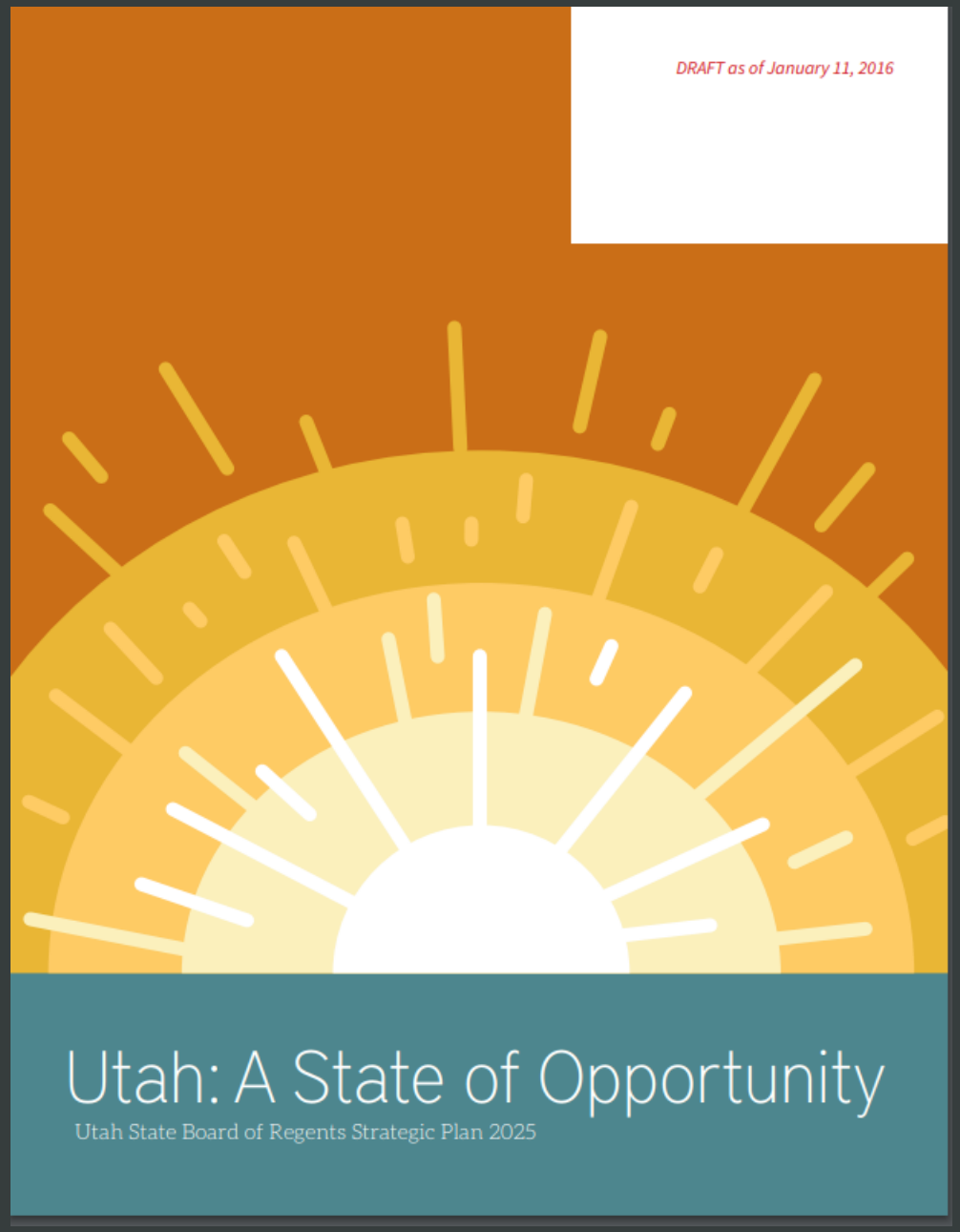
Measuring Student Access and Success

Julie Hartley, USHE
David Ma, USHE

UTAH SYSTEM OF HIGHER EDUCATION

Session Overview

- Regents' access and success strategic plan
- USHE's access and success metrics
- Next steps


DRAFT as of January 11, 2016
Utah: A State of Opportunity
Utah State Board of Regents Strategic Plan 2025

AFFORDABLE PARTICIPATION

- SBR Goal: Increase the number of Utahns who decide to access, are prepared for, and succeed in higher education.
- Regents' Metric: Increase the percentage of Utah high school graduates enrolling in college within five years to 75% by 2024-2025

Timely Completion

Regents' Goal for 2025 is 28 awards per 100 FTE.

- 2015: 25 awards per 100 FTE
- 2016: 26 awards per 100 FTE

Missing Metrics

- Completion Goals specific for different groups of students, particularly those with attainment gaps
- Assessments/measures of the maneuverability of institutions and degree pathways

Increase the educational attainment of Utahns
to enhance their overall quality of life,
and to meet Utah's current and future workforce needs.

Affordable Access	Timely Completion	Research & Workforce	Capacity & Growth

Regent Work Groups

Utah College Acceptance Letter	Statewide Data /Tech. Strategy	High demand, undersupplied occupations
Student Aid and Tuition Policy	Mental Health Recommendations	Improve Information to Students on Workforce Options
StepUp Schools	Student Transfer	

Strategic Communications Plan

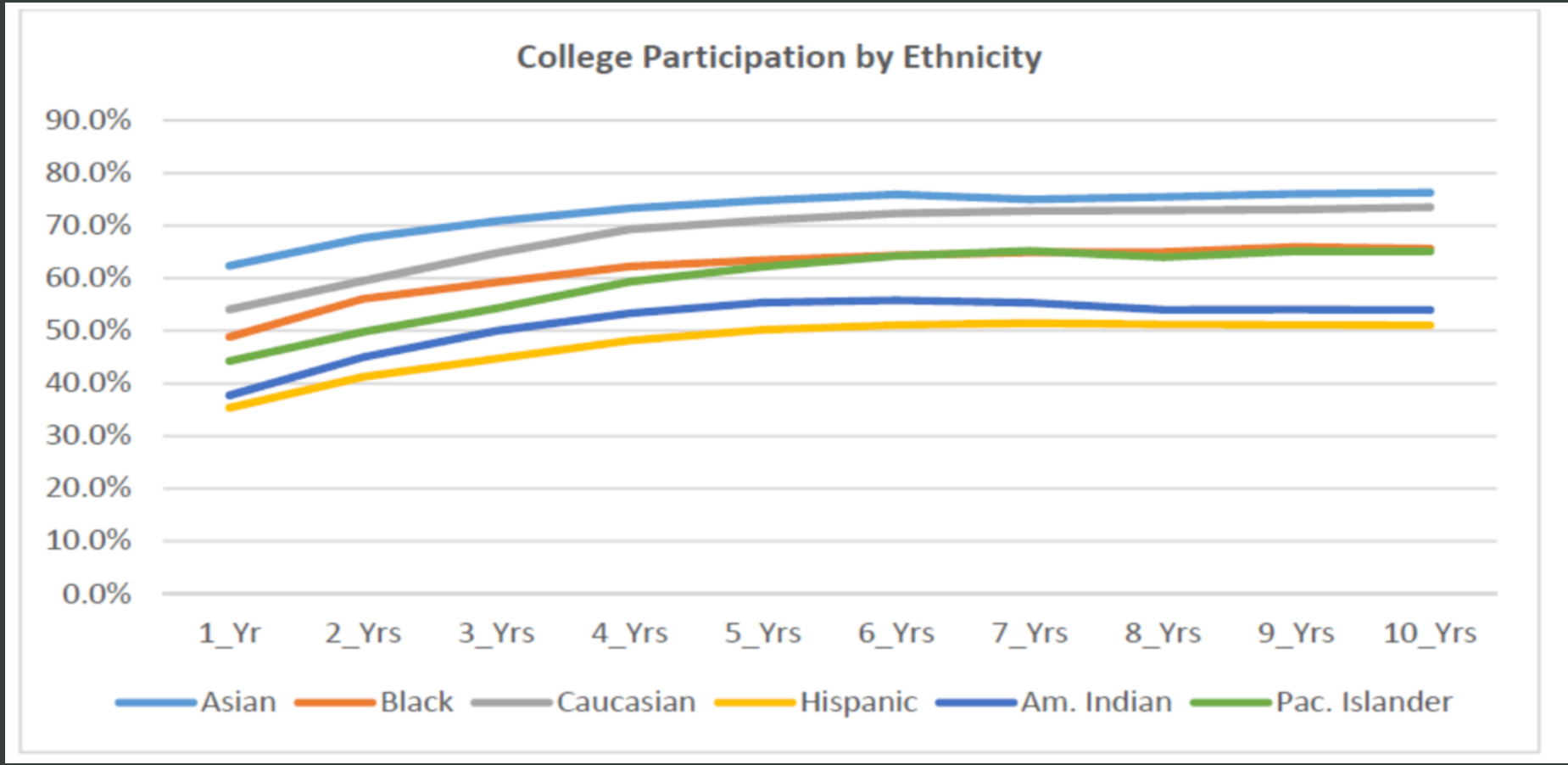
Affordable Participation

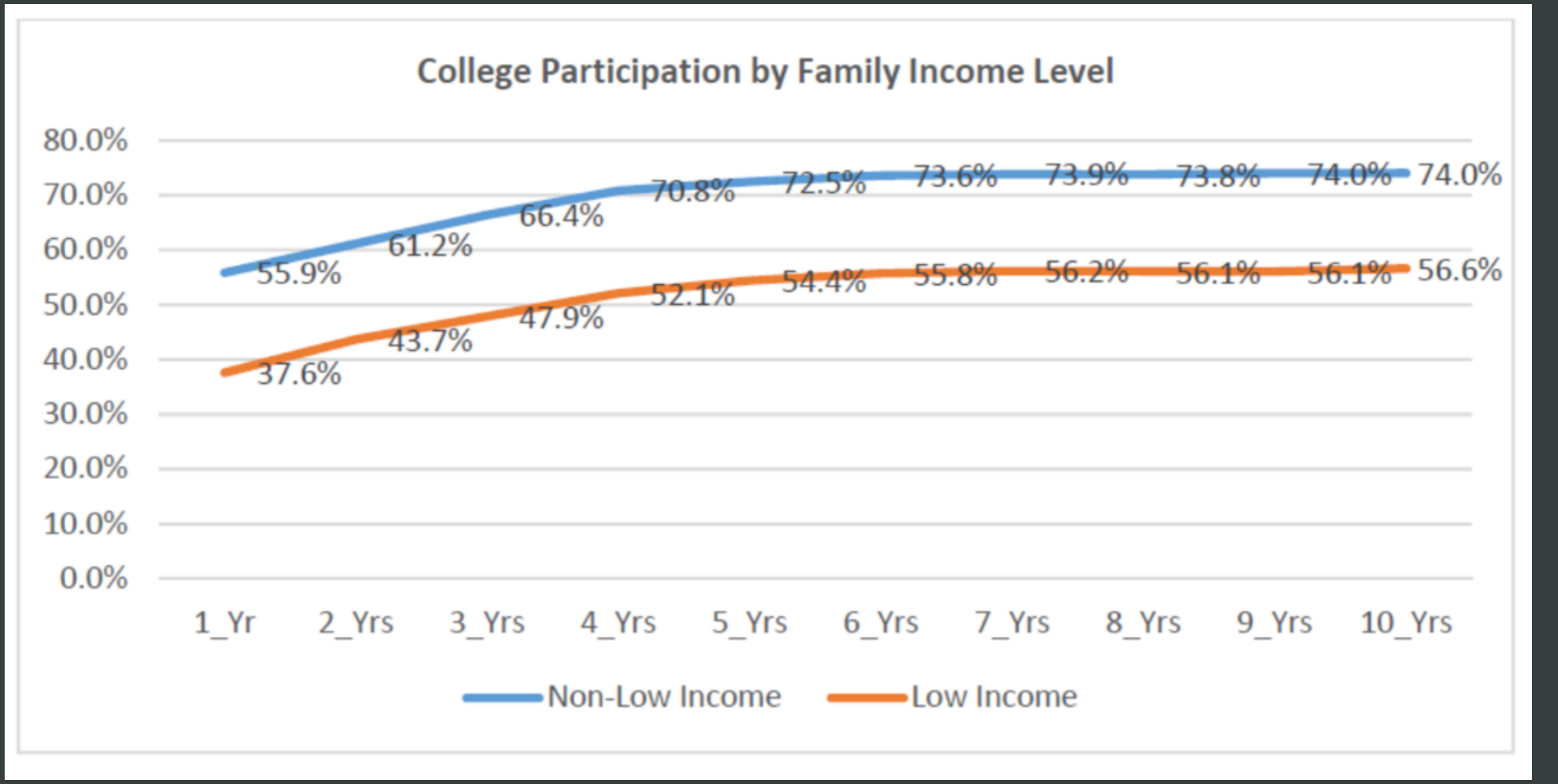
Strategic Plan Goal

- 75% of high school graduates enrolled in college within five of high school graduation

