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# Talking 'Bout My Generation: Defining 'First-Generation Students' in Higher Education Research

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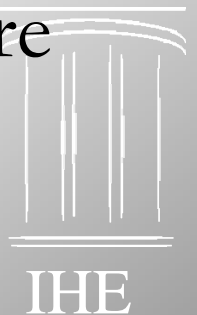
# Introduction

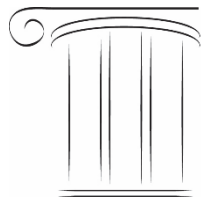
- Many studies have focused on whether parental education affects the postsecondary decisions of their children
- General consensus: positive association between parental education and student demand for college
- Human capital explanation: Students with highly-educated parents may themselves have higher skills and academic ability
- Social/cultural capital explanation: Students with highly-educated parents are raised in environments that enable them to go to college



# First-generation College Students

- Particular focus in theoretical and empirical students on “first-generation college students”
- Argument: First-generation students face more hurdles than do non-first generation students due to having parents with less education
- Usually operationalized by grouping students into two categories: first-gen vs. not first-gen
- Many studies have found first-gen students are less likely than others to go to college

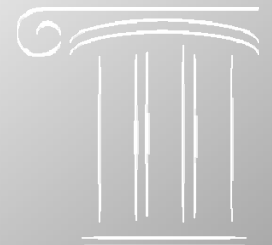




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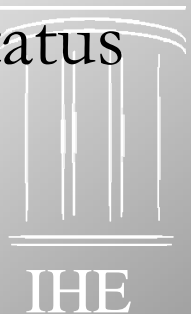
# AIR FORUM POLL



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# Defining 'First-generation' Students

- No consensus on how to define 'first-generation college students'. Options might include:
  - 1 if neither parent graduated from any college
  - 1 if neither parent graduated from 4-year college
  - 1 if neither parent attended 4-year college
  - 1 if neither parent attended any college
- May also depend on how many parents meet the criteria (“neither” vs. “at least one”)
- Rely on student responses which may not be accurate
- Unknown if the way in which first-generation status is defined affects the results of the study

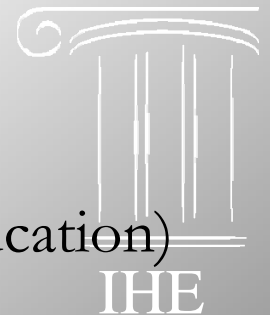


# Example 1: Indiana 9<sup>th</sup> Grade Survey

9. *Has one or both of your parents or guardians graduated from a four-year college or university?*

- Yes
- No
- Don't know

- Little flexibility for researcher (first generation if replied “No”)
- Only first generation if neither parent satisfied criteria
- Applies to either parent or guardian
- Only counts 4-year institutions
- Only counts graduating from an institution
- Relies on student response (may not know parental education)



# Example 2: NH Survey of Seniors

**9. What is the highest level of education completed by each of your parents?**

	Mother	Father
Eighth grade or less (1)	<input type="radio"/>	<input type="radio"/>
Some high school (2)	<input type="radio"/>	<input type="radio"/>
High school diploma (3)	<input type="radio"/>	<input type="radio"/>
Certificate from business or technical school of less than two years (4)	<input type="radio"/>	<input type="radio"/>
Some college (5)	<input type="radio"/>	<input type="radio"/>
Associate's Degree—2 years (6)	<input type="radio"/>	<input type="radio"/>
Bachelor's Degree—4 years (7)	<input type="radio"/>	<input type="radio"/>
Some graduate or professional school (8)	<input type="radio"/>	<input type="radio"/>
Graduate or professional degree (9)	<input type="radio"/>	<input type="radio"/>

- Lots of options for researcher to define “first-generation”
- Does not include guardian
- Not clear what option is the best option to use
- Researchers may derive different definitions of first-generation status from the same data



# Other Examples

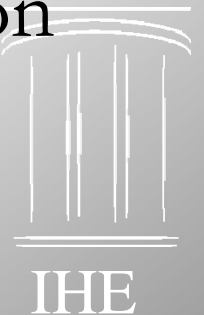
- FAFSA: “Has your father or mother earned a 4-year bachelor’s degree?”
- NCES (1998): 1<sup>st</sup> gen is someone “whose parents never enrolled in postsecondary education.”
- NCES (2000): 1<sup>st</sup> gen is someone “whose parents have attained no more than a high school education.”
- College Board (2007): 1<sup>st</sup> gen is someone “whose parents did not complete a 2-year degree.”
- TRIO: 1<sup>st</sup> gen is “an individual neither of whose natural or adoptive parents received a baccalaureate degree.”
- Definition may depend on the institution (4-year may define 1<sup>st</sup> gen relative to attending/graduating 4-year institution)





