/staff perspective, triangulation/validation of other data

Group 2 (Danielly + Marilyn)

- What do you need to know about your student population?
  - An open question – what would help?
    - Why students enroll?
    - How they hear about programs?
      - Friends, co-workers, advertisements, social media, etc?
    - What challenges do students face to complete programs?
      - Financial, work-life balance, academic difficulty, etc?
    - What initiatives have students found helpful?
      - Online/hybrid coursework, evening/weekend classes, tutoring, financial aid programs, etc?
- How can programs adapt study findings?
  - Applied Research
    - Evidence-based approach for programmatic decisions and program development
      - Provide examples based on potential findings:
        - Work-life balance
        - Academic difficulty
        - Financial hardship

Breakout Session #2 (15 min)

Repeat Groups

Conclusion (15 min)

PathTech LIFE

Understanding **path**ways in advanced **tech**nologies.

Personal and Professional Motivations of Enrollment in Community College Advanced Technology Programs

Will Tyson
Principal Investigator
Associate Professor
Department of Sociology
University of South Florida

Lakshmi Jayaram
Research Associate
PathTech LIFE
University of South Florida

PathTech Projects

- PathTech Tampa Bay
  - *Successful Academic and Employment **Path**ways in Advanced **Tech**nologies* (NSF #1104214)
- PathTech LIFE (Learning, Interests, Family, Employment)
  - *PathTech LIFE: Constructing a National Survey of Engineering Technology Students through Regional and Statewide Testing* (#1501999)
- NSF Advanced Technological Education (ATE)
  - Targeted Research in Technician Education

NSF ATE - Advanced Technological Education

- ATE Mission (from program solicitation *emphasis added*)
  - ATE supports **targeted research on technician education**, changing roles of technicians in the workplace, and topics that **advance the knowledge base** needed to make technician education programs more effective and more forward-looking.
  - Results **inform** practices in technician education programs, emphasizing dissemination to practitioners.
  - Projects represent a **true collaboration**--reflected in the activities, the leadership, and the budget--between well-qualified **researchers**, **two-year college educators** and other stakeholders.

PathTech Projects

- PathTech LIFE (Learning, Interests, Family, Employment)
  - *PathTech LIFE: Constructing a National Survey of Engineering Technology Students through Regional and Statewide Testing* (#1501999)
  - $778,031 over 3 years (2015-18)
  - National survey of community college students in advanced technology fields in collaboration with a national network of colleges

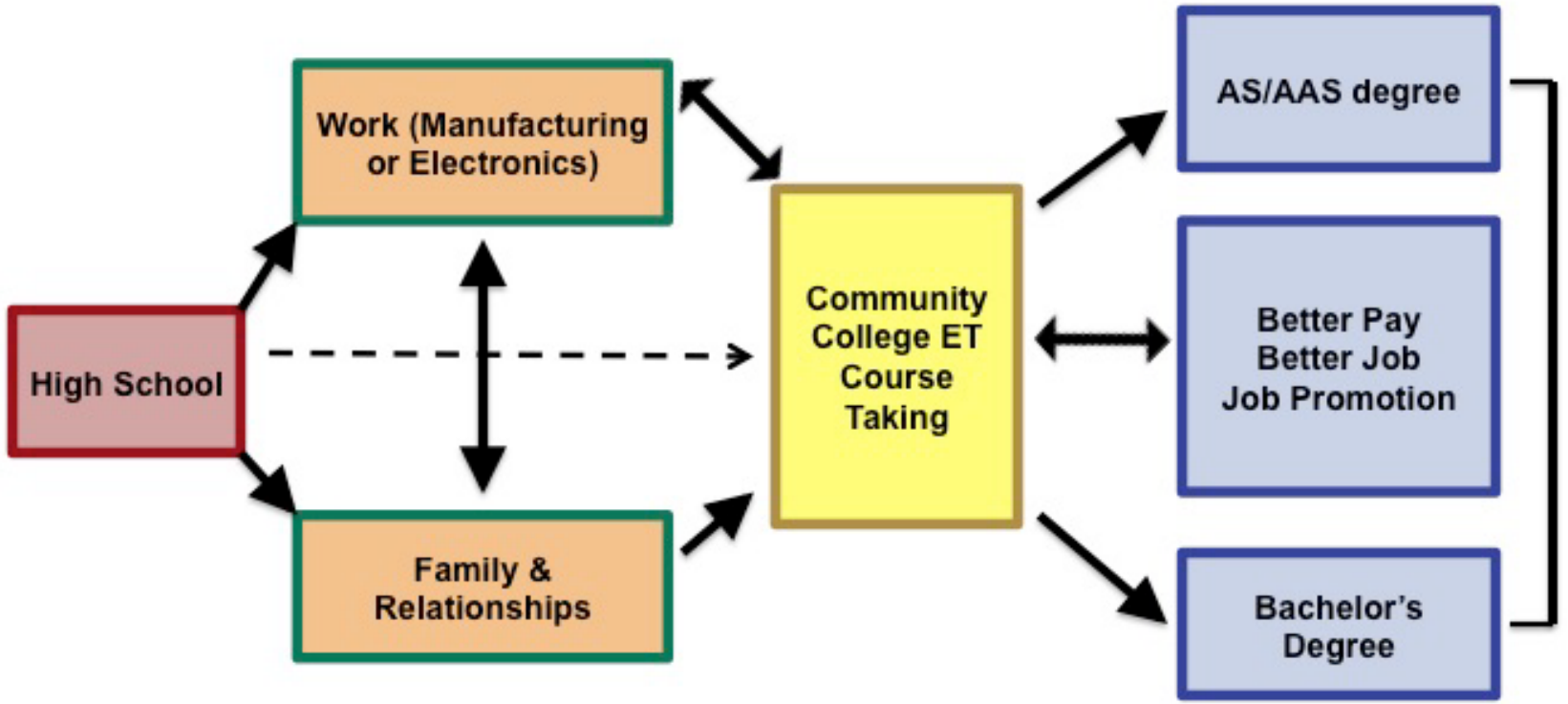
PathTech LIFE Purpose

- To understand the LIFE experiences that influence enrollment, retention, and persistence toward advanced technology certificates and degrees
  - **L**earning
  - **I**nterests
  - **F**amily
  - **E**mployment

PathTech LIFE Problem Statement

- Engineering technicians earn above average wages, secure stable employment, and achieve middle-class status (Carnevale, Smith, & Strohl, 2010).
- The majority of students completing ET courses, certifications and degrees at two-year colleges are adults with complex lives.
  - Balance employment, health, children, etc.
- ET students cycle between school and work to re-skill (Adkisson & Monaghan, 2014).

PathTech Pathways Model of Cycling



Stop Out vs Dropout vs Cycling

- **Stop out** – non-continuous enrollment patterns
- **Dropout** – permanent departure from school
- For non-traditional students with complex lives outside of school is it difficult to determine whether departure from schooling is temporary or permanent
  - Leads to questions about statistics describing community college enrollment patterns.
- The stop out/dropout dichotomy may be too simplistic to capture today's community college enrollment experience.
- **Cycling** – regular movement between school and work
  - May be a better term to conceptualize how educational pathways overlap and intersect with other life course transitions related to family, work, and community.

Research Questions

- Who comprises the "non-traditional" group at community colleges?
- What are their enrollment patterns?

Survey Construction

- Survey Topics
  - Academic Background
  - College Experiences
  - Employment Background
  - Employment Status
  - Motivation for Enrollment
  - Program Evaluation
  - Academic Goals
  - Career Goals
  - Demographics
- Survey with 1,872 students at 62 community colleges across the U.S.
- Students enrolled in STEM programs in engineering

Sampling and Recruitment

- Survey with 1,872 students at 62 community colleges across the U.S.
- Students enrolled in coursework and/or pursuing certificates and degrees in:
  - engineering technology
  - advanced manufacturing
  - micro and nanotechnology
  - energy and environmental technology

Findings

		*Associates Degree and 2 year enrollment								
		Did not enroll in CC			Enrolled in CC			Earned associate's degree		
		*Bachelors Degree and 4 year enrollment			*Bachelors Degree and 4 year enrollment			*Bachelors Degree and 4 year enrollment		
		Did not enroll in 4 year	Enrolled in 4 year	Earned bachelor's	Did not enroll in 4 year	Enrolled in 4 year	Earned bachelor's	Did not enroll in 4 year	Enrolled in 4 year	Earned bachelor's
		Count	Count	Count	Count	Count	Count	Count	Count	Count
*Age Groups	Traditional age (18-25)	684	63	19	148	11	2	53	3	5
	Non-traditional (26-35)	182	51	68	132	15	0	72	6	7
	Older (36+)	129	24	43	83	7	6	42	7	10

Findings Highlight

- The majority of students in the study would be characterized as “nontraditional” based on their age.
- A high percentage of students enrolled in community college after some 2-yr and 4-yr coursework, as well as after an AA or BA degree
- The threshold for “stopouts” in this sample is 22 years old – much younger than anticipated or reported in previous studies
- Across all age groups, as well as students who had either enrolled in higher education previously or not, the number one reason for their current enrollment in community college was “to increase opportunities for a better life”

Discussion

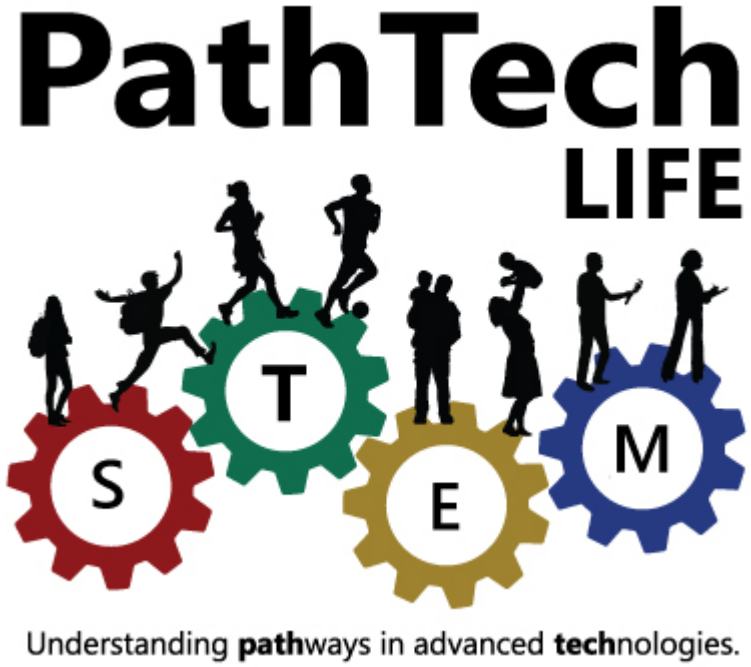
- Reconceptualize what is considered “traditional” and “non-traditional” for community college enrollment.
- How is “College for All” impacting the phenomena of stopouts? Is it causing an increase and perhaps at younger ages?
- Stopouts, or “Cycling,” may illustrate enduring role of education across the life course alongside other transitions, rather than a “negative” statistic about enrollment patterns
- Findings also may also provide evidence of role of re-skilling to meet workforce demands and illustrate the important relationship between education and economy.

Next Steps

- Multivariate analysis based on how background characteristics predict stop outs, or an experience in higher education that cycles between school, work, family, and community, and in the context of globalization and a changing economy, across the life course?

Questions?

Contact Will Tyson – wtyson@usf.edu



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PathTech LIFE is supported by the National Science Foundation under Grant No. 1501999. Any opinions, findings, and conclusions or recommendations expressed on this site are those of the authors and do not necessarily reflect the views of the National Science Foundation. USF IRB: Pro00021314

PATHTECH LIFE PROJECT INFORMATION

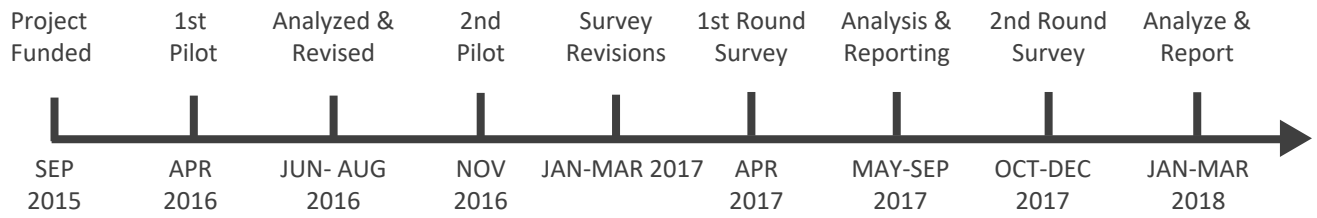
OVERVIEW

- National Science Foundation (NSF) funded Advanced Technological Education (ATE) Targeted Research in Technician Education
- Partnership between University of South Florida, Florida Advanced Technological Education Center (FLATE) at Hillsborough Community College and national ATE Center Partners
- National survey of community college students in advanced technology fields in collaboration with a national network of colleges.
- PathTech LIFE seeks to understand how learning, interests, family, and employment (LIFE) experiences of two-year college students impact their decisions to enroll, return for further coursework, and/or pursue a certificate or degree.

BACKGROUND

- Builds from Successful Academic and Employment Pathways in Advanced Technologies (NSF #1104214)
- $1.2 million over 4 years (2011-2015)
- Examination of educational and employment pathways through interviews and observation in local high schools, community colleges, and industry

TIMELINE SUMMARY



PATHTECH LIFE PROJECT INFORMATION

JUSTIFICATION

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    - Balance employment, health, children, etc.

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TIMELINE

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February – April 2016	Received input from panel of experts made up of two people from each ATE Center using Delphi technique (three iterative rounds)
April 2016	Completed survey revisions Completed IRB modification
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May – September 2017	Analyze 1st round national data, prepare reports, publications, and presentations
October-December 2017	Distributed 2nd round national survey to students at 59 colleges (1344 respondents)
January-February 2018	Analyzed 2nd round national data, prepared reports, publications, and presentations
March 2018- May 2018	Distributing 3rd round national survey

SURVEY INFORMATION

LOGISTICS

Total Respondents: 1,872 students

Total Colleges: 62 community colleges

Survey Time: 15 minutes

SURVEY TOPICS

- Academic Background
- College Experiences
- Career Goals
- Employment Status
- Demographics
- Employment Background
- Motivation for Enrollment
- Program Evaluation
- Academic Goals

PROGRAM AREAS

ENGINEERING TECHNOLOGY

ENERGY AND ENVIRONMENTAL TECHNOLOGY

ADVANCED MANUFACTURING

MICRO AND NANO TECHNOLOGY

NATIONAL SURVEY REACH

Numbers represent number of respondents from each location

View the interactive report at: https://batchgeo.com/map/a38c71ef96e83e8a64943a534d48dd47

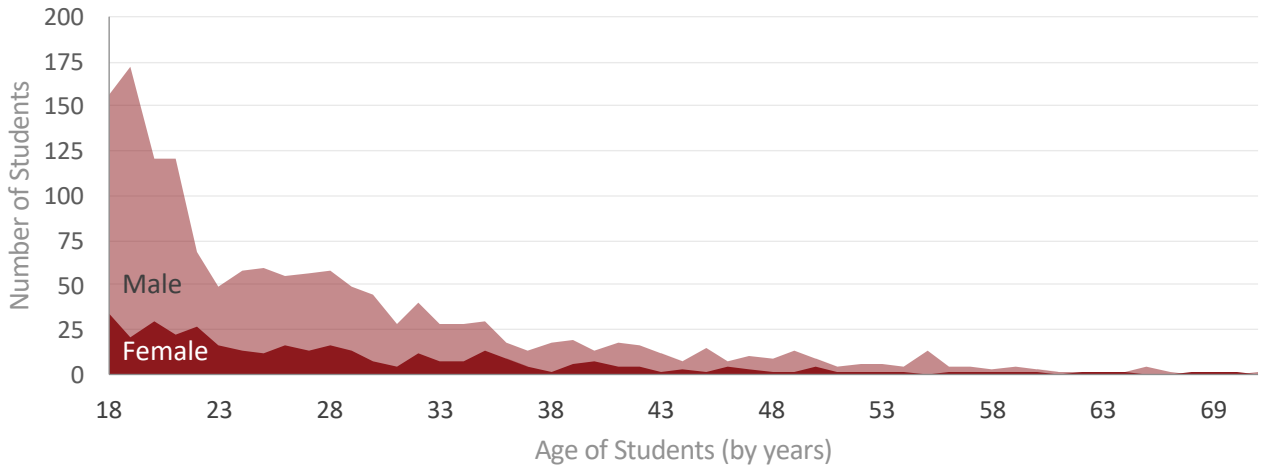
RECRUITMENT

- Recruited colleges through ATE grantees and partner colleges unaffiliated with ATE
- Offered colleges a findings report for their college if they delivered a 50% response rate
- All student respondents received $25

DEMOGRAPHICS

AGE

The majority of the 1,872 respondents were between the ages of 18-30.

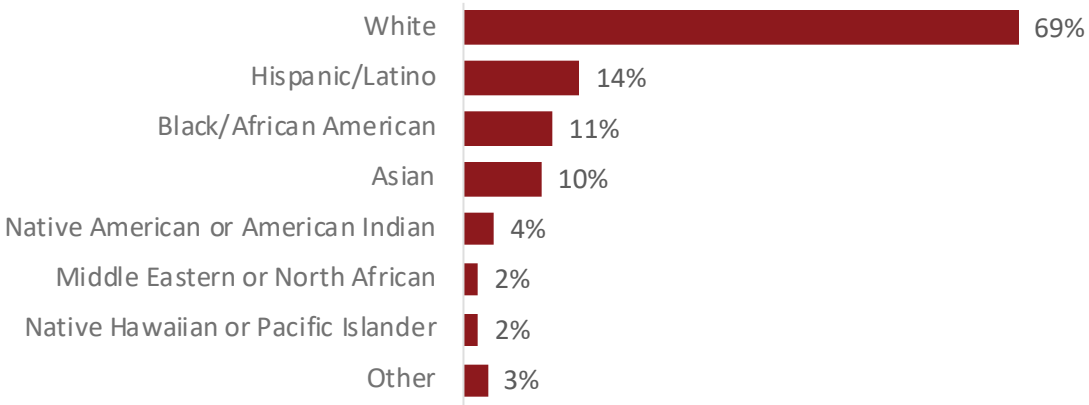


GENDER

79.6% of the respondents were male, 0.8% of the respondents identified as non-gender conforming.

RACE & ETHNICITY

1,289 (69%) of the 1,872 respondents indicated that they were white.*

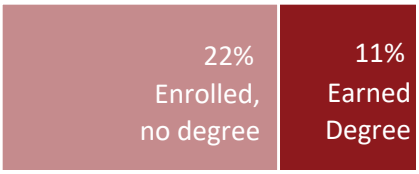


*Students selected all that apply therefore percentages add up to more than 100%

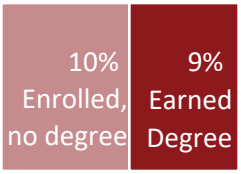
BACKGROUND PRIOR TO ENROLLMENT

EDUCATIONAL BACKGROUND

33% of students enrolled in **2-year college** prior to enrolling.

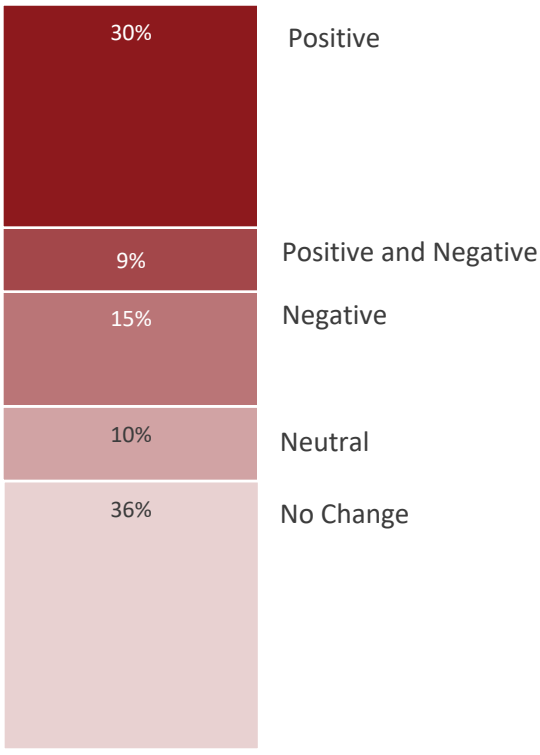


19% of students enrolled in **4-year college or university** prior to enrolling.



53% of students **did not enroll** in a community college or university prior to enrolling, but only **37**% of students **age 23 and older**.

LIFE CHANGES PRIOR TO ENROLLMENT



Respondents were asked about how their life was impacted in the areas of **employment**, **family**, **financial**, **family**, and **other major life events** in the 12 months before enrolling.

PRiSM Decision Model for Adult Enrollment (Stein & Wanstreet, 2006):

P*athway to a Better Life* - adults' assessments of the extent to which their own cognitive and economic conditions might be enhanced as a result of participation in a higher education program.

R*eflective Learner* - how students attempt to evaluate their own academic abilities and academic readiness to pursue a degree.

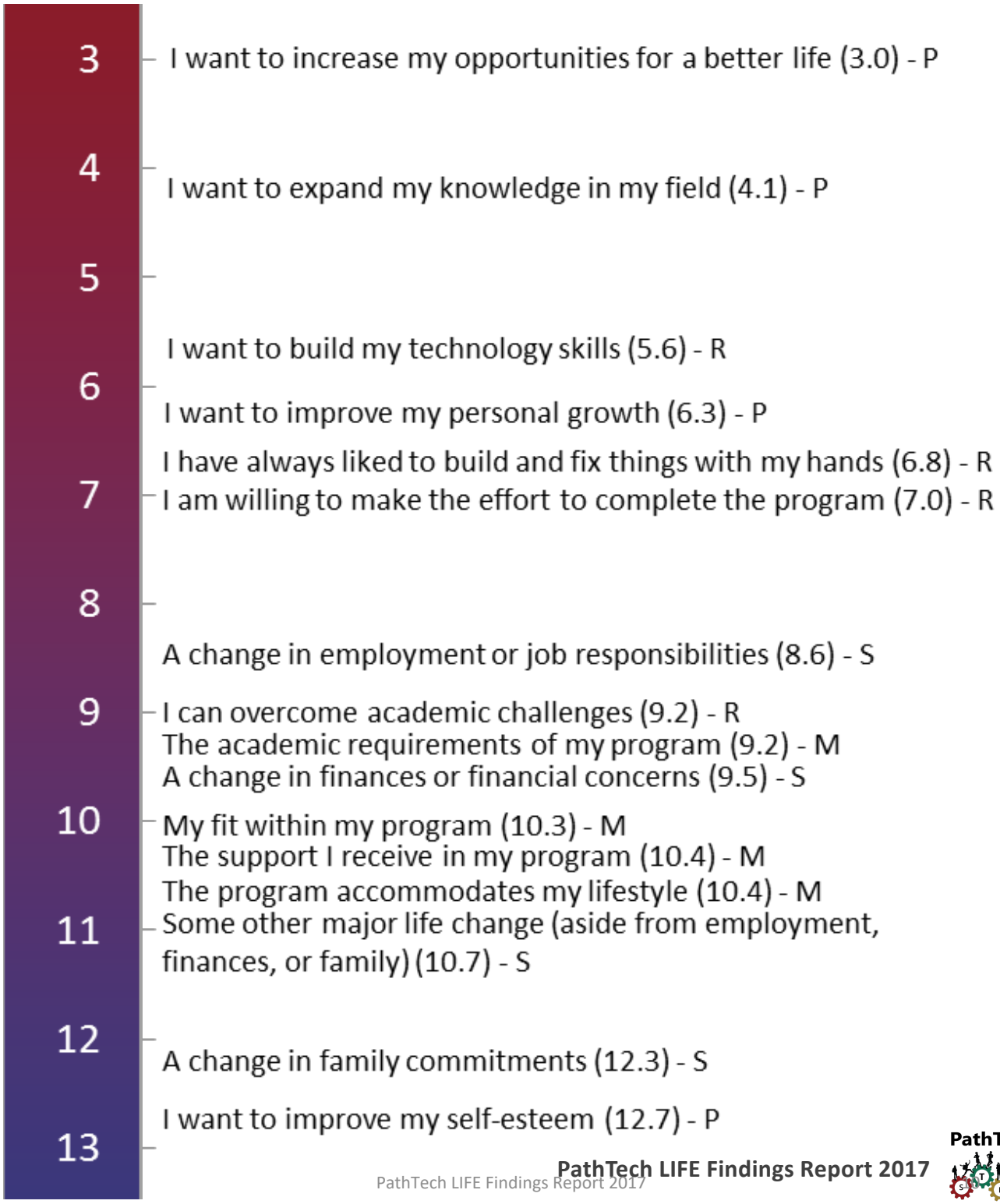
S*ynchronizing Learning, Earning, and Living* - emphasis on their particular life stage as well as their abilities to balance learning, earning, and living as critical determinants in their decisions to pursue enrollment in higher education.

M*atch with an Academic Life* - importance of adults seeking a fit with the academic program's curriculum, policies, requirements, support, and accommodation with adult learners.