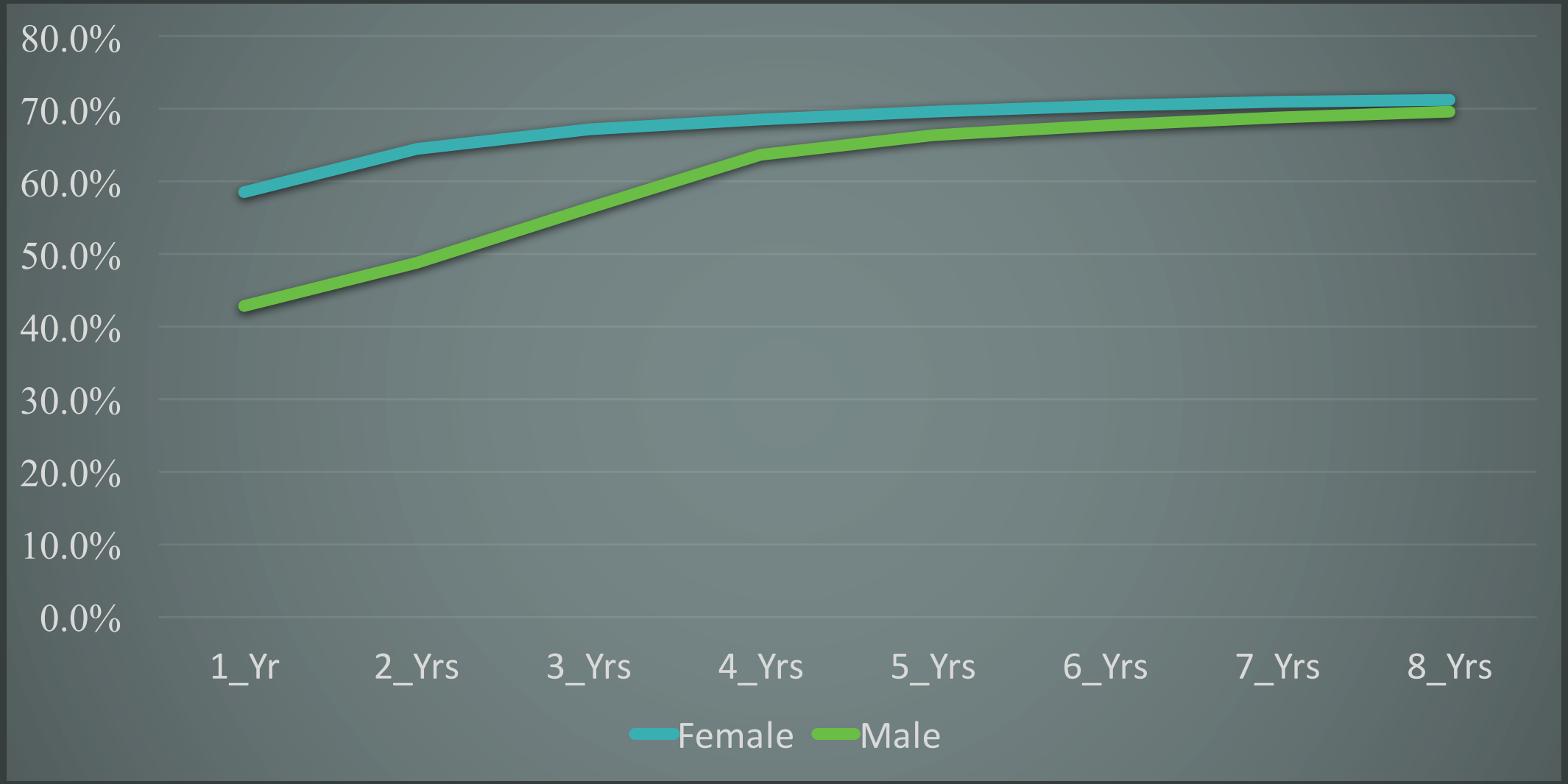
Cohorts 2007-2012:

- 5th year: 69%
- 10th year: 71%


College Participation by Ethnicity
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
1_Yr
2_Yrs
3_Yrs
4_Yrs
5_Yrs
6_Yrs
7_Yrs
8_Yrs
9_Yrs
10_Yrs
Asian
Black
Caucasian
Hispanic
Am. Indian
Pac. Islander


College Participation by Family Income Level
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
55.9%
61.2%
66.4%
70.8%
72.5%
73.6%
73.9%
73.8%
74.0%
74.0%
37.6%
43.7%
47.9%
52.1%
54.4%
55.8%
56.2%
56.1%
56.1%
56.6%
1_Yr
2_Yrs
3_Yrs
4_Yrs
5_Yrs
6_Yrs
7_Yrs
8_Yrs
9_Yrs
10_Yrs
Non-Low Income
Low Income

College Enrollment by Gender



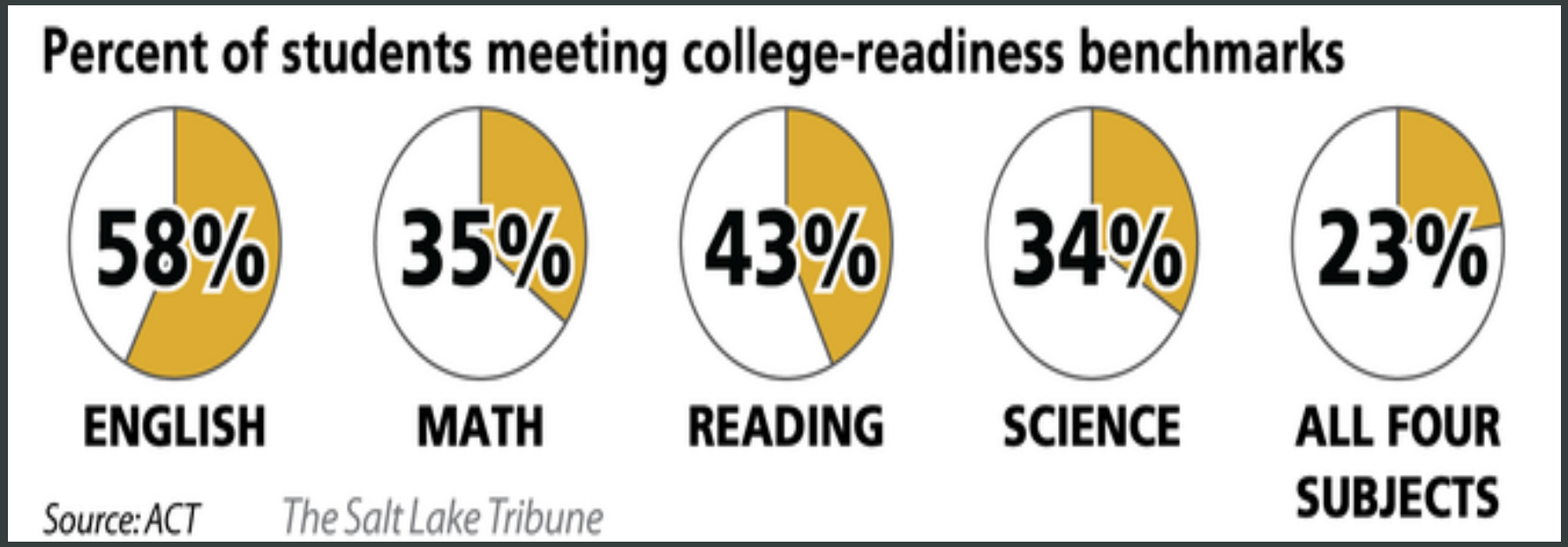
College Readiness

“Implement specific K-16 partnership initiatives that encourage college readiness with the goal that every Utah high school graduate is prepared for college.”

USHE Recommended High School Curriculum

1. Substantial research indicating certain courses increased students' likelihood of earning grades of C or higher in related college courses

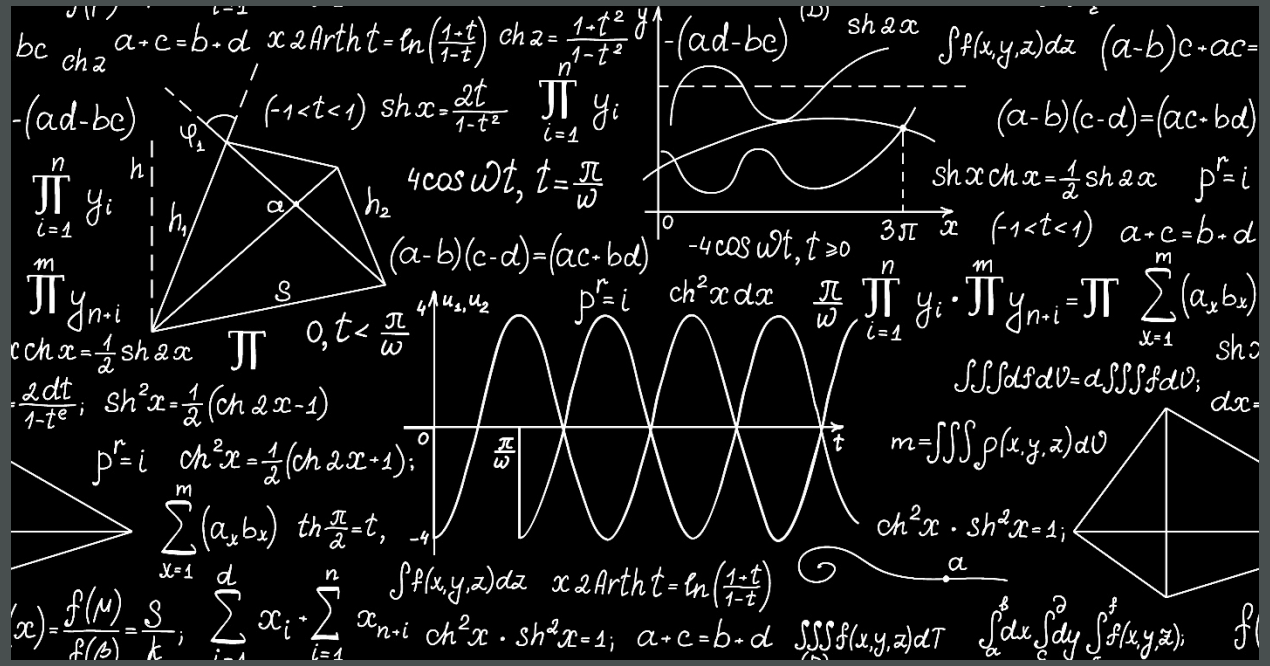
2. Demonstrated correlation between the courses and increases in the ACT benchmark scores used to place students into college classes



