

COMMUNITY COLLEGE STEM PATHWAYS

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Community Colleges Routes to STEM: Many Pathways....

- TRANSFER route to bachelor's
 - ▣ Includes associate degree and transfer, transfer without degree, or selected coursework

- ENTRY into the workforce
 - ▣ Includes associate degrees, long-term and short-term certificates, or coursework leading to STEM jobs; also transfer

- UPGRADING for current workers

Challenges of the Community College Context



- ❑ Low completion rates
- ❑ Diverse student population
- ❑ Basic skills deficiencies
- ❑ Complexity of programs and pathways
- ❑ Limited resources for STEM education

Research Questions



- Who are community college STEM students?
- What are their pathways?
- What are their outcomes?

Data



- National Center on Education Statistics, 2004/09 Beginning Postsecondary Students Longitudinal Study (BPS: 04/09)
- Nationally representative of college students enrolled in 03/04
- Baseline survey and follow up 1, 3 & 6 years after enrollment
- Field of study based on interviews and transcripts



Student Characteristics

CC and 4 Year STEM Students' Demographic Characteristics

Demographic Group	Community College STEM Students	Four-Year STEM Students
Race/ethnicity		
White	65	67
Black or African-American	11	9
Hispanic/Latino	14	9
Asian	6	9
All Other	4	5
Female	30	37
Pell Grant Recipients	26	26
Disabled	12	7

More Community College STEM Students are Nontraditional

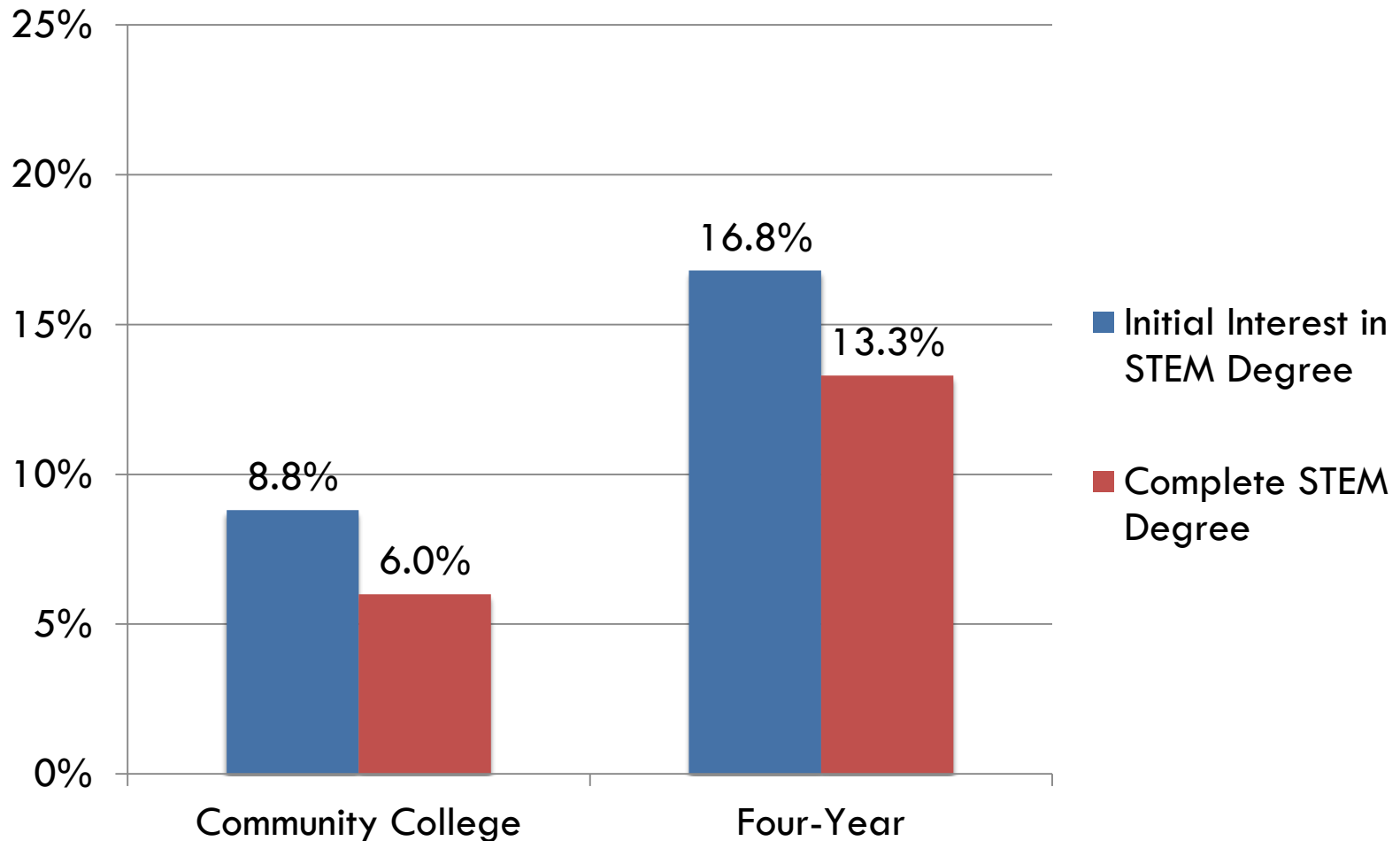
	Community College STEM Students	Four-Year STEM Students
Average Age Upon Enrollment	22	19
Percent Working While Enrolled	76%	55%
Average Hours Worked (Among Those Working)	30	19
Percent with Dependent Children	17%	2%
Percent Veteran	4%	Not Available
Percent Enrolled Part-time	67%	32%



