

Measurement and Meaning of Educational Achievement

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Components of Education Measure

- Years
- Diploma/Degree
- Achievement
- Preparation for future schooling/occupation

Current measures

- **NHIS/Census**
 - What is the highest level of school completed or the highest degree received?
- **MEPS**
 - What is the **highest** grade or year of **regular** school (PERSON) ever **completed**?
 - What is the highest degree obtained?

NHIS and Census

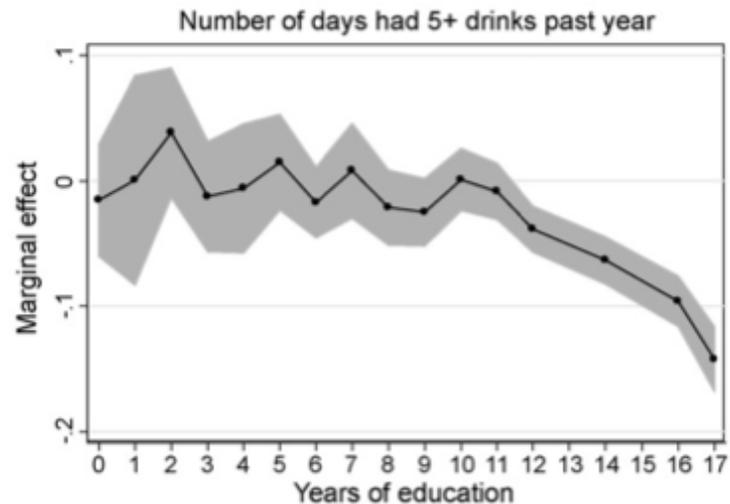
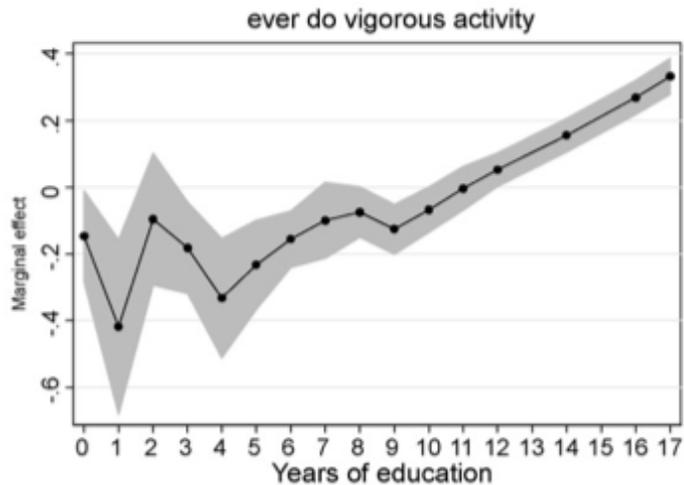
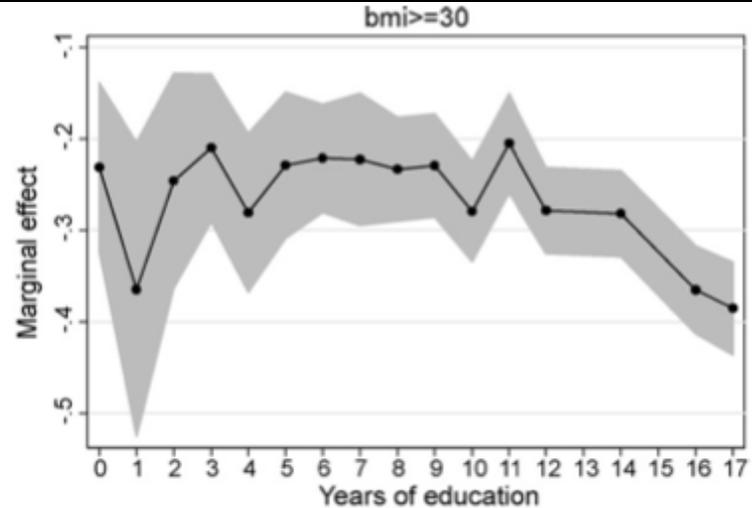
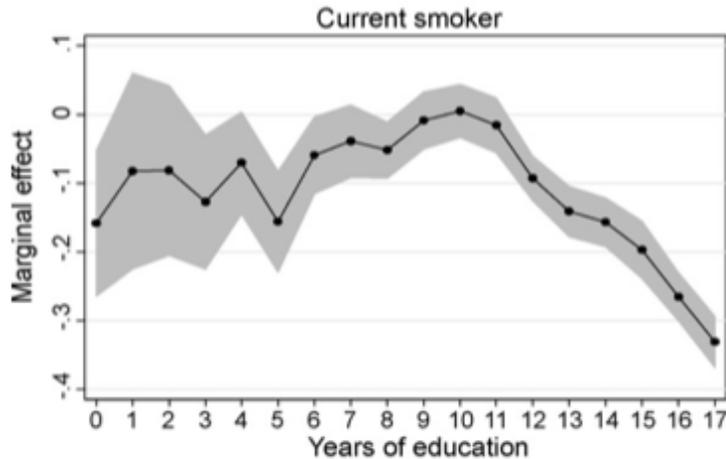
- 1-12 years (No diploma)
- GED or equivalent
- HS Graduate
- Some College, no degree
- Degrees
 - Associate (occupational, technical, vocation)*
 - Associate (academic program)*
 - Bachelor's
 - Masters, Professional, Doctoral

*NHIS, but not Census, differentiates between 2 types of Associate Degrees. MEPS does not measure AA degree at all.