# Goals of This Study

1. Use ELS:2002 to determine if various measures of first-generation status affect a student's predisposition for college and whether the student enrolled in college
2. Compare estimates to determine if the effects of first-generation status vary by way in which the variable is defined
3. Focus on level of required parental education and number of parents meeting criteria



# Motivation for Study

- Need to know how to operationalize measures for first-generation status in statistical models
- Federal, state, and institutional support programs often targeted towards helping 1<sup>st</sup> gen students
  - Need to know who should receive help, and which groups of students need the most help
- Provide some consistency in how we talk about “first-generation students”



# Data

- ELS: nationally-representative longitudinal survey of 10<sup>th</sup> graders in 2002, followed through 2012
- Advantage: Surveyed parents and obtained more accurate information about parental education
- Final sample ~ 6,000 cases
- Data were weighted to reflect the stratified sampling design used by ELS



# Dependent Variables

1.  $Y = 1$  if 10<sup>th</sup> grader planned on taking SAT or ACT during high school, else 0
2.  $Y = 1$  if student applied to at least one postsecondary institution, else 0
3.  $Y = 1$  if student enrolled in any postsecondary institution, else 0



# Dimensions in Defining First- Generation Status

1. Level of postsecondary education (2yr vs. 4yr)
2. Educational attainment (attend vs. graduate)
3. Number of parents (one vs. two)

Results in eight possible combinations of variables



# First-generation Status Variables

Variable	Student is first-generation if ____ parent(s) did not:				
	How Many Parents?	Graduate 4-Year	Attend 4-Year	Graduate 2-Year	Attend 2-Year
oneG4yr	At least one	X			
oneA4yr	At least one	X	X		
oneG2yr	At least one	X	X	X	
oneA2yr	At least one	X	X	X	X
twoG4yr	Both	X			
twoA4yr	Both	X	X		
twoG2yr	Both	X	X	X	
twoA2yr	Both	X	X	X	X

Definitions are nested within each other

Other alternatives also exist (e.g., 1 if grad 2 yr or grad 4 yr, 1 if mother is a college grad)



# Examples

1. Sheldon's mother earned a doctorate degree in psychology, his father spent one year in community college:

$\text{oneG4yr} = 1, \text{oneA4yr} = 1, \text{oneG2yr} = 1,$   
all other measures = 0

