



MISSOURI HIGHER EDUCATION EQUITY
BRIDGES TO SUCCESS



From High School to the Future: Current Challenges, Opportunities, and Initiatives to Close the Gaps in Missouri

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Context of our work: Critical Issues

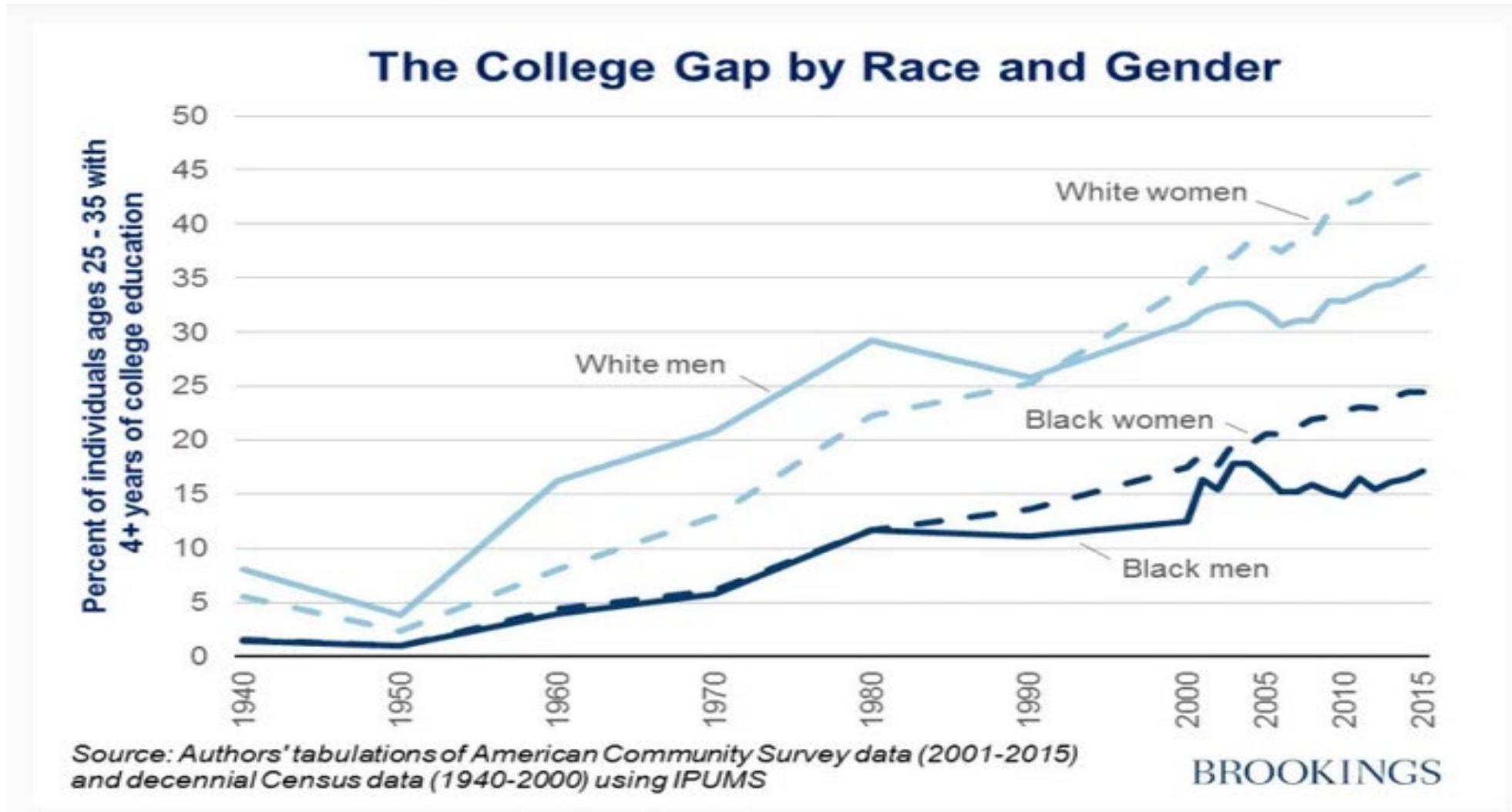
US Income Distribution, Labor Market, and Educational Attainment

Trends:

- Growing income inequality in recent decades
 - Growth in knowledge-based economy, requiring skills beyond high school
 - Growing income gaps between those with and without post-secondary credentials
 - Post-secondary degree attainment has increased over the last several decades
 - But, degree attainment gaps have also grown by socio-demographic characteristics
- Addressing educational disparities is the key to future success of our youth

Growing educational attainment disparities in the US (4+ Years of Education)

National trend by Brookings Institute (2017)



Our presentations today: 2 Parts

Part 1: Understanding the current challenges

a) Historical overview of post-secondary enrollment and degree attainment trends by race and gender groups in MO using the American Community Survey(ACS)

b) Race-and-gender gaps in degree attainment by following a cohort of all first-time 9th-grade students in MO public high schools through 6 years in college (entering HS in AY2009-10)

- What factors explain the gap?
- Importance of pre-college academic skills

Our presentations today: 2 Parts

Part 2: Current opportunities

- Relocation of National Geospatial-Intelligence Agency in 2025
- Innovative apprenticeship training by Gateway Global
- What can a university like SLU do to support K-12 teachers, students, and workforce development?