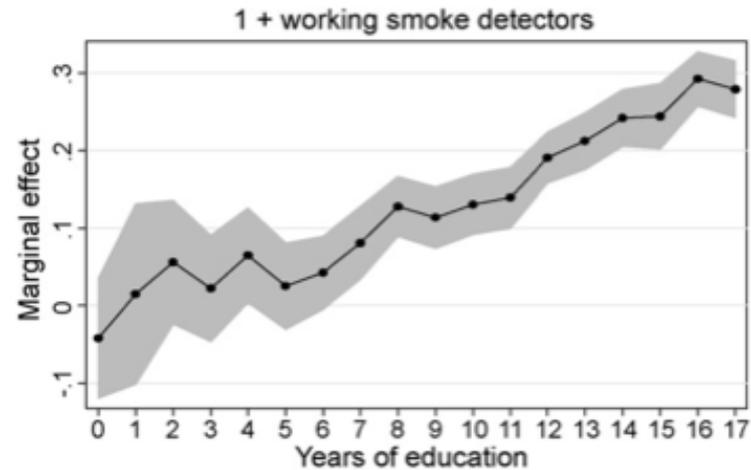
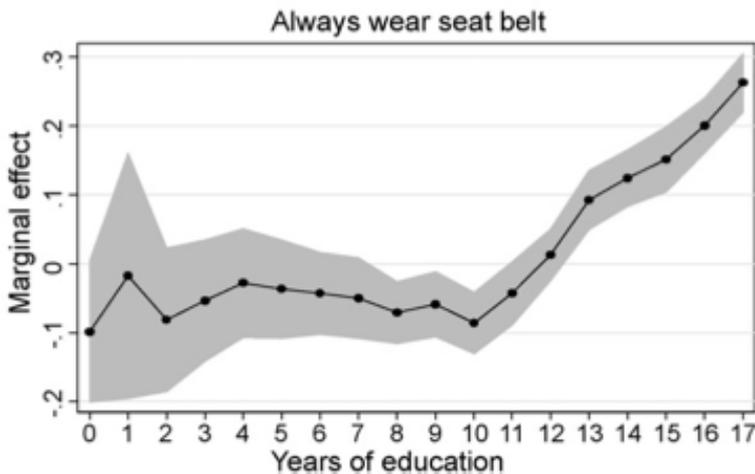
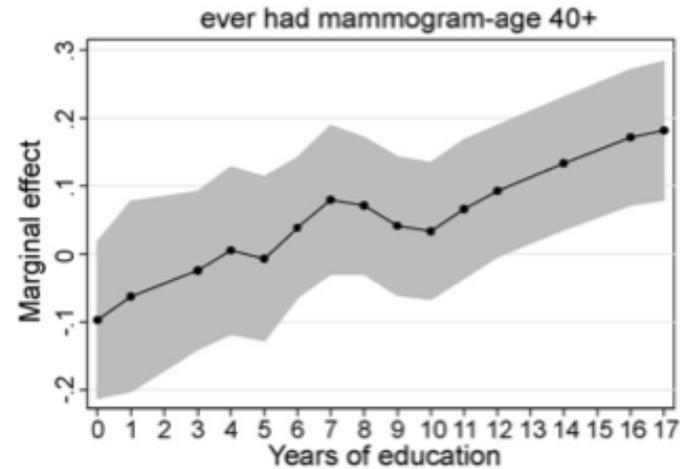
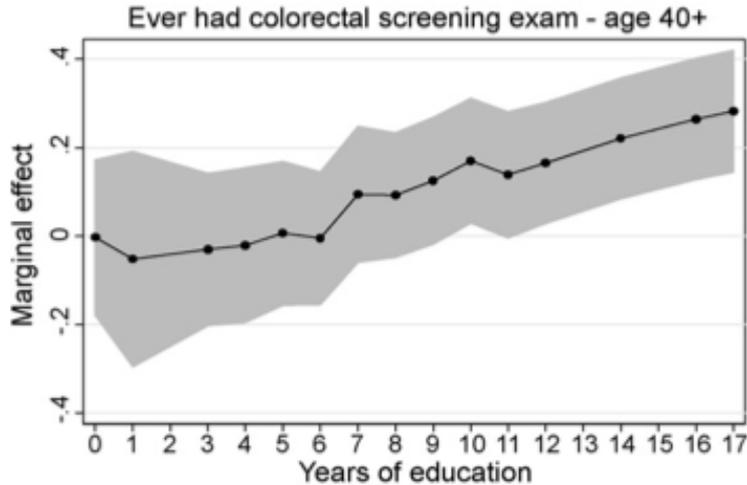
Components of Education Measure

- Years
- Diploma/Degree
- Achievement
- Preparation for future schooling/occupation

Education and health



Education and health



What is School?

- Public
- Private
- Charter
- Home schooling
- Independent study
- Continuation
- Vocational
- Blended learning (distance learning/virtual schools)

Educational Attainment vs. Achievement

- Wide variation in what a high school diploma means:
 - Courses/content
 - Grades
- Purpose (preparation for college or vocation)
- Has weak relationship with achievement

Alternative Measures

- Course completion (California: A-G Requirements)
- Preparation for occupation and future schooling (e.g. need for remediation in college)
- Standardized tests