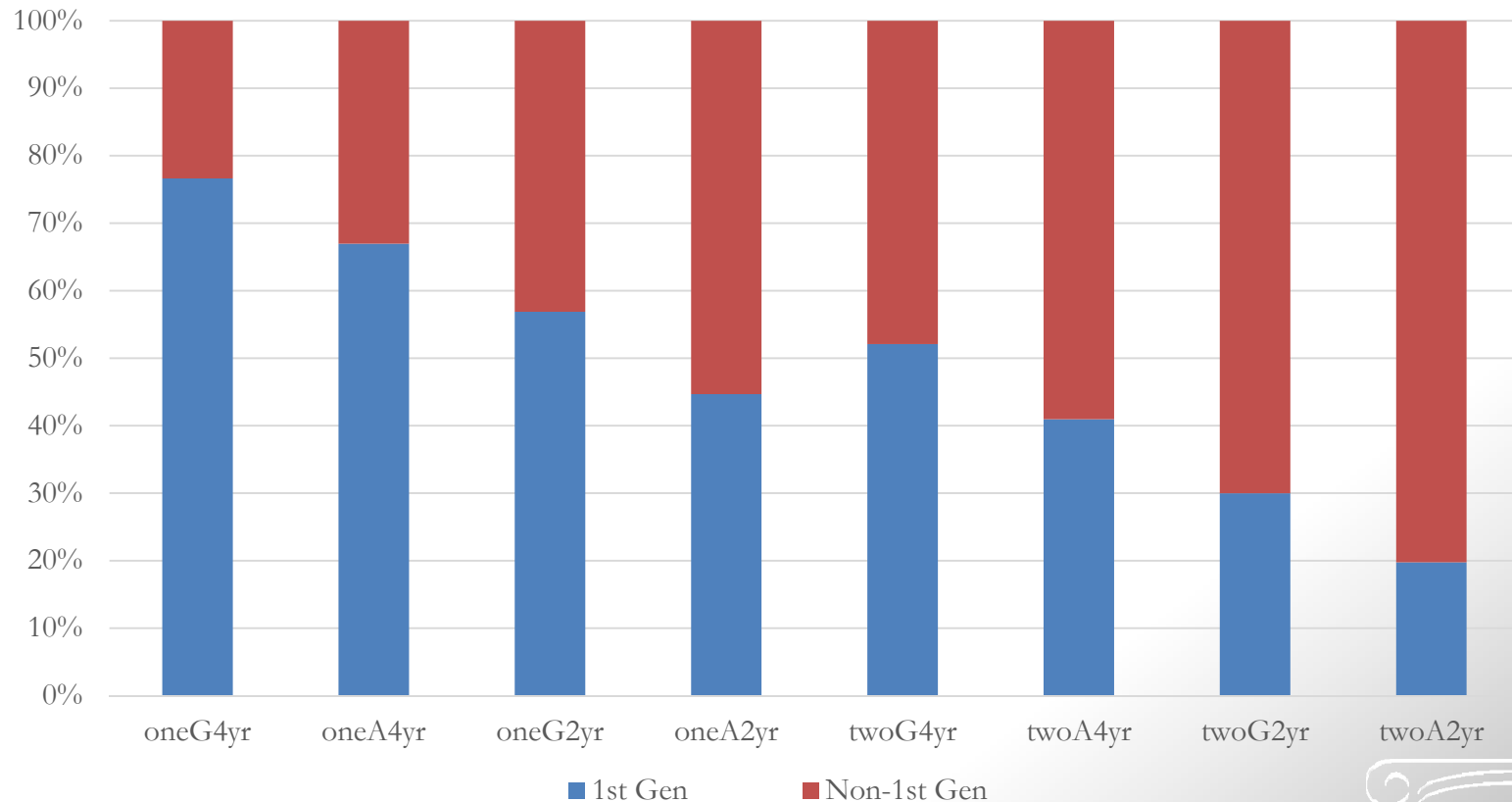
2. Danerys's father and mother both earned 2-year degrees but neither attended a 4-year institution:

$\text{twoG4yr} = 1, \text{twoAyr} = 1, \text{oneG4yr} = 1,$   
 $\text{oneA4yr} = 1, \text{all other measures} = 0$



# First-gen Students by Definition

Shares of First-Generation Students by Metric



Largest = oneG4yr (77% 1<sup>st</sup> gen): 1 if one or more parents did not earn 4-yr degree

Smallest = twoA2yr (20% 1<sup>st</sup> gen): 1 if both parents did not attend 2-yr or 4-yr college





# Notes on 1<sup>st</sup> Generation Variables

- Definition changes who gets counted as 1<sup>st</sup> gen and who gets counted as non-first gen
- Effect of the variable is the difference in outcomes for these two groups
- As 1<sup>st</sup> gen group becomes more selective, non-first gen group becomes less selective (and vice-versa)



1 <sup>st</sup> Gen	Y = Plan on Taking the SAT or ACT			Y = Apply to College			Y = Enroll in College		
	1 <sup>st</sup> Gen	Non-1 <sup>st</sup> Gen	Gap	1 <sup>st</sup> Gen	Non-1 <sup>st</sup> Gen	Gap	1 <sup>st</sup> Gen	Non-1 <sup>st</sup> Gen	Gap
oneG4yr	72.8%	90.0%	-17.2%	82.4%	96.6%	-14.2%	76.9%	96.7%	-19.8%
oneA4yr	71.7%	87.3%	-15.6%	80.9%	95.5%	-14.6%	75.0%	94.7%	-19.7%
oneG2yr	69.9%	85.9%	-16.0%	79.2%	94.3%	-15.1%	72.7%	93.1%	-20.4%
oneA4yr	68.0%	84.0%	-16.0%	77.1%	92.7%	-15.6%	69.7%	91.0%	-21.3%
twoG4yr	68.8%	85.6%	-16.8%	78.3%	93.8%	-15.5%	70.9%	93.1%	-22.2%
twoA4yr	66.4%	84.1%	-17.7%	75.4%	92.9%	-17.5%	68.0%	90.9%	-22.9%
twoG2yr	64.0%	82.3%	-18.3%	72.7%	91.3%	-18.6%	64.7%	88.7%	-24.0%
twoA2yr	60.1%	81.0%	-20.9%	69.6%	89.7%	-20.1%	60.8%	86.6%	-25.8%

