**Analysis Plan**

Outcomes:

* Bachelor’s degrees awarded (total / per FTE)
  + RFA, T&H
* 150% time Graduation Rate

Sample:

* 4-year public institutions
  + RFA, T&H
* Years 2003 to 2015 (have both graduation rates and total bachelor’s degrees for these years)
* Keep the 50 states in the US (plus DC)
* Drop schools that (keep track of how many we drop for each step):
  + Missing data on bachelor’s degrees in a year from 2003-2015
    - RFA
  + Missing data on graduation rates in a year from 2003-2015
    - RFA
  + Awarded more associates degrees than bachelor’s degrees in a year from 2003-2015
    - RFA
  + Schools that don’t exist in the entirety of 2003-2015
    - RFA
  + Possibly schools with outlier years for outcomes/covariates?
    - RFA

Independent Variables:

* CPI adjusted $ spent on education (instruction and student services) per FTE
  + [(instruction01 + studserv01) / cpi\_scalar\_2015] / fte\_count
* CPI adjusted $ spent on instructors per FTE
  + (instruction02 / cpi\_scalar\_2015) / fte\_count
* Instructional Faculty per FTE
  + Full time – ftall1 / fte\_count
  + All – (ftall1 + ptall1 + ptall2) / fte\_count

Covariates:

* % Under-represented minority
  + (total\_enrollment\_black\_tot + total\_enrollment\_hisp\_tot) / total\_enrollment
  + RFA
* CPI-Adjusted Pell $ per FTE
  + (grant01 / cpi\_scalar\_2015) / fte\_count
  + RFA, T&H
* CPI-Adjusted Revenue from state appropriations ($) per FTE
  + (state03 / cpi\_scalar\_2015) / fte\_count
  + T&H
* Undergraduate enrollment
  + total\_undergraduates
  + RFA
* CPI-Adjusted Tuition $ per FTE
  + (nettuition01 / cpi\_scalar\_2015) / fte\_count
  + RFA, T&H
* By state, by year GDP per capita
  + Outside data
  + Source: <https://fred.stlouisfed.org/categories/27281>
  + RFA, T&H
* By state, by year unemployment rates
  + Outside data
  + Source: <https://data.bls.gov/map/MapToolServlet?survey=la&map=state&seasonal=s>
  + RFA, T&H
* State Fixed Effects
  + Try models with and without
  + T&H
* Year Fixed Effects
  + Try models with and without
  + T&H

Models:

* Four groups of models:
  + Regular Regression on Bachelor’s per FTE
    - RFA, T&H
  + Regular Regression on 150% time graduation rates
  + Poisson (Regular? Quasi? Other?) model on total bachelor’s degrees awarded
  + Binomial (Regular? Quasi? Other?) model on graduation rates
* (Multi-way) clustered standard errors
* Interactions of Independent Variables with important covariates (undergraduate enrollment and tuition? Or maybe all of them?)
* Try models with and without state and year fixed effects
  + RFA, T&H
* First difference as quantity of interest (because of the interactions)
  + Cluster bootstrap for standard errors / confidence intervals