Connecting Developmental Education to College Level Programs of Instruction

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Developmental Mathematics: For whom? Mathematical Sciences Research Institute

Community College Research Center

Teachers College, Columbia University.

Founded in 1996

- High school to college transitions
- **Developmental Education**
- Student services and financial aid
- Online learning and instructional technology
- College completion and transfer
- College to career and workforce education

- http://ccrc.tc.columbia.edu/our-research.html.

Organization of the Center for the Analysis of Postsecondary Readiness

CCRC

MDRC

Descriptive Study of Developmental Education

Evaluation of New Assessment Practices (RCT in NY)

Evaluation of The New Mathways Project (RCT in TX)

Supplemental Studies

DE Basics

The high school/community college connection is weak

The assessment and placement system needs reform

- We cannot effectively separate students into developmental and college ready categories
- Many students are underplaced

DE does a poor job of improving student outcomes

- Most DE students do not complete a relevant college level course
- DE tends to divert students rather than solidifying them in a college level program

DE Reform Basics

Assessment—

- Early assessment
- Multiple measures

Instruction—

- Learning facilitation
- Productive persistence
- College success skills

DE Reform—Connection to College Level

Intensity, Compression, Acceleration

- Technology assisted
- Modularized instruction
- Acceleration/compression--CCD
- Intensity—CUNY Start

Comprehensive Reform

- Curricular Alignment—NMP
- ASAP
- On-ramps to college level programs

Assessment Reform

Can We Effectively Divide Students into Dev Ed and College Ready Categories?

No consensus on definition of "college ready"

- No consensus on cutoff scores
- Significant underplacement

Differs by grade standards

No obvious cutoff point (continuous not discontinuous relationship)

Required skills differ by student goals

Assessments do not measure non-cognitive skills

Intensity, Compression, and Acceleration

The Developmental Education Reform at the Virginia Community College System
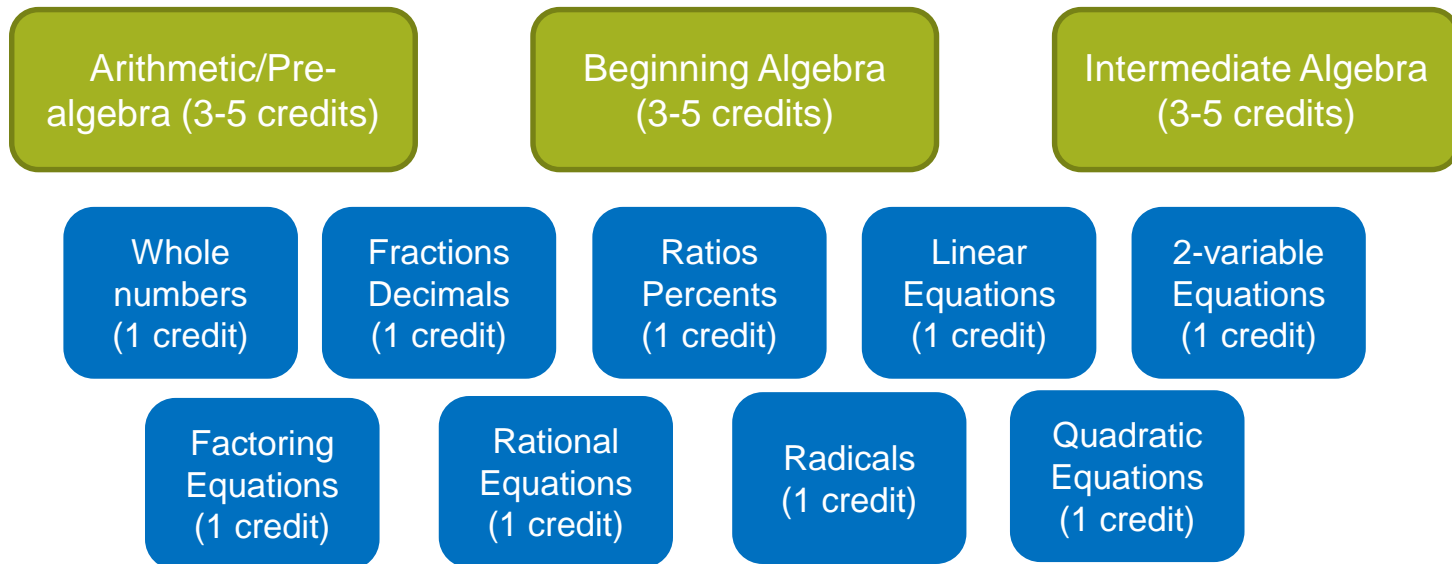
Driven by three broad goals:

- To reduce the need for developmental education—more success in college level courses

- To reduce the time students spend in developmental education

- To increase the number of developmental education students graduating or transferring
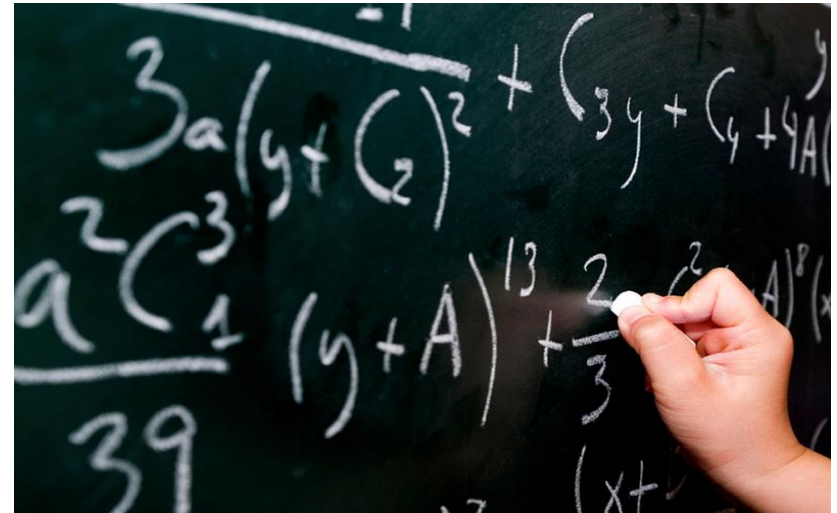
Modularized Developmental Math

- Redesigned developmental math curricula into one-credit modules

| Arithmetic/Pre-algebra (3-5 credits) | Beginning Algebra (3-5 credits) | Intermediate Algebra (3-5 credits) |

| Whole numbers (1 credit) | Fractions Decimals (1 credit) | Ratios Percents (1 credit) | Linear Equations (1 credit) | 2-variable Equations (1 credit) |

| Factoring Equations (1 credit) | Rational Equations (1 credit) | Radicals (1 credit) | Quadratic Equations (1 credit) |

- Introduced a customized diagnostic assessment to place students into individual modules

Acceleration: FastStart

- Two levels of developmental math and a student success course completed concurrently in a single semester
- Dedicated case manager
- Courses meet in long instructional blocks
- Professional development for FastStart instructors considered essential to program success

CCBC ALP (1 year **follow-up**)

