

Academic Pathways Study: Processes and Realities



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- Institutions
 - Colorado School of Mines
 - Howard University
 - Stanford University
 - University of Minnesota
 - University of Washington (Lead)
- Leadership team
 - Robin Adams, Cindy Atman (Director), Lorraine Fleming, Larry Leifer, Ron Miller, Barbara Olds, Sheri Sheppard, Karl Smith, Ruth Streveler, Reed Stevens, and Jennifer Turns

1) Longitudinal Cohort Design

Breadth →

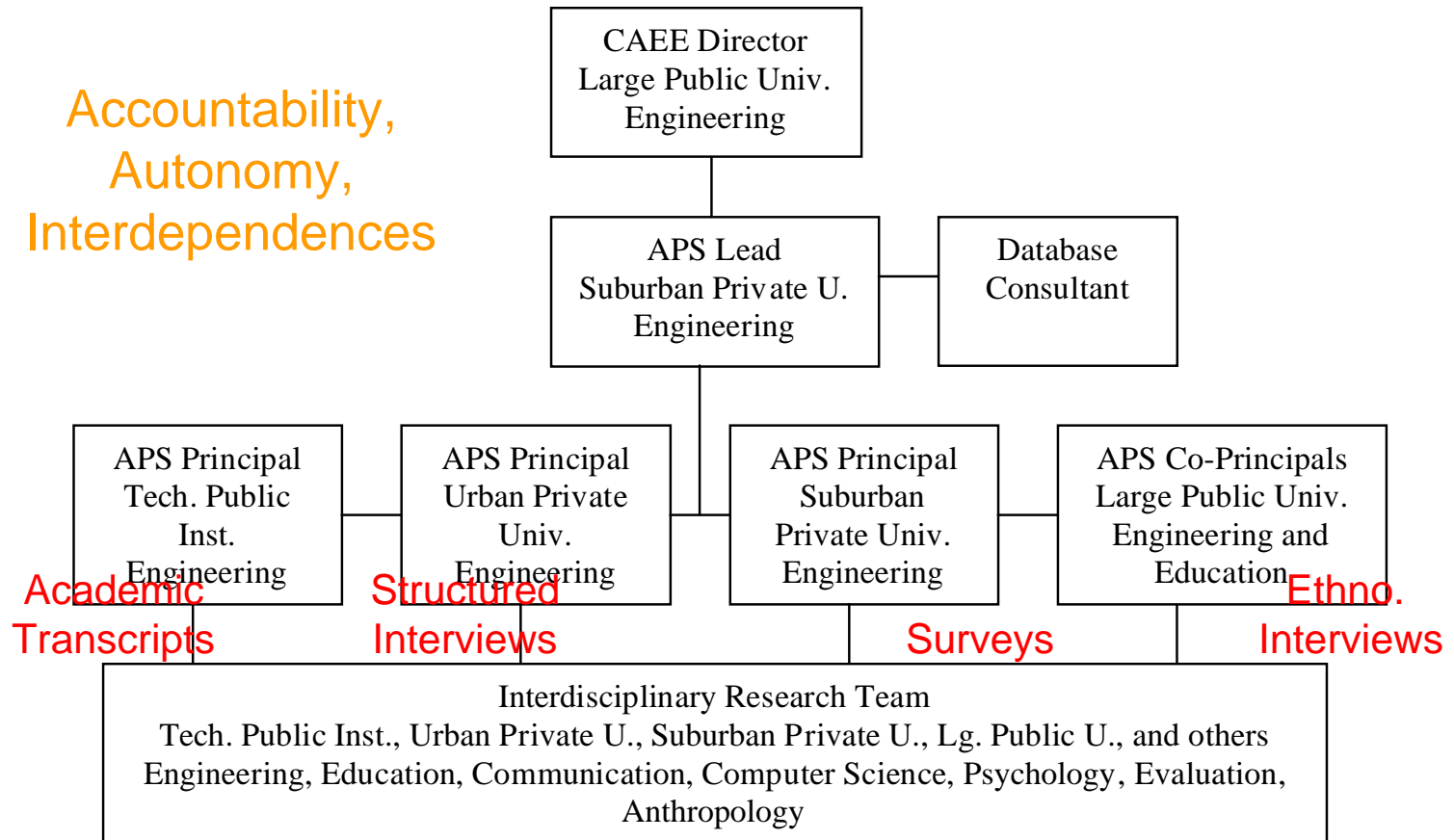
Depth ↓

Low Contact Group Target N = 96 (24 per school) <ul style="list-style-type: none">• 7 Surveys• 3 