# Innovation/Technology Adoption and Health Insurance

Evidence from Garthwiate (2012) and Agha, Kim, and Li (2022)

# Garthwaite (2012)

- Question: How do public health insurance expansions affect physician behavior?

- Contribution: Examine effects of State Children's Health Insurance Program (SCHIP) on physician labor supply and practice patterns beyond public health insurance participation.

# Garthwaite (2012)

- Data:
  - Community Tracking Study Physician Survey (CTS): longitudinal data on physician behavior (1996-1997, 1997-1998, 2000-2001)
  - National Ambulatory Medical Care Survey (NAMCS): provides data on patient insurance status and visit length

# Garthwaite (2012)

- Simulated Eligibility Measure:
  - Variation in program size provides valuable information
  - Eligibility determined for nationally-representative sample and aggregated to state level

- Empirical Strategy:
  - $HOURS_{it} = \pi_0 + \pi_1 REIMB_{it} + \eta_1 SIMELIG_{it} + \eta_2 SIMELIG_{it} \times PED_i + \eta_3 SIMELIG_{it} \times 5\%MCAID_i + \eta_4 PED_i \times SIMELIG_{it} \times 5\%MCAID_i + \mu_i + \rho_t + \varepsilon_{it}$
  - $DURATION_i = \delta_0 + \delta_1 X_i + \gamma_1 POSTSCHIP_i \times PED_i + \varepsilon_i$

# Garthwaite (2012)

- Key Results:
  - Average increase in simulated eligibility decreased hours spent on patient care by affected pediatricians by about 2 hours (~5% relative to mean)
    - Estimates larger for Medicaid expansion states
  - SCHIP is associated with decreases in duration and positive point estimates of a visit length less than 10 minutes
  - SCHIP implementation increased the probability of accepting new Medicaid patients by 3.6 percentage points
    - Results driven by previously low-Medicaid participating physicians

# Agha, Kim, and Li (2022)

- Question: How do insurance coverage policies impact pharmaceutical innovation?

- Contribution: Show that decisions of private firms affect pharmaceutical innovation.

# Agha, Kim, and Li (2022)

- Data:
  - Formulary Exclusions: collected from publicly disclosed standard formulary lists published by CVS Caremark, Express Scripts, and OptumRX
  - First Data Bank: drug classification data
  - Cortellis Investigational Drugs: data on pipeline drugs 2007-2017

# Agha, Kim, and Li (2022)

- Exclusion Risk Measure:
  - Construct several predictors of exclusion risk
  - Estimate single index using logistic regression: $\Pr(Excluded_c \big| \boldsymbol{X}_c) = F(\alpha \boldsymbol{X}_c)$

- Empirical Strategy:
  - $Development_{ct} = \beta_1 \Pr(Excluded)_c \times \mathbf{1}(Year_t \geq 2012) + \boldsymbol{X}_{ct}\gamma + \delta_c + \delta_t + \epsilon_{ct}$
    - $Development_{ct}$: number of new drug candidates in drug class $c$ at year $t$

# Agha, Kim, and Li (2022)

- Key Results:
  - A one standard deviation increase in the risk the class has formulary exclusions leads to between 3.3 and 3.6 fewer advanced drug candidates each year (11-12 percent relative to mean)
  - Development activity declines by 6% for every standard deviation increase in exclusion risk

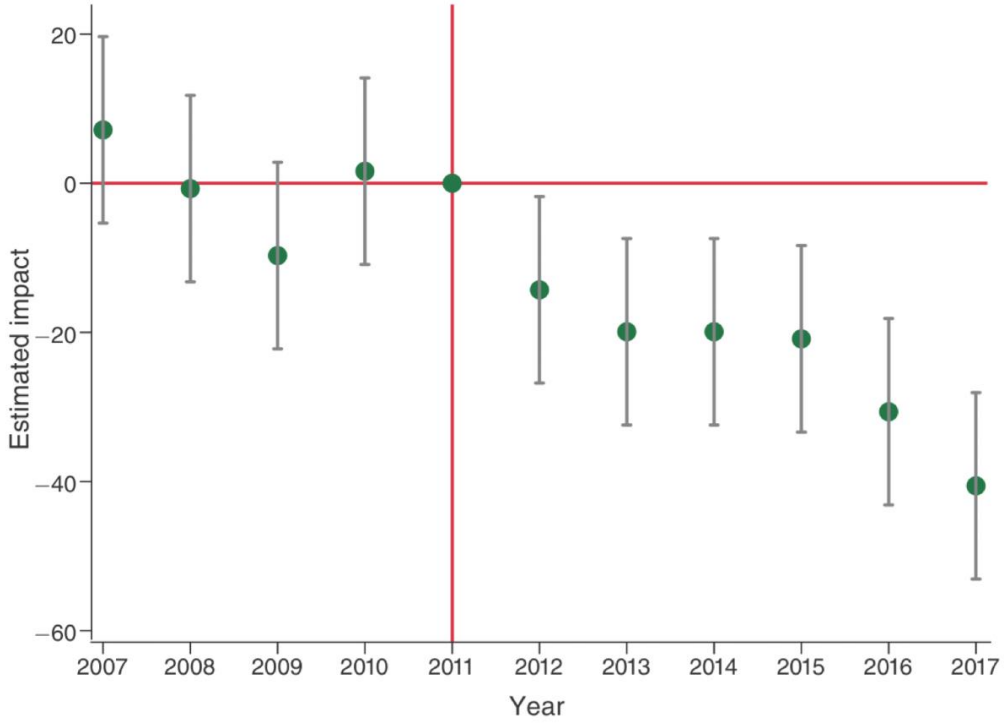


FIGURE 2. IMPACT OF PREDICTED EXCLUSION RISK ON NEW DRUG DEVELOPMENT: EVENT STUDY

# Conclusion

- Discussion Questions:
  - How can we determine the effects of these policies on overall welfare?
  - Should formulary exclusions be limited to drugs in markets with many options already available? In other words, is there a benefit to targeting drugs in markets for rare diseases as well?