Reg Dev Ed
ALP

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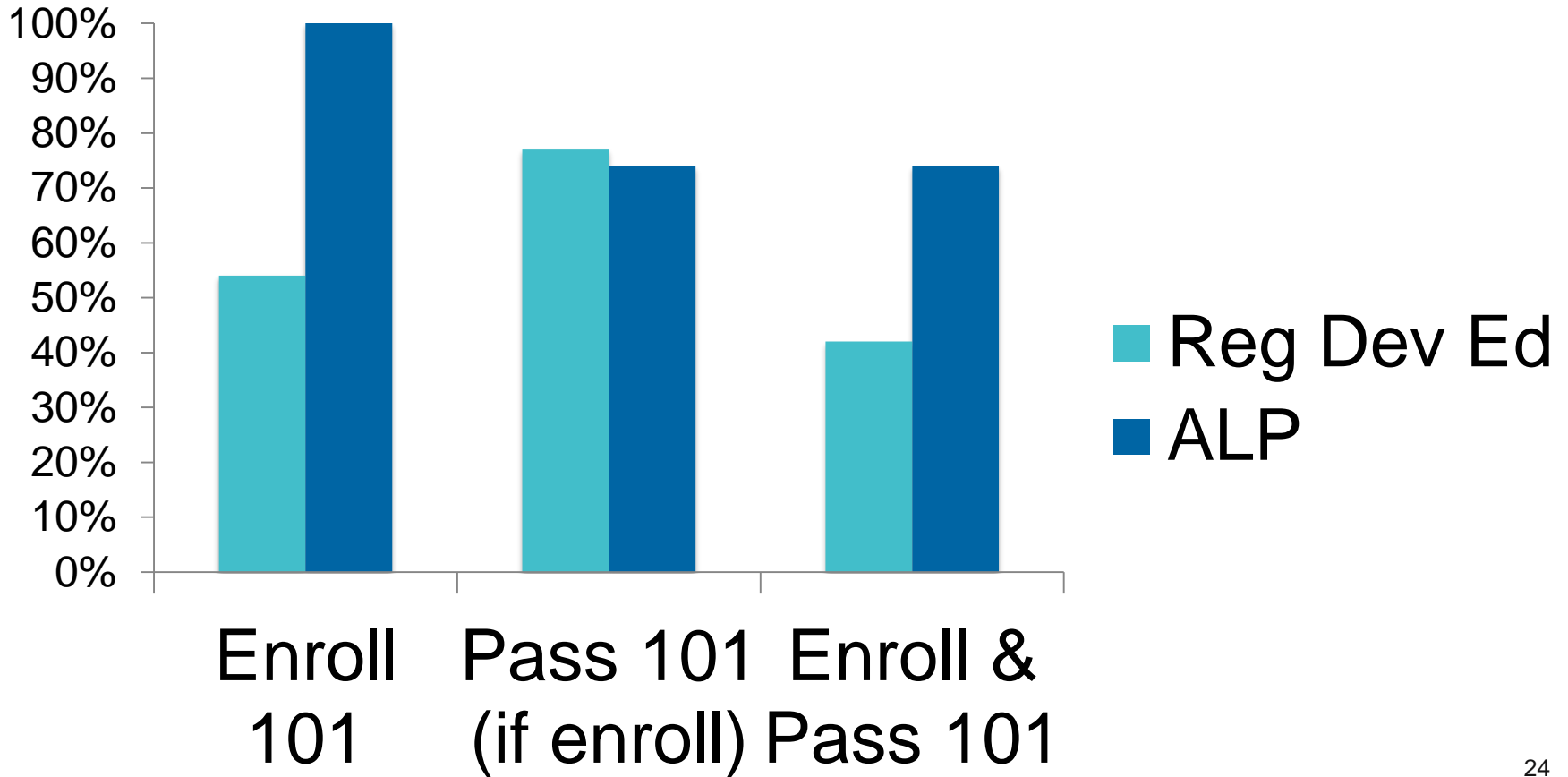
Low Scoring Students:
CUNY Start

- Instructional design uses student-centered active learning strategies focused on conceptual understanding
- Twelve hours of instruction per week in each subject
- Integrated student supports
- Intensive semester-long apprenticeship for new instructors

Math Gains

Table 3.2M Math Proficiency Gains[1]

Proficiency Gains in Math[3]	CUNY Start Students		Matched Comparison Group[2]		
	N	% Achieving proficiency	N	% Achieving proficiency after One Semester[4]	
All Students Needing Remediation in Math	1,354	53.0	1,354	10.2	-42.8
Initial Need in Math Only	166	62.0	166	12.7	-49.3
Initial Need in Math + Reading Only	99	50.5	99	10.1	-40.4
Initial Need in Math + Writing Only	421	61.3	421	13.5	-47.8
Initial Need in Math + Reading + Writing	668	45.8	668	7.5	-38.3

City University of New York, 2013

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Comprehensive Reform-On-Ramps to College Level Programs

Widespread Reform without Institutional Level Improvements in Student Outcomes

Failure of horizontal scaling

- "Initiatives" outside of the core functioning of the college

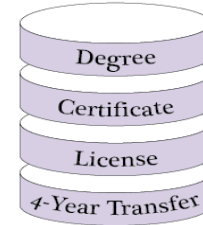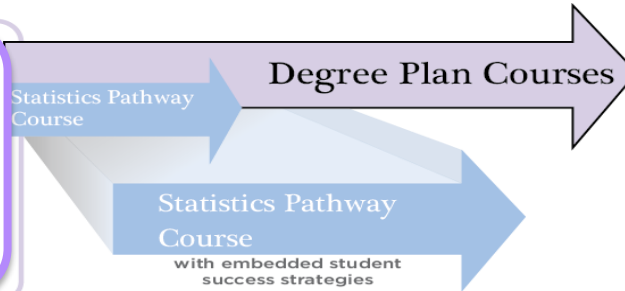## Failure of vertical scaling