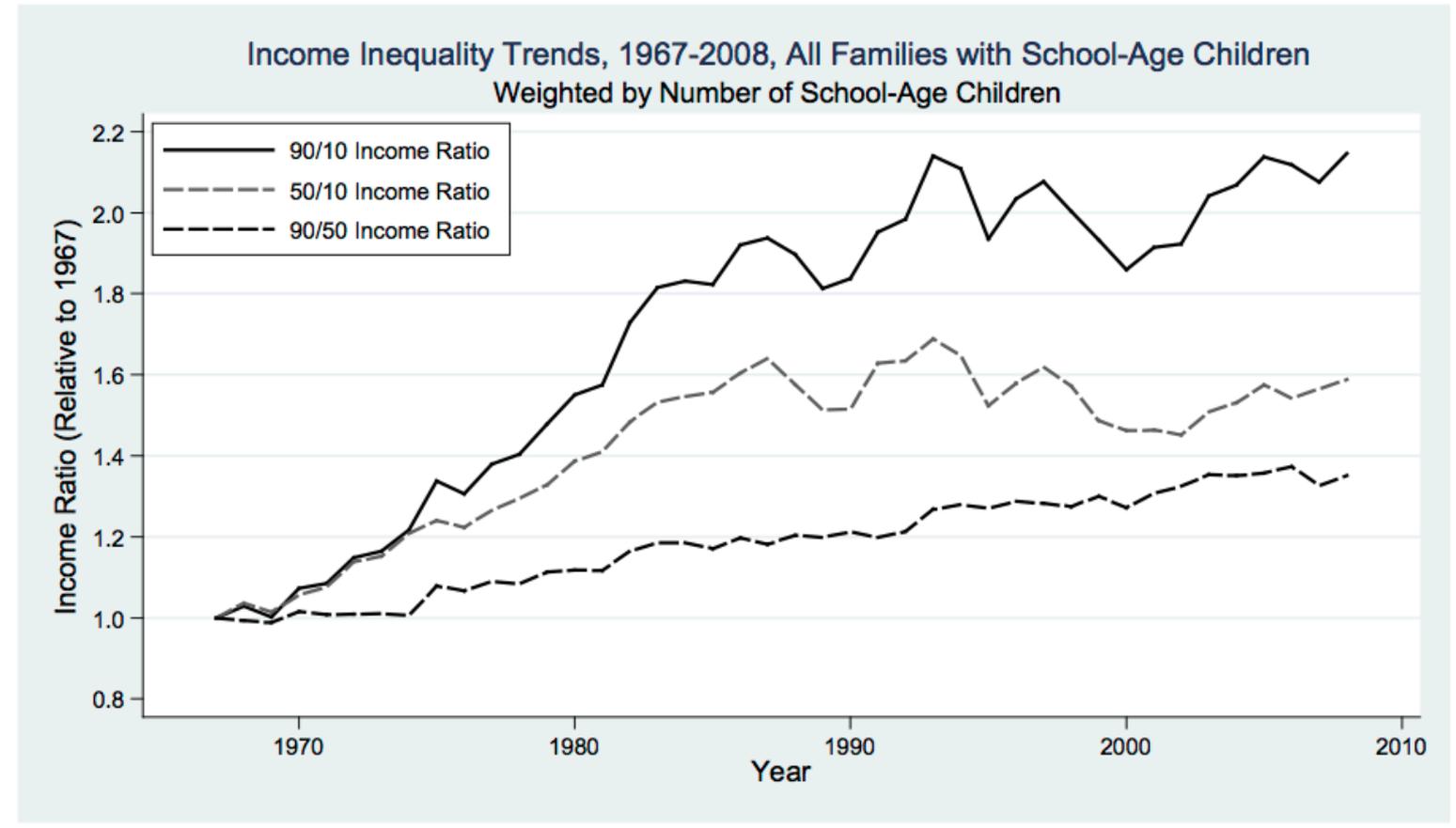
Standardized testing to measure competency and achievement

- SAT, ACT, Advanced Placement
- High school exit exams
- State level standardized tests (NCLB)
- National Assessment of Educational Progress (NAEP): Equivalency measures for state level tests at grade 4, 8 and 12.

Relationship between educational achievement and income

Income gap is increasing over time

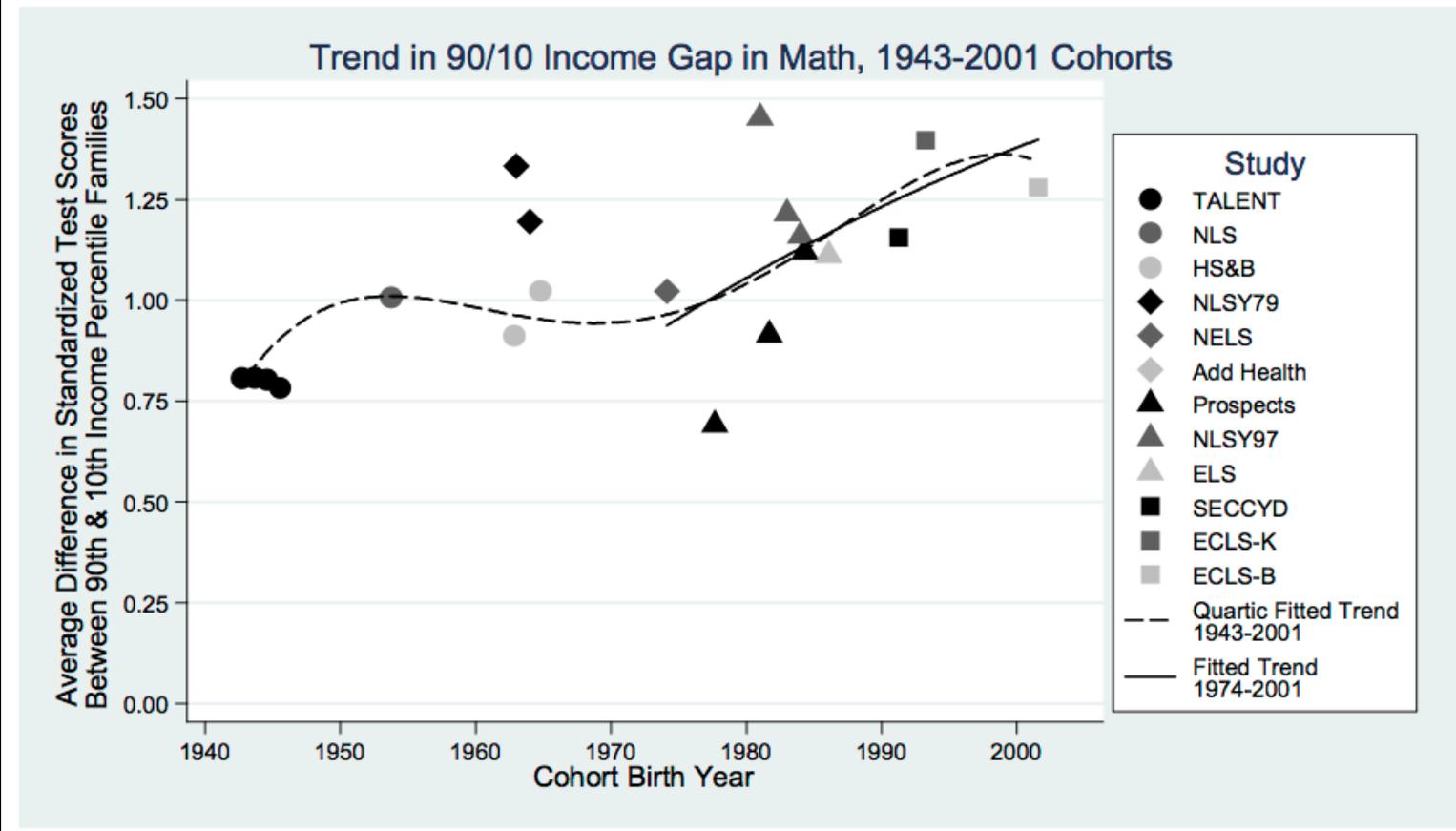
FIGURE 5.6 Trends in Family-Income Inequality Among School-Age Children, 1967 to 2008
(Weighted by Number of School-Age Children)



