



National Academies Workshop on Addressing the Underrepresentation of Women of Color in Technology

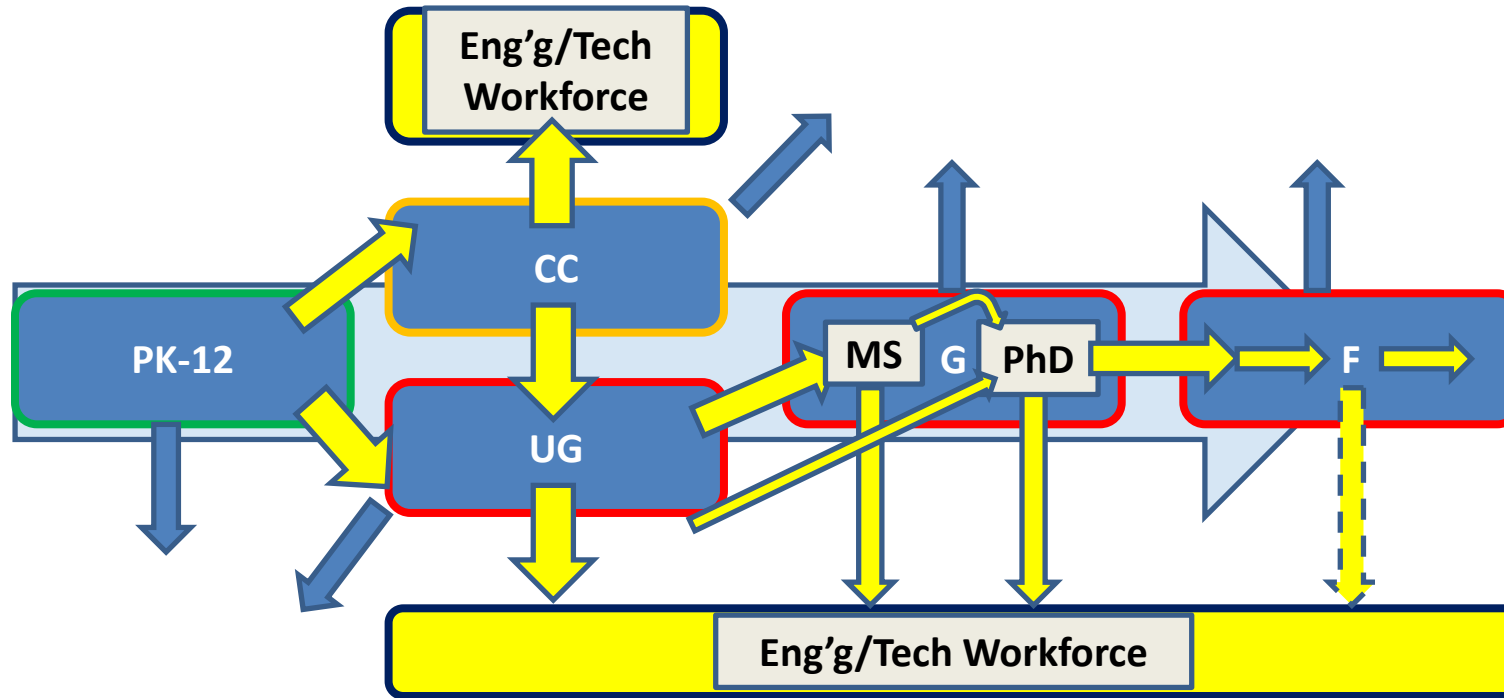
***“The Parity Objective:
Developing a ‘Framework’ Suite of Best
Practice Interventions towards Achieving It”***