- Addresses problems in a limited segment of the student experience

Three Pathways To-and-Through College Transferable Courses
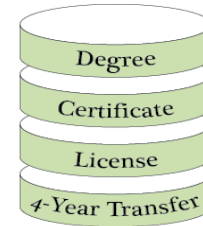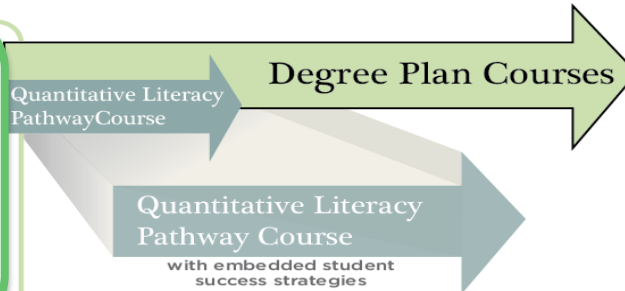
The New Mathways Project

STATISTICS PATHWAY is designed for students seeking a college-level statistics course as part of their general education requirement for majors in fields including:
- Nursing
- Social Work
- Criminal Justice

Statistics Pathway Course → **Degree Plan Courses**

Statistics Pathway Course with embedded student success strategies

Degree / Certificate / License / 4-Year Transfer

QUANTITATIVE REASONING PATHWAY is designed for students pursuing a field of study in which general education math is a requirement. These fields include majors in:
- Communications
- Graphic Design
- Paralegal

Quantitative Literacy Pathway Course → **Degree Plan Courses**

Quantitative Literacy Pathway Course with embedded student success strategies

Degree / Certificate / License / 4-Year Transfer

STEM-PREP PATHWAY is designed for students seeking a STEM or mathematics-intensive major in fields including:
- Petroleum Engineering
- Computer Science
- Chemistry

STEM Pathway Course → **Degree Plan Courses**

STEM Pathway Course with embedded student success strategies

Degree / Certificate / License / 4-Year Transfer
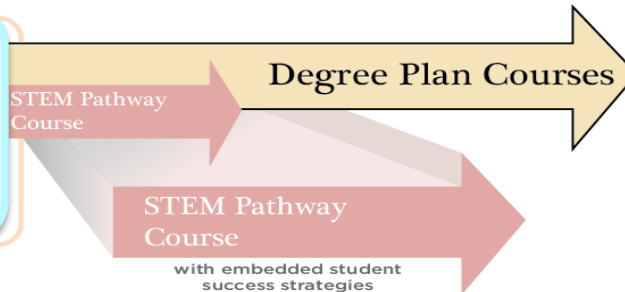
college completion goals

Differences in Enrollment and Completion of College-Level Math

KNOW WHAT YOU WANT
What are your career and life goals?