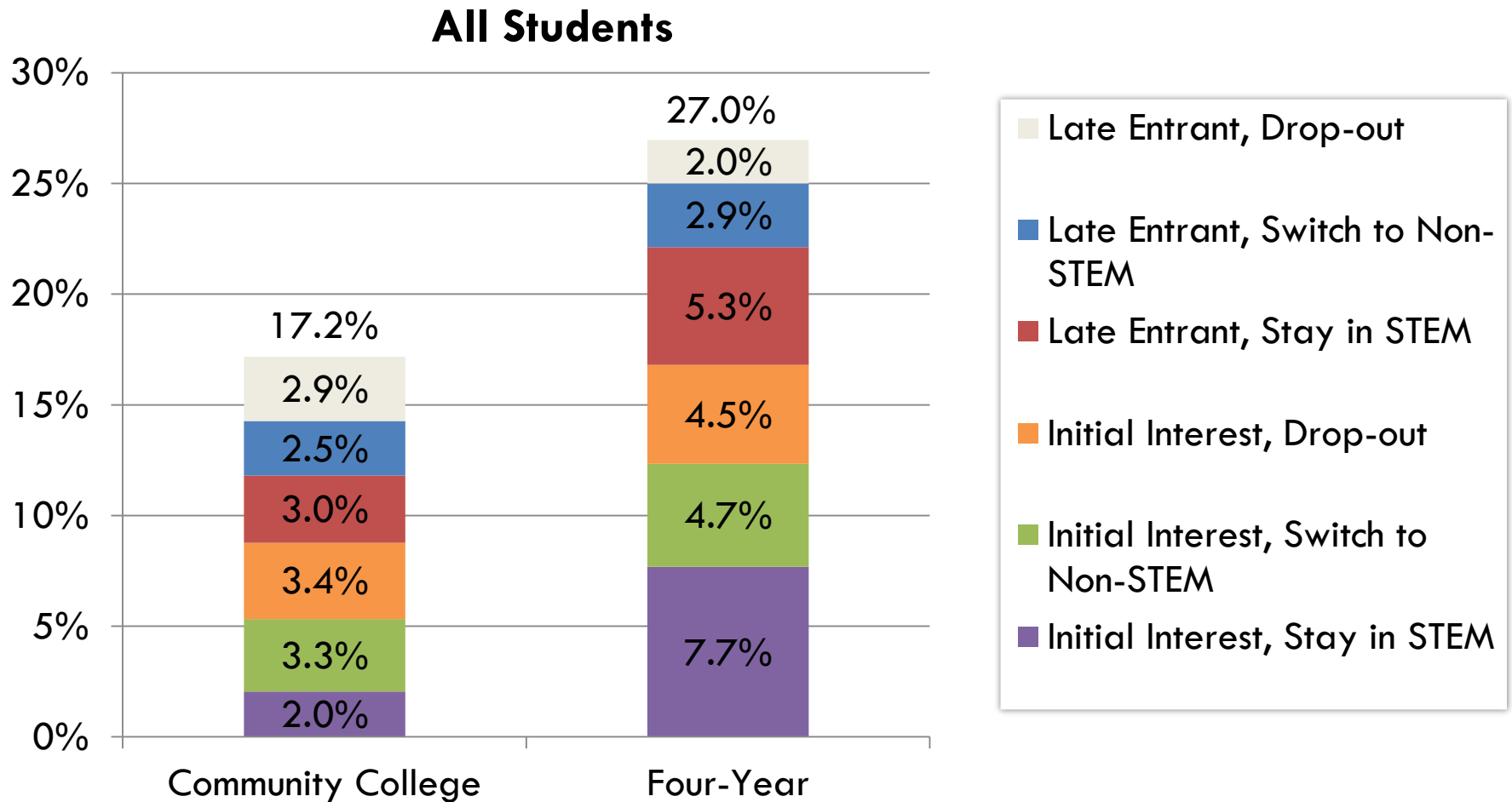
Pathways and Outcomes

Fewer Students Complete in STEM Than Initially Interested But....

