

Math Matters:

Transition from High School to Postsecondary Education

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National/State Data

- Placement in developmental math courses
 - 28% - 42% (National Data, 2010)
 - Enrolling in developmental math (KBOR – 2013/14)
 - 30.9% at community colleges
 - 12.6% at state universities
- Completion rate (Grade C or better)
 - 21% - 30% (National Data, 2010)
 - Completing developmental math in 2 years (KBOR – 2013/14)
 - 66.8% at community colleges
 - 76.2% at state universities
 - Also completing College Algebra in 2 years (KBOR – 2013/14)
 - 19.0% at community colleges
 - 40.7% at state universities

Concerns

- Impact on student self-esteem
- Barrier to postsecondary access
- Increasing costs – for students and institutions
- Workforce: Increased need for K-16 coherence

KSA-M: 2008-2010

- Coverage: algebra, geometry, and data analysis
- 84 multiple-choice items/scores ranging from 0-100/reliability=95%
- Taken at end of 9th, 10th, or 11th grade – Opportunity to Learn
- Can be retaken by those not reaching proficiency
- Used for building accountability, not student graduation
 - Academic warning
 - Approaches standards
 - Proficient
 - Exceeds standards
 - Exemplary

KIDS & KSPSD Datasets

- How well does KSA-M predict developmental math placement in postsecondary education?
- How well does KSA-M predict developmental math performance in postsecondary education?
- How well does KSA-M predict non-developmental math performance in postsecondary education? Is that different from developmental math performance in postsecondary education?

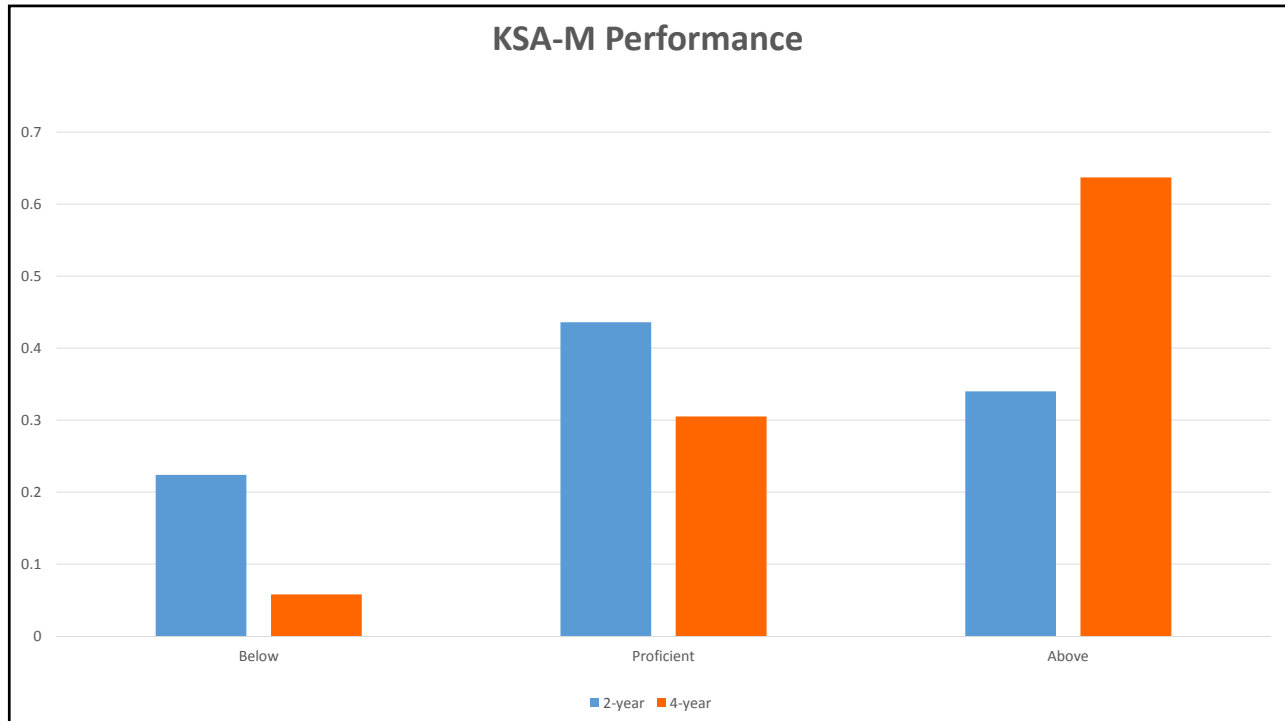
Hierarchical Generalized Linear Models

- Used when outcome variables are influenced by nested variables – students/K-12 schools/postsecondary institution
- Levels of Performance on KSA-M
 - Below proficiency – academic warning & approaches standards)
 - Proficient
 - Above proficiency – exceeds standards & exemplary
- The analysis generates a statistical model that we used to estimate expected probabilities for the outcome variables

Predicting Developmental Math Placement

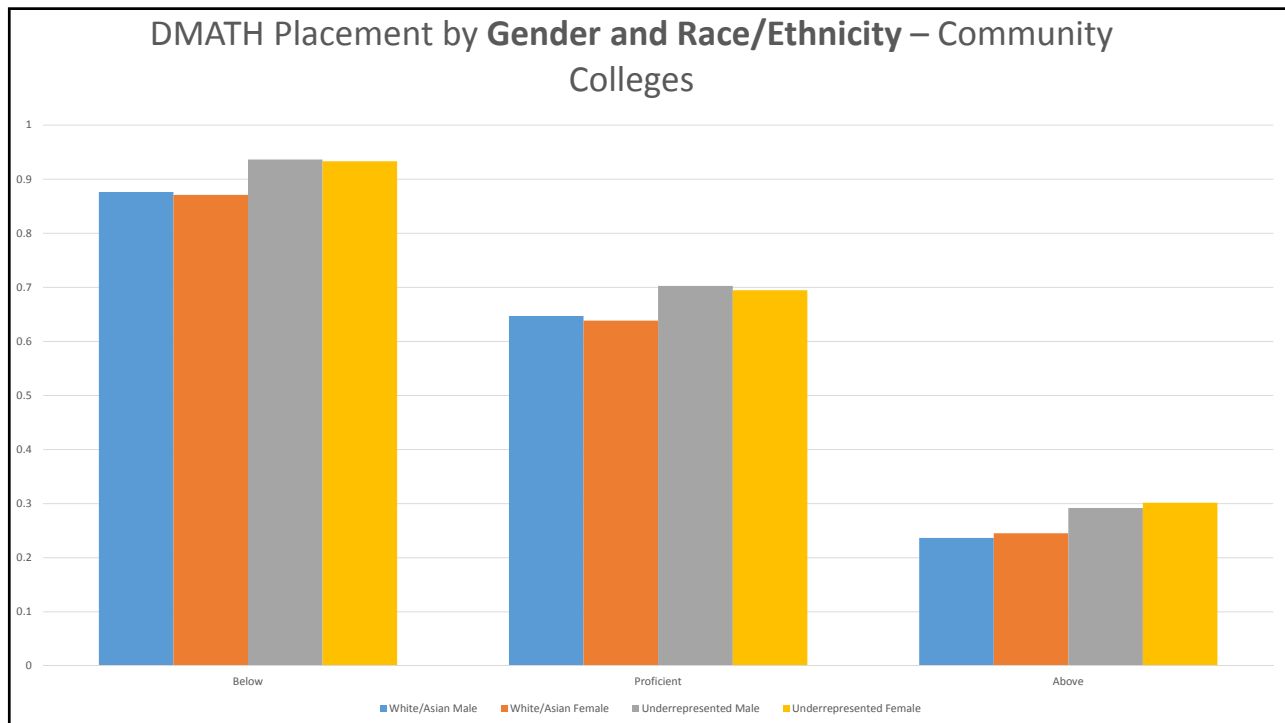
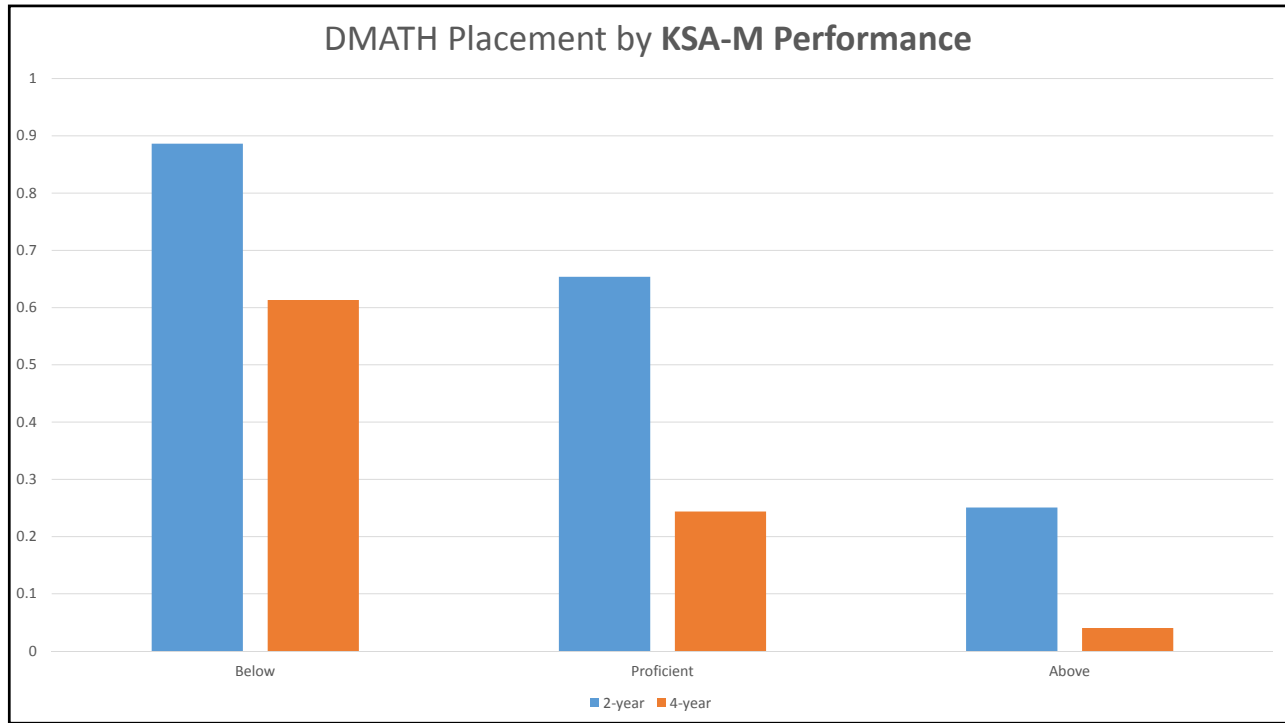
Student Variables Examined