Race-Gender Disparity in College Enrollment and Bachelor's Degree Attainment in Missouri

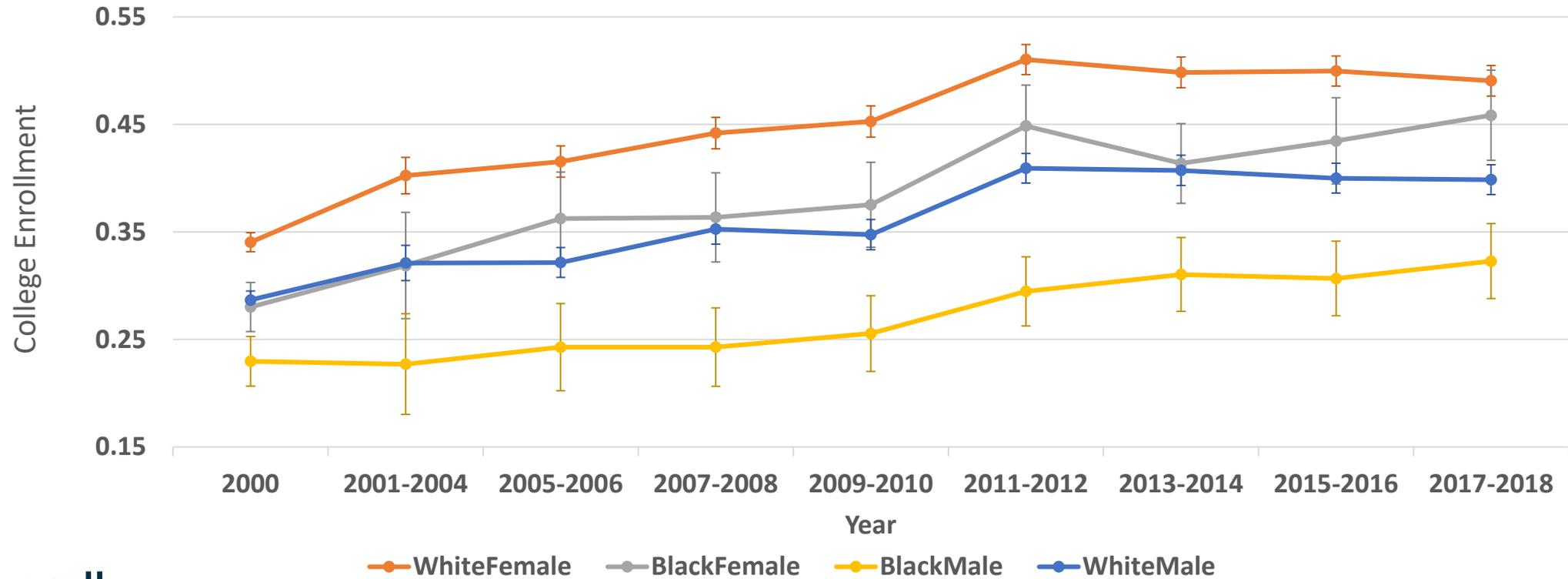
Takako Nomi, Ph.D and Michael Podgursky, Ph.D



Trend Analysis

- The study looks at a difference in college enrollment and attainment between white and black, male and female ACS respondents since 2000 (MO population trends)
- College enrollment: Currently enrolled in college for age 18 to 24
- For degree attainment: Holding a 4-year degree for age 24 to 36
- Metro vs Non-Metro difference

Overall Trend in College Enrollment by Race-Gender in MO, age 18-24



Overall

- Large gaps overall—females leading males in both races
- After 2010, the trend is flat for white males and females, but the upward trend continues for black students
- The gaps are not widening over the last 10 years

Metro vs. non-Metro Difference in College Enrollment

Metro Area

- Race-gender gaps are stable since 2005
- Black females are similar to white males

Non-Metro Area

- Black females have the highest enrollment rate of all groups
- Black males have made larger improvement (now similar to white males)
- White students of both genders lag considerably behind their Metro counterparts. Few Metro vs non-Metro gaps for black students



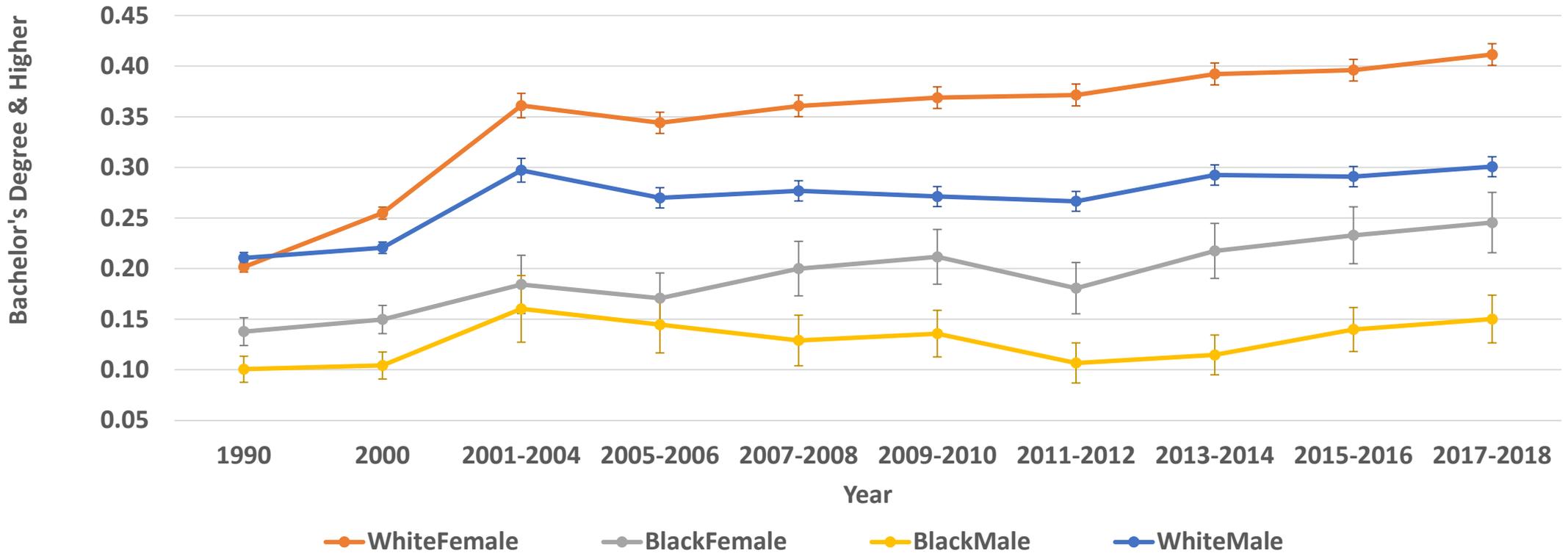
Degree Attainment

If all students are similarly successful in completing a degree once they enter college, then the degree attainment trend should follow the enrollment trend with a time lag (appx 6 yrs).