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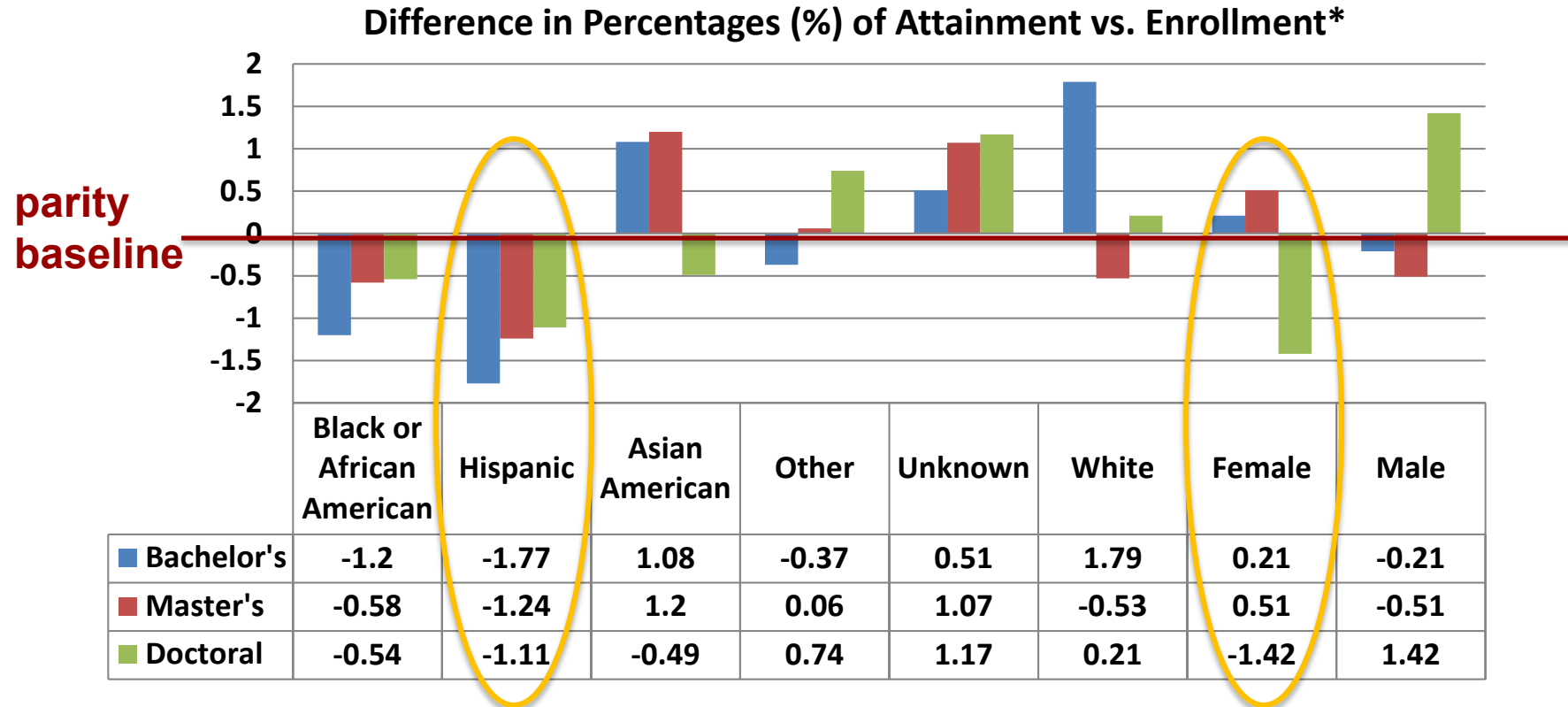
USC Viterbi School of Engineering

Eng'g/Tech Pipeline: Flow-Reaction Process*



- Higher Ed. Institutions: “own” their “control volumes” (e.g., for UG, G, Faculty)
- *Parity Objective: For each control volume, the aggregate demographics of the output flows should be statistically the same as the input flows*
- Q: How to achieve? A: Apply needed *interventions* within control volumes

Demographic *Disparities* in Attaining Eng'g/Tech Degrees



- Negative percentages mean higher attrition relative to parity baseline (e.g., 9.27% of enrolled BS students are Hispanic; but only 7.5% of degree earners)
- Hispanic Women: Significant disparity in enrollment vs PhD degrees earned

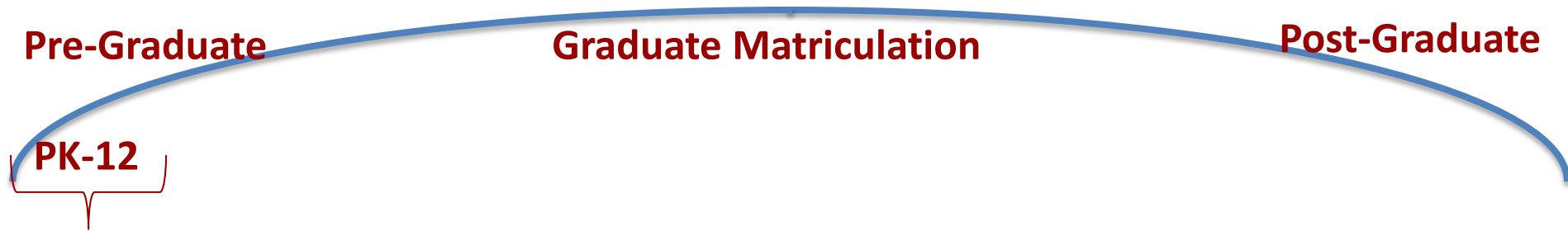
Best Practice (“Control Volume”) Interventions Are Needed towards Achieving the Parity Objective