PathTech LIFE Findings Report 2017

MOTIVATION FOR ENROLLING

Q: WHICH FACTOR WOULD YOU SAY IS THE MOST IMPORTANT REASON WHY YOU CHOSE TO ENROLL THIS SEMESTER? (Average rank, 1 = highest)

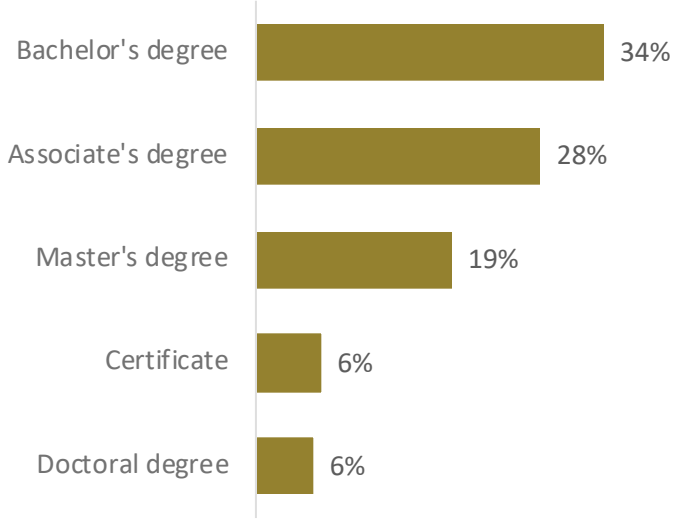


PathTech LIFE Findings Report 2017

LONG-TERM GOALS & COMMITMENTS

ACADEMIC GOALS

34% of students reported that their goal was to obtain an bachelors degree. 28% planned to earn an associate's degree. 19% of students planned on getting a master's degree, 6% a certificate, and 6% a doctoral degree.



CAREER COMMITMENTS

Most students are very committed to pursing a career related to what they are studying in their ATE program.

On a scale of 1-5, 1 being the least committed and 5 being the most.

75% of students indicated that a having a higher paying job was the biggest contribution the program could have on their career.

MOTIVATION FOR ENROLLING

SIX REASONS STUDENTS ENROLLED

Factor analyses identified six sets of reasons students enrolled scaled from 1-10:

PERSONAL WELL-BEING

OPPORTUNITY

ACADEMIC EFFORT

SKILL BUILDING

JOB AND FINANCIAL CONCERNS

FAMILY AND OTHER CONCERNS

PERSONAL WELL-BEING

5.0 out of 10 (mean score)

- Higher motivation among Black, Asian, and Middle Eastern/North African students
- Less motivation for Native American students
- Higher motivation for LGBT students
- Higher motivation for students who were not US Citizens or Permanent Residents

"I want to improve my self-esteem"

"I want to improve my personal growth"

OPPORTUNITY

8.5 out of 10 (mean score)

- No significant differences; Highest priority among all groups

"I want to expand my knowledge in my field"

"I want to increase my opportunities for a better life"

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MOTIVATION FOR ENROLLING

ACADEMIC EFFORT

5.8 out of 10 (mean score)

- More important for younger students
- Less important for Native American students
- Less important for students with Bachelor's degrees compared to students with no prior college enrollments
- More important for divorced and single students

"I can overcome academic challenges"

"I am willing to make the effort to complete the program"

SKILL BUILDING

6.2 out of 10 (mean score)

- Less important for Black and Asian students
- More important for single students and parents with more children
- More important for students with higher household income

"I have always liked to build and fix things with my hands"

"I want to build my technology skills"

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MOTIVATION FOR ENROLLING

JOB AND FINANCIAL CONCERNS

5.1 out of 10 (mean score)

- More important for older students
- Less important for Asian and LGBT students
- More important for students who had been enrolled in a community college or earned a bachelor's degree
- More important for students living with a partner
- Less important for unemployed students or higher household income students

"A change in employment or job responsibilities"

"A change in finances or financial concerns "

FAMILY AND OTHER CONCERNS

2.2 out of 10 (mean score)

- More important for Hispanic, Black, Asian, and Native Hawaiian/Pacific Islander students
- Less important for single and divorced students
- More important for parents and parents with more children
- Less important for students who are unemployed but not looking
- Less important for students with higher household income

"A change in family commitments"

"Some other major life change (aside from employment, finances, or family)"

PathTech LIFE

ACKNOWLEDGMENTS

PathTech LIFE would like to acknowledge the following people/organizations for their contribution to this work:

- Marilyn Barger, Principal Investigator, Florida Advanced Technological Education Center for Manufacturing (FLATE)
- Eight National Science Foundation Advanced Technological Education Centers:
  - Consortium for Alabama Regional Center for Automotive Manufacturing (CARCAM)
  - Center for Renewable Energy Advanced Technological Education (CREATE)
  - Florida Advanced Technological Education Center for Manufacturing (FLATE)
  - MatEdU: National Resource Center for Materials Technology Education
  - Midwest Photonics Education Center (MPEC)
  - Northeast Advanced Technological Education Center (NEATEC)
  - Regional Center for Nuclear Education and Training (RCNET)
  - Regional Center for Next Generation Manufacturing (RCNGM)
- 62 Community Colleges
- Impact Allies for External Communications services, including the data visualization, survey outreach, and coordination.

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PathTech LIFE

Understanding **path**ways in advanced **tech**nologies.

Spring 2018
Survey Findings Report

HI-TEC Conference 2018

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Co-Principal Investigator
FLATE
Hillsborough Community College

Edward Fletcher
Co-Principal Investigator
Associate Professor
Career and Workforce Education
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TIMELINE

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April 2016	Completed survey revisions; Completed IRB modification
April – May 2016	Distributed Round 1 pilot survey to students at six colleges (97 respondents)
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January – February 2018	Analyzed 2nd round national data, prepared reports, publications, and presentations
March – June 2018	Distributed 3rd round national survey to 65 colleges (1443 respondents)
June 2018	Received supplemental funding to extend project to February 2019
June 2018 – February 2019	Analyze all data, prepare reports, publications, and presentations

PROGRAM SELECTION

ENGINEERING TECHNOLOGY

ENERGY AND ENVIRONMENTAL TECHNOLOGY

ADVANCED MANUFACTURING

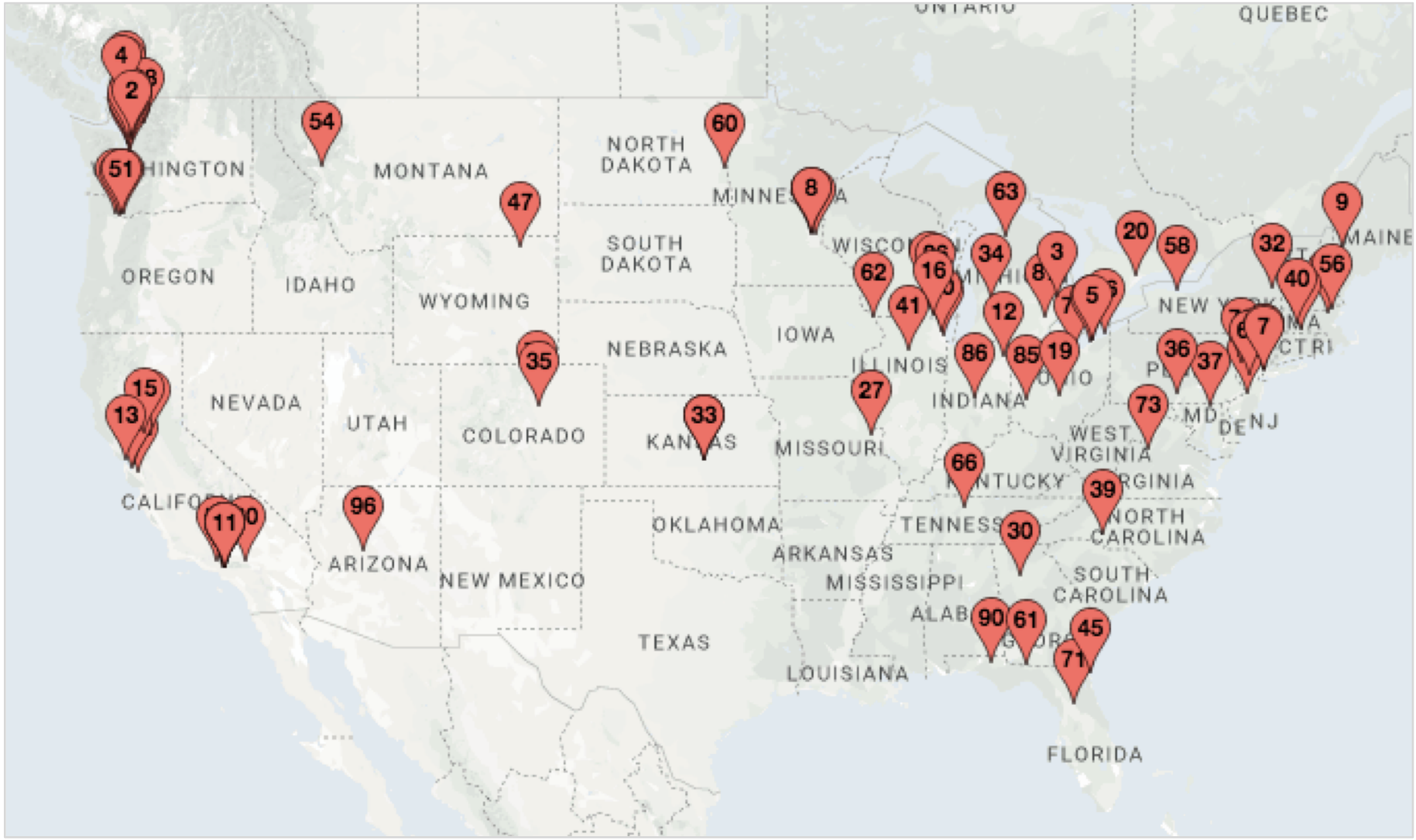
MICRO AND NANO TECHNOLOGY

SURVEY TOPICS

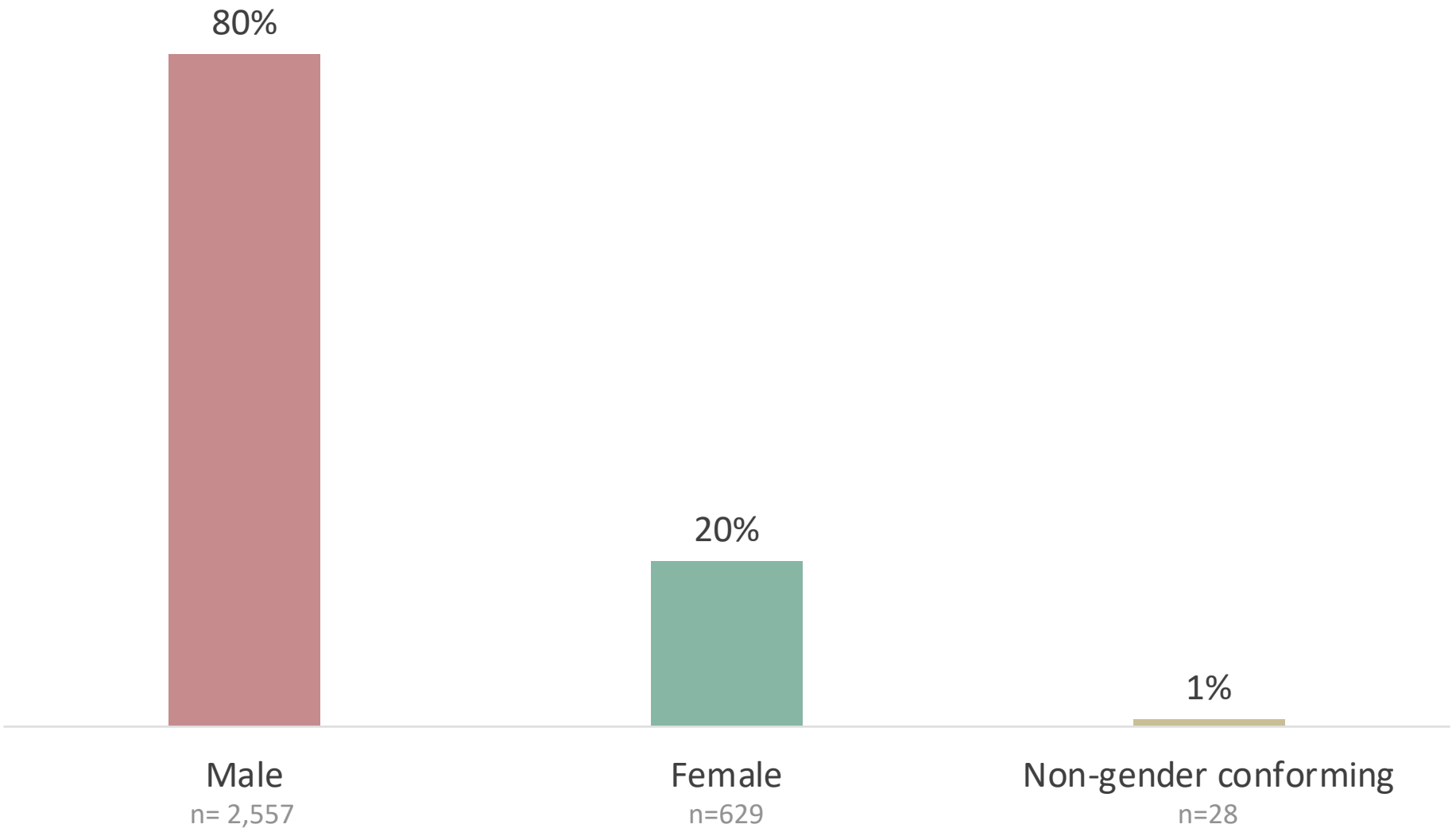
- Academic Background
- College Experiences
- Employment Background
- Employment Status
- Motivation for Enrollment
- Program Evaluation
- Academic Goals
- Career Goals
- Demographics

SURVEY RESULTS

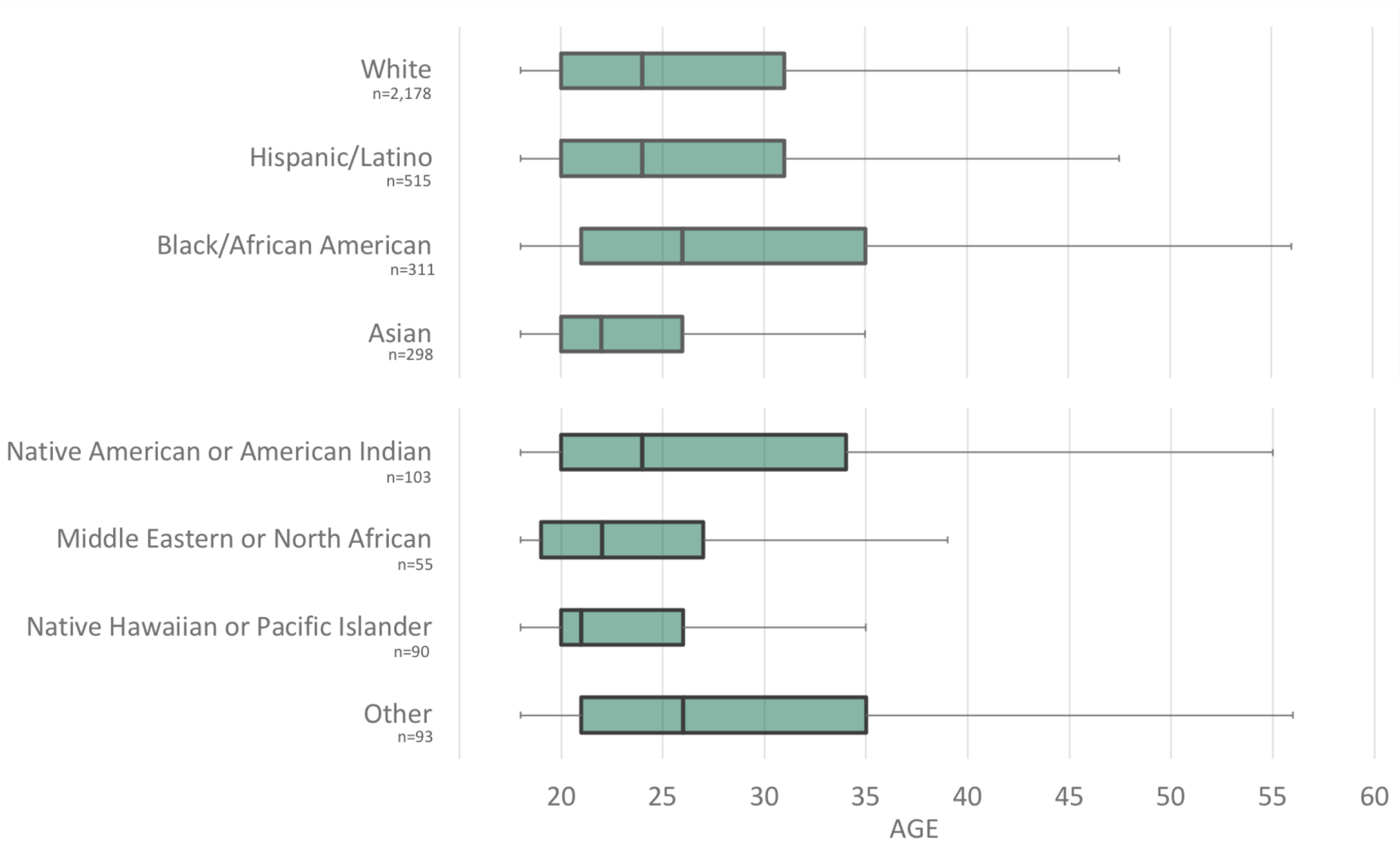
SURVEY RESPONDENTS across US



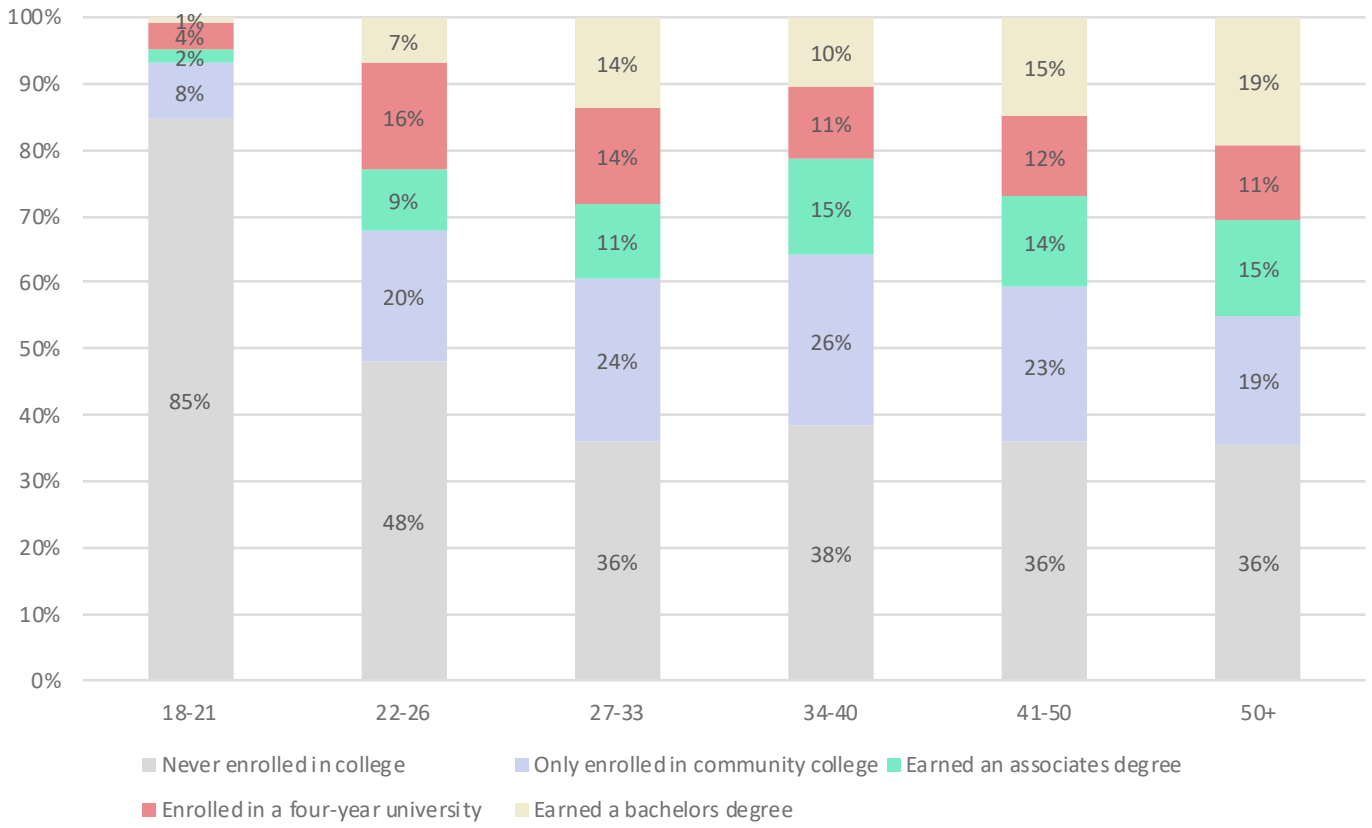
Demographics by **GENDER**



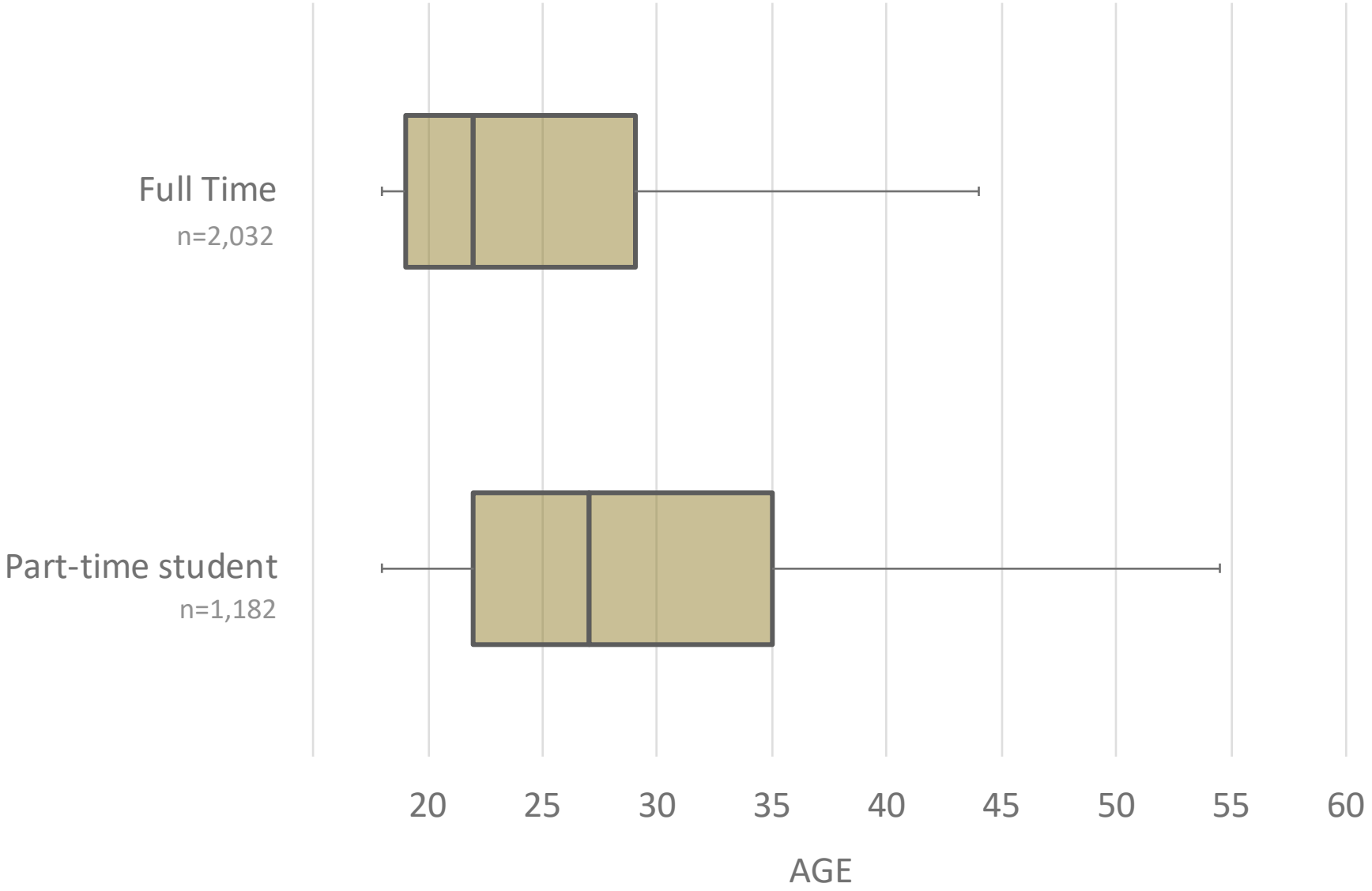
Age by **RACE**


White
n=2,178
Hispanic/Latino
n=515
Black/African American
n=311
Asian
n=298
Native American or American Indian
n=103
Middle Eastern or North African
n=55
Native Hawaiian or Pacific Islander
n=90
Other
n=93
20
25
30
35
40
45
50
55
60
AGE