However, evidence suggests growing attainment gaps

Overall Trend in 4+ Years of College Education by Race-Gender in MO, age 24-36



Overall

- Gaps have grown over time
- Females improved more than males in both groups
- Black males have made the smallest improvement

Metro vs. non-Metro Difference in Bachelor's Degree Attainment

Metro Area

- Both female groups improved more than their male counterparts
→ greater gender gaps within the same race
- Black males seem to have made the smallest improvement

Non-Metro Area

- For all groups, non-metro students have lower 4-yr degree attainment than metro students
- White females is the only group showing improvements over time
- Black females showed downward trend (are they attaining 2-yr degree?)

Summary on Trends

Our data shows:

- All groups have upward enrollment trends
- However, black males show little improvement in attainment
- Black females have similar, or higher enrollment than white males, but much lower 4-yr degree attainment

→ Of those enrolled in college, 4-year degree non-completion rates may be rising for minority students (male students in particular)



Following one cohort of first-time ninth-grade students in MO public high schools (AY2009-10)

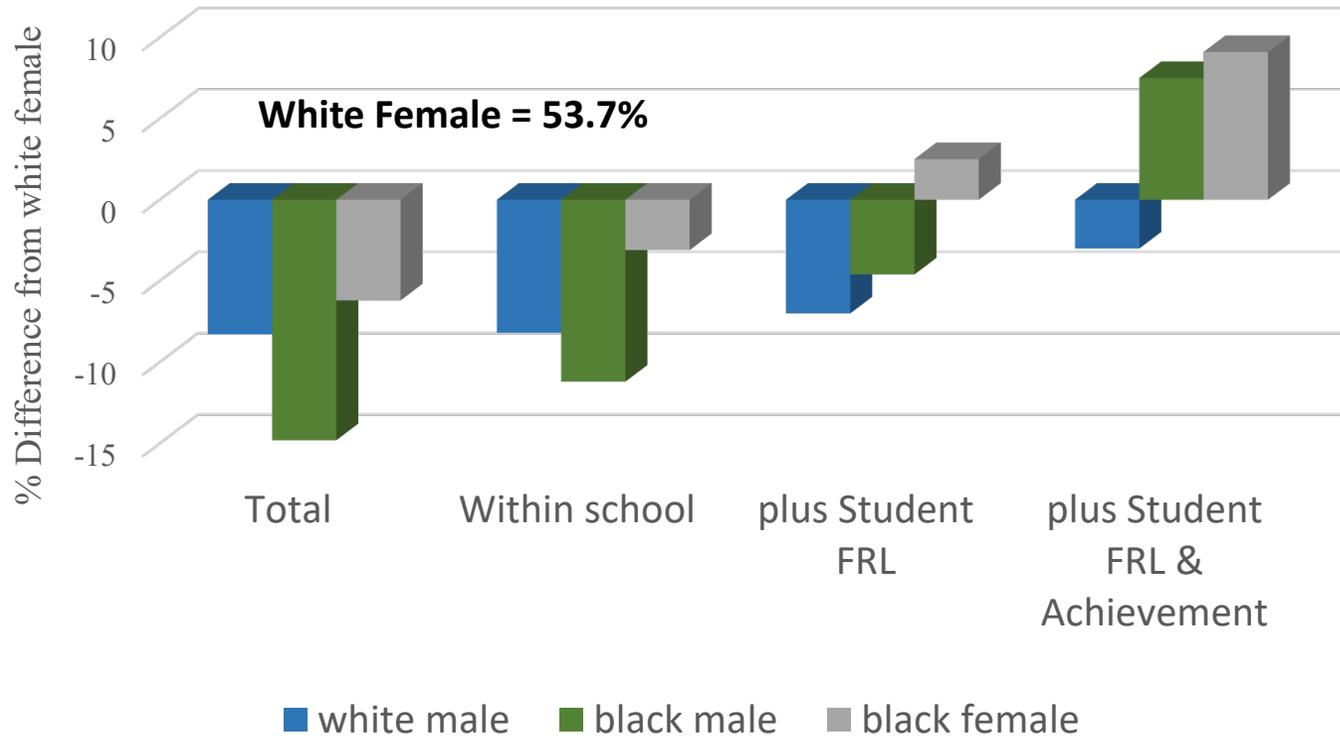
Outcomes:

College enrollment, any degree, and bachelor's degree attainment



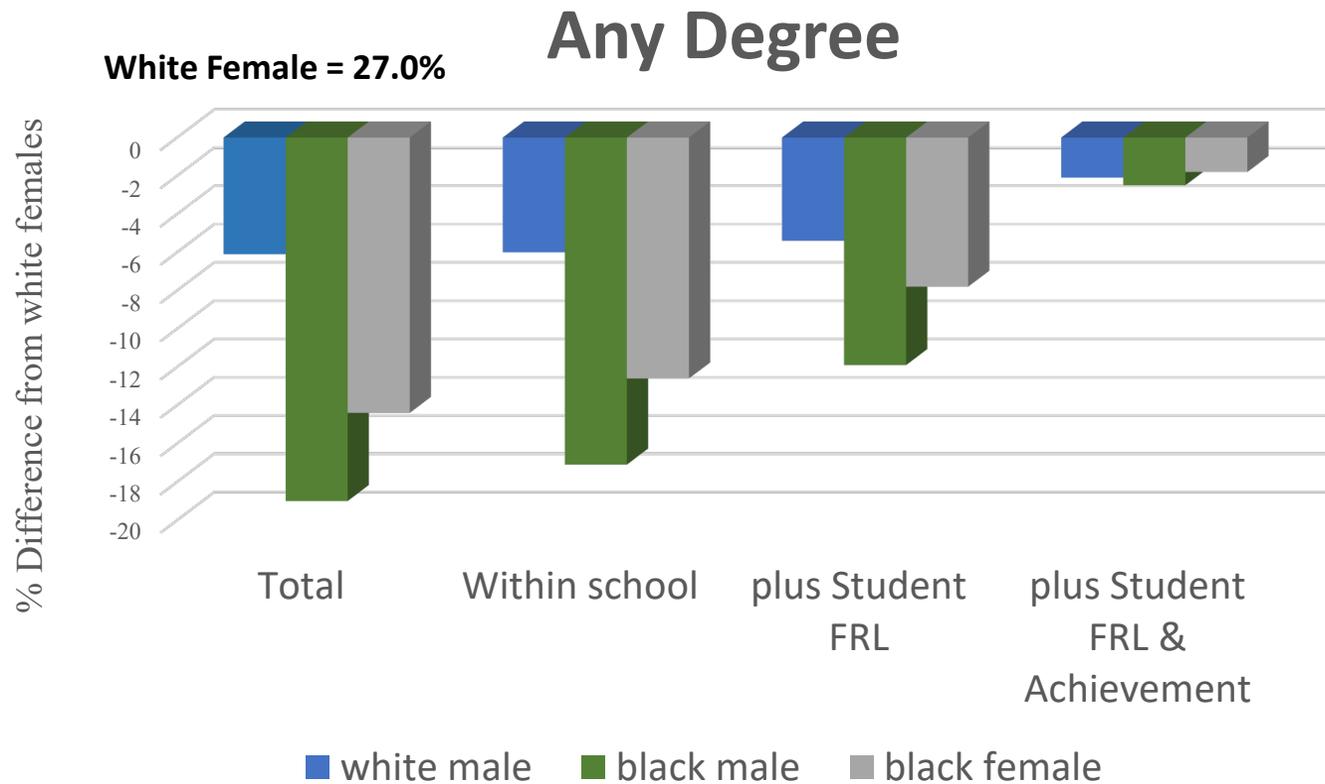
To what extent high school and student characteristics (FRL and academic backgrounds) explain the overall gaps?

College Enrollment



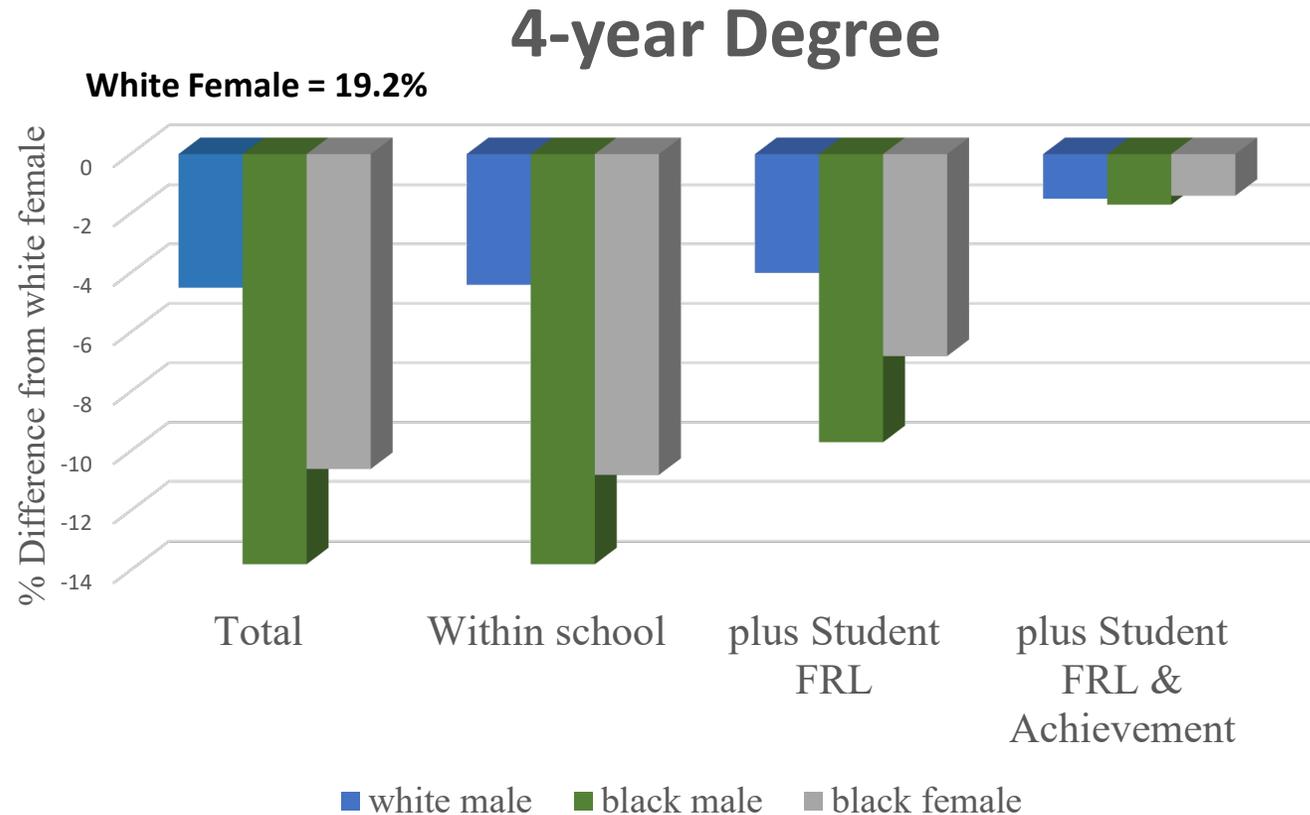
Total: Total average gap
Within School: Within HS average gap
+ Student FRL: Within HS + age and FRL
+ Student FRL + Achievement: Within HS, age and FRL + Math MAP 8th and 9th-GPA

- Large total gaps between white females and the rest of the groups (and males are behind females in both races)
- School factors and student FRL status explain more than 65% of the gap for minority students, but not for white males.
- Black males and females have higher college enrollment than white students with similar academic and family(FRL) background.



