Variation in the Impact of High School Environment on College Applications

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The college application process

● Steps to college
  ➢ Prepare academically
  ➢ Prepare financially
  ➢ Choose a college

● Free Application for Federal Student Aid (FAFSA)
  ➢ During senior year of high school
  ➢ Submit household and financial info
  ➢ List any colleges they are interested in
FAFSA is a gateway to college

● Benefits of filing

  ➢ Access to federal Pell Grants and federal loans
  ➢ Access to state grant aid
  ➢ Colleges package financial aid, makes price clear

● Potential problems

  ➢ Not filing: many students who could benefit do not apply, do not attend
    (Bettinger et al., 2012; King, 2004)
  ➢ Filing too late: 46% of Pell-eligible filers apply after known state deadlines
    (Cannon & Goldrick-Rab, 2016)
Role of high schools

- High schools are positioned to find and solve these problems
- Large literature on what high school counselors do, how it impacts college
  - Recent review by College Board (Avery, Howell, & Page, 2014)
  - Chicago Public Schools (CPS) study found better college-going climate predicts more and better-quality applications (Roderick, Coca, & Nagaoka, 2011)
  - Research informed CPS FAFSA tracking, which increased filing rates (Johnson, Moeller, & Holsapple, 2013)
Research questions

- Who files the FAFSA and when?
- Do high schools impact who files?
- Research design: describe sources of variation in filing
  - Academic, financial, aspirations, demographic characteristics predict filing outcomes
  - Conditional on these characteristics at senior year, estimate high school variation
  - Explain high school variation with observable attributes of high school, compare to variation at individual level
  - Use Illinois class of 2009 public high school graduates
Empirical model

- First predict outcome $Y_i$ for individual $i$ with characteristics $X_i$ measured at senior year:

$$Y_i = \alpha + X_i'\beta + \bar{X}_{j(i)}'\delta + e_i$$

- $X_i$ includes aspirations, test scores, family income, race/ethnicity, gender
  - $\bar{X}_{j(i)}$ are averages at school $j$ attended by $i$

- Then average the residuals $e_i$ within each high school
  - Not true value added with pre-test measures and multiple observations at the level of the value-added estimate

- Outcomes $Y_i$
  - filing FAFSA
  - filing week
Illinois Class of 2009 longitudinal dataset

- 109,030 graduates from 640 public high schools
- All took the ACT and answered questionnaire
  (Illinois State Board of Education)
- High school information
  (ISBE Report Card, Common Core of Data)
- FAFSA filing observed over next four years
  (Illinois Student Assistance Commission)
- College enrollment and degree attainment observed over next four years
  (National Student Clearinghouse)
- Limit to 59,860 without missing questionnaire data, at HS with 10+ students
Summary statistics

● Students

- 52% women; 71% White, 7% African American, 6% Latino
- 88% aspire to get BA or higher
- 34% college ready in science, 51% math, 58% reading, 76% English (covariation with wealth)
- 67% file the FAFSA in first year
- Of filers, 37% are first-generation college students, 16% have zero EFC

● High schools

- Median graduation rate 93% with $P_{10} = 82$
- Instructional expenditures/student range from $3,300 to $11,500 with avg. $6,500
- Students per counselor ranges from 10 to over 1,000 with average 219
Filing rate varies by aspirations

- Doctorate
- Masters
- BA
- Other
Filing rate varies by ACT score

(12 and under grouped together)
Filing rate does not vary much by income
HS effects on filing, vs. observed filing
Filing rate results

- 1 SD increase in HS effect increases likelihood of filing by 8 pc pts
- 1 SD increase in ACT score increases likelihood of filing by 8 pc pts
- Regress HS effect on HS characteristics
  - Not strongly related to instructional spending
  - 1 SD decrease in students per counselor increases HS effect by 0.10 SD
    \( (p = 0.06) \)
  - 1 SD decrease in average class size increases HS effect by 0.09 SD
    \( (p = 0.09) \)
Observed filing week

![Histogram of observed filing week density over the week of the filing cycle. The x-axis represents the week of the filing cycle, ranging from 0 to 50, and the y-axis represents the density, ranging from 0 to 1. The histogram shows a peak around the 10th week, with a gradual decrease as the week number increases.]
Filing week results:

Average FAFSA filing week
By college aspirations

- Other
- Certificate
- AA
- BA
- Masters
- Doctorate

Week of the year

0 10 20 30
Average FAFSA filing week
By ACT composite score (12 and under grouped together)
Average FAFSA filing week
By reported parental income

Week of the year

0-24k
24-36k
36-50k
50-60k
60-80k
80-100k
100-120k
120-150k
150k+

Week of the year
0 10 20 30

17
HS effects on filing week, vs. observed

![Graph showing the relationship between observed average filing week and standardized HS effect. The x-axis represents the observed average filing week, ranging from 5 to 25. The y-axis represents the standardized HS effect, ranging from -5 to 5. The graph is a scatter plot with several data points distributed across the plot.](image-url)
Filing week results

- 1 SD increase in HS effect decreases week of filing by 1.9 weeks
- 1 SD increase in ACT score decreases week of filing by 2.8 weeks

- Regress HS effect on HS characteristics
  - Not strongly related to instructional spending or to students per counselor
  - 1 SD decrease in average class size increases HS effect by 0.17 SD ($p = 0.001$)
Discussion and conclusion

● Surprisingly little variation in filing by family income

● Significant variation across high schools, after detailed individual controls:
  
  ➢ Comparable with variation accounted by ACT
  
  ➢ Small amount of variation explained by observable HS characteristics

● Next steps

  ➢ Explore FAFSA filing effect on college enrollment

  ➢ Explore HS effect on college fit using listed colleges and average ACT

(Hurwitz et al., 2012)
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