- Interventions: can account for non-uniform distribution of skills, background, preparedness, and other possible attributes present in various demographic populations
- Interventions should be designed to counterbalance, offset inherent disparities pre-existing in “input flow distributions” (of populations)
- *Equity does not always mean being equal* in the interventions taken
 - some interventions might more appropriately be applied to members of some demographic populations rather than to other populations
 - Key: leverage & harness intersectional opportunities and interventions
- Well-designed best practice interventions are imperative towards achieving the parity objective

Arc of Preparation for a Career in Eng'g/Tech

Best Practices for Successfully Traversing the Arc



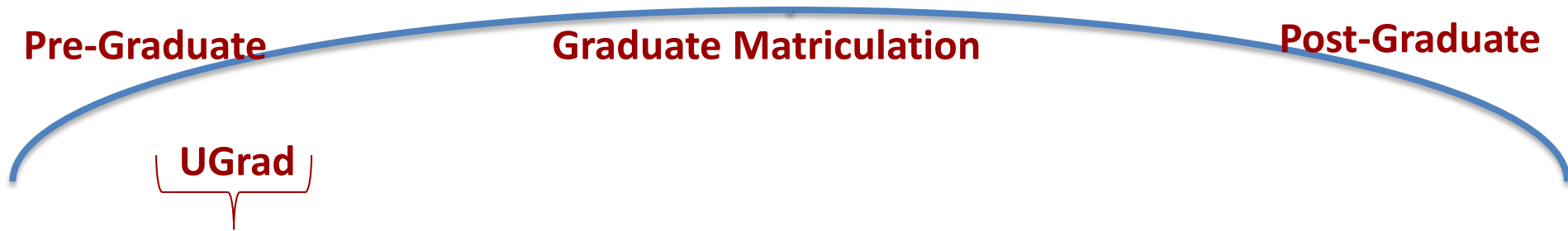
- *Identify & Nurture Aptitude* (early preparation)

- PK-12 Outreach Programs:

- Corp. & Univ. Partnerships with Secondary Schools
- STEM Spotlights, Visitation/Open Houses, Coding Competitions,...
- Summer Camps, Summer Intensives in Engineering and Tech, ...
- RETs, Co-curricular modules/activities, “adopt a school/teacher”, ...

Arc of Preparation for a Career in Eng'g/Tech

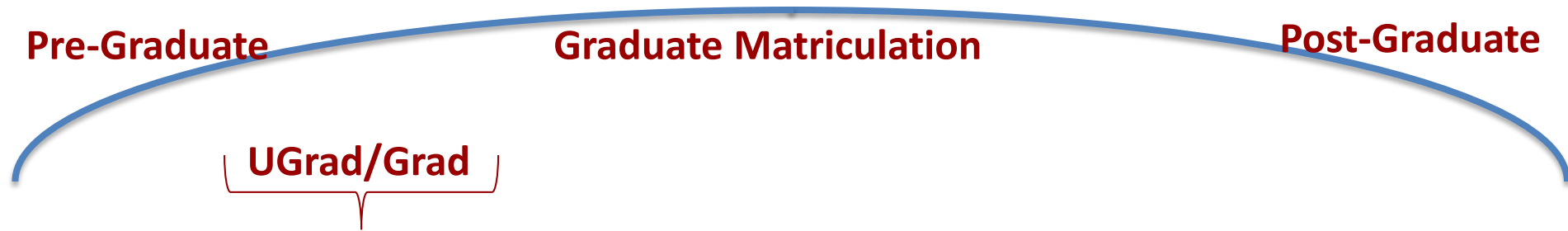
Best Practices for Successfully Traversing the Arc



- *Instill & Reinforce Fundamentals, Curiosity* (build momentum)
- Undergrad Bridge/Transition Programs:
 - Pre-engineering Course Modules (Viterbi's Summer Institute), ...
 - Research Mini-projects (Viterbi's UGrad-faculty research matching app), ...
- Undergrad Matriculation Programs and Support Groups:
 - Study Groups & Tutoring support, Tech Teams (Rocket Lab, Auto Racing, Coding), ...
 - Climate & Affinity Group support (Eng'g/Tech student associations, WiE, CED), ...
 - Internships, REUs, Thought Leadership (NAE Grand Challenges Scholars Program), ...