Total: Total average gap
Within School: Within HS average gap
+ Student FRL: Within HS + age and FRL
+ Student FRL + Achievement: Within HS, age and FRL + Math MAP 8th and 9th-GPA

- Much larger total gaps in degree attainment (any degree) for minority students than the gaps in enrollment
- School factors and student FRL status explain smaller gaps in attainment for minority students than their enrollment gaps
- After taking into account pre-college academic differences, small gaps in degree attainment remain



Total: Total average gap
Within School: Within HS average gap
+ Student FRL: Within HS + age and FRL
+ Student FRL + Achievement: Within HS, age and FRL + Math MAP 8th and 9th-GPA

- Patterns are similar to any degree attainment, but school factors do not explain any of the gaps in 4-year degree attainment.
- Pre-college academic background and FRL status explain the majority of the gaps in 4-year degree attainment

Summary

- **Minority students are more likely to attend college than white students with the same FRL status, test scores and GPA, but this does not translate into degree attainment—degree attainment of minority students are lower than similarly prepared white students**
- **This suggests: Among those who enrolled in college, college dropout rates are higher for minority students than white students with similar academic preparation levels**
- **Importance of improving skills before they enter college, and continuing to offer support once they are enrolled in college**

Part 2: Current Opportunities in MO

The opening of NGA-West is expected to create a geospatial hub in St. Louis

- New job growth
- Need for talent development and better pipelines from K12 to college and work
- How can we increase college readiness and support transition from high school to college and career?



Gateway
Global



Zekita Armstrong Asuquo

Founder & President

- Global Marketing Consultant – marketed wine (for clients) into China, Hong Kong, Thailand, Malaysia and other Asian markets
- Diversity Manager – oversaw \$70M diversity spend portfolio with more than 300+ contracting consultants
- Director of Social Enterprise – built a social enterprise unit to help a local nonprofit generate revenue, oversaw operations, developed workforce development program for women re-entering the workforce
- Director of Operations – oversaw operations and finance at private, local middle and high school
- Published – by some of the most influential publications including ABC World News, The Root, Diversity Journal, Black Britain Magazine, and St. Louis American
- Media – appearances on local and national radio shows including Roland S. Martin Show (former CNN), Rebecca Roberts (DC), and Charlie Brennan (KMOX)
- Community board and committee memberships – Community Women Against Hardship, former HSSU Workforce Preparedness Advisory Council, Opera Theatre St. Louis Engagement & Inclusion Committee, former NAWBO St. Louis President, GeoFutures Committee (STL)
- Education – B.A. Sociology and Anthropology (concentrations in International Relations and Majority/Minority Relations, Maryville University MML in Business Candidate , World Trade Center Certification in International Trade

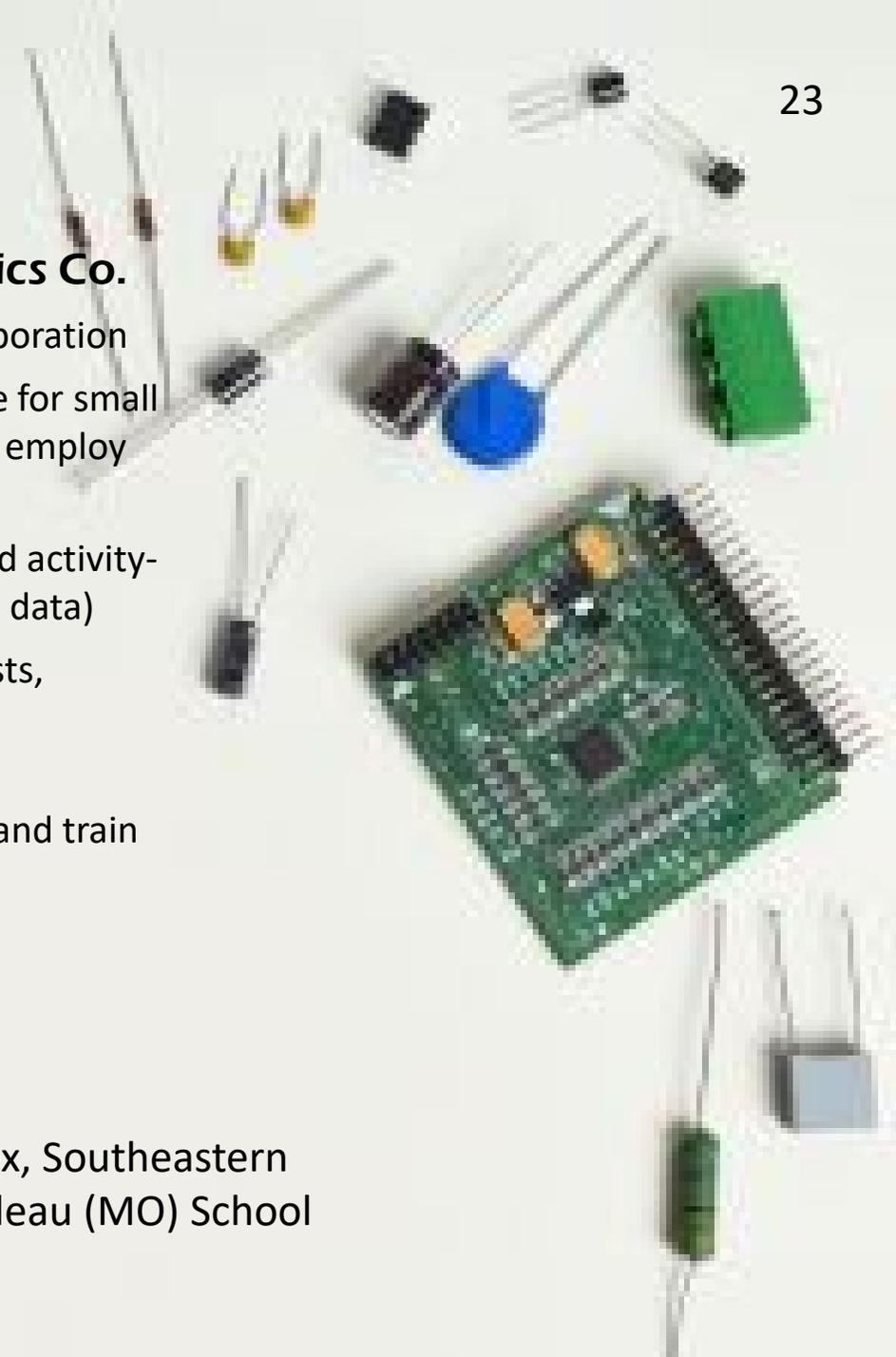
Gateway Global American Youth & Business Alliance

