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Unpacking the Transfer Playbook: How Colleges Can Improve Transfer Outcomes

TAAC Conference
May 31st, 2017

John Fink

Research Associate

Community College Research Center

#TacklingTransfer

Tackling TRANSFER

 PUBLIC AGENDA

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Tracking

**New Measures of
Effectiveness
College Student
Degrees**

January 2016

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**How and Why Does
Influence Baccalaureate
Labor Market**

A CAPSEE

University

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The research reported here was supported by the Inst
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ca

THE TRANS ESSENTIAL TWO- AND FOUR

THE ASPEN INSTITUTE
COLLEGE EXCELLENCE PROGRA

Google

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

2016



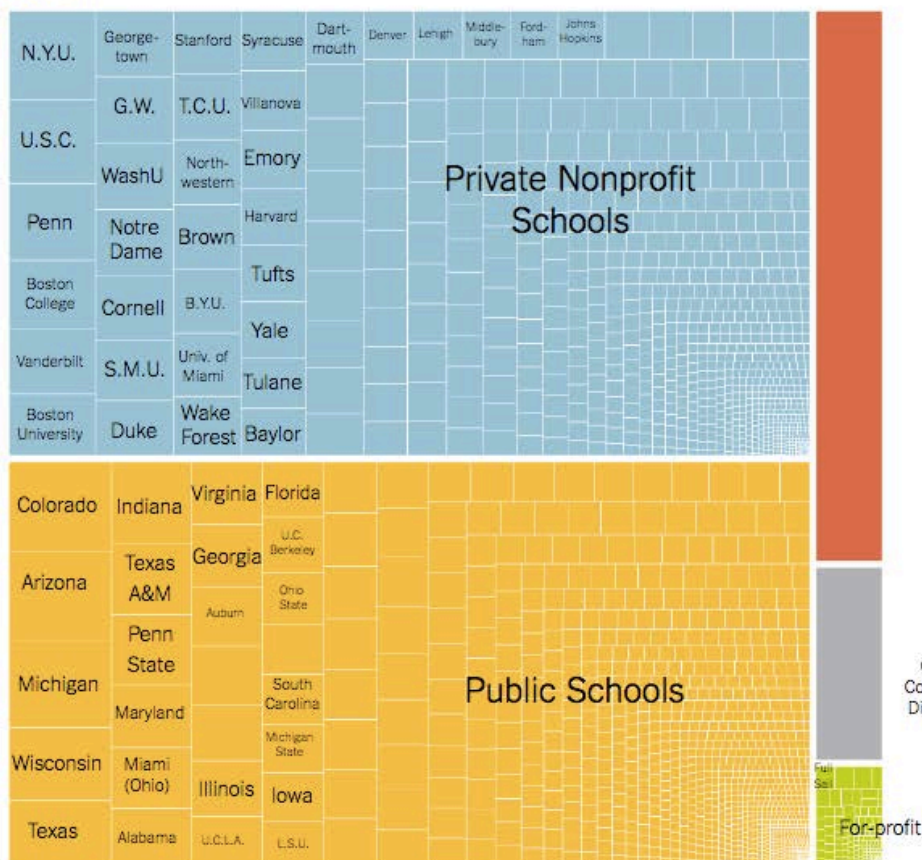
Does college “level the playing field” or produce more stratification?

THE UPSHOT | Some Colleges Have More Students From the Top 1 Percent Than the Bottom 60. Find Yours.

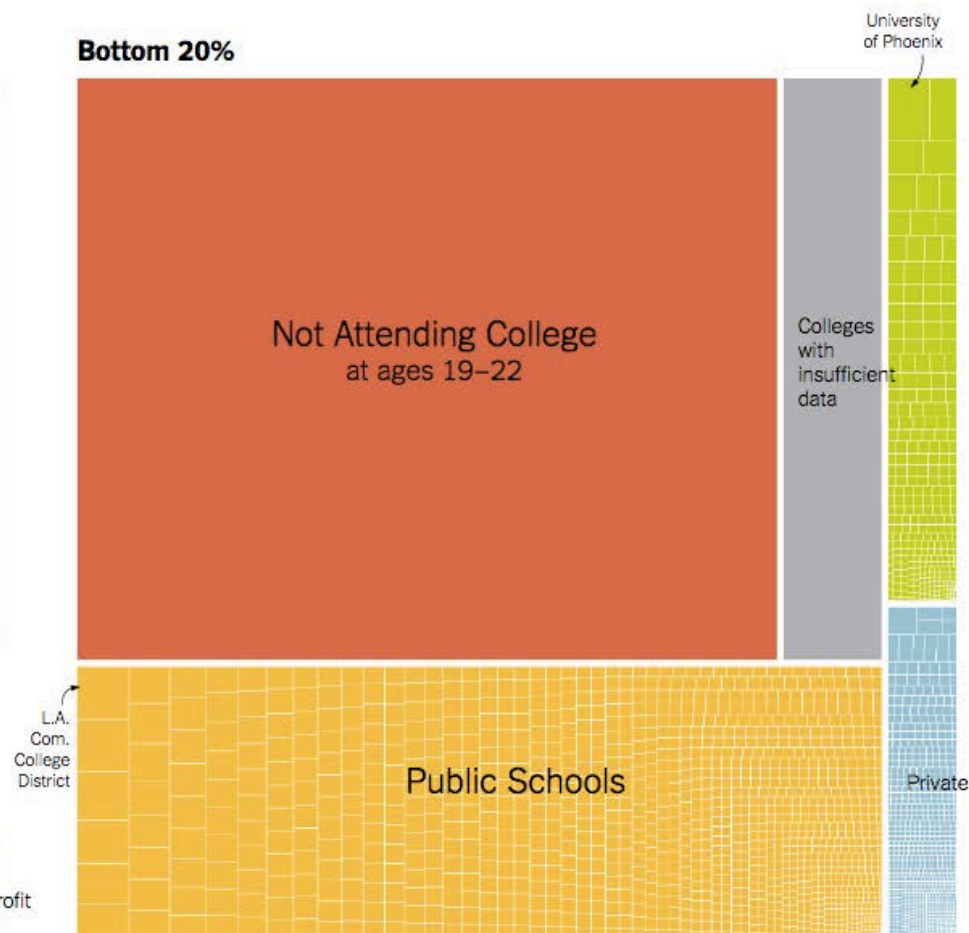
[f](#) [t](#) [✉](#) [➔](#) MORE

Where the top 1% and the bottom 20% go to college

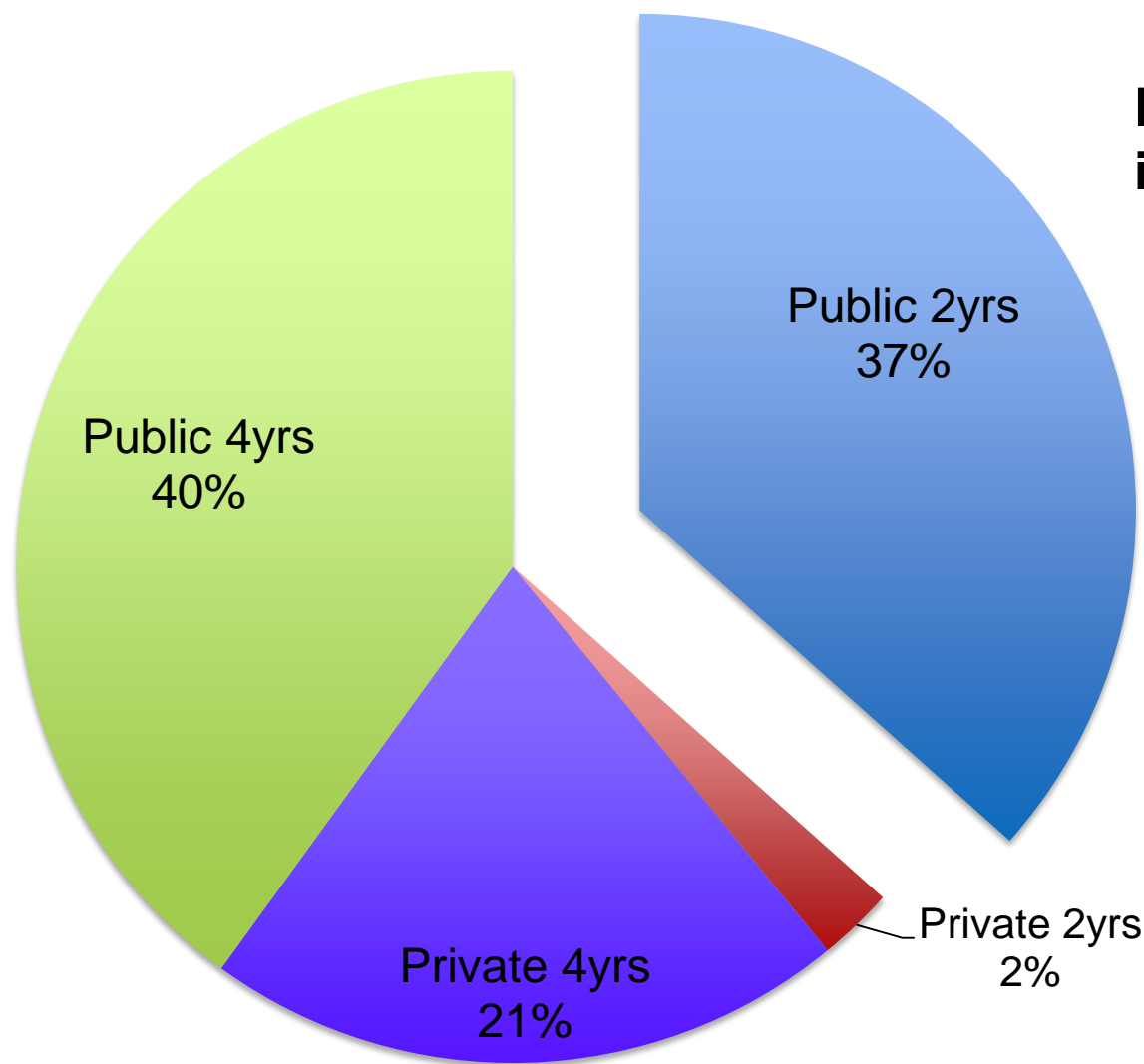
Top 1%



Bottom 20%



Fall 2014: 2.9 Million First-time Degree-seeking Students



Potential of Transfer to increase Social Mobility:

Community Colleges accounted for 37% of all new students starting college in the fall of 2014

Approximately 80% intend to transfer and earn a bachelor's degree

The vast majority of students who enroll in a community college plan to one day earn a bachelor's degree.

Most never make it.

1.7 Million

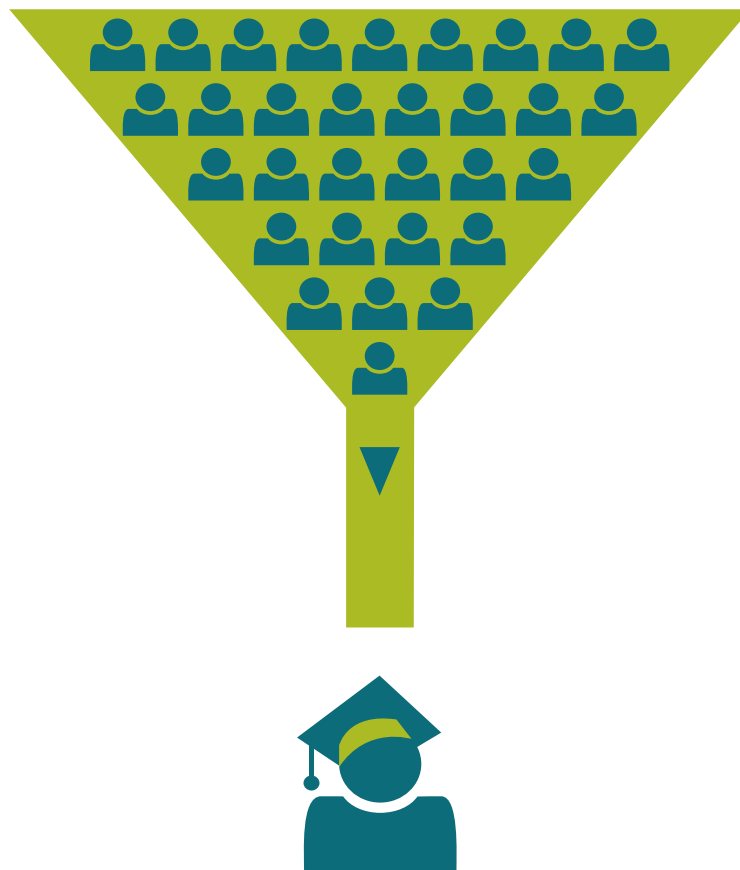
new students enroll in a
community college each year



80%

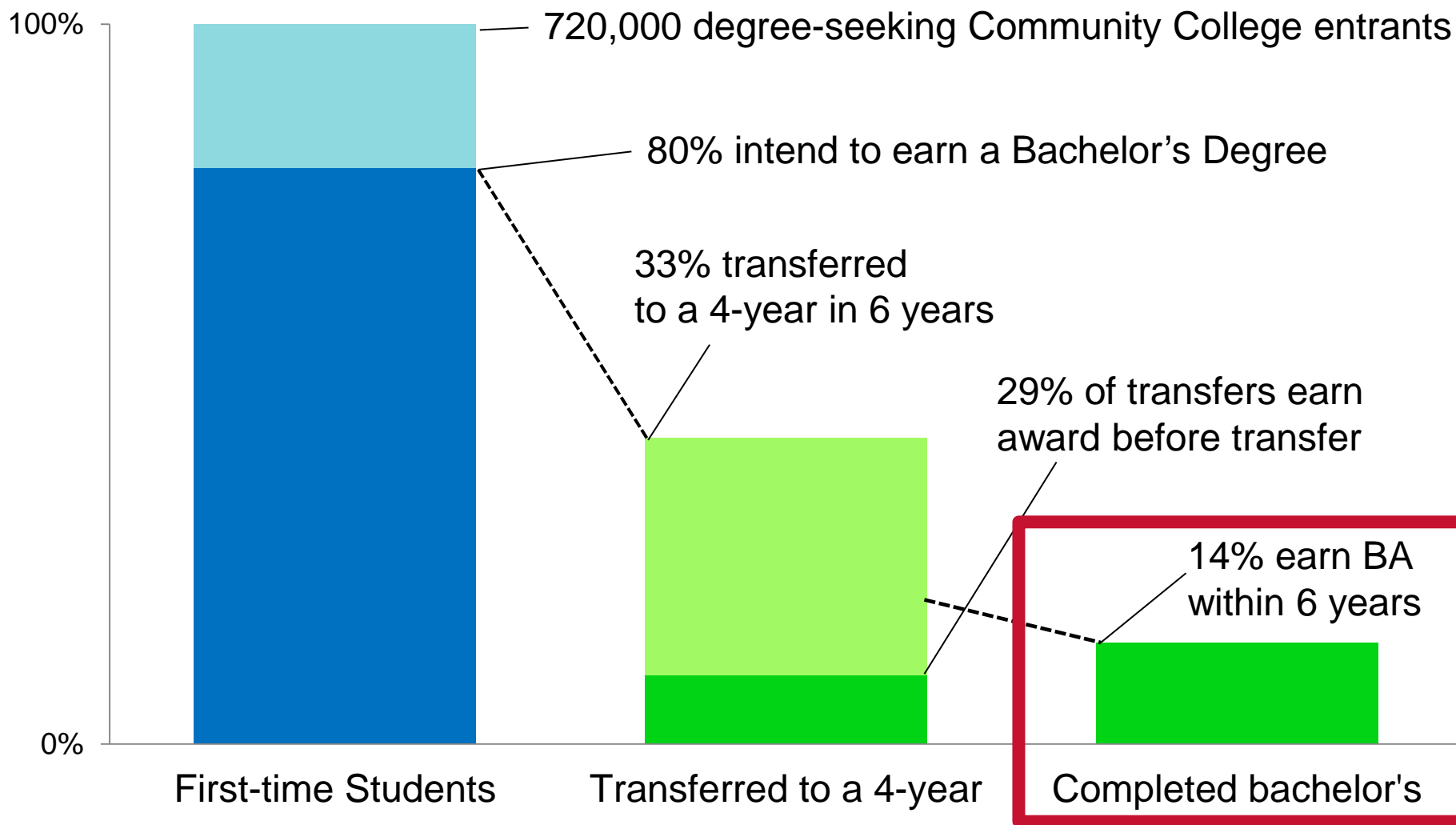
plan to get a
bachelor's degree
or higher

We tracked **720,000** community college students who started in the fall of 2007 in pursuit of a college credential

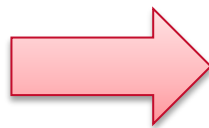
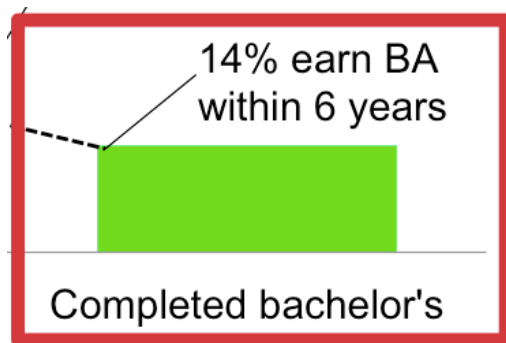


Only 100,000 earned
a bachelor's after 6 years

Few Transfer, **Even Fewer Complete**

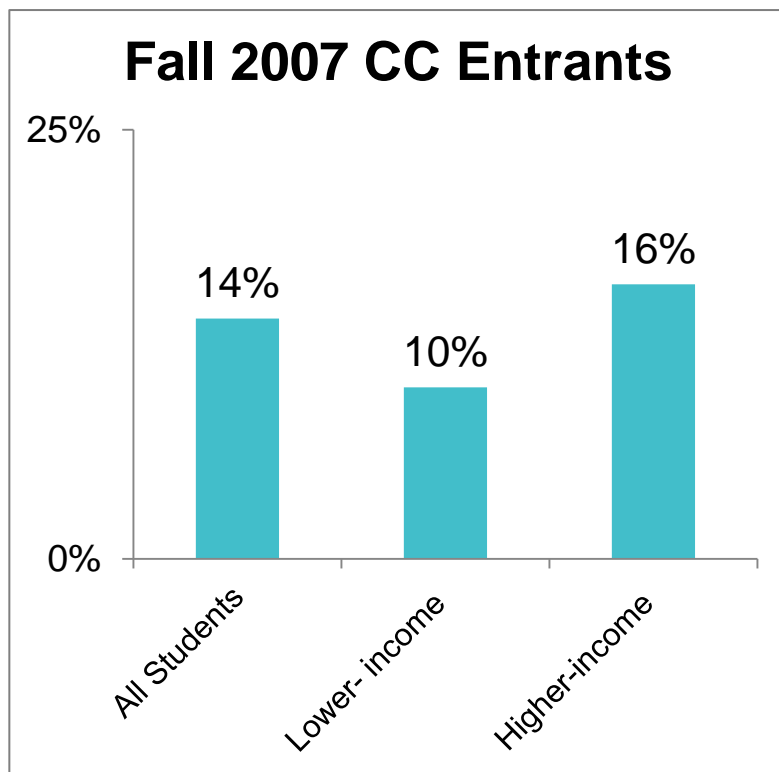


Source: Jenkins & Fink (2016)

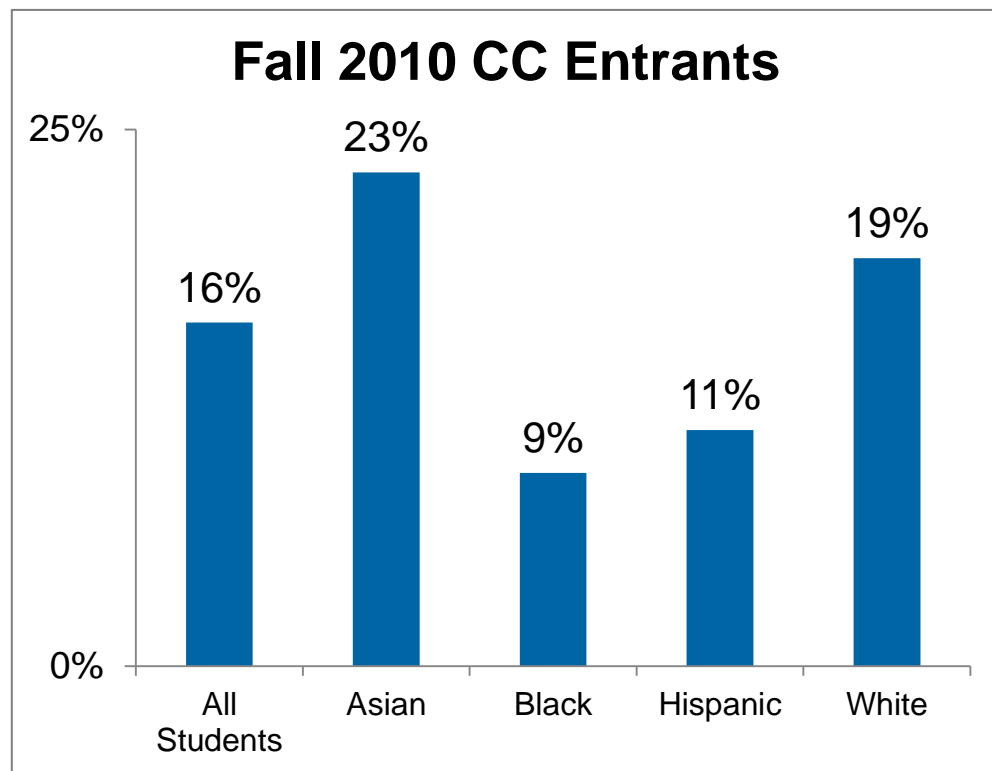


Achievement gaps, by Race & Income

6-yr Bachelor's Completion Rate



Jenkins & Fink, 2016



Shapiro et al., 2017

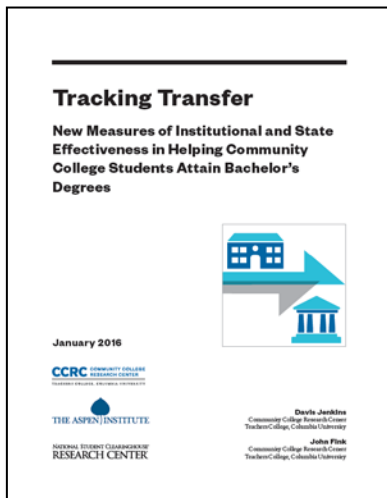
Tracking Transfer: Five New Measures



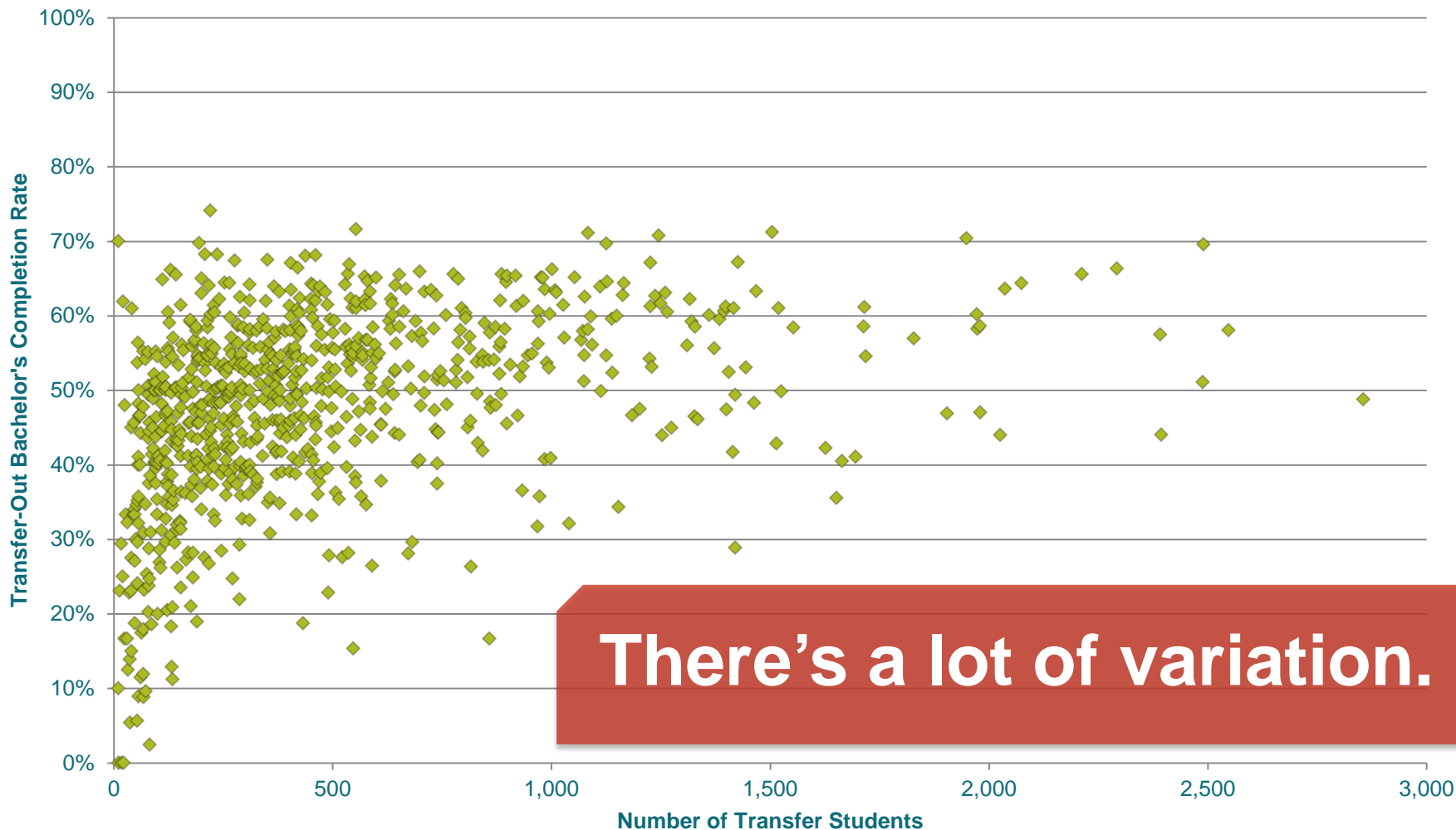
1. Transfer-Out Rate
2. Transfer-with-Award Rate
3. Transfer-Out Bachelor's Completion Rate