EDUCATIONAL ACHEIVEMENT by Age



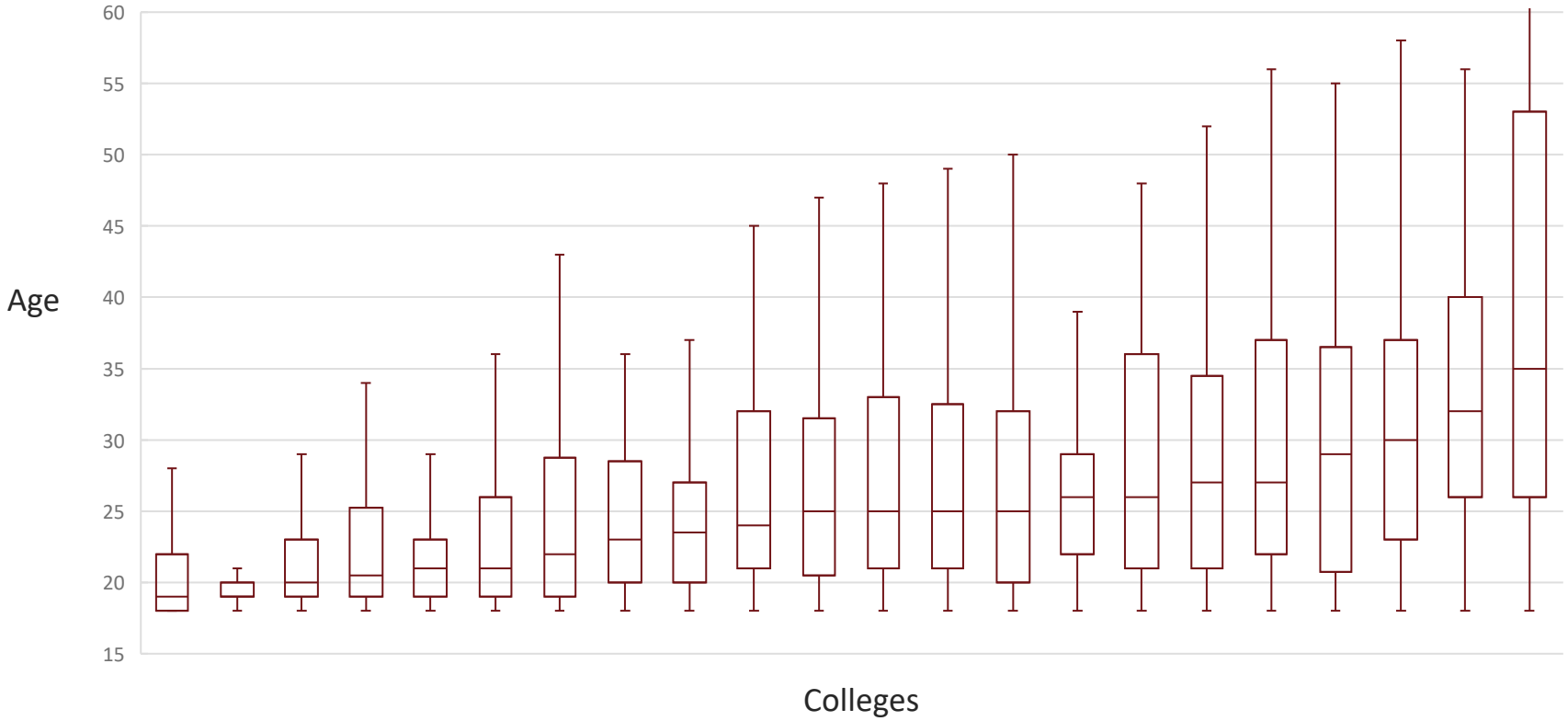
Age by **ENROLLMENT**



AGE DISTRIBUTION by College

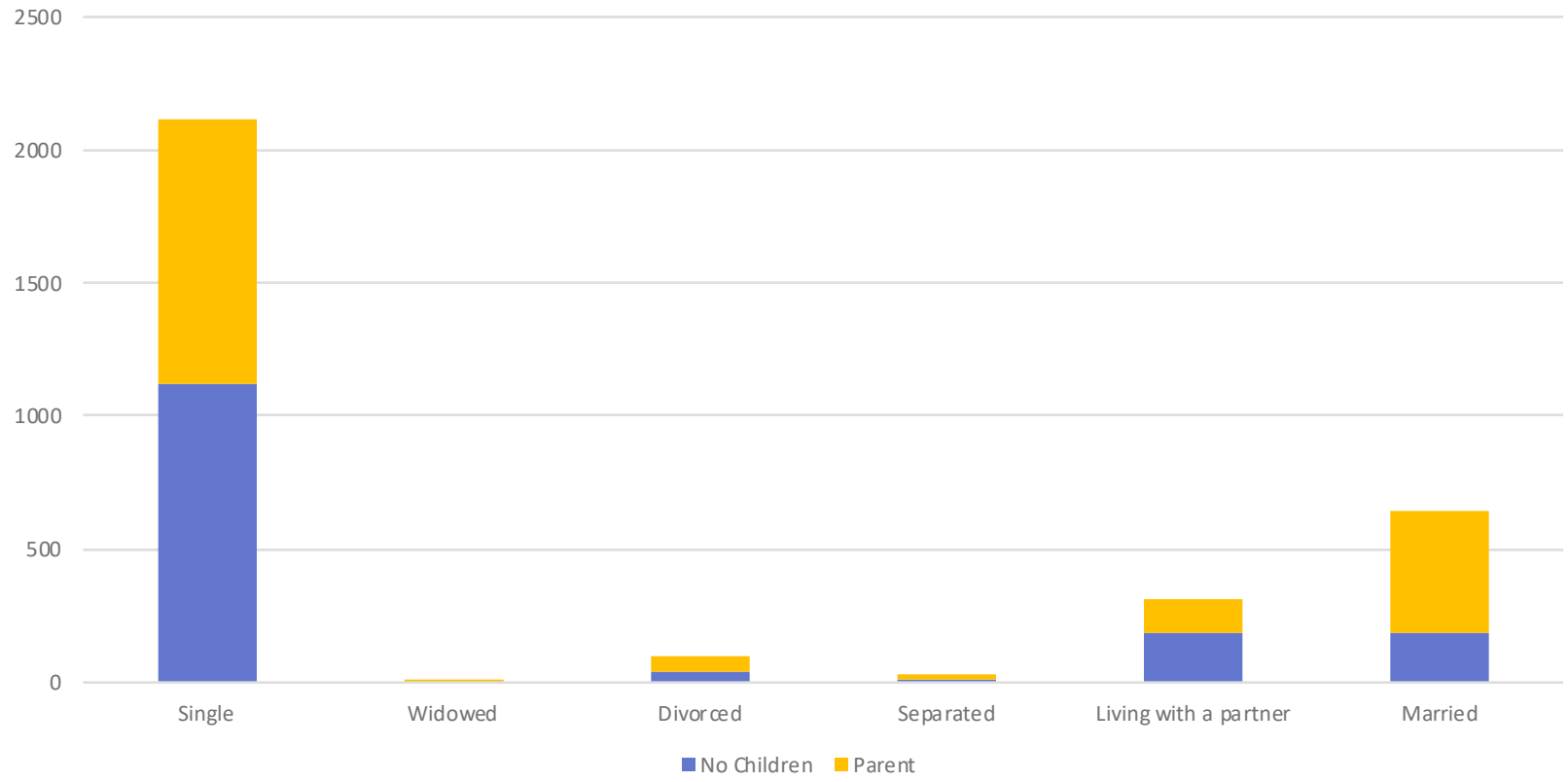
Individual colleges different greatly in the age distribution of their students. In colleges with 20 or more respondents, the median age of respondents within each college ranged from 19 to 38.

The boxplot below highlights the median age of colleges with 50 or more respondents without outliers (college names omitted). The older students range from 21 to over 60.



FAMILY

The majority of students were single (66%) and the rest were primarily married (20%) or living with a partner (10%). The majority of students were parents (52%) including 47% of single students. Parenthood was similar among men (51%) and women (54%).



KNOWLEDGE OF ACADEMIC RESOURCES by Race

To the best of knowledge, are the following resources available at your college? (check all that apply)

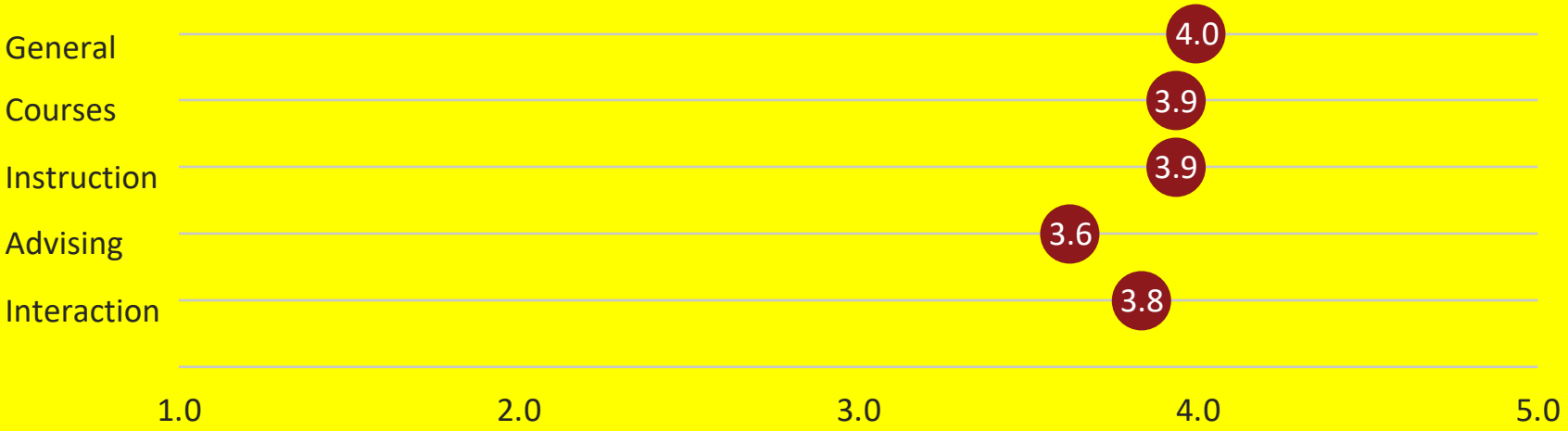
	White	Hispanic/ Latino	Black	Asian	Native American	Middle Eastern	Hawaiian/ Pacific Islander	Other
Flexible courses/schedules	54%	56%	45%	48%	53%	52%	60%	63%
Online courses	62%	63%	54%	61%	60%	59%	69%	63%
Hybrid courses	45%	49%	39%	52%	50%	50%	43%	51%
Online textbooks	51%	49%	47%	52%	53%	57%	51%	55%
Advising	65%	60%	53%	64%	64%	63%	78%	59%
Tutoring services	57%	61%	52%	62%	57%	63%	78%	61%

KNOWLEDGE OF LIFE AND CAREER RESOURCES by Race

	White	Hispanic/ Latino	Black	Asian	Native American	Middle Eastern	Hawaiian/ Pacific Islander	Other
Mentoring	41%	42%	41%	44%	33%	30%	53%	42%
Career services	53%	47%	45%	48%	52%	59%	44%	57%
Internship opportunities	52%	52%	46%	53%	57%	50%	57%	57%
Mental health services	38%	38%	30%	41%	42%	33%	43%	42%
Student resources centers	50%	49%	41%	50%	50%	52%	56%	53%
Disability services	42%	42%	33%	43%	41%	41%	42%	46%
Food pantry	33%	35%	31%	32%	37%	33%	39%	42%
Childcare	31%	33%	25%	35%	35%	37%	29%	39%
Financial support	59%	58%	52%	56%	58%	57%	77%	54%

SATISFACTION & PROGRAM ACCOMODATIONS

Students were very satisfied with their programs. Overall the average for all categories was 3.84 out of 5. Advising was scored the lowest at 3.6 and general received the highest satisfaction at 4.0 out of 5.



Over half of the students reported that the program accommodated their work schedule and lifestyle choices very or extremely well. Only 3% indicated that the program was not accommodating in these areas.

n=387

PathTech LIFE

Understanding **path**ways in advanced **tech**nologies.

Will Tyson
Principal Investigator
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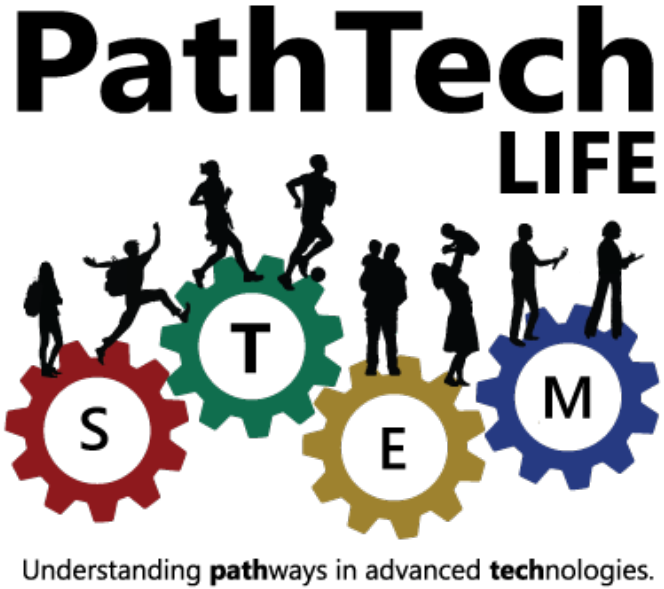

Applied Research 101: PathTech LIFE and LISTEN Research in Action

ATE PI Conference 2018

Will Tyson
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PathTech LIFE is supported by the National Science Foundation under Grant No. 1501999. PathTech LISTEN is supported by the National Science Foundation under Grant No. 1801163. Any opinions, findings, and conclusions or recommendations expressed on this site are those of the authors and do not necessarily reflect the views of the National Science Foundation. USF IRB: Pro00021314

PathTech Projects

- **PathTech Tampa Bay**
  - *Successful Academic and Employment **Path**ways in Advanced **Tech**nologies* (NSF #1104214)
  - $1,196,790 over 4 years (2011-2015)
  - Examination of educational and employment pathways through community college engineering technology (ET) AS/AAS programs in the Tampa Bay area

PathTech Tampa Bay

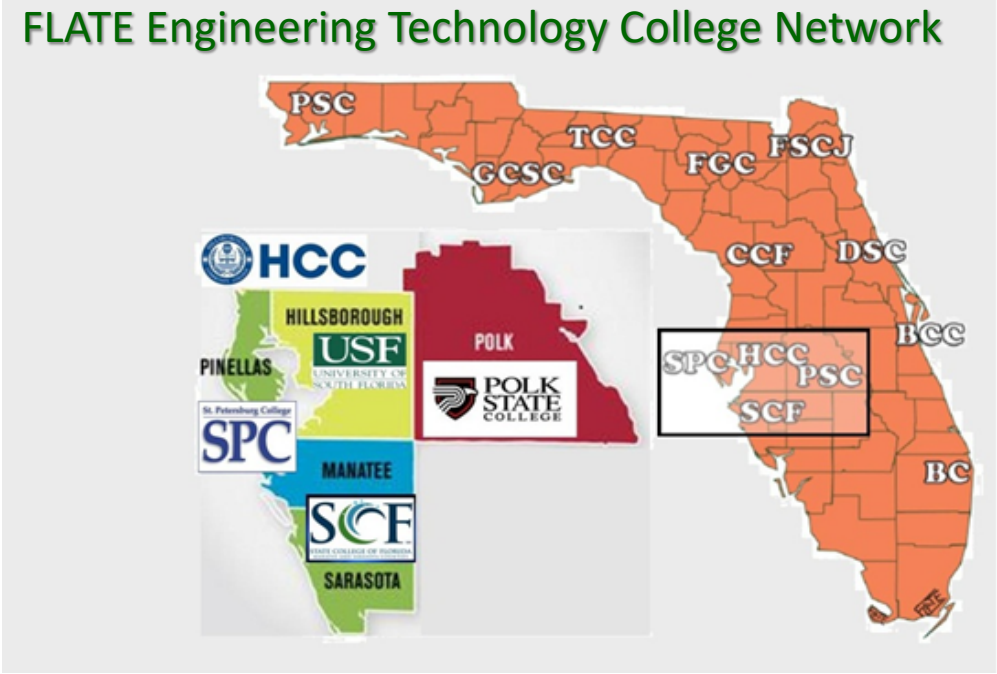
- **Qualitative Methods**
  - Interviews with 175 unique individuals from high schools, community colleges, and industry recruited with help from FLATE
    - 67 ET A.S. degree students at four community colleges
    - 4 ET faculty and administrators at four community colleges
    - 27 employers from local technology and advanced manufacturing businesses
    - 70 high school engineering or ET career academy students at four high schools
    - 4 high school career academy teachers and 3 district STEM curriculum administrators

PathTech Tampa Bay

- **Quantitative Methods**
  - Short survey administered to ET students
  - Limited Florida Department of Education data
  - 1997 National Longitudinal Study of Youth (NLSY97)
    - Tracked a cohort of 1997 high school graduates through early adulthood by collecting data on their schooling, employment, and personal histories

PathTech Tampa Bay

- **Community Engagement**
- **FLATE helped researchers connect with**
  - Colleges
  - High school
  - Industry partners



PathTech Tampa Bay

- **Personal Contact**
  - Site visits
  - Presentations
  - Advisory boards

Meeting with college administrators

Industry tours

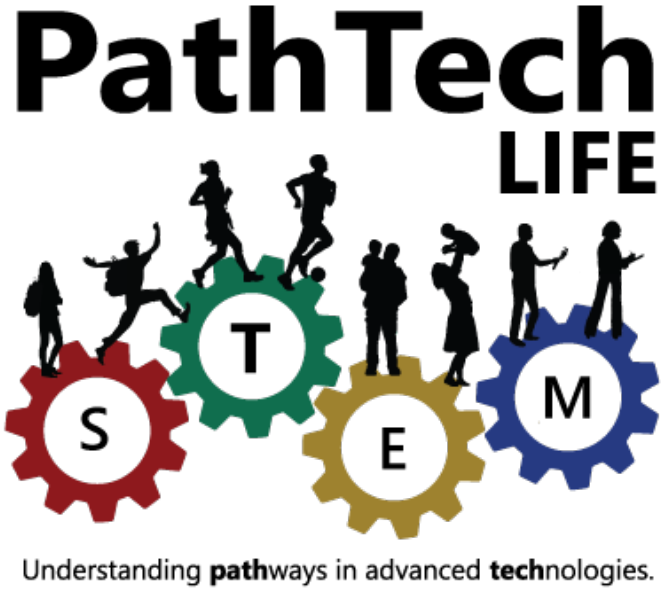
Presenting to college stakeholders

PathTech Projects

- **PathTech LIFE (Learning, Interests, Family, Employment)**
  - *PathTech LIFE: Constructing a National Survey of Engineering Technology Students through Regional and Statewide Testing* (#1501999)
  - $778,031 over 3 years (2015-18)
  - $155,586 supplement (through Feb 2019)
  - National survey of community college students in advanced technology fields in collaboration with a national network of colleges

PathTech Projects

- **PathTech LISTEN**
  - *PathTech LISTEN: Mixed Methods Longitudinal Investigations of Students in Technician EducatioN* (#1801163)
  - $799,858 over 3 years (2018-21)
  - Longitudinal follow-up interviews and pilot survey with PathTech LIFE respondents from a variety of backgrounds



Applied Research 101

What is applied research?

- Applied research is the practical application of science, scientific methods, and existing theoretical concepts and empirical findings
- Applied research deals with solving problems
- Development of solutions in contrast to developing new knowledge
- Link research with action

How is applied research used?

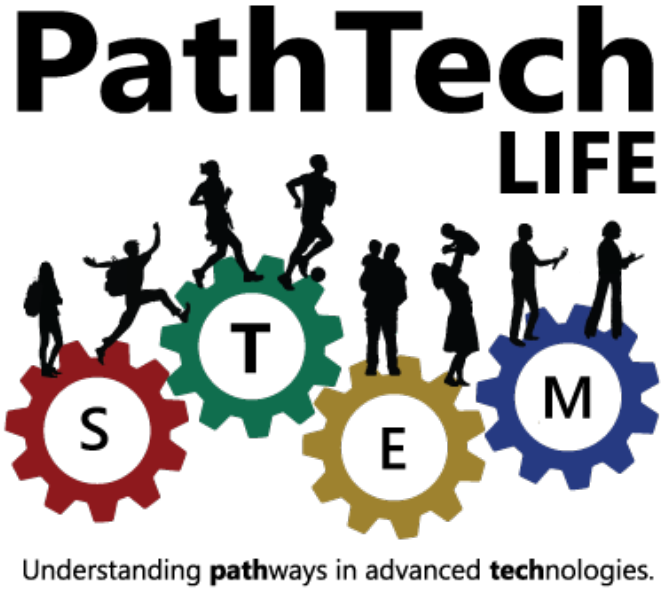
- Applied research offers an evidence-based approach to developing solutions to practical problems in our workplaces, schools, and communities.
  - Collaboration with stakeholders
  - Identification of the problem
  - Variety of research methods
  - Evaluation of interventions
  - Needs assessments

- Applied research provides a systematic approach for problem-solving.

Examples of applied research

- Recruitment, retention, and completion
- School climate
- Student success
- Student services
- Career services/placement

- Questions??



Survey Findings Report

ATE PI Conference 2018

PROJECT OVERVIEW

- National Science Foundation (NSF) funded Advanced Technological Education (ATE) Targeted Research in Technician Education
- Partnership between University of South Florida, Florida Advanced Technological Education Center (FLATE) at Hillsborough Community College and national ATE Center Partners
- National survey of community college students in advanced technology fields in collaboration with a national network of colleges.
- PathTech LIFE seeks to understand how learning, interests, family, and employment (LIFE) experiences of two-year college students impact their decisions to enroll, return for further coursework, and/or pursue a certificate or degree.

TIMELINE

September 2015 – January 2016	Drafted initial survey
February – April 2016	Received input from panel of experts made up of two people from each ATE Center using Delphi technique (three iterative rounds)
April 2016	Completed survey revisions; Completed IRB modification
April – May 2016	Distributed Round 1 pilot survey to students at six colleges (97 respondents)
June – August 2016	Analyzed data 1st pilot survey data, revised survey based on findings
September 2016	Conducted one-on-one interviews with four students while taking survey
October 2016	Completed survey revisions; Completed IRB modification
November – December 2016	Distributed 2nd pilot survey to students at 18 colleges (147 respondents)
January – March 2017	Shortened survey from 25 to 15 minutes; Revised distribution plan to include direct communication with colleges; Completed IRB modification
April 2017 – May 2017	Distributed 1st round national survey to students at 25 colleges (528 respondents)
May – September 2017	Analyzed Round 1st round national data, prepared reports, publications, and presentations
October – December 2017	Distributed 2nd round national survey to students at 59 colleges (1344 respondents)
January – February 2018	Analyzed 2nd round national data, prepared reports, publications, and presentations
March – June 2018	Distributed 3rd round national survey to 65 colleges (1443 respondents)
June 2018	Received supplemental funding to extend project to February 2019
June 2018 – February 2019	Analyze all data, prepare reports, publications, and presentations

PROGRAM SELECTION

ENGINEERING TECHNOLOGY

ENERGY AND ENVIRONMENTAL TECHNOLOGY

ADVANCED MANUFACTURING

MICRO AND NANO TECHNOLOGY

SURVEY TOPICS

- Academic Background
- College Experiences
- Employment Background
- Employment Status
- Motivation for Enrollment
- Program Evaluation
- Academic Goals
- Career Goals
- Demographics