- Non-profit federally tax exempt
- Recruits apprentices: high school students, high school graduates, and college students
- Offers training: technical and soft skills
- Focused on big picture career pathways like: Foreign Policy, Global Trade, Environment, Disaster Relief, Submarine Fibre Optics and Outer Space.
- Facilitates Dept. of Labor registered Geospatial Specialist Apprenticeship program (Entry to Executive)
- Partners across STL region and the state

Partners include: St. Louis University (GeoSLU), USGIF (Academic Affairs), T-Rex, Southeastern MO Geospatial Council, KIPP High School, Normandy High School, Cape Girardeau (MO) School District and Jackson (MO) School District.

Gateway Global Data Logistics Co.

- For profit Missouri registered corporation
- Certified MBE Corporation eligible for small business contracting set asides to employ Geospatial Specialist Apprentices
- Specializes in both topography and activity-based intelligence (human centric data)
- Creates jobs for Geospatial Analysts, Technicians, and DOL Registered Apprentices
- Ability to scale, create more jobs and train cohorts of apprentices annually



Problem

Challenges of U.S. Education System in a Rapidly Changing Global Marketplace

- Disconnect between academia, secondary education and economic development
- Limited alternatives to immediately attending a four-year college or university – for poor minorities and poor whites (this includes women across the spectrum)
- Lack of diversity in talent pipeline – attributed to lack of alternatives
- Outdated and non-innovative recruitment strategies for selecting talent
- Lack of focus on cultivating a workforce effectively in K-12
- In the U.S. there is a stigma associated with apprenticeships that is not seen in parts of Europe where traditional and non-traditional apprenticeships are successfully a large component of workforce development (ex. Germany, Switzerland, UK)
- Emphasis primarily on “coding” only which detracts interest from STEM based careers
- Using 20th century programming and methodology for 21st century issues



What We Found



- Apprenticeships are an attractive model to students who are not likely to attend four year college immediately after high school
- Students in our targeted demographic value an immediate income equally to higher education
- Most of this demographic would be excited about STEM careers if they understood more about them
- Most students in this demographic would eventually complete a college degree if they could get skilled and go to work at a high paying job first
- Most parents/guardians are in agreement that work is equally as important as higher education and would support a STEM based apprenticeship program for their students
- Most parents believe that apprenticeships in Science and Technology will help their students obtain the skills and education they need to be successful
- Most students that participated in the survey, signed their names stating that they were genuinely interested in learning more about the apprenticeship program

STEM Based Apprenticeships: Keeping U.S. Companies Globally Competitive

A Path Towards Diversifying Talent Pools and Pipelines in *Now and Next Generation Science and Technology*

St. Louis Promise Zone High School Students 9th – 12th

51.1

Percent that said that both going straight to work to support themselves and enrolling in college was the most important thing to them after graduating high school.

57.5

Percent that said that they would join a STEM based apprenticeship program if they could “earn while they learn” and earn credentials.

51.4

Percent that said they would be more excited about a career in STEM if they actually understood why the work was important and how it fit into the big picture.

57.8

Percent signed their names saying that they wanted to receive more information STEM based apprenticeships in their communities.

65.5

Percent said that they would definitely go to college if they could start with a good paying job that would allow them to move up in their career.

St. Louis Promise Zone Parents/Guardians

85.3

Percent that said they believe that Science and Technology (STEM) based apprenticeships would help poor, minority or female students obtain the education and skills they need to succeed.

75.4

Percent that said that both going to straight to college and getting skills to work at a high paying job was most important for their child after high school graduation.

92.7

Percent that said that it was important to them that their student/child become educated and qualified for careers in organizations like NGA and its contractors like Boeing, BAE Systems, Leidos, Harris Corp, and others

92.8

Percent that said that they would support a STEM based apprenticeship that could help their student/child gain credentials before going to college