5. Community College Cohort Bachelor's Completion Rate

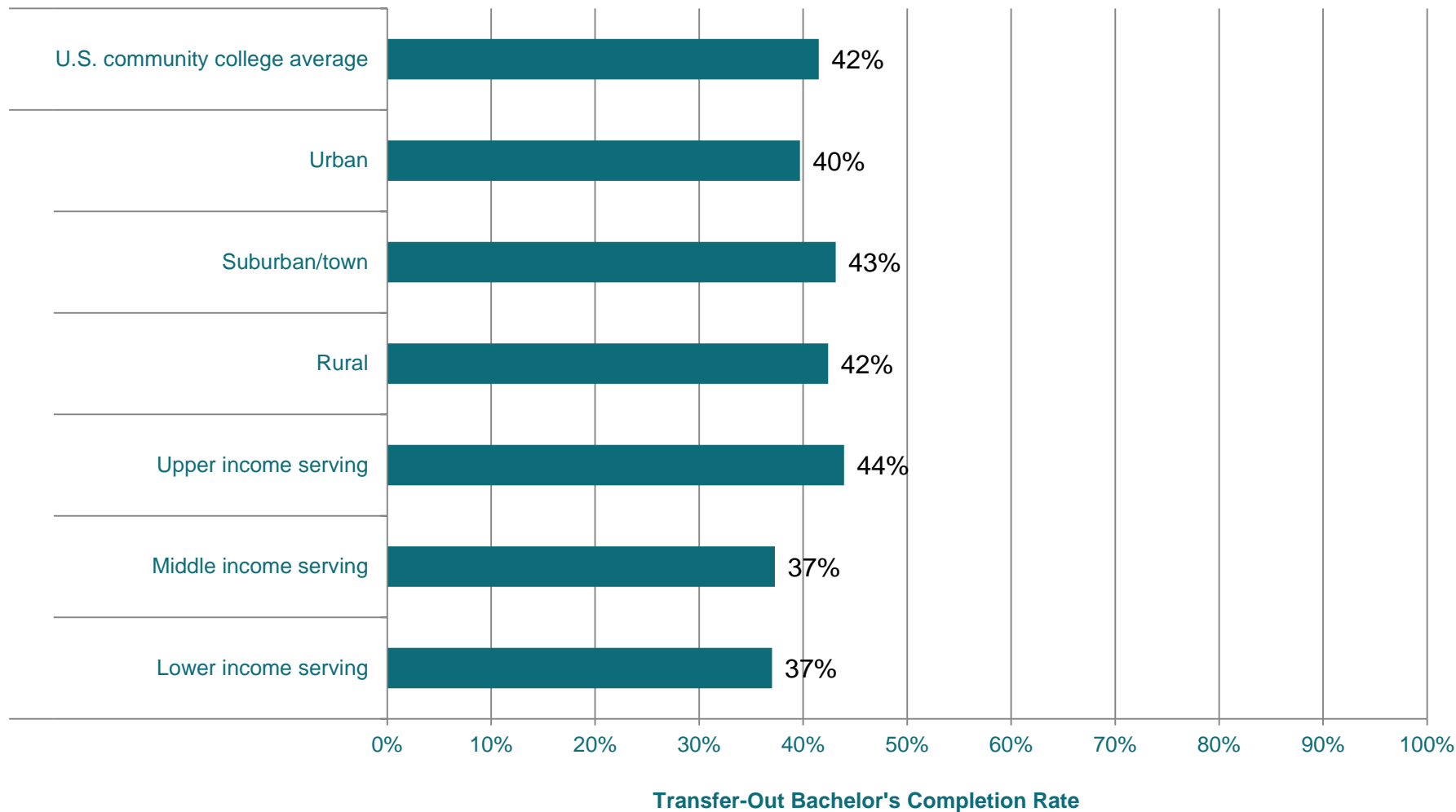
4. Transfer-In Bachelor's Completion Rate



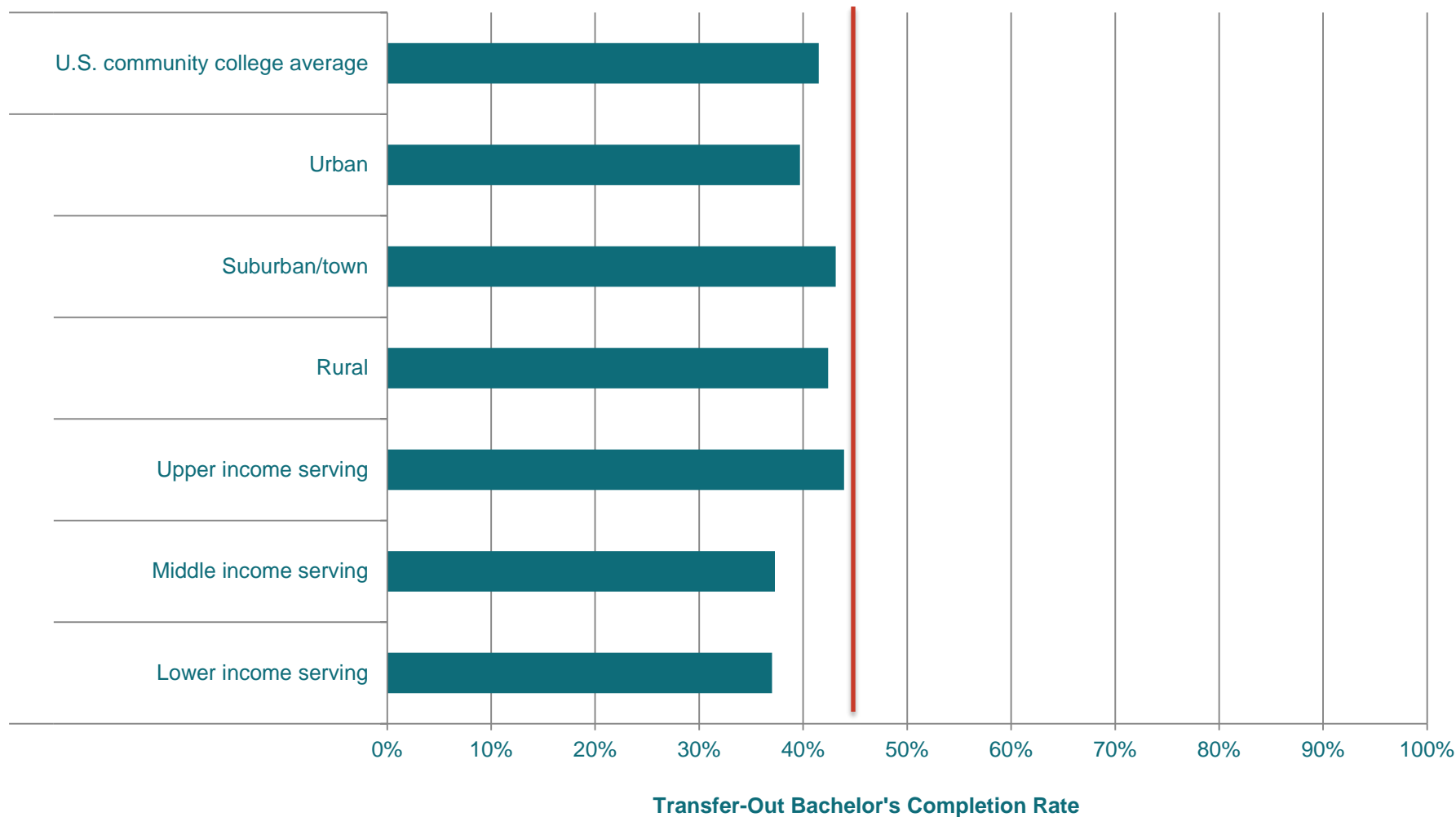
These are the bachelor's completion rates for transfer students, by individual community college.



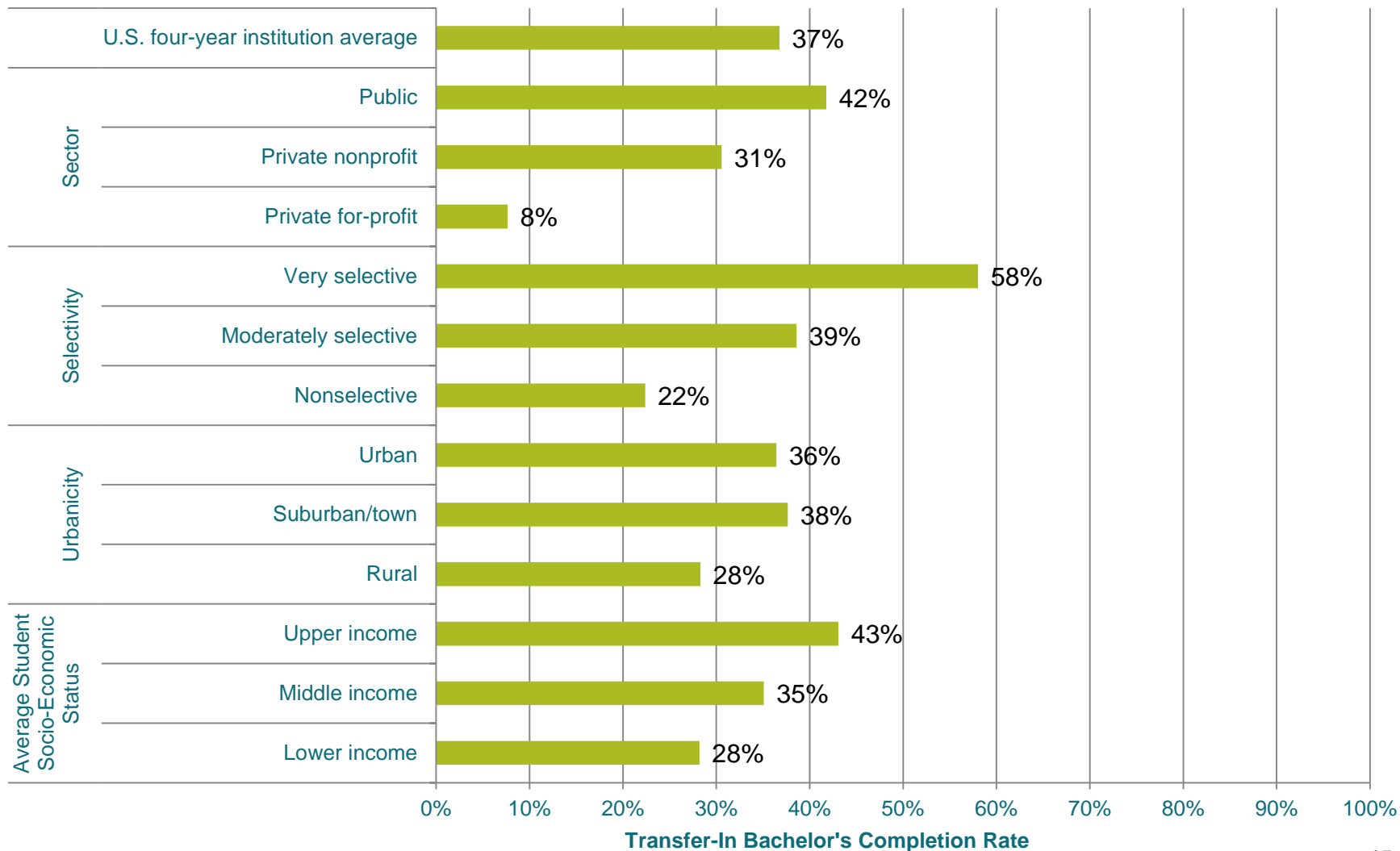
Average Transfer-Out Bachelor's Completion Rates by Institutional Characteristics



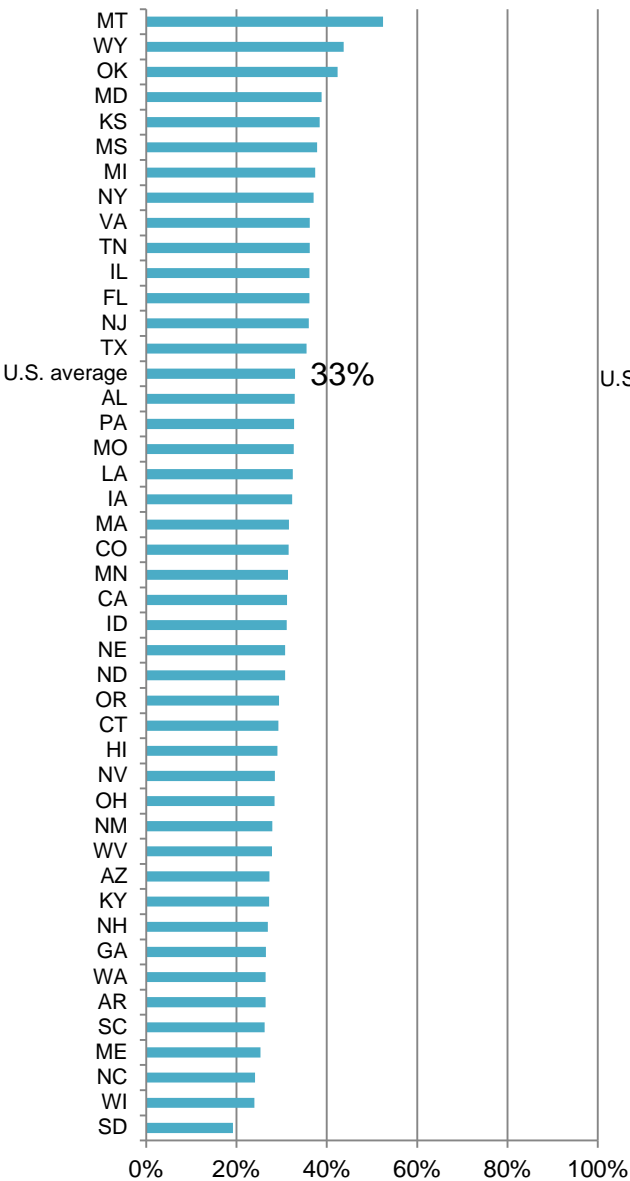
While outcomes at community colleges vary, what we might imagine would predict variation **doesn't**.



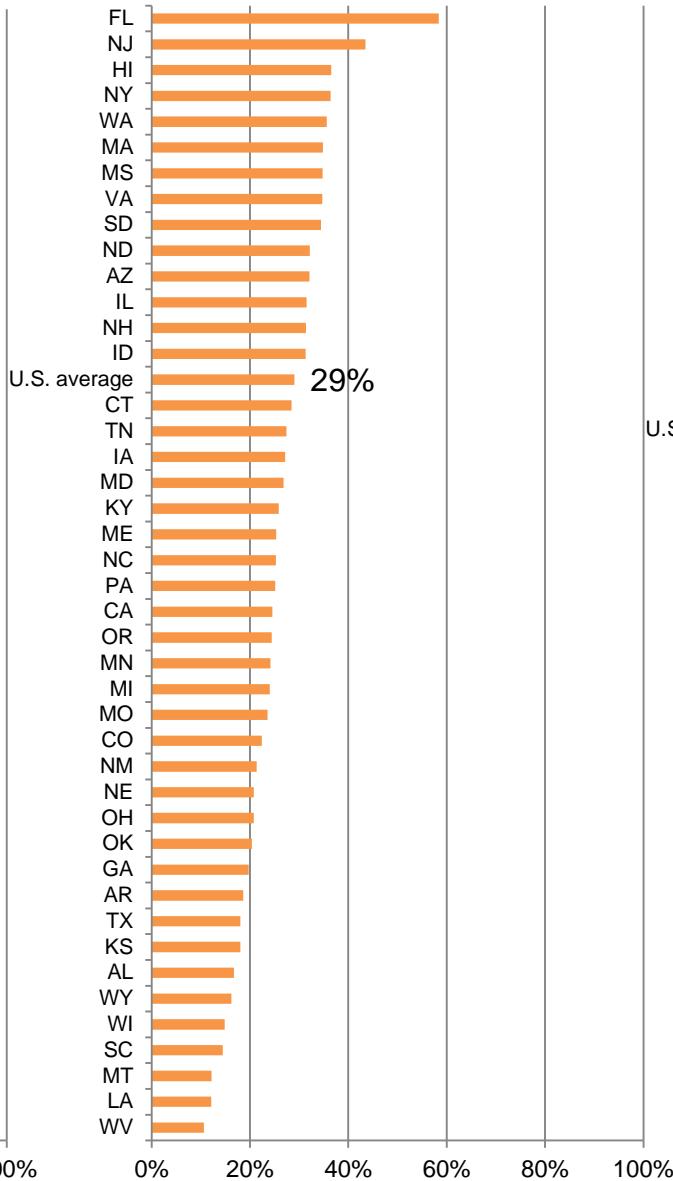
On the other hand, the characteristics of 4-year schools matter when it comes to how many transfer students get a bachelor's.



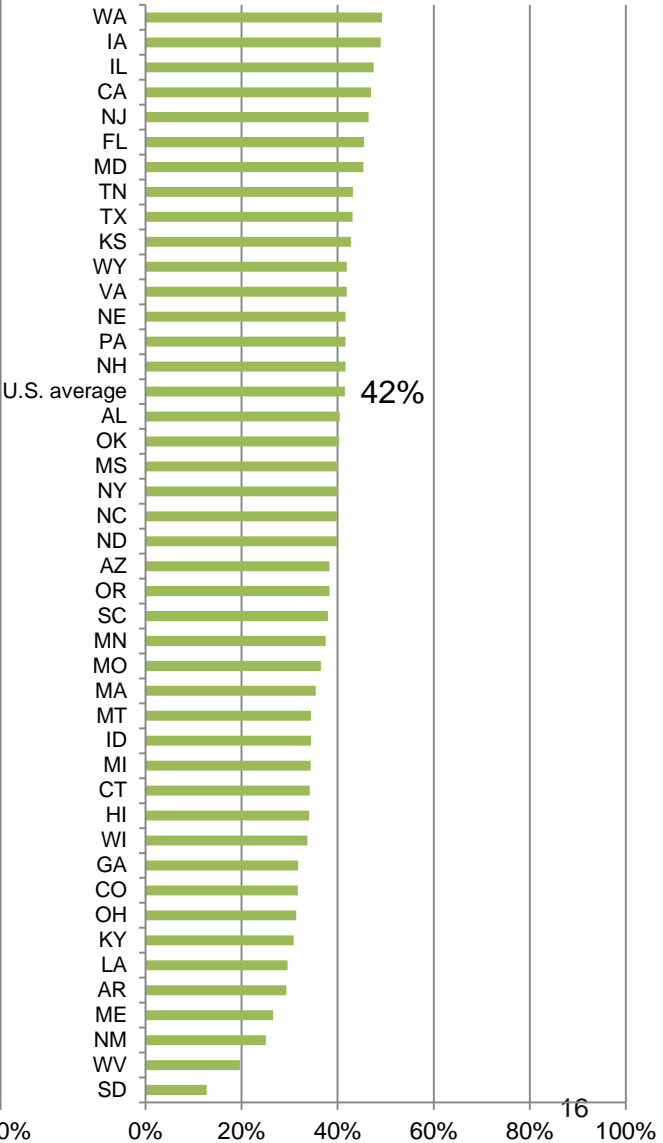
Transfer-Out Rates



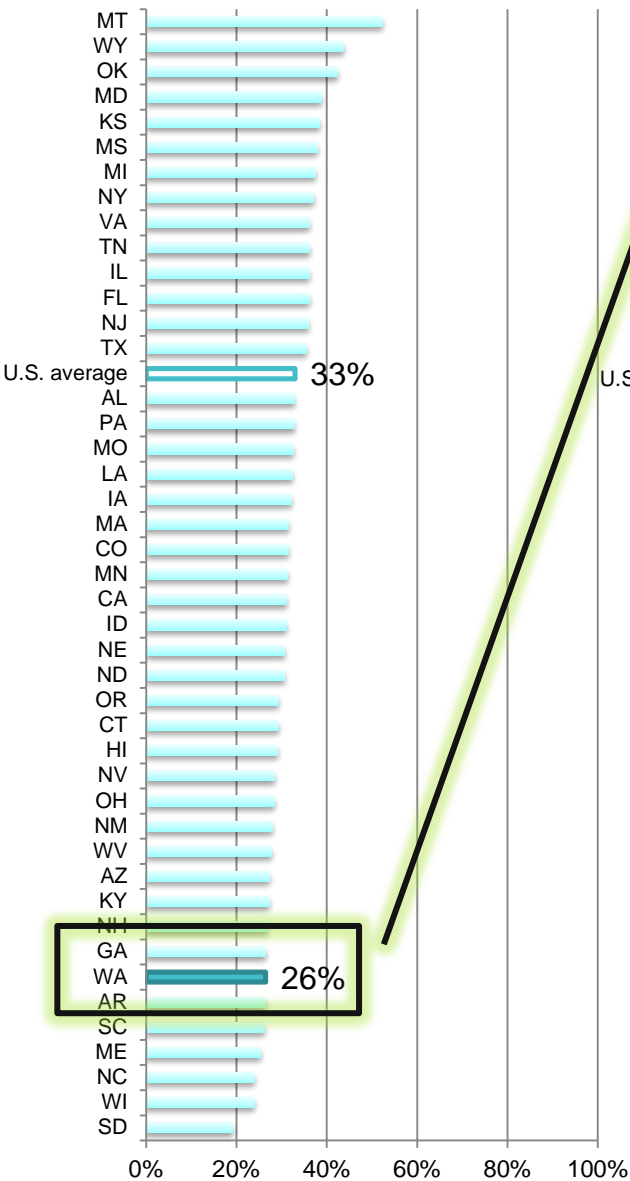
Transfer-With-Award Rates



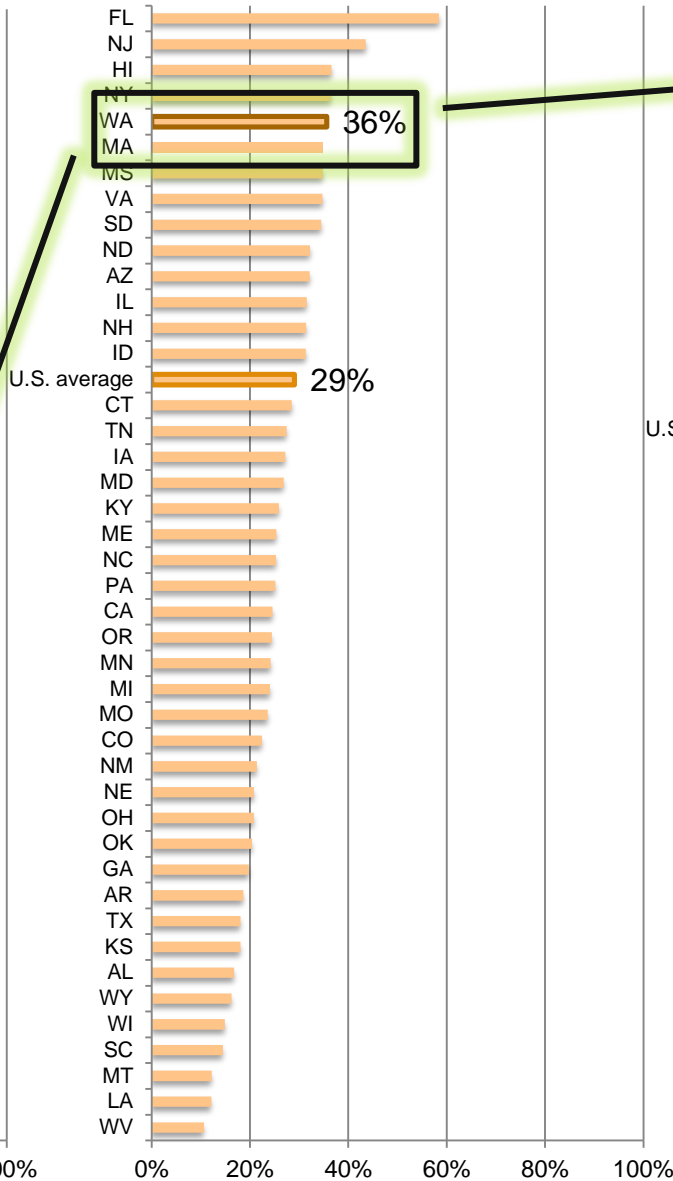
Transfer-Out Bachelor's Completion Rates