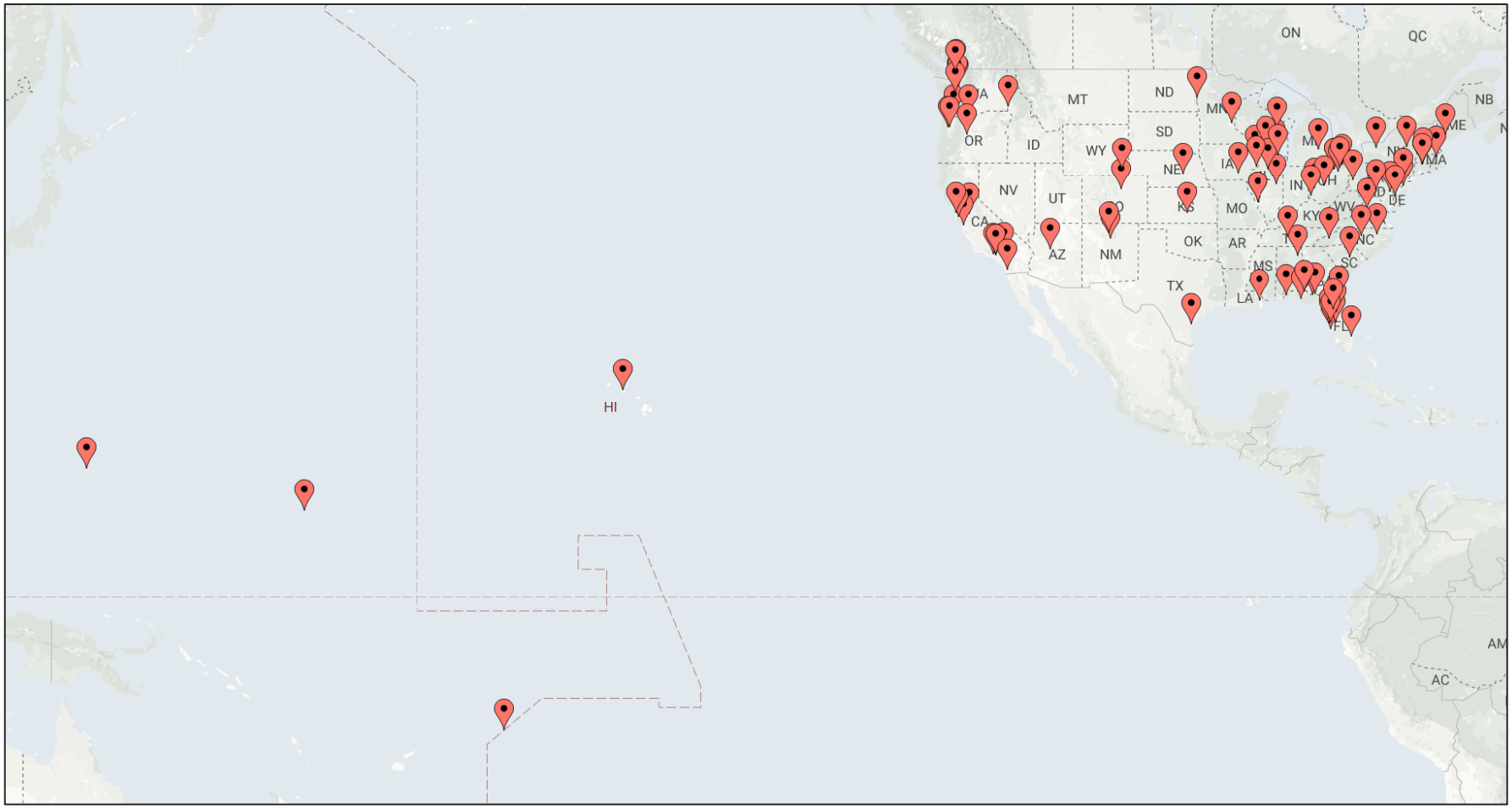
SURVEY RESULTS

SURVEY RESPONDENTS across US

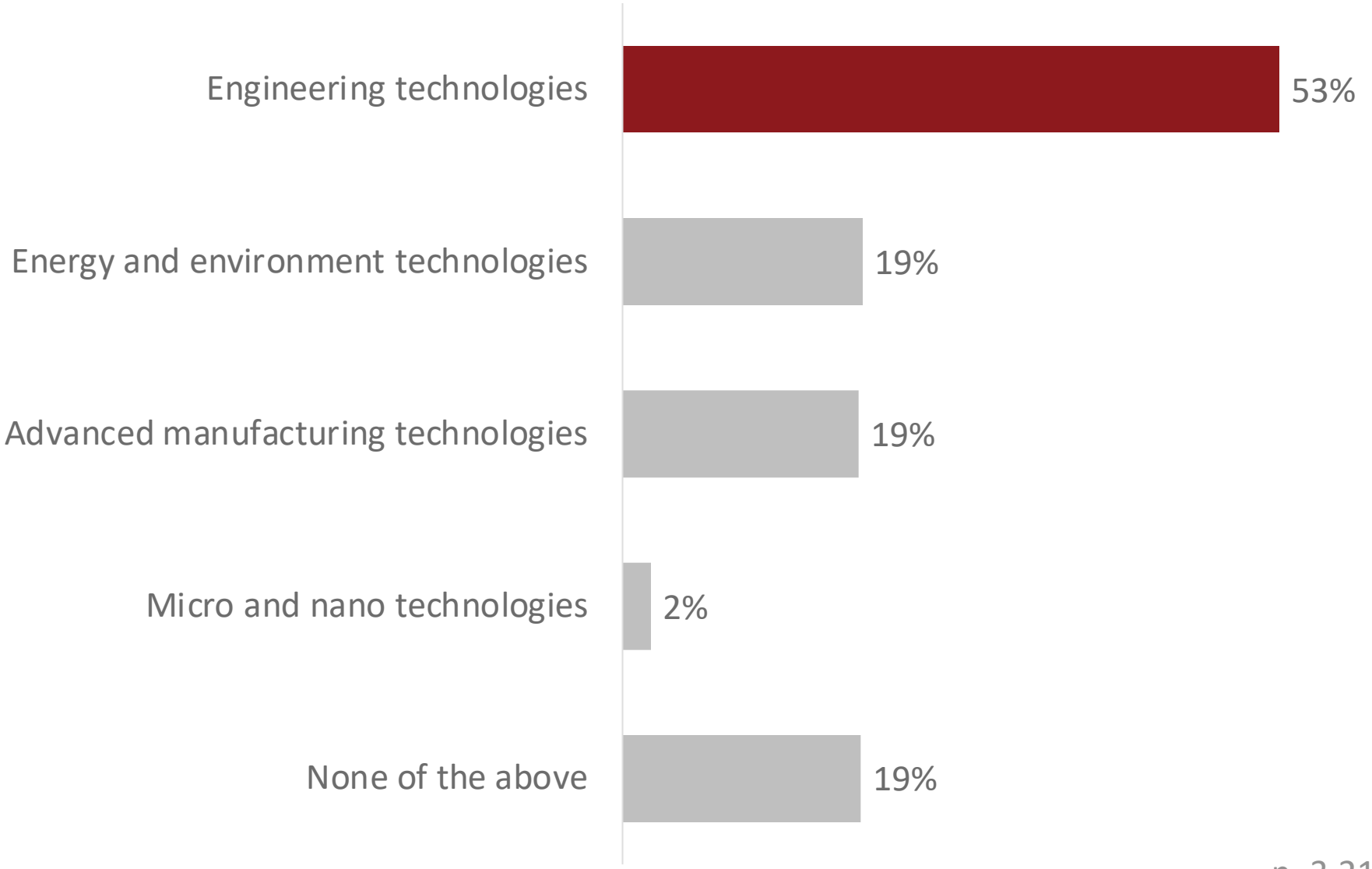
(3,216 students from 96 colleges in 38 states…

SURVEY RESPONDENTS across US

…and 3 territories)

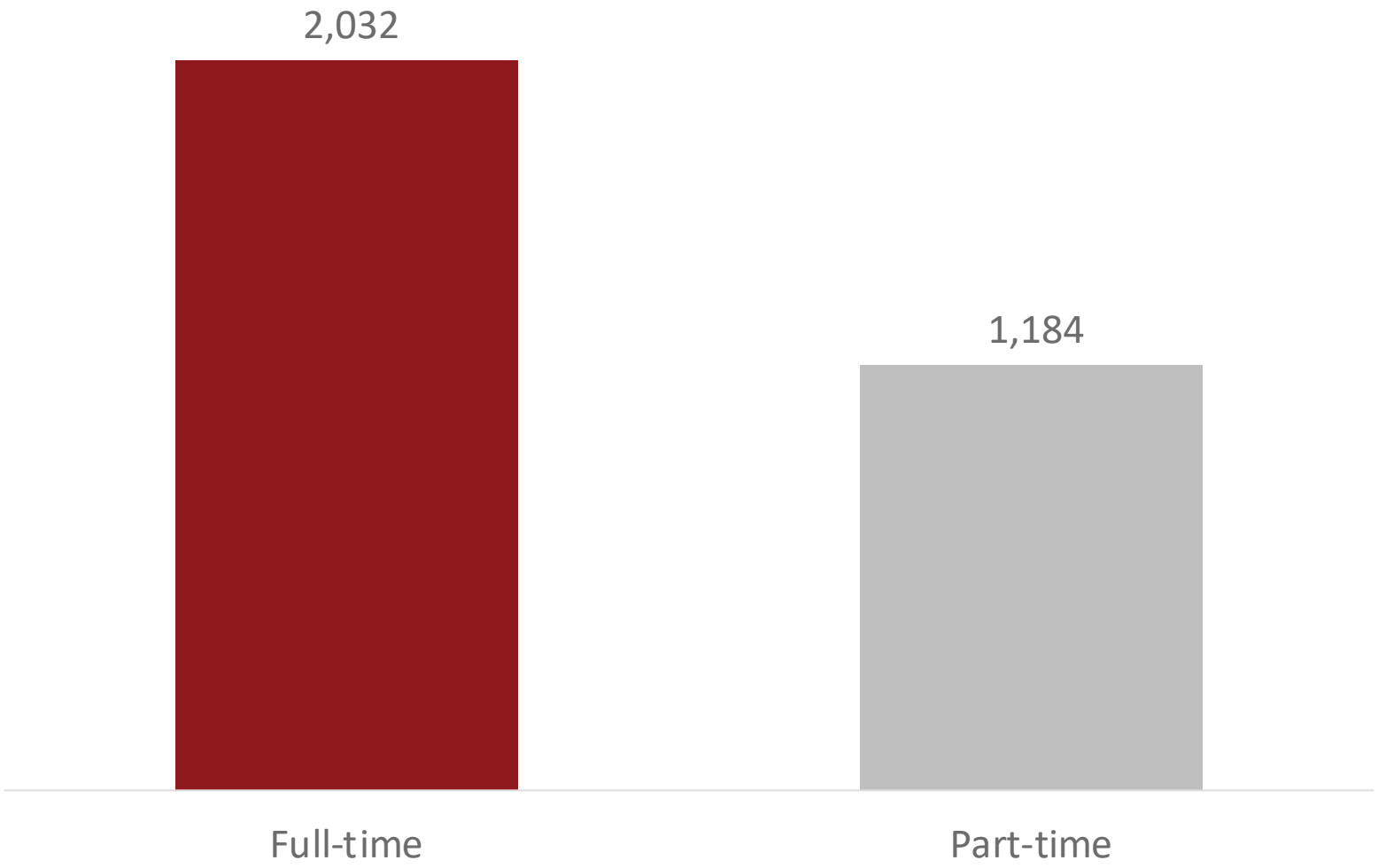


Program Areas



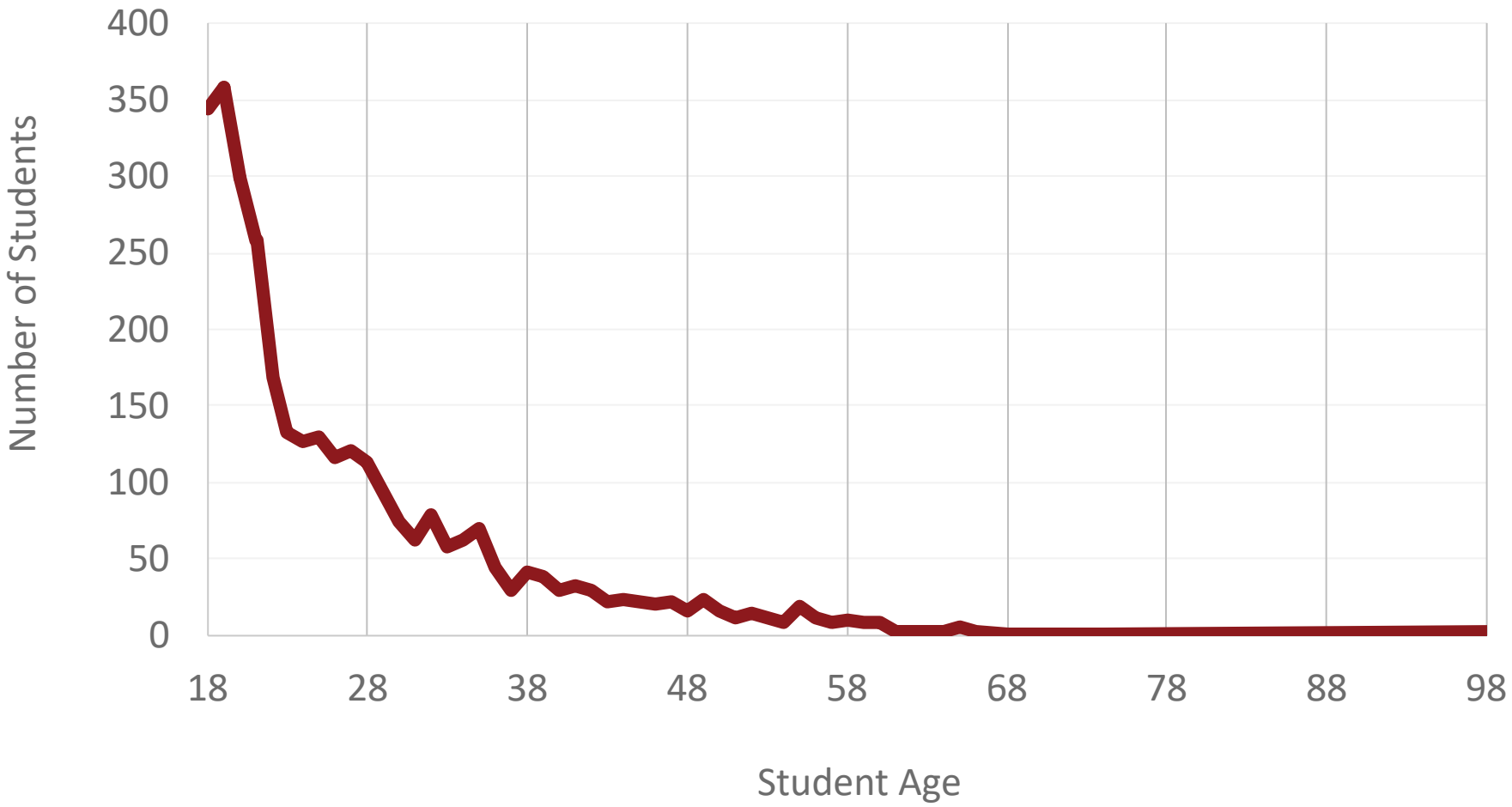
n=3,216

Student Enrollment Status



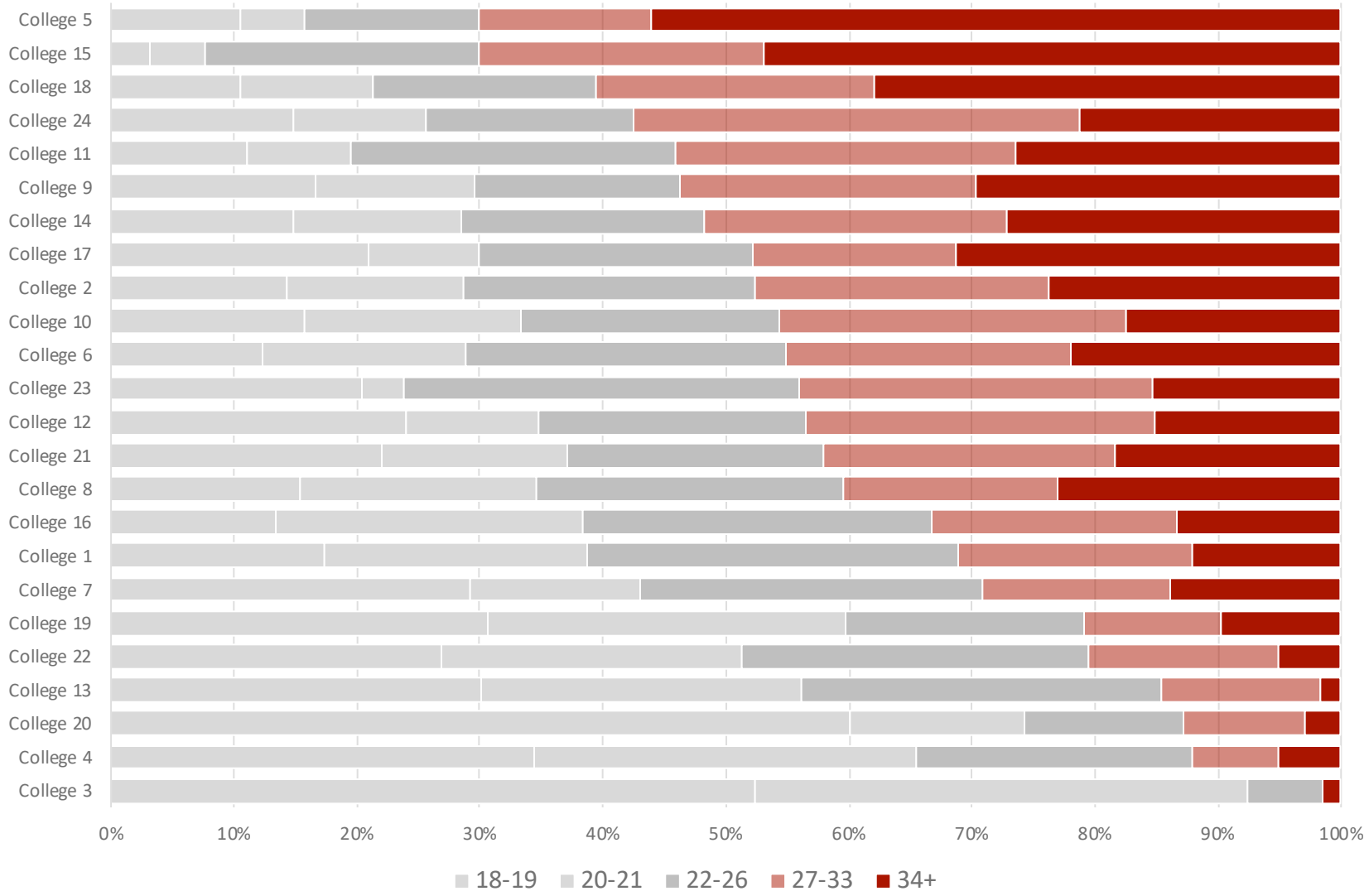
n=3,216

Age


400
350
300
250
200
150
100
50
0
Number of Students
18
28
38
48
58
68
78
88
98
Student Age

n=3,216

Age Quintiles by College



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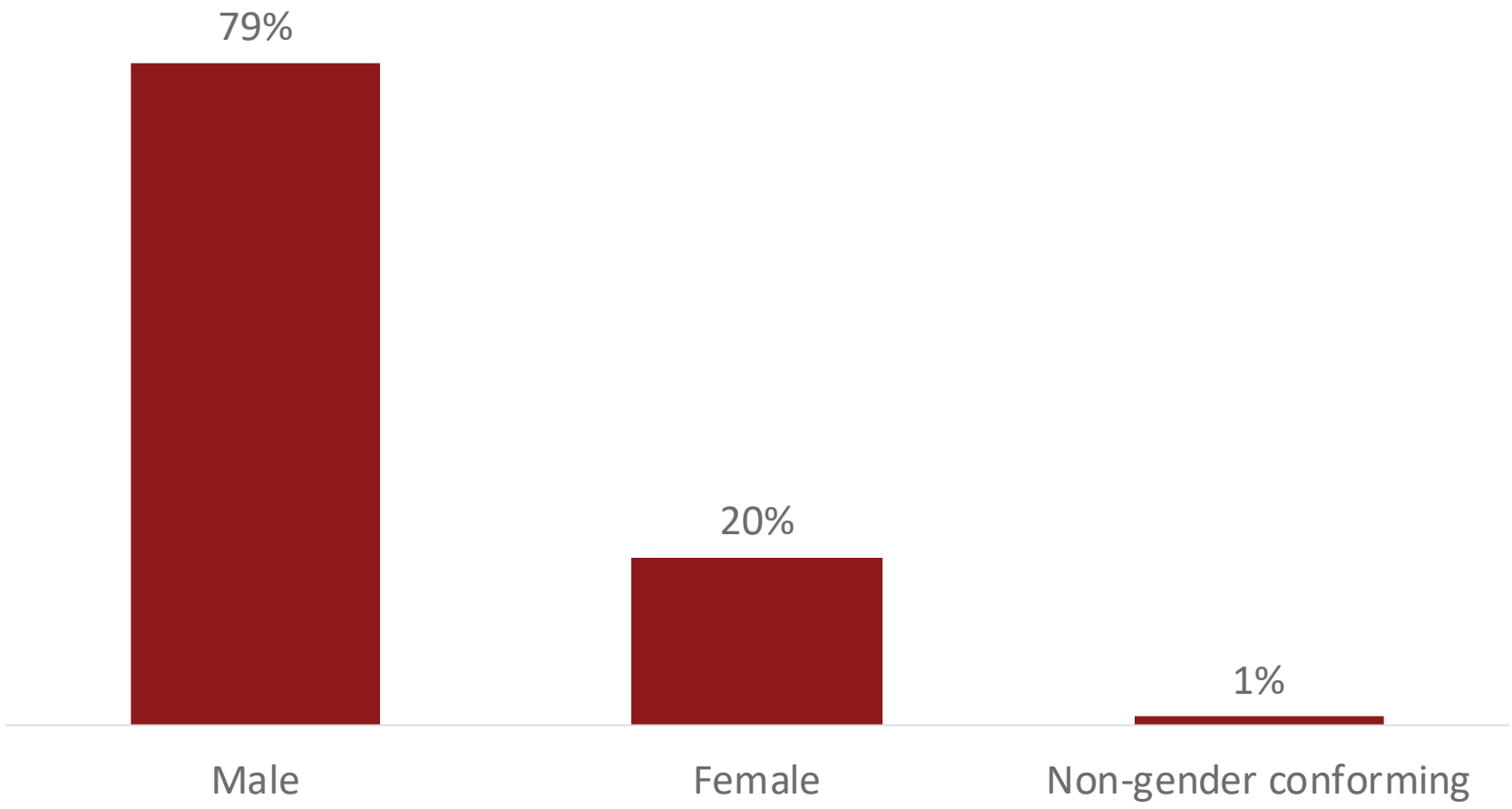
Gender



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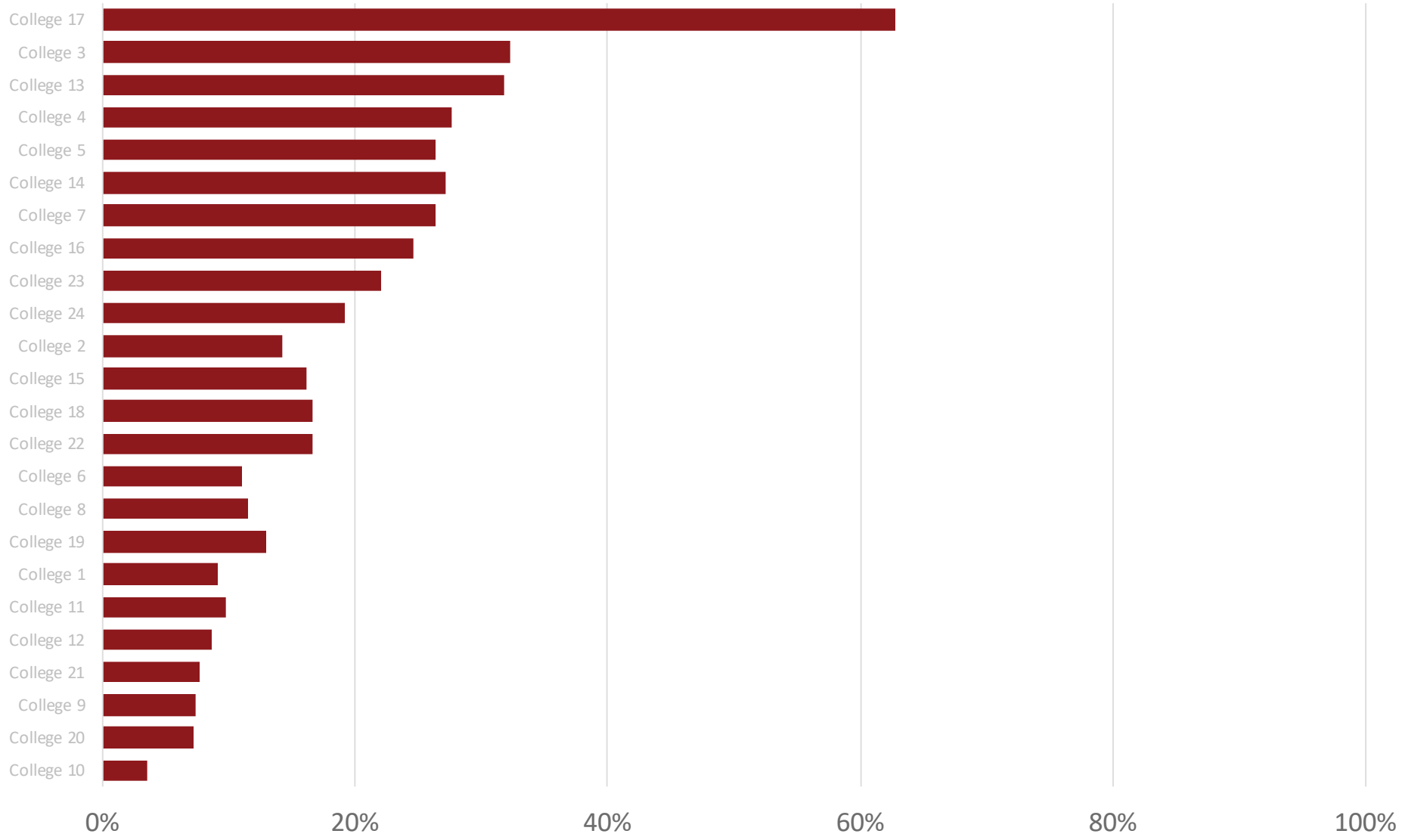
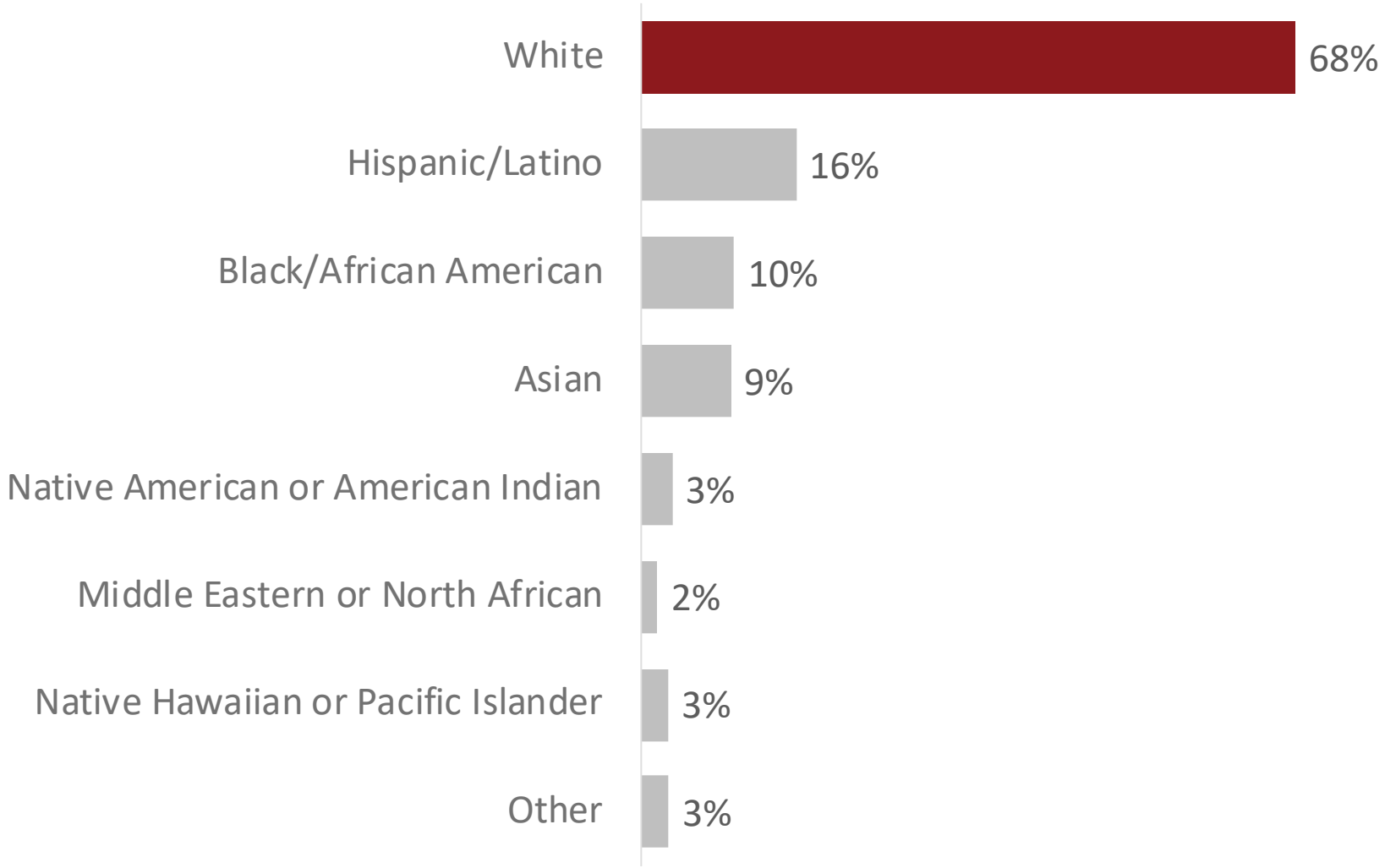
College Comparisons: Females