All Students



...Pathways Are Complex

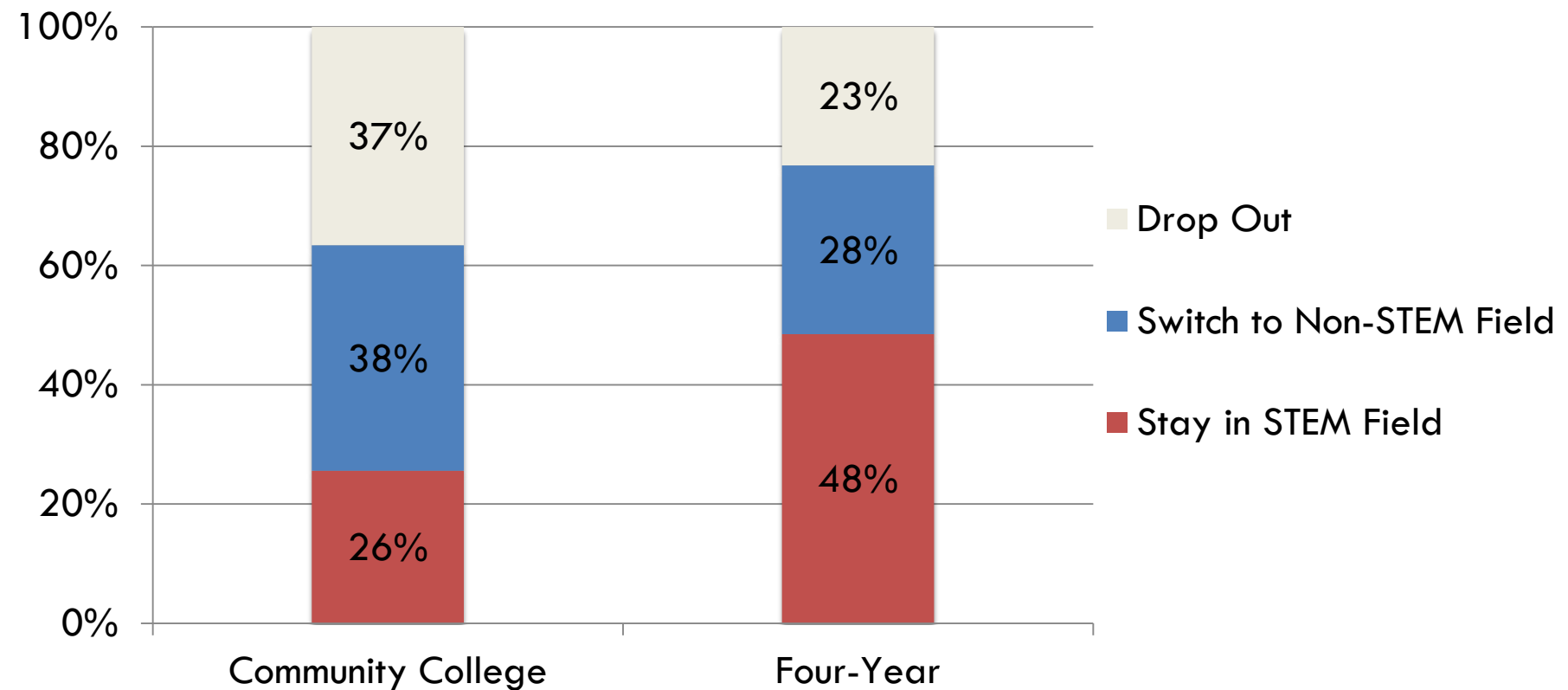


Initial Interest = Reported major in 1st year