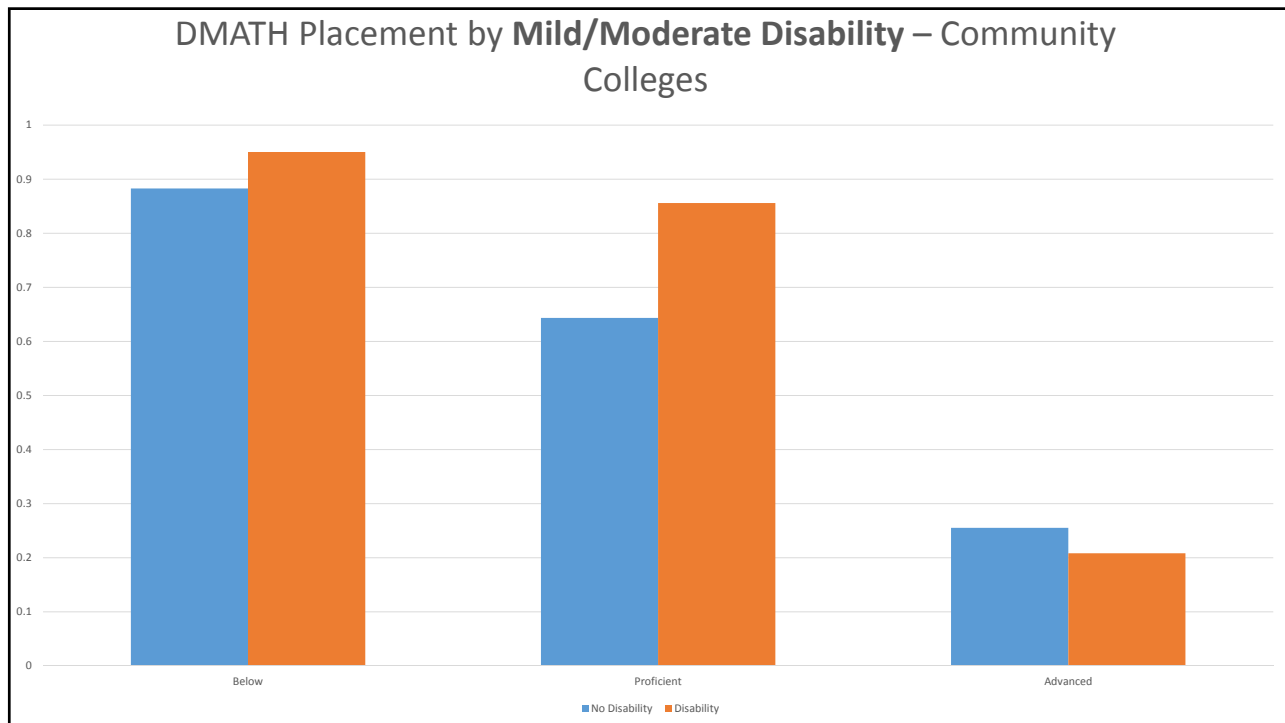
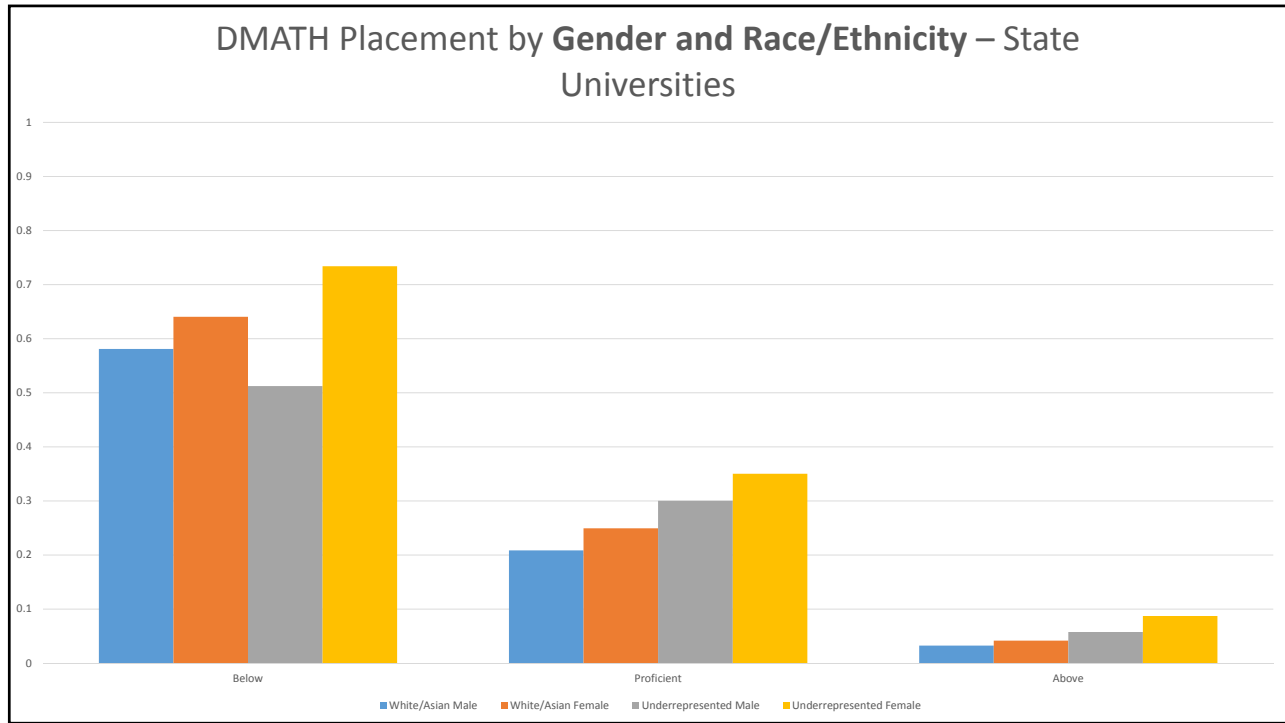
- Graduation Year
- Gender
- Race/Ethnicity
- Gifted
- Mild/Moderate Disability
- Gap Between High School Graduation & First Math Course in Postsecondary Education