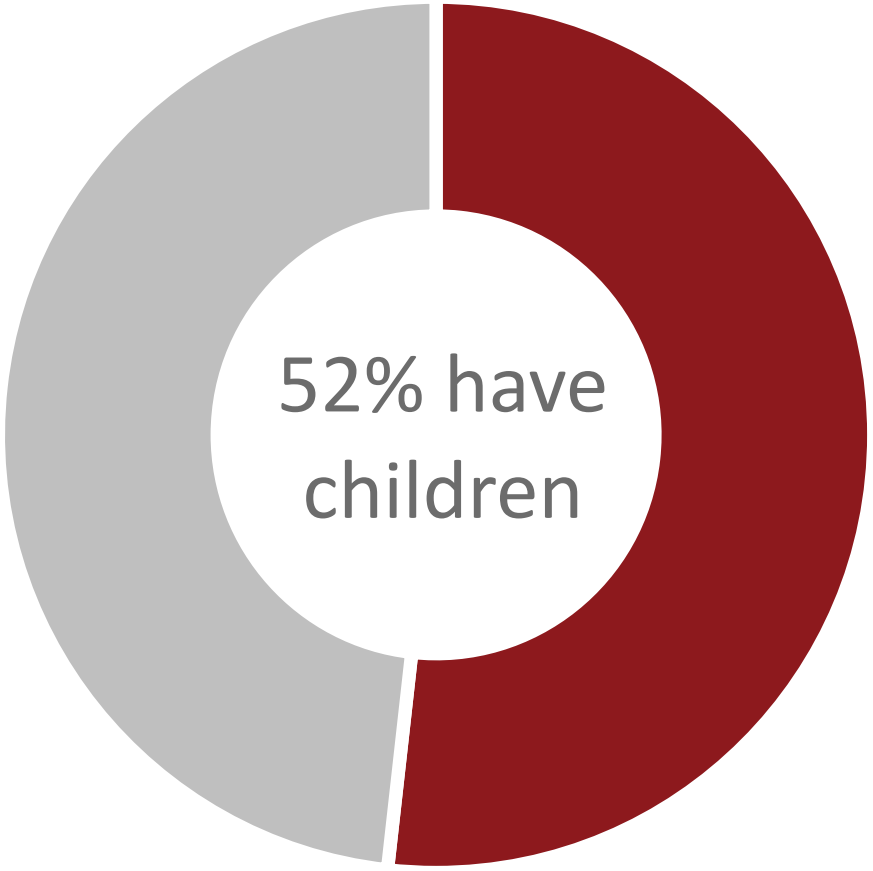


Race and Ethnicity



n=3,216

Percentage with Children



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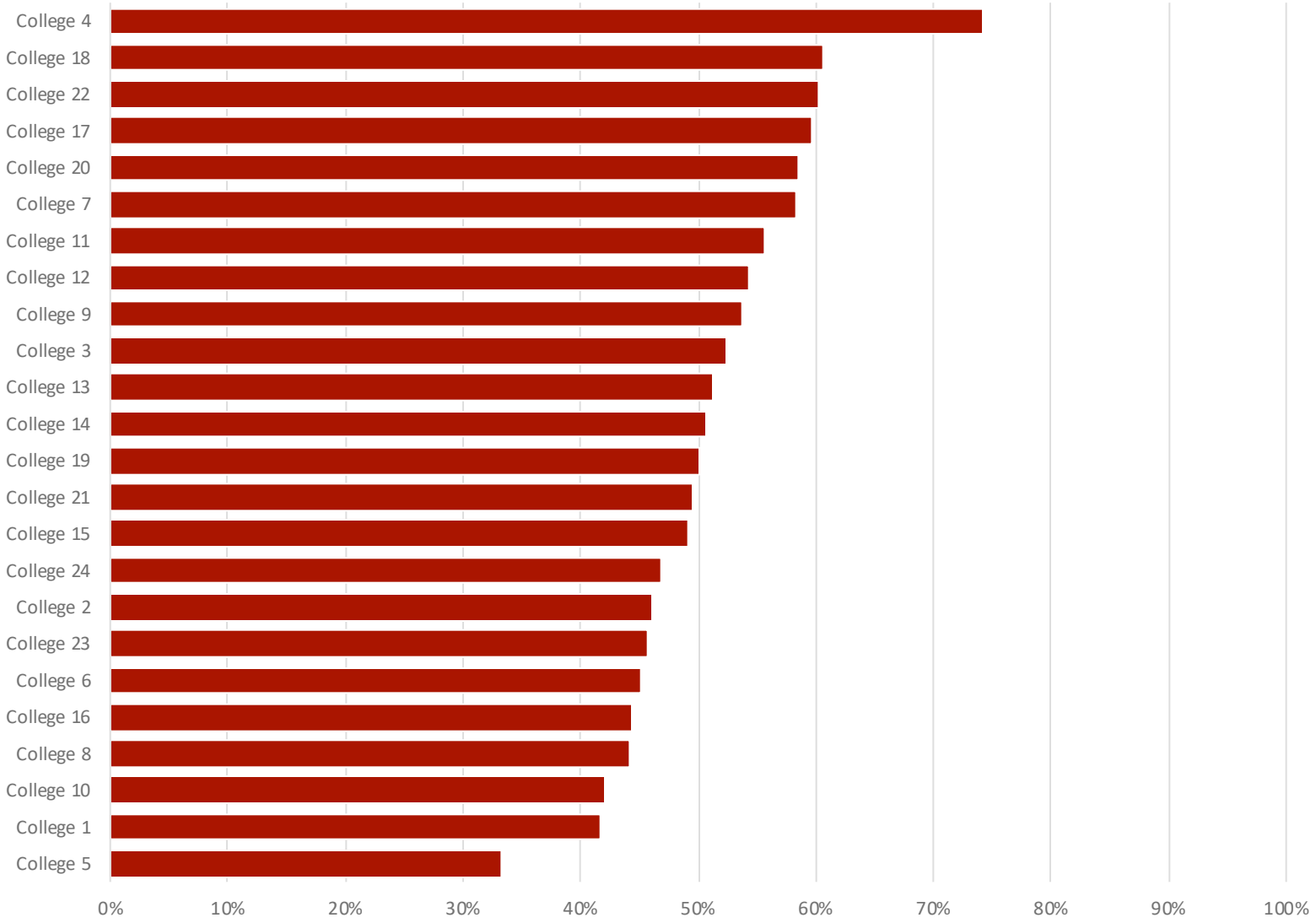
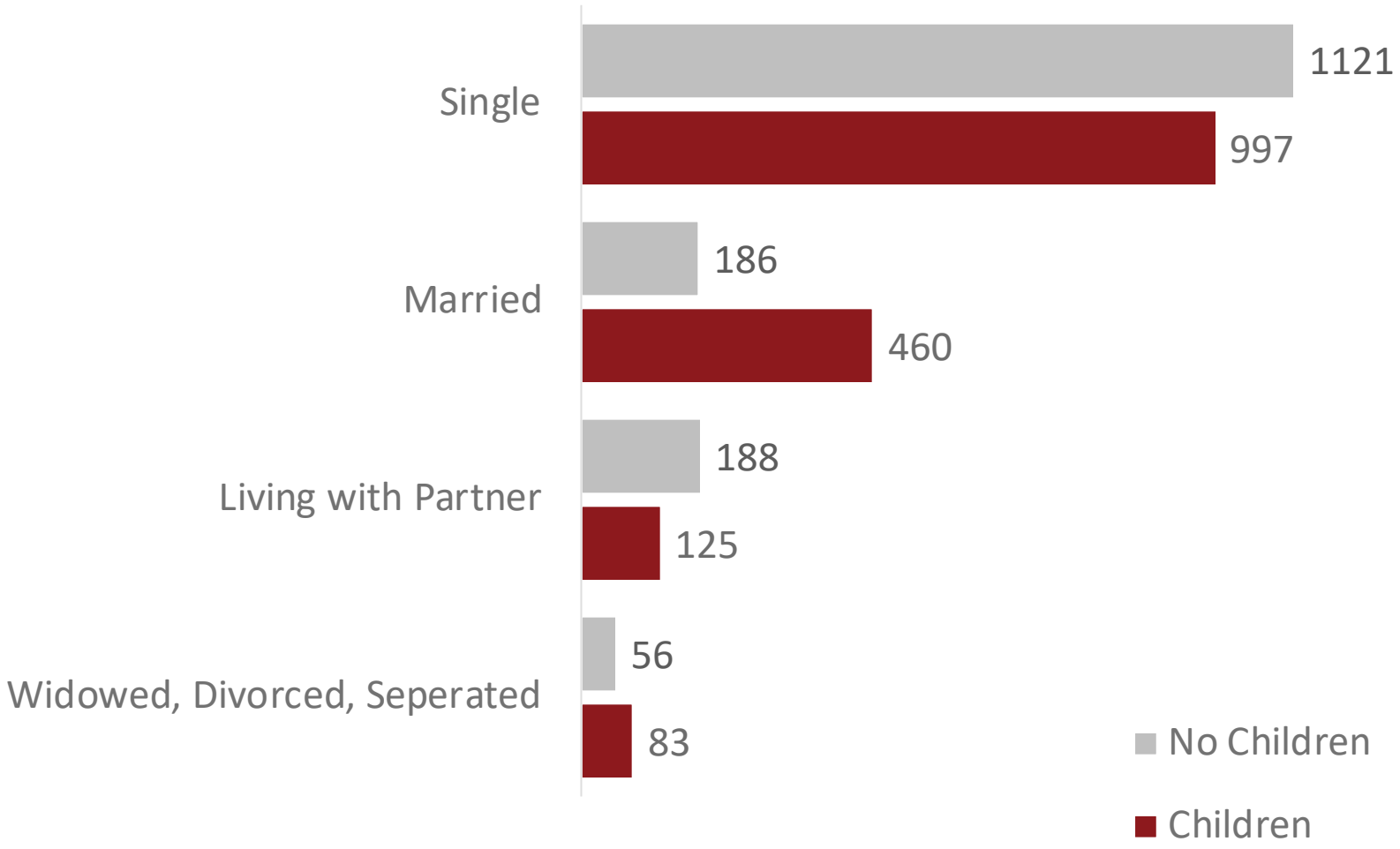
Percentage with Children



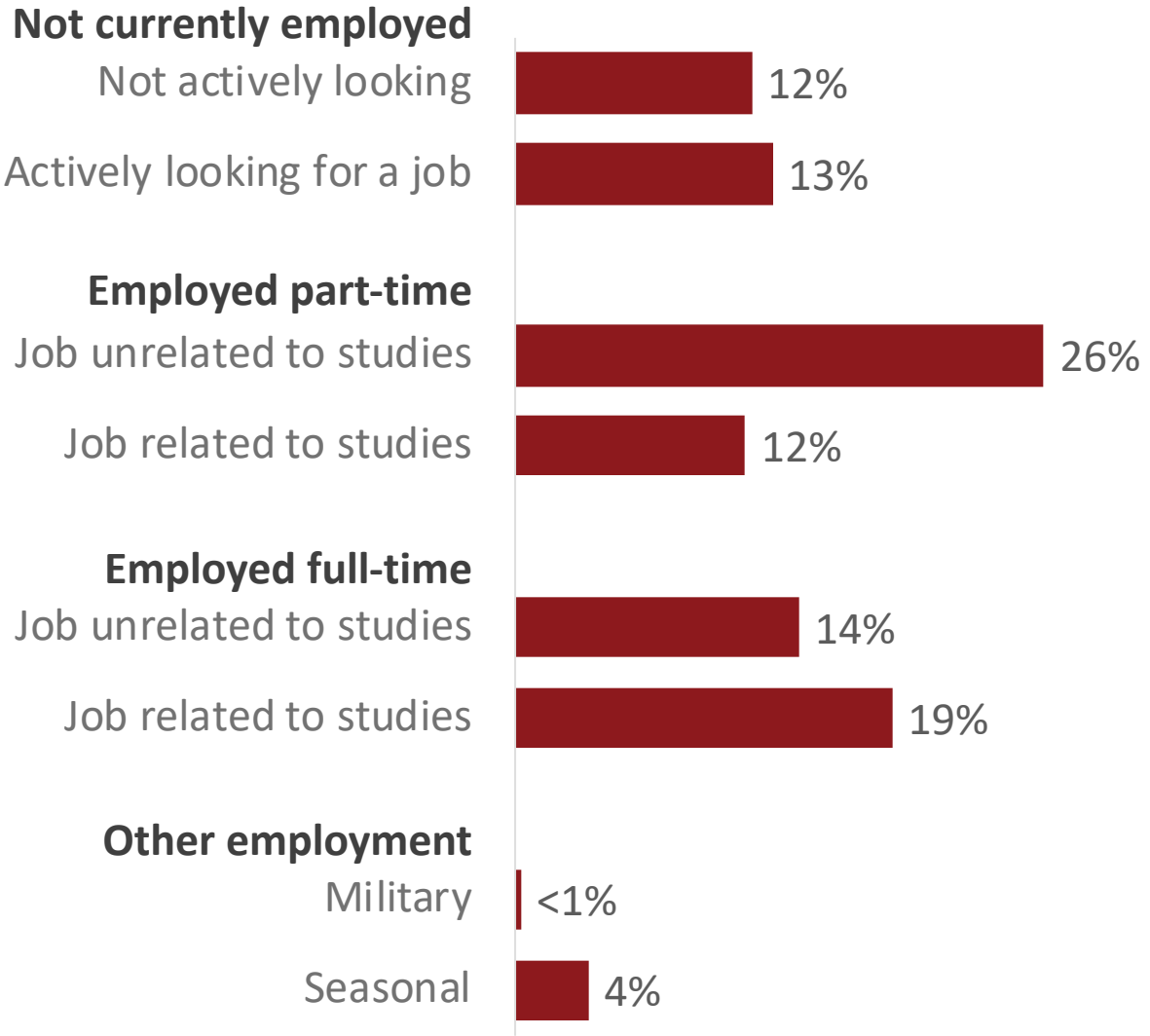
n=3,216

Family Status



n=3,216

Employment Status



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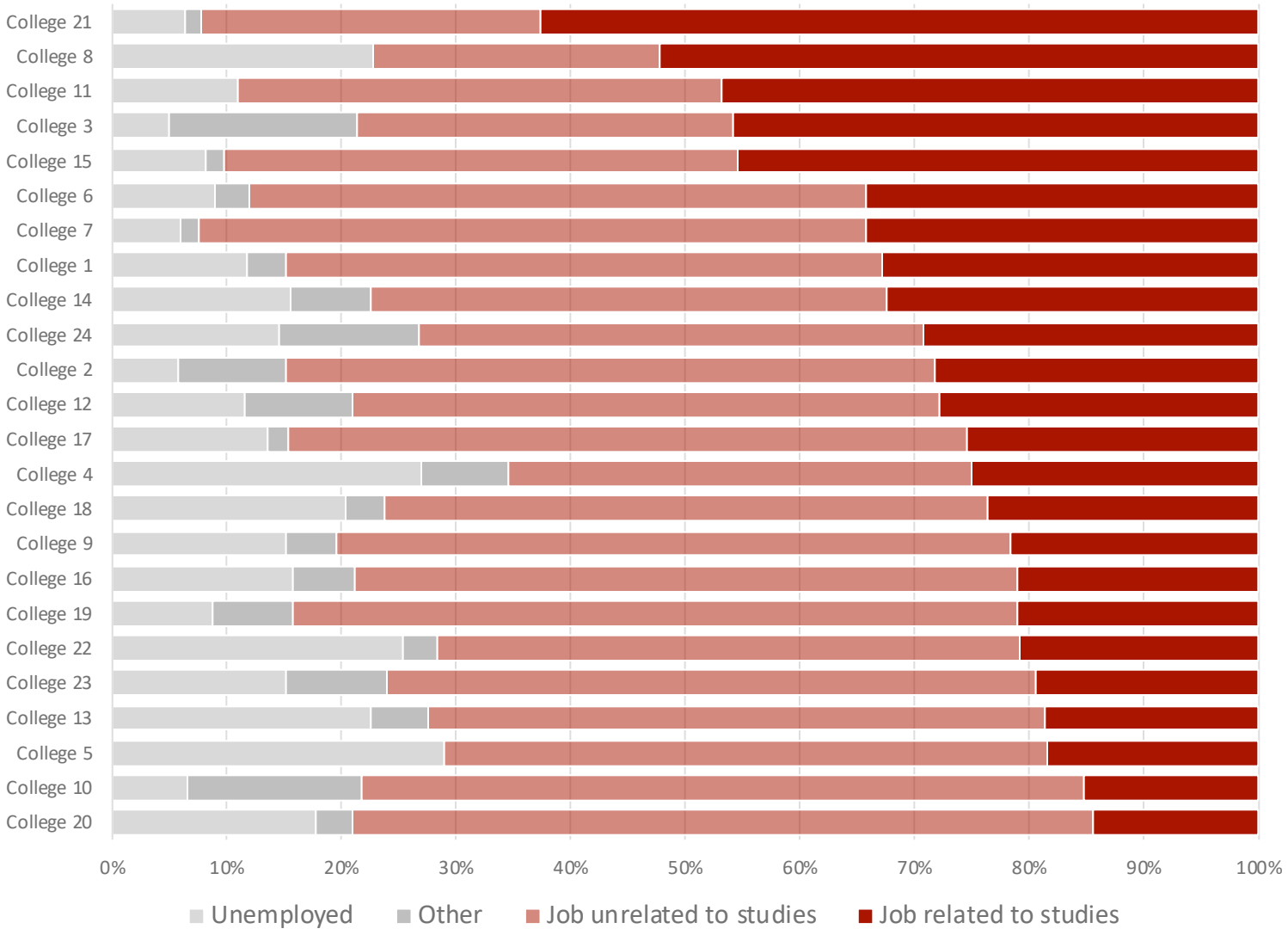
Employment Status



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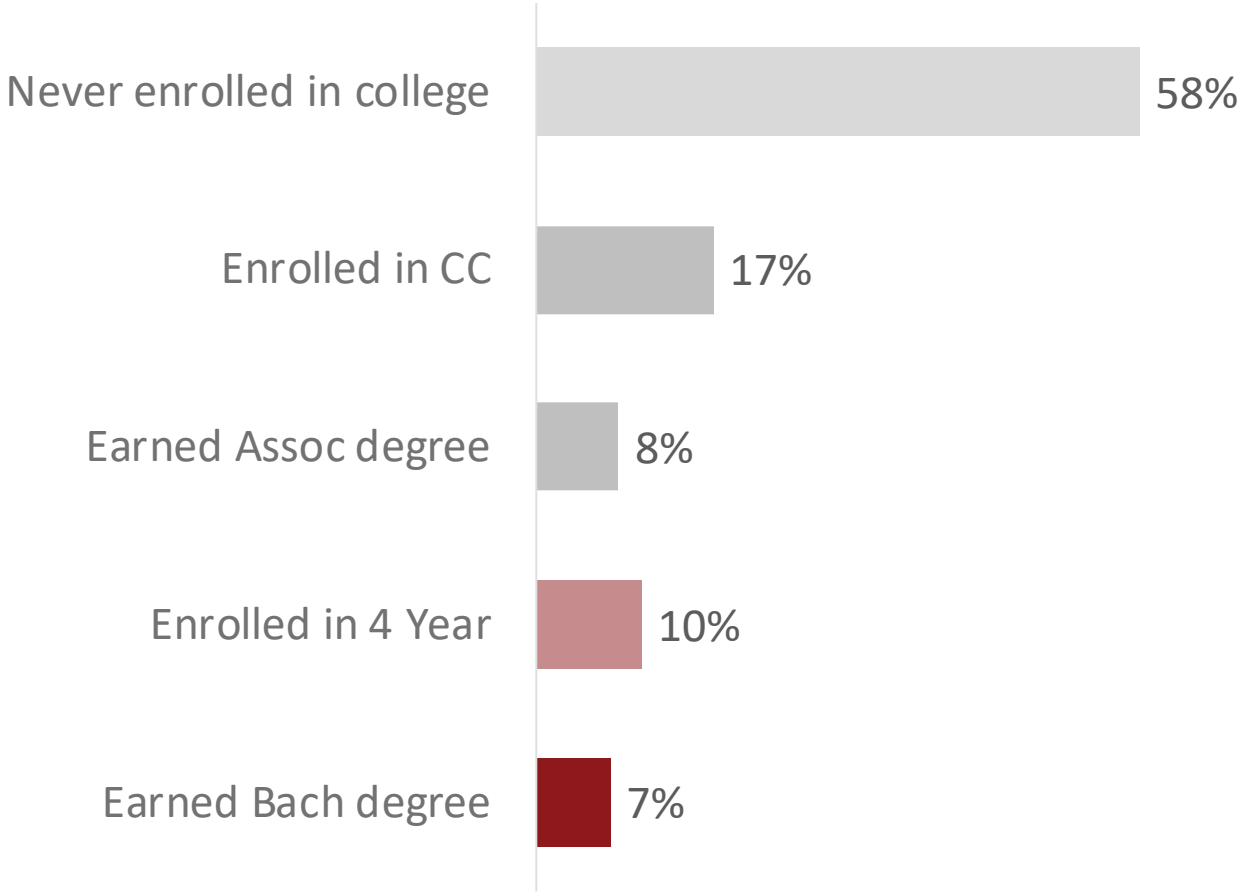
Educational Background



