



Starting a High Return Bachelor's Degree at a Community College

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Jaggars

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A Longitudinal Analysis of Community College Pathways to Computer Science Bachelor's Degrees

2016



Student Perspectives of Community College Pathways to Computer Science Bachelor's Degrees

2016



Community College Pathways to Computer Science Bachelor's Degrees

2016



1.8M community college students tracked
2007-2014



321 enrolled community college students
surveyed

24 enrolled community college students
interviewed

14 past community college students
interviewed

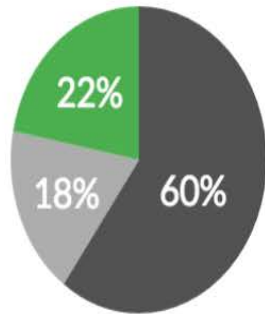
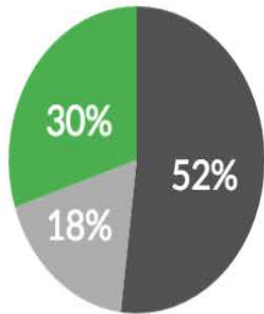
Not representative of the greater community college population

1.8M 2007 community college entrants

3,290 who earned CS bachelor's



51% male



87% male

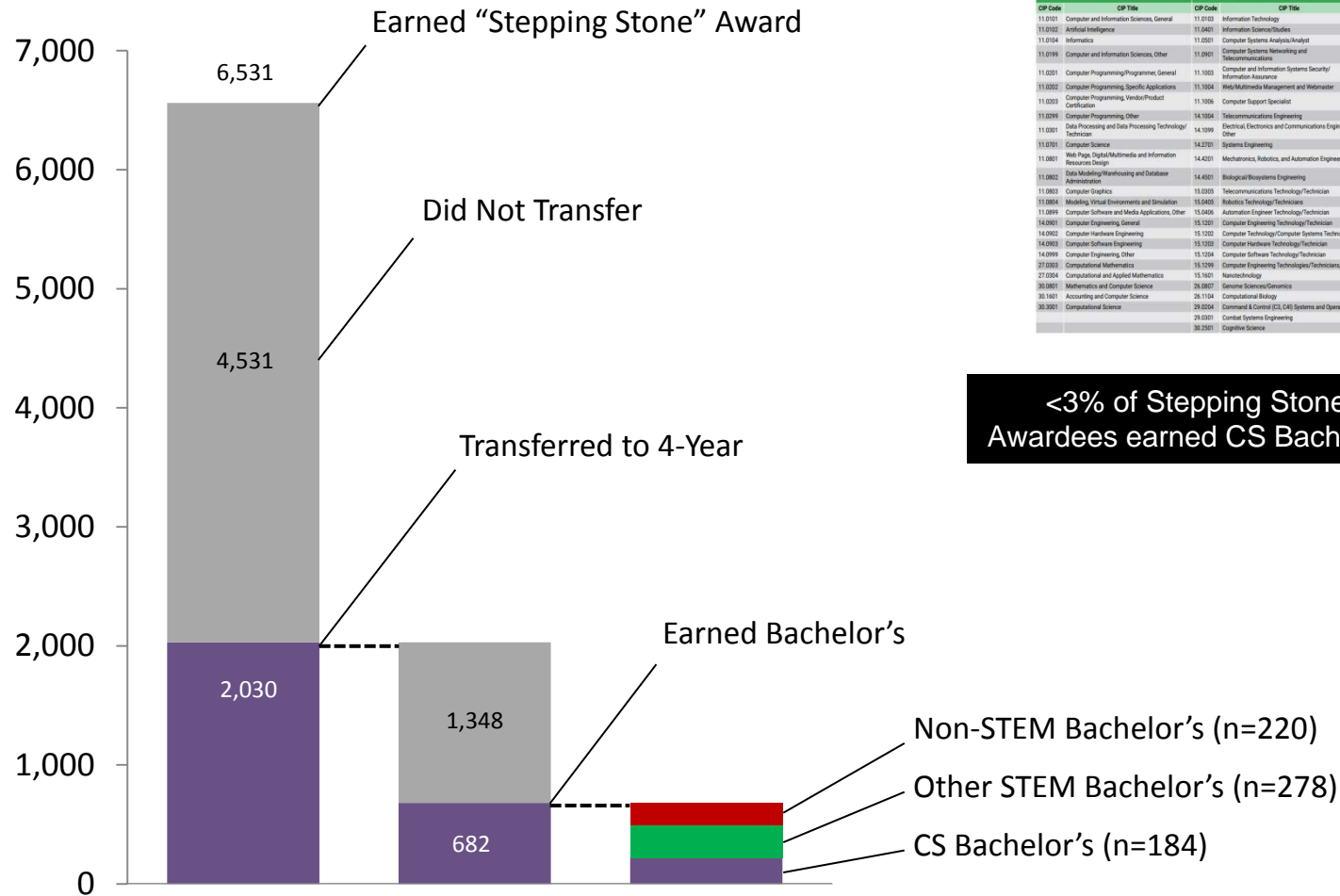
- bottom two neighborhood SES quintiles
- middle neighborhood SES quintile
- top two neighborhood SES quintiles