A degree or certificate from CCC is your ticket to a rewarding career, either right after graduation, or after a successful transfer to a four-year university. We have the resources to get you there, but you have to make some choices about your path.
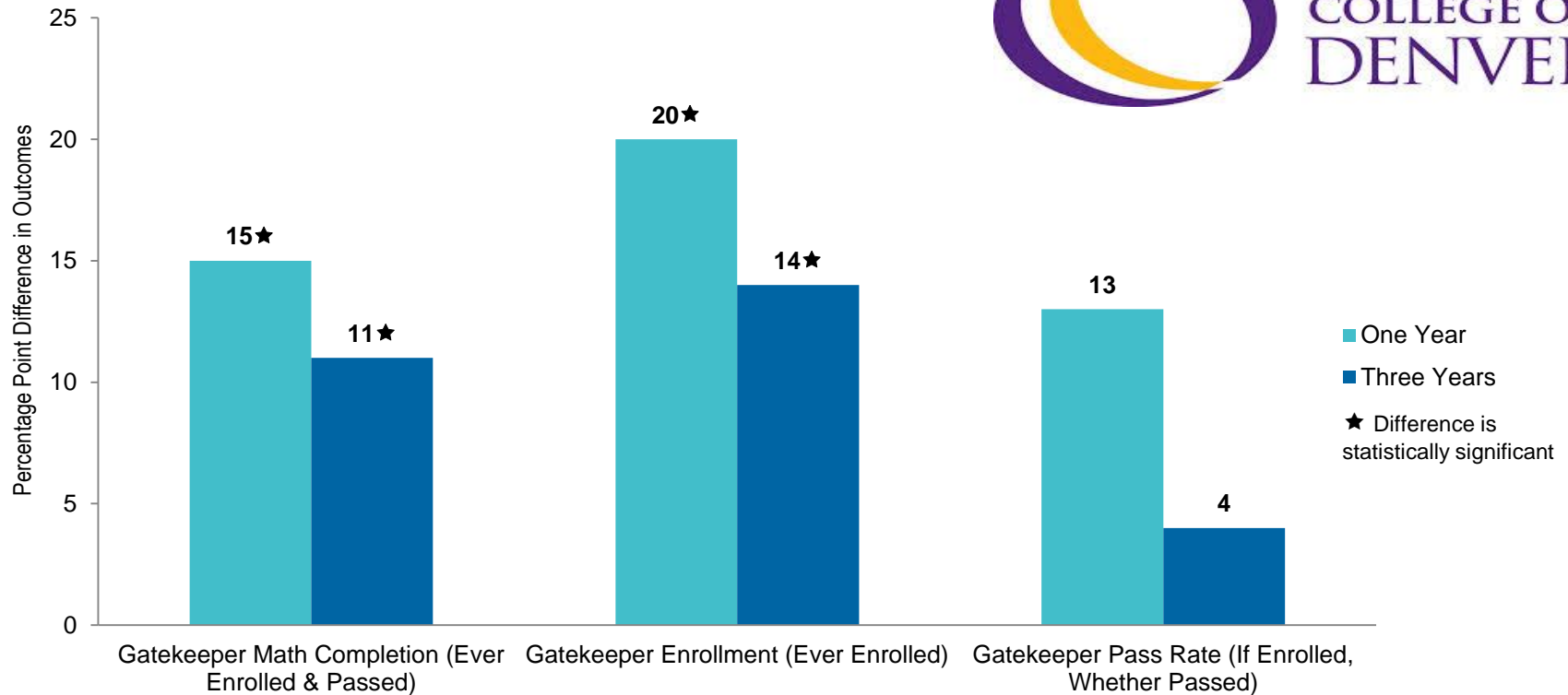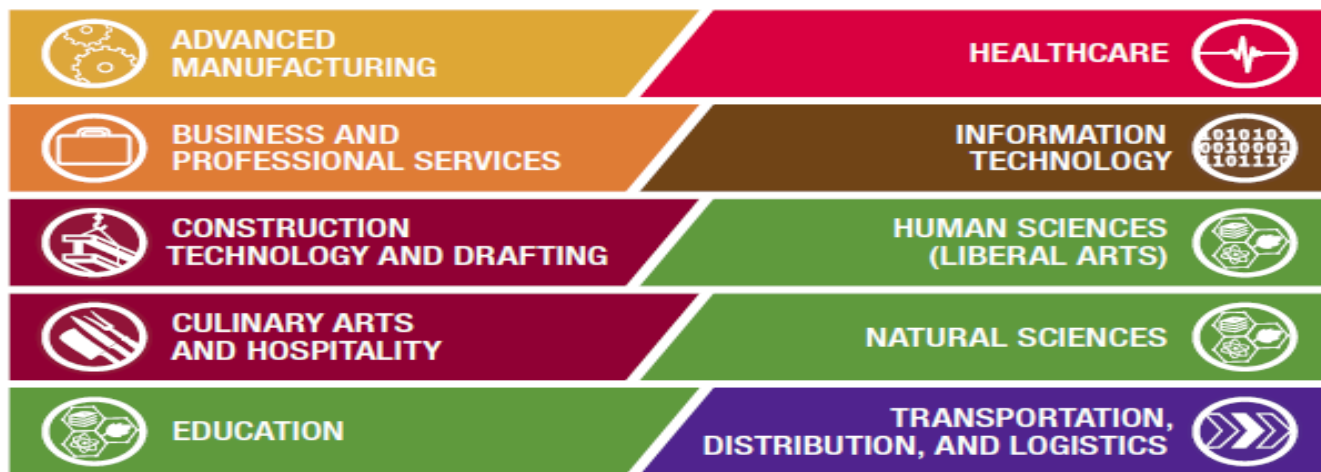
The City Colleges of Chicago offers over 200 degree and certificate programs. That's a lot of choices! To narrow down your options, **1) choose one of our ten Focus Areas.** Your College Advisor can give you tools and ask you the right questions to help you make your decision. Once you have chosen a focus area, you should consult with your College Advisor to **2) decide if you plan to transfer** to a four-year school. With this information, you and your advisor can determine the degree or certificate program that works best for you!