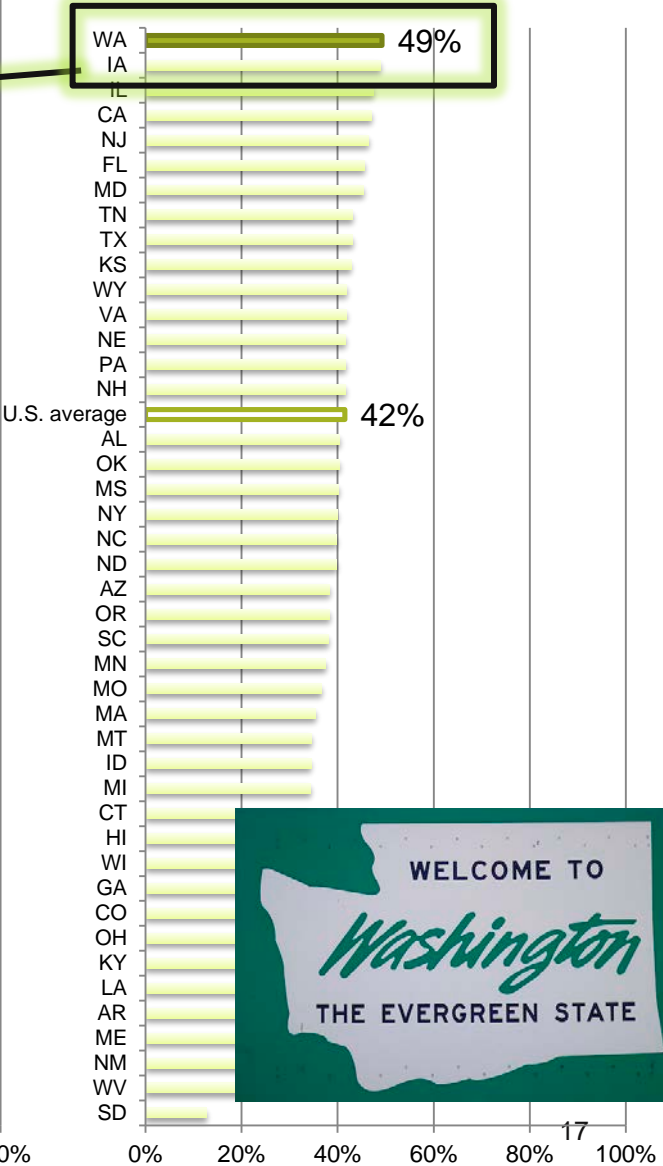
Transfer-Out Rates



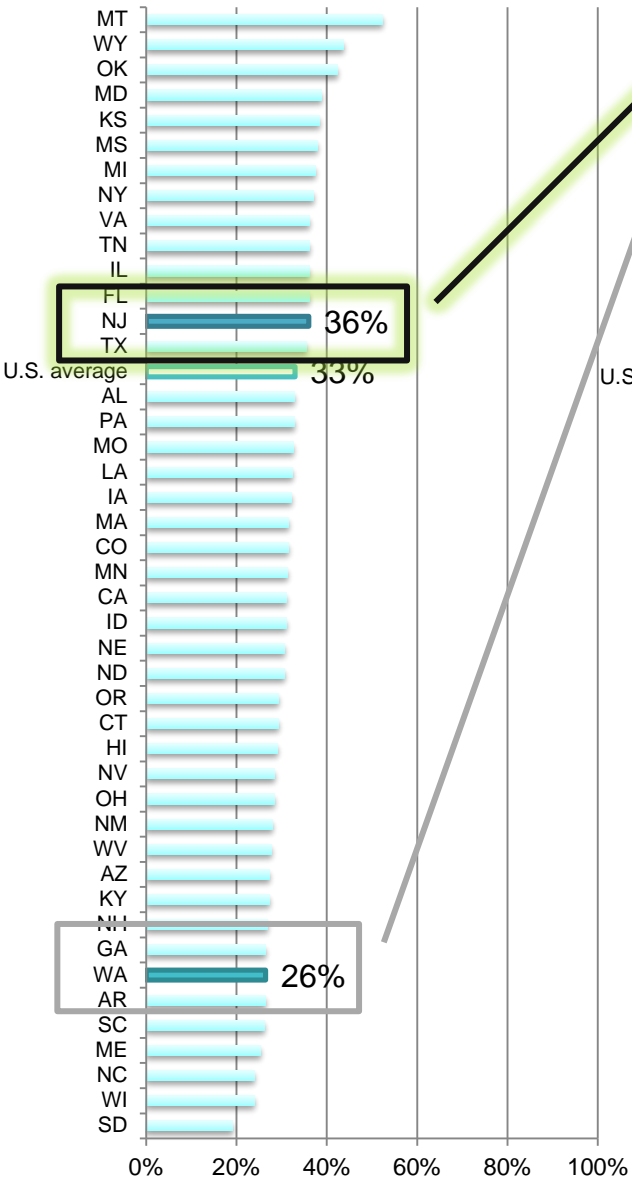
Transfer-With-Award Rates



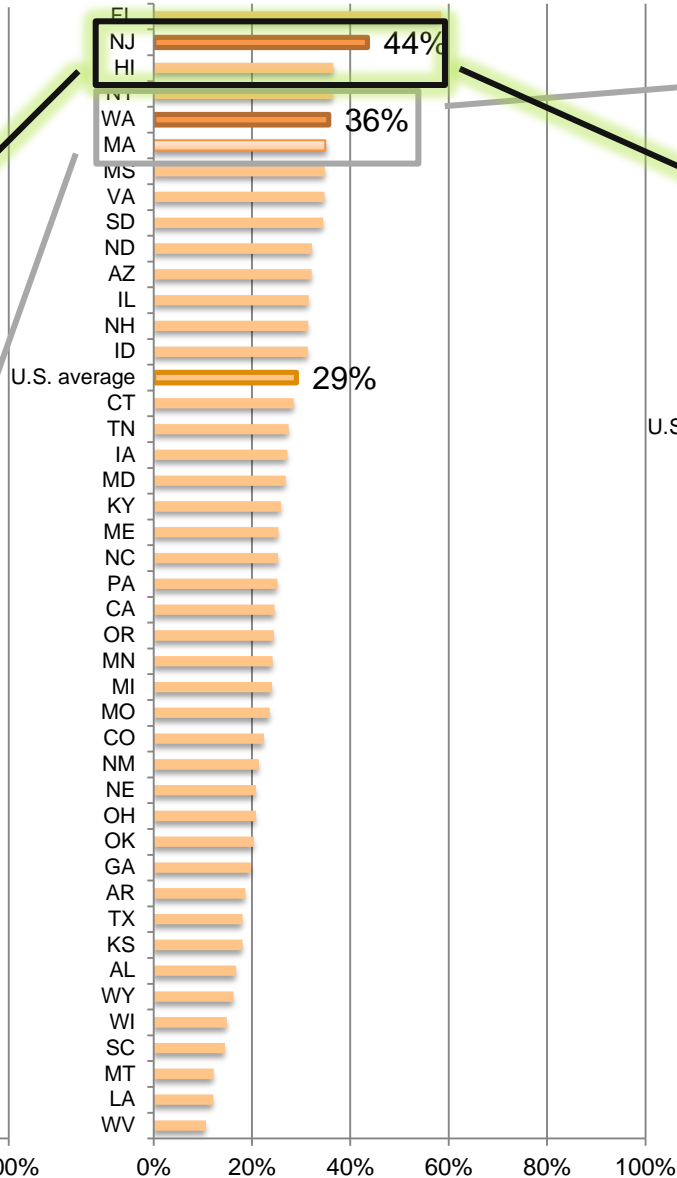
Transfer-Out Bachelor's Completion Rates



Transfer-Out Rates



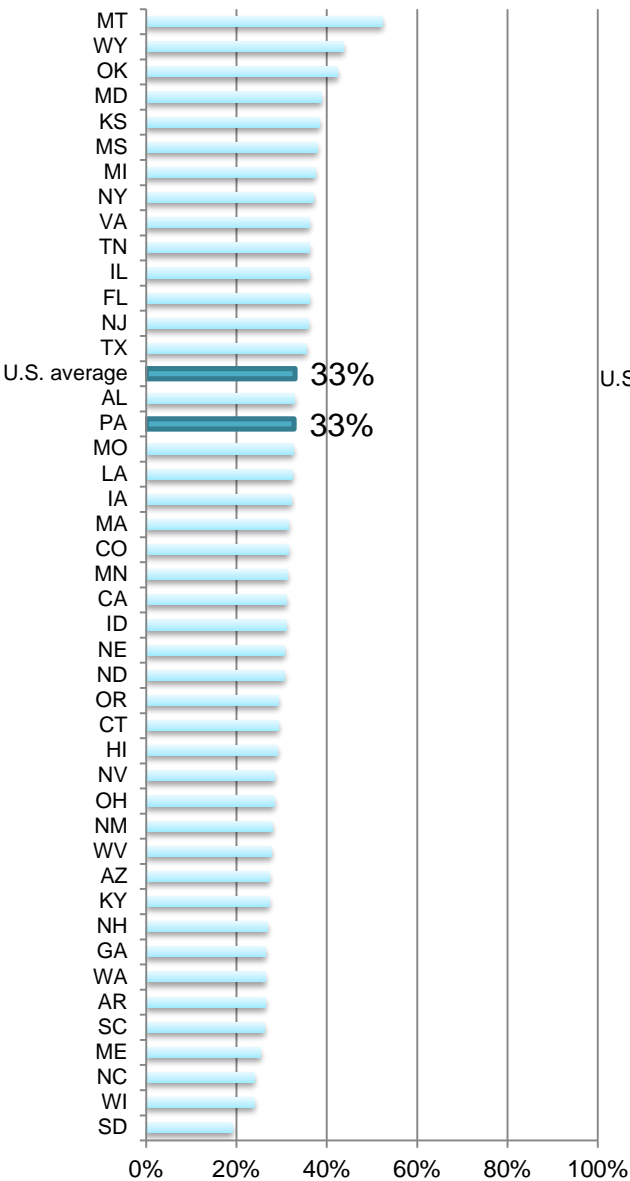
Transfer-With-Award Rates



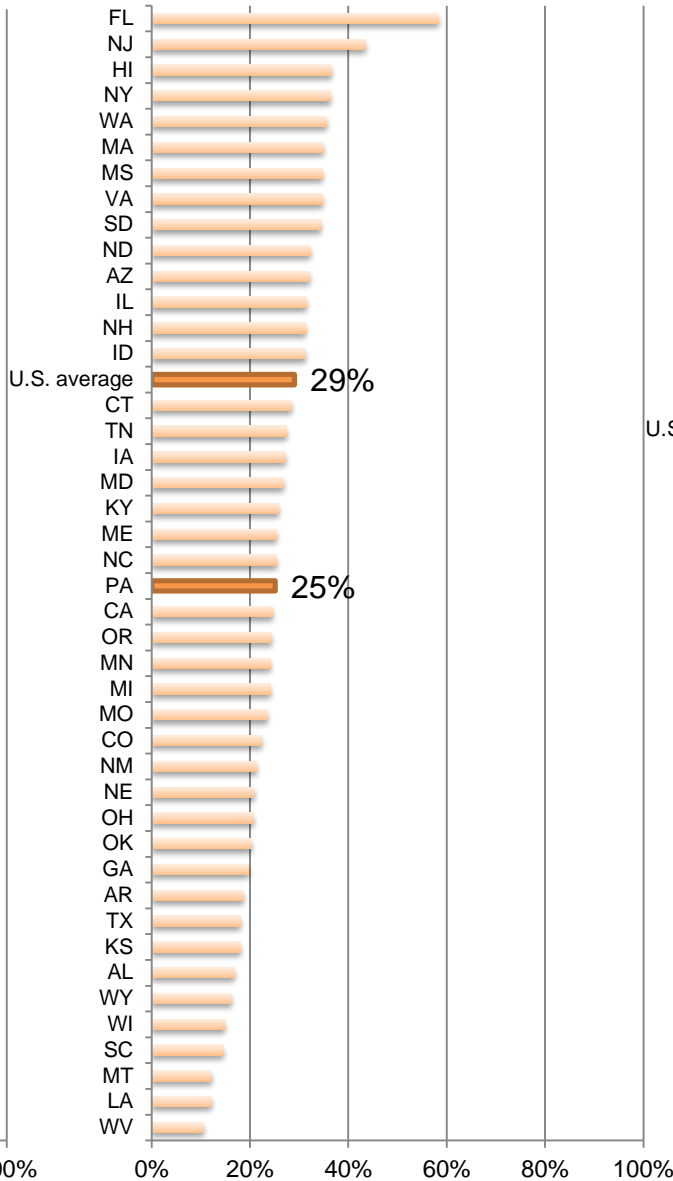
Transfer-Out Bachelor's Completion Rates



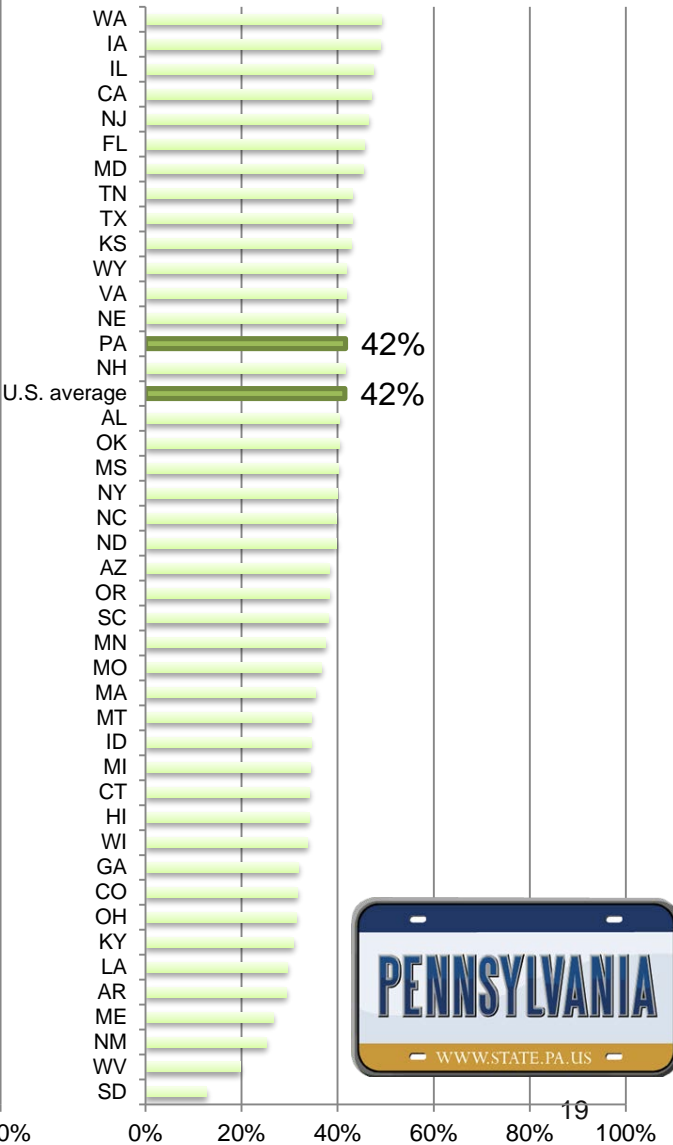
Transfer-Out Rates



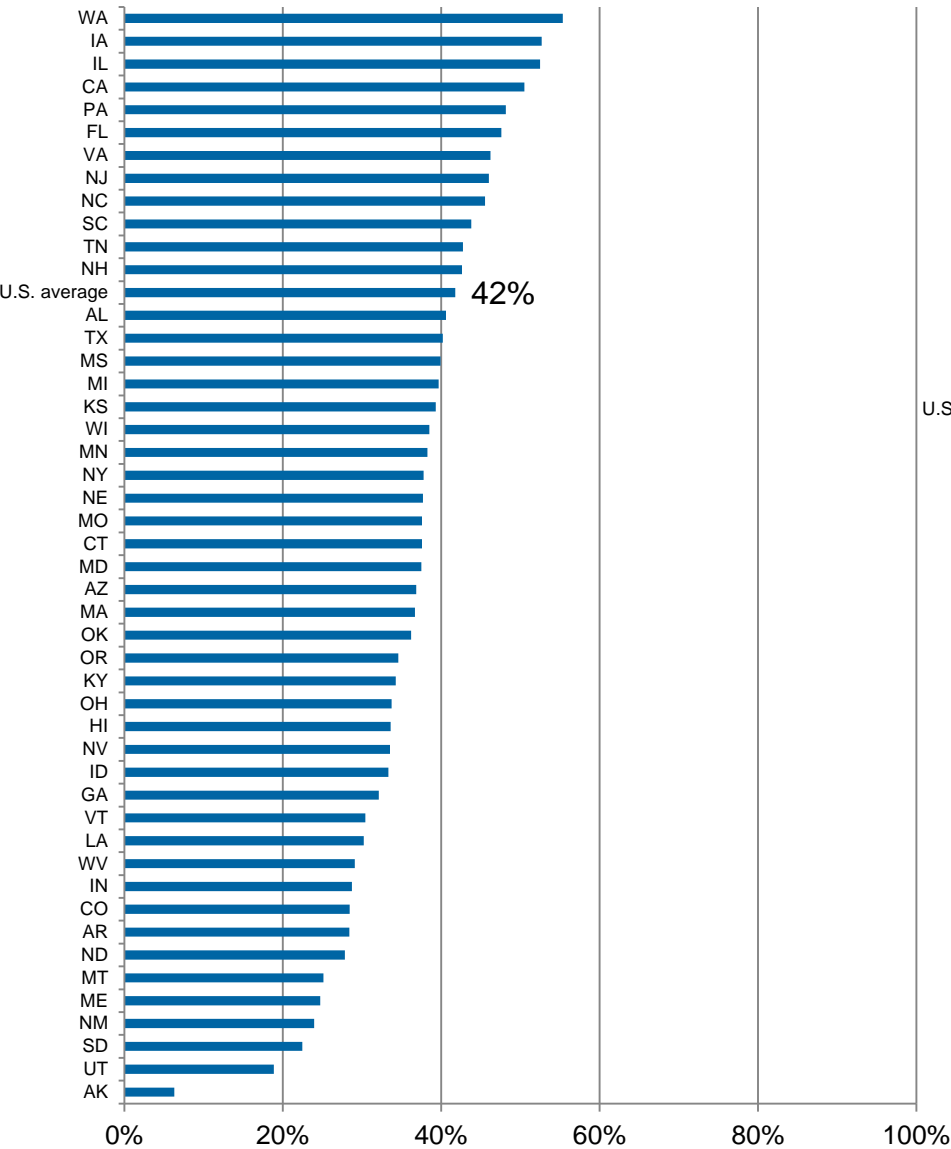
Transfer-With-Award Rates



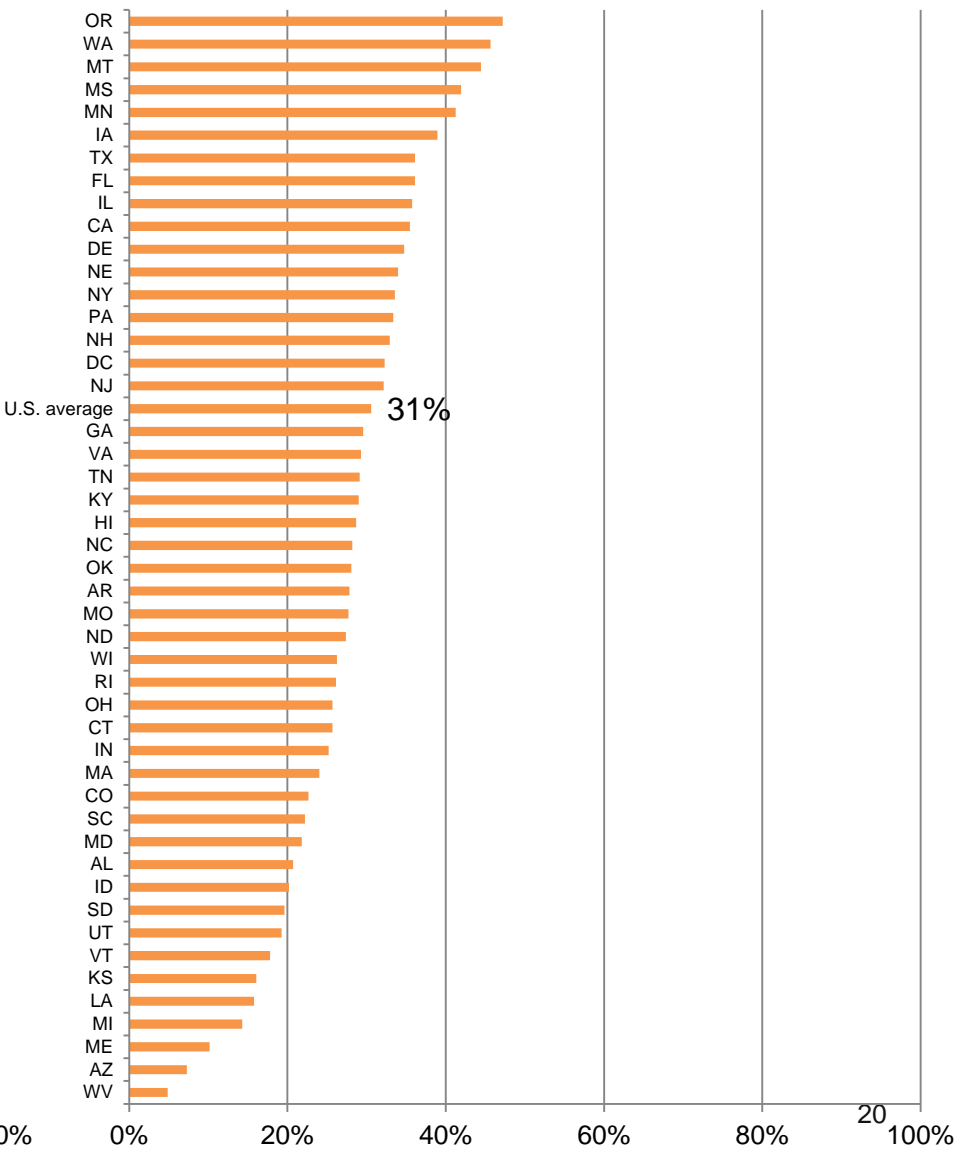
Transfer-Out Bachelor's Completion Rates