Structured Interviews• 3 Engr. Design Tasks• Academic Transcripts• Exit Interview if needed	Medium Contact Target N = 32 (8 per school) <ul style="list-style-type: none">• 7 Surveys• 1 Struct Interv• 4 Semi-struc Interviews• 4 Engr. Design Tasks• Academic Transcripts• Exit Interview if needed	High Contact Target N = 32 (8 per school) <ul style="list-style-type: none">• 7 Surveys• 4 Semi-struc Interviews• 3 Engr. Design Tasks• Field Observations*• Academic Transcripts• Exit Interview if needed
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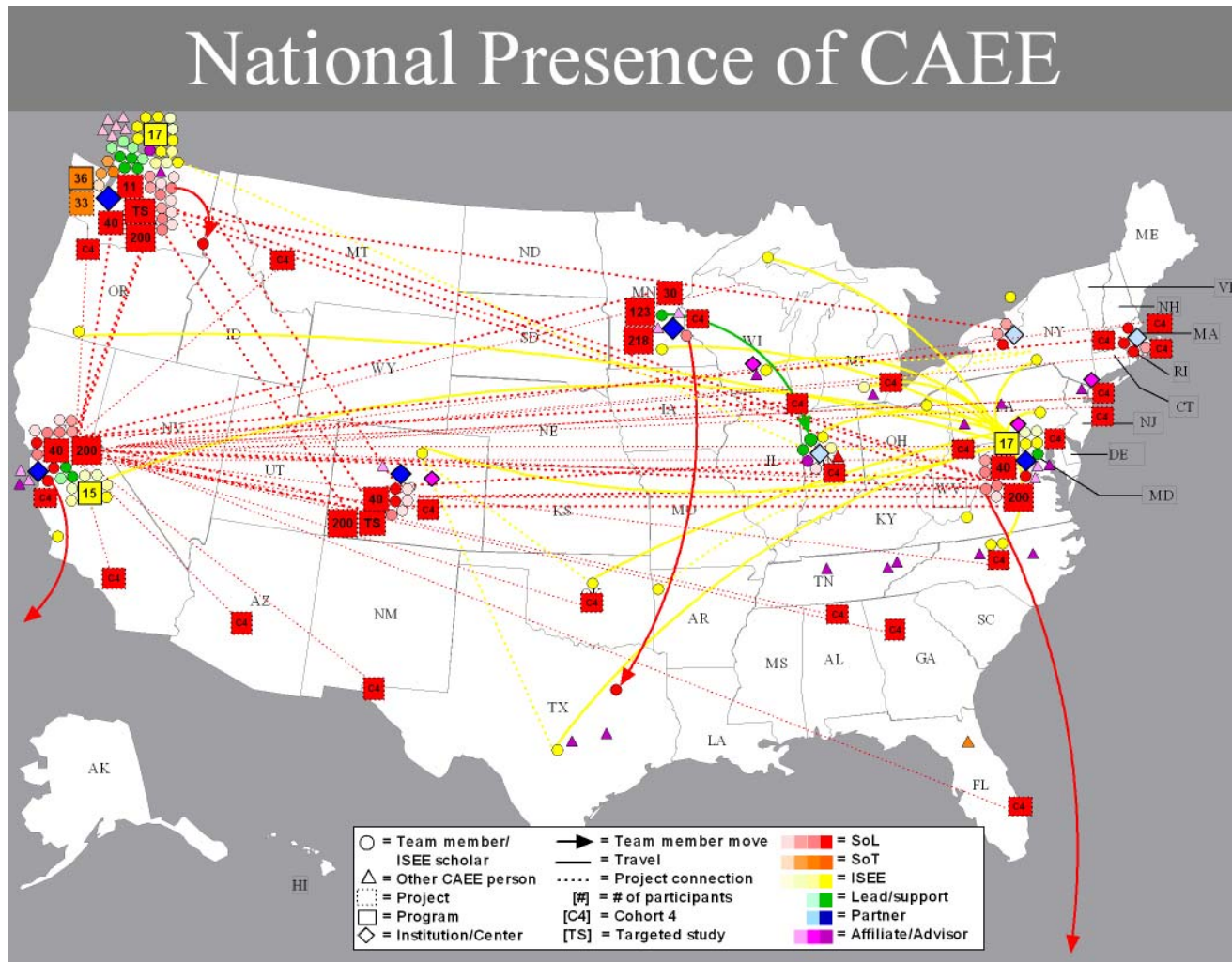
*Field Observations were limited after the first year