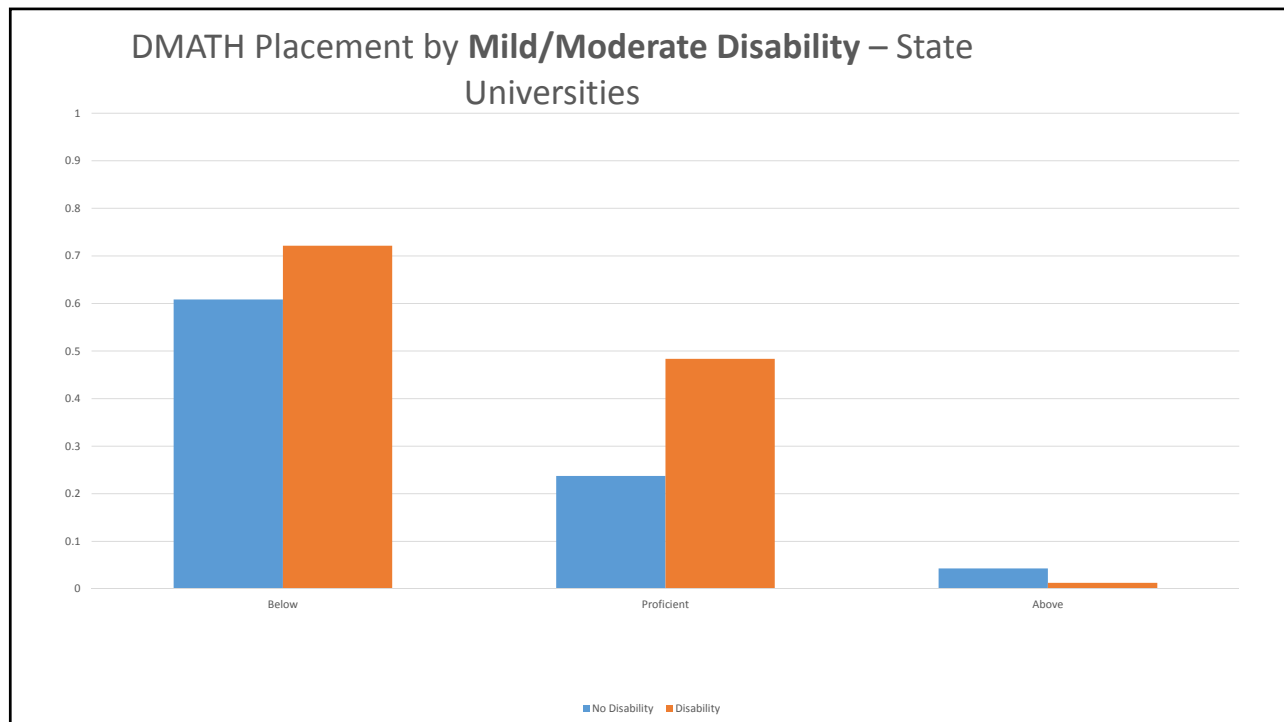


Student Demographics

	<u>Community Colleges</u>	<u>State Universities</u>
%Female	50.45%	48.70%
%White-Non-Hispanic/Asian	72.18%	82.76%
%Mild/Moderate Disability	5.94%	1.44%
Average FRL%	38.79%	32.31%

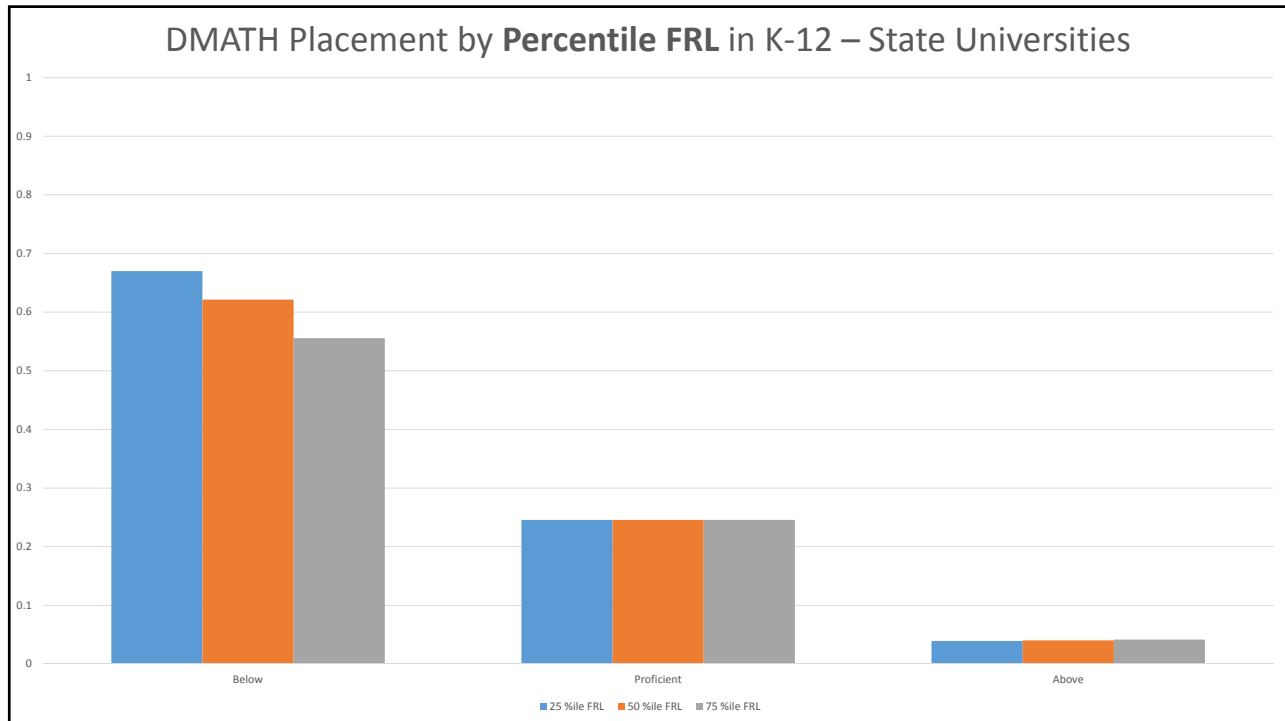
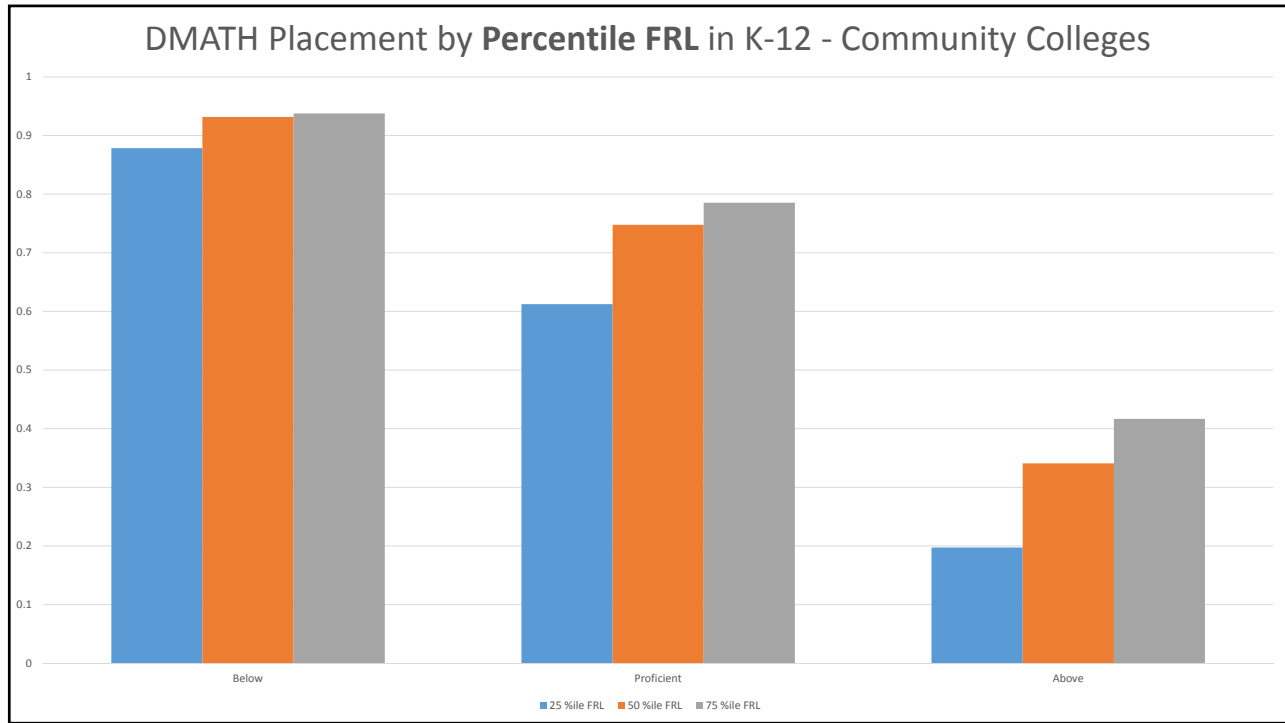