- Large and significant gaps across all 1<sup>st</sup> generation definitions
- Percentages for both groups fall as 1<sup>st</sup> gen category becomes smaller
- Gaps tend to rise as 1<sup>st</sup> generation category becomes smaller
- Gaps tend to be larger for “both parents” vs. “at least one parent”
- Larger gaps for college enrollment vs. aspirations



# Statistical Models

$$Y = \alpha + D\beta + A\gamma + S\delta + \theta P + \varepsilon$$

where:

$Y$  = dependent variable (3 measures)

$D$  = demographic factors (gender, race)

$A$  = academic ability factors (GPA)

$S$  = family measures (income, status, siblings)

$P$  = first-generation status variable



# Methodological Details

- Examine aspirations for college (plan on taking SAT or ACT, apply for college) and matriculation (enrolled in college)
- Used logistic regression analysis
  - Results reported as marginal effects
  - Weighted data to account for NCES sampling design
- Estimated models two ways:
  - One first generation variable at a time
  - Combinations of variables to isolate additive effect of # parents, attend vs. graduate, level of education



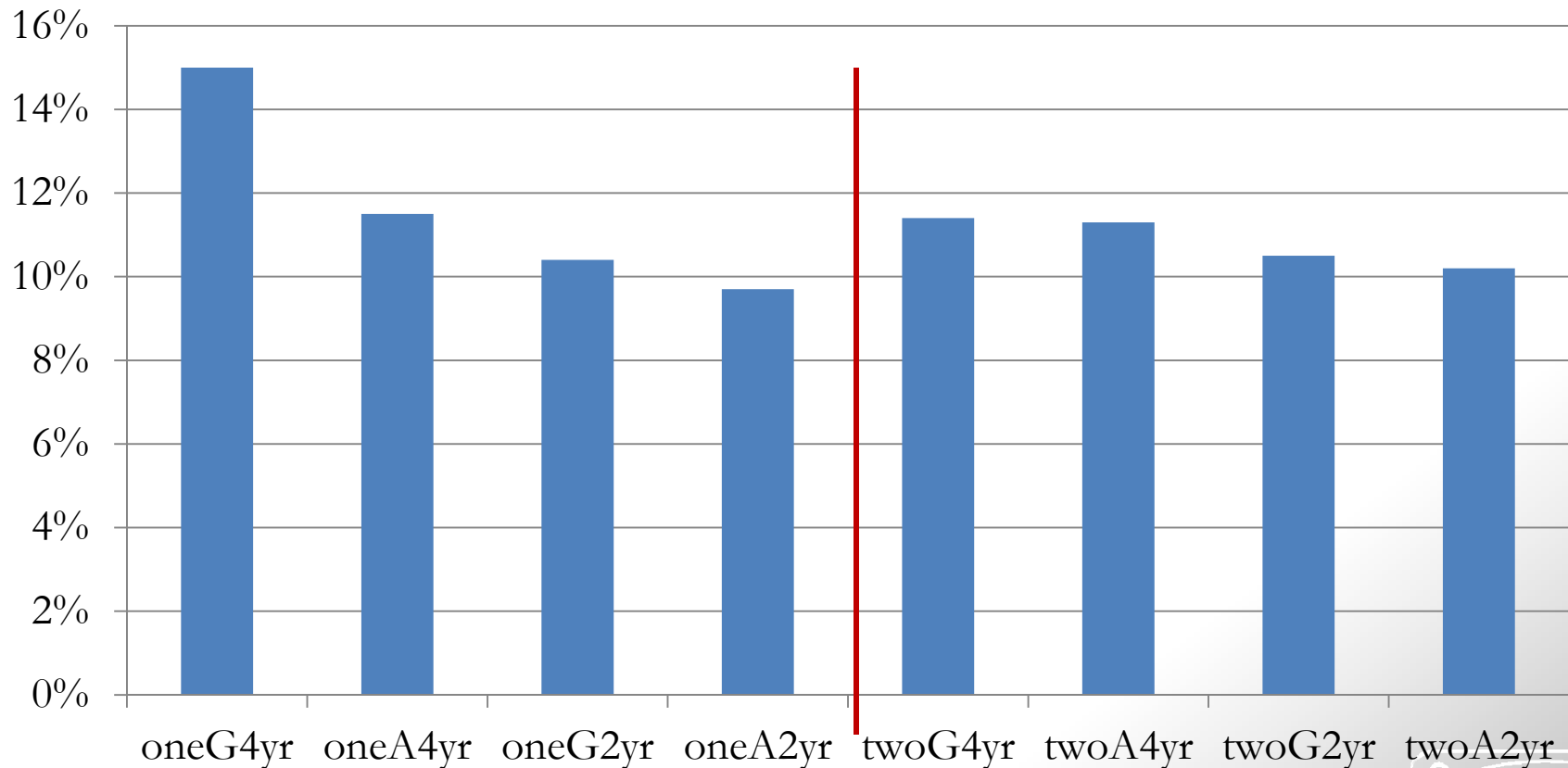
# Selected Results – Non 1<sup>st</sup> Gen Variables