3. Alignment with the more demanding admissions requirements of highly selective institutions.

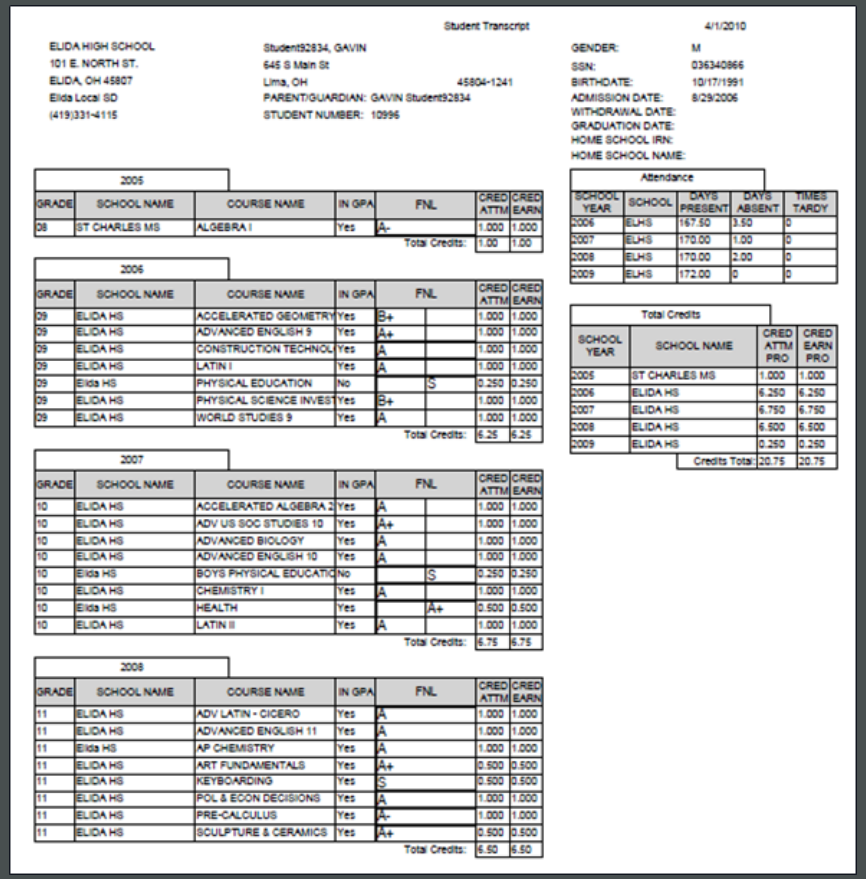
(U of U, USU, Westminster, BYU, Harvard, Yale, Columbia, Berkeley, Princeton, Stanford)

Math


$a+c=b+d$
$x\,2Arth\,t=\ln\left(\frac{1+t}{1-t}\right)$
$ch\,z=\frac{1+t^2}{1-t^2}$
$-(ad-bc)$
$(-1<t<1)$
$sh\,x=\frac{2t}{1-t^2}$
$\prod_{i=1}^{n} y_i$
$4\cos\omega t,\ t=\frac{\pi}{\omega}$
$(a-b)(c-d)=(ac+bd)$
$\prod_{i=1}^{m} y_{n+i}$
$0,\ t<\frac{\pi}{\omega}$
$sh\,x\,ch\,x=\frac{1}{2}sh\,2x$
$sh^2x=\frac{1}{2}(ch\,2x-1)$
$ch^2x=\frac{1}{2}(ch\,2x+1);$
$p^r=i$
$\sum_{x=1}^{m}(a_x b_x)$
$th\frac{\pi}{2}=t,$
$\int f(x,y,z)dz$
$ch^2x\cdot sh^2x=1;$
$\iiint_V f(x,y,z)dT$
$\int_a^b dx\int_c^d dy\int_f^g f(x,y,z);$
$\iiint_V dx\,dy\,dz=d\iiint_V f\,dV;$
$m=\iiint_V \rho(x,y,z)dV$
$-4\cos\omega t,\ t\geq 0$
3π
φ_1
h_1
h_2
α
S
u_1,u_2
t
$\frac{\pi}{\omega}$
-4
a

Transcript Studies

- Math course higher than Algebra 2 (Utah Secondary Math III) doubled odds of completing a bachelor's degree.
- Students who completed Algebra 2 or beyond in high school were two- to almost three-times more likely to become "well paid" or "highly paid" professionals.



Student Transcript

4/1/2010

ELIDA HIGH SCHOOL
101 E. NORTH ST.
ELIDA, OH 45807
Elida Local SD
(419)331-4115

Student92834, GAVIN
645 S Main St
Lima, OH 45804-1241
PARENT/GUARDIAN: GAVIN Student92834
STUDENT NUMBER: 10996

GENDER: M
SSN: 036340866
BIRTHDATE: 10/17/1991
ADMISSION DATE: 8/29/2006
WITHDRAWAL DATE:
GRADUATION DATE:
HOME SCHOOL IRN:
HOME SCHOOL NAME:

2005

GRADE	SCHOOL NAME	COURSE NAME	IN GPA	FNL		CRED ATTM	CRED EARN
08	ST CHARLES MS	ALGEBRA I	Yes	A-		1.000	1.000
					Total Credits:	1.00	1.00

2006

GRADE	SCHOOL NAME	COURSE NAME	IN GPA	FNL		CRED ATTM	CRED EARN
09	ELIDA HS	ACCELERATED GEOMETRY	Yes	B+		1.000	1.000
09	ELIDA HS	ADVANCED ENGLISH 9	Yes	A+		1.000	1.000
09	ELIDA HS	CONSTRUCTION TECHNOL	Yes	A		1.000	1.000
09	ELIDA HS	LATIN I	Yes	A		1.000	1.000
09	Elida HS	PHYSICAL EDUCATION	No		S	0.250	0.250
09	ELIDA HS	PHYSICAL SCIENCE INVEST	Yes	B+		1.000	1.000
09	ELIDA HS	WORLD STUDIES 9	Yes	A		1.000	1.000
					Total Credits:	6.25	6.25

2007

GRADE	SCHOOL NAME	COURSE NAME	IN GPA	FNL		CRED ATTM	CRED EARN
10	ELIDA HS	ACCELERATED ALGEBRA 2	Yes	A		1.000	1.000
10	ELIDA HS	ADV US SOC STUDIES 10	Yes	A+		1.000	1.000
10	ELIDA HS	ADVANCED BIOLOGY	Yes	A		1.000	1.000
10	ELIDA HS	ADVANCED ENGLISH 10	Yes	A		1.000	1.000
10	Elida HS	BOYS PHYSICAL EDUCATIO	No		S	0.250	0.250
10	ELIDA HS	CHEMISTRY I	Yes	A		1.000	1.000
10	Elida HS	HEALTH	Yes		A+	0.500	0.500
10	ELIDA HS	LATIN II	Yes	A		1.000	1.000
					Total Credits:	6.75	6.75

2008

GRADE	SCHOOL NAME	COURSE NAME	IN GPA	FNL		CRED ATTM	CRED EARN
11	ELIDA HS	ADV LATIN - CICERO	Yes	A		1.000	1.000
11	ELIDA HS	ADVANCED ENGLISH 11	Yes	A		1.000	1.000
11	Elida HS	AP CHEMISTRY	Yes	A		1.000	1.000
11	ELIDA HS	ART FUNDAMENTALS	Yes	A+		0.500	0.500
11	ELIDA HS	KEYBOARDING	Yes	S		0.500	0.500
11	ELIDA HS	POL & ECON DECISIONS	Yes	A		1.000	1.000
11	ELIDA HS	PRE-CALCULUS	Yes	A-		1.000	1.000
11	ELIDA HS	SCULPTURE & CERAMICS	Yes	A+		0.500	0.500
					Total Credits:	6.50	6.50

Attendance

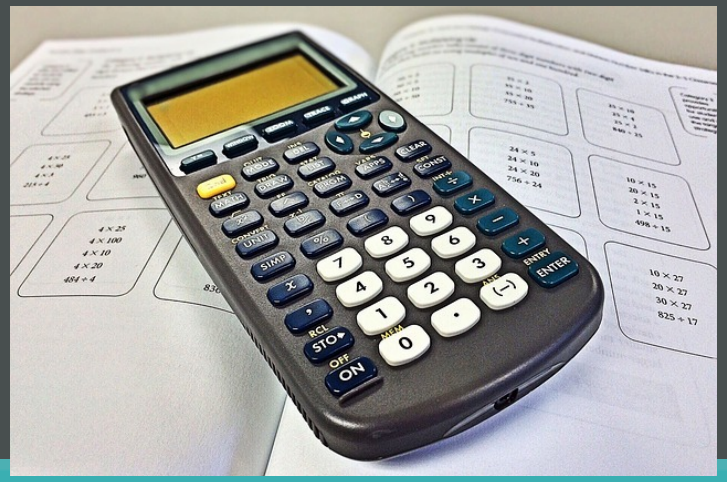
SCHOOL YEAR	SCHOOL	DAYS PRESENT	DAYS ABSENT	TIMES TARDY
2006	ELHS	167.50	3.50	0
2007	ELHS	170.00	1.00	0
2008	ELHS	170.00	2.00	0
2009	ELHS	172.00	0	0

Total Credits

SCHOOL YEAR	SCHOOL NAME	CRED ATTM PRO	CRED EARN PRO
2005	ST CHARLES MS	1.000	1.000
2006	ELIDA HS	6.250	6.250
2007	ELIDA HS	6.750	6.750
2008	ELIDA HS	6.500	6.500
2009	ELIDA HS	0.250	0.250
	Credits Total:	20.75	20.75

ACT

- Utah students who
- Completed Math III: 16% met ACT math benchmark
- Completed 4th credit of Math: 62% hit benchmark



H.S. Graduation Requirements

Required Courses	Required Credit
Language Arts	4.0
Mathematics	3.0
Science	3.0
Social Studies	2.5
Information Technology	0.5
Fine Arts	1.5
Physical Education	1.5
Health Education	0.5
Financial Literacy	0.5
Career & Tech Ed.	1.0
Elective	8.0
Total Credits	26

Recommended Curriculum

4 credits of English

2 credits of world language
(other than English, taken during grades 9-12)

4 credits of math

(at least 1 credit beyond Math 3)

3 credits of social science

(such as history, goverment, psychology, geography—
check Regents' Scholarship list for approved courses)

3 credits of lab-based science

(one each of biology, chemistry, physics)