ADVANCED MANUFACTURING	**HEALTHCARE**
BUSINESS AND PROFESSIONAL SERVICES	**INFORMATION TECHNOLOGY**
CONSTRUCTION TECHNOLOGY AND DRAFTING	**HUMAN SCIENCES (LIBERAL ARTS)**
CULINARY ARTS AND HOSPITALITY	**NATURAL SCIENCES**
EDUCATION	**TRANSPORTATION, DISTRIBUTION, AND LOGISTICS**

Consider that in 2018, 80% of jobs in Illinois will fall under College to Careers focus areas. The College to Careers (C2C) initiative makes sure that we are training people to fill these positions. C2C also partners with potential employers and transfer institutions to ensure students make smooth transitions to meet their goals.

GradesFirst

Set an appointment with your College Advisor!
Your College Advisor is your biggest ally in choosing your path at City Colleges. It is important that you meet with them frequently. Use the program GradesFirst to set an appointment.

1. Go to ccc.gradesfirst.com and log in with your CCC username and password.
2. Click on the Calendar tab, and then on "Get Advising" on the right side of the page.
3. Your advisor's calendar will pop up; choose an appointment date and time.

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Pathways to Academic, Career and Transfer Success (PACTS)

LOS ANGELES TRADE—TECH
LATTC
A Community College

PATHWAYS*

- Advanced Transportation Manufacturing
- Applied Sciences
- Construction, Maintenance & Utilities
- Design and Media Arts
- Health Sciences
- Liberal Arts & Sciences

Pinnacle of Potential

STUDENT OUTCOME (2-4 Years)
- Reaching the Pinnacle of Potential through Postsecondary Pathway Completion

Tier 4 – Degree and/or Transfer Program of Study Competencies

Degree and/or Transfer
(Unique to Each Program of Study)

STUDENT OUTCOME (2-4 Years)
- Degree Completion
- Transfer Ready/ IGETC Certification

Tier 3 – Program of Study Core Competencies

Program of Study Core Competencies
(Unique to Each Program of Study)

Career Readiness (Unique to Program of Study(s))

STUDENT OUTCOMES (1-2 Years)
- CTE Certificate of Achievement Completion(s) that Lead to Career Readiness for Entry Occupations, Career Advancement, and/or Wage Progression
- Industry-Recognized Certification/Credential(s)
- 30 Units in Degree Program of Study

Tier 2 – Academic and Career Readiness Competencies
(Competency-Based, Required Until Competencies Met)

Career Readiness (Unique to Program of Study(s))

STUDENT PREPARATION
- Competency Gains (pre-post assessment)
- Progress Towards PACTS Goal(s)
- HSDiploma or GED Completion
- Noncredit
- Certificate of Competency Completion

Academic Readiness (Math and English)	Computing, Information, and Digital Literacy

Tier 1 - Foundational Competencies for Success in College and Careers (Trade Tech Experience)

Self-Efficacy for College and Career Success	Awareness of Academic/Career Options and Readiness	Academic and Career Goal Setting and Planning	Navigating and Accessing Community and College Resources

STUDENT ACCESS & ENGAGEMENT
- Completed PACTS Plan
- Increased Self-Efficacy Skills

*Four Additional Pathways Programmed for 2014-2016

November 12, 2014

Prepare students to choose and enter a college-level program of study

Upfront career/college exploration, planning

Undecided students required to choose "meta-major" or "exploratory major"