Reardon, S. F. (2010). "The Widening Academic--Achievement Gap between the Rich and the Poor: New Evidence and Possible Explanations. *Whither Opportunity: Rising Inequality, Schools, and Children's Life Chances.*

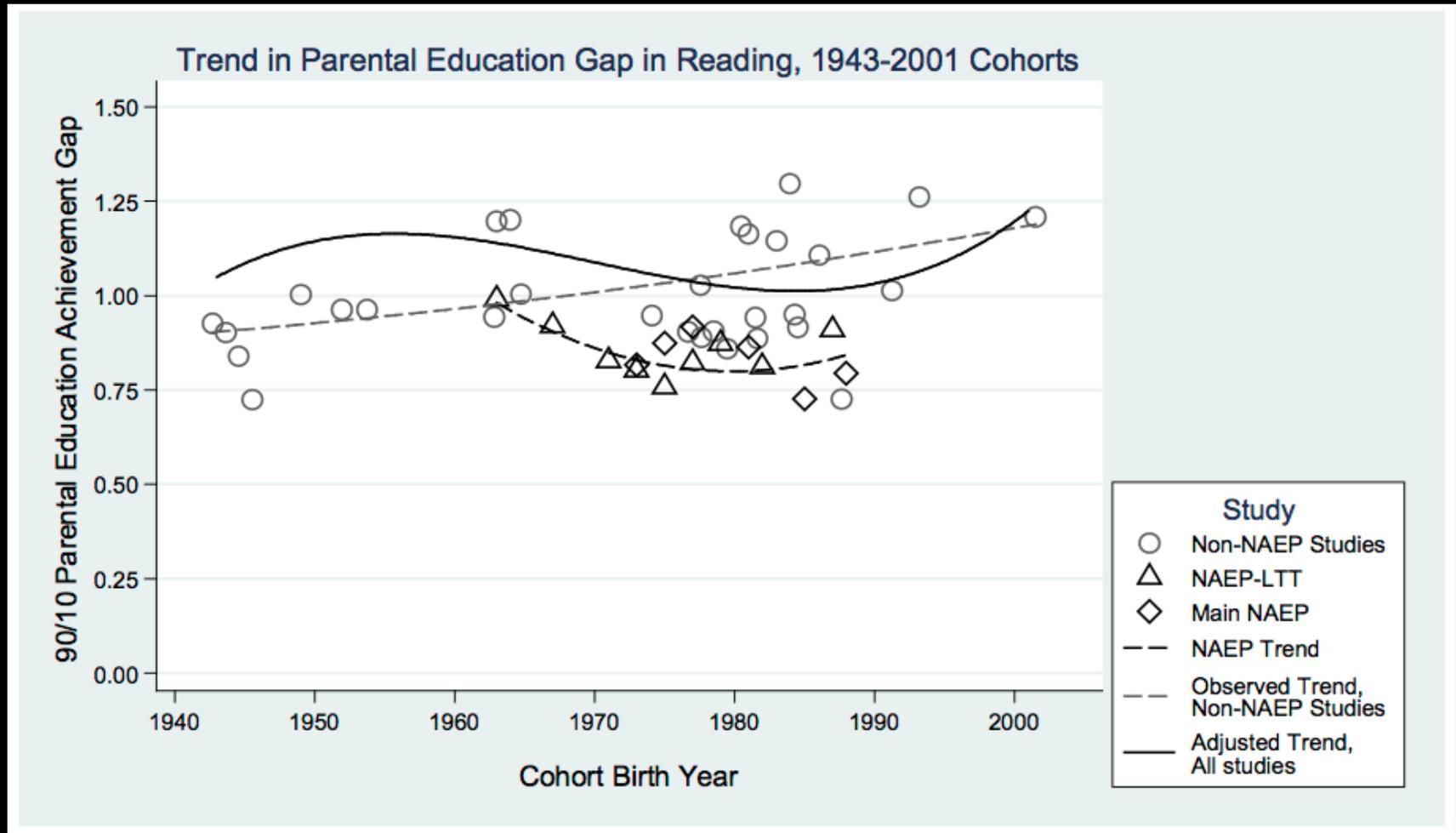
Educational achievement gap has been growing faster than income gap

FIGURE 5.2 Trend in 90/10 Income Achievement Gap in Math, by Birth Cohort (1943 to 2001 Cohorts)



Reardon, S. F. (2010). "The Widening Academic--Achievement Gap between the Rich and the Poor: New Evidence and Possible Explanations. *Whither Opportunity: Rising Inequality, Schools, and Children's Life Chances.*

Parental-child achievement relationship has been relatively stable



Reardon, S. F. (2010). "The Widening Academic--Achievement Gap between the Rich and the Poor: New Evidence and Possible Explanations. *Whither Opportunity: Rising Inequality, Schools, and Children's Life Chances.*

Relationship between educational achievement and health

Adjusted Odds Ratio of Recent Risky Behaviors

	Smoking	Alcohol	Marijuana	Sex
Parent has high school diploma	0.88	0.91	0.67	0.83
Parent is employed	0.69	1.21	0.86	0.80
Family owns home	0.81	1.34	1.04	1.35
Annual Family Income (\$) (reference=50k or greater)				
Unknown	1.10	0.94	1.31	0.77
<15k	0.97	1.00	0.78	1.26
15-29k	1.62	1.04	1.29	0.94
30-49k	1.03	0.83	1.43	0.68
Most recent California Standardized Test Score (reference=highest tertile)				
Middle tertile	1.07	1.23	0.90	1.08
Lowest tertile	1.51	1.63	1.25	1.76