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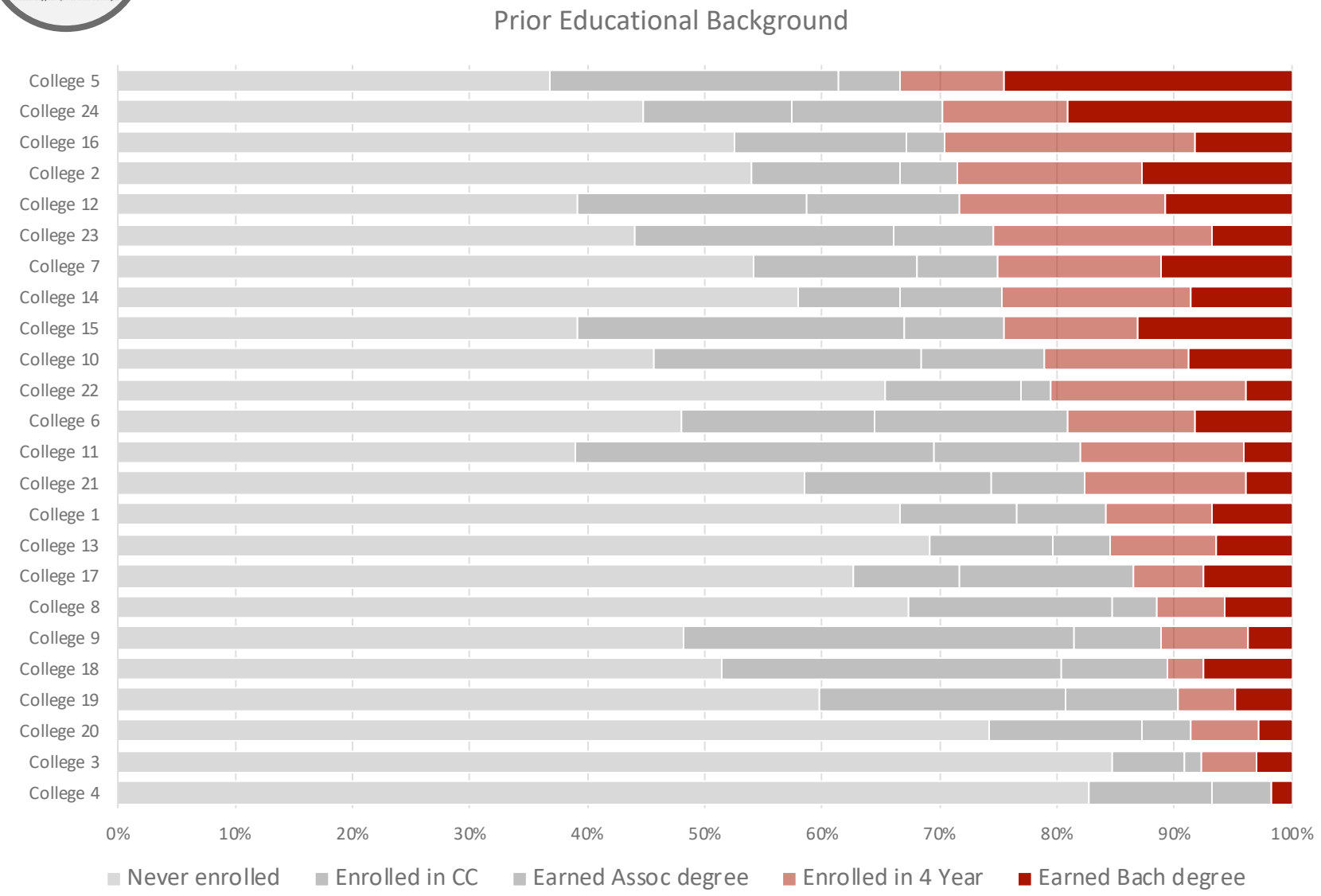
Educational Background



n=3,216

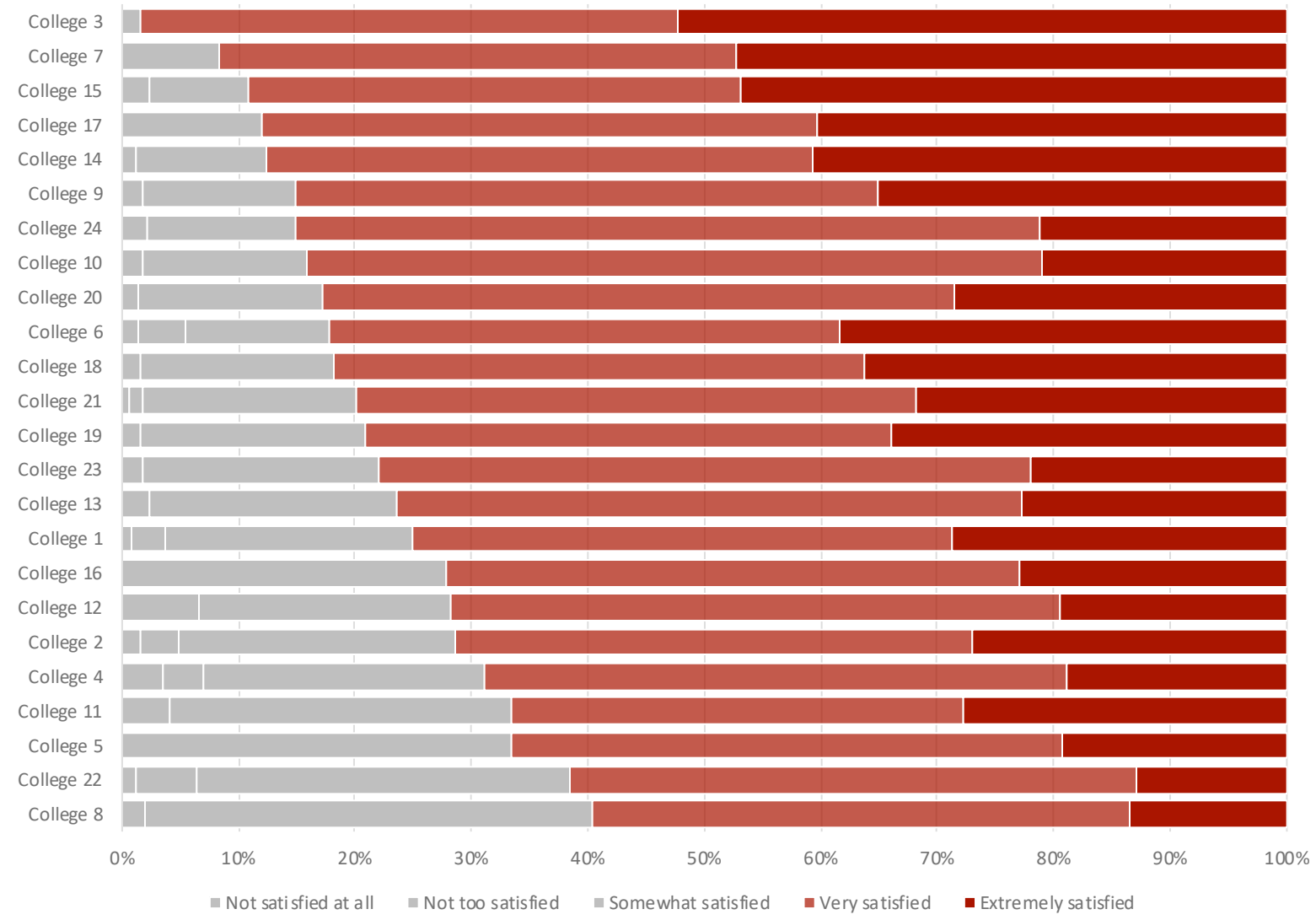
Program Satisfaction: General Satisfaction

2% Not too satisfied

1% Not satisfied at all

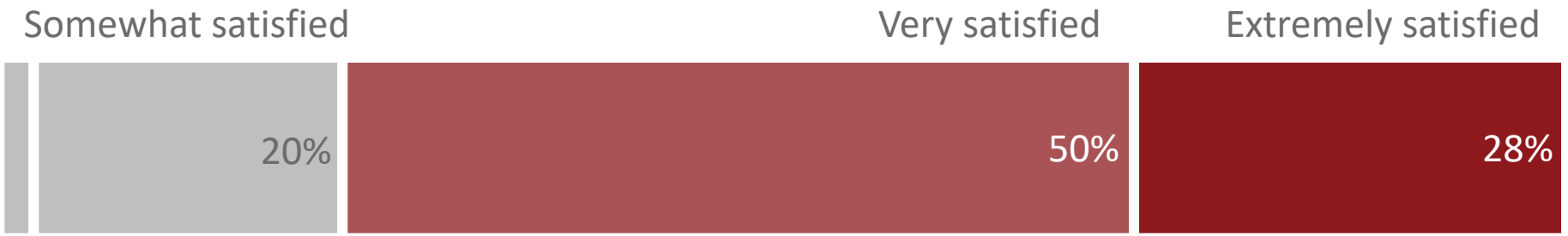
n=3,216

Program Satisfaction: General Satisfaction by College



n=3,216

Program Satisfaction: Courses



2% Not too satisfied

.5% Not satisfied at all

n=3,216

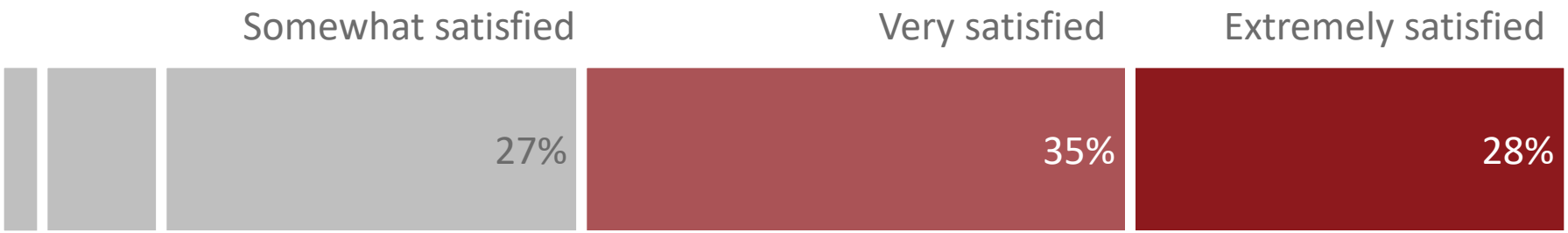
Program Satisfaction: Instructors

3% Not too satisfied

1% Not satisfied at all

n=3,216

Program Satisfaction: Advising



7% Not too satisfied

3% Not satisfied at all

n=3,216

Program Satisfaction: Student Interaction

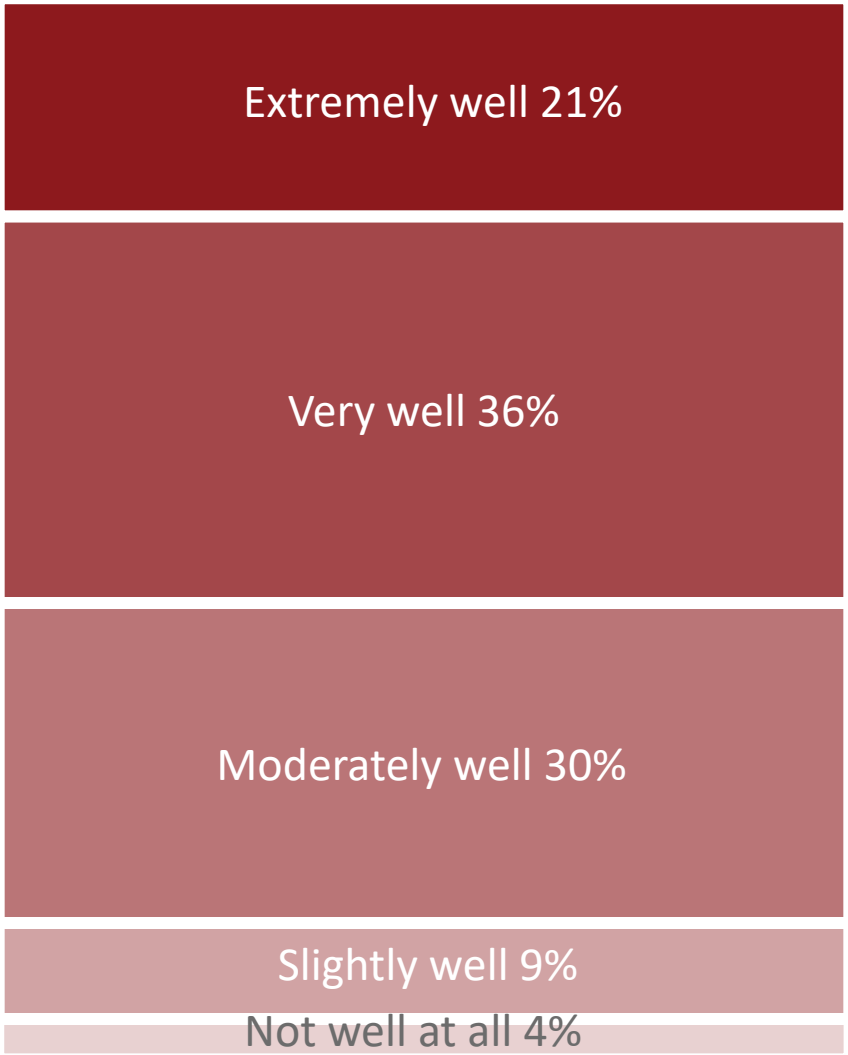
5% Not too satisfied

1% Not satisfied at all

n=3,216

Student Accommodations

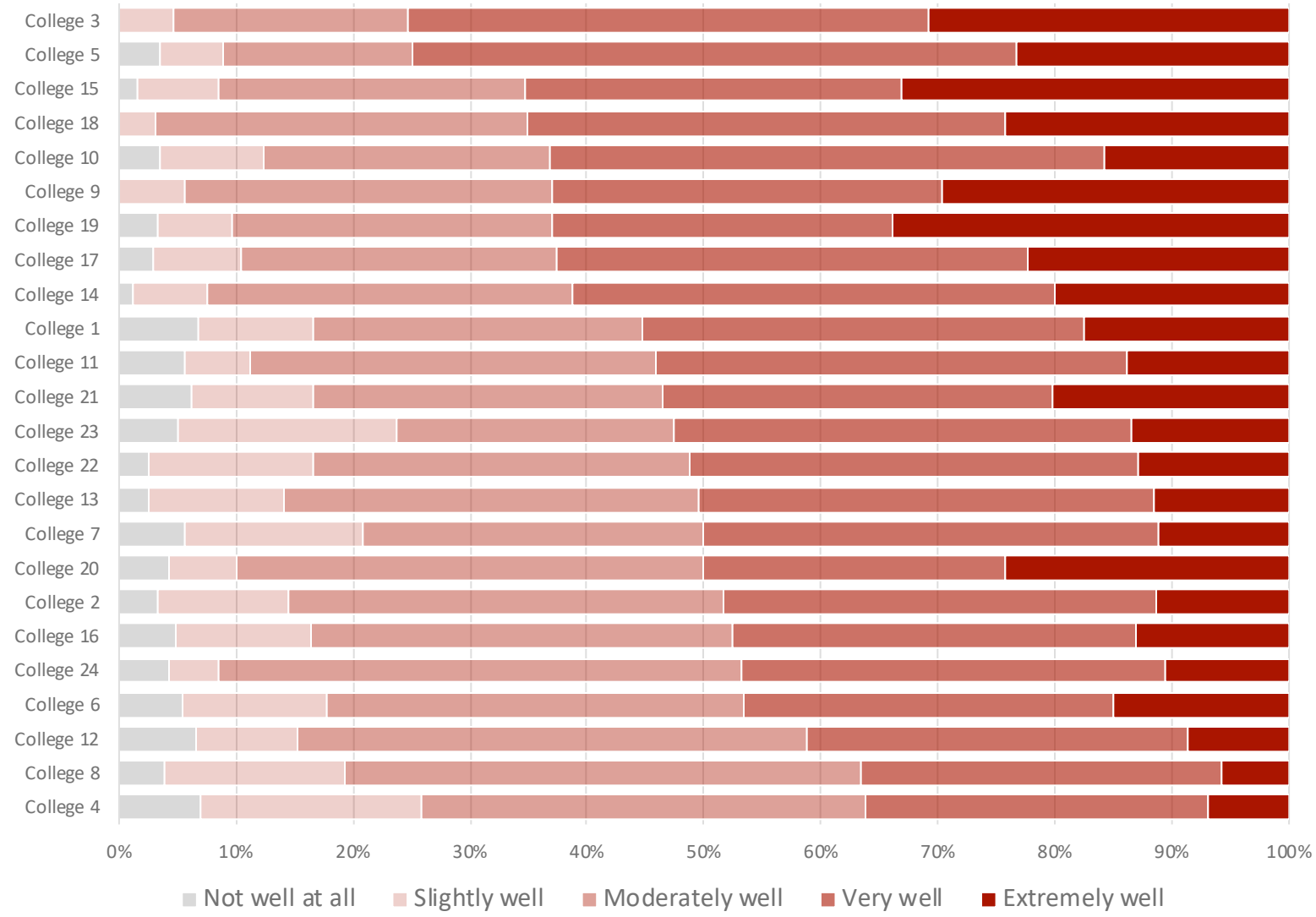
How well does your program accommodate your work schedule and lifestyle?



n=3,216

Student Accommodations

How well does your program accommodate your work schedule and lifestyle?