Find Out More:
HigherEdUtah.org

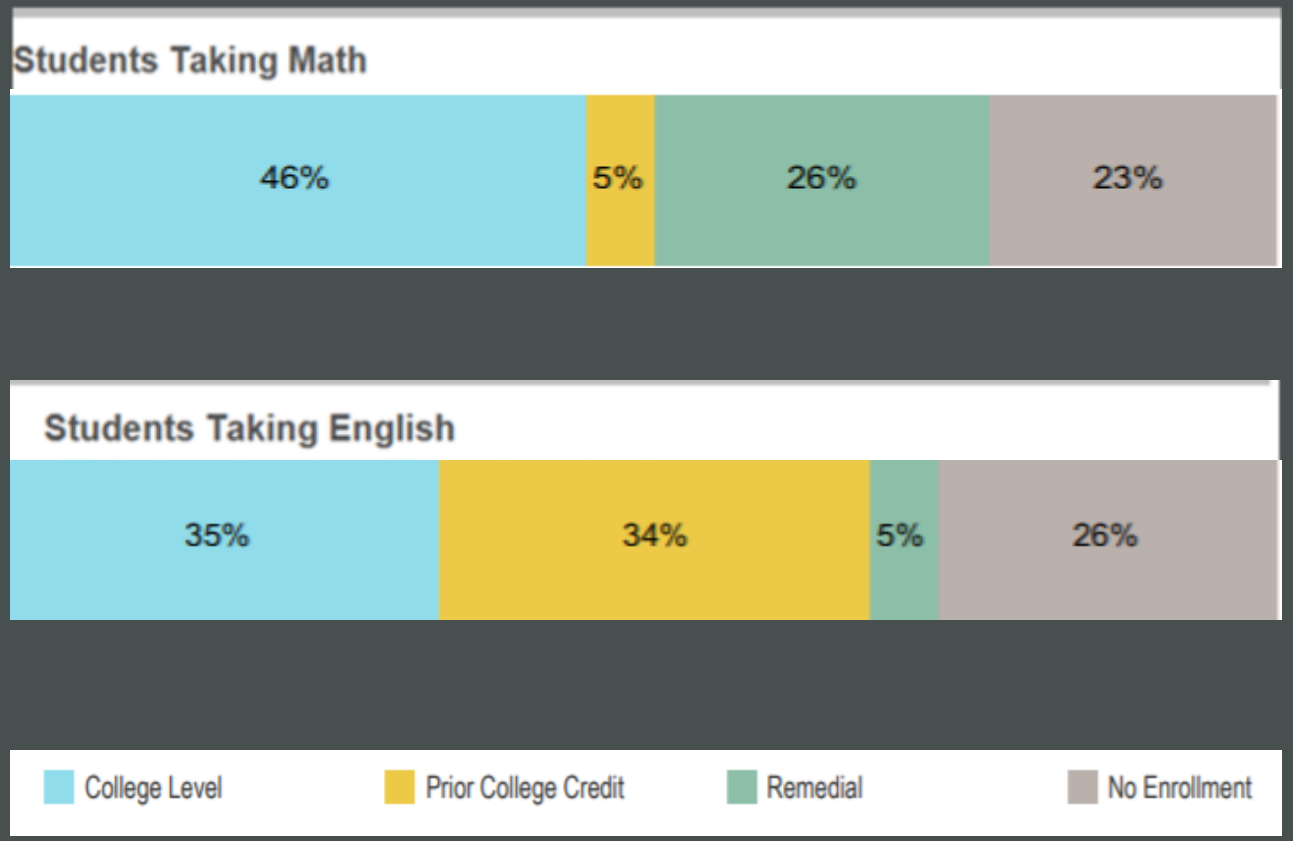
ISSUE BRIEF

No. 2018-3 | February 2018
Julie Hartley, Ph.D.

The Utah State Board of Regents' Recommended High School Curriculum

A Foundation for College Success

High School Feedback Reports



Access & Completion

Completion

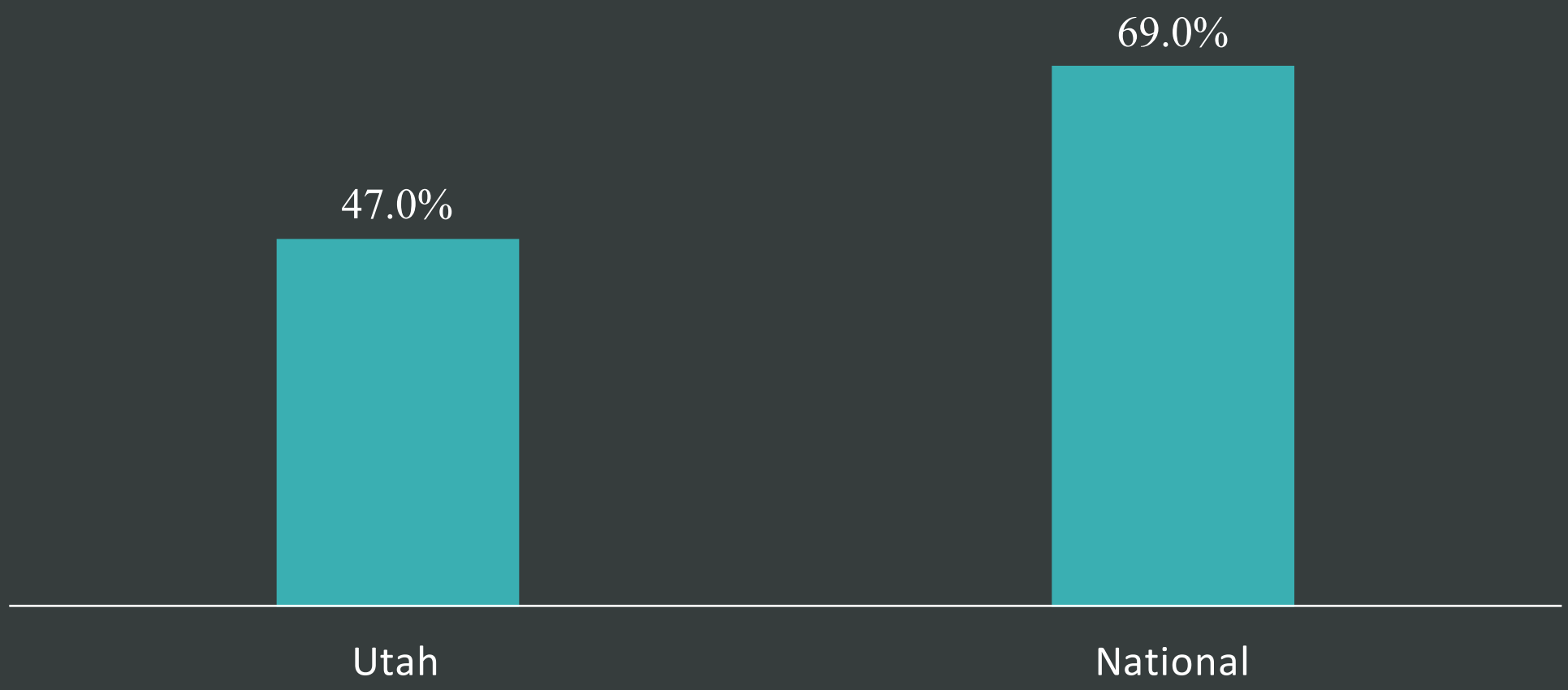
Regents' Goal for 2025 is 28 awards per 100 FTE.

- 2015: 25 awards per 100 FTE
- 2016: 26 awards per 100 FTE

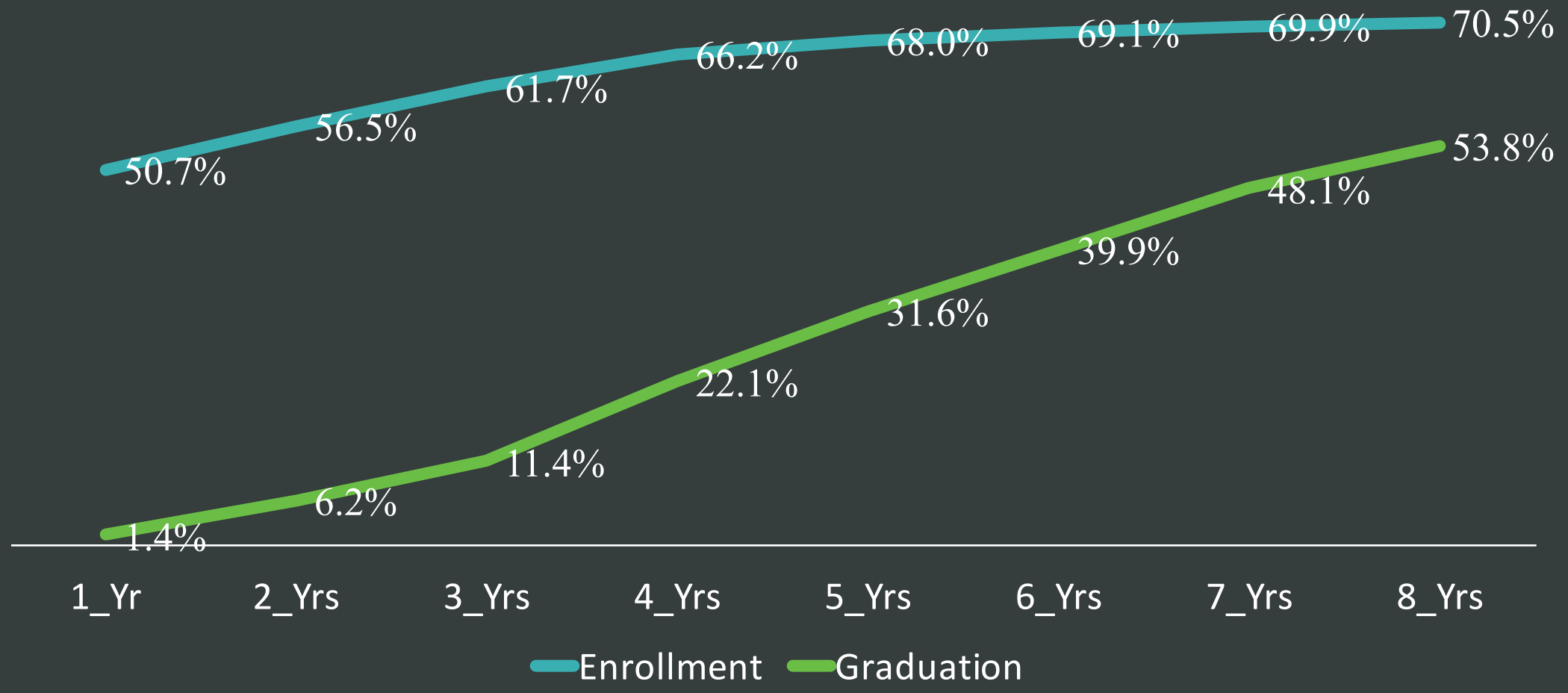
Underrepresented populations

“Increase the participation of first-generation, economically disadvantaged, and returning adults with targeted outreach efforts and partnerships with organizations focused on improving college access for these communities.”