Identifying Students Earning “Stepping Stone” Awards

COMPUTER SCIENCE CIP CODE DEFINITIONS

Bachelor's Degrees		“Stepping-Stone” Community College Awards	
CIP Code	CIP Title	CIP Code	CIP Title
11.0101	Computer and Information Sciences, General	11.0103	Information Technology
11.0102	Artificial Intelligence	11.0401	Information Science/Studies
11.0104	Informatics	11.0501	Computer Systems Analysis/Analyst
11.0199	Computer and Information Sciences, Other	11.0901	Computer Systems Networking and Telecommunications
11.0201	Computer Programming/Programmer, General	11.1003	Computer and Information Systems Security/ Information Assurance
11.0202	Computer Programming, Specific Applications	11.1004	Web/Multimedia Management and Webmaster
11.0203	Computer Programming, Vendor/Product Certification	11.1006	Computer Support Specialist
11.0299	Computer Programming, Other	14.1004	Telecommunications Engineering
11.0301	Data Processing and Data Processing Technology/ Technician	14.1099	Electrical, Electronics and Communications Engineering, Other
11.0701	Computer Science	14.2701	Systems Engineering
11.0801	Web Page, Digital/Multimedia and Information Resources Design	14.4201	Mechatronics, Robotics, and Automation Engineering
11.0802	Data Modeling/Warehousing and Database Administration	14.4501	Biological/Biosystems Engineering
11.0803	Computer Graphics	15.0305	Telecommunications Technology/Technician
11.0804	Modeling, Virtual Environments and Simulation	15.0405	Robotics Technology/Technicians
11.0899	Computer Software and Media Applications, Other	15.0406	Automation Engineer Technology/Technician
14.0901	Computer Engineering, General	15.1201	Computer Engineering Technology/Technician
14.0902	Computer Hardware Engineering	15.1202	Computer Technology/Computer Systems Technology
14.0903	Computer Software Engineering	15.1203	Computer Hardware Technology/Technician
14.0999	Computer Engineering, Other	15.1204	Computer Software Technology/Technician
27.0303	Computational Mathematics	15.1299	Computer Engineering Technologies/Technicians, Other
27.0304	Computational and Applied Mathematics	15.1601	Nanotechnology
30.0801	Mathematics and Computer Science	26.0807	Genome Sciences/Genomics
30.1601	Accounting and Computer Science	26.1104	Computational Biology
30.3001	Computational Science	29.0204	Command & Control (C3, C4I) Systems and Operations
		29.0301	Combat Systems Engineering
		30.2501	Cognitive Science