P value

0.05-0.10

0.01-0.05

<0.01

Model adjusts for gender, grade, race/ethnicity, language, parental supervision, school engagement

Adjusted Odds Ratio of Recent Risky Behaviors

	Smoking	Alcohol	Marijuana	Sex
Parent has high school diploma	0.96	0.92	0.69	0.84
Parent is employed	0.93	1.26	0.96	0.85
Family owns home	0.89	1.38	1.05	1.36
Annual Family Income (\$)				
(reference=50k or greater)				
Unknown	0.94	0.91	1.18	0.77
<15k	0.78	0.98	0.76	1.23
15-29k	1.54	1.02	1.17	0.93
30-49k	1.07	0.83	1.36	0.67
Most recent California Standardized				
Test Score (reference=highest tertile)				
Middle tertile	0.92	1.19	0.83	1.04
Lowest tertile	1.17	1.57	1.16	1.70
Worse than average school (API)	5.69	1.50	3.51	1.27

P value 0.05-0.10 0.01-0.05 <0.01

Model adjusts for gender, grade, race/ethnicity, language, parental supervision, school engagement, school type

Wong et al. (unpublished)

Limitations of standardized testing

- Cannot be obtained through self-report
- May not capture all students (e.g. private school students)
- Comparability/equivalency between states
- Methodologic challenges for comparability at individual level (NAEP)

Conclusion

- Educational attainment is easy to obtain through self-report but has poor correlation with achievement
- Educational achievement is an informative component of SES and predictor of health
- Future studies should capitalize on the opportunity to link health studies to state-level standardized test scores

Acknowledgements

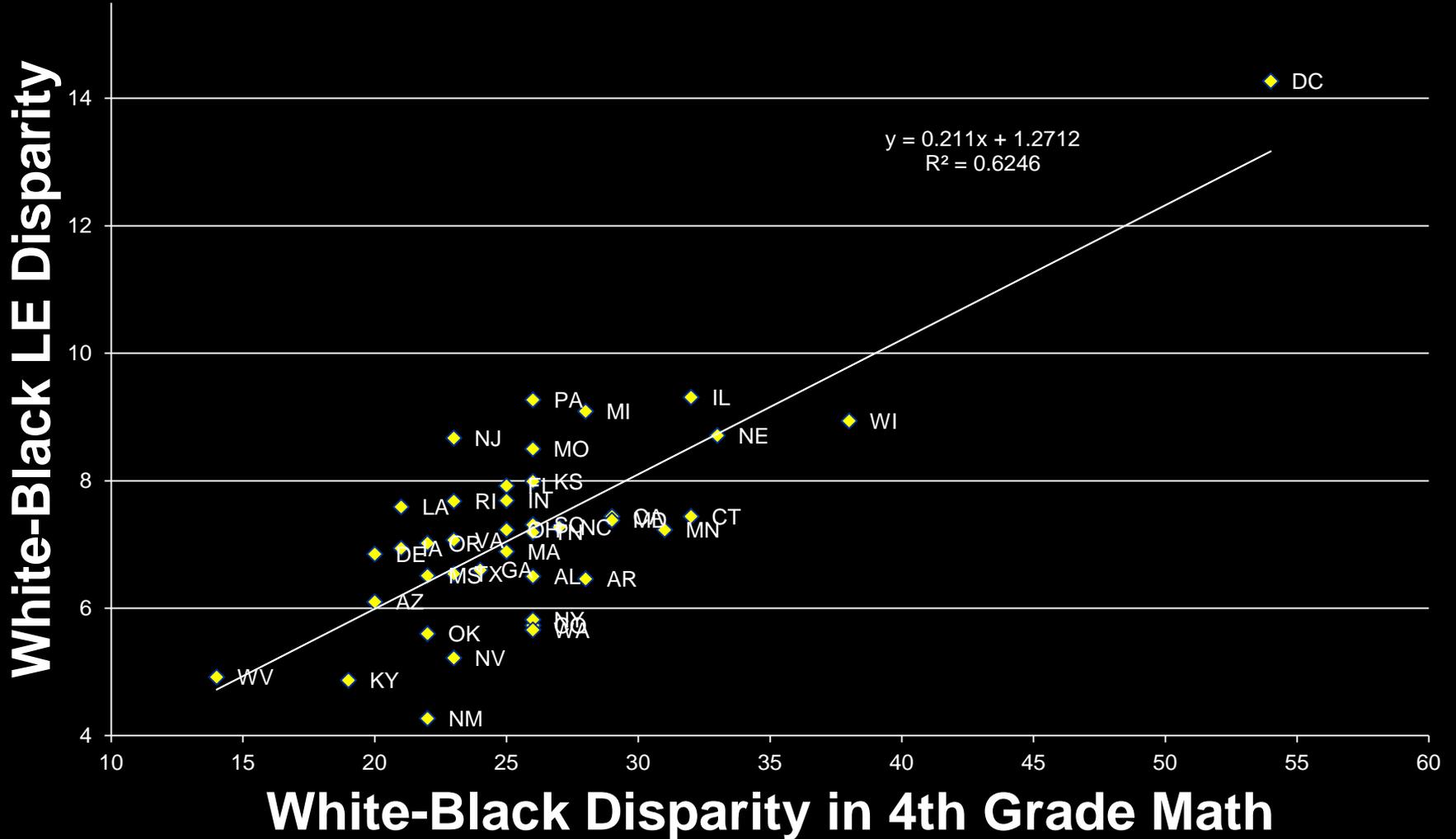
Grant Funding:

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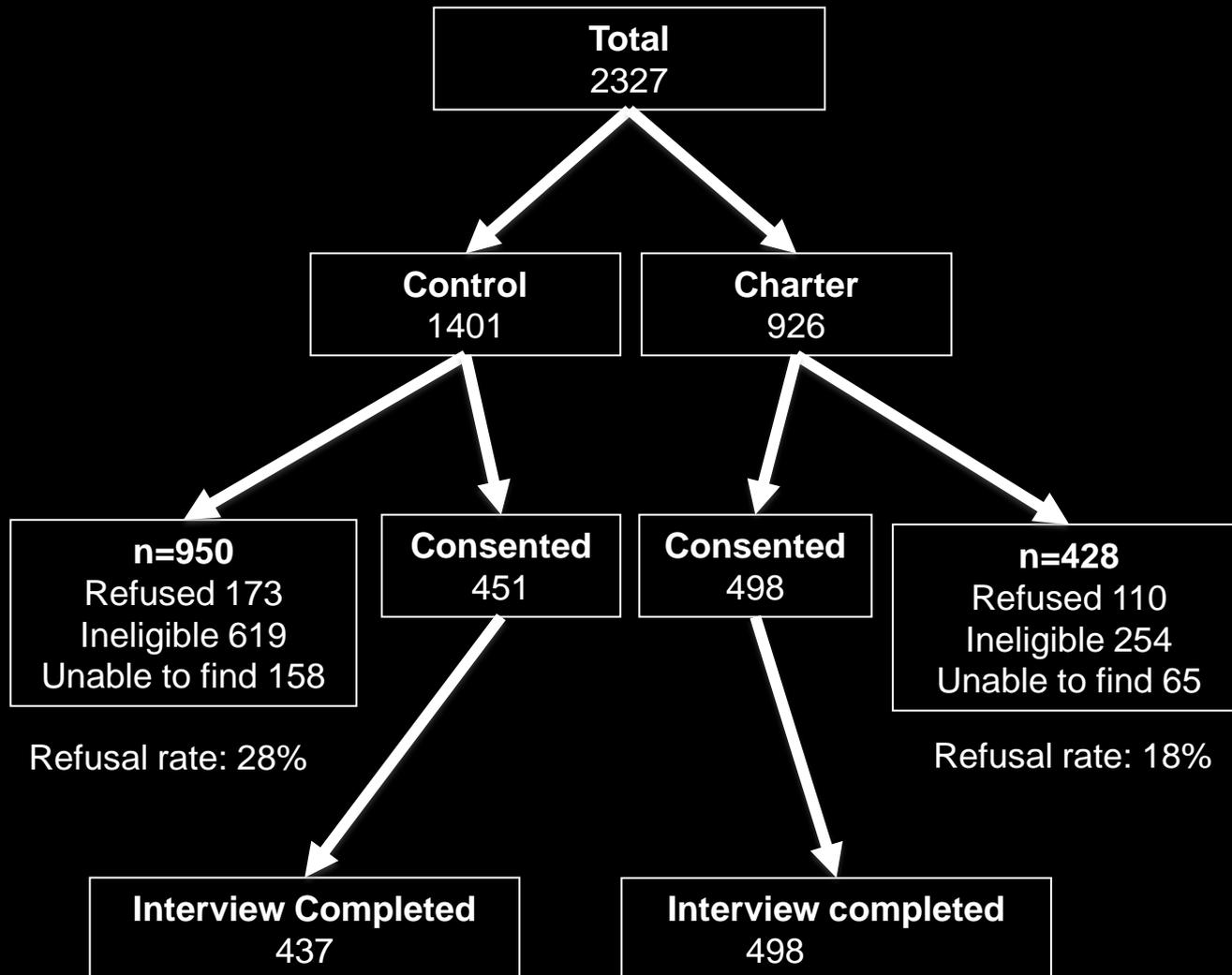
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- Jeanne Miranda, PhD (UCLA)
- Marco Petruzzi (Green Dot Public Schools)
- Martin Shapiro, MD PhD (UCLA)
- Kim Uyeda (Los Angeles Unified School District)

Relationship Between Education Disparity and Life Expectancy Disparity by State



Subject Recruitment



Demographics

	Control (%)	Charter (%)	P Value
Race/Ethnicity			0.46
White	0.9	1.2	
Latino	80	83	
Black	13	12	
Mix/other	6	4	
Female	48	43	0.08
English first language	41	36	0.20
Parental Education HS grad+	49	52	0.29
Parent employed full time	92	92	0.90
Family owns a home	42	45	0.04
Family owns a car	93	93	0.62
Family income			0.94
<15k	13	12	
15-29k	26	26	
30-49k	21	20	
>50k	14	15	
Don't know	25	27	25

School Behavior/Performance

	Control (%)	Charter (%)	P Value
Currently a full time student	96	99	0.04
California Standardized Test			
8 th grade or first available	645	655	0.193
Most recent	623	648	0.004
Change	-22	-8	0.024
Time spent doing homework/day			0.13
<1	20	16	
1-2	35	33	
>2	45	51	
Cut/Skip school in typical month	39	19	<0.001
Ever repeated a grade	12	13	0.73
Expect to graduate	95	99	0.001
Expect to go to College	96	96	0.91