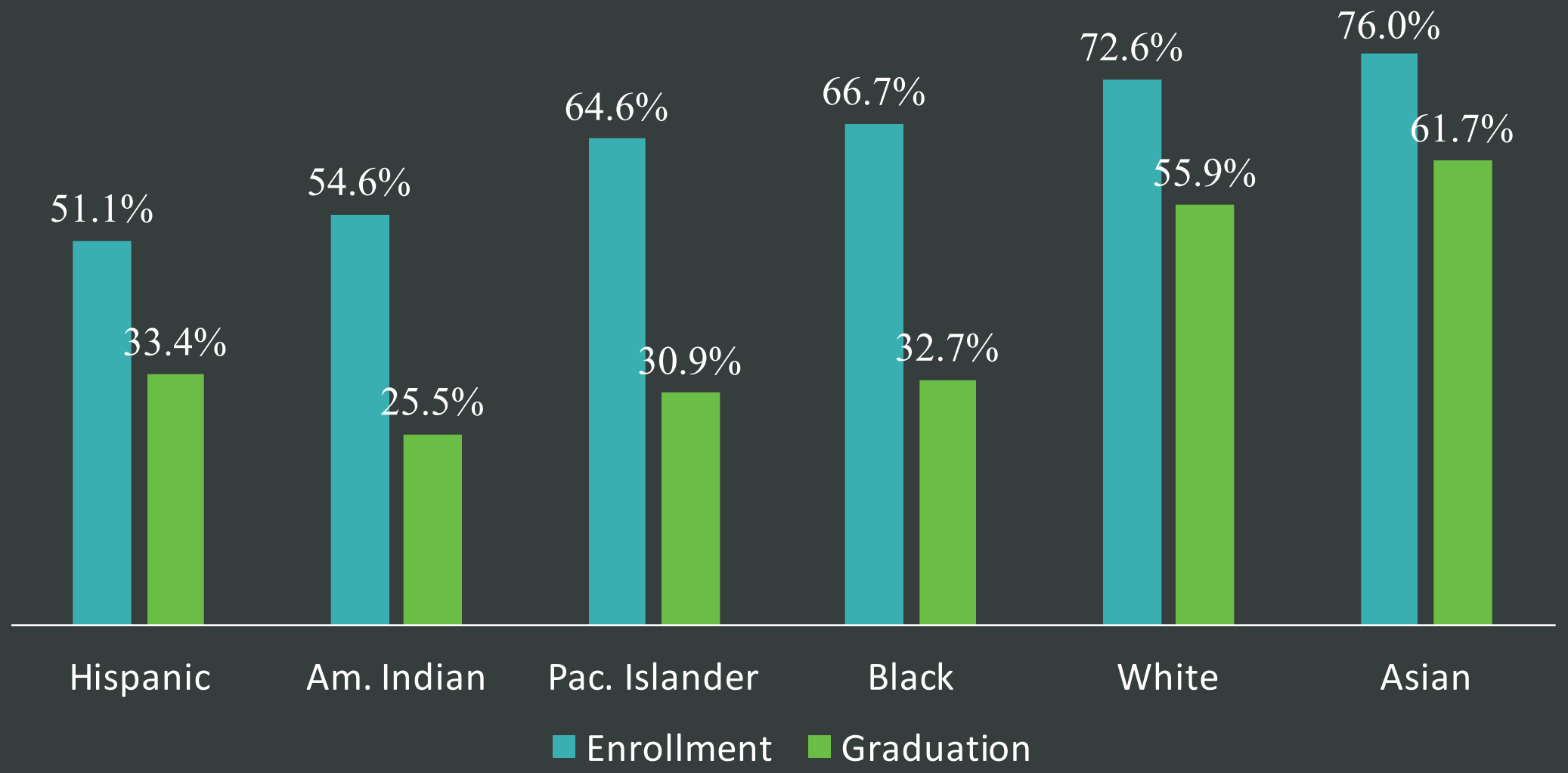
Immediate College Enrollment Rate



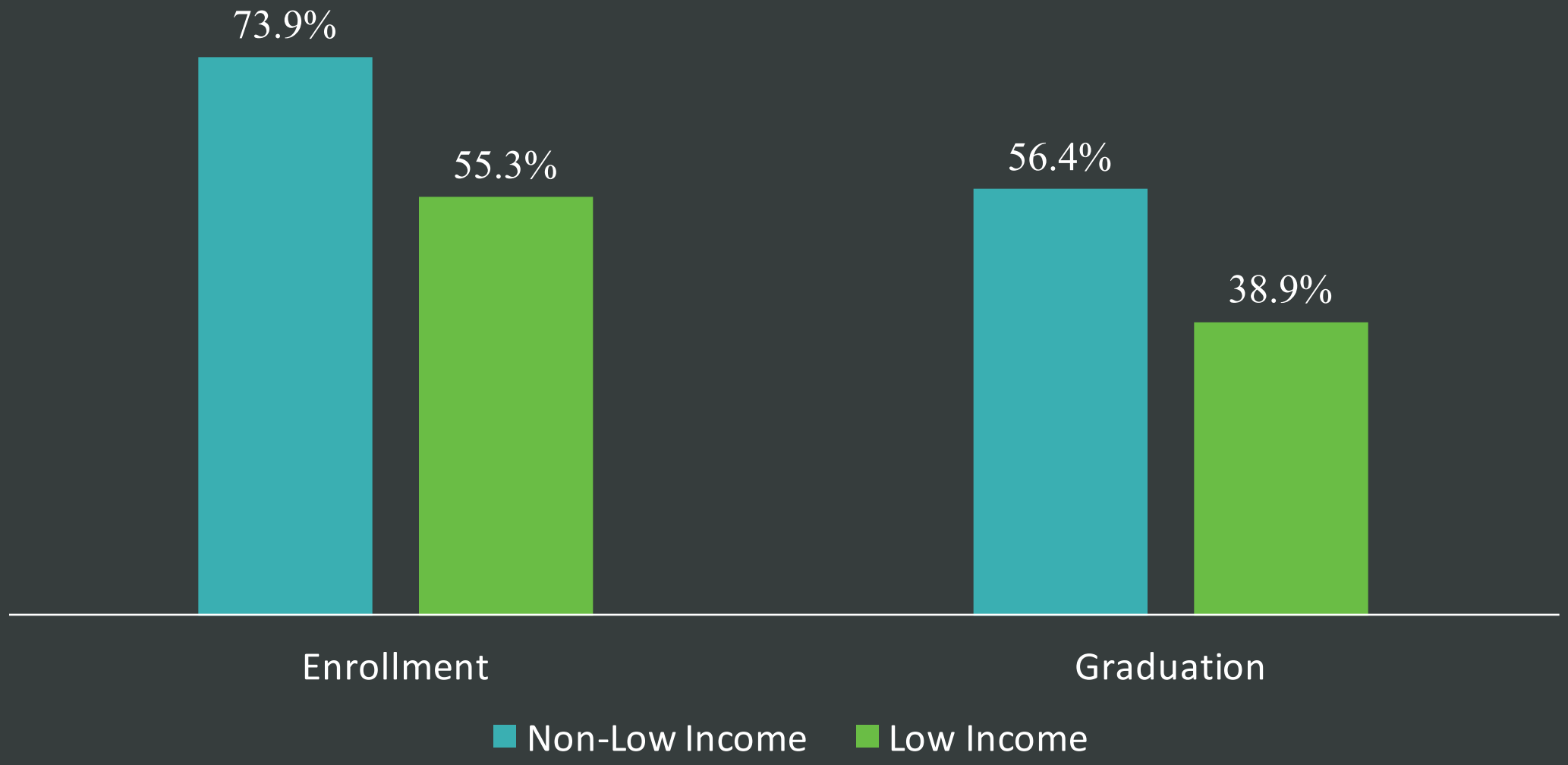
8-Year College Enrollment & Graduation Rates



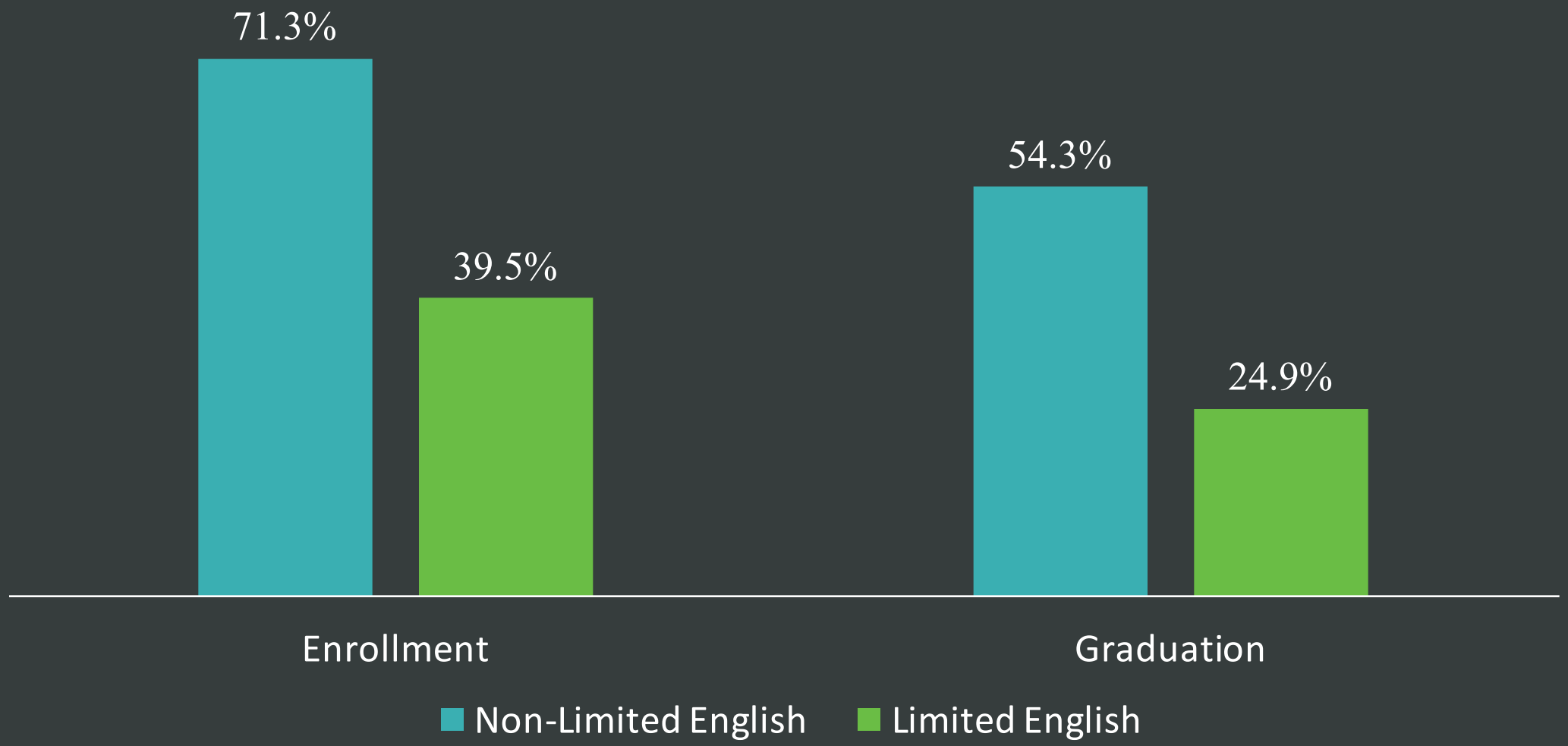
College Enrollment & Graduation by Ethnicity