School Variables Examined

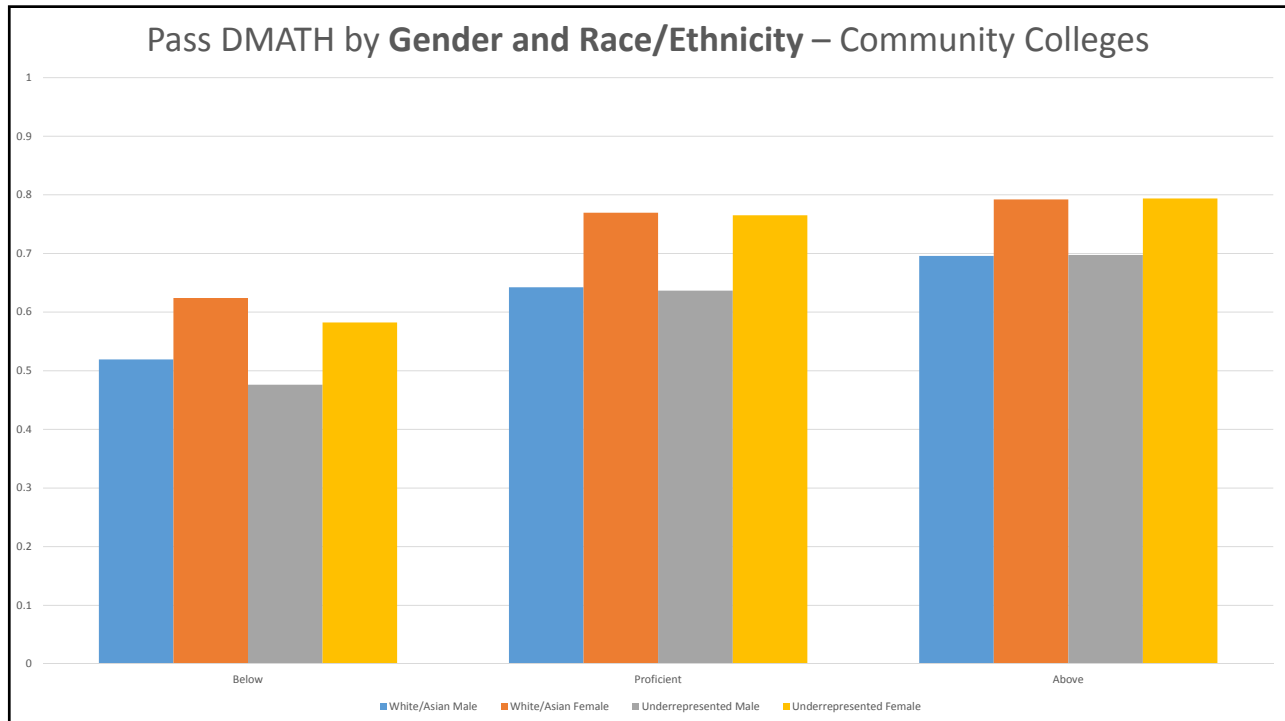
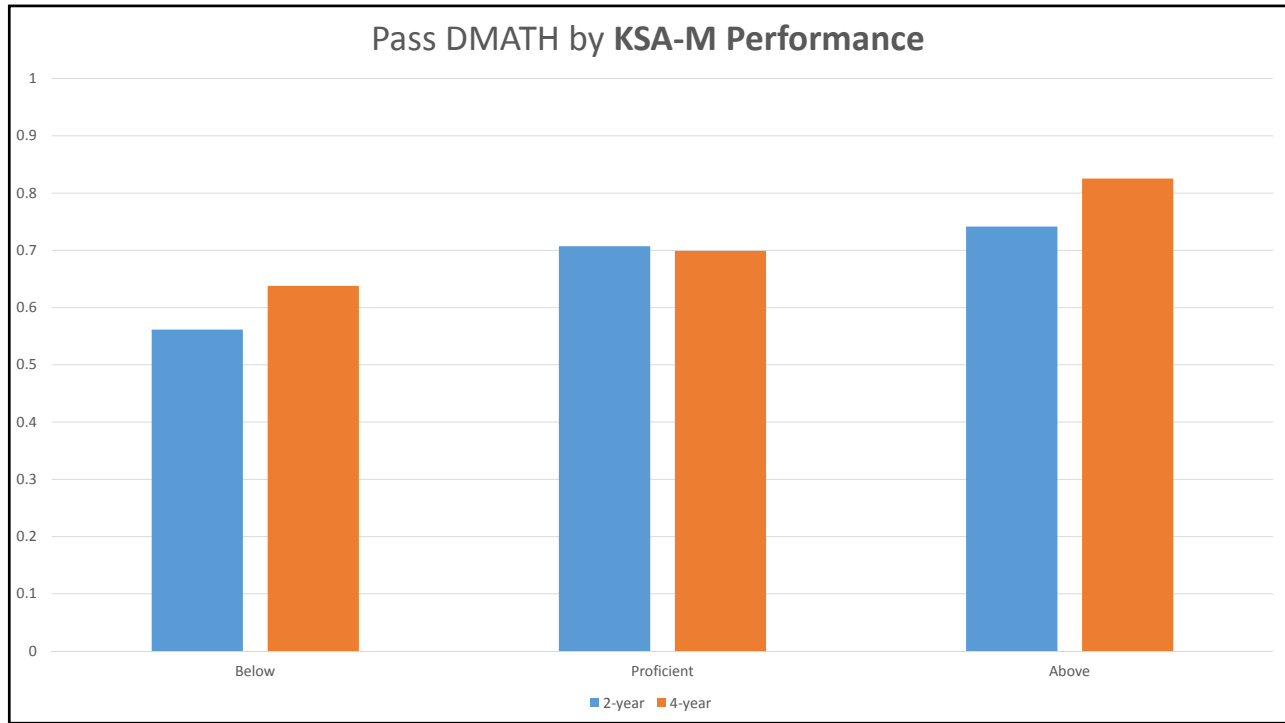
- K-12 Location
- School size
- School structure/grade span
- Percent highly qualified math teachers
- Percent of math courses above Algebra II
- Percent of students eligible for Free & Reduced Lunch (FRL)
- School Average Performance on KSA-M
- Sector: Public vs. Private

