Diverse Group; Big Tent

• Diverse fields and institutions
• Intentional on the part of the organizers
• Mathematics community to reach across fields & sectors
• Include more students & faculty from underrepresented backgrounds
• Communicate with those outside our community
• Hear from all with useful ideas about teaching & learning
Current TPSE Math Members

- Eric Friedlander, USC
- J. Sylvester Gates, Univ. of Maryland, PCAST
- Mark Green, UCLA
- Tara Holm, Cornell
- Uri Treisman, UT Austin
- Phillip Griffiths, IAS (Convener)
- Brit Kirwan, Univ. System of Maryland (Senior Advisor)
Background Documents

- *The Mathematical Sciences in 2025*, National Research Council (Mark Green); described the expanding uses & importance of math

- *Engage to Excel*, PCAST (Jim Gates); identified mathematics as the number one barrier to college completion, asked for new ideas
Major Issues

• Outdated curricula overly focused on calculus & algebra
• Lower division: disjointed pathways into & through mathematical sciences curriculum
• Upper division: lack of linkages between mathematics & other STEM & non-STEM areas
• Lack of incentives for excellent teaching
• Financial pressures on economic model of departments
• Narrow training of graduate students, most of whom will have teaching careers
Evolution of TPSE Math

• Structural roots in the Opportunity Equation, the report of a joint commission on K-12 science & mathematics education by Carnegie Corporation of NY & IAS

• Financial support from CCNY & Sloan Foundation to convene math community

• Early finding: widespread understanding of issues in math community; many initiatives at local level but little awareness outside math community
National Meeting: Early Recommendations

- Curricula should provide more diverse experiences for different skill levels
- Create diverse institutional pathways for math majors, other STEM majors, & non-math majors
- Departments should enhance incentives for teaching, curriculum reform
- Expose undergraduates to statistics, modeling, data science, computation, & other disciplines
- Broaden graduate student training to include teaching, mentoring, & soft skills
Regional Meetings

• University of Maryland, Baltimore County: emphasized community & four-year colleges
• UCLA: reached out to “demand side of the equation” – students, potential employers, other disciplines, state governments, other stakeholders
• JMM (2): Valuable community building
• Chicago: Role of university administrations, responsibility of mathematics departments, graduate training, underrepresented populations, high-performing undergraduates
Consultant

• Carnegie supported hiring
• Interviewed TPSE Math members, academic leaders, funding organizations
• Focused TPSE Math thinking
• Recommended TPSE roles: working with mathematics community, university administrations, potential supporters, professional organizations, state governments, & other interested stakeholders
Strategic Actions

• Convene the chairs
• Alternative pathways
• Economics of teaching technologies
• Expanded alternative pathways
• Graduate student training
• Policy initiatives
This Weekend’s Panels

• Linked directly to some of these topics
• Ongoing process to work with mathematics community & outside stakeholders