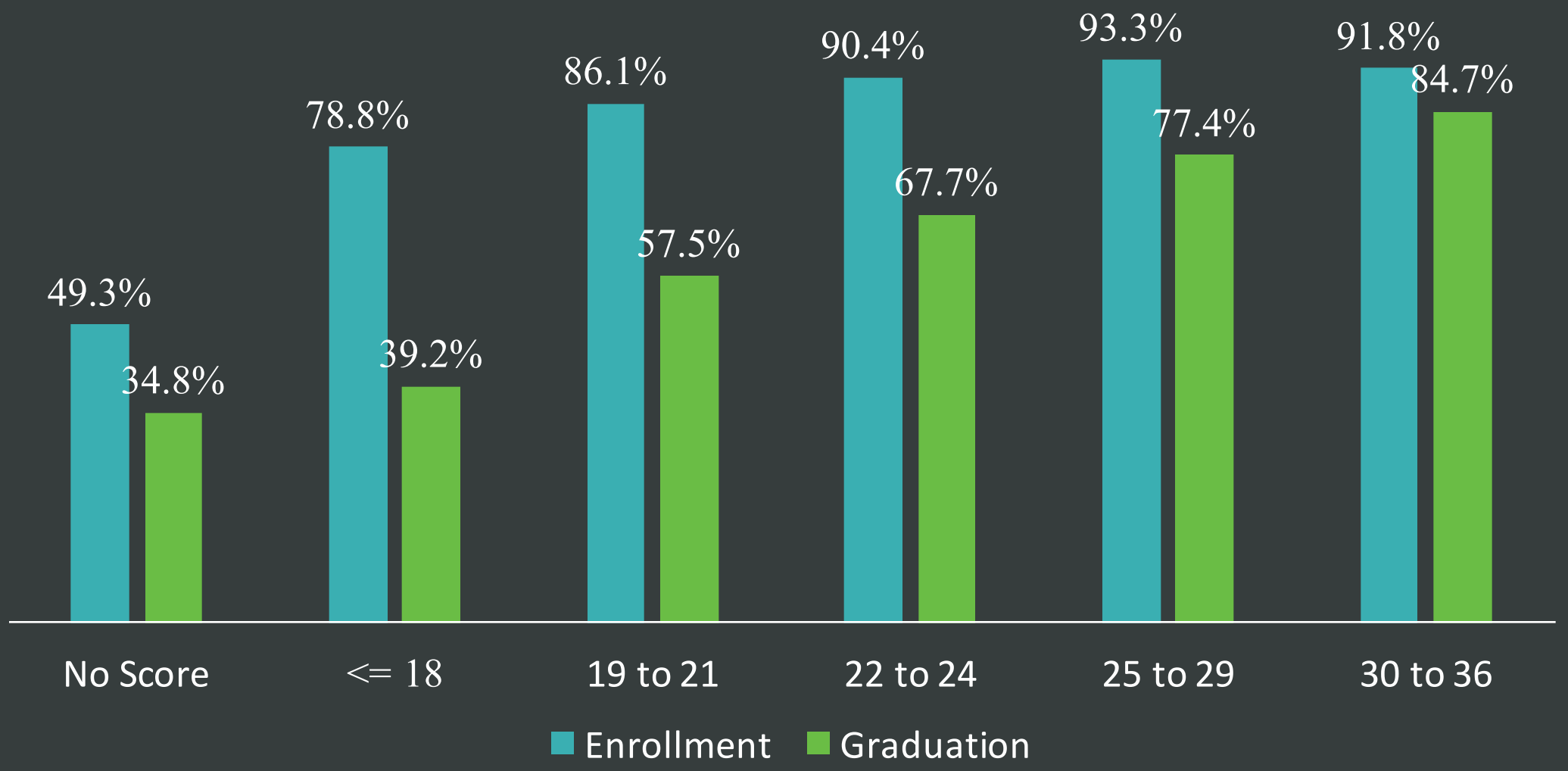
College Enrollment & Graduation by Income Level



College Enrollment & Graduation by English Proficiency

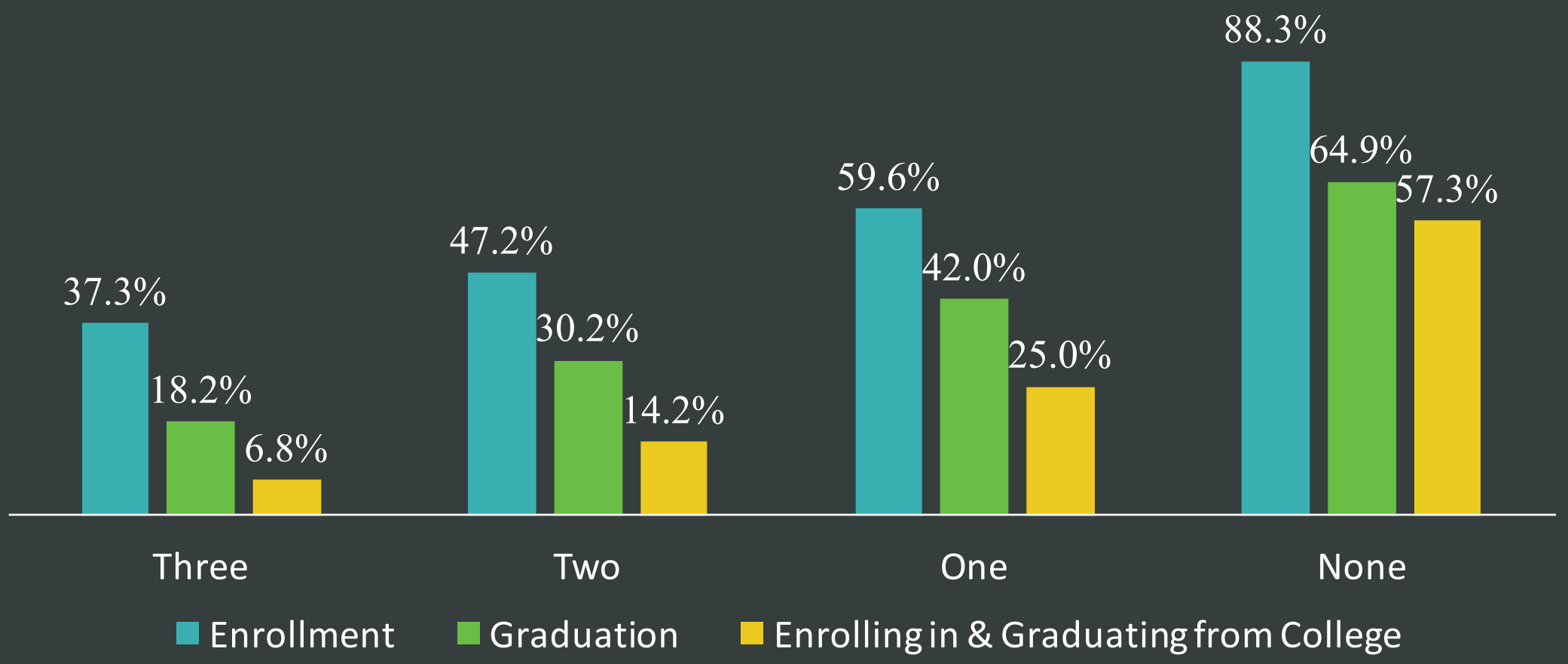


College Enrollment & Graduation by ACT Scores



Interaction Effects

Being a student of color, from a low-income family and having no ACT score



Ease of participation

Maneuverability

“Improve ease of access among K-12 students through on-campus experiences, concurrent enrollment, and access among all students through transferability and streamlined transitions to college through the admissions and onboarding processes at USHE institutions.”