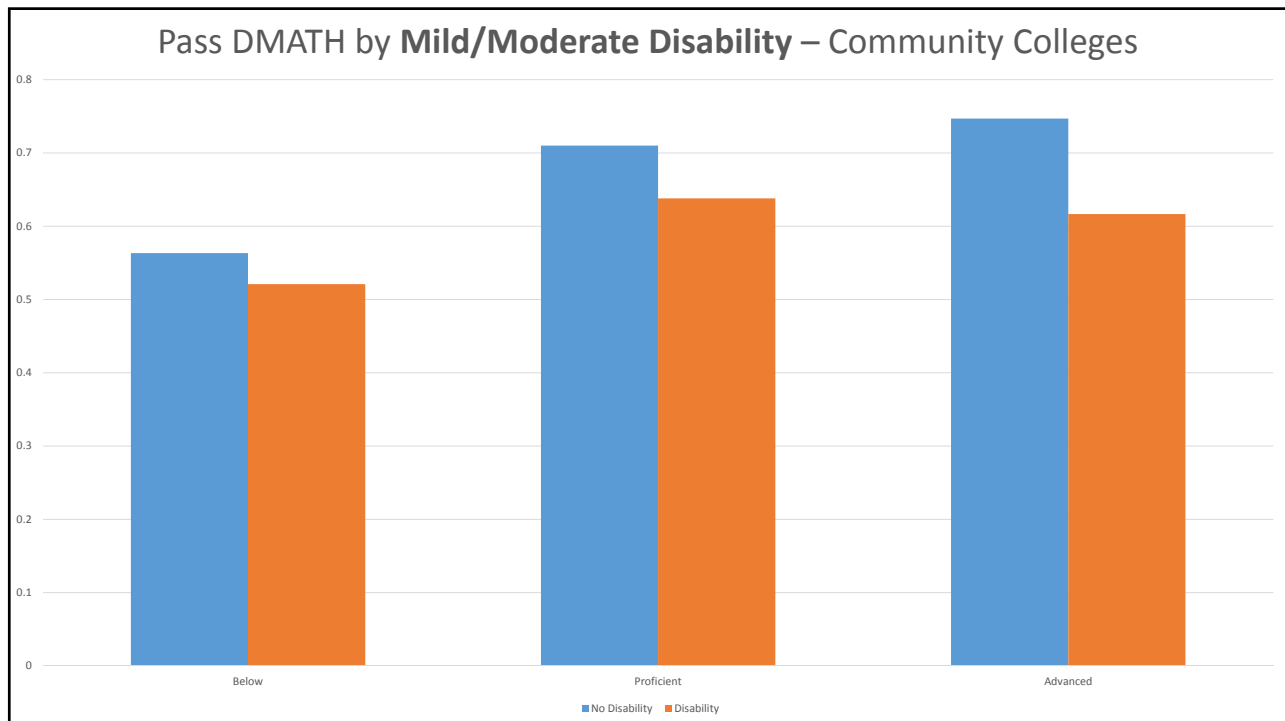
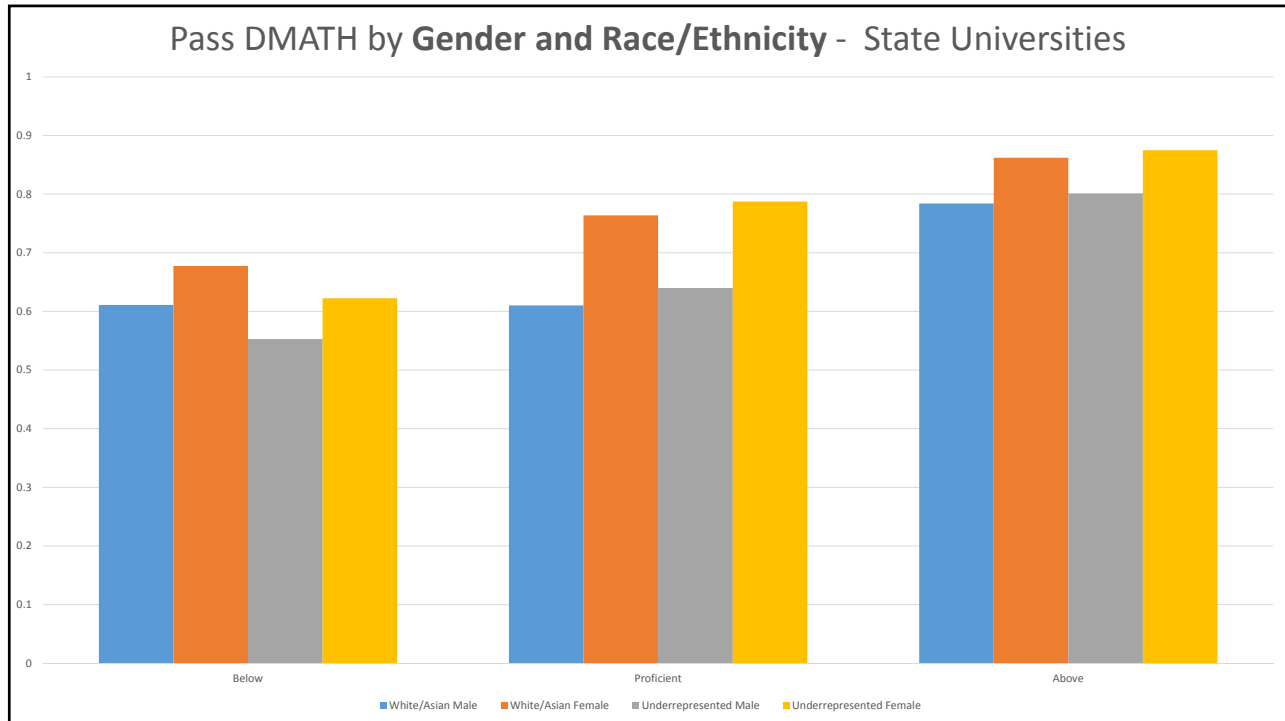


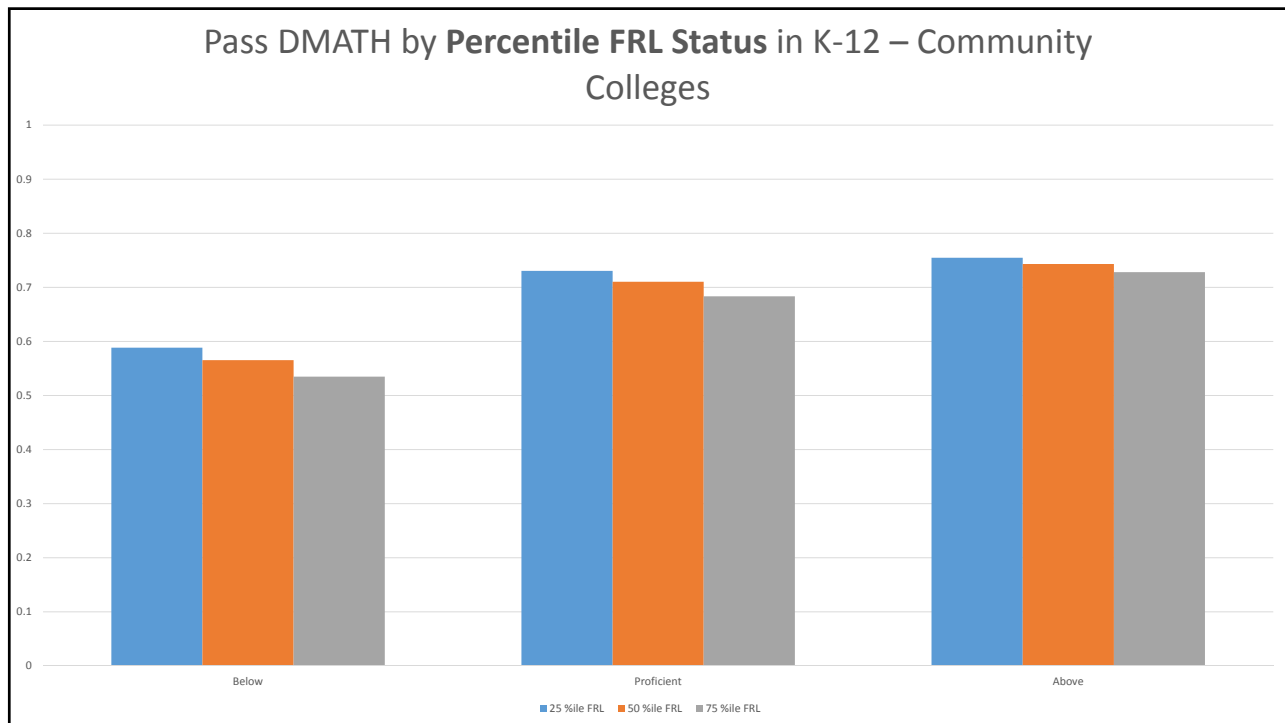
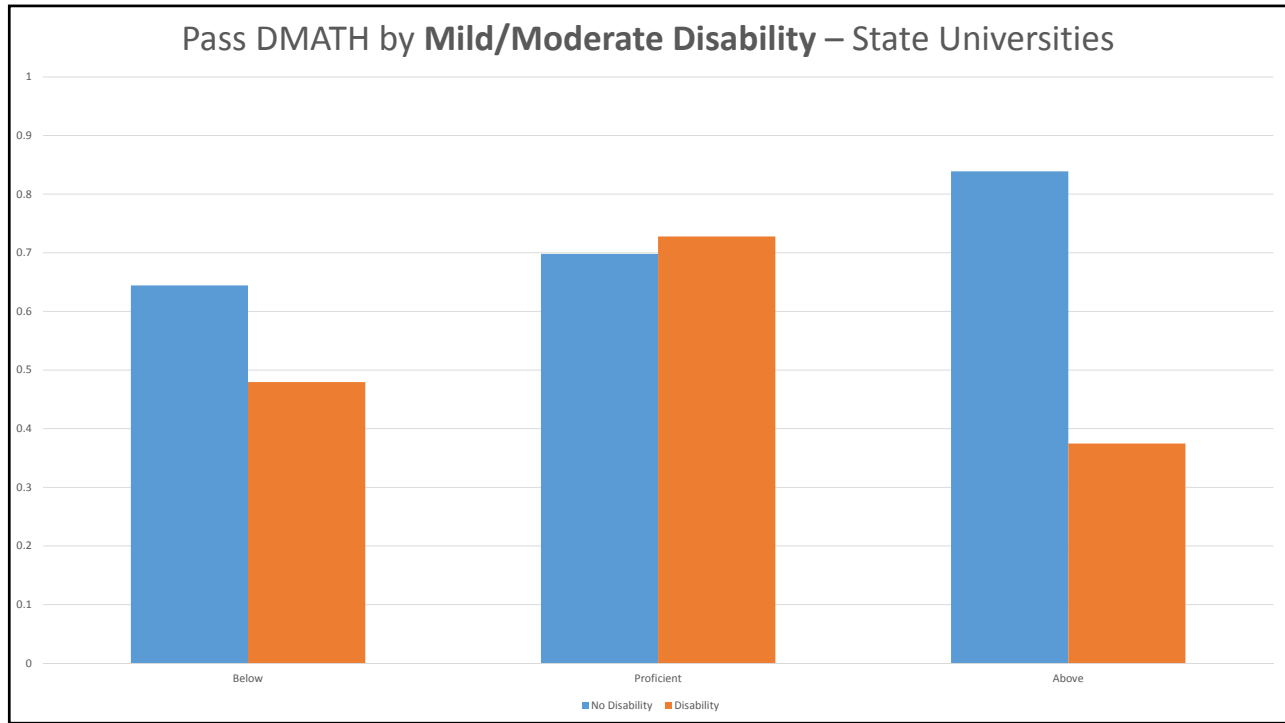
More Likely to be Placed?