Late Entrant = Reported or completed major 3 or 6 years after enrollment

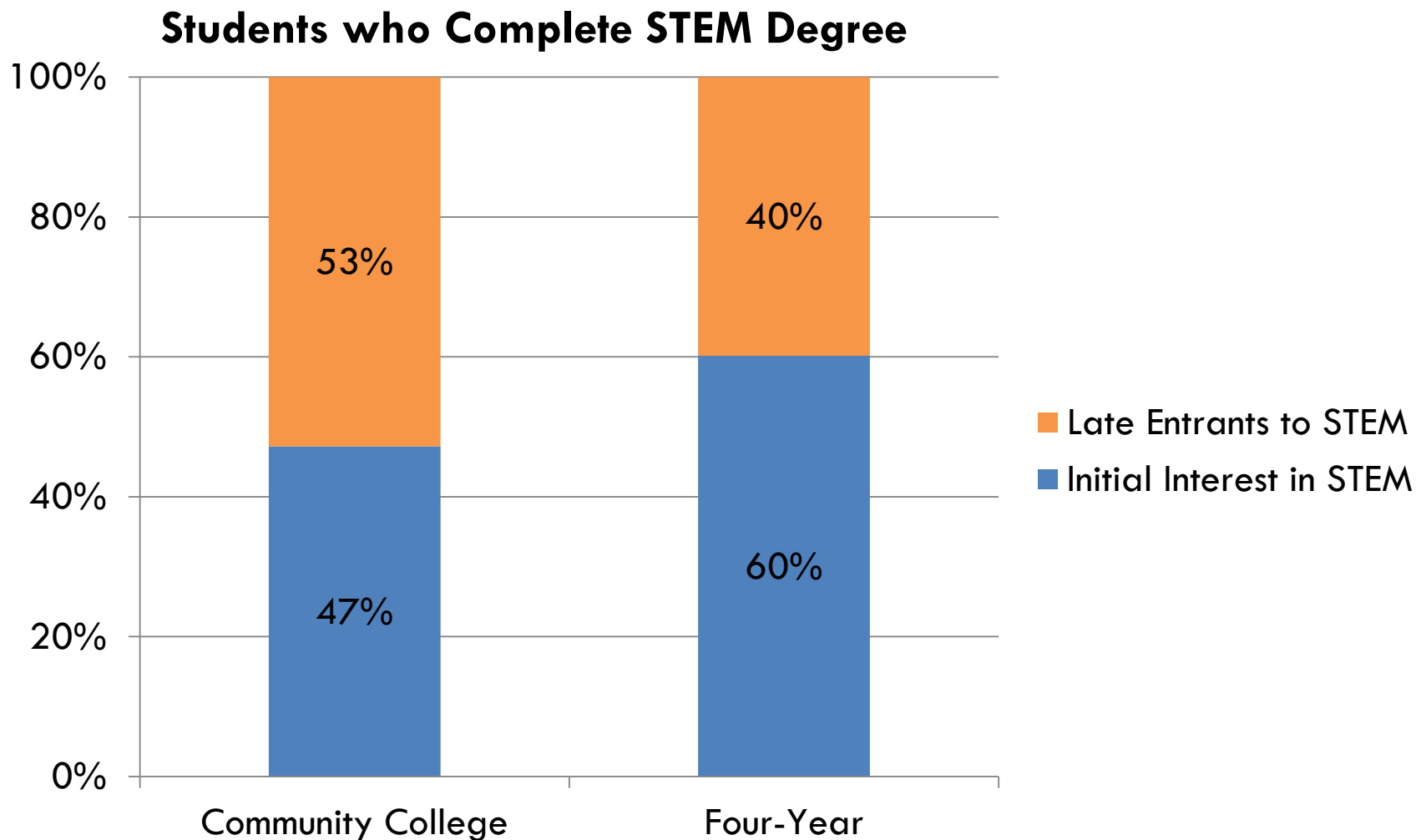
Many CC Students Switch to Non-STEM Fields

