POST CSPCC:
WHAT WE DO NOT KNOW
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- what students in these calculus courses learned
- how different types of students experience calculus
- the extent to which what instructors say about instruction actually happens in the classroom
- how do institutions/programs get better
LEARNING

- There is no learning measure collected across all institutions.
  - Logistics of administration of an instrument that could measure what students learn after one calculus course
  - Need a better instrument: an improved concept inventory (we can learn from TIMSS/PISA!)
THE EXPERIENCE OF DIFFERENT KINDS OF STUDENTS

- It is not possible to find out how various groups of students in the sample experience calculus
  - The sampling was done at the program level, not at the student level.
  - Within each class the representation of URM students was small
  - The study did not collect information on students with visible or invisible disabilities
  - The study did not differentiate by prior knowledge levels
WHAT DOES ACTUALLY HAPPEN IN CLASSROOMS?

- Our observation of nearly 70 lessons and our analysis of nearly 500 problems solved across reveal:
  - Predominance of lecture (82% of problems) over other organizations (9% group work; 15% individual work)
  - Little to no technology use (less than 3%)
  - 66% of problems emphasized procedures and skill development
  - 65% problems used only symbolic representations
  - No major differences by type of institution

(Mesa, White, Sobek, 2015)
THE PROCESS OF BECOMING A SUCCESSFUL PROGRAM

The features are evident across the various institutions, but...

- What is the mechanism? Local variation?
  - What is the role of administration (chair, coordinator, deans, provosts) in getting the program better? (my hunch: It is HUGE—and it is NOT just resources)
  - What is the role of curricula (my hunch: it is MINIMAL)
  - What is the role of examinations? (my hunch: A BETTER BET, “learning objectives”)
  - Faculty development (my hunch: MINIMAL as it is now conceived)

(Burn, White, & Mesa, 2015; Mesa & Burn, 2016; White & Mesa, 2014)
REFERENCES