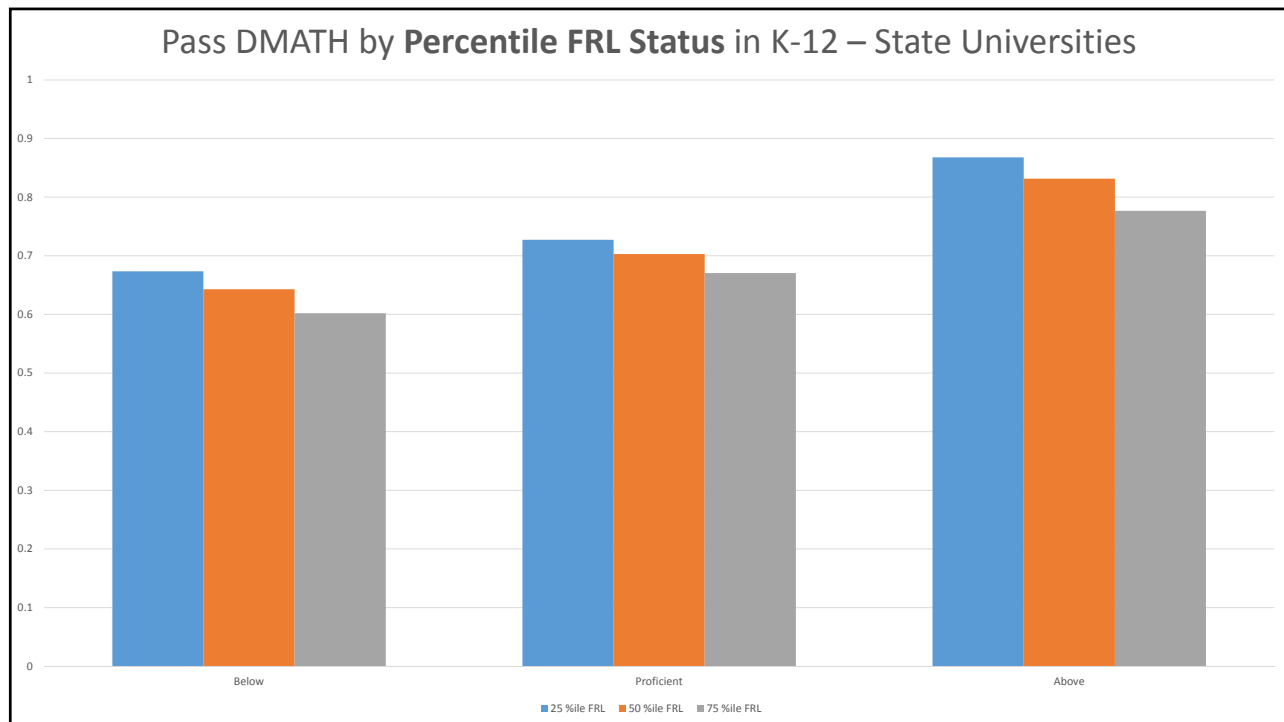
- Gender:** 2-Yr – no difference
4-Yr – females
- Race/Ethnicity:** 2-Yr – minorities at all levels
4-Yr - minorities at proficiency and above
- Disability:** 2-Yr - with disability at below and proficient (largest difference at proficient level)
4-Yr – same as 2-Yr
- Percentile FRL:** 2-Yr – as percentile of FRL eligibility increases; smallest increase at below proficiency
4-Yr – no difference at proficient and above; at below proficiency, students from schools with lower FPL more likely to be placed