APS Organizational Chart

Accountability,
Autonomy,
Interdependences



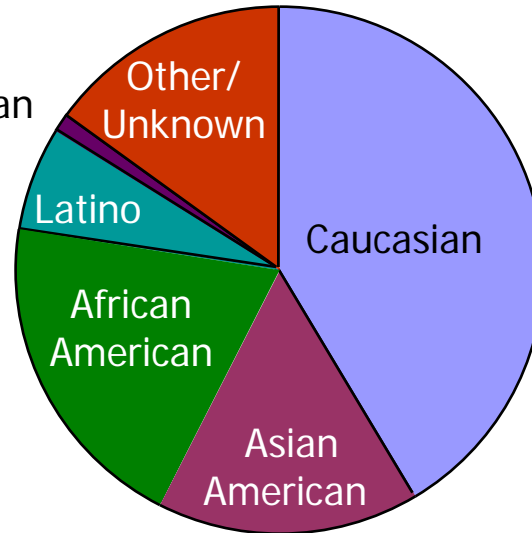
APS' Activities May 2006 – Sept. 2007



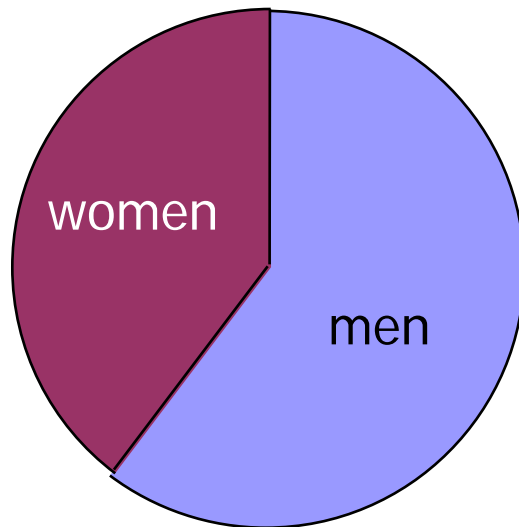
2) Longitudinal Cohort

(160 total - 40 undergraduates per school; Fall 2003)