Students Initially Interested in STEM



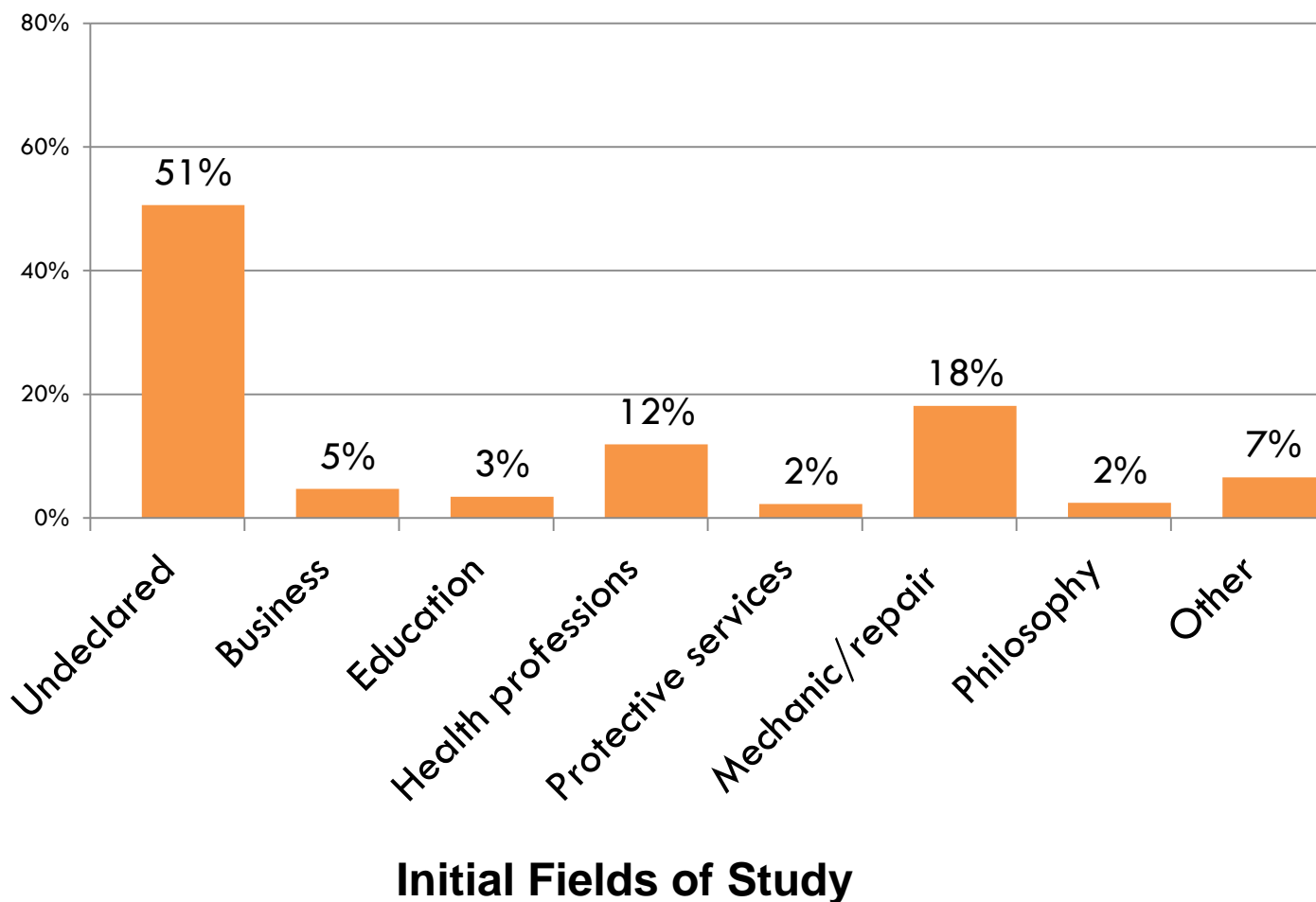
Six year status of students who start in STEM
("In Field" = complete degree or still enrolled)