Pass DMATH





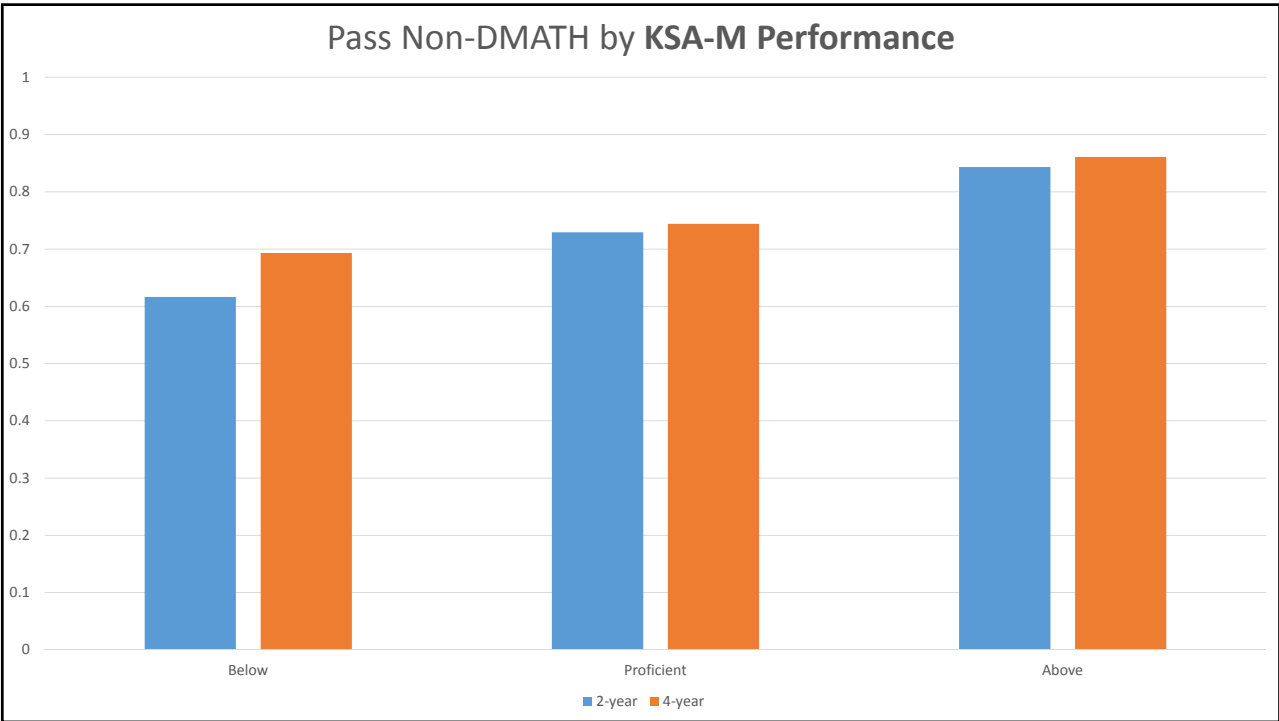


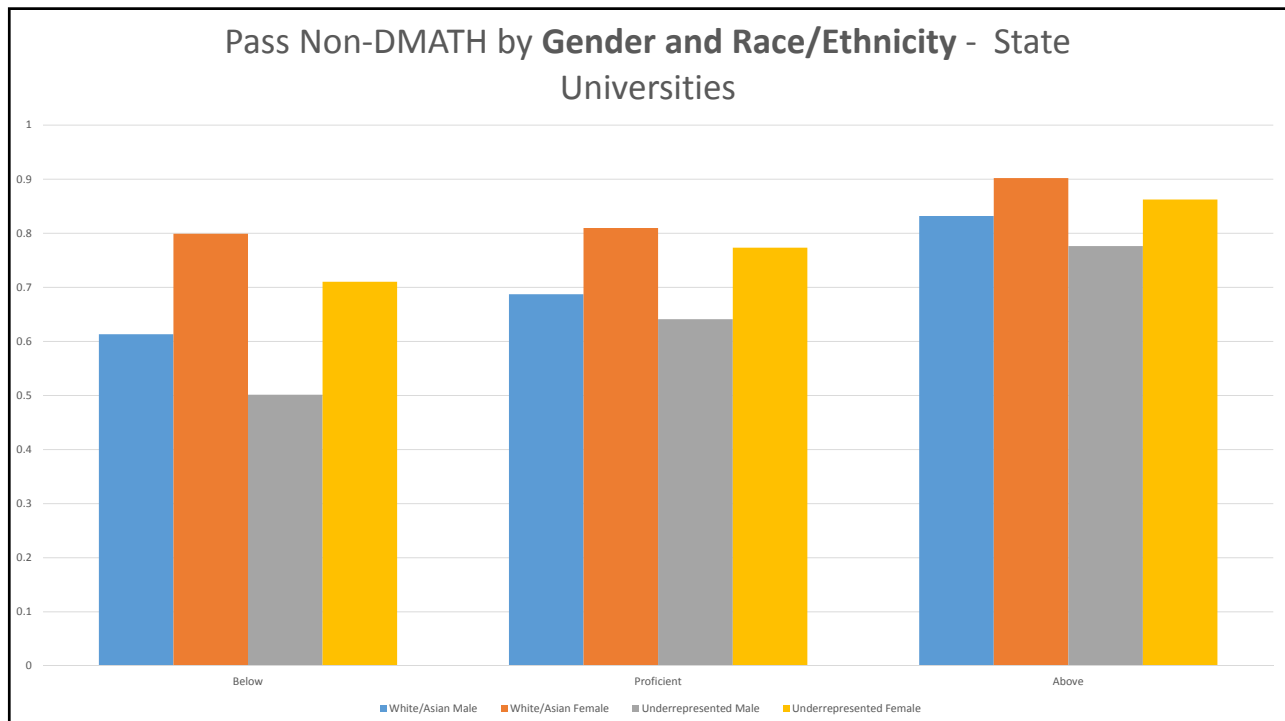
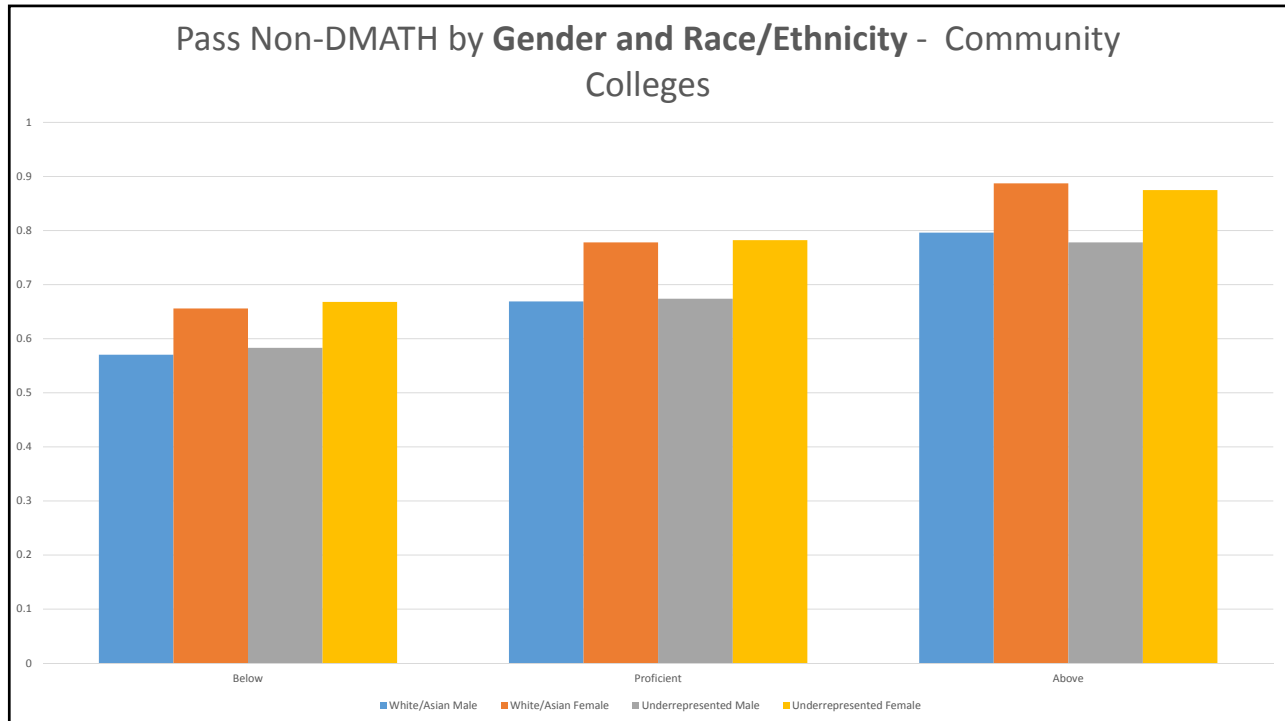


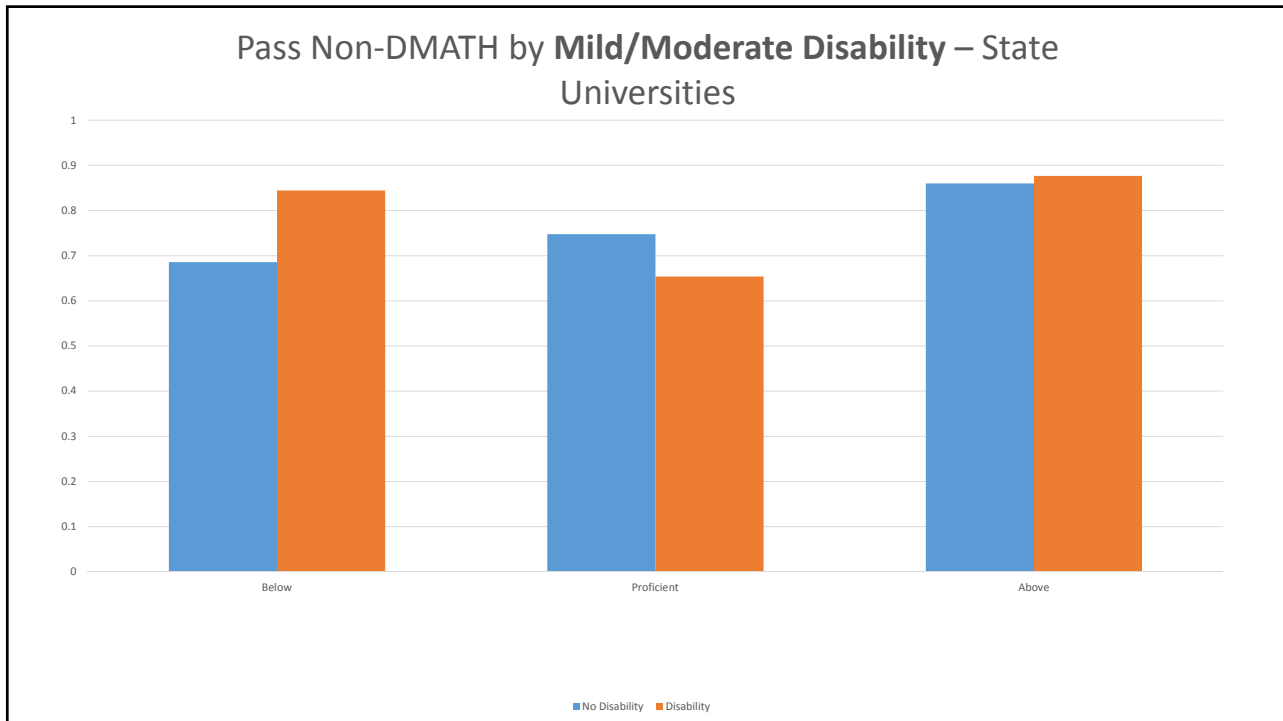
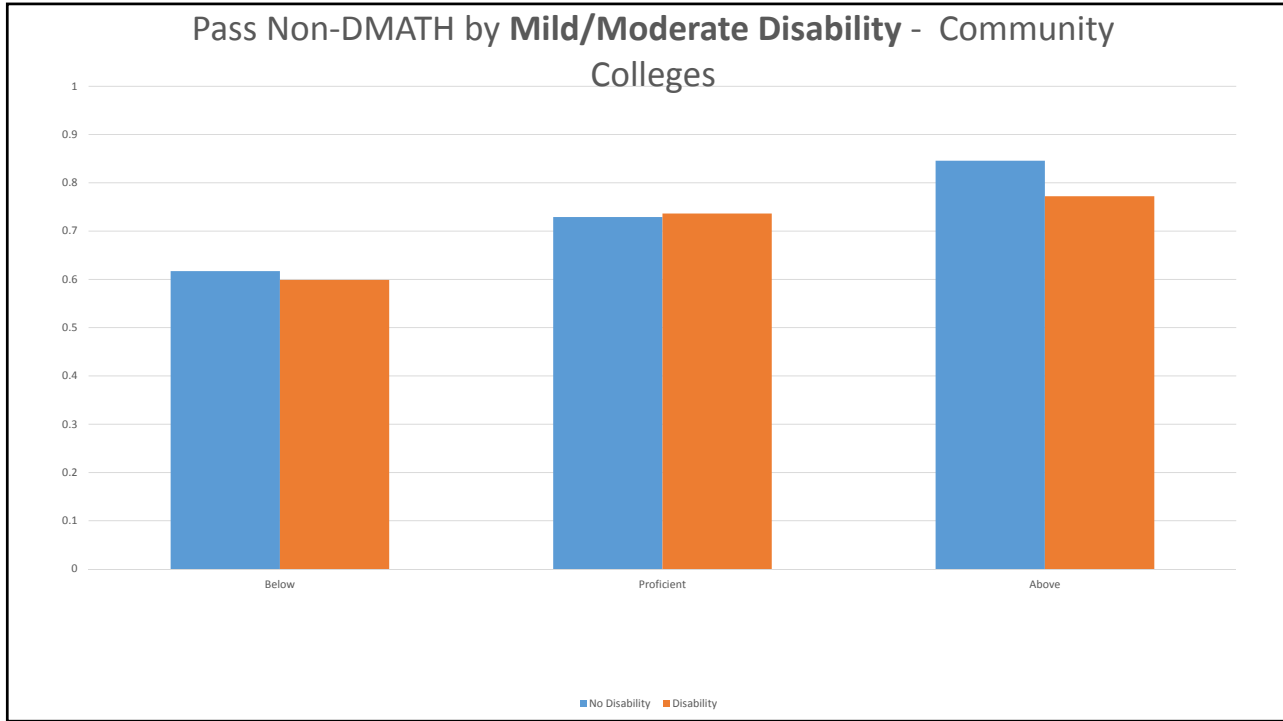
More Likely to Pass DMATH?