Outcomes: Students Earning “Stepping Stone” Awards



COMPUTER SCIENCE CIP CODE DEFINITIONS

Bachelor's Degree		"Stepping Stone" Community College Award	
CIP Code	CIP Title	CIP Code	CIP Title
11.0101	Computer and Information Sciences, General	11.0103	Information Technology
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11.0201	Computer Programming/Programmer, General	11.1003	Computer and Information Systems Security/Information Assurance
11.0202	Computer Programming, Specific Applications	11.1004	Web/Multimedia Management and Webmaster
11.0203	Computer Programming, Vendor/Product Certification	11.1006	Computer Support Specialist
11.0299	Computer Programming, Other	14.1004	Telecommunications Engineering
11.0301	Data Processing and Data Processing Technology Technicians	14.1099	Electrical, Electronics and Communications Engineering, Other
11.0701	Computer Science	14.2201	Systems Engineering
11.0801	Web Page, Digital/Multimedia and Information Resources Design	14.4201	Mechanics, Robotics, and Automation Engineering
11.0802	Data Modeling/Modeling and Database Administration	14.4201	Biological/Biosystems Engineering
11.0803	Computer Graphics	15.0205	Telecommunications Technology/Technician
11.0804	Modeling, Visual Environments and Simulation	15.0405	Robotics Technology/Technician
11.0899	Computer Software and Media Applications, Other	15.0409	Automation Engineer Technology/Technician
14.0801	Computer Engineering, General	15.1201	Computer Engineering Technology/Technician
14.0902	Computer Hardware Engineering	15.1202	Computer Technology/Computer Systems Technology
14.0903	Computer Software Engineering	15.1203	Computer Hardware Technology/Technician
14.0999	Computer Engineering, Other	15.1204	Computer Software Technology/Technician
27.0201	Computational Mathematics	15.1299	Computer Engineering Technology/Technician, Other
27.0204	Computational and Applied Mathematics	15.1601	Nanotechnology
30.0201	Mathematics and Computer Science	29.0807	Genome Sciences/Genetics
35.1001	Accounting and Computer Science	29.1104	Computer Game Design
35.2001	Computational Science	29.0204	Command & Control (C3, C4) Systems and Operations
		29.0201	Combat Systems Engineering
		36.1201	Cognitive Science

<3% of Stepping Stone Awardees earned CS Bachelors

**NO DEFINED
PATHWAY**

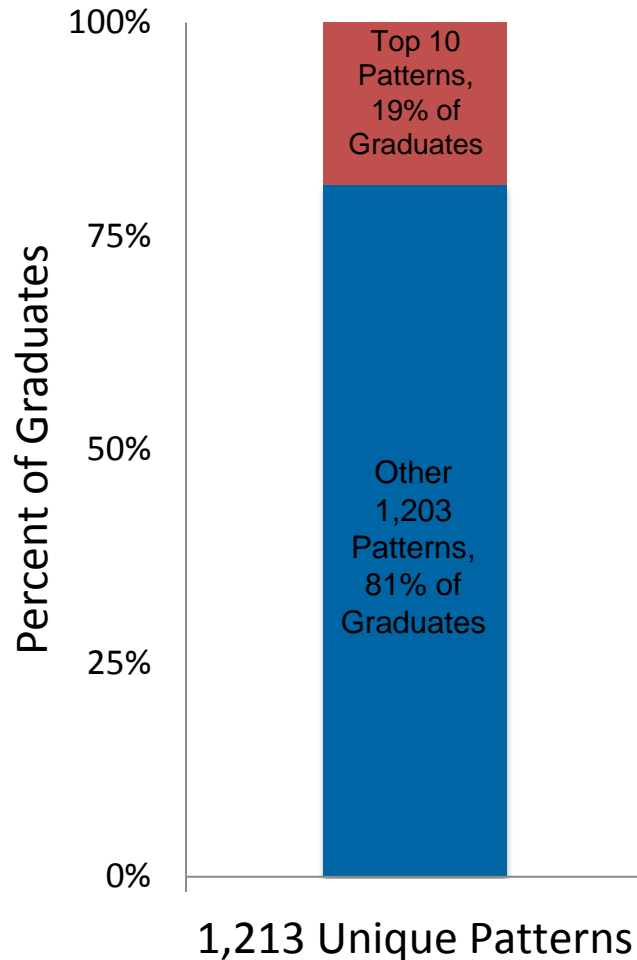
to CS bachelor's
degrees

1,213

unique
pathways
among
3,290 CS
degree
earners

No “Well-Trodden” Transfer Pathway:

Unique, Term-by-Term Enrollment Patterns among
3,290 Computer Science Graduates



Top Pattern, 5% of CS Graduates:

1 Year at Community College

+

4 Years at Four-Year Institution

‘Traditional’ Transfer Pattern:

2 Years at Community College

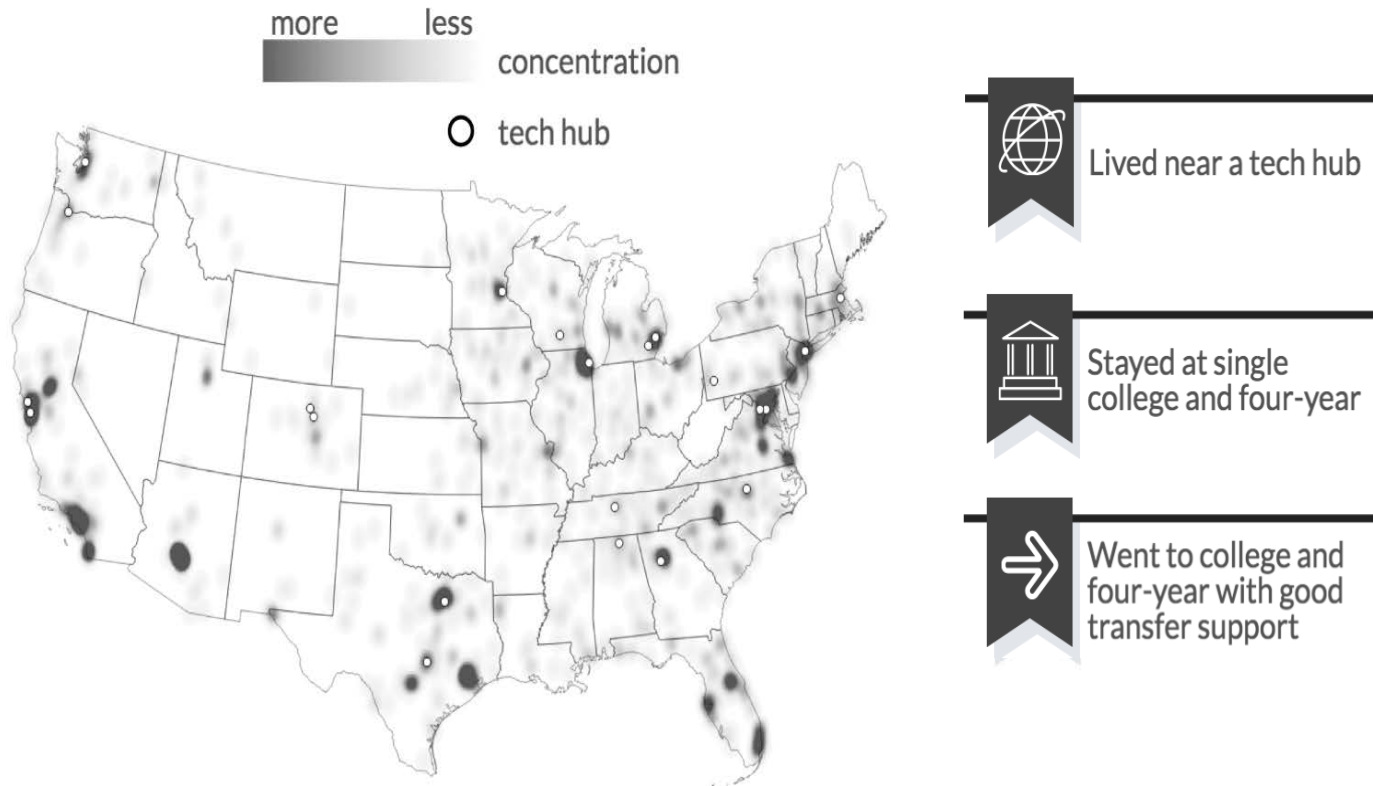
+

2 Years at Four-Year Institution

Accounts for 1% of CS Graduates

Community college students who earned computer science bachelor's degrees:

focused & fortunate



Barriers include...

- Confusing transfer requirements and pathway
- Personal and financial responsibilities on top of inflexible requirements and limited course capacity
- Low confidence and anxiety about math requirements
- Limited understanding of how CS is applied in professional settings

Recommendations: Take advantage of the potential pool already at community colleges



Strengthen pathways and align requirements between two- and four-year institutions



Support diverse students with institutional flexibility and targeted programs



Be more inclusive and proactively recruit students into CS



Incorporate career relevant course content