Instruction in academic fundamentals and "soft skills" integrated into gatekeeper courses

Collaborative professional development

Pathway **Models** Compared

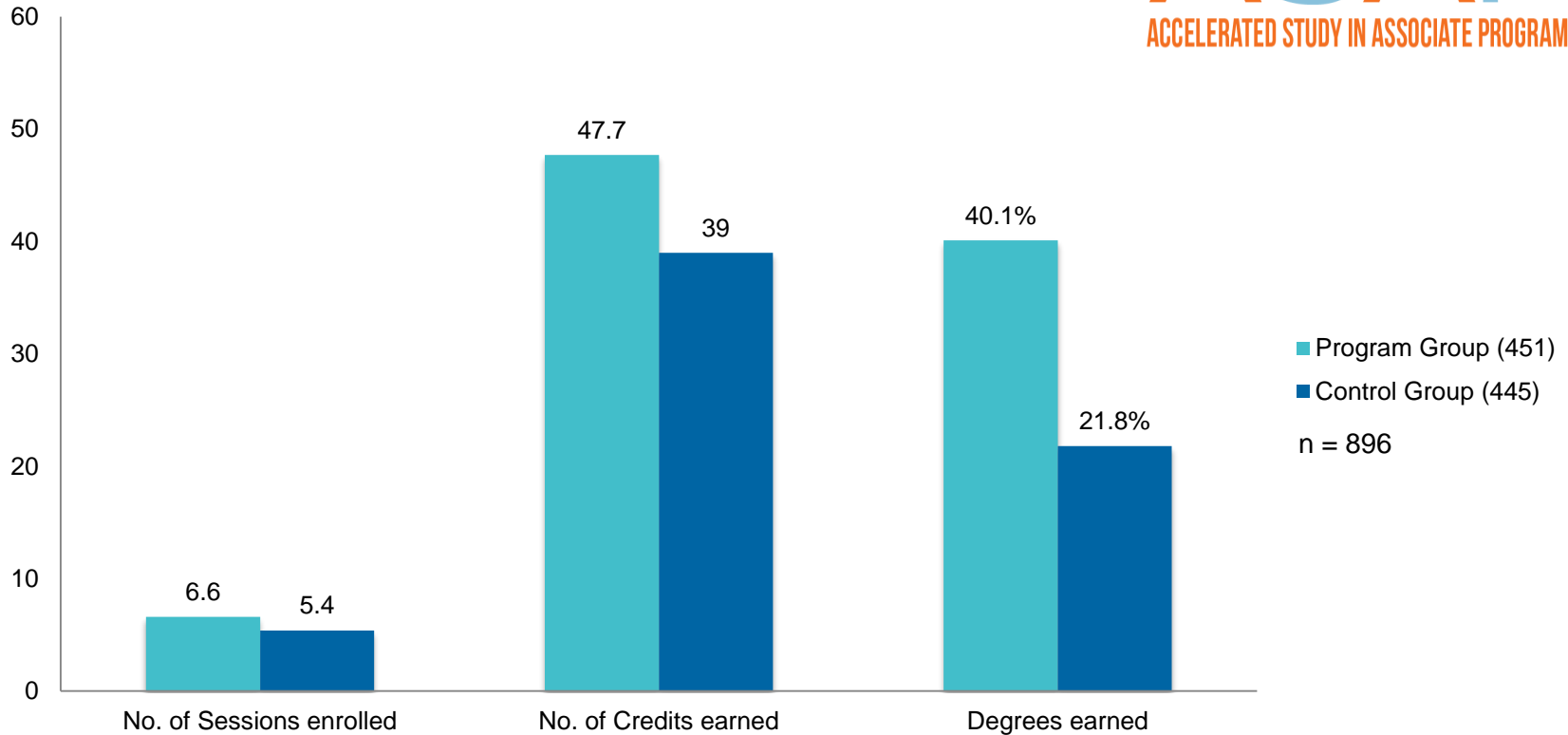| Self-Service (Status Quo)	Guided Pathways
"Opt-in" career and college planning	Required plans, exploratory majors
Program paths unclear	Clear roadmaps to student end goals
Too many choices	Default, whole-program schedules
Dev ed narrowly focused on Math & English 101, no "soft skills" prep	Intake system redesigned as "on-ramp" to program of study
Students' progress not monitored	Progress tracking, regular feedback & support