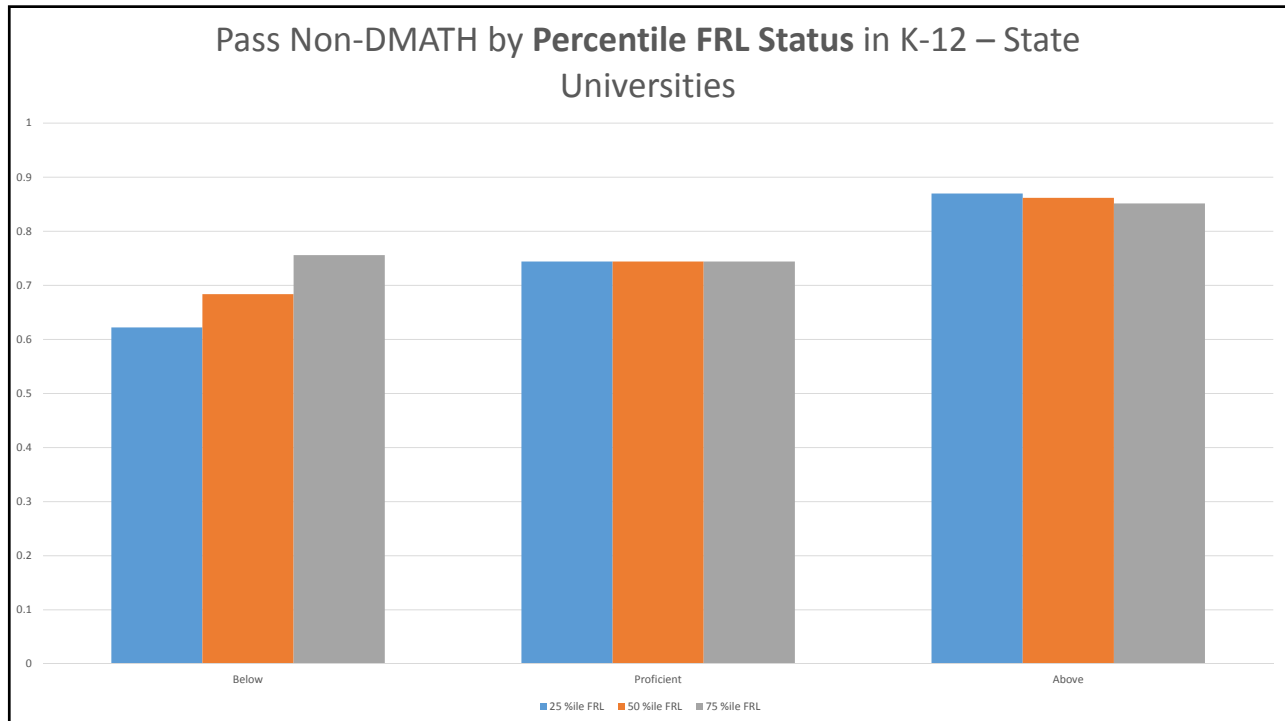
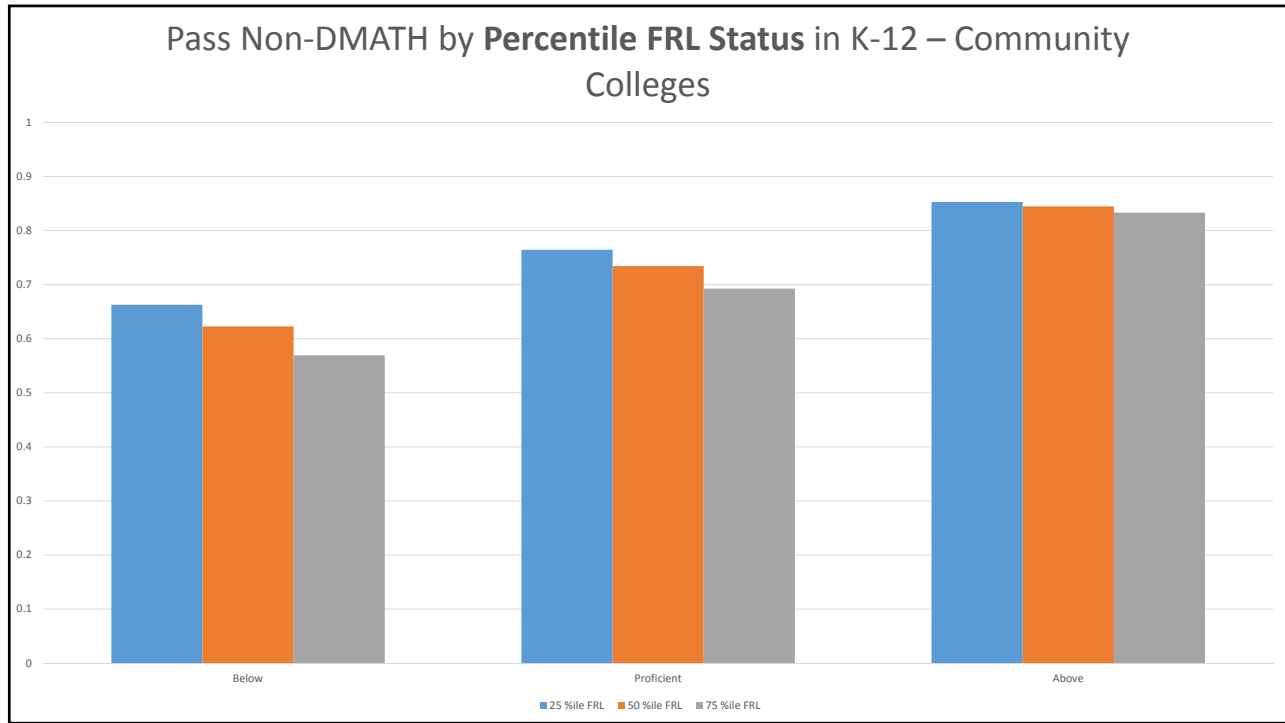
- Gender:** 2-Yr – females at all levels
4-Yr – females at all levels; difference greatest at proficient
- Race/Ethnicity:** 2-Yr – no difference at below and proficient; majority at above
4-Yr - minorities at proficiency and above; majority at below
- Disability:** 2-Yr – no disability at all levels (largest difference at above)
4-Yr – no disability at below and above; no difference at proficient
- Percentile FRL:** difference is more than 40 percentage points at above
2-Yr – as percentile of FRL eligibility increases, likelihood of passing DMATH increases with least difference at above
4-Yr – same as 2-Yr. but a larger effect

Pass Non-DMATH









More Likely to Pass Non-DMATH?

Gender:	2-Yr – females 4-Yr – females with differences in likelihood decreasing with increased performance on KSA-M
Race/Ethnicity:	2-Yr – no differences at all levels 4-Yr – majority at all levels of performance on KSA-M; largest difference for students who scored below proficiency
Disability:	2-Yr – no difference at below and proficient; at above those with <u>no</u> mild/moderate disability are more likely to pass 4-Yr – with disability at below proficient; no disability at proficient and above
Percentile FRL:	2-Yr – as percentile of FRL eligibility decreases at below and proficient; no difference at above proficiency 4-Yr – no difference at proficient and above; at below proficiency, students from schools with lower FPR more likely to pass

Summary

	<u>Placement</u>		<u>Pass DMATH</u>		<u>Pass Non-DMATH</u>	
	2-Year	4-Year	2-Year	4-Year	2-Year	4-Year
Below	88.7%	61.3%	56.2%	63.8%	61.6%	69.3%
Proficient	65.4%	24.4%	70.7%	70.0%	72.9%	74.4%
Above	25.1%	4.0%	74.2%	82.5%	84.3%	86.1%

Other Thoughts?