Gateway vs. Gatekeeper Courses

DFWI Rates for 10 Gateway Courses

- BIOL 1610
- CHEM 1210
- ENGL 1010/WRTG 1010
- 1040
- POLS 1100
- PSY 1010

MATH 1010/MAT 1010

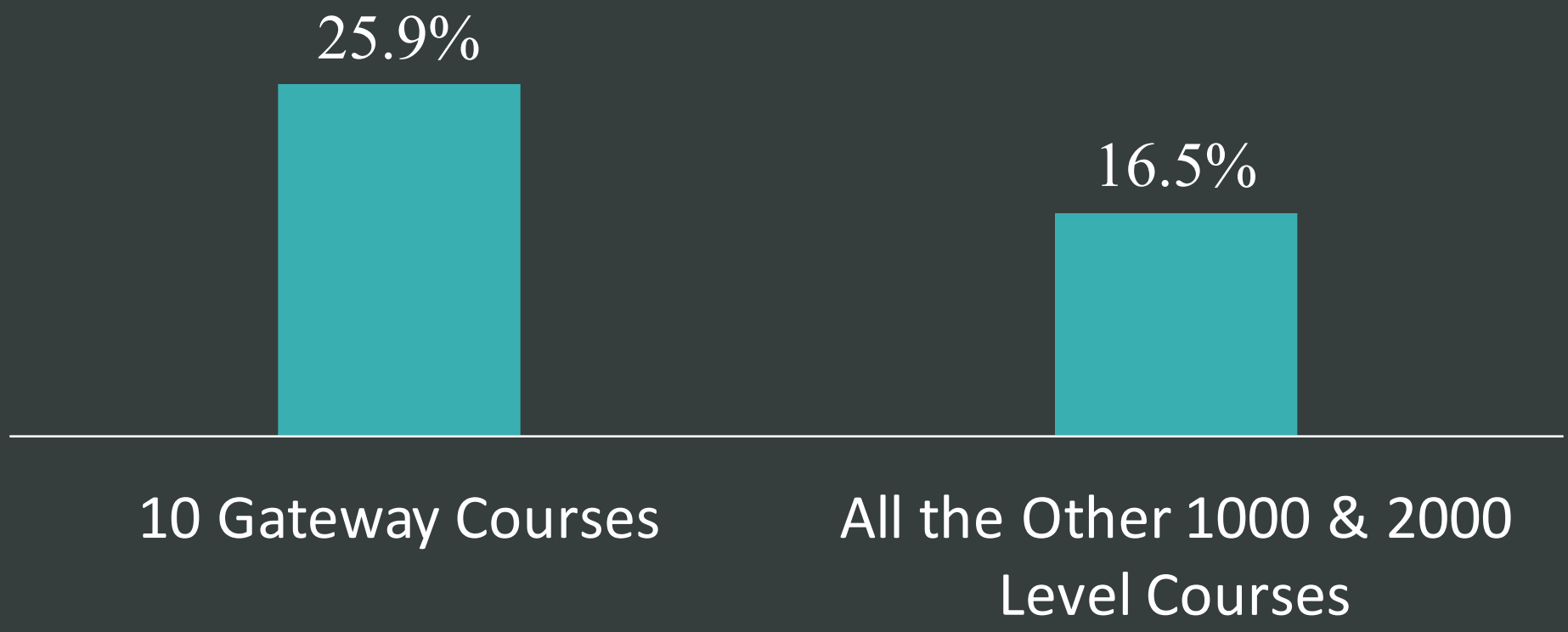
MATH 1030

MATH 1040/STAT

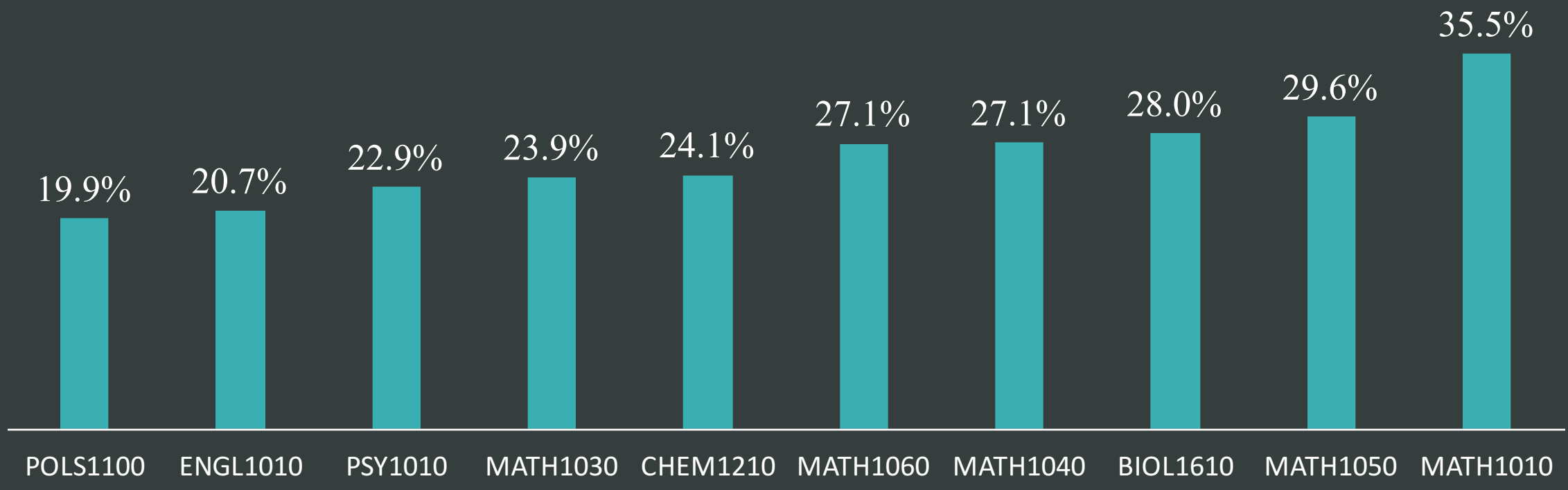
MATH 1050

MATH 1060

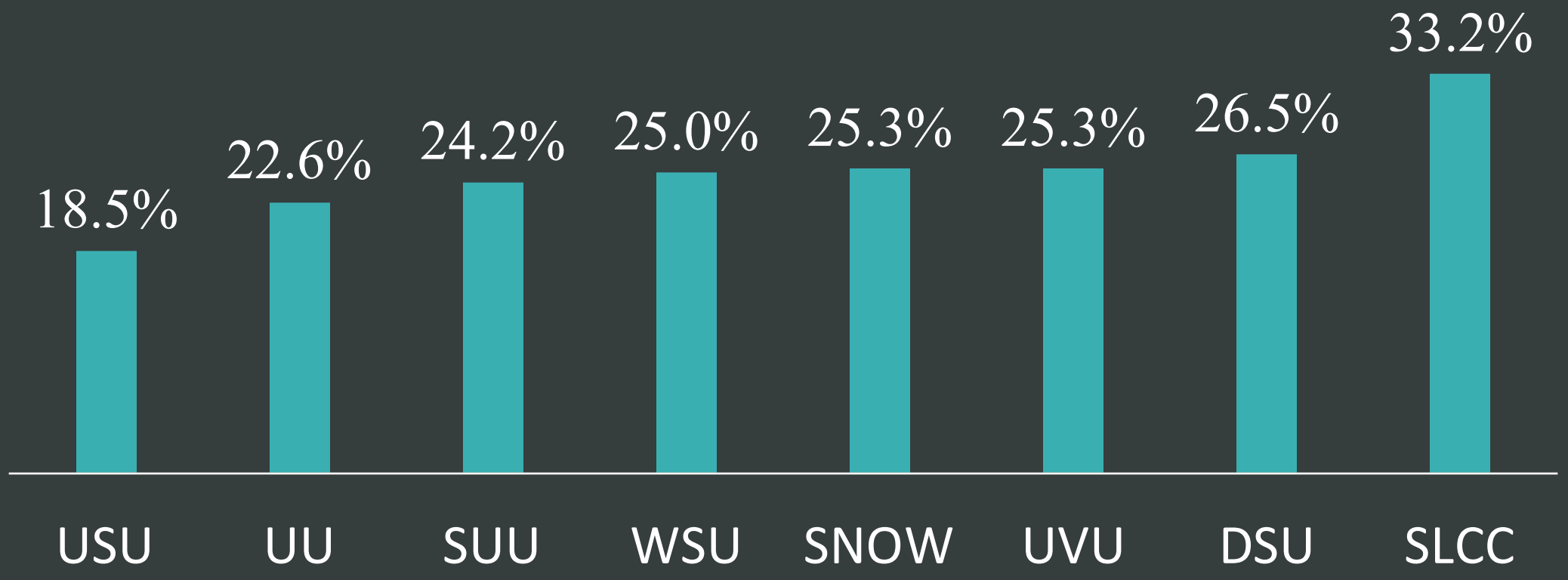
High or Low?