1. Females 7% more likely than males to take SAT, apply to college, and enroll in college
2. Asian students 10% more likely than white students to aspire and enroll in college
3. Black students 6% more likely than white students to aspire to college, 3% more likely to enroll in college
4. HS grades matter: each GPA point raises probability of aspiring or enrolling by 3%
5. Income has large positive association with college aspirations and enrollment
6. Family matters: living w/both parents increases probability of going to college by 10%
7. Number of siblings does not affect aspirations, but reduces probability of enrolling in college



# Effect of First-gen on Plan on Taking SAT

## Marginal Effect



Each measure was statistically significant at 1% level

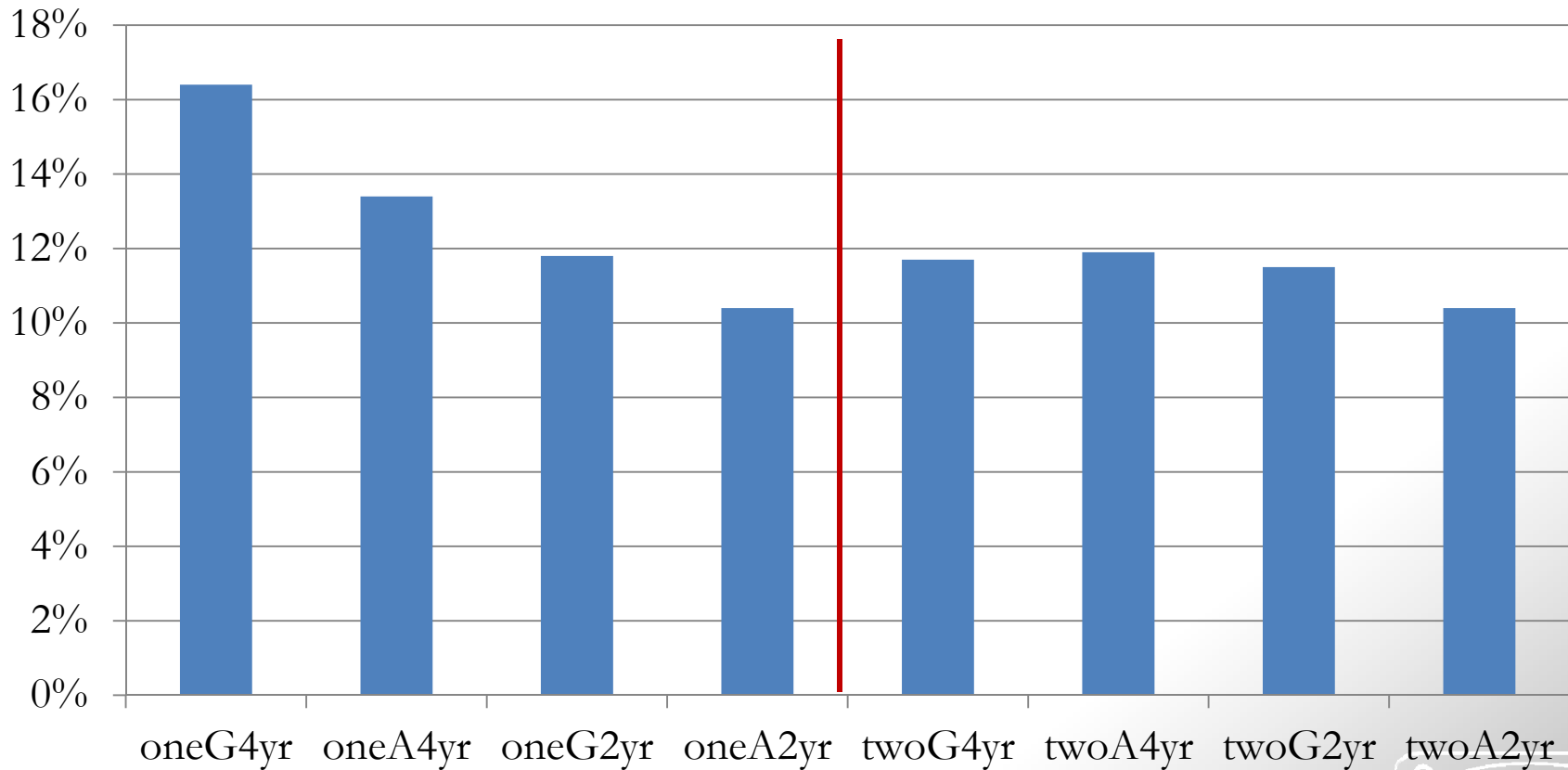
Disadvantage ranges from 10% to 15%

Largest estimate for oneG4yr (broadest 1<sup>st</sup> gen definition)