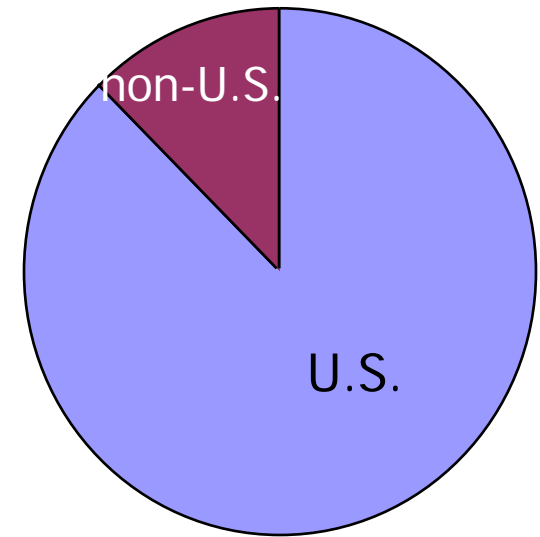
by race/ethnicity



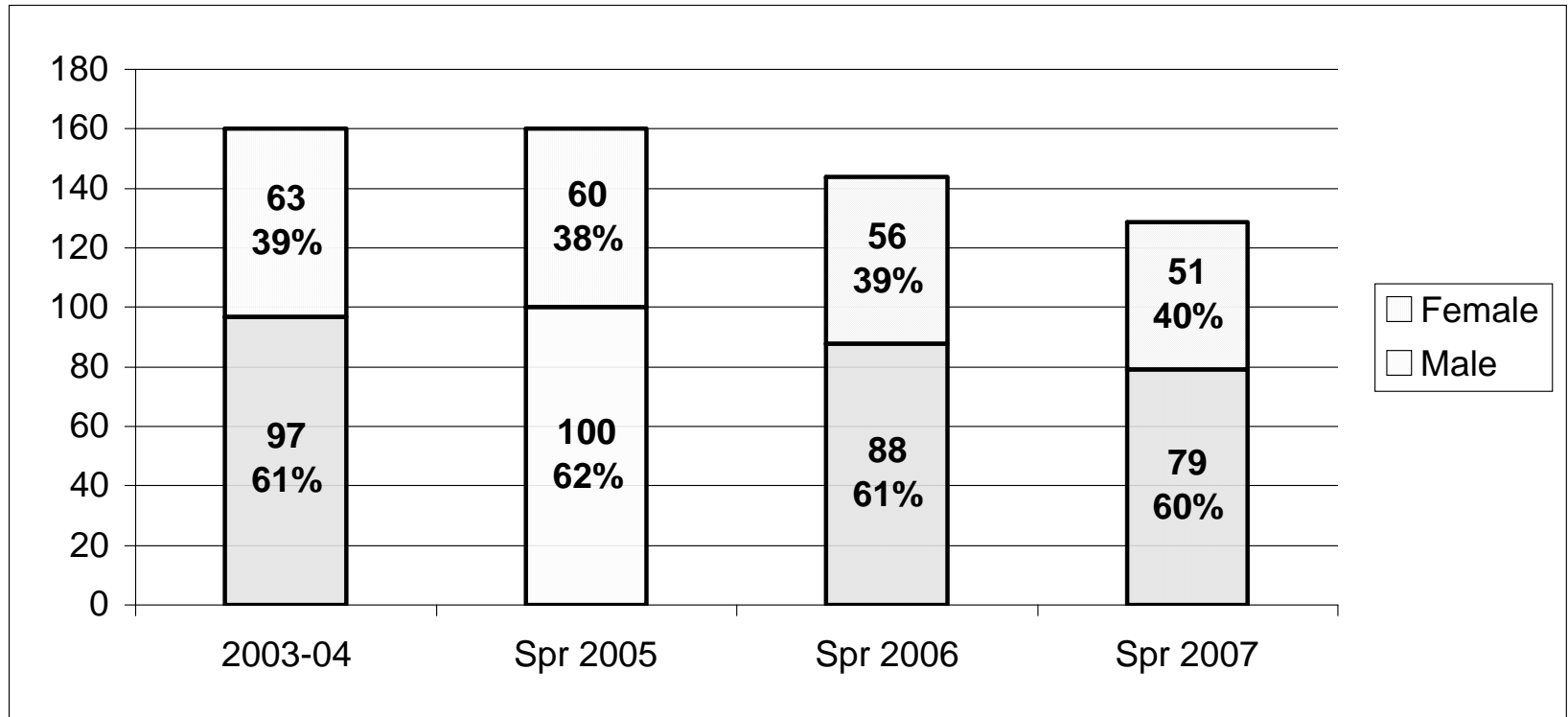
by gender



by citizenship



2) Longitudinal Cohort ...changes over time...



3) Longitudinal Cohort in relation to the national picture...

Longitudinal Cohort	160 students, 4 years @ 4 institutions	Multiple methods (including PIE Survey)
Broader Core Cohort	842 undergraduates at the same institutions as the Longitudinal Cohort	Academic Pathways of People Learning Engineering Survey (APPLES)
Broader National Cohort	4,266 students across all four years, cross-sectional @ 21 institutions, 13% response rate	Academic Pathways of People Learning Engineering Survey

4) Documentation & Access Beyond

Preface	2.4.2 Recruitment Goals
1 Background and General Information	2.5 Data collection
1.1 Study Overview	2.5.1 Methods
1.2 Ensuring Diversity	2.5.2 Interview Protocols and Training
1.3 Protecting Identities of Participants	2.5.3 Ethnography Observation Training
1.4 Incentives to Participate	2.5.4 Summary of Data Collected
1.5 Participating Institutions	2.6 Notes and Reflections on Year 1
1.5.1 School Descriptions	2.6.1 Recruitment Challenges
1.5.2 School Pseudonyms	2.6.2 Consistency of Methods and Procedures across Schools
1.6 Research Team and Leadership	2.6.3 Non-Random Assignment to Study Groups
1.7 Data Storage, Organization and Access	2.6.4 Insufficient Ethnography Resources
1.7.1 Technology Infrastructure	2.6.5 Recording and Transcribing Semi-structured Ethnographic Interviews
1.7.2 Security and Backup	3 Research Year 2: Fall 2004 Š Spring 2005
1.7.3 Data Collection and Inventory	3.1 Tasks and Goals
1.7.4 Access Policy	3.2 Changes to Study Design and Procedures
1.8 Data Analysis Plan and Processes	3.2.1 Control Group
1.9 Study Terminology	3.2.2 Types of Data Collected
2 Research Year 1: Fall 2003 Š Spring 2004	3.2.3 Transcription of Structured Interviews
2.1 Tasks and Goals	3.3 Migration between Study Groups
2.2 Recruitment	3.3.1 Year 2 Migration and Replenishment
2.2.1 Methods	3.3.2 Exit Interviews
2.2.2 Diversity Considerations	3.3.3 Study Group Demographics
2.3 Group Assignments	3.4 Data Collection
2.3.1 Methods	3.4.1 Methods
2.3.2 Numbers	3.4.2 Summary of Data Collected
2.3.3 Replenishing Study Groups	3.5 Notes and Reflections on Year 2
2.4 Changes to Study Design	3.5.1 Non-engineering Majors
2.4.1 Medium Contact Group	3.5.2 Non-enrolled Students
	3.5.3 Missing Data

Some concluding thoughts...

- Challenging...
- Amazing...
- One model of large impact engineering education research

Acknowledgement

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For further information see the CAEE Web site at <http://www.engr.washington.edu/caee> or contact Cindy Atman at caee@engr.washington.edu