Arc of Preparation for a Career in Eng'g/Tech

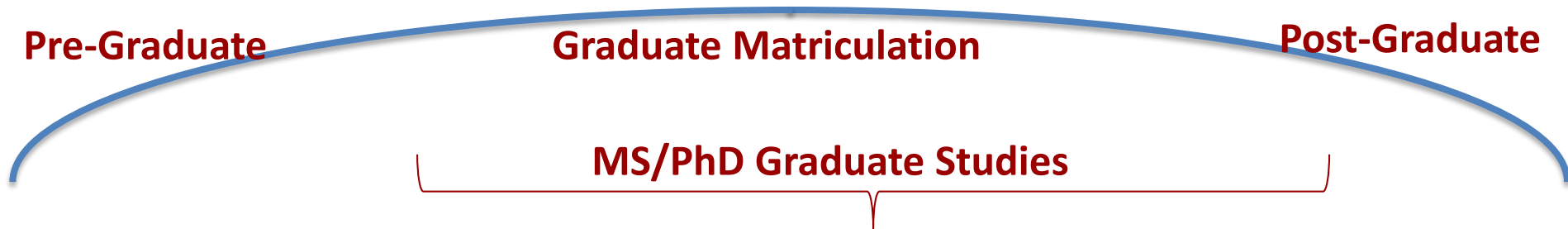
Best Practices for Successfully Traversing the Arc



- **Provide Access and Opportunity** (enable students to reach their potential)
 - **Graduate Bridge/Transition Programs:**
 - Grad Panels (e.g., “Why Pursue Grad Studies?”), ...
 - Grad Preview Events (e.g., USC Viterbi’s REACH Program), ...
 - **Demystify and Diversify Graduate Admission:**
 - Cast the Net Widely, including through Partnerships with MSI’s
 - Admit with Financial Support (GEM, Eng’g Fellowships, Top-Off Awards, ...)

Arc of Preparation for a Career in Eng'g/Tech

Best Practices for Successfully Traversing the Arc



- Facilitate Mentorships (create support networks)
 - Faculty, Peer, and Outside Mentors:
 - MS/PhD Disciplinary Advisor(s)--find the right *inclusive fit*
 - 3rd Party Faculty Sponsor(s)/Mentor(s)
 - Climate, Affinity Group mentoring support, (e.g., USC WiSE), ...
 - School MS/PhD Mentoring Panels--multiple touches throughout
 - Industry/Lab Internships and mentoring networks

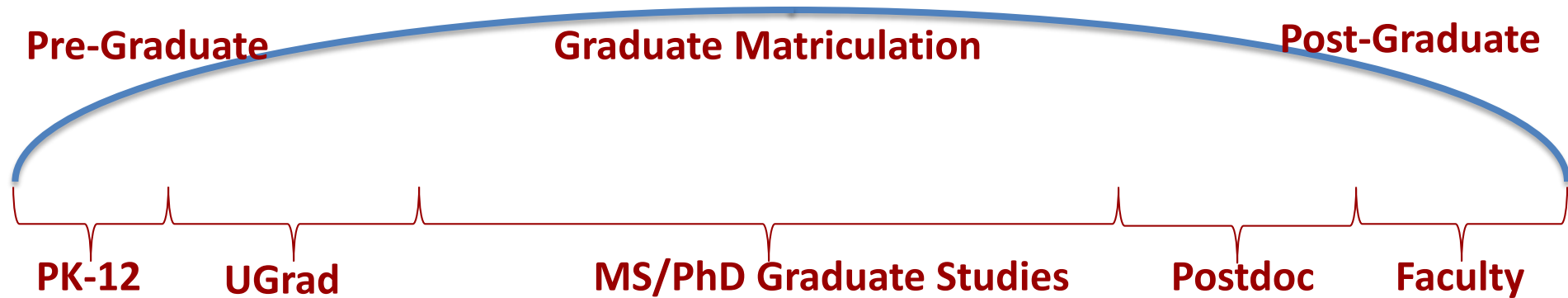
Arc of Preparation for a Career in Eng'g/Tech

Best Practices for Successfully Traversing the Arc



- **Effective Placement** (realize individual's promise)
 - **Career Bridge/Transition Mentoring Programs & Events:**
 - Academic Career Mentoring Panels
 - Disciplinary Mentoring Workshops/Symposia (CMD-IT, ARLN, ...)
 - **Post-doctoral and Faculty Positions:**
 - Create Clearinghouse of Opportunities (MinorityPostdoc.org), ...
 - Expand Opportunities & Cast Net Widely (USC's WiSE, Provost's Diversity Initiative: Postdoc-to-Faculty Fellowships, Assist. Prof. Fellowships, etc.),

Summary: Goal is to Develop a “Framework” Suite of Best Practice Interventions towards Achieving the Parity Objective



- **Identify & Nurture Aptitude** (prepare early)
- **Instill & Reinforce Fundamentals, Curiosity** (build momentum)
- **Provide Access & Opportunity** (enable potential)
- **Facilitate Mentorships** (create support networks)
- **Effective Placement** (realize promise)