# Effect of First-gen on Applying to College

## Marginal Effect



Each measure was statistically significant at 1% level

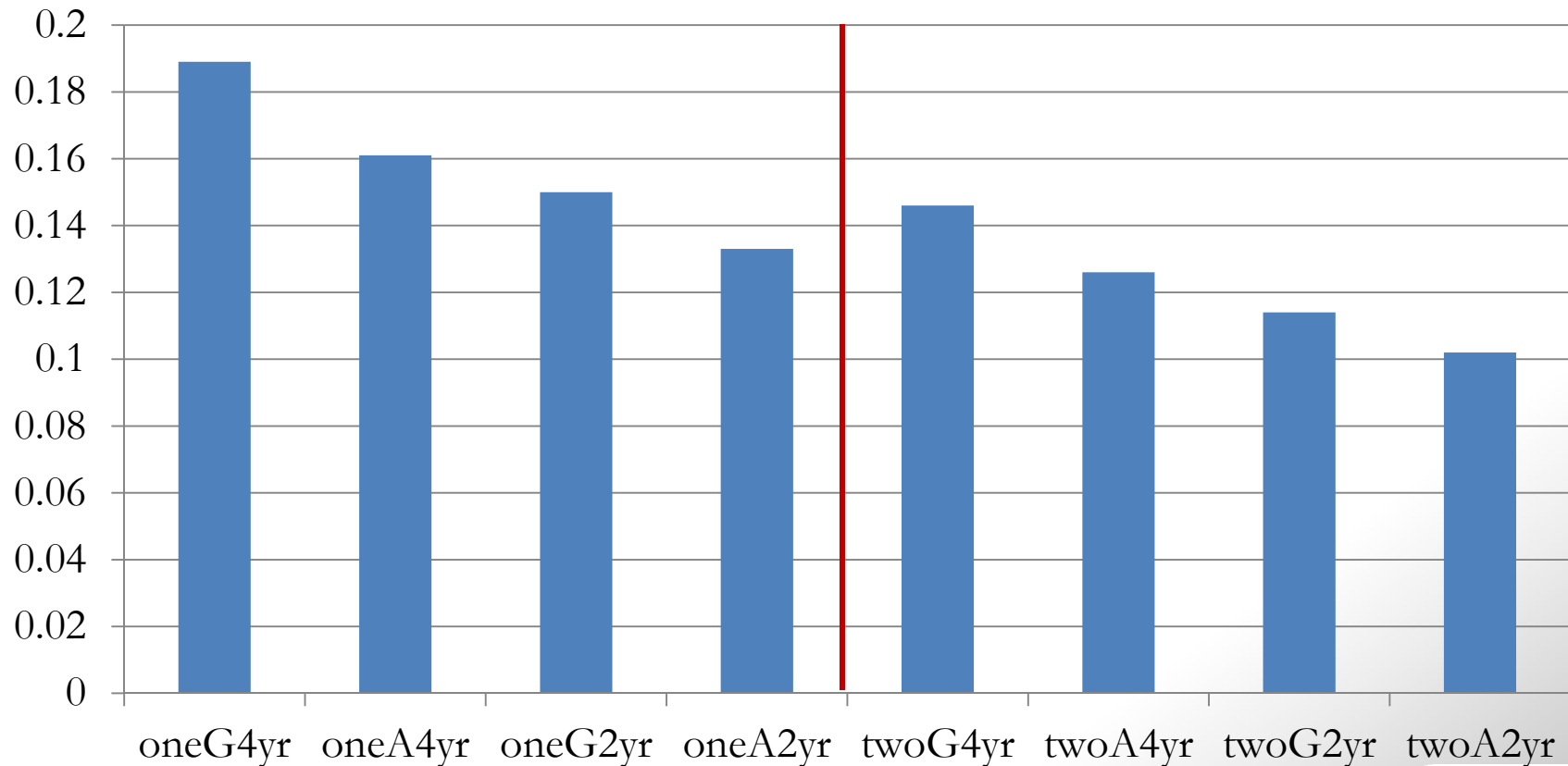
Disadvantage ranges from 10% to 16%

Largest estimate for oneG4yr (broadest 1<sup>st</sup> gen definition)



# Effect of First-gen on Enrolling in College

## Marginal Effect



Each measure was statistically significant at 1% level

Disadvantage ranges from 10% to 19% (higher than aspirations)

Largest estimate for oneG4yr (broadest 1<sup>st</sup> gen definition)





# Does the Number of Parents Matter?

Variable	Take SAT/ACT	Apply to College	Enroll in College
Grad 4yr: One +	-0.099***	-0.103***	-0.107***
Grad 4yr: Two	-0.080***	-0.088***	-0.115***
Attend 4yr: One +	-0.062**	-0.074***	-0.104***
Attend 4yr: Two	-0.087***	-0.091***	-0.088***
Grad 2yr: One +	-0.066***	-0.070***	-0.113***
Grad 2yr: Two	-0.075***	-0.085***	-0.067***
Attend 2yr: One +	-0.069***	-0.073***	-0.113***
Attend 2yr: Two	-0.064***	-0.066***	-0.044**

- Having one parent w/o college credential reduces odds of aspiration & enrollment
- Students with both parents w/o college credential face double the odds against college aspiration and enrollment



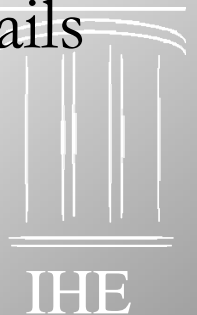
# Summary

1. About half of the aspiration/enrollment gaps are explained by student and family attributes
2. Regardless of how it is measured, 1<sup>st</sup> gen students have lower probability of aspirations and enrollment than do non-1<sup>st</sup> gen
3. Magnitude of effects varies by number of parents used in definition (more parents => larger deficit)
4. Magnitude varies by level of education and degree (4yr graduate => larger deficit)



# Discussion

- More narrow definition of 1<sup>st</sup> gen status may miss some students who also face deficits & need help
  - Ex: restricting 1<sup>st</sup> gen services to those whose parents did not ever attend college overlooks kids whose parents went to college but did not earn a degree
- Need to pay close attention to how we collect data on first-generation status
  - Wording of questions matters
  - Best to provide more flexibility (ask for more details whenever possible)



# Next Steps

- Look at course-taking patterns and other college predisposition measures, and type of college attended
- Examine impact of first-generation variables on college completion
  - Does 1<sup>st</sup> generation status matter once a student gets to college?
- Examine other aspects of parental education
  - Does having a graduate degree affect aspirations?
  - Does the particular parent (mother vs. father) matter?
  - Does living situation + parental education matter?



# Final Thoughts

- More work is needed on the reasons why parental education matters:
  - Is it an indicator of intelligence/ability?
  - Does it capture wealth/ability to pay?
  - Is it related to signals (intentional and unintentional) sent by parent to children about college aspirations?