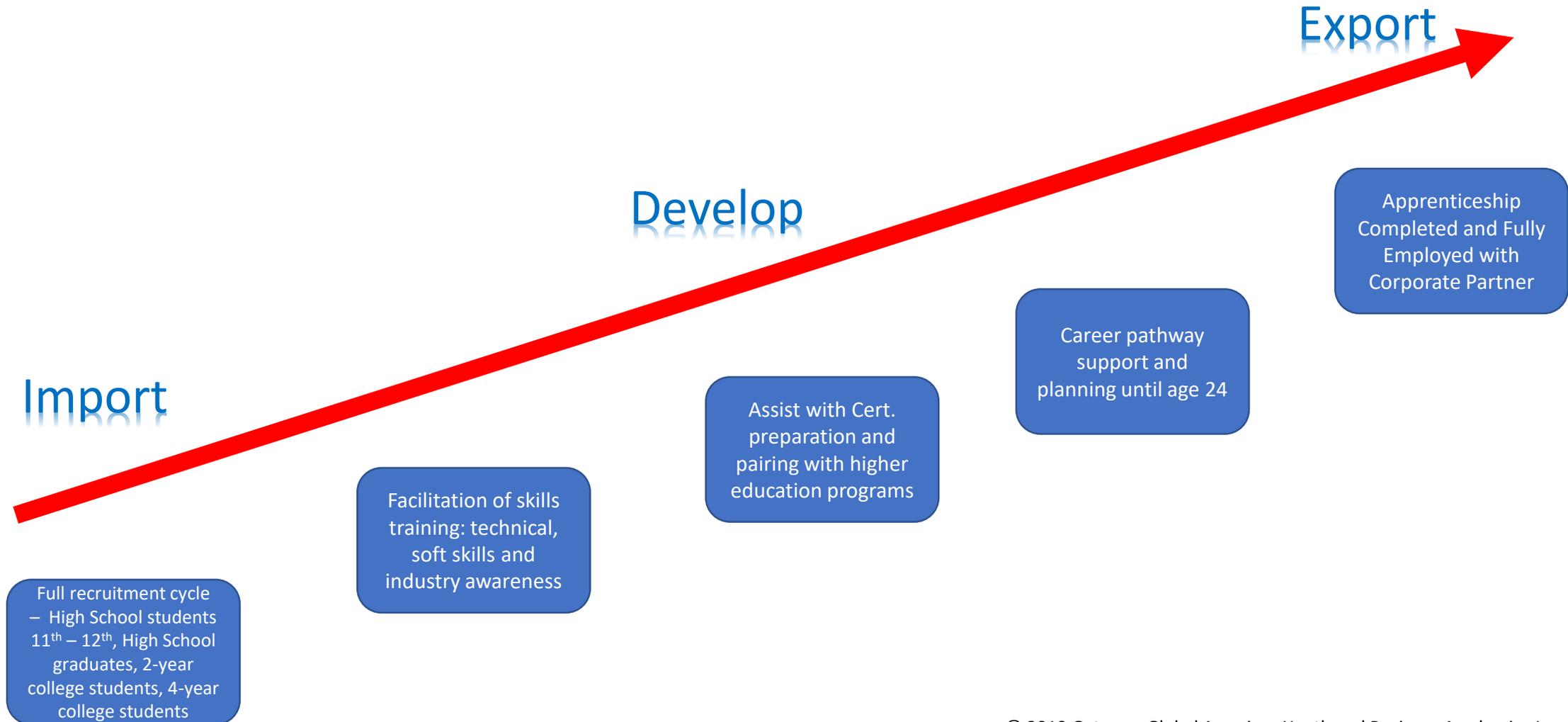
Some Areas Where U.S. Will Fall Behind Globally Without Innovative Workforce and Education Solutions

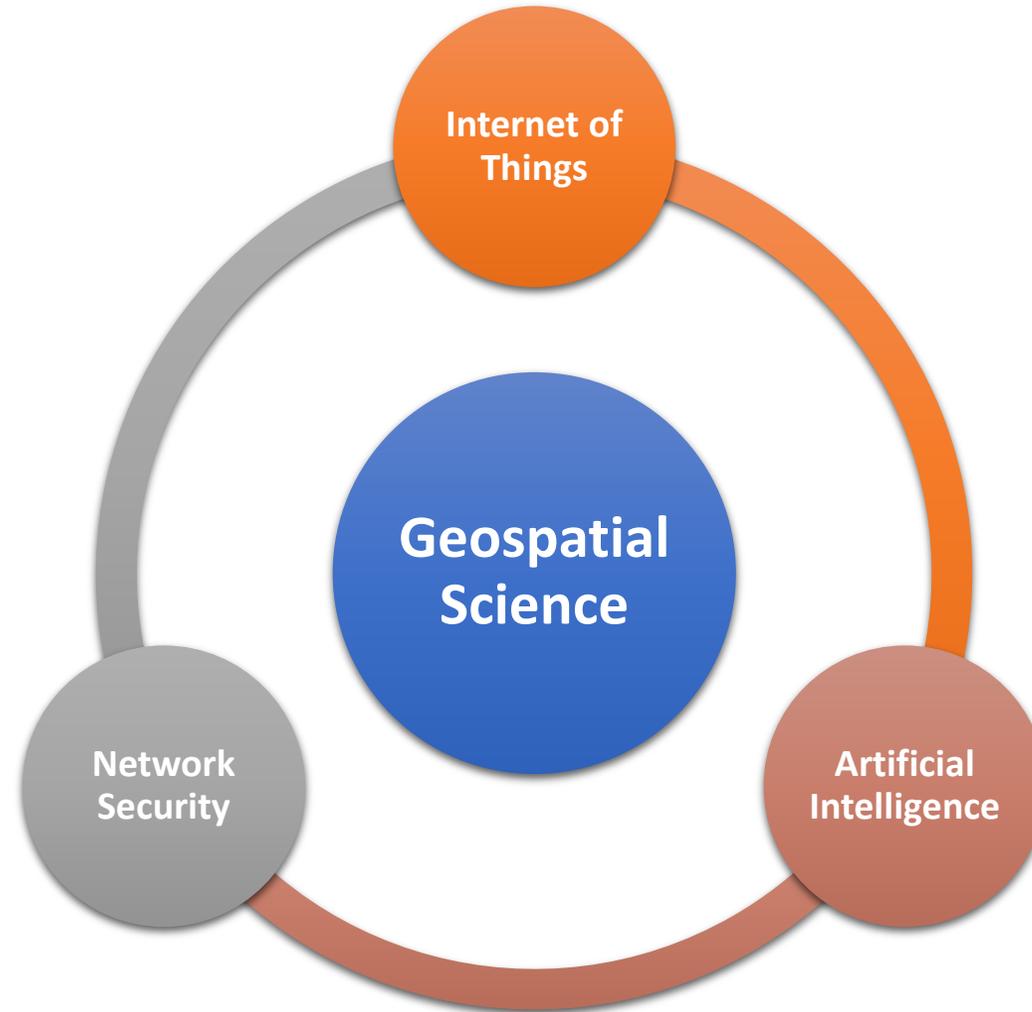
- Sustainable Energy Solutions
- Outer Space
- Global Soft Power
- Advanced Fatal Weaponry
- Allied Infrastructure Assets
- 5g
- Artificial Intelligence
- Robotics
- Geospatial Intelligence
- High Speed Rail & other Sustainable Transportation