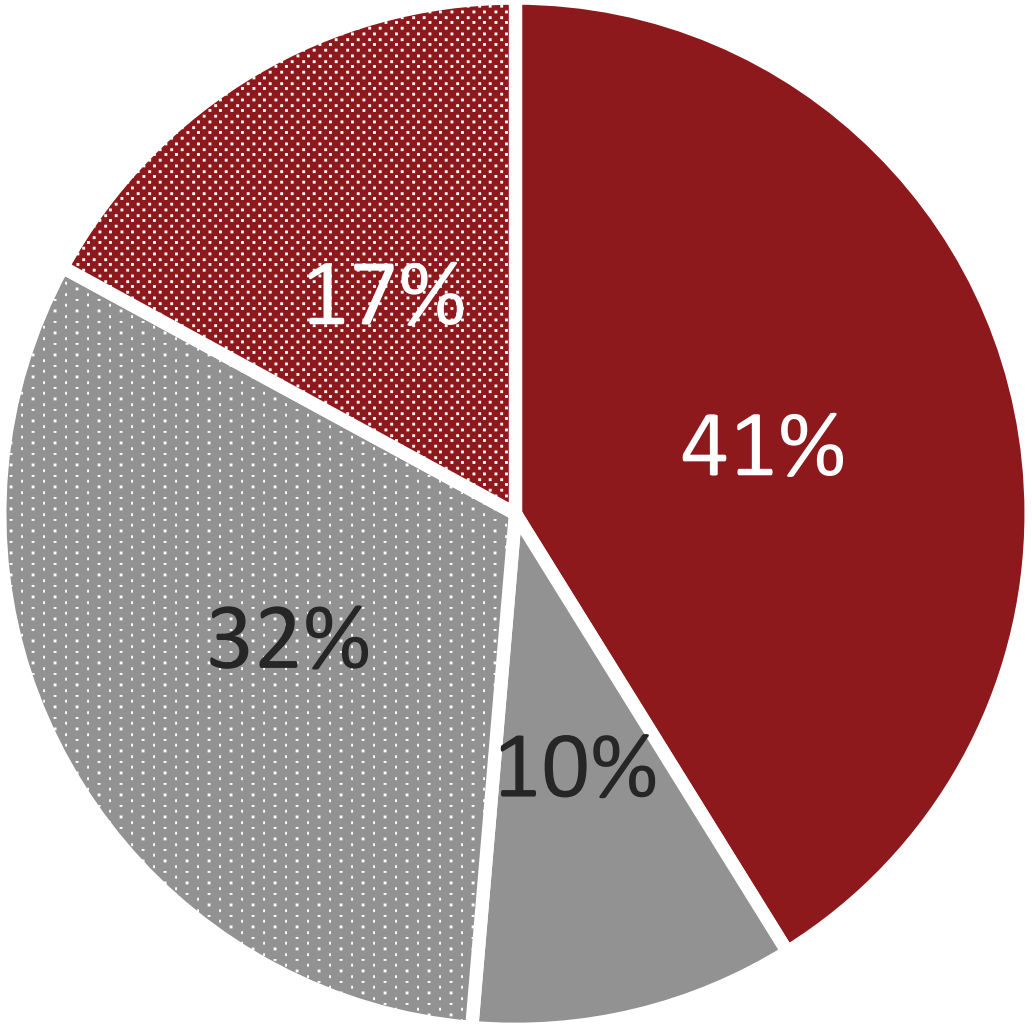


n=3,216

Resource Availability and Use: Tutoring

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

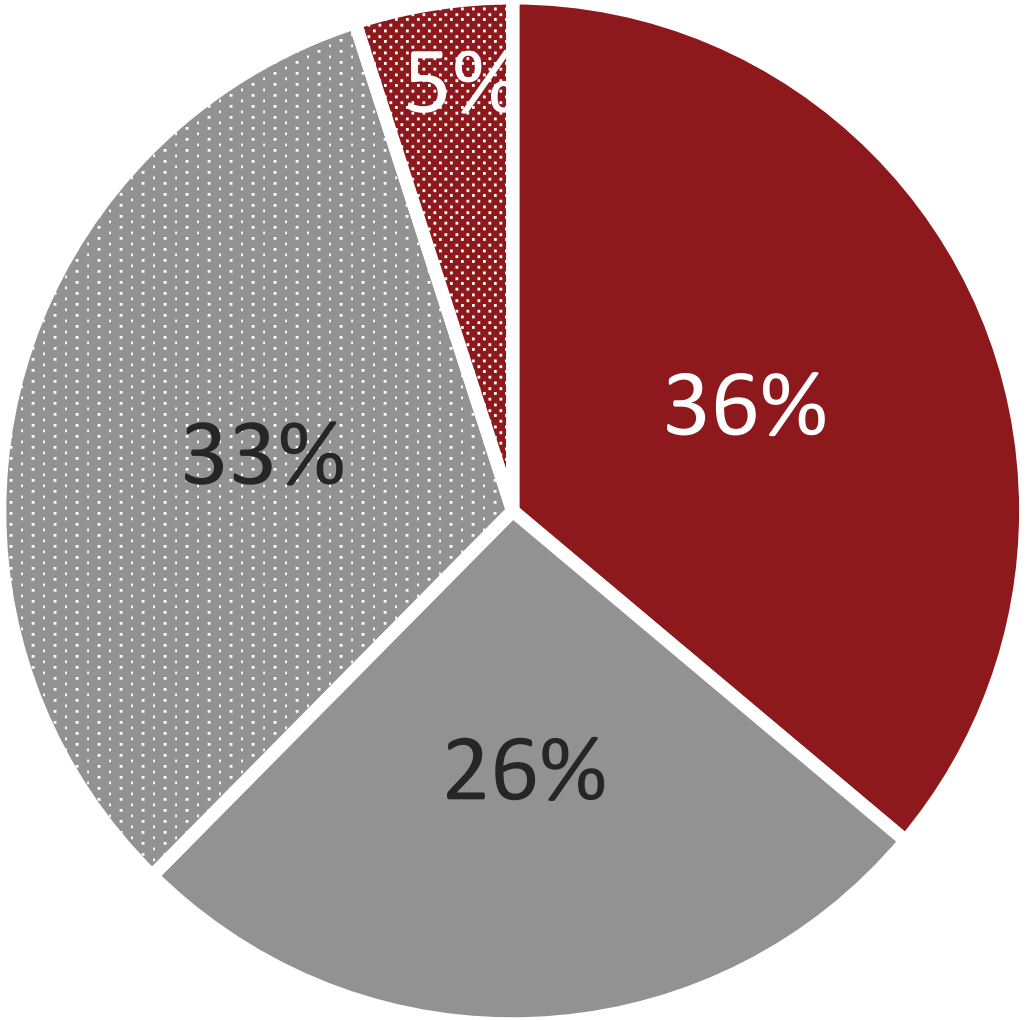
Not Available, would not use

n=2,777

Resource Availability and Use: Disability Services

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

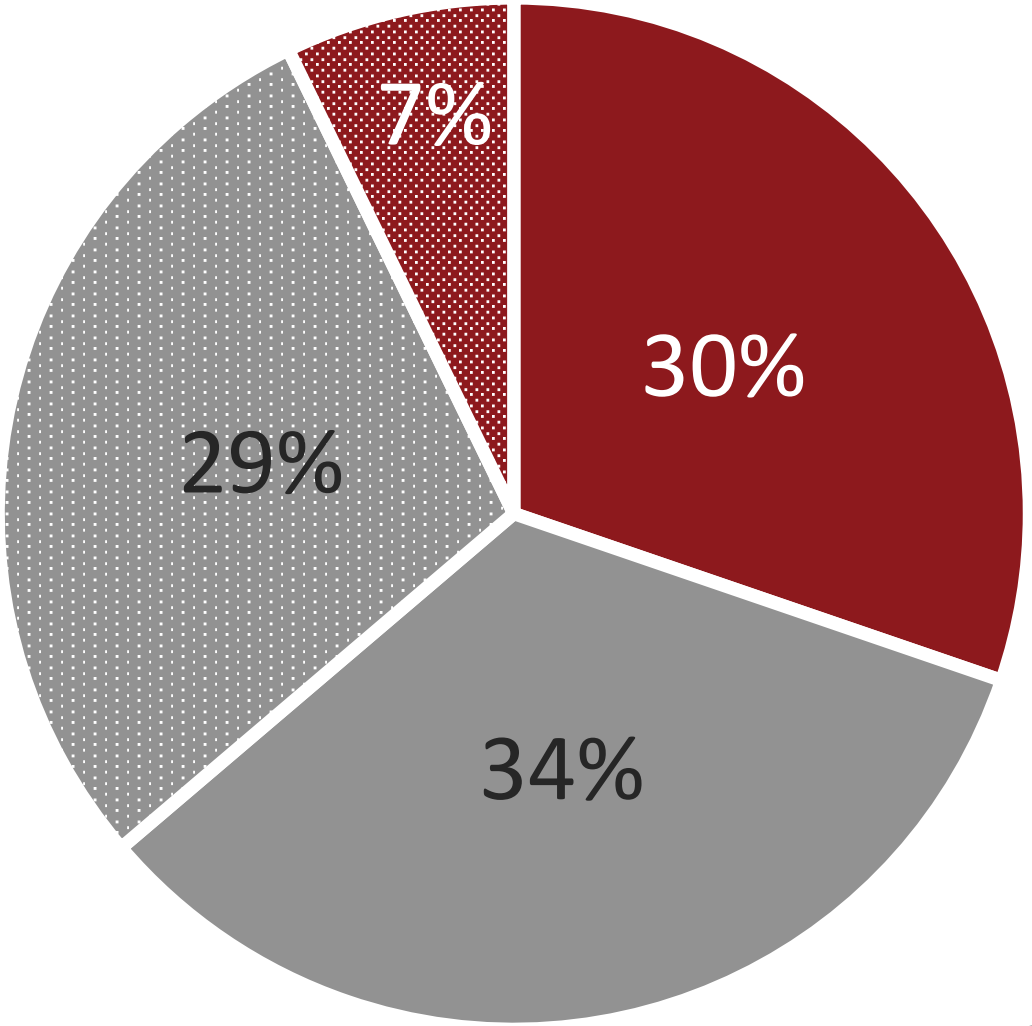
Not Available, would not use

n=2,777

Resource Availability and Use: Mental Health Services

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

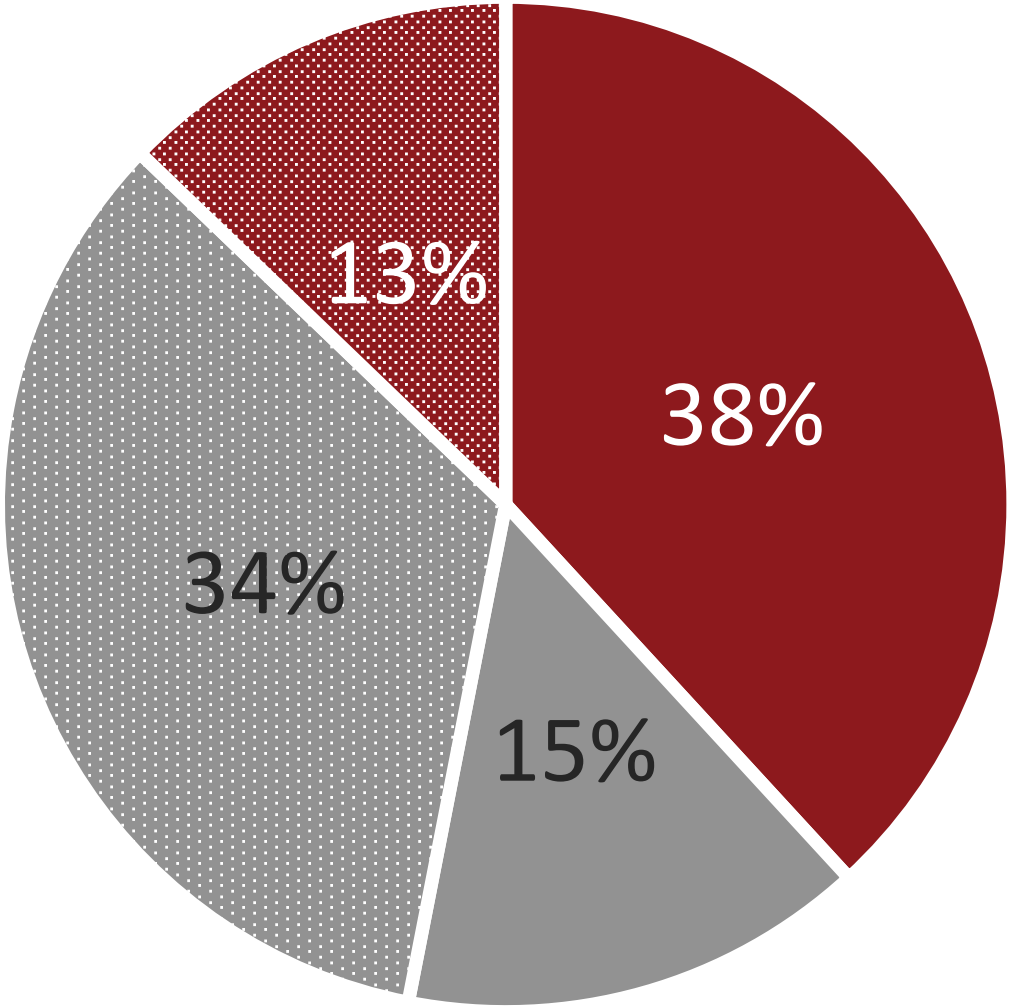
Not Available, would not use

n=2,777

Resource Availability and Use: Career Services

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

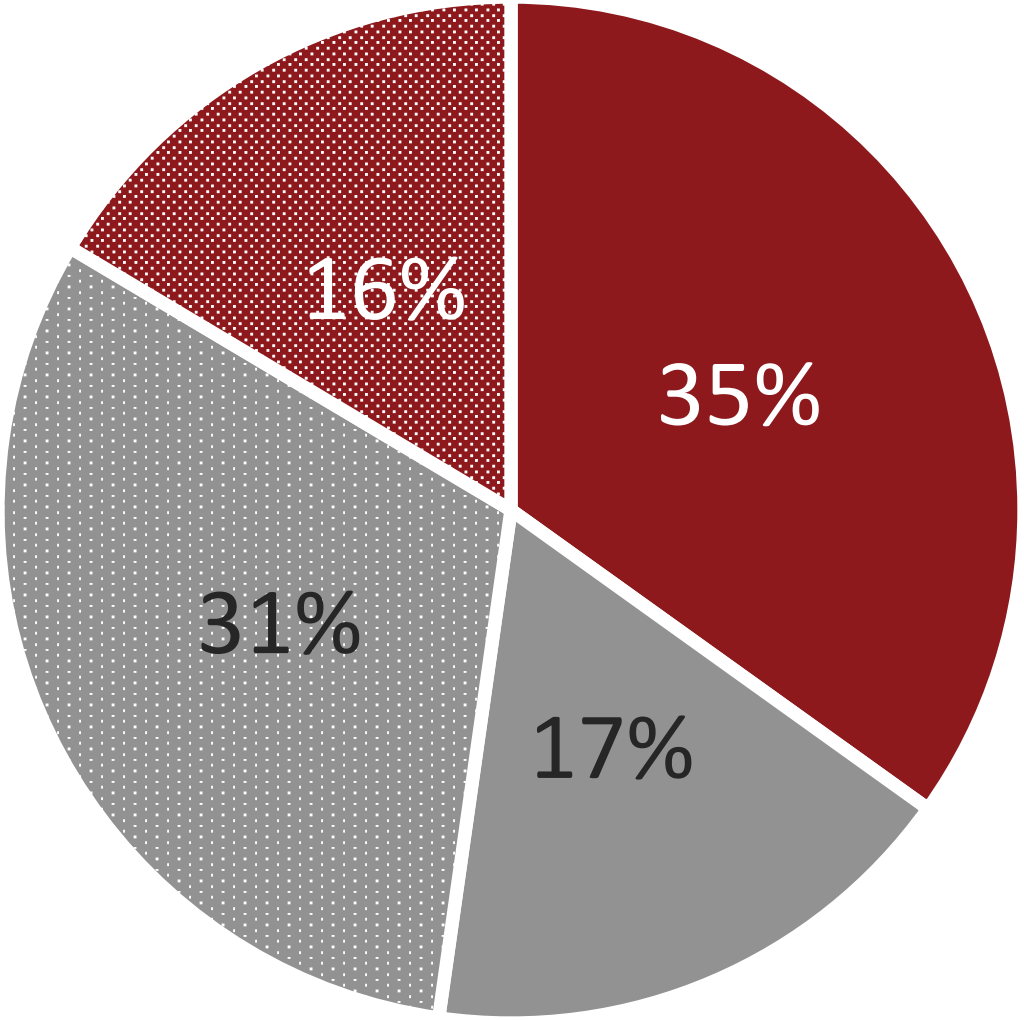
Not Available, would not use

n=2,777

Resource Availability and Use: Internship Opportunities

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

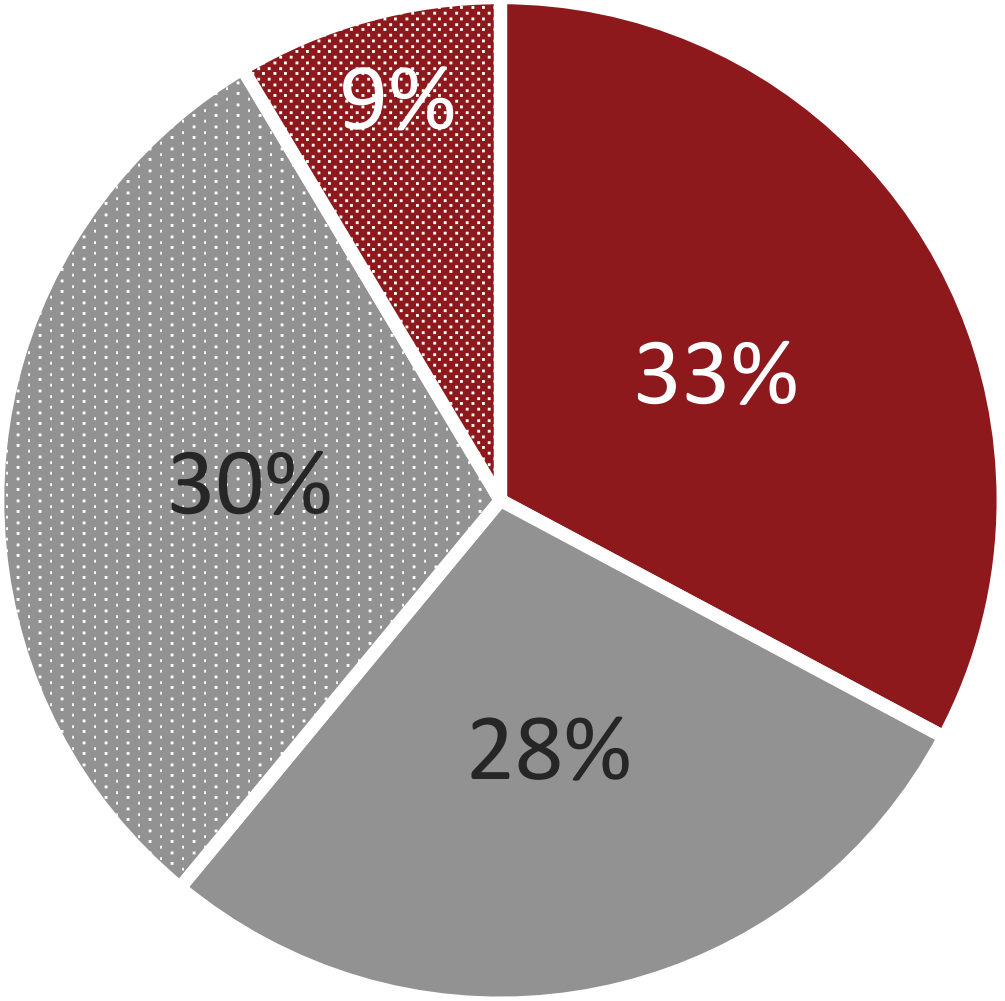
Not Available, would not use

n=2,777

Resource Availability and Use: Mentoring

"Are the following resources available at your college?"

"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

Not Available, would not use

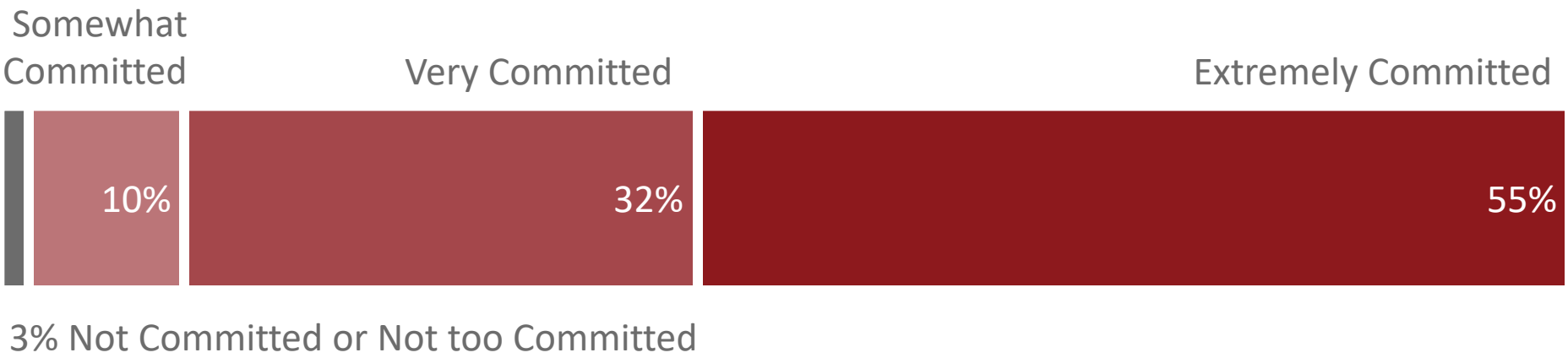
n=2,777

Highest Aspiring Degree

n=3,216

Commitment to Field

How committed are you to pursuing a career related to what you are studying in your current program?

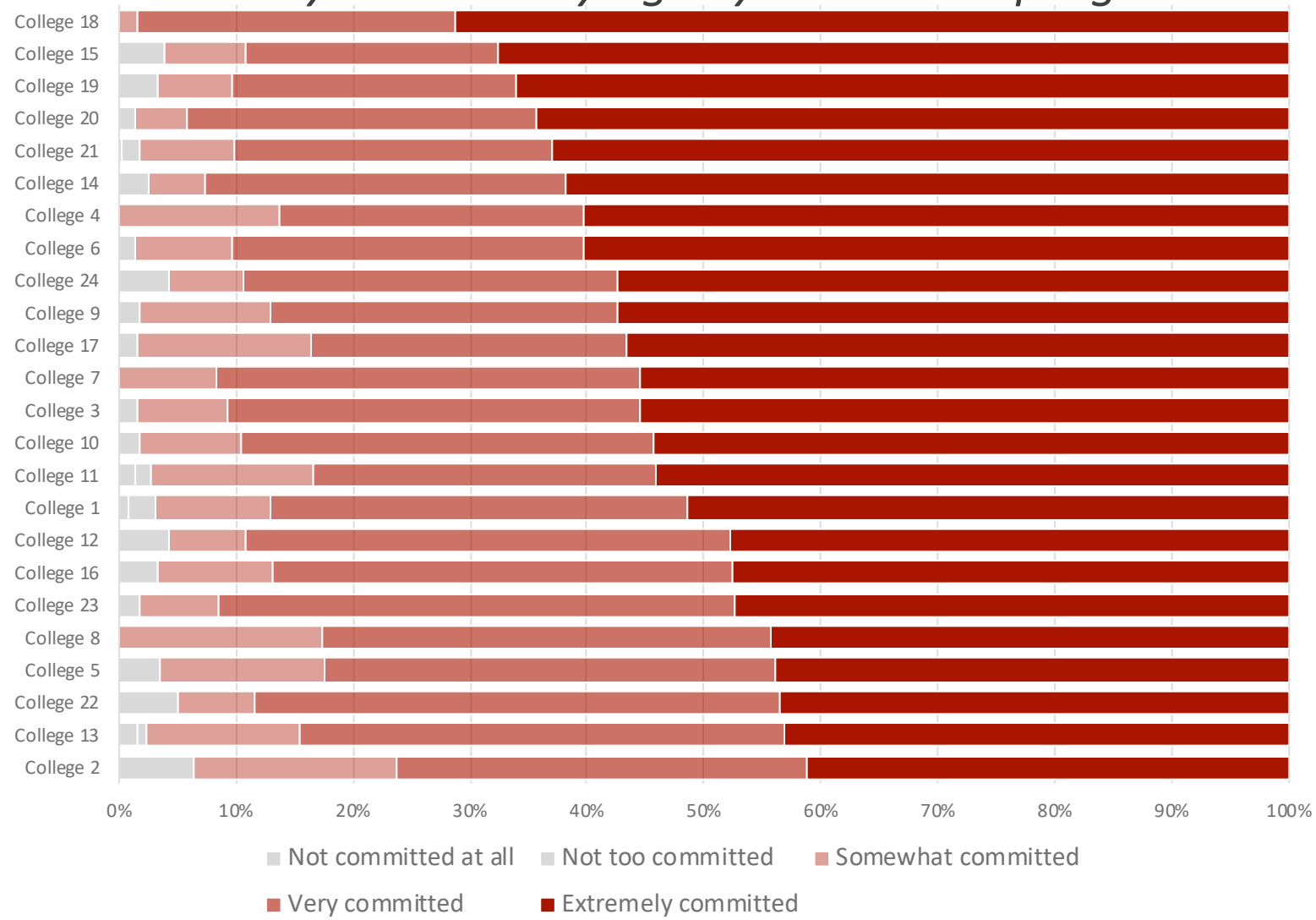


3% Not Committed or Not too Committed

n=3,216

Commitment to Field

How committed are you to pursuing a career related to what you are studying in your current program?



n=3,216

PathTech LIFE

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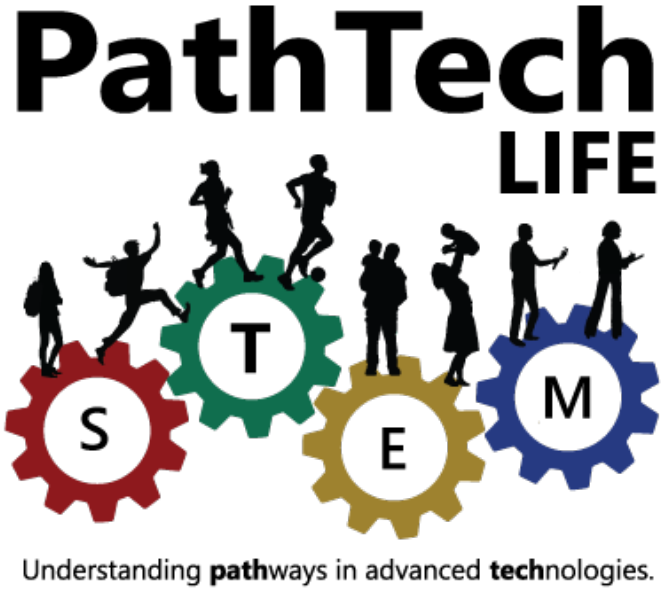

Community College Student Knowledge of and Use of Career Centers and Internships

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PathTech LIFE is supported by the National Science Foundation under Grant No. 1501999. PathTech LISTEN is supported by the National Science Foundation under Grant No. 1801163. Any opinions, findings, and conclusions or recommendations expressed on this site are those of the authors and do not necessarily reflect the views of the National Science Foundation. USF IRB: Pro00021314

COMMUNITY COLLEGES

- The focus of social scientists studying community colleges has been on **the disparity between improving access to educational opportunities and the failure to improve persistence across demographics** (Clark 1960, Schudde and Goldrick-Rab 2014).

- Most literature focuses on instruction and pedagogical practices, disparities in access to community college, recruiting and retaining community college students, and the relationship between community colleges and industry.

- **Community college student development theories have been undertheorized** in the higher education literature (Ozaki 2016)

CAMPUS RESOURCES

The sparse literature about resource access focuses on four-year universities, **not community colleges**:

- Students will not be engaged with campus life if resources are not accessible (Astin 1984).
- **Student engagement** with extra-curricular resources is positively related to student retention and persistence at two-year institutions (Karp 2011)
- There is a link between **campus resources and student success** at two-year institutions of higher education (Bailey and Morest 2006, Nitecki 2011, Wood and Harris III 2013)
- Students at two-year and four-year institutions experience **greater academic success** if they use institutional resources such as learning communities and supplemental instruction (Crisp and Taggart 2013)

CAMPUS RESOURCES AT COMMUNITY COLLEGES

- Involvement literature for community college students must consider the ways that **external factors impact these students' experiences** (Tinto 2012, Ozaki 2016)

- Community college students **were unlikely to participate in campus student resource services** including computing resources, food services, athletic events, relaxation resources, social clubs and organizations, and academic clubs and events (Miller, Pope, and Steinmann 2005)

- Community college students are **less likely to participate in institutionally sponsored activities** (McClenney 2005)

- **Students who are less involved because of family or work** obligations will not engage with the institution in the same way as students with less obligations (Pascarella & Terenzini 2005)

CAREER CENTERS AND INTERNSHIPS

- In terms of career planning and career services, Bailey, Jaggars, and Jenkins (2015) suggest that **community colleges and career oriented faculty and staff should develop highly structured program maps that create a pathway towards students' career goals**.

- Students believe that **institutional support at community colleges are often lacking**, and that **support services and processes are poorly articulated** making it challenging to accrue the social capital necessary to be successful (Moschetti and Hudley 2015).

- **Online student support and resources can help to engage online learners** and distance learners (Bailey and Brown 2016), but it is not clear how these resources might impact community college students generally.

- The literature on community colleges has yet to simultaneously consider **external factors, alongside resource availability and student interest/engagement**.

GOALS – KNOWLEDGE AND USE OF CAMPUS RESOURCES

To understand knowledge and use of career centers and internships among the diverse population of community college students enrolled in technician education programs.

- Technician education programs focus on workforce skills and often provide direct pathways into technology and manufacturing careers (i.e. the **"T" in STEM**). Most students are first time in college; however, these programs attract students with associate's degrees, prior four-year enrollment, and even bachelor's degrees.

Key Independent Variables

- **Employment status**: Technician education programs often recruit students with part-time and full-time **jobs in related fields** as well as students **in non-STEM fields** or **unemployed students**.

- **Paying for College**: Students fund college using a variety of methods including scholarships and financial aid, loans, parents' support, primary jobs, and additional work.

- **Financial Challenges**: Frequency of financial challenges on Likert scale (1 = Never to 5 = Always)

PROJECT OVERVIEW

- National Science Foundation (NSF) funded Advanced Technological Education (ATE) Targeted Research in Technician Education

- Partnership between University of South Florida, Florida Advanced Technological Education Center (FLATE) at Hillsborough Community College and national ATE Center Partners

- National survey of community college students in advanced technology fields in collaboration with a national network of colleges.

- PathTech LIFE seeks to understand how learning, interests, family, and employment (LIFE) experiences of two-year college students impact their decisions to enroll, return for further coursework, and/or pursue a certificate or degree.

TIMELINE

September 2015 – January 2016	Drafted initial survey
February – April 2016	Received input from panel of experts made up of two people from each ATE Center using Delphi technique (three iterative rounds)
April 2016	Completed survey revisions; Completed IRB modification
April – May 2016	Distributed Round 1 pilot survey to students at six colleges (97 respondents)
June – August 2016	Analyzed data 1st pilot survey data, revised survey based on findings
September 2016	Conducted one-on-one interviews with four students while taking survey
October 2016	Completed survey revisions; Completed IRB modification
November – December 2016	Distributed 2nd pilot survey to students at 18 colleges (147 respondents)
January – March 2017	Shortened survey from 25 to 15 minutes; Revised distribution plan to include direct communication with colleges; Completed IRB modification
April 2017 – May 2017	Distributed 1st round national survey to students at 25 colleges (528 respondents)
May – September 2017	Analyzed Round 1st round national data, prepared reports, publications, and presentations
October – December 2017	Distributed 2nd round national survey to students at 59 colleges (1344 respondents)
January – February 2018	Analyzed 2nd round national data, prepared reports, publications, and presentations
March – June 2018	Distributed 3rd round national survey to 65 colleges (1443 respondents)
June 2018	Received supplemental funding to extend project to February 2019
June 2018 – Present	Analyze all data, prepare reports, publications, and presentations

TECHNICIAN EDUCATION PROGRAMS

ENGINEERING TECHNOLOGY

ENERGY AND ENVIRONMENTAL TECHNOLOGY

ADVANCED MANUFACTURING

MICRO AND NANO TECHNOLOGY

SURVEY TOPICS

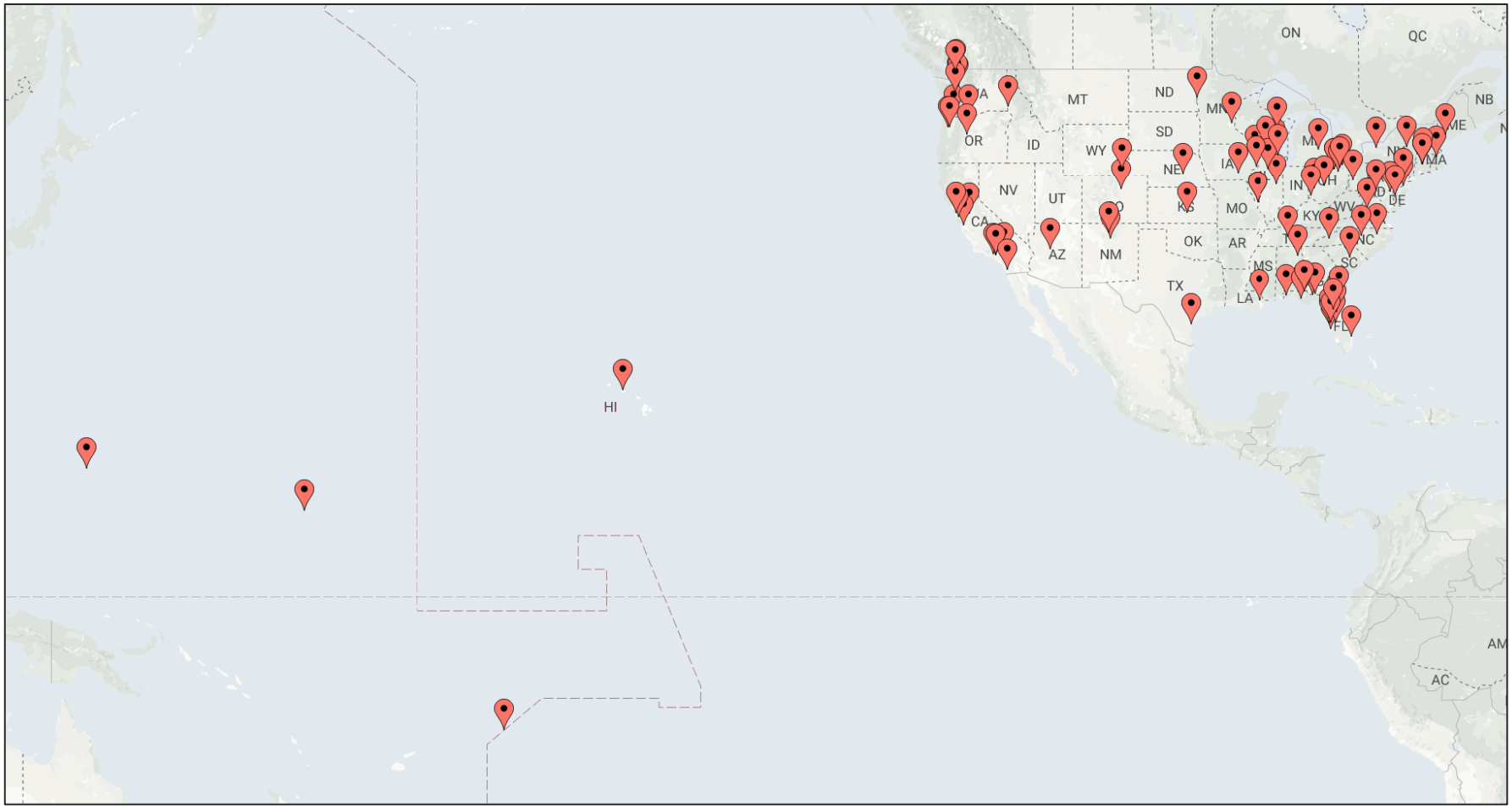
- Academic Background
- College Experiences
- Employment Background
- Employment Status
- Motivation for Enrollment
- Program Evaluation
- Academic Goals
- Career Goals
- Demographics