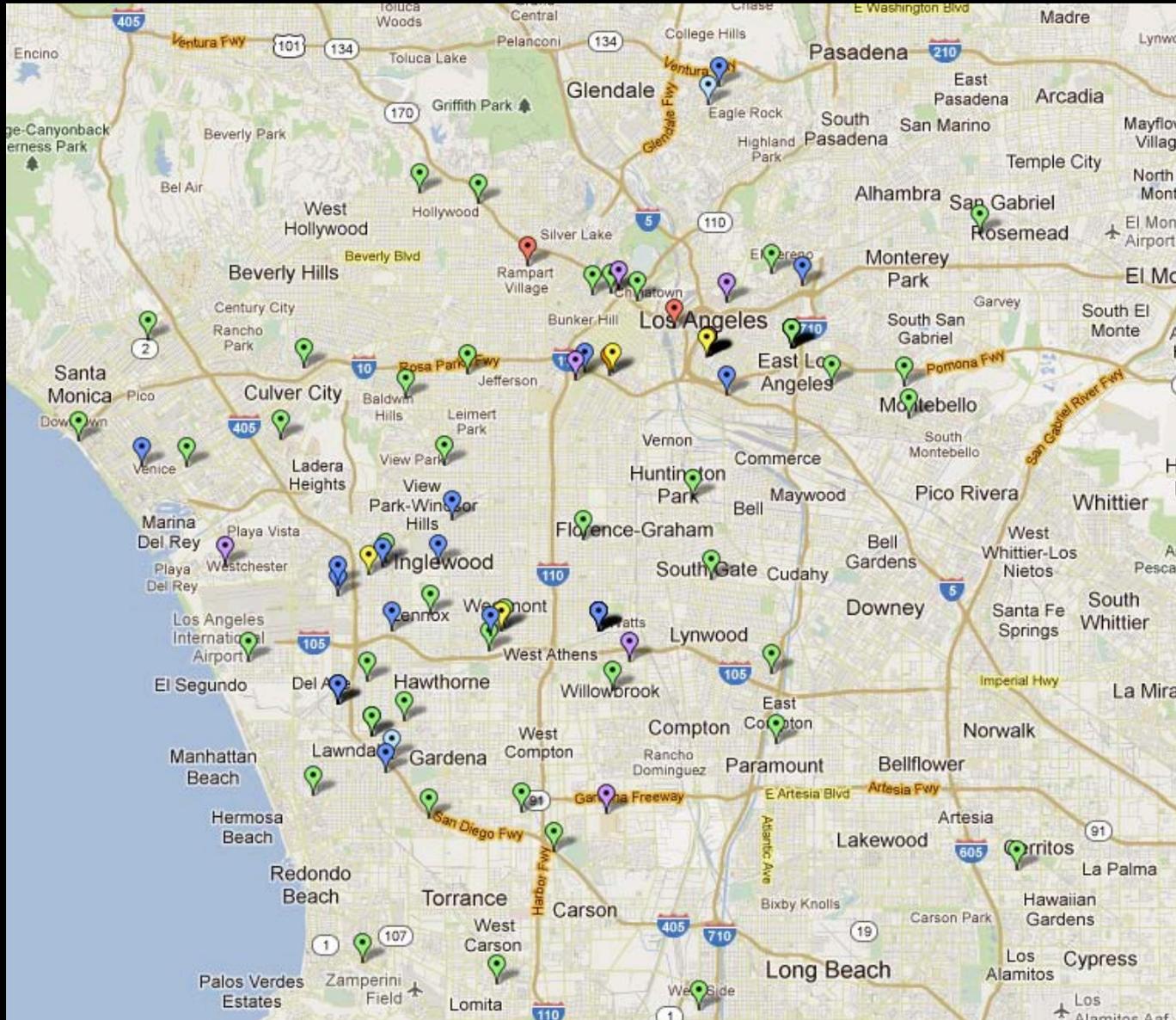
Risky Behaviors

	Reference (%)	Control (%)	Charter (%)	P Value
Cigarette use in last 30 days	20 (US) 15 (CA)	10	9	0.38
Alcohol in last 30 days	42	33	34	0.84
Marijuana use in last 30 days	21	21	21	0.84
Drug use in last 30 days		5	8	0.11
Sex in last 90 days	34	28	25	0.30
Used contraception last sexual encounter	61 (condom use)	51	58	0.34
Ever pregnant/got someone pregnant		4	2	0.15

Risky Behaviors

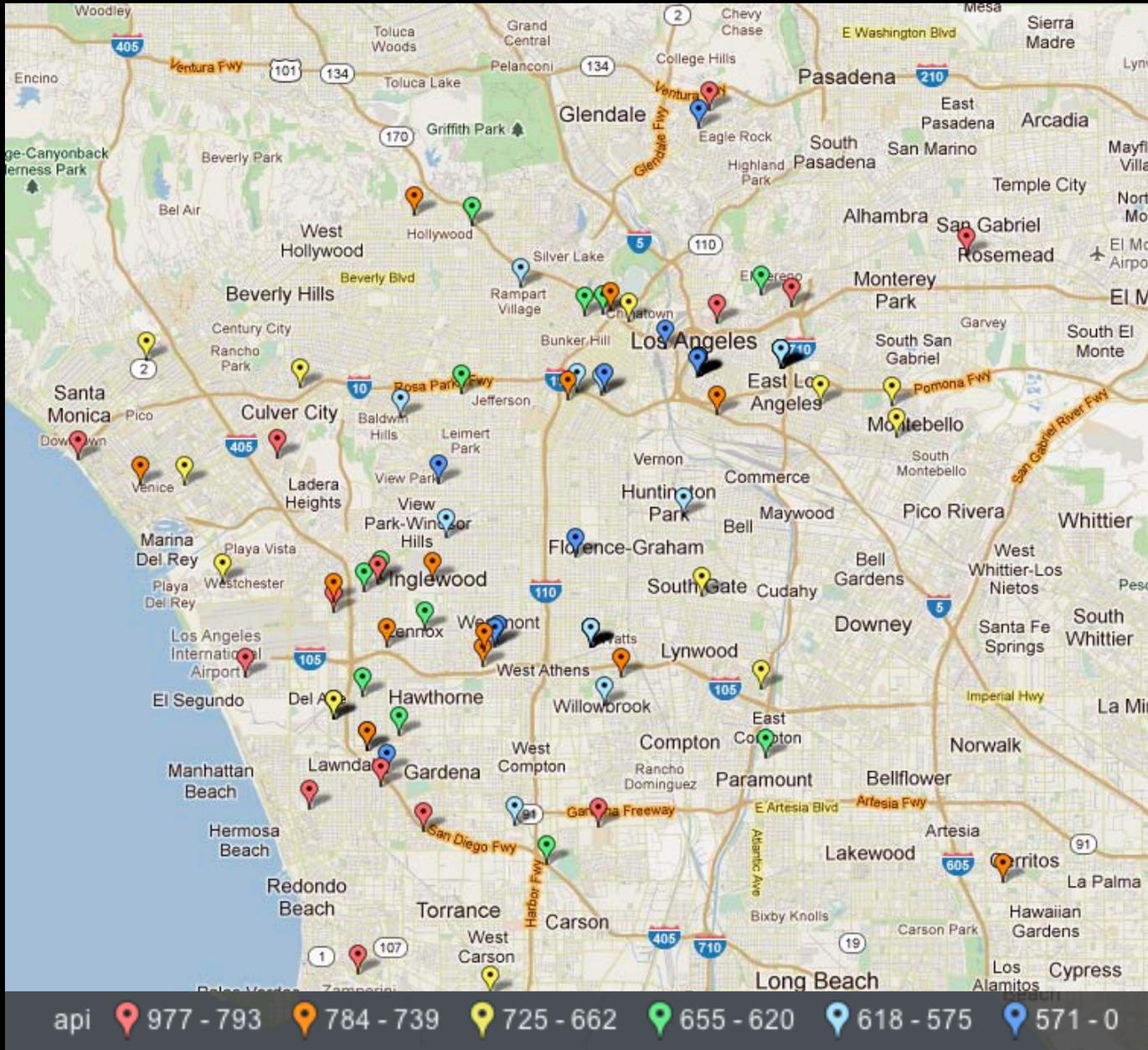
	Reference	Control	Charter	P Value
Bullied at school in last 12 months (%)	20	19	26	0.01
Bullied outside of school in last 12 months (%)		11	16	0.04
Bullied someone at school in last 12m (%)		17	25	0.006
Bullied someone outside of school in last 12 m (%)		11	20	0.001
Emotional Distress (mean)	17	17	18	0.28
BMI (%)				0.98
Overweight (wt 85-95%)		21	21	
Obese (wt>95%)	20-30	24	24	