Solution

GGAYBA “Entry to Executive” STEM APPRENTICESHIP MODEL

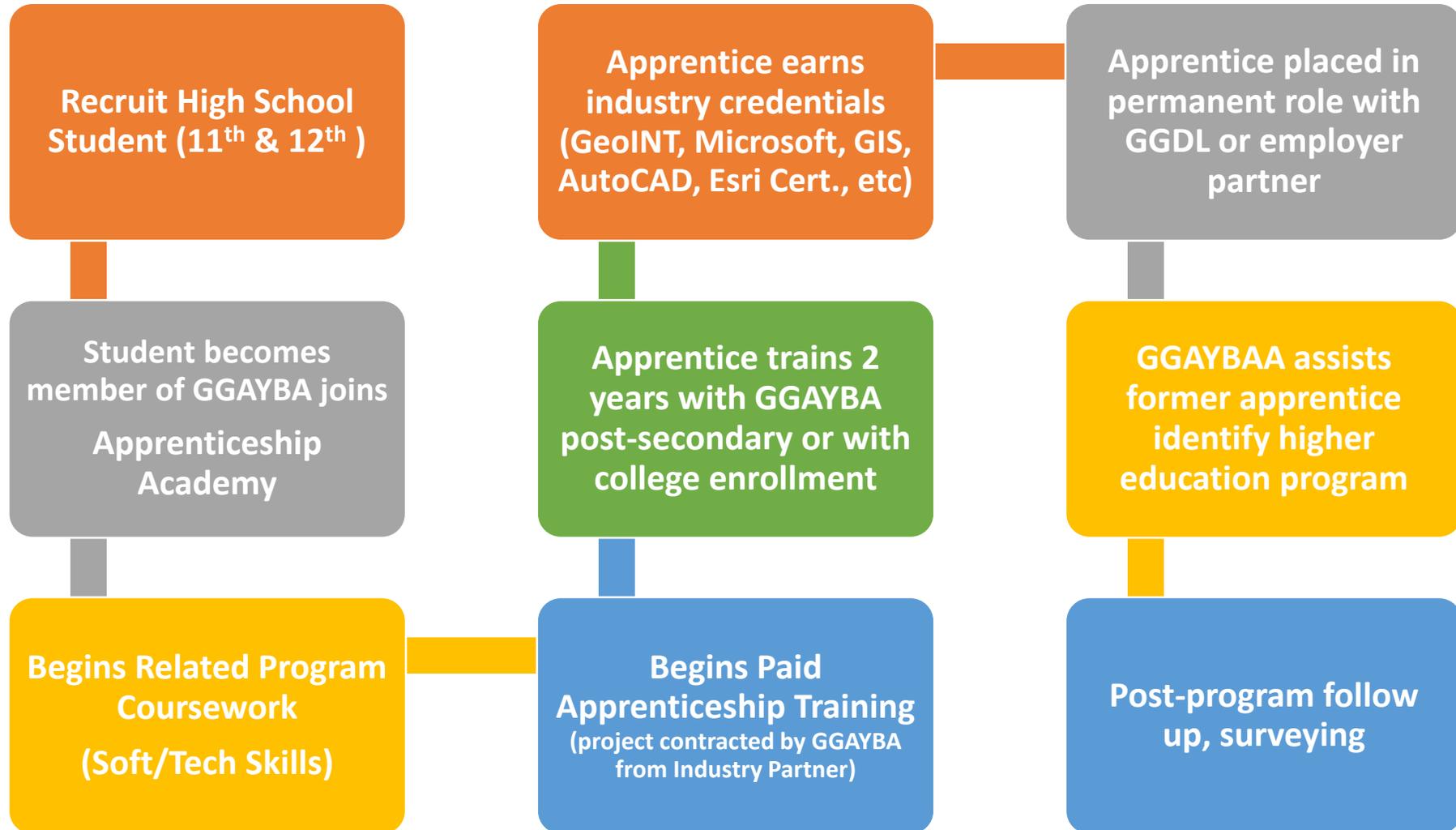
Our I.D.E. method was designed to identify the workforce needs of employers, recruit young adults with an interest, but had barriers to entry, and finally, help move the region forward by using creative methods to help rapidly close the skills gaps by utilizing untapped talent sources to support efficiency, innovation and global competitiveness.





Geospatial Science converges with other critical industries like Artificial Intelligence, Network Security and Internet of Things (IoT)

How It Works



Some Resources on Workforce Trends in Non-Traditional, White Collar Apprenticeships

White Collar Apprenticeships

<https://www-nytimes-com.cdn.ampproject.org/c/s/www.nytimes.com/2019/12/10/us/apprenticeships-white-collar-jobs.amp.html>

From Apprentice to CEO

<https://www.qa.com/resources/our-thinking/from-apprentice-to-ceo/>

Win for Business, Win for Workers



- Providing free technical (Esri) and soft skills training to youth ages 16-24 automatically qualifies them for entry level production
- Targeting both Urban Centers and Rural Communities as partners increases the number of skilled young workers and expedites closing skills gaps in critical *Now* and *Next Generation* Technologies
- At the end of the apprenticeship, employers receive trained and experienced workforce that can bypass entry level roles and take on more responsibility
- Recruitment across school districts and connecting counties increases diverse talent pipelines – racially and socioeconomically
- Contracting projects to GGAYBA contributes to competitive advantage by familiarizing talent pipeline with company’s mission, vision, values, goals and stakeholders early on

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Current Effort at SLU for High Schools in St. Louis (high minority/low income schools/districts)



Goals

- Increase content exposure by introducing spatial-thinking into regular high school courses
- Increase the use of tools (e.g., GIS) for spatial analysis
- Create better pathways from high school to college
- Increase teacher training



Current Effort at SLU for High Schools in St. Louis (high minority/low income schools/districts)

What we are doing

- Instructional module development (used for stand-alone classes or part of the core subject)
 - Implemented in local high schools, (e.g., Collegiate School of Medicine and Bioscience in SLPS, and more schools in the future)
- Teacher PD (currently in SLPS, and more to follow)
- Developing College Dual-Credit Courses (SLU 1818)
 - Old model: Each high school must have a teacher with qualification
 - New model: One instructor teaches to students in multiple schools (combining online and face-to-face instruction onsite).
- Developing articulation agreement with STLCC in geospatial science