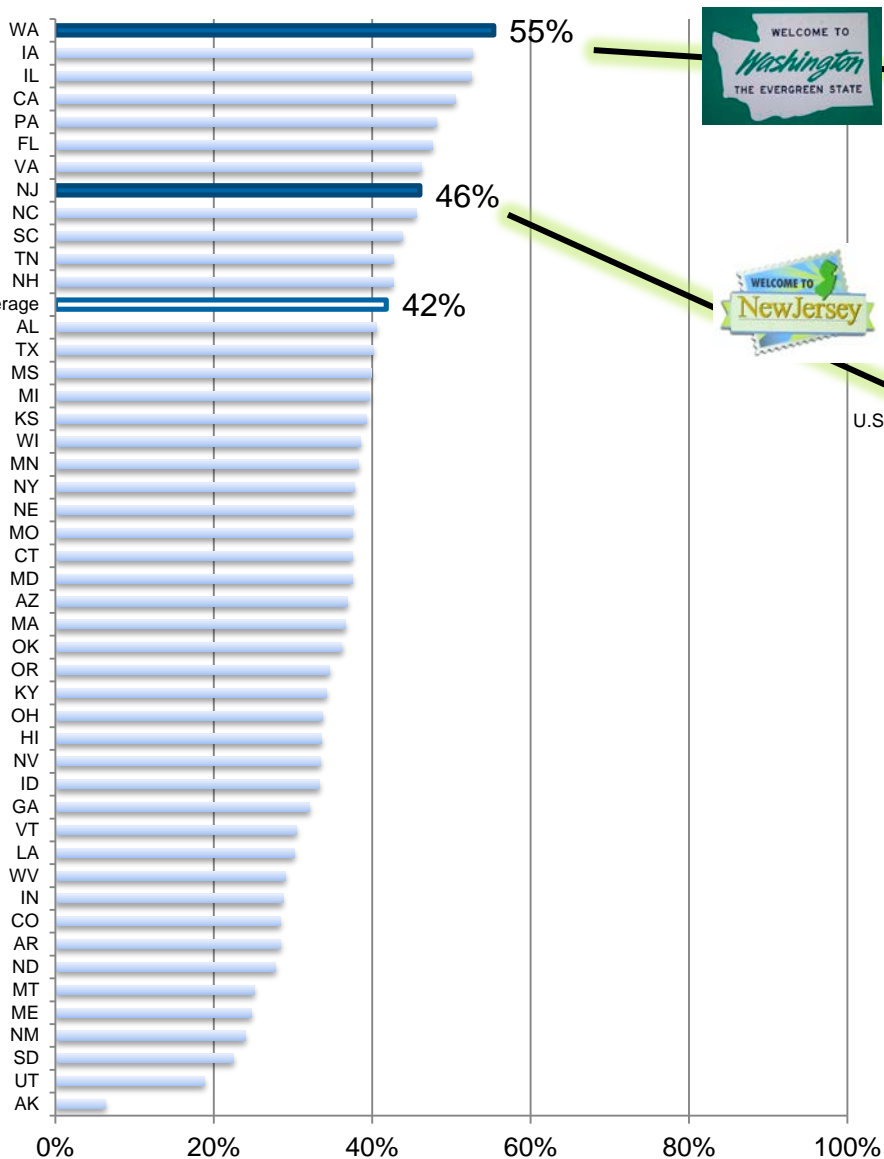
Transfer-In Bachelor's Completion Rates at Public Four-Year Institutions



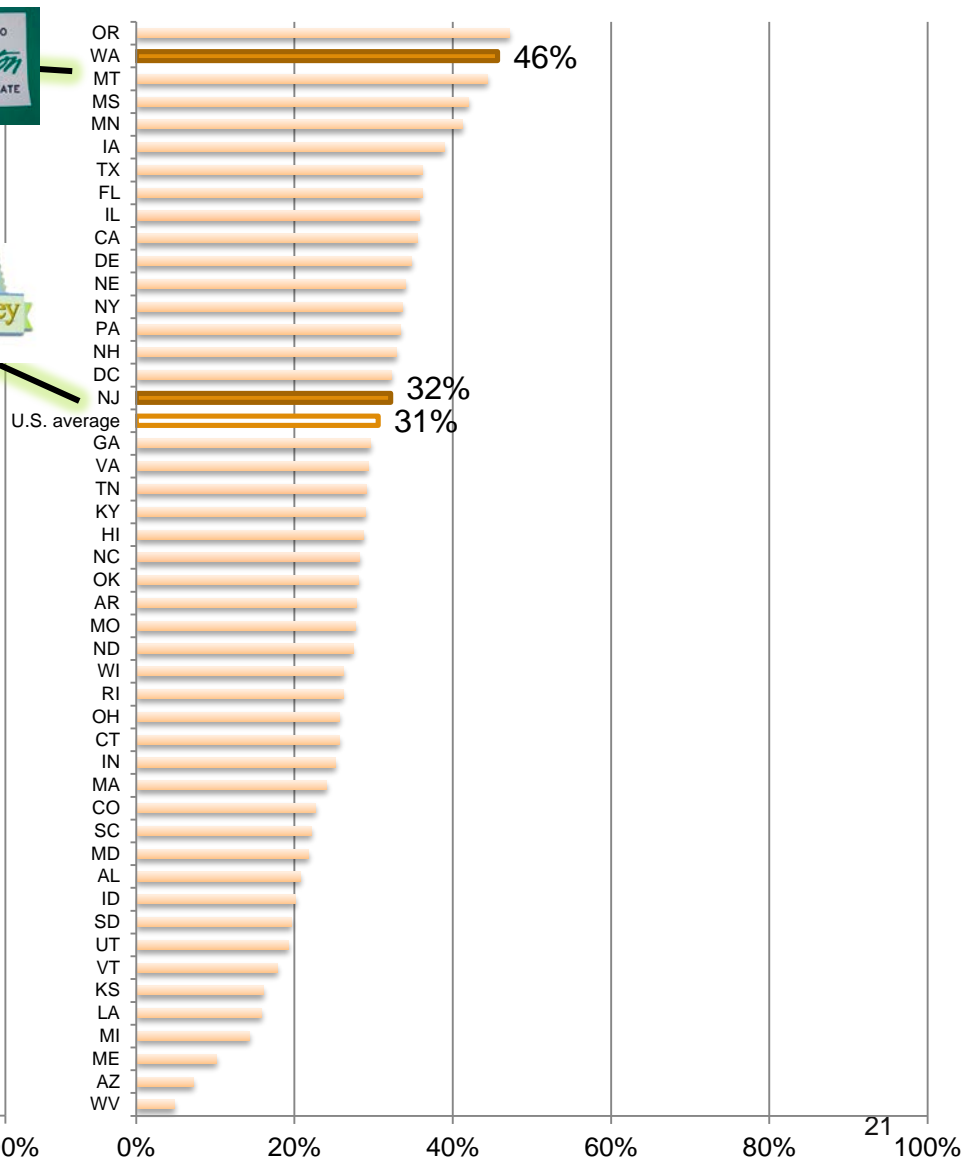
Transfer-In Bachelor's Completion Rates at Private Nonprofit Four-Year Institutions



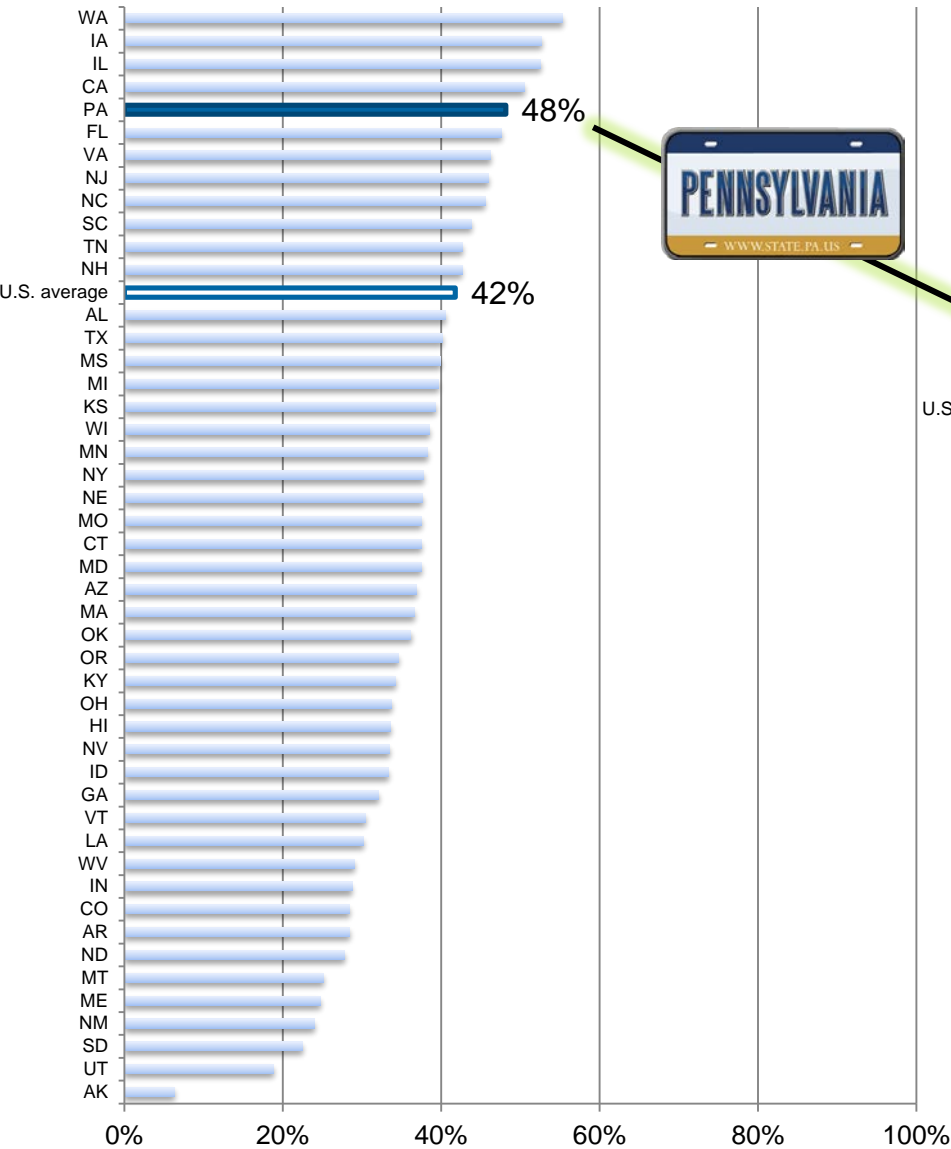
Transfer-In Bachelor's Completion Rates at Public Four-Year Institutions



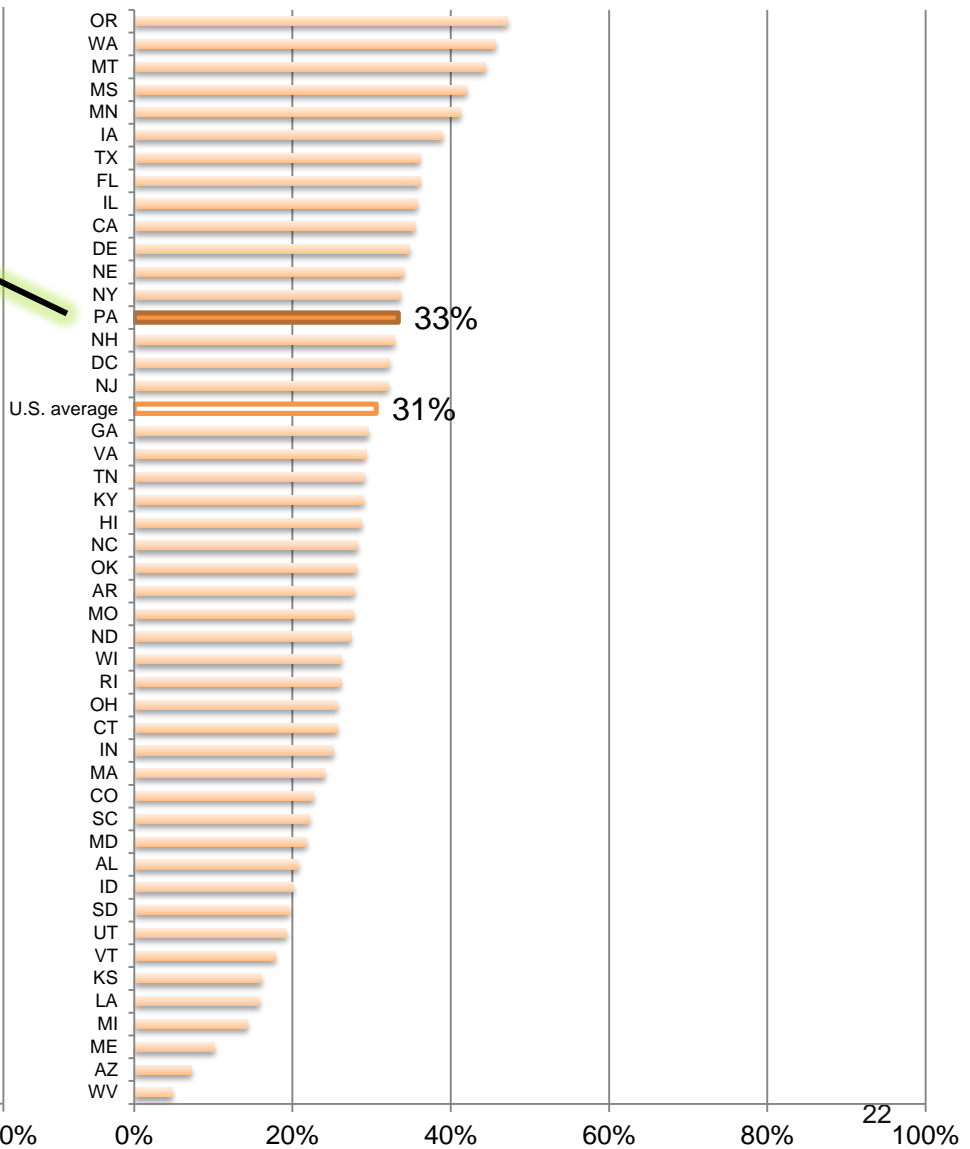
Transfer-In Bachelor's Completion Rates at Private Nonprofit Four-Year Institutions



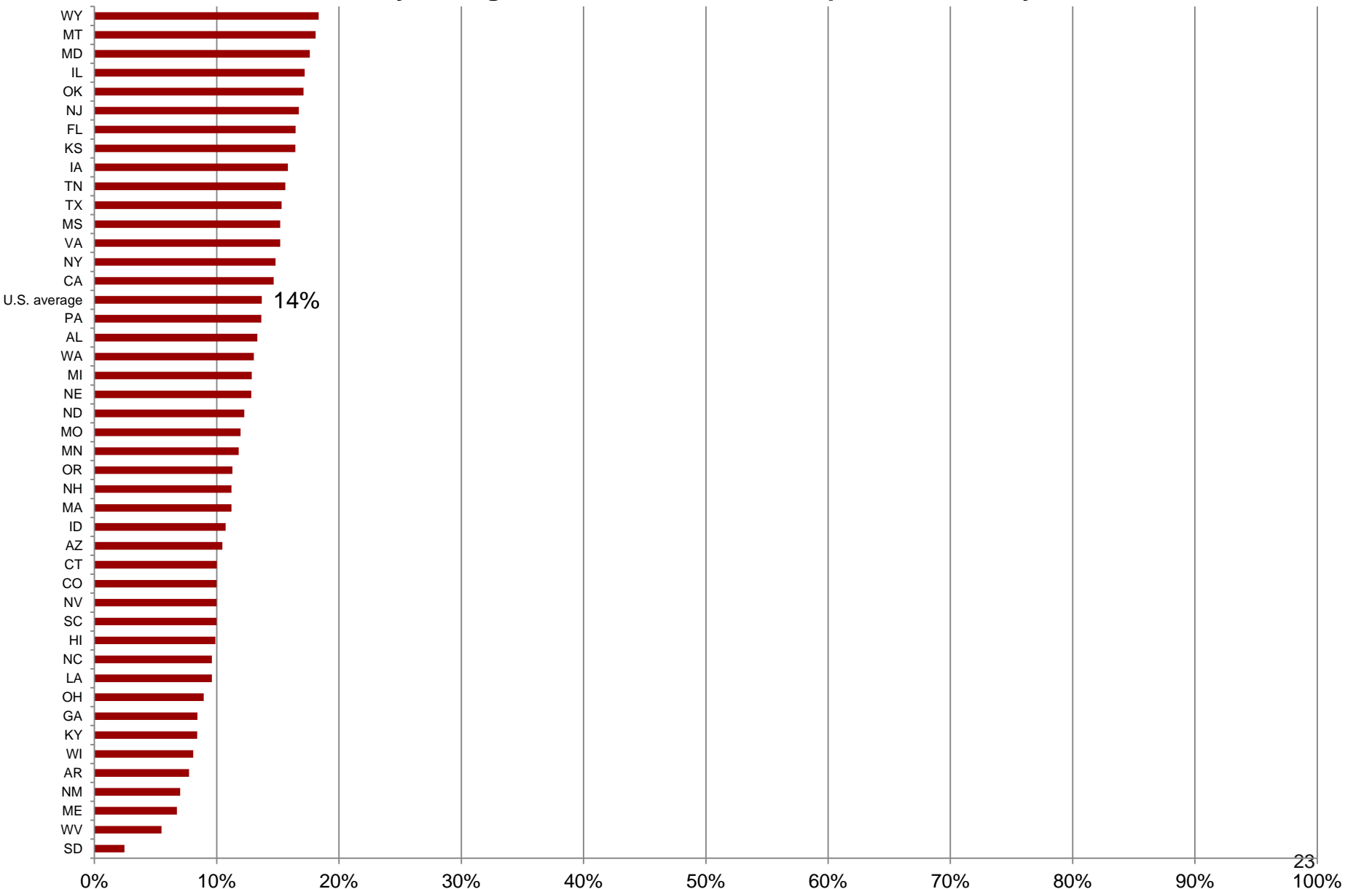
Transfer-In Bachelor's Completion Rates at Public Four-Year Institutions



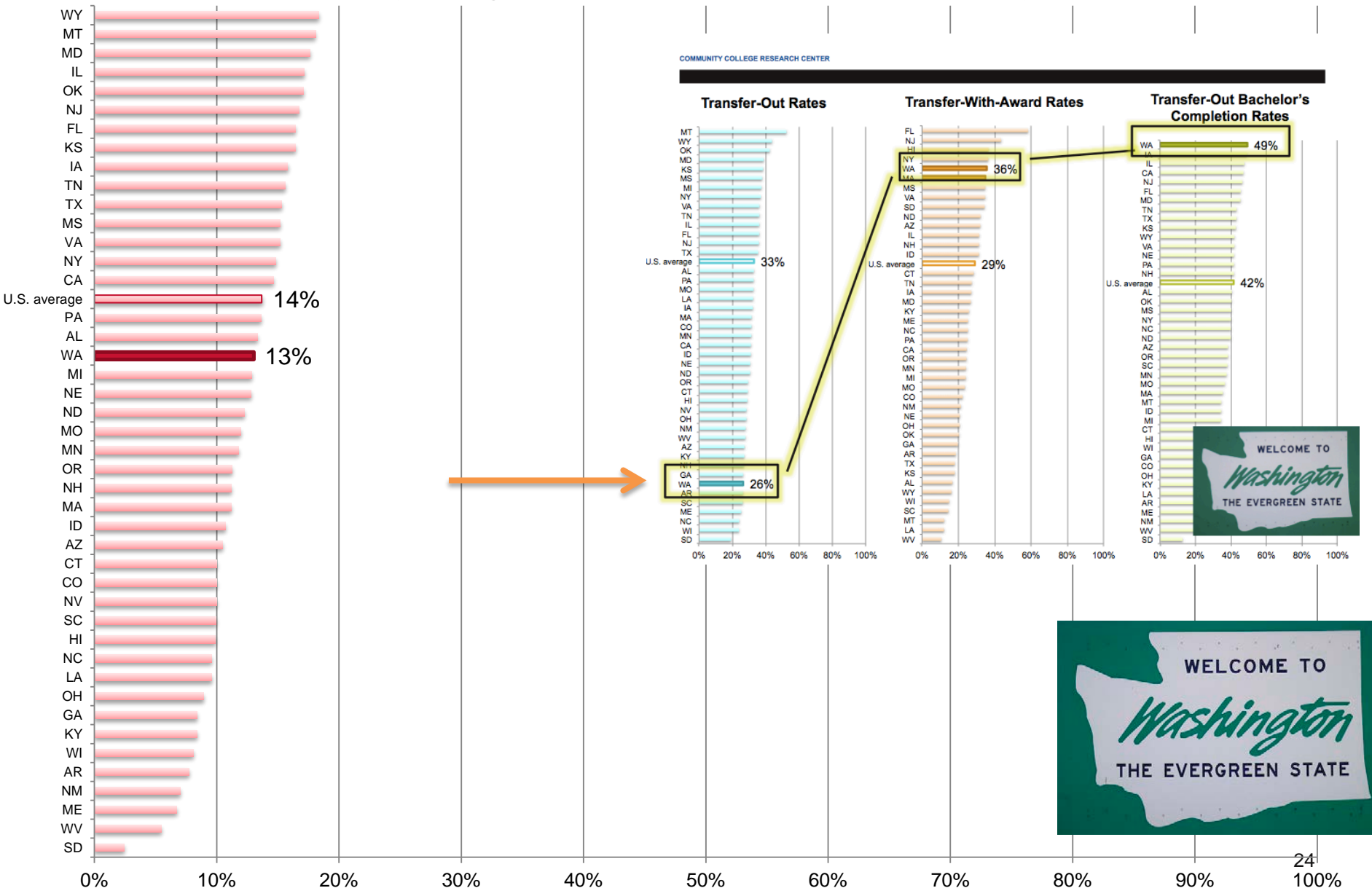
Transfer-In Bachelor's Completion Rates at Private Nonprofit Four-Year Institutions



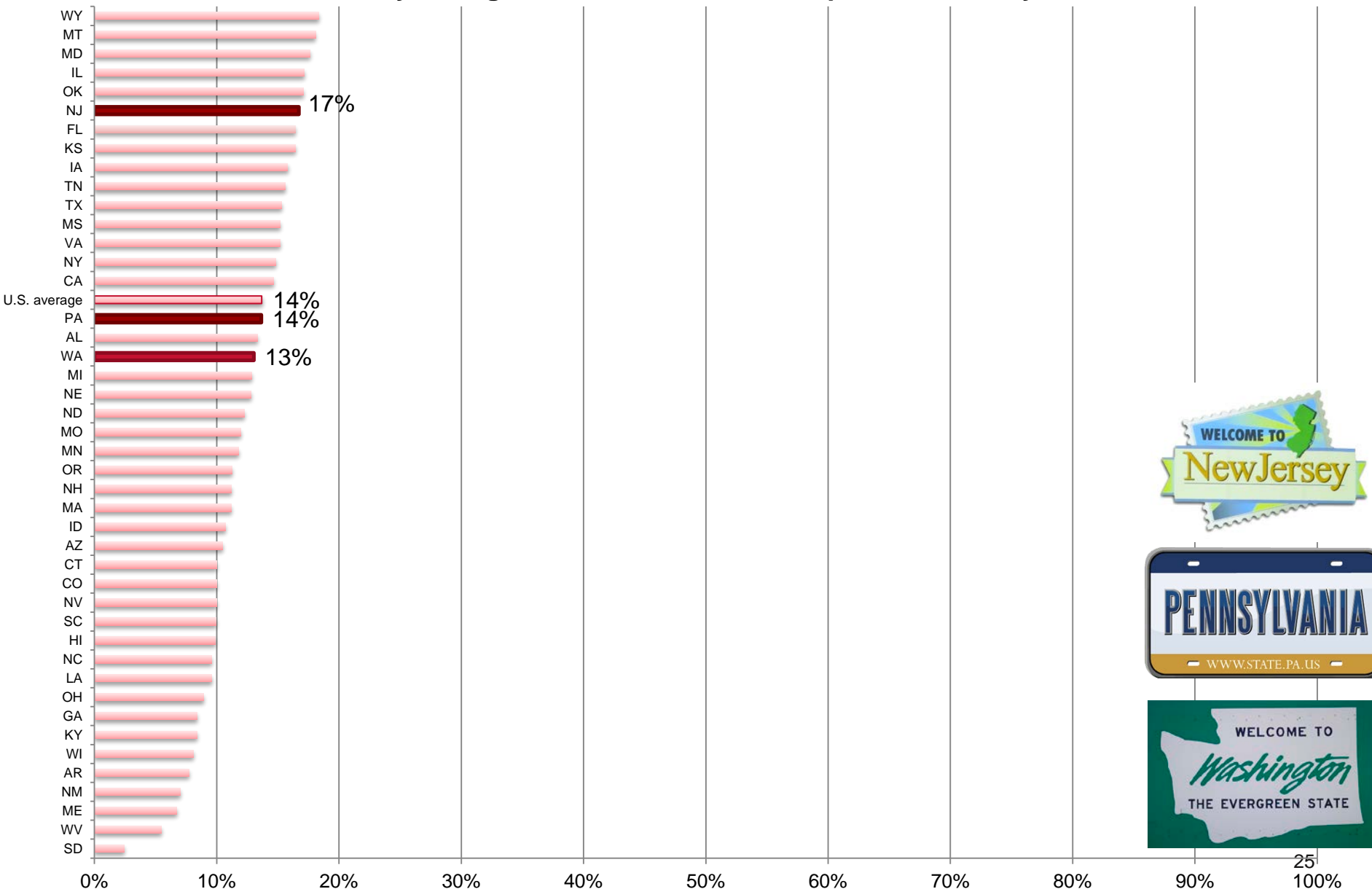
Community College Cohort Bachelor's Completion Rates by State