Map of Schools in RISE Study



type adult charter public continuation magnet alternate Others

Map of Schools in RISE Study



Demographics

	Low API (%)	High API (%)	P Value
Race/Ethnicity			0.14
White	1	1	
Latino	86	80	
Black	9	14	
Mix/other	4	5	
Female	48	44	0.21
English first language	36	39	0.54
Parental Education HS grad+	38	56	<0.001
Parent employed full time	87	94	0.001
Family owns a home	36	46	0.04
Family owns a car	90	94	0.15
Family income			0.02
<15k	14	12	
15-29k	30	24	
30-49k	17	22	
>50k	10	18	
Don't know	28	25	

School Behavior/Performance

	Low API (%)	High API (%)	P Value
Currently a full time student	93	99	<0.001
California Standardized Tests			<0.001
8 th grade or first available	607	660	<0.001
Most recent	586	650	<0.001
Change	-21	-10	0.15
Time spent doing homework/day			<0.001
<1	23	16	
1-2	38	32	
>2	39	52	
Cut/Skip school in typical month	44	19	<0.001
Ever repeated a grade	15	12	0.12
Expect to graduate	95	98	0.02
Expect to go to College	94	97	0.13

Risky Behaviors

	Reference (%)	Low API (%)	High API (%)	P Value
Cigarette use in last 30 days	20 (US) 15 (CA)	16	6	<0.001
Alcohol in last 30 days	42	37	32	0.11
Marijuana use in last 30 days	21	27	18	<0.002
Drug use in last 30 days		6	6	0.99
Sex in last 90 days	34	33	24	0.003
Used contraception last sexual encounter	61 (condom use)	53	55	0.80
Ever pregnant/got someone pregnant		6	2	<0.001

Risky Behaviors

	Reference	Low API	High API	P Value
Bullied at school in last 12 months (%)	20	17	26	0.004
Bullied outside of school in last 12 months (%)		11	15	0.14
Bullied someone at school in last 12m (%)		15	24	0.001
Bullied someone outside of school in last 12 m (%)		12	17	0.04
Emotional Distress (mean)	17	18	18	0.41
BMI (%)				0.70
Overweight (wt 85-95%)		22	21	
Obese (wt>95%)	20-30	22	24	

Risky Behaviors

9th grade only

11th and 12th grade only

	Reference (%)	Low API (%)	High API (%)	P Value
Cigarette use in last 30 days	20 (US) 15 (CA)	12.5 17	5 8	0.03 0.003
Alcohol in last 30 days	42	27 45	17 42	0.08 0.52
Marijuana use in last 30 days	21	15 34	8 24	0.10 0.03
Drug use in last 30 days		6 6	4 8	0.61 0.36
Sex in last 90 days	34	12 43	8 33	0.24 0.03
Used contraception last sexual encounter	61	38 56	36 57	0.96 0.88
Ever pregnant/got someone pregnant		0 1	0 0	-- 0.22

Multivariable model predicting risk behaviors

- Mixed effects model
- Random effects for school
- Tested random slope and random intercept models
- Prelim analysis since we don't have complete CST scores yet
- Examine effect if student, family, peer and school characteristics
- Race/ethnicity and language not significant so not shown in following table

Adjusted Odds Ratio of Recent Risky Behaviors

	Smoking	Alcohol	Marijuana	Sex
STUDENT CHARACTERISTICS				
Male	1.24	1.03	1.67	1.03
Grade (grade 9)				
10	1.59	0.92	2.30	2.90
11	0.89	1.37	2.51	2.17
12	1.71	1.25	2.25	3.69
EDUCATIONAL CHARACTERISTICS				
More engaged in school	0.61	0.73	0.66	1.10
Last CST score	1.00	1.00	1.00	1.00
Improved in CST score (last-first)	1.00	0.99	1.00	1.00
FAMILY CHARACTERISTICS				
Parent has HS degree	0.86	0.83	0.63	0.86
Parent works	1.13	0.94	0.86	1.03
Family owns care	0.98	1.05	0.96	0.41
More parental supervision	0.33	0.48	0.47	0.50
High % of relatives engaging in [behavior]	1.14	1.96	1.76	
PEER CHARACTERISTICS				
High % of peers engaging in <i>[behavior]</i>	3.51	4.12	5.02	6.79
SCHOOL CHARACTERISTICS				
charter (public)	1.41	0.83	1.03	0.75
other type (public)	0.90	0.87	0.22	1.33
Top 50% 2010-11 API Scores	0.15	0.86	0.36	1.20

P value 0.05-0.10 0.01-0.05 <0.01