Many CC STEM Completers are Late Entrants



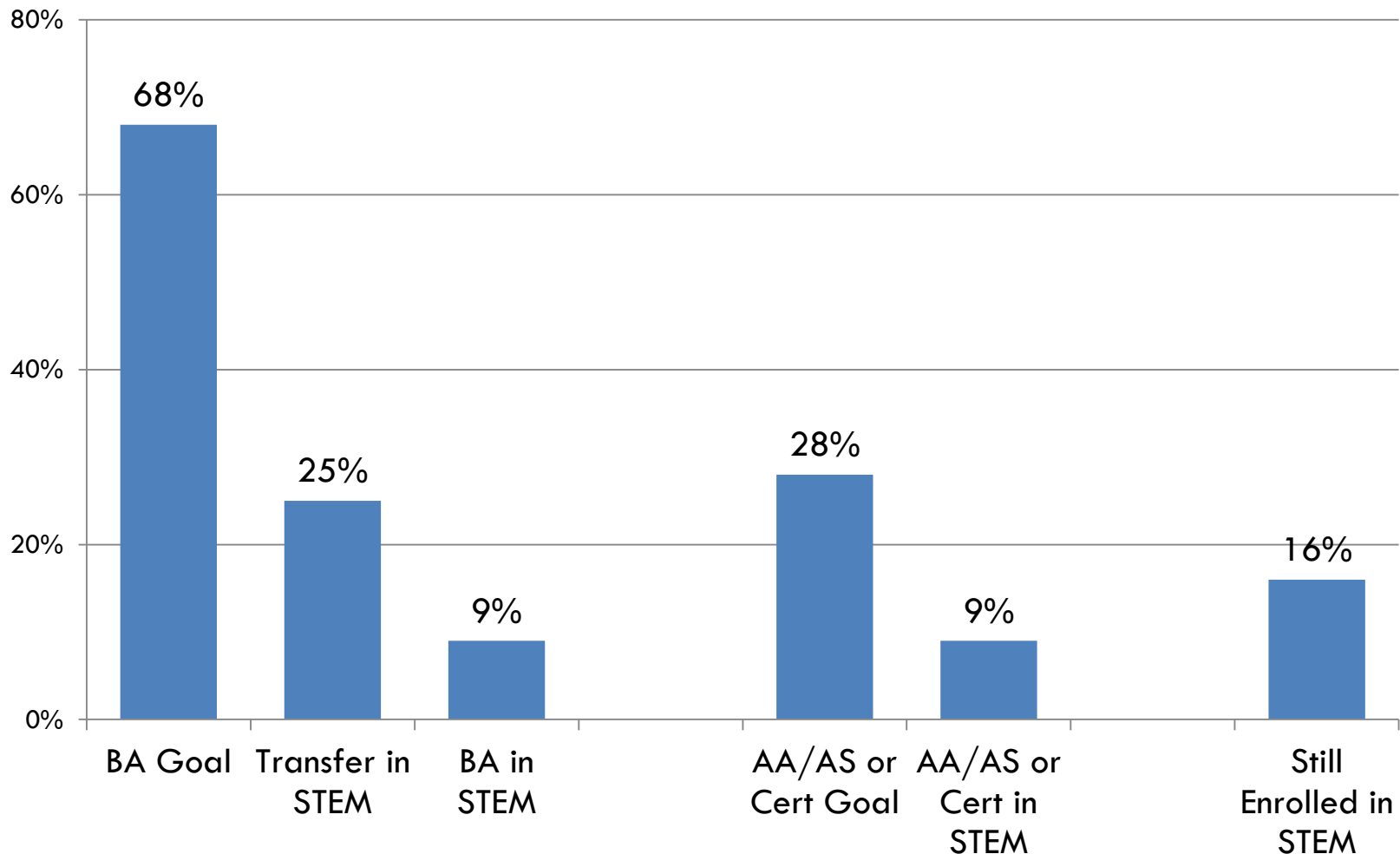
Many CC STEM Late Entrants are Initially Undecided

Community College STEM Late Entrants



CC STEM Students Persist but Complete at Low Rates

Community College Students Ever Interested in STEM



Conclusions



- CC STEM reforms must incorporate needs and constraints of nontraditional students.
- Delayed decision making in CC STEM needs to be understood to develop reform strategies.
- Lengthy persistence requires different strategies
 - ▣ Good news: CC STEM students persist
 - ▣ Bad news: New routes to completion needed

Next Steps



- ❑ Compare characteristics of students with initial interest in STEM vs. late entrants to STEM
- ❑ Examine CC STEM student pathways by broad fields of study, i.e. workforce and academic
- ❑ Examine institutional differences in CC STEM student pathways

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