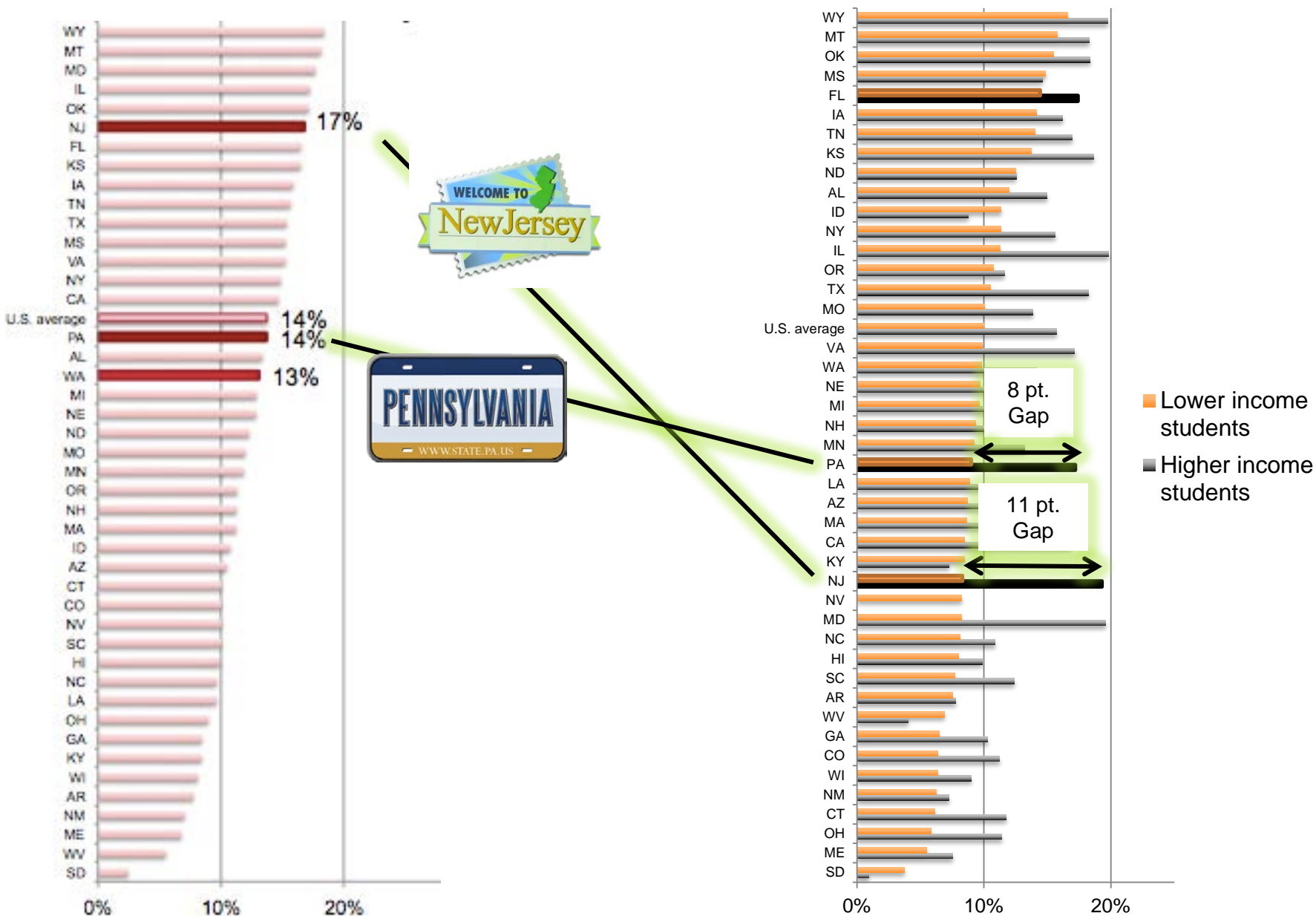
Community College Cohort Bachelor's Completion Rates by State




Community College Cohort Bachelor's Completion Rates by State



Community College Cohort Bachelor's Completion Rates, by Student Income

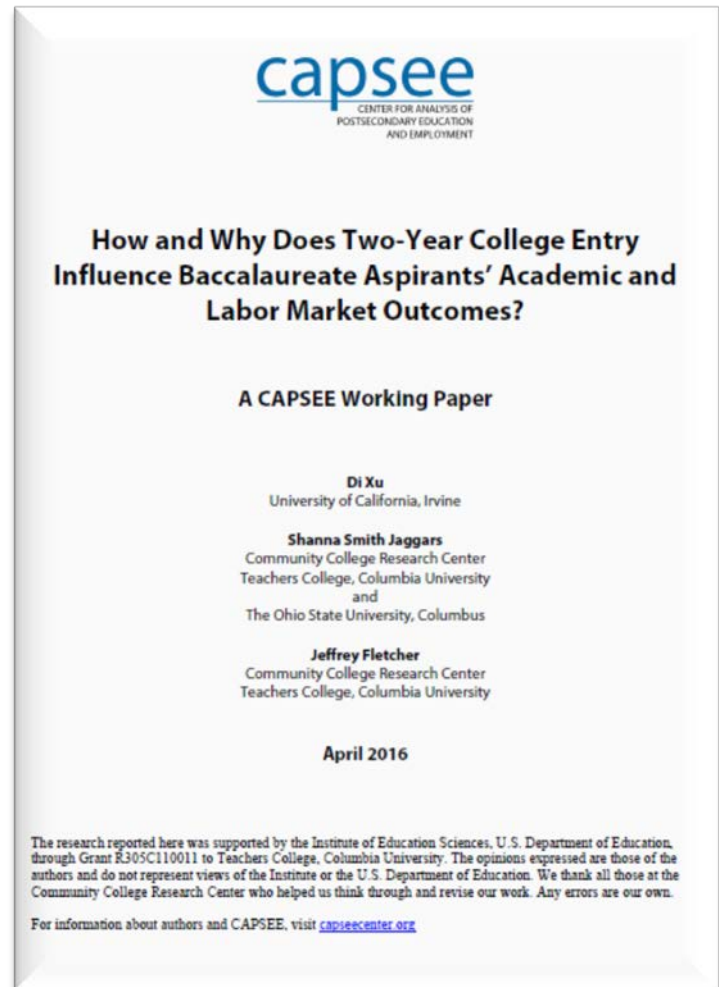




Our conclusion: Transfer outcomes depend on what community colleges and 4-year colleges do to teach and support their students.

Understudied Barriers to Transfer Success

- 1) Lack of early momentum
- 2) Students make progress, don't transfer
- 3) Transfer paths unclear
- 4) Transfer credit loss

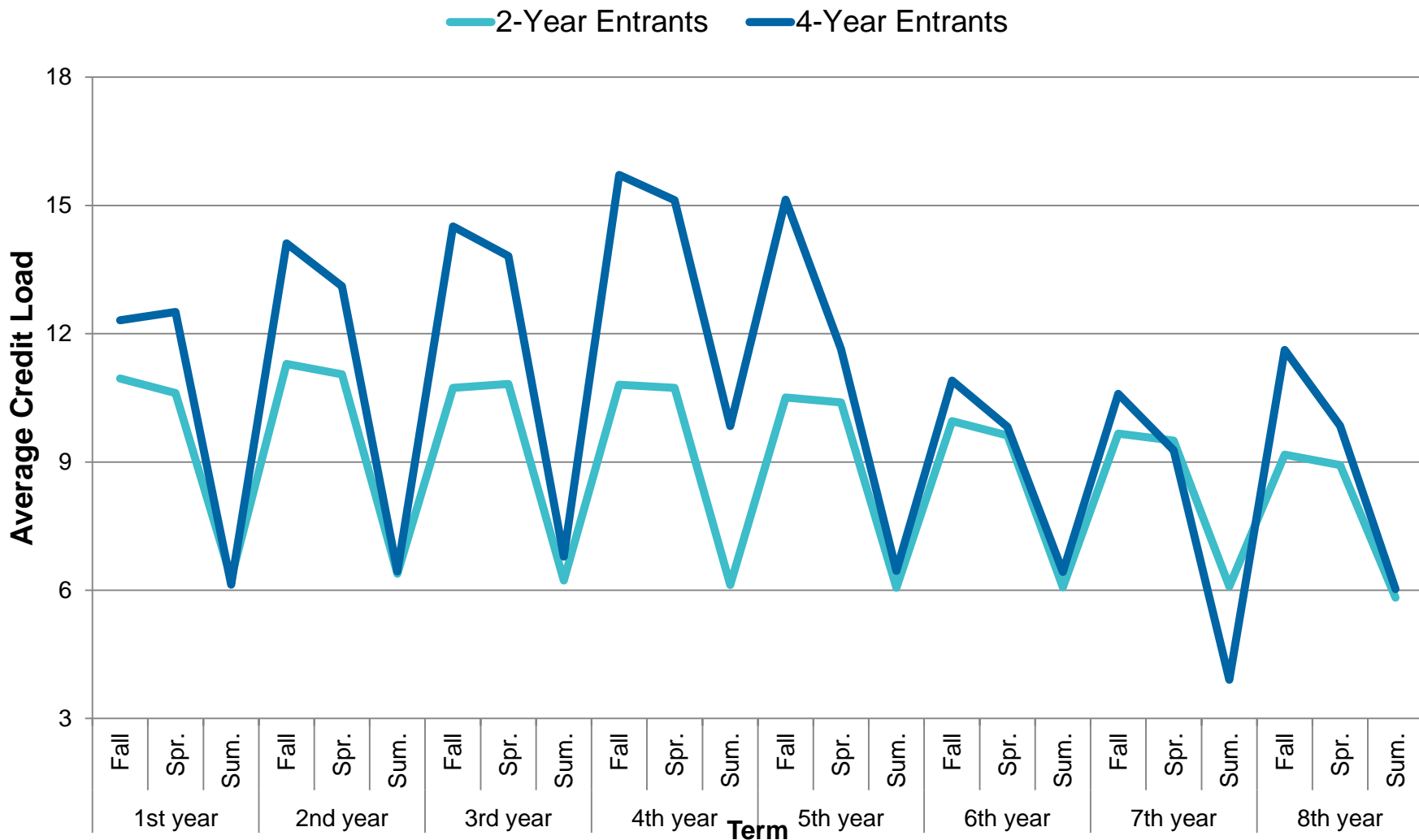


Understudied Barrier #1

Lack of Early Momentum

Understudied Barrier #1: Lack of Early Momentum

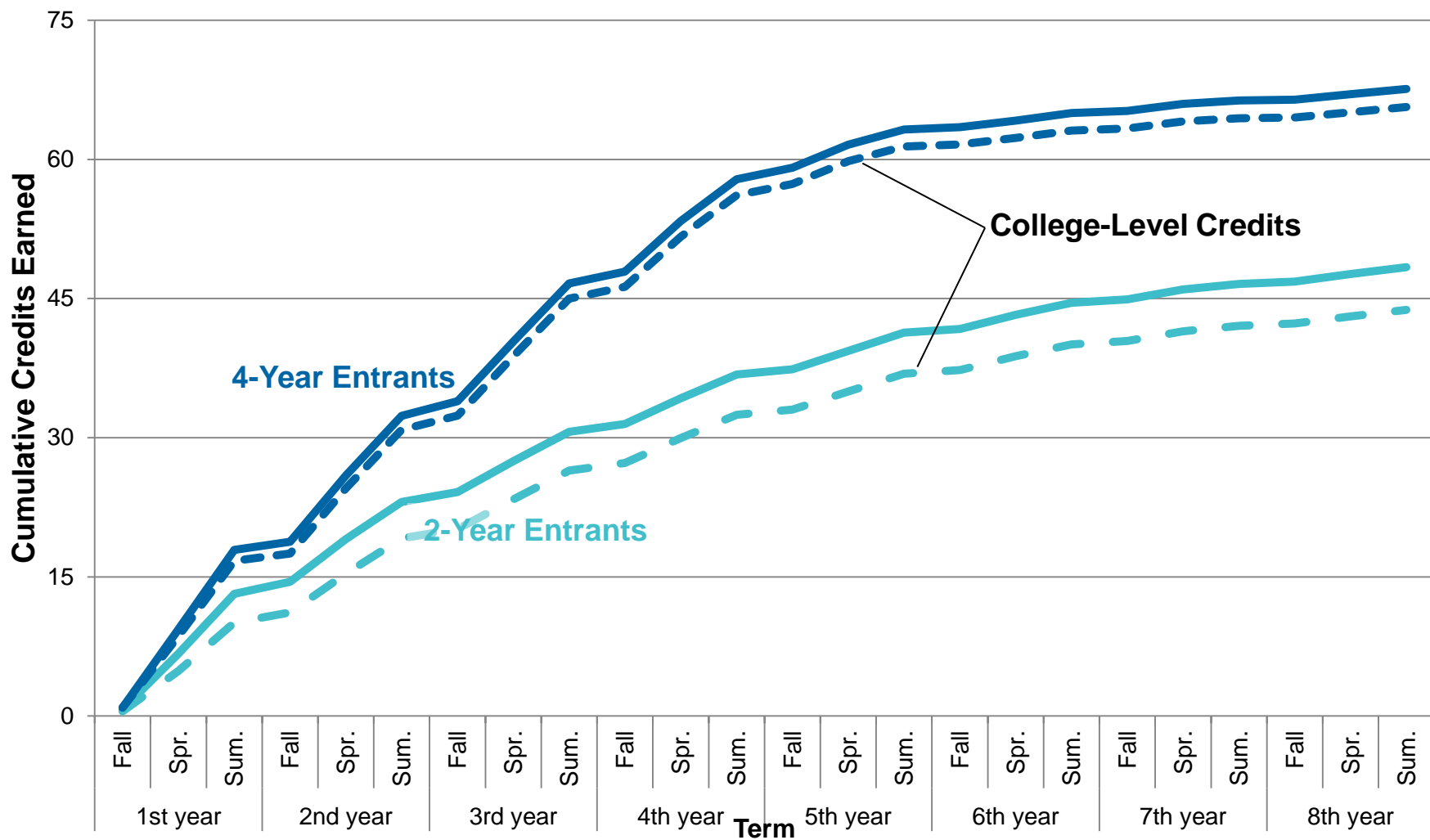
VA Fall 2004 Matched 2- and 4-Year Entrants, Average Credit Load by Term



Source: Xu, Jaggars, & Fletcher, 2016.

Understudied Barrier #1: Lack of Early Momentum

VA Fall 2004 Matched 2- and 4-Year Entrants, Cumulative Credits Earned by Term



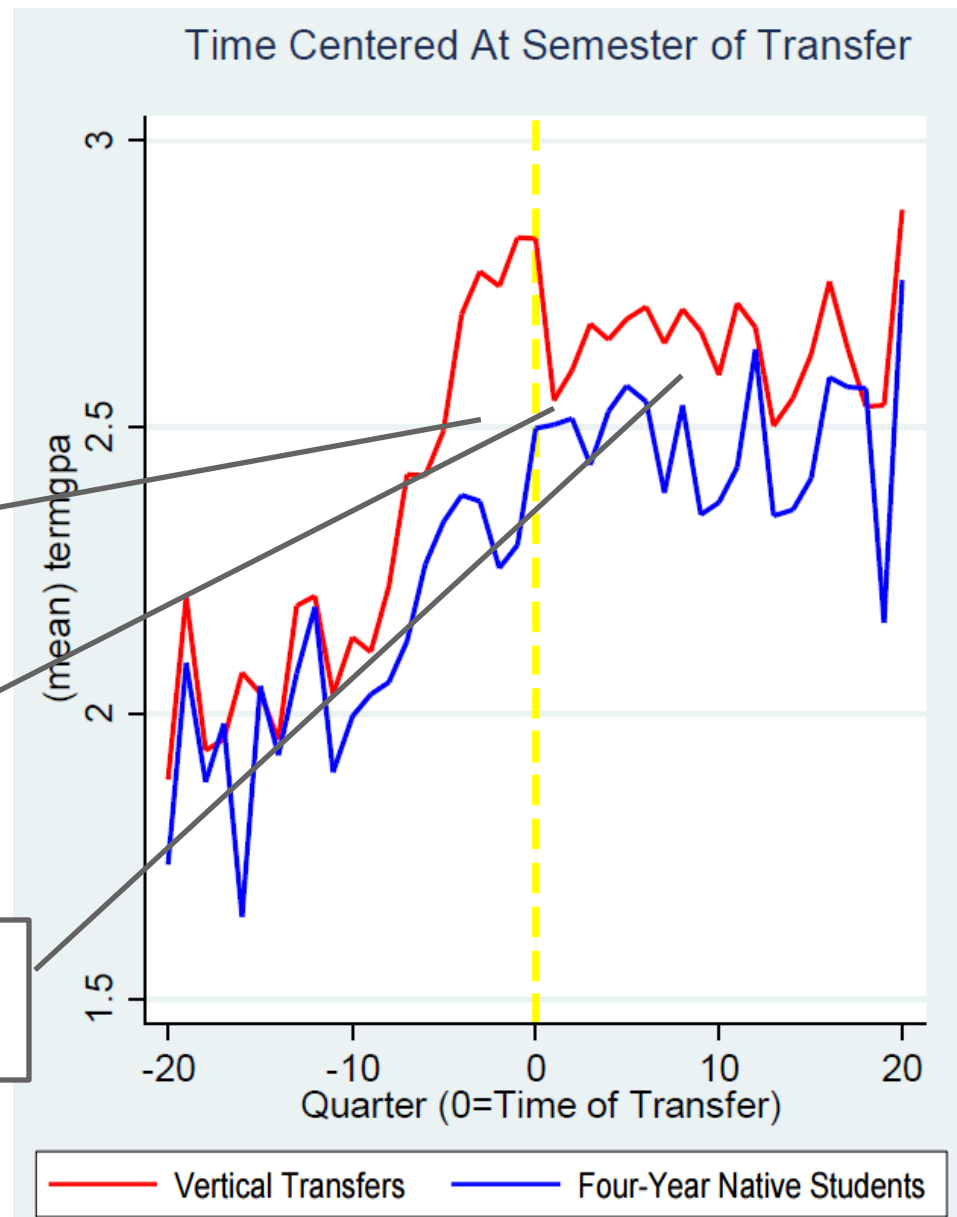
Source: Xu, Jaggars, & Fletcher, 2016.

Term-by-Term Fluctuations in GPA Among Transfers and Matched Native Students

Transfer student community college GPAs pre-transfer much higher than matched sample of 4-Year Entrants

"Transfer Shock" initial drop in GPA; still higher than matched sample of 4-Year Entrants

Transfer Student GPA consistently higher than matched sample of 4-Year Entrants



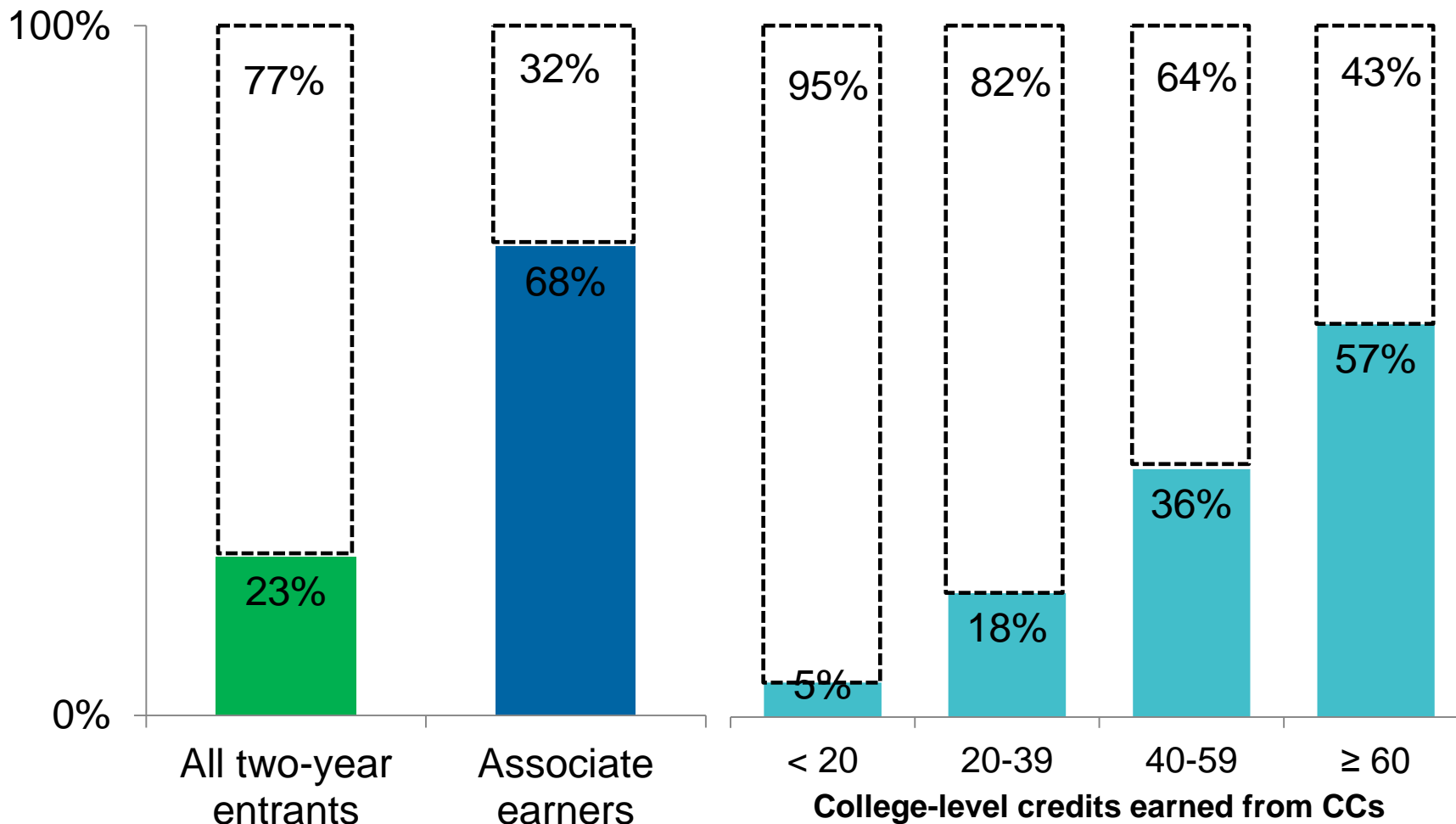
Source: Xu, Jaggars, & Fletcher, 2016, Figure 4.

Understudied Barrier #2

Students make progress, don't transfer

Understudied Barrier #2: Students make progress, don't transfer

Bachelor's Degree-Seeking 2-year Entrants in VA, Rate of Transfer to Four-year Colleges



Source: Xu, Jaggars, & Fletcher, 2016, Table 9.