SURVEY RESPONDENTS across the US

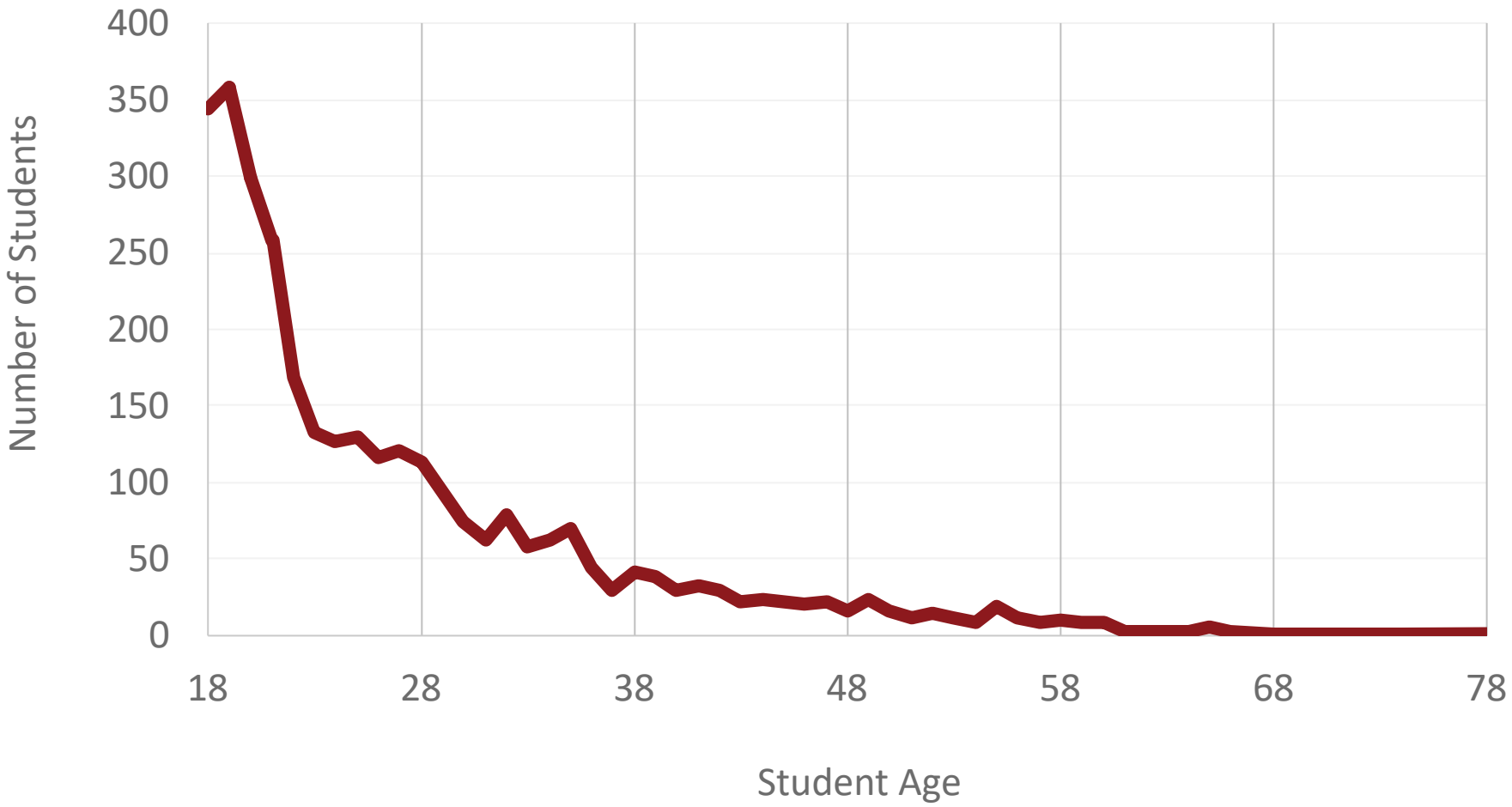
(3,216 students from 96 colleges in 38 states…

SURVEY RESPONDENTS across US

…and 3 territories)

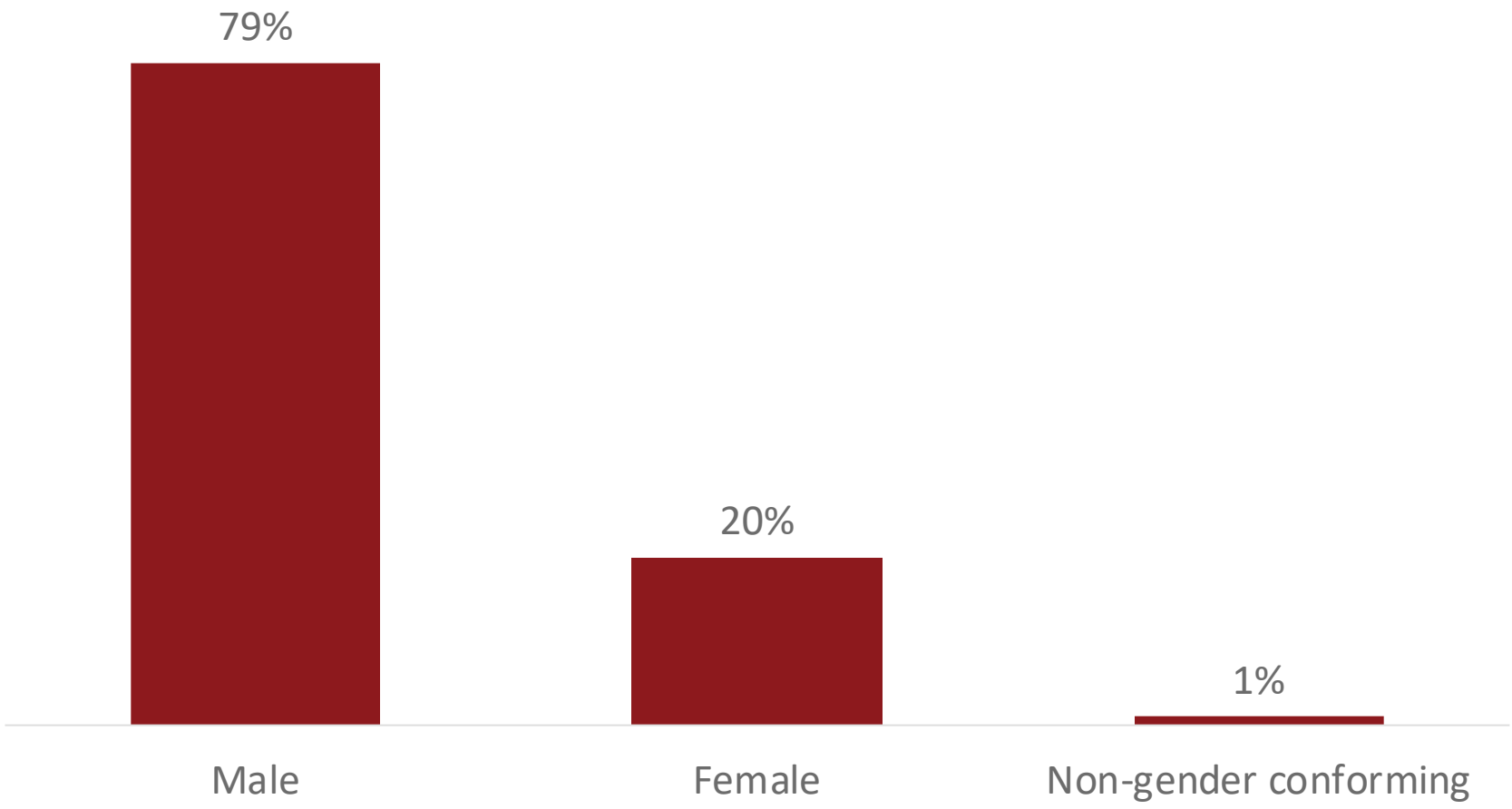


Age


400
350
300
250
200
150
100
50
0
Number of Students
18
28
38
48
58
68
78
Student Age

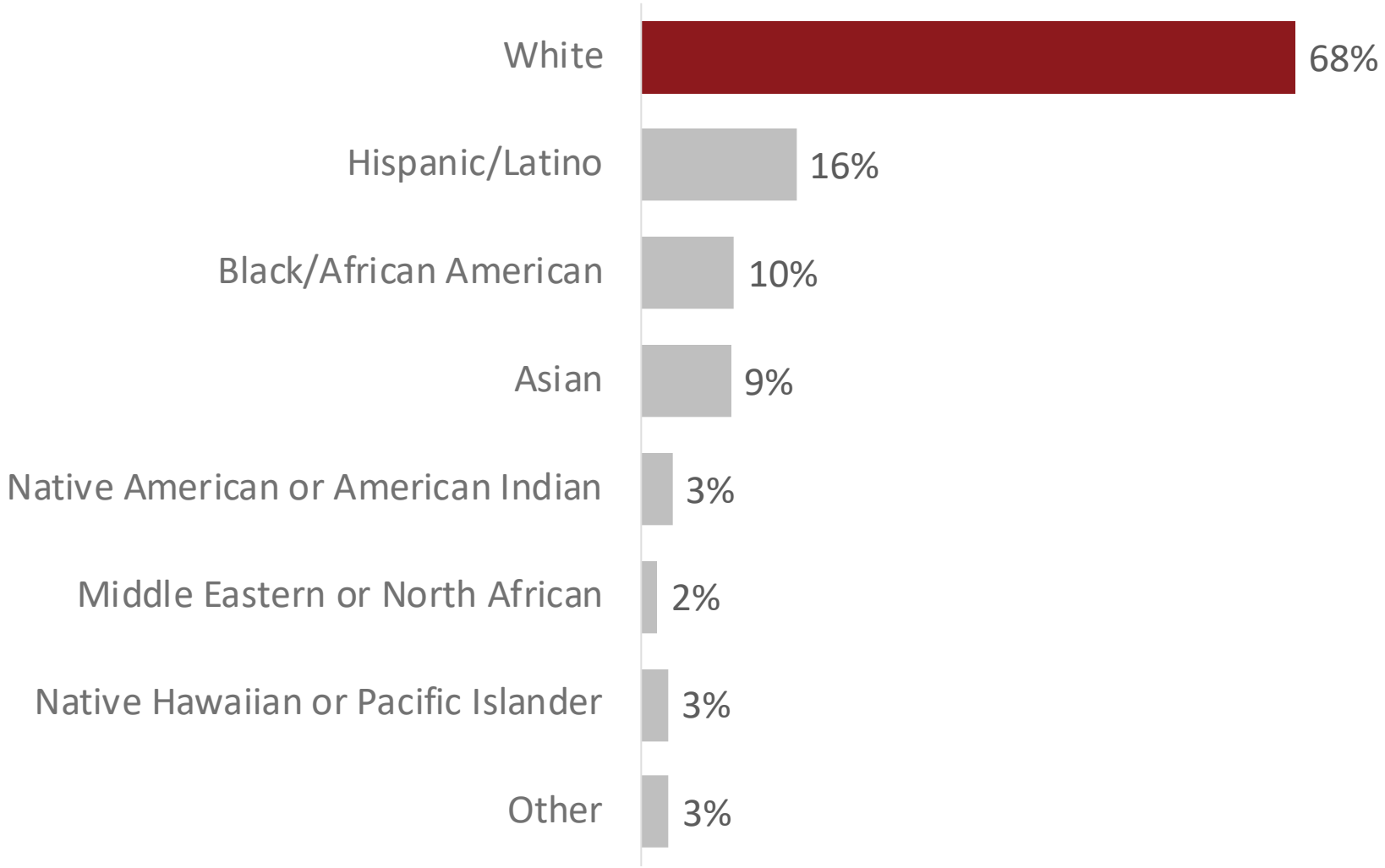
n=3,216

Gender



n=3,216

Race and Ethnicity



n=3,216

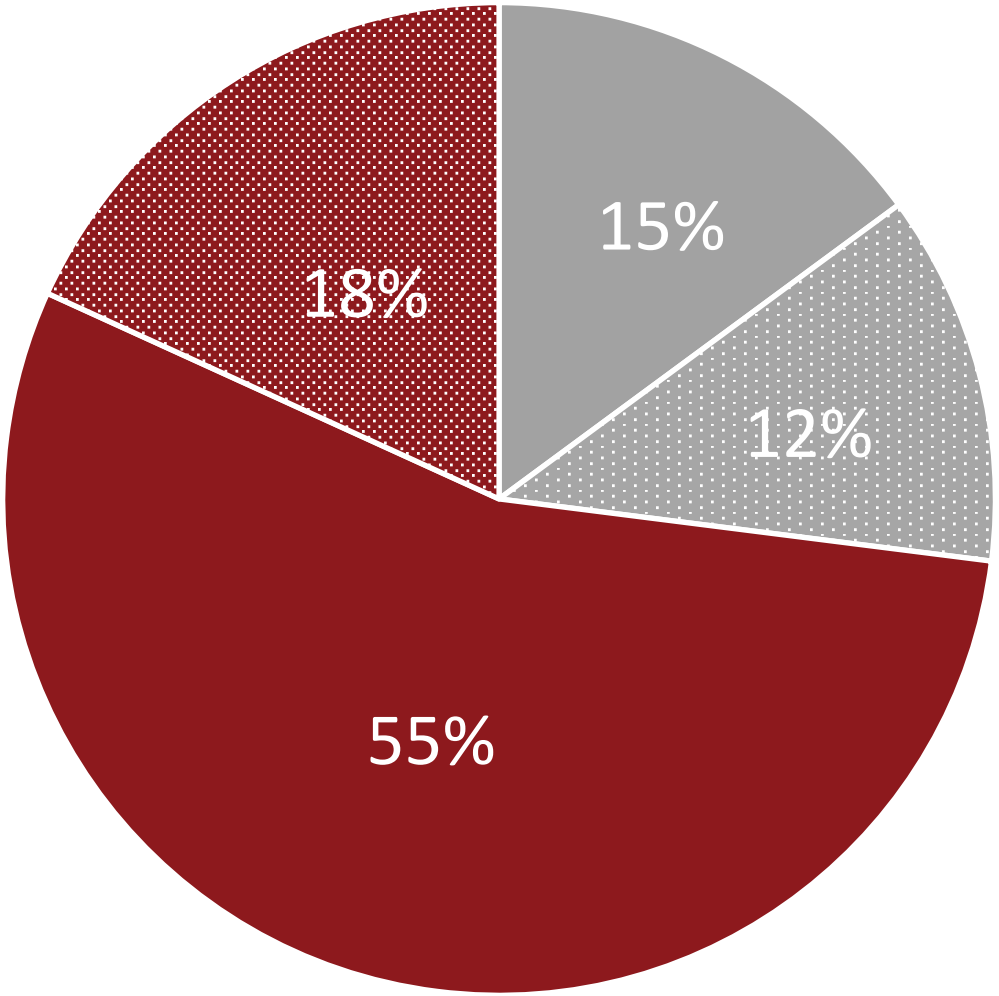
SAMPLE

- 53 colleges with at least 20 respondents (N = 2,427)
- A majority of students at 52 colleges reported having “Career/Job Placement services”
- A majority of students at 48 colleges reported having “Internship opportunities”

RESOURCES

Resource Availability and Use: Career/Job Placement Services

"Are the following resources available at your college?"
"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

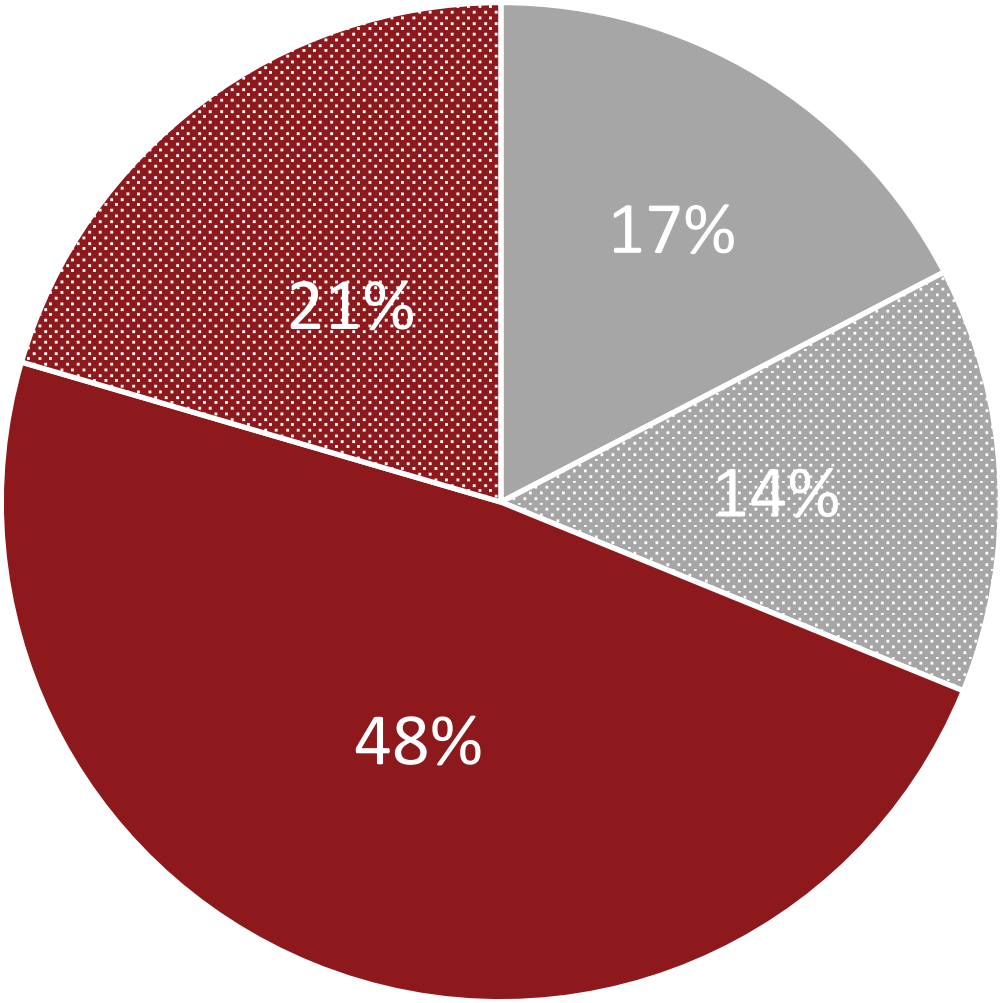
Not Available, would use

Not Available, would not use

n=2,777

Resource Availability and Use: Internship Opportunities

"Are the following resources available at your college?"
"Do you utilize them or would you utilize them if they were available?"



Available, do use

Available, do not use

Not Available, would use

Not Available, would not use

n=2,777

ANALYSES

- Binomial and multinomial hierarchical linear modeling (HLM) to distinguish between student- and school-level effects on membership in two groups or four groups:
  - **Knowledge**: Resources are available vs. not available
  - **Need**: Do/would use vs. do/would not use
  - **Use among those who know:** Available do use vs. do not use

KEY VARIABLES

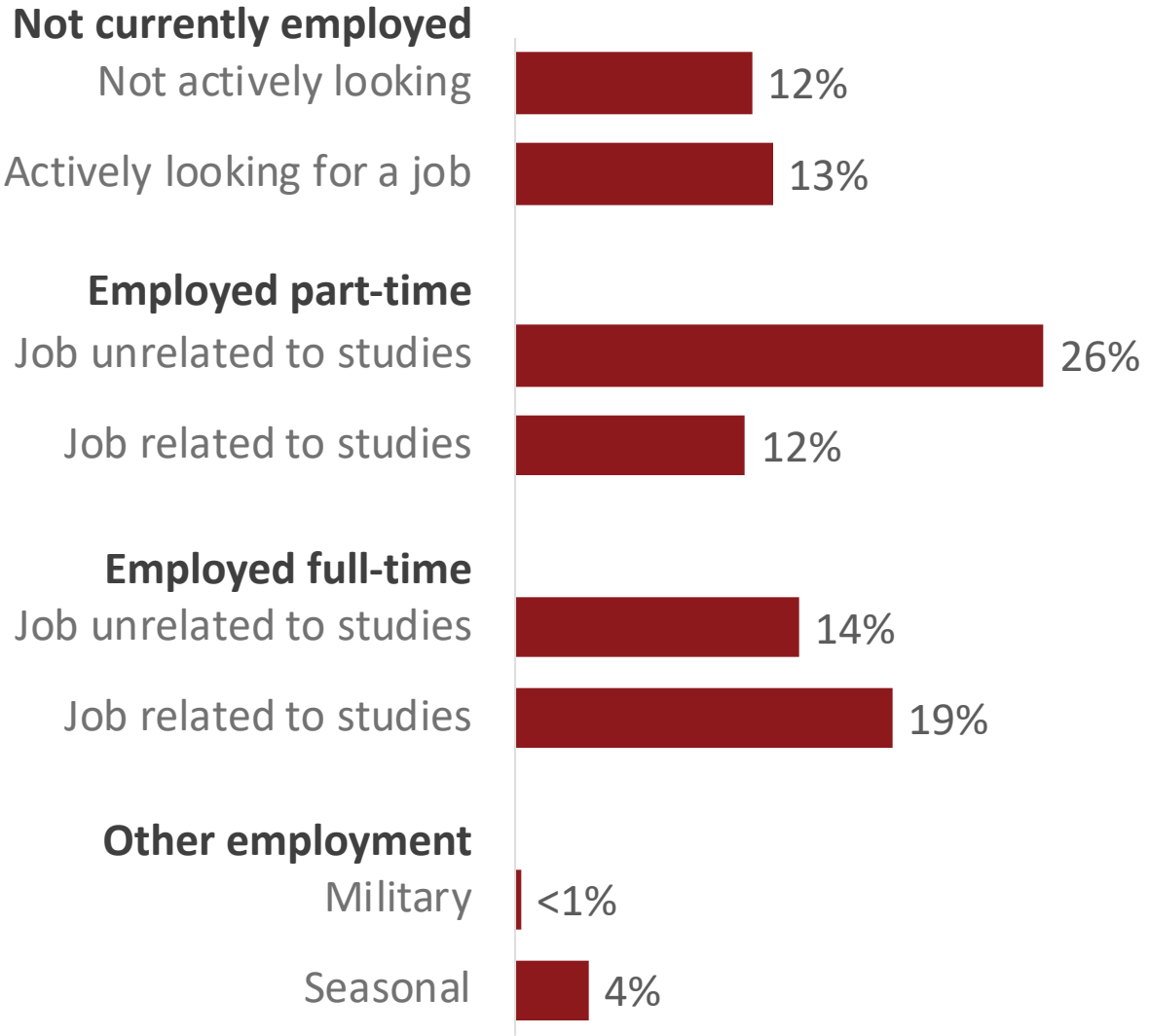
DEMOGRAPHICS and FAMILY STATUS

- Age was not significant predictors of knowledge or use of Career Services or Internships
- Non-gender confirming students were more likely to use Internships
- Black and Hispanic students were more likely to use Internships.
- Marital status and children in the household have limited effects.

ACADEMICS

- Students who took more courses in the last 12 months had greater need for career services and were more likely to use if they knew about them
- Full-time students had a greater need for and knowledge of internship opportunities
- Students with a lower GPA were more likely to know about career services

EMPLOYMENT STATUS (entire sample)



n=3,216

EMPLOYMENT STATUS

(compared to students with full-time job in field related to their studies)

Know about Career Services

- Unemployed and actively looking for a job

Need and Use Career Services

- Unemployed and actively looking for a job
- Part-time job in unrelated field
- Part-time job in related field
- Full-time job in unrelated field

EMPLOYMENT STATUS

(compared to students with full-time job in field related to their studies)

Know about Internships

- Unemployed, but not actively looking for a job
- Unemployed and actively looking for a job
- Part-time job in related field

Need Internships (all groups)

- Unemployed, but not actively looking for a job
- Unemployed and actively looking for a job
- Part-time job in unrelated field
- Part-time job in related field
- Full-time job in unrelated field

EMPLOYMENT STATUS

(compared to students with full-time job in field related to their studies)

Use Internships

- Unemployed, but not actively looking for a job
- Unemployed and actively looking for a job
- Part-time job in related field

Unmet need

- Part-time job in unrelated field
- Full-time job in unrelated field

PAYING FOR COLLEGE

Need for Career Services and Internships

- Financial aid from state or federal government
- Scholarships or financial aid from college (internships only)
- Family contribution
- Personal savings
- Income from a primary job (internships only)
- Income from a second job
- Other sources (internships only)

Use of Career Services and Internships among those who know

- Financial aid from state or federal government
- Scholarships or financial aid from college (internships only)
- Personal savings
- Income from a primary job (internships only)
- Income from a second job
- Other sources (internships only)

Students with family contributions underutilize resources.

FINANCIAL CHALLENGES

Students with more frequent financial challenges are less likely to know Career Services and Internships are available.

They are more likely to need Career Services, but not Internships.

They are no more or less likely to use Career Services and Internships even if they know about them.

NEXT STEPS

- Participating colleges with high response rates have been sent reports detailing resource knowledge and use among their students.
- Conducting a survey of faculty and administrators asking how often they tell students about different campus resources.
- Analyses to link campus resource utilization with measures of program satisfaction.
- PathTech LISTEN – National longitudinal follow-up interviews with survey respondents about college experiences and short-term outcomes

PathTech LIFE

Understanding **path**ways in advanced **tech**nologies.

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