25.9%
16.5%
10 Gateway Courses
All the Other 1000 & 2000 Level Courses

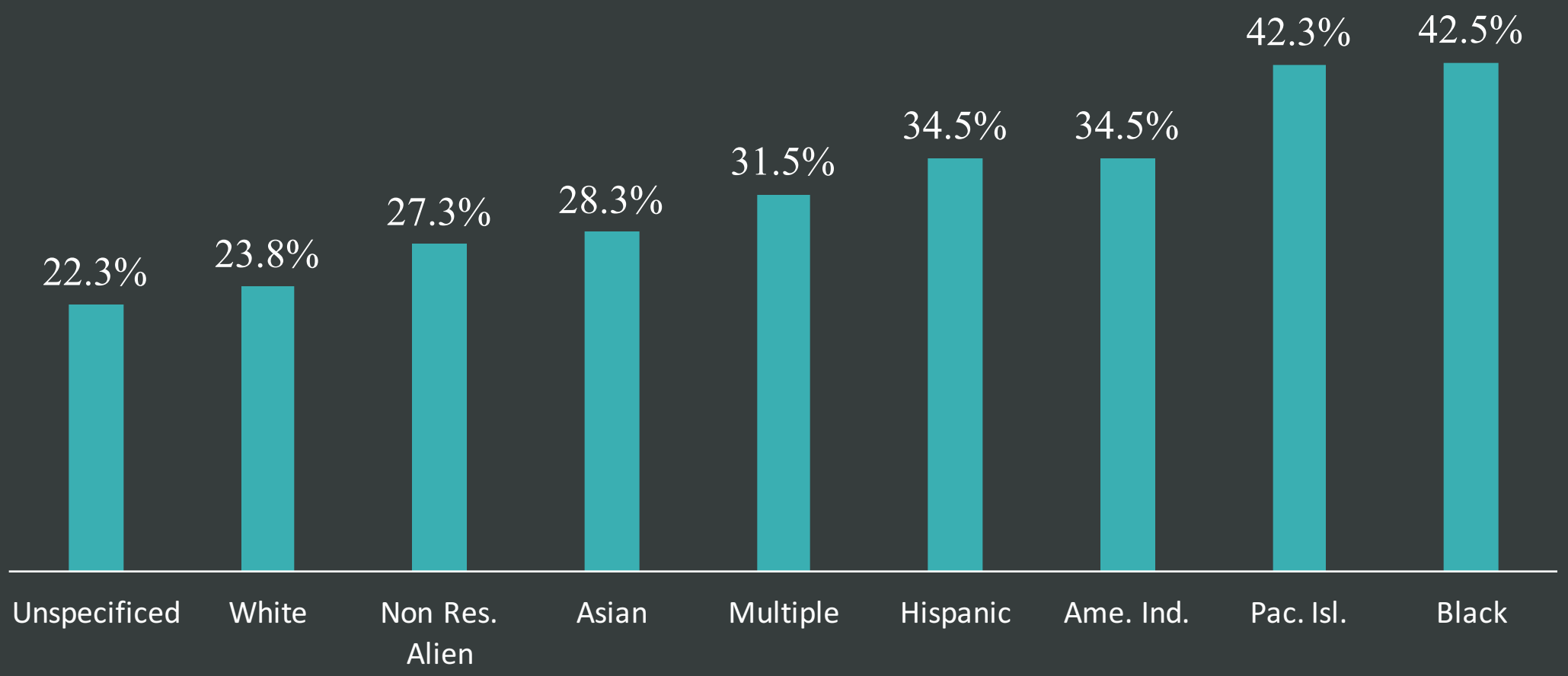
DFWI Rates By Course



DFWI Rates By Institutions



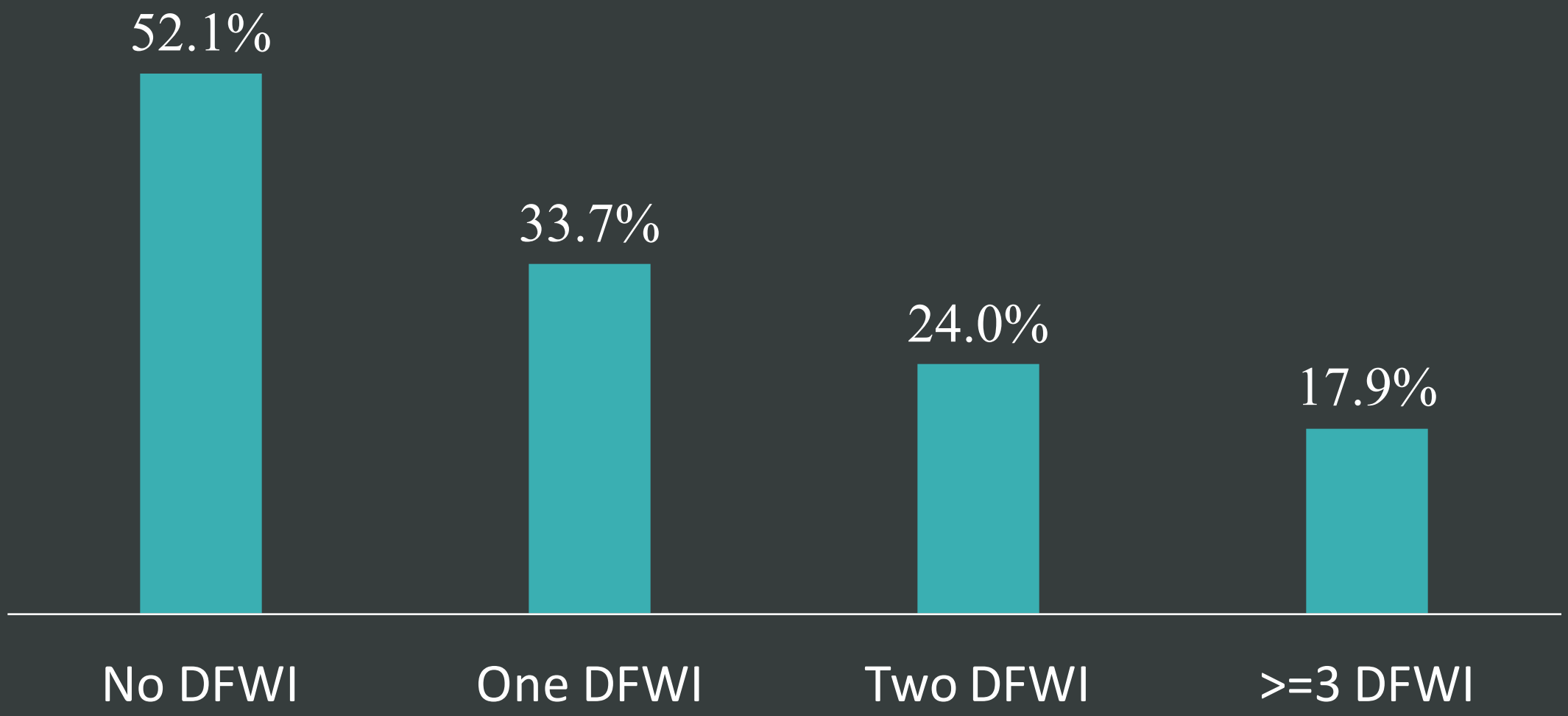
DFWI Rates by Ethnicity



DFWI Rates by Course and by Ethnicity

	Asian	Black	Hispanic	American Indian	Multiple	Non Resident Alien	Pacific Islander	Unspecified	White	All
BIOL1610	33.6%	49.3%	40.0%	41.5%	29.2%	33.3%	42.1%	24.6%	25.2%	28.0%
CHEM1210	27.1%	45.7%	34.1%	44.7%	22.9%	27.3%	34.8%	15.6%	22.6%	24.1%
ENGL1010	22.5%	34.6%	29.4%	28.7%	27.0%	23.0%	41.0%	14.3%	18.5%	20.7%
MATH1010	39.0%	47.5%	42.4%	43.6%	41.0%	25.5%	44.1%	40.4%	33.4%	35.5%
MATH1030	19.0%	42.4%	29.0%	40.0%	27.7%	25.5%	38.9%	27.8%	21.5%	23.9%
MATH1040	22.0%	49.4%	35.4%	34.5%	33.1%	23.1%	40.0%	29.7%	25.4%	27.1%
MATH1050	36.4%	47.7%	38.8%	32.2%	36.7%	31.4%	53.3%	23.9%	27.5%	29.6%
MATH1060	30.4%	47.4%	32.3%	35.0%	32.4%	26.3%	25.0%	30.5%	25.7%	27.1%
POLS1100	20.0%	37.6%	28.2%	27.6%	22.4%	33.0%	39.0%	17.8%	17.5%	19.9%
PSY1010	21.9%	41.5%	32.4%	33.0%	31.0%	28.2%	37.7%	20.7%	20.5%	22.9%
All	28.3%	42.5%	34.5%	34.5%	31.5%	27.3%	42.3%	22.3%	23.8%	25.9%

Freshmen 8-Yr Graduation Rates by DFWI Status



Gateway Courses: Math

22.2% of first-year Freshmen enter our system with QL requirements already completed

- 17.1% through ACT score
- 7.6% through Concurrent Enrollment

Gateway Courses: Math

64% of first-year students enroll in a math pathway

- 40.8% are taking remedial
- 35.7% are taking a QL= Math 1030 or greater

USHE Gateway Courses: Math

Pass rates:

- 54% who took a remedial course failed
- 49% of students who took Quantitative Literacy courses failed

Problem: Wrong Math Pathway

DFWI Study

- Students who are advised into Math 1050 are at greater risk for failure, especially if calculus is not needed for their major.

- Putting students in the wrong math class = setting them up to drop out.

35% of students complete gateway math courses in their first year

ONLY 10% of students who take College Algebra ever enroll in a Calculus course

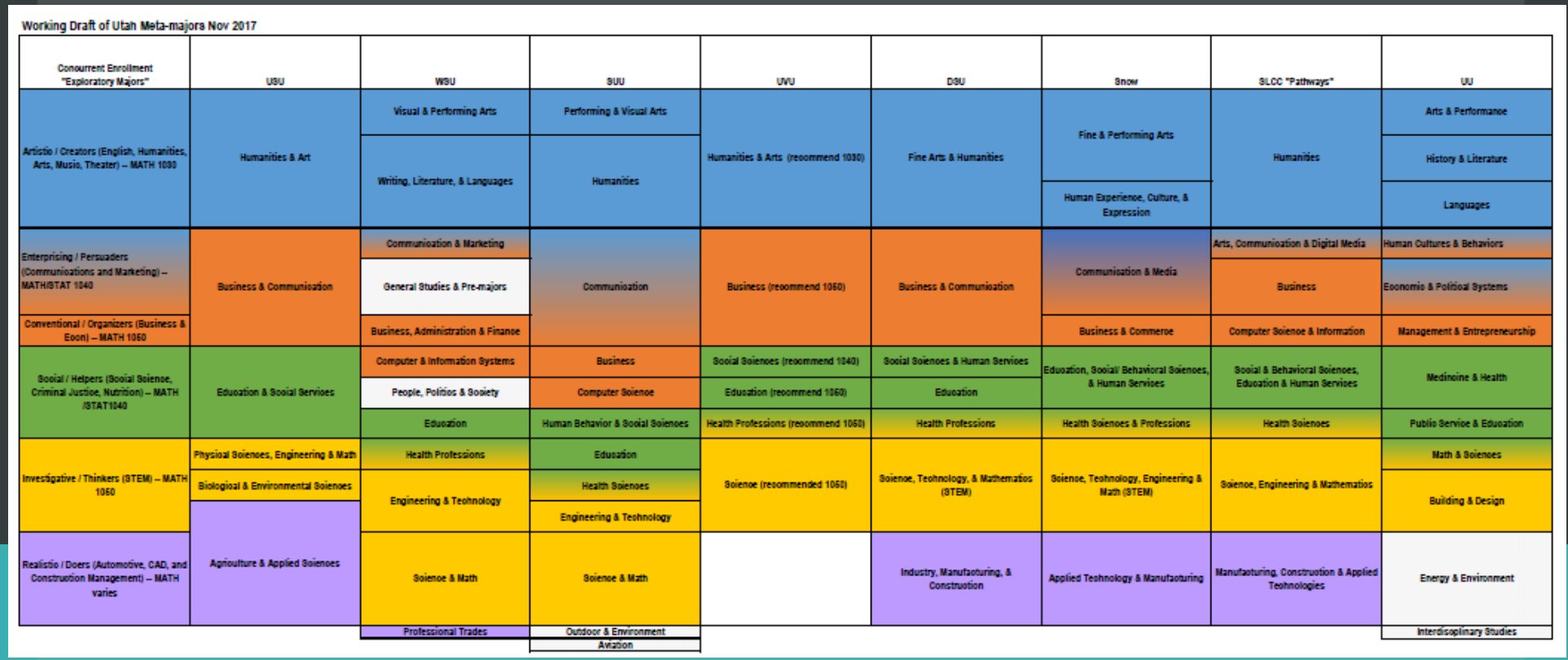
The Mathematical Association of America, American Math Association for Two-Year Colleges, and other national math associations agree that College Algebra in not an appropriate gateway math course for students not pursuing Calculus.

INSTITUTIONAL MATH ASSESSMENT WORKSHOP OUTCOMES

Most STEM degrees kept MATH 1050 (or higher) as QL and/or prerequisite option (when calculus is a degree requirement).

Sixty-six programs in arts, humanities, social science, and teaching eliminated MATH 1050 as QL. They will substitute STAT 1040, STAT 1045 or another new program-specific QL course.

USHE's Meta-majors



Working Draft of Utah Meta-majors Nov 2017

Concurrent Enrollment "Exploratory Majors"	USU	WSU	SUU	UVU	DSU	Snow	SLCC "Pathways"	UU
Artistic / Creators (English, Humanities, Arts, Music, Theater) -- MATH 1030	Humanities & Art	Visual & Performing Arts	Performing & Visual Arts	Humanities & Arts (recommend 1030)	Fine Arts & Humanities	Fine & Performing Arts	Humanities	Arts & Performance
		Writing, Literature, & Languages	Humanities					History & Literature
						Human Experience, Culture, & Expression		Languages
Enterprising / Persuaders (Communications and Marketing) -- MATH/STAT 1040	Business & Communication	Communication & Marketing	Communication	Business (recommend 1060)	Business & Communication	Communication & Media	Arts, Communication & Digital Media	Human Cultures & Behaviors
		General Studies & Pre-majors					Business	Economic & Political Systems
Conventional / Organizers (Business & Econ) -- MATH 1060		Business, Administration & Finance				Business & Commerce	Computer Science & Information	Management & Entrepreneurship
Social / Helpers (Social Science, Criminal Justice, Nutrition) -- MATH /STAT1040	Education & Social Services	Computer & Information Systems	Business	Social Sciences (recommend 1040)	Social Sciences & Human Services	Education, Social Behavioral Sciences, & Human Services	Social & Behavioral Sciences, Education & Human Services	Medicine & Health
		People, Politics & Society	Computer Science	Education (recommend 1060)	Education			
		Education	Human Behavior & Social Sciences	Health Professions (recommend 1060)	Health Professions	Health Sciences & Professions	Health Sciences	Public Service & Education
Investigative / Thinkers (STEM) -- MATH 1060	Physical Sciences, Engineering & Math	Health Professions	Education	Science (recommended 1060)	Science, Technology, & Mathematics (STEM)	Science, Technology, Engineering & Math (STEM)	Science, Engineering & Mathematics	Math & Sciences
	Biological & Environmental Sciences	Engineering & Technology	Health Sciences					Building & Design
	Agriculture & Applied Sciences		Engineering & Technology					
Realistic / Doers (Automotive, CAD, and Construction Management) -- MATH varies		Science & Math	Science & Math		Industry, Manufacturing, & Construction	Applied Technology & Manufacturing	Manufacturing, Construction & Applied Technologies	Energy & Environment
		Professional Trades	Outdoor & Environment					Interdisciplinary Studies
			Aviation					


RESULTS

Very early results from SLCC

Getting students into appropriate QL:

- 22% increase in math enrollments.
- 25% increase in the number students passing a QL course in a given semester (460 more students than in Fall 2015)

Increase the educational attainment of Utahns
to enhance their overall quality of life,
and to meet Utah's current and future workforce needs.

Affordable Access	Timely Completion	Research & Workforce	Capacity & Growth

Regent Work Groups

Utah College Acceptance Letter	Statewide Data /Tech. Strategy	High demand, undersupplied occupations
Student Aid and Tuition Policy	Mental Health Recommendations	Improve Information to Students on Workforce Options
StepUp Schools	Student Transfer	

Strategic Communications Plan

Data Strategy

- Predictive Analytics
  - Institutional level: quality, real-time analytics that can personalize the student experience in advising, degree pathways, course registration, financial need, and just-in-time intervention.
  - System level: Predictive analytics task force; sharing of best practices; system pattern tracking and interventions (i.e., are particular transfer pathways causing problems)
- Data management and reporting that provides clear performance and value tracking for key stakeholders (legislators, Board of Regents, Boards of Trustees, business advisory boards, etc.)
- Increase and scale the availability and flexibility of courses for students, leverage the ecosystem for nontraditional teaching excellence, and address new and rapidly evolving curriculum needs to better serve students (i.e., PLA, CBE, computer adapted assessment).
- Improved articulation and transfer of students among USHE and UTech institutions and between USHE institutions.
- IT infrastructure with the requisite security and usability.
- Cost savings efforts through common IT strategies, coordinated licensing, and effective IT investment in enterprise applications, standards, security, and infrastructure.

Transfer Initiative

- ***Goal of this priority is to increase the # of students that successfully* transfer from two-year program to four-year program through the:***
- Examination of Program Articulation in top transfer majors
- *Purchase and implementation of a statewide data transfer platform that strengthens course-to-course articulations and includes program-to-program articulations*
- *Implementation of a systemwide student identifier*
- *Development of a completion metric that tracks transfer paths as part of on-time graduation*
- *Report of how PLA is recorded and transfers across the system (e.g. does AP count as course equivalent & if not, does the course it waives transfer across institutions?)*

Questions