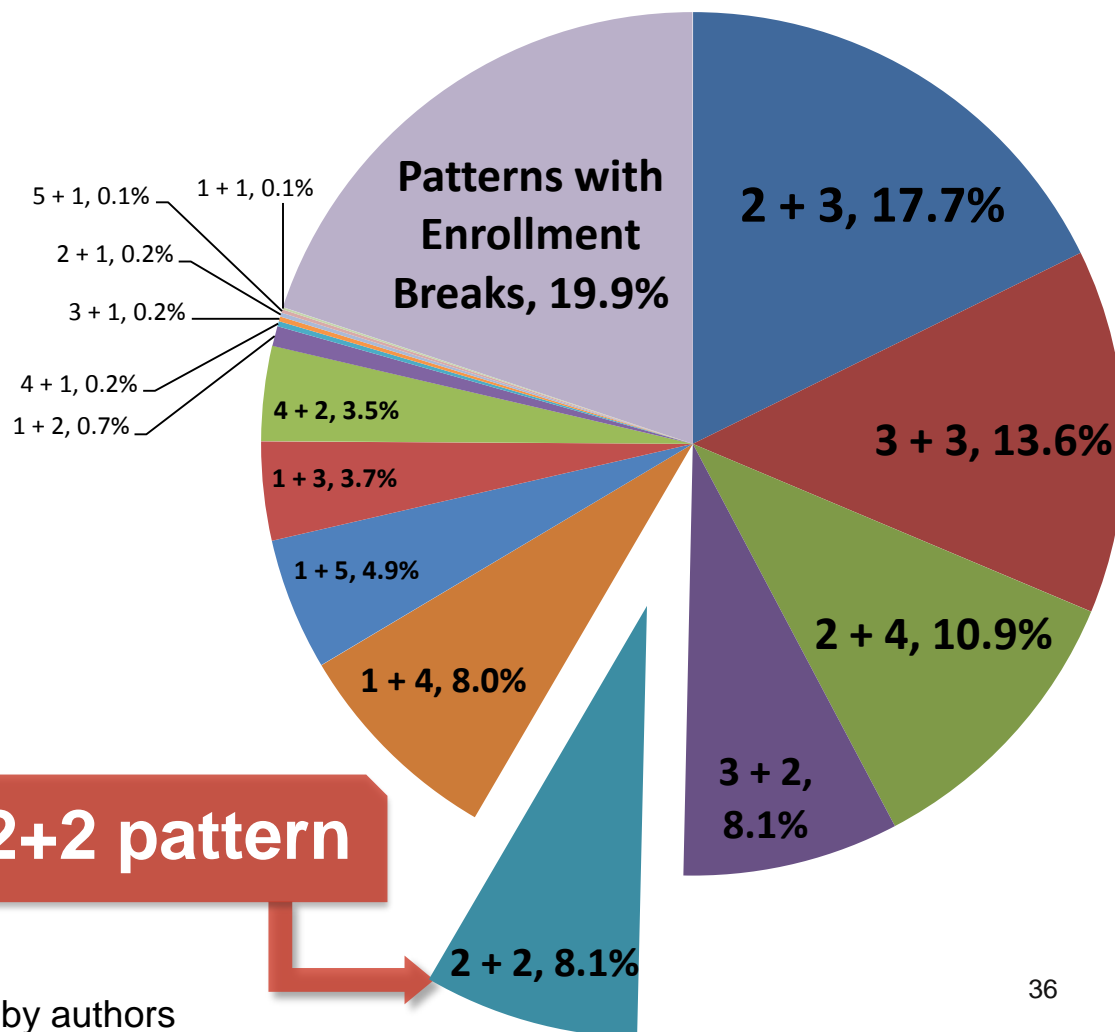
Understudied Barrier #3

Transfer paths unclear

Understudied Barrier #3: Transfer paths unclear

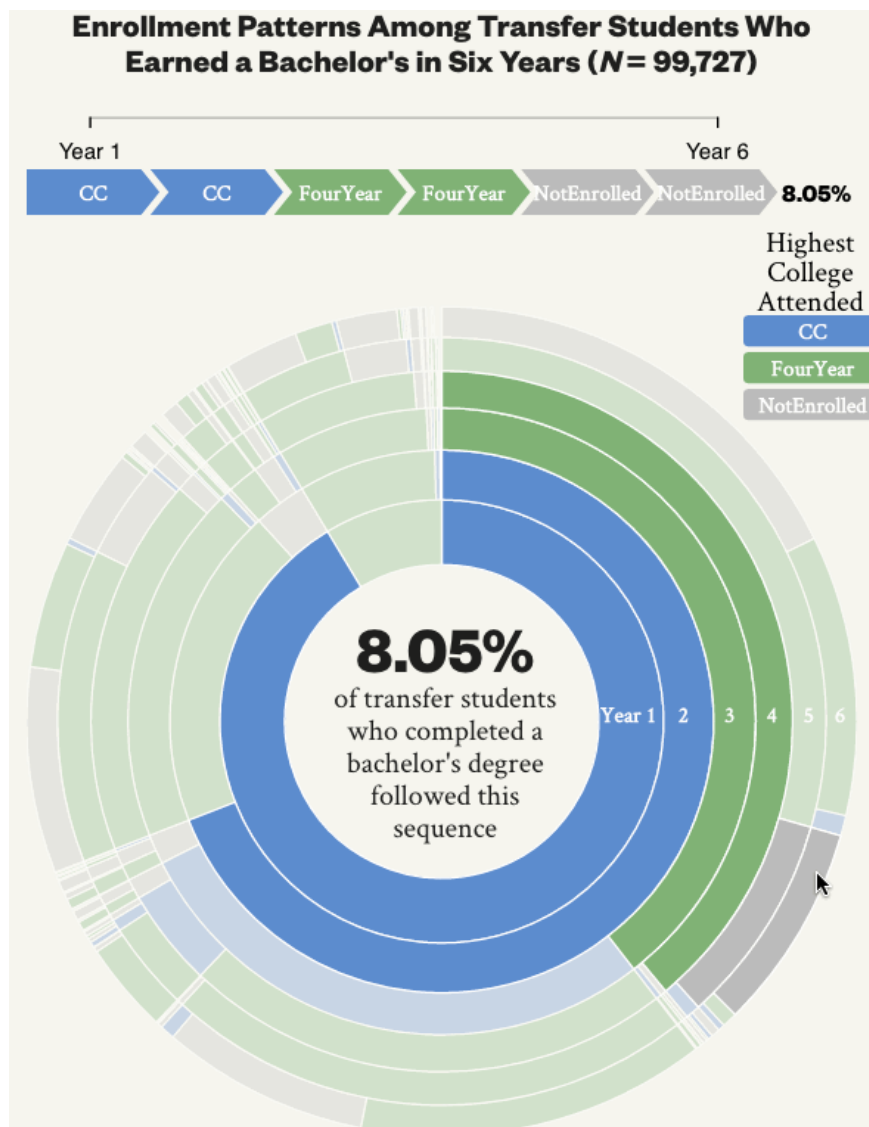
Enrollment Patterns among ~100K Bachelor's Degree Completers who Started at a Community College

years at CC
+
years at 4yr



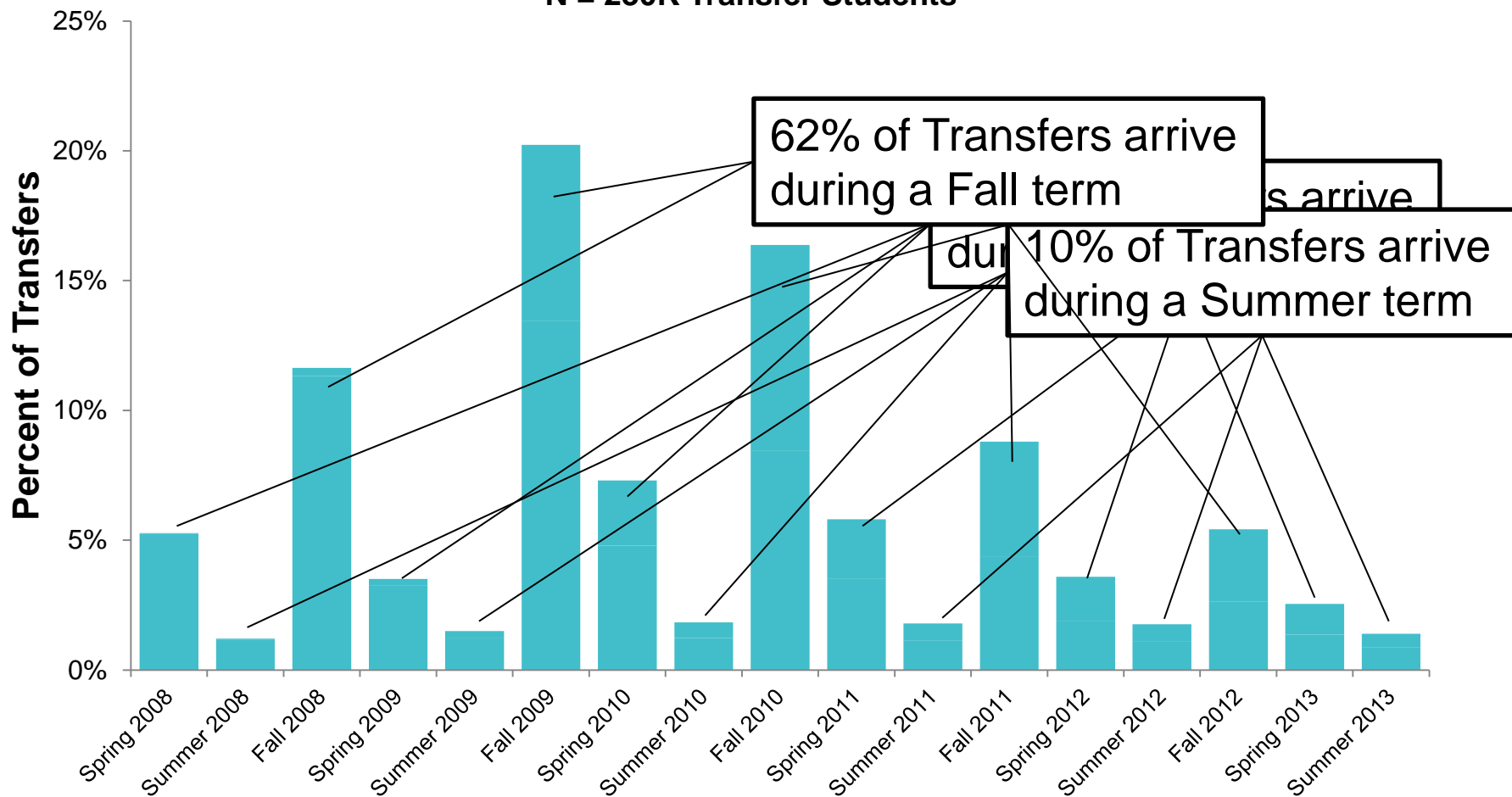
Few graduates follow 2+2 pattern

Understudied Barrier #3: Transfer paths unclear



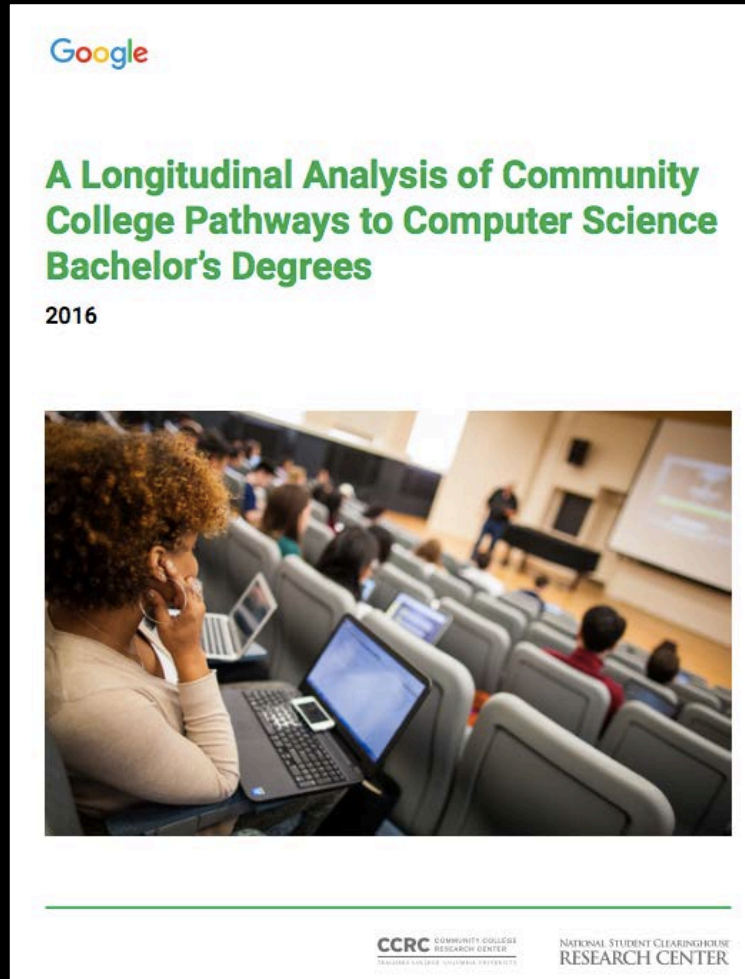
Understudied Barrier #3: Transfer paths unclear

**National Fall 2007 Degree-Seeking CC Entrants
who Transferred within Six Years
N = 230K Transfer Students**

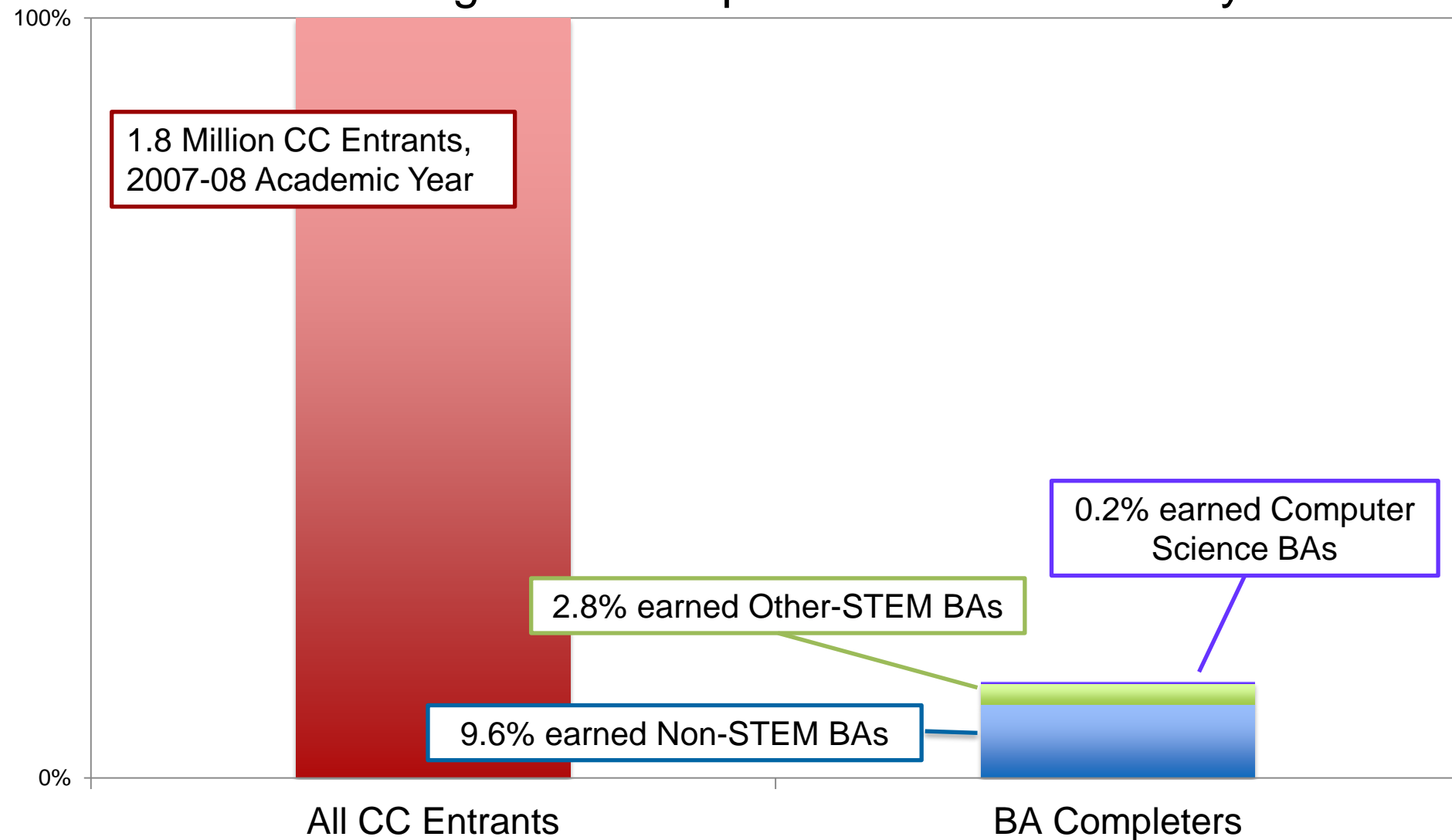


Transfer Arrival at Four-year Colleges: Earliest Transfer Term

No “Well-Trodden” Transfer Pathway to Degrees in STEM and Computer Science



Few students who started at a Community College earned a bachelor's degree in Computer Science within 7 years

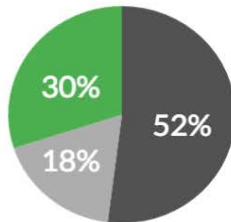


Not representative of the greater
community college population

1.8M 2007 community
college entrants



51% male

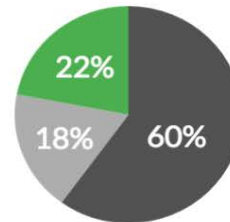


■ bottom two neighborhood
SES quintiles
■ middle neighborhood SES
quintile
■ top two neighborhood SES
quintiles

3,290 who earned CS
bachelor's



87% male



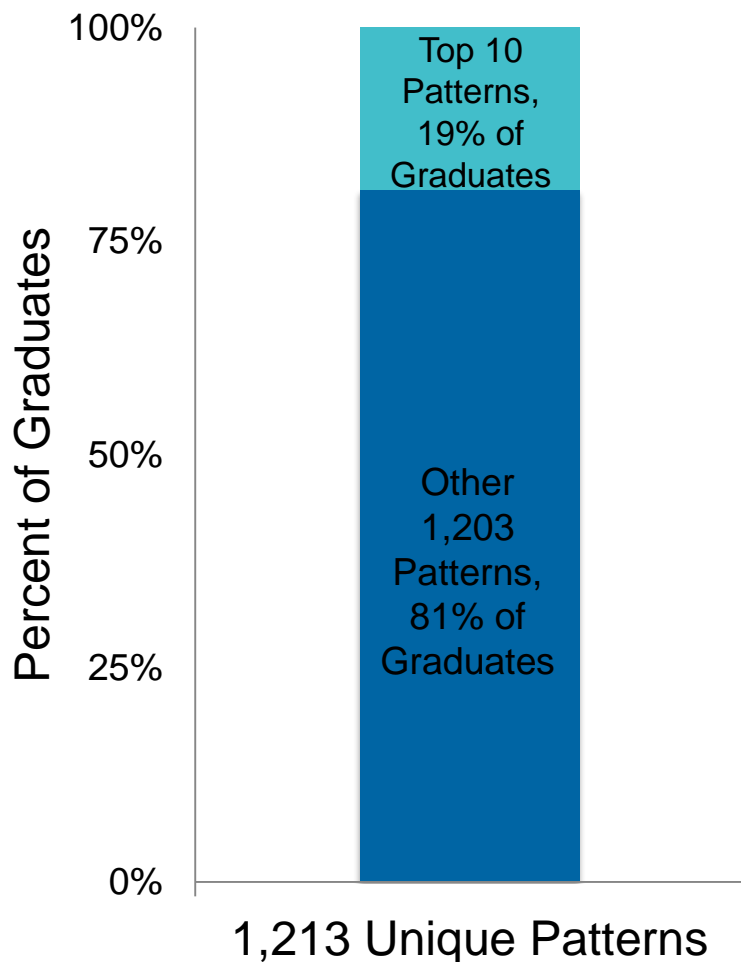
**NO DEFINED
PATHWAY**

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

Companion report surveyed prospective CS students at two California Community Colleges



Key themes:

- Students are confused about transfer pathways in CS
- Students struggle to progress through complex chain of prerequisites in preparation for transfer into CS major
- Students have limited knowledge of CS profession

Barriers to students' development of interest and progression into CS:

- Necessary prerequisite classes are over-enrolled
- Math requirements are “daunting”
- Students lack confidence to succeed in needed courses
- Competing responsibilities interfere

Understudied Barrier #4

Transfer credit loss

Understudied Barrier #4: Transfer Credit Loss



Just **58%** of students successfully transferred 90% of their credits.



And **15%** can't transfer any credits at all.

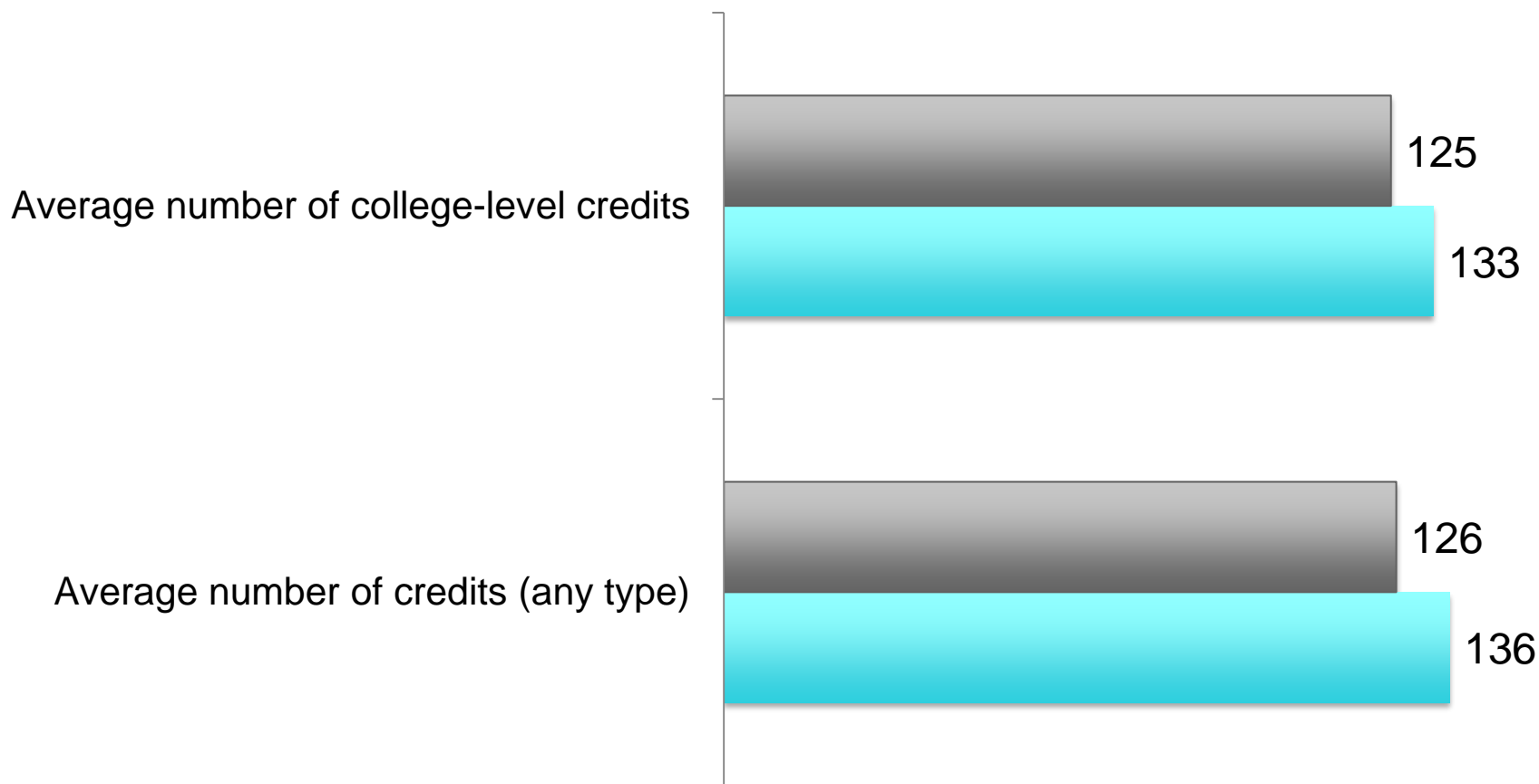


Students who can transfer 90% of their credits were **2.5x** more likely to get their bachelor's degree, compared to those who transfer half or less.