Comprehensive Reform: ASAP

- Financial incentives: tuition waiver, free textbooks, monthly transit cards
- Consolidated full-time schedule
- Cohort design
- Regular structured advisement for courses and careers
- Extra academic assistance: mandatory tutoring for students deemed at-risk
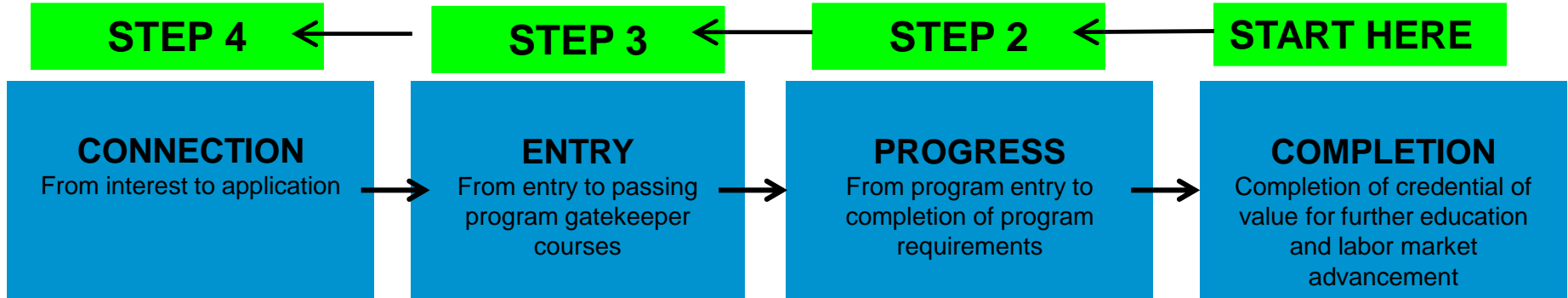
Impact Over Three Years

Three Year Summary Table

Focus on the Ultimate Goals

STEP 4 ←	STEP 3 ←	STEP 2 ←	START HERE
CONNECTION From interest to application	**ENTRY** From entry to passing program gatekeeper courses	**PROGRESS** From program entry to completion of program requirements	**COMPLETION** Completion of credential of value for further education and labor market advancement

- Market program paths
- Build bridges from high school and adult ed. into program streams (e.g., strategic dual enrollment, I-BEST)

- Help students choose program pathway and track entry
- Build prescribed "on-ramps" customized to largest program streams

- Clearly define and prescribe program paths
- Monitor students' progress and provide feedback and supports JIT
- Incentivize progress

- Align academic program outcomes with requirements for success in further education and (for CTE programs) in the labor market
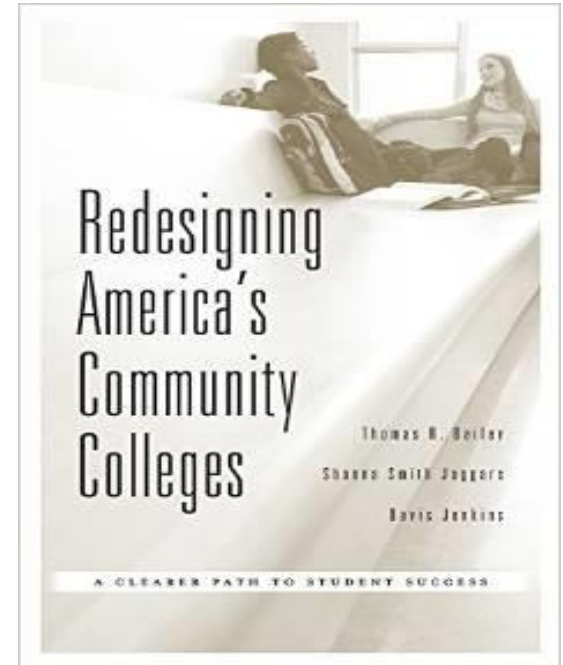
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Redesigning America's Community Colleges

A Clearer Path to Student Success

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For more information

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http://ccrc.tc.columbia.edu

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