**Composition:**

**The Key to Differential Privacy’s Success**

* Auxiliary information
  + Even if adversary has partial information, protect against further privacy loss
* Composition
  + Even w multiple analyses, privacy maintained (smooth gradual degradation)
* Contrast 2 alternate approaches Cynthia touched on:
  + “just” releasing statistics
    - Say we’re looking at a sample of students. Say we release 2 statistics for this sample: the number of students that have a hearing disability (large university, this isn’t problematic is it?), and the number of students that have a hearing disability that are not a student president (another large, seemingly privacy protected). However, given these 2 answers, if you were to subtract the latter from the former, you may learn that the student president has a hearing disability.
  + De-identifying the data

Composition:

Privacy maintained even under multiple analyses.