Understudied Barrier #4: Transfer Credit Loss

VA Fall 2004 Matched 2- and 4-Year Entrants,
Total Credits Earned at Graduation

■ 4-Year Entrants ■ 2-Year Entrants



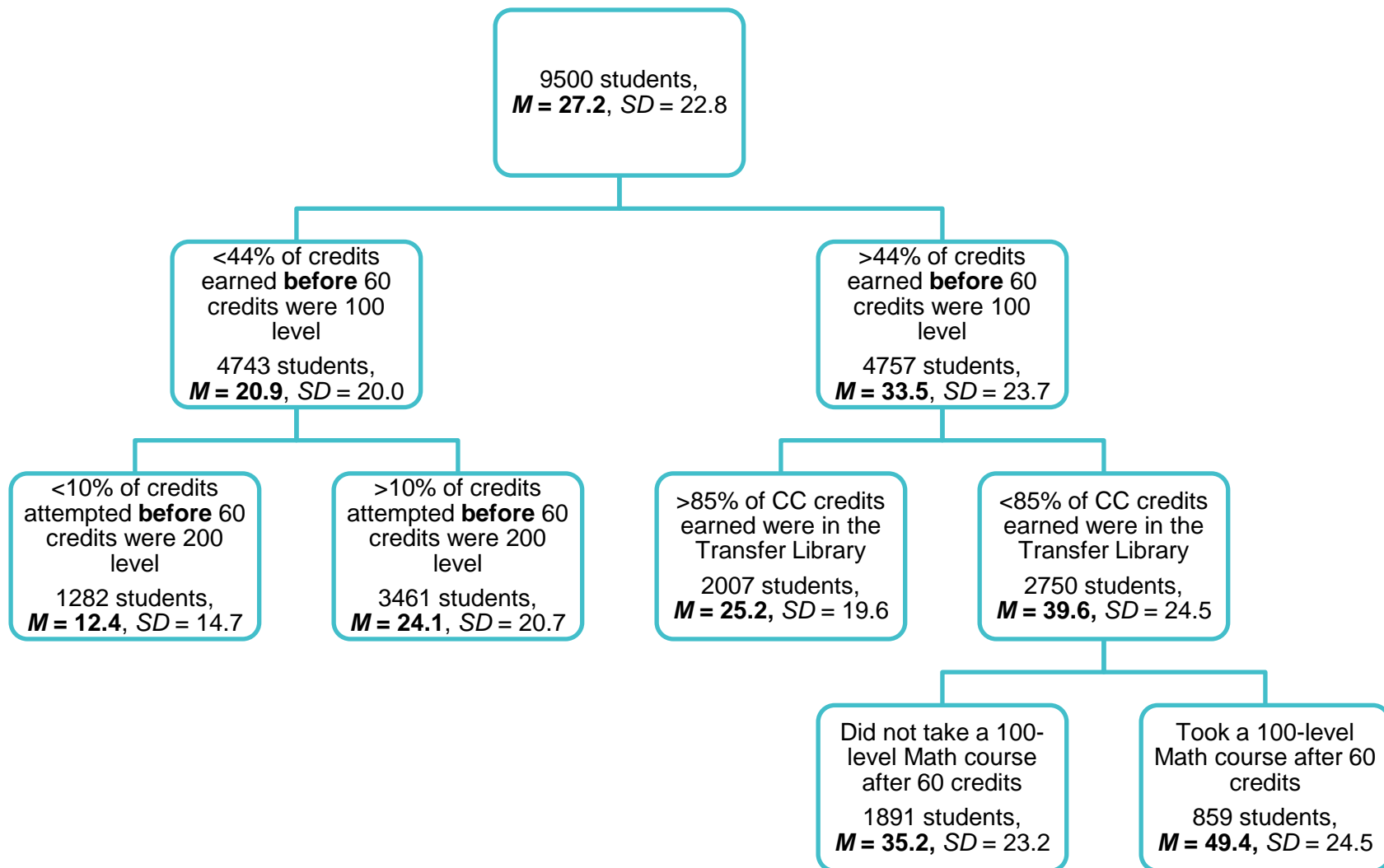
Source: Xu, Jaggars, & Fletcher, 2016, Table 10.

Credit Transfer Efficiency

- Important to understand: both a barrier to completion and source of extra cost
- Measures of credit transfer efficiency:
 - **Transferability:** Credits are accepted at receiving institution
 - **Applicability:** Credits are counted toward major/degree at receiving institution
 - **Excess Credit:** Students attempted/earned more credits than the total required for their degree
- APPAM 2016: Exploratory study of excess credits among BA completers who started a two- and four-year institutions in two states:
 - Created a rich set of variables to capture the curricular pathways students take in pursuing a bachelor's degree
 - Used data mining techniques to identify variables associated with efficient or inefficient bachelor's degree pathways
 - Dependent Variable: Excess Credits among BA completers

Simplified Partition Tree:

State B, 2-year Entrants, Excess Credits Attempted



Understudied Barriers to Transfer Success

- 1) Lack of early momentum
- 2) Students make progress, don't transfer
- 3) Transfer paths unclear
- 4) Transfer credit loss

What can we do to address these barriers?

How Can Community College and Four-Year Partners Achieve Strong Transfer Outcomes?

THE TRANSFER PLAYBOOK: ESSENTIAL PRACTICES FOR TWO- AND FOUR-YEAR COLLEGES

The Transfer Playbook: Essential Practices for Two- and Four-Year Colleges

State	Community College	Universities
Colorado	<ul style="list-style-type: none"> • Front Range CC 	<ul style="list-style-type: none"> • Colorado State University
Connecticut	<ul style="list-style-type: none"> • Manchester CC 	<ul style="list-style-type: none"> • Eastern Connecticut State U
Florida	<ul style="list-style-type: none"> • Broward College 	<ul style="list-style-type: none"> • Florida International U • Florida Atlantic U
Louisiana	<ul style="list-style-type: none"> • LSU-Eunice 	<ul style="list-style-type: none"> • U of Louisiana - Lafayette
Mass.	<ul style="list-style-type: none"> • Holyoke CC 	<ul style="list-style-type: none"> • U Mass Amherst
Washington	<ul style="list-style-type: none"> • Everett CC 	<ul style="list-style-type: none"> • University of Washington • Western Washington U

The Transfer Playbook: Essential Practices for Two- and Four-Year Colleges

- ✓ **STRATEGY 1:** Prioritize Transfer
- ✓ **STRATEGY 2:** Create Clear Programmatic Pathways with Aligned High-Quality Instruction
- ✓ **STRATEGY 3:** Provide Tailored Transfer Student Advising
- + Build strong transfer partnerships

STRATEGY 1: Prioritize Transfer

- ✓ Communicate transfer as a key component of the institution's mission
- ✓ Share data to increase understanding of the need to improve transfer student outcomes – and the benefits of doing so
- ✓ Dedicate significant resources to support transfer students

**“EVERYONE ASKS,
‘WHERE ARE YOU GOING NEXT?’”**

— STUDENT AT HOLYOKE COMMUNITY COLLEGE

GENERAL EDUCATION REQUIREMENTS

(Select 12 courses from this list of more than 300)

Basic Liberal Studies Requirements: [2 courses must include the Diversity (D) overlay]

English Communication: 6 credits; 3 credits must be in a writing course

Writing (ECw): ELS 112, 122 (nonnative speakers); HPR 326; WRT 104, 105, 106, 201, 227, 235, 302, 303, 304(D), 305(D), 333.

General (EC): COM 100(D), 110(D); LIB 120; PHL 101.

Fine Arts and Literature (A): 6 credits; 3 credits in Fine Arts and 3 credits in Literature

Fine Arts: ARH 120(D), 251(D), 252(D); ART 101, 207; FLM 101(D), 203(D), 204(D), 205(D); HPR 105, 124, 201A, 202A, 324; LAR 201; MUS 101(D), 106(D), 111, 292(D), 293(D); PLS 233; SPA 320(D); THE 100, 181, 351(D), 352(D), 381, 382, 383.

Literature: AAF 247(D), 248(D); CLA 391(D), 395(D), 396(D), 397(D); CLS 160(D); ENG 110(D), 160(D), 241(D), 242(D), 243(D), 247(D), 248(D), 251(D), 252(D), 260(D), 262(D), 263(D), 264(D), 265(D), 280(D), 300(D), 302(D), 303(D), 304(D), 317(D), 355(D), 357(D), 358(D); FRN 309(D), 310(D), 320(D), 391(D), 392(D), 393(D); HPR 105, 125, 201A, 202A; RUS 391(D), 392(D); SPA 305(D), 306(D), 307(D), 308(D); WMS 317(D).

Language/Culture (FC): 6 credits

- Demonstration of competence through the intermediate level by examination or successfully completing through 104 (living language) or 302 (classical language)
- Two-course sequence (or one course at the 113 level) in a previously studied language through at the appropriate level (all D): ARB 103, 104; CHN 103, 104; FRN 103, 104; GER 103, 104; GRK 301, 302; HBW 103, 104; ITL 103, 104, 111; JPN 103, 104; LAN 193, 194; LAT 301, 302; POR 103, 104; RUS 103, 104; SPA 103, 104, 111, 113, 210.
- Two-course sequence (or one course at the 111 level) in a language not previously studied (or studied for less than two years in high school) through the beginning level: ARB 101, 102; CHN 101, 102; FRN 101, 102; GER 101, 102; GRK 101, 102; HBW 101, 102; ITL 101, 102; JPN 101, 102; LAN 191, 192; LAT 101, 102; POR 101, 102; RUS 101, 102; SPA 101, 102.
- Study abroad in an approved program for one semester
- Major in a foreign language
- Formerly registered international students, students with recognized immigrant status, or naturalized citizens (at Dean's discretion)
- Two courses in Cross-Cultural Competence: CPL 300(D); FRN 309(D), 310(D), 320(D), 391(D), 392(D), 393(D); HIS 132(D), 171(D), 172(D), 180(D), 311(D), 327(D), 374(D), 375(D); HPR 201F, 202F; LET 151L(D), 151Q(D), 151R; NRS 300; PHL 331(D); RLS 131(D); SPA 320(D), TMD 224(D); six credits of a full-semester approved Intercultural Internship in a foreign country through the Office of Internships and Experiential Education

Letters(L): 6 credits

AAF 150(D), 201(D), 355(D), 356(D); APG 327; BGS 392(D); CLS 160(D), 235; EGR 316(D); ENG 110(D), 160(D), 243(D), 251(D), 252(D), 280(D), 355(D), 356(D); FRN 391(D), 392(D), 393(D); HIS 111, 112, 113(D), 114(D), 116, 117, 118(D), 130(D), 132(D), 141(D), 142(D), 145(D), 146(D), 150(D), 160(D), 171(D), 172(D), 180(D), 304, 305, 310(D), 311(D), 314, 323(D), 327(D), 332(D), 333(D), 340(D), 341(D), 346(D), 351(D), 355(D), 356(D), 374(D), 375(D); HPR 107, 201L, 202L, 307; JOR 110(D); LAR 202(D); LET 151L(D), 151Q(D), 151R(D); NUR 360(D); PHL 101, 103, 204, 210(D), 212(D), 215, 217(D), 235, 314, 316(D), 321, 322, 323(D), 325(D), 328(D), 331(D), 346, 355; PSC 341, 342; PSY 310; RLS 111(D), 125, 126, 131(D); WMS 220(D), 315(D), 320(D)

Mathematics(MQ): 3 credits satisfied by MTH 141

BUS 111, CSC 101, 201; HPR 108, 201M, 202M; MTH 106, 107, 108, 109, 111, 131, 141; PSC 109; STA 220.

Natural Sciences(N): 6 credits; satisfied by PHY

AFS 190, 210, 211; APG 201(D); AST 108, 118; AVS 101(D); BCH 190; BIO 101, 102, 105, 106, 286(D); BPS 201; CHM 100, 101, 103, 112; GEO 100, 102, 103, 110, 113, 120; HPR 109, 201N, 202N; MIC 190; NPS 207; NRS 190; OCG 110, 123, 131; PHY 109, 111, 112, 140, 185, 186, 203, 204, 205, 273, 274, 275; PLS 150, 190; TMD 113

Social Sciences(S): 6 credits

APG 200(D), 202, 203(D), 301(D); CPL 202(D); ECN 100(D), 201, 202, 306, 381(D); EDC 102(D); EEC 105, 310, 356; GEG 101(D), 104(D), 202(D); HDF 225; HPR 110(D), 201S, 202S; HSS 130; JOR 110(D); KIN 123(D); LIN 200(D); MAF 100; NUR 150(D); PSC 113(D), 116(D), 274(D), 288; PSY 103(D), 113(D), 232(D), 235(D), 254(D), 255(D); SOC 100(D), 212(D), 230(D), 240(D), 242(D), 274(D); TMD 224(D), WMS 150(D)

STRATEGY 2: Create Clear Programmatic Pathways with Aligned High-Quality Instruction

- ✓ Work collaboratively with colleagues from partner institutions to create major-specific program maps
- ✓ Provide rigorous instruction and other high-quality academic experiences to prepare students for four-year programs
- ✓ Establish regular, reliable processes for updating and improving program maps
- ✓ Design unconventional pathways, as necessary

Overview of program

Business Transfer DTA

GENERAL INFORMATION

This degree satisfies general undergraduate requirements for a major in economics through a university in the sciences or business. This degree meets statewide guidelines for transfer to the following Washington universities subject to exceptions and qualifications outlined in this guide: Central Washington University, University of Washington, Washington State University, Western Washington University, Gonzaga University, Heritage University, Pacific Lutheran University, Saint Martin's University, Seattle Pacific University, Seattle University, Walla Walla University, and Whitworth University.

Information on common transfer destinations

Central Washington University (CWU) www.cwu.edu	Seattle Pacific University (SPU) www.spu.edu/depts/sbe
Eastern Washington University (EWU) www.ewu.edu	University of Washington (UW) www.foster.washington.edu/academ www.uwb.edu/business (Bothell); www.tacoma.uw.edu/milgard-sch
Pacific Lutheran University (PLU) www.plu.edu/bus	Washington State University (WSU) www.business.wsu.edu
Seattle University (SU) www.seattleu.edu/albers	Western Washington University (WWU) www.cbe.wvu.edu

Students interested in earning a bachelor's degree in Hospitality Management (via WSU's program at Eastern Washington University) should contact the program advisor at WSU.

GETTING STARTED AT EVCC

Enrollment Services provide information on transfer requirements; contact Enrollment Services at 425.388.9364 for more information.

PROGRAM ADVISORS

Students are required to complete an academic plan. Registrar's Office can assist with this process.

Dongwa Hu, Olympus 216
425.388.9364; dhu@evcc.edu

Chad T. Lewis, Olympus 216
425.388.9559; ctilewis@everettcc.edu

Lynne Muñoz, Olympus 216
425.388.9175; lmunoz@everettcc.edu

If there is no answer, please call the Division Office at 425.388.9200.

425.388.9538; meppley@everettcc.edu

Bill Reed, Monte Cristo 122

425.388.9175; breed@evcc.edu

Program advisor information

BUSINESS TRANSFER—DTA/MRP DEGREE REQUIREMENTS

Must earn a C grade (2.0) or better in all required courses. Courses may be subject to prerequisites.

BASIC COMMUNICATION SKILLS (10 credits)

Course	Course Title	Credits	Grade	Quarter	Year
ENGL& 101 or ENGL& 101D	English Composition I	5			
ENGL& 102, ENGL& 102D or CMST& 220	Composition II or Public Speaking (CMST& 220 required at EWU)	5			

BASIC QUANTITATIVE SKILLS (10 credits)

Course	Course Title	Credits	Grade	Quarter	Year
MATH 138 or &141 or &144 or &148 or &151 (or higher)		5			
MATH& 148 or &151 or higher		5			

HUMANITIES (15 credits) with no more than 10 credits from any one discipline on the AAS DTA Humanities distribution list. No more than 5 credits of foreign language and performance arts credits can be listed. Two quarters at EvCC or two years in high school of the same world language is required for admission to all UW campuses. Students interested in a business major should consult with the specific transfer institution regarding foreign language requirements.

Course	Course Title	Credits	Grade	Quarter	Year
		5			
		5			
		5			

SOCIAL SCIENCE (15 credits; 10 credits in economics; 5 credits other than economics from the AAS DTA Social Science distribution list. BUS &101 recommended as a social science distribution course.)

Course	Course Title	Credits	Grade	Quarter	Year
ECON& 201	Micro Economics	5			
ECON& 202	Macro Economics	5			
BUS& 101 (recommended)	Introduction to Business	5			

NATURAL SCIENCE (15 credits; 5 credits in statistics; 5 credits each from the AAS DTA Natural Science distribution lists Part A and Part B.)

Program-specific "degree-sheets"

Notes:

- To earn a certificate or degree, the courses must be completed with a cumulative GPA of 2.0 (C) or better.
- Gonzaga requires a course equivalent to its BMIS 235, Management Information Systems.
- PLU requires a course equivalent to its Computer Applications CSCE 120 or MOS certification; CL 101 may suffice to fulfill this requirement.
- SPU requires a course equivalent to its BUS 1700 or MOS certification (MOS 77-420); BT 242 may suffice to fulfill this requirement.
- WWU requires a course equivalent to its MIS 220 Introduction to Computer Systems; CL 101 may suffice to fulfill this requirement. The WWU Manufacturing and Supply Chain Management program requires additional coursework, some of which may also be taken as elective credit at EvCC. Management program web site is www.wvu.edu/node/731/.

Notes:

- To earn a certificate or degree, the courses must be completed with a cumulative GPA of 2.0 (C) or better.
- Gonzaga requires a course equivalent to its BMIS 235, Management Information Systems.
- PLU requires a course equivalent to its Computer Applications CSCE 120 or MOS certification; CL 101 may suffice to fulfill this requirement.
- SPU requires a course equivalent to its BUS 1700 or MOS certification (MOS 77-420); BT 242 may suffice to fulfill this requirement.
- WWU requires a course equivalent to its MIS 220 Introduction to Computer Systems; CL 101 may suffice to fulfill this requirement. The WWU Manufacturing and Supply Chain Management program requires additional coursework, some of which may also be taken as elective credit at EvCC. Management program web site is www.wvu.edu/node/731/.

Select an area
of interest

Program description

Program Description

The BSCS degree presents a course of study that

Admission Requirements

Career Opportunities

Related Occupations:

Computer Scientist; Control System Computer Scientist;
Scientific Programmer Analyst.

Most of these occupations require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).

Wages & Employment Trends for :

Florida Median income	\$90,910
Florida rate of growth	+5%
National Median wages	\$108,360
National Projected growth	+15 to 21%

Source and more information:
<http://www.onetonline.org/link/summary/15-1011.00>

The screenshot displays the FIU Undergraduate Degree Search interface. At the top, there are filters for "My Major" (Physical Sciences and Engineering, 2), "UH / AI" categories (AI categories, 2), and "or by college/school" (Architecture and the Arts, 2). Below these are search criteria for "Degree Level" (Undergraduate Degree Search) and "Apply Filter".

BROWSE MAJORS

Filters: All (2), 3, Jump To [Compare]

Majors	Degree	Major Maps	College/School	Courses
Biomedical Engineering	Bachelor of Science	3-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
Chemistry (BA)	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
Chemistry (BS)	Bachelor of Science	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
Chemistry/Biochemistry	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
	Bachelor of Science	2-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
	Bachelor of Science	2-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
Computer Science	Bachelor of Science	2-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
	Bachelor of Science	2-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
	Bachelor of Science	2-year Transfer, 4-year Freshman	Engineering and Computing	MVC (S)
	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
	Bachelor of Arts	2-year Transfer, 4-year Freshman	Arts and Sciences	MVC (S)
	Bachelor of Arts	N/A	Education	MVC (S)

Description: The BS/CS degree presents a course of study that includes mathematics, science, and computer science foundational topics necessary for the preparation of a successful computing professional. Students are taught skills in the art and science of computer programming that explores them to program design, algorithmic thinking, software engineering, and validation. Students develop software in our class of the art labs that offer a variety of operating systems and interactive development environments.

Typical jobs obtained by recent graduates include: computer programmer, computer analyst, and computer support specialist. Students who intend to pursue a software engineering career should select the Software Development Track.

[Compare]

Select a major map
for course sequence
and prerequisites to
finish in two years

FLORIDA INTERNATIONAL
UNIVERSITY

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Run Time: 03:11:08

Undergraduate Major Map

Catalog Year	2015
College / School	Computer Science - BS
Major	Track - Undergraduate
Career Path	Two Year Transfer

Fall Term 2015

Note: If spaced does not have CS science requirement(s) he/she must satisfy it at entering FIU.

Course Group	Courses Required	Course Description	Credits Hours	CS Req
Core Courses	CDA 3163	Fund Computer System	3	1
Additional Courses	ENC 3249	Tech Writing Comp	3	
Core Courses	COP 3337	Programming II	3	
Introduction to Probability & Statistics	STA 3033	Prob & Stat For Cs	3	
Core Courses	MAD 2104	Discrete Mathematics	3	

Spring Term 2016

Course Group	Courses Required	Course Description	Credits Hours	CS Req
Core Courses	CDA 4211	Structure Comp Org	3	1
Core Courses	CS 3095	Technology in the Global Arena	3	
Core Courses	COP 3330	Data Structures	3	
Core Courses	CST 3641	Logic For Comp Sci	3	
Core Courses	COP 4110	Database Management	3	

Summer Term 2016

(U) Use this Semester to catch up on coursework if necessary.

Course Group	Courses Required	Course Description	Credits Hours	CS Req
Core Courses	COP 4338	Programming III	3	

FIU
FLORIDA INTERNATIONAL
UNIVERSITY

Undergraduate Major Map

Fall Term 2016

Course Group	Courses Required	Course Description
Core Courses	CDA 4211 CST 4111	Software Eng I Real-world Computing
Core Courses	MAD 3810	Trig. Algorithms
Electives		
General Electives		

Spring Term 2017

Course Group	Courses Required	Course Description
Core Courses	CDA 4211	Senior Project
Core Courses	COP 4338	Prog Of Prog Lang
Core Courses	COP 4610	Operating System
Electives		

Summer Term 2017

Use this semester to catch up on coursework if necessary.

General


2 Year plan assumes student has completed an Associate's degree or the following pre-requisite courses for the major: PHY 2048, PHY 2049, PHY 2046, EEC 100 and CS 1010.

*Critical indicator is the minimum grade indicated in a major. Earning less than the minimum grade is a trigger for review.

GENERAL UNIVERSITY REQUIREMENTS

Transfer students are assumed to have completed all or completed 60 credits and the University Core Curriculum.

In addition, the following courses are required for the Global Learning Requirement for Transfers. Transfers: Global Learning requirement.


**FLORIDA
INTERNATIONAL
UNIVERSITY**

Fall 2017
 Fall 2018
 2019

Undergraduate Major Map

Fall Term 2016						Terms Taken: 13
Courses Group	Courses Required	Courses Description	Credits Earned	Credit Indicator	Courses Notes	Cum GPA: 2.0
Core Courses	CON 4070	Software Eng I	3	C		
Core Courses	CNT 4713	Networking	3			
Core Courses	CON 3912	Human Algorithms	3		Prerequisite for Fall of approved courses.	
Electives					Prerequisite for Fall of approved GL courses.	
General Electives			3			
Spring Term 2017						Terms Taken: 14
Courses Group	Courses Required	Courses Description	Credits Earned	Credit Indicator	Courses Notes	Cum GPA: 2.0
Core Courses	DSR 4941	Senior Project	3			
Core Courses	COE 4383	Proj Of Prog Lang	3			
Core Courses	COE 4610	Operating Syst Princ	3			
Electives			3		Prerequisite for Fall of approved courses.	
Electives			3		Prerequisite for Fall of approved courses.	
Summer Term 2017						Cum GPA: 2.0
Use this semester to complete a necessary requirement						

General Requirements

2 Year plan assumes student has completed an Associates of Arts Degree from a Florida Public Institution as well as the following pre-requisite courses for the major: COS 1620, COE 2210, MAC 2311, MAC 2312, PHY204S, PHY 204SL, PHY204B, PHY 204BL, BSC 1010 and BSC 1013L, OR BSC 1011 and BSC 1013L, MAC 2104

*"Oral Indicator is the minimum grade indicated in specific courses to demonstrate proficiency and progress in major. Earning less than the minimum grade is a trigger for a conversation with advisor."

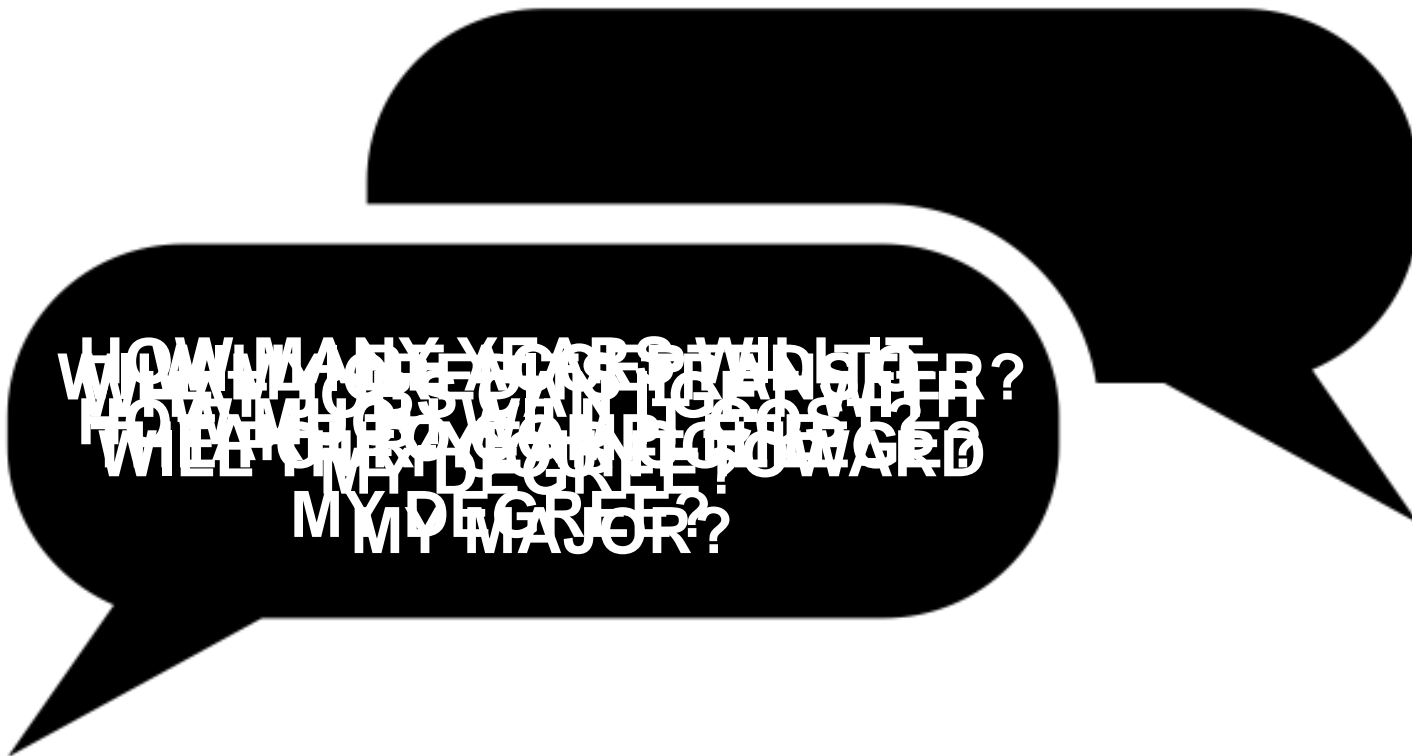
GENERAL UNIVERSITY REQUIREMENTS

Transfer students are guaranteed to have completed an Associates of Arts Degree from a Florida Public Institution or completed 60 credits and the University Core Curriculum Requirements.

In addition, the following courses are required of incoming transfer students:

Global Learning Requirement for Transfers: Transfers entering FIU at 2017 or later are required to take two Global Learning courses.

STRATEGY 3: Provide Tailored Transfer Student Advising



STRATEGY 3: Provide Tailored Transfer Student Advising



**COMMUNITY COLLEGE
ADVISING PRACTICES**

- ✓ Clearly articulate students' transfer options and help them determine, as early as possible, their field of interest, major, and preferred transfer destination
- ✓ Continuously monitor student progress, provide frequent feedback and intervene quickly when students are off-track
- ✓ Help students access the financial resources necessary to achieve their goals

WEBSITE EXERCISE

Imagine you are a student about to register for classes at your community college.

You want to study marketing and transfer to a local four-year university. Go to **YOUR COLLEGE'S** website, and find the information that you need to select your courses and transfer successfully. Try to figure out what courses you will need to in order to transfer and enter the marketing program at the four-year institution.

Think about the following questions **AS THE STUDENT**:



Getting Off on the Right Start: What marketing programs are available at nearby universities? What career options are available to you after you transfer and complete the degree? What do salaries look like for these career options? Is this information available to you on either website?



Planning for Program Requirements: What are the requirements for admission to the university's marketing programs? What classes will the student need to take at **YOUR COLLEGE** if you want to transfer into a marketing program at the university? How easy or difficult was it to find this information? How many clicks did it take?



Locating In-Person Help: Who would you need to go to at **YOUR COLLEGE** to get information on transfer in marketing? Where would you go to on your campus to find that person? How easy or difficult was it to find this information on your website?

STRATEGY 3: Provide Tailored Transfer Student Advising



**FOUR-YEAR COLLEGE
ADVISING PRACTICES**

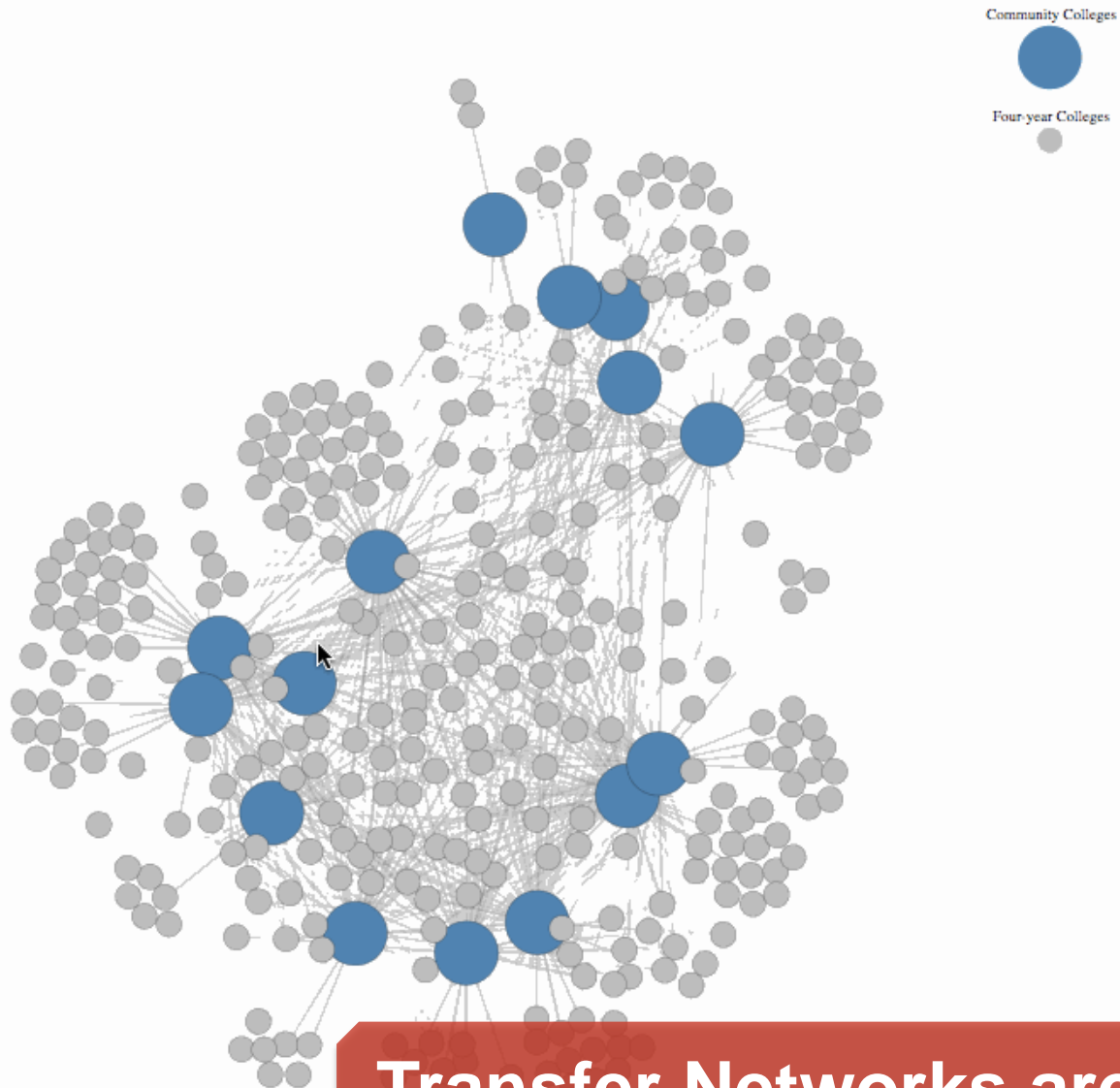
- ✓ Commit dedicated personnel, structures, and resources for transfer students
- ✓ Assign advisors and clearly communicate essential information to prospective transfer students
- ✓ Strongly encourage transfer students to choose a major prior to transfer
- ✓ Replicate elements of the first-year experience for transfer students
- ✓ Exercise fairness in financial aid allocation

“I APPLIED TO [A FOUR-YEAR UNIVERSITY] AS A FRESHMAN AND GOT SCHOLARSHIPS. THEN I APPLIED [TO THE SAME UNIVERSITY] AS A TRANSFER STUDENT AND DIDN'T GET [SCHOLARSHIPS]. WHERE DID THEY GO?”

— CURRENT COMMUNITY COLLEGE TRANSFER STUDENT

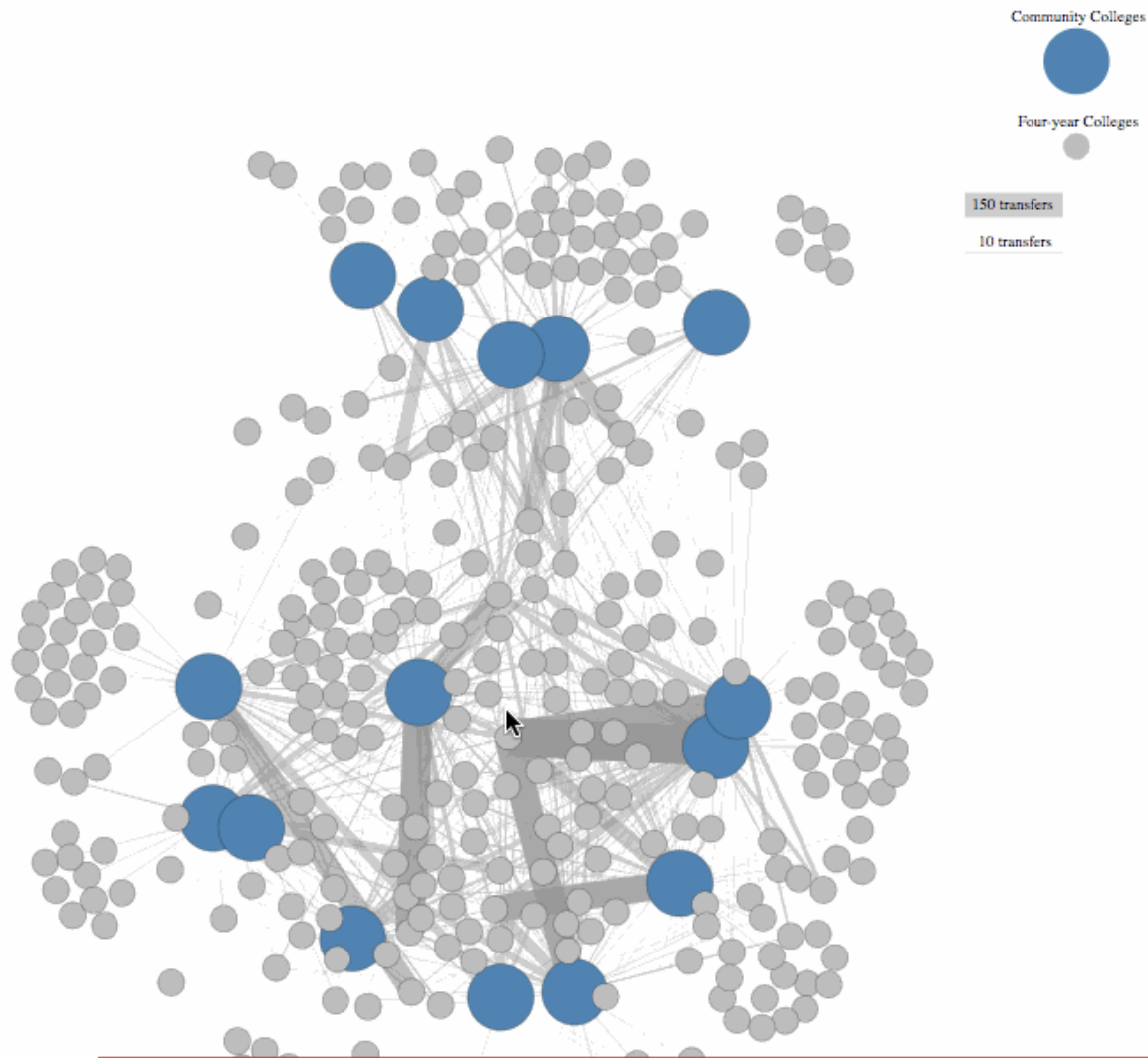
Build Strong Transfer Partnerships

Weight links by number of transfers | Add color for completion rates | Reset



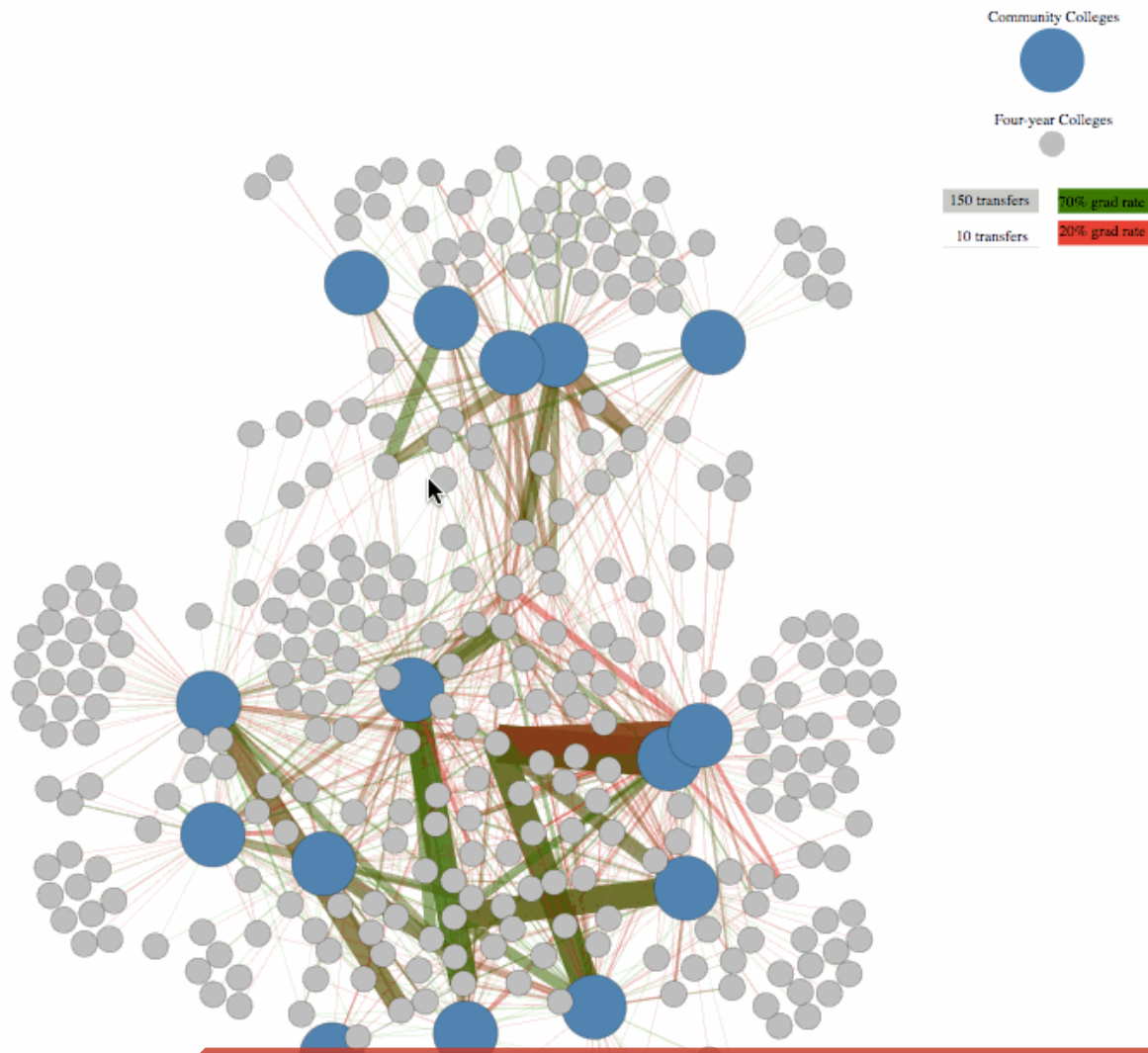
Transfer Networks are complex

Weight links by number of transfers Add color for completion rates Reset



Colleges are prioritizing major partners

Weight links by number of transfers Add color for completion rates Reset



...and looking at success by partner

Build Strong Transfer Partnerships

- ✓ Build trusting relationships with partners and communicate frequently at all levels.
- ✓ Share data on transfer student experiences and outcomes.
- ✓ Jointly invest in shared support services and strategic initiatives to benefit transfer students.
- ✓ Collaborate on improving instruction and support services for transfer students.
- ✓ Designate “transfer champions” to serve as liaisons to transfer partners.

Institution Name: _____

Overview: This tool is designed to help your institution assess the alignment of your community college transfer student practices with those described in *The Transfer Playbook: Essential Practices for Two- and Four-Year Colleges*, published in May 2016 by the Aspen Institute's College Excellence Program and the Community College Research Center at Columbia University's Teachers College. These practices were identified based on research on two- and four-year institutional partnerships that have achieved exceptional transfer and baccalaureate completion rates for students who start at community colleges (controlling for student and institutional characteristics).

How to use this tool: The assessment is organized around four categories of essential practices: 1) prioritize transfer, 2) create clear, rigorous program pathways, 3) provide tailored transfer advising, and 4) build effective transfer partnerships. Within the four categories, please use the following scale to rate how systematically each sub-practice is implemented at your college. By "systemic," we mean that the practice is implemented routinely and at scale, and that it is part of the regular operation and culture of the college. The tool offers questions to consider as you conduct the assessment, and space to identify possible next steps.

Scale of Adoption
(1) Minimal
(2) Beginning
(3) Building
(4) Systemic

We recommend that a core team be assembled to complete the assessment to ensure that those with relevant knowledge of transfer student practices and policies are included. Possible members of the team might include: deans from at least two colleges or academic divisions, department chairs from at least two academic divisions, a financial aid staff member, and advisors who work with transfer students. Once a diverse, inclusive core team has completed the assessment, members should then engage others at the institution in conversation about the results, beginning with the president and her/his cabinet and followed by a broader group of faculty and staff. Ideally these discussions should help refine the assessment, build shared understanding of the ways your institution does and does not support transfer students, and motivate college leaders to continue to engage the wider college community in planning and implementing improvements.

For help using this tool: Contact Josh Wyner of the Aspen Institute (josh.wyner@aspeninstitute.org) or Davis Jenkins at CCRC (davisjenkins@gmail.com).

To share feedback or comments on the report, please contact John Fink (john.fink@tc.columbia.edu).

**THE TRANSFER PLAYBOOK:
TOOL FOR ASSESSING PROGRESS TOWARD ADOPTION OF
ESSENTIAL TRANSFER PRACTICES FOR FOUR-YEAR COLLEGES**

Institution Name: _____

Date: _____

Overview: This tool is designed to help your institution assess the alignment of your community college transfer student practices with those described in *The Transfer Playbook: Essential Practices for Two- and Four-Year Colleges*, published in May 2016 by the Aspen Institute's College Excellence Program and the Community College Research Center at Columbia University's Teachers College. These practices were identified based on research on two- and four-year institutional partnerships that have achieved exceptional transfer and baccalaureate completion rates for students who start at community colleges (controlling for student and institutional characteristics).

How to use this tool: The assessment is organized around four categories of essential practices: 1) prioritize transfer, 2) create clear, rigorous program pathways, 3) provide tailored transfer advising, and 4) build effective transfer partnerships. Within the four categories, please use the following scale to rate how systematically each sub-practice is implemented at your college. By "systemic," we mean that the practice is implemented routinely and at scale, and that it is part of the regular operation and culture of the college. The tool offers questions to consider as you conduct the assessment, and space to identify possible next steps.

Scale of Adoption	Definition
(1) Minimal	The college does not engage in this practice in a significant way (i.e., routinely and/or at scale)
(2) Beginning	The college is beginning to engage in this practice, but has not moved toward systematizing it
(3) Building	The college engages in this practice and is moving toward systemic implementation
(4) Systemic	The college engages in this practice systemically

We recommend that a core team be assembled to complete the assessment to ensure that those with relevant knowledge of transfer student practices and policies are included. Possible members of the team might include: deans from at least two colleges or academic divisions, department chairs from at least two academic divisions, a financial aid staff member, and advisors who work with transfer students. Once a diverse, inclusive core team has completed the assessment, members should then engage others at the institution in conversation about the results, beginning with the president and her/his cabinet and followed by a broader group of faculty and staff. Ideally these discussions should help refine the assessment, build shared understanding of the ways your institution does and does not support transfer students, and motivate college leaders to continue to engage the wider college community in planning and implementing improvements.

For help using this tool: Contact Josh Wyner of the Aspen Institute (josh.wyner@aspeninstitute.org) or Davis Jenkins at CCRC (davisjenkins@gmail.com).

To share feedback or comments on the report, please contact John Fink (john.fink@tc.columbia.edu).

DRAFT FOR FIELD TESTING AND REVIEW

CCRC COMMUNITY COLLEGE
RESEARCH CENTER

THE ASPEN INSTITUTE
COLLEGE EXCELLENCE PROGRAM

ESSENTIAL TRANSFER PRACTICES

THE ASPEN INSTITUTE
COLLEGE EXCELLENCE PROGRAM

DRAFT FOR FIELD TESTING AND REVIEW COMMENTS WELCOME

CCRC COMMUNITY COLLEGE
RESEARCH CENTER
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

Institution

Overview
Essential
Research
have achieved
character

How to use
3) provide
systematic
and that
space to

We recognize
that serving
student success
should be the
of faculty and
transfer success

For help

To share feedback

a. The institution
other senior
that improve
college transfer
outcomes is
institution's

b. Transfer student
reflected as
institution's
(e.g., strategic
self-study, self-
planning documents,
etc.).

c. The institution
and widely
transfer student
the effective
practices.

ESSENTIAL TRANSFER PRACTICE #2: CREATE CLEAR, RIGOROUS PROGRAM PATHWAYS

Stage of Adoption at Our Institution

Questions to Consider

Next Steps: Easy Wins and Opportunities for Long-Term Improvement

a. Programs of study for
community college transfer
students are clearly mapped.

- ☐ Minimal
- ☐ Beginning
- ☐ Building
- ☐ Systemic

- Do the transfer maps clearly indicate:
 - recommended lower-division courses, course sequences, and progress milestones by academic term for specific majors?
 - clear information on special requirements and procedures for specific majors or colleges?
 - notes to clarify particularly confusing articulation with major feeder colleges?
 - information on career opportunities in each field?
- Are the maps easily accessible on the institution's website?
- Is there a mechanism for keeping transfer program requirements and maps up-to-date?

b. Community college coursework
and extra-curricular activities
provide students with rigorous
preparation aligned to
expectations for their junior and
senior years at your institution.

- ☐ Minimal
- ☐ Beginning
- ☐ Building
- ☐ Systemic

- What does your institution do to ensure that the lower division instruction offered by partner community colleges is aligned with the requirements for your major programs, both in content and level of rigor?
- Are your academic departments actively involved in reviewing the content and quality of partner community college offerings?
- Is there a process for your academic departments to communicate needed improvements to partner community colleges? If so, how well does this process work?

c. Alternatives to traditional 2+2
transfer pathways have been
developed for circumstances
where those are not the best
routes to a bachelor's degree.

- ☐ Minimal
- ☐ Beginning
- ☐ Building
- ☐ Systemic

- For which students or programs do 2+2 arrangements work best? For which does the 2+2 arrangement work least well?
- What new structures have been put in place to improve outcomes (e.g., 1+3; 3+1; reverse transfer)?

For more information

Please visit us on the web at

<http://ccrc.tc.columbia.edu>

where you can download presentations, reports,
and briefs, and sign-up for news announcements.

We're also on [Facebook](#) and [Twitter](#).

Community College Research Center

Teachers College, Columbia University

525 West 120th Street, Box 174, New York, NY 10027

E-mail: ccrc@columbia.edu Telephone: 212.678.3091



CCRC

COMMUNITY COLLEGE
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TEACHERS COLLEGE, COLUMBIA UNIVERSITY