

Research Title:

On the heterogeneity of fiscal
inputs to elementary and
secondary school in America: A
cross-sector analysis

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Draft as of 10/16/2010

Alternative title:
If money doesn't matter, why do
some (those who can and want to) **choose to**
spend so much more than
others?

3 Recent Studies/Analyses

- Private school supply and costs (2009)
 - Private Schooling in the U.S.: Expenditures, Supply and Policy Implications
- Study of charter school finance in NYC (2010)
 - Philanthropy and Fiscal Disparities among New York City Charter Schools
- Study of patterns of disparity in public school revenues (2010)
 - Is school funding fair?

Study #1: Private School Spending

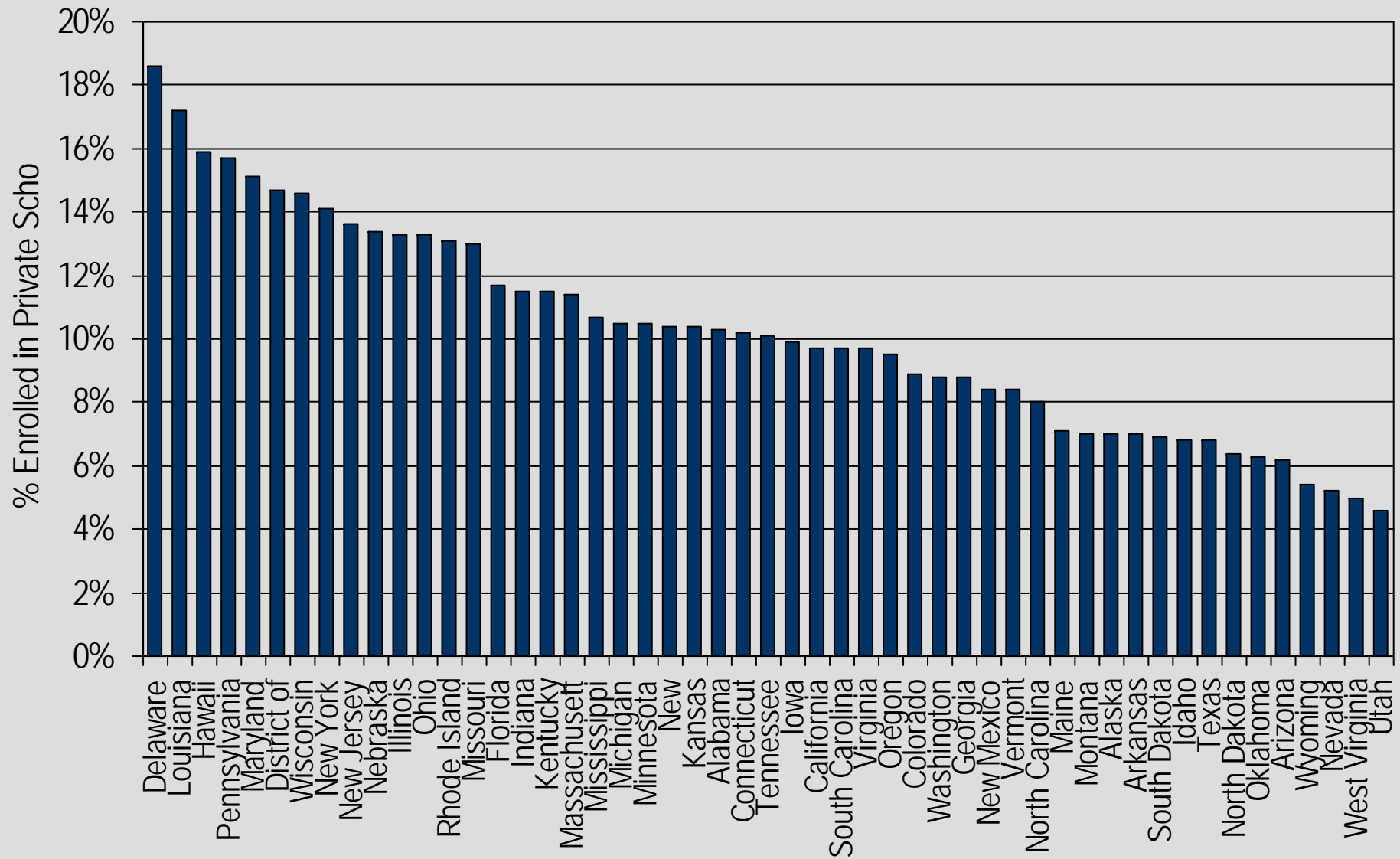
Summer 2009

Draft as of 10/16/2010

Overview

- Linked data from 1600 IRS 990 filings to NCES Private School Universe Survey
- Evaluated spending by affiliation
- Modeled spending variations
 - e.g. what factors most associated with variations?
- Explored resource allocation differences
 - Teacher salary variation
 - Class size variation

Private School Enrollment by State (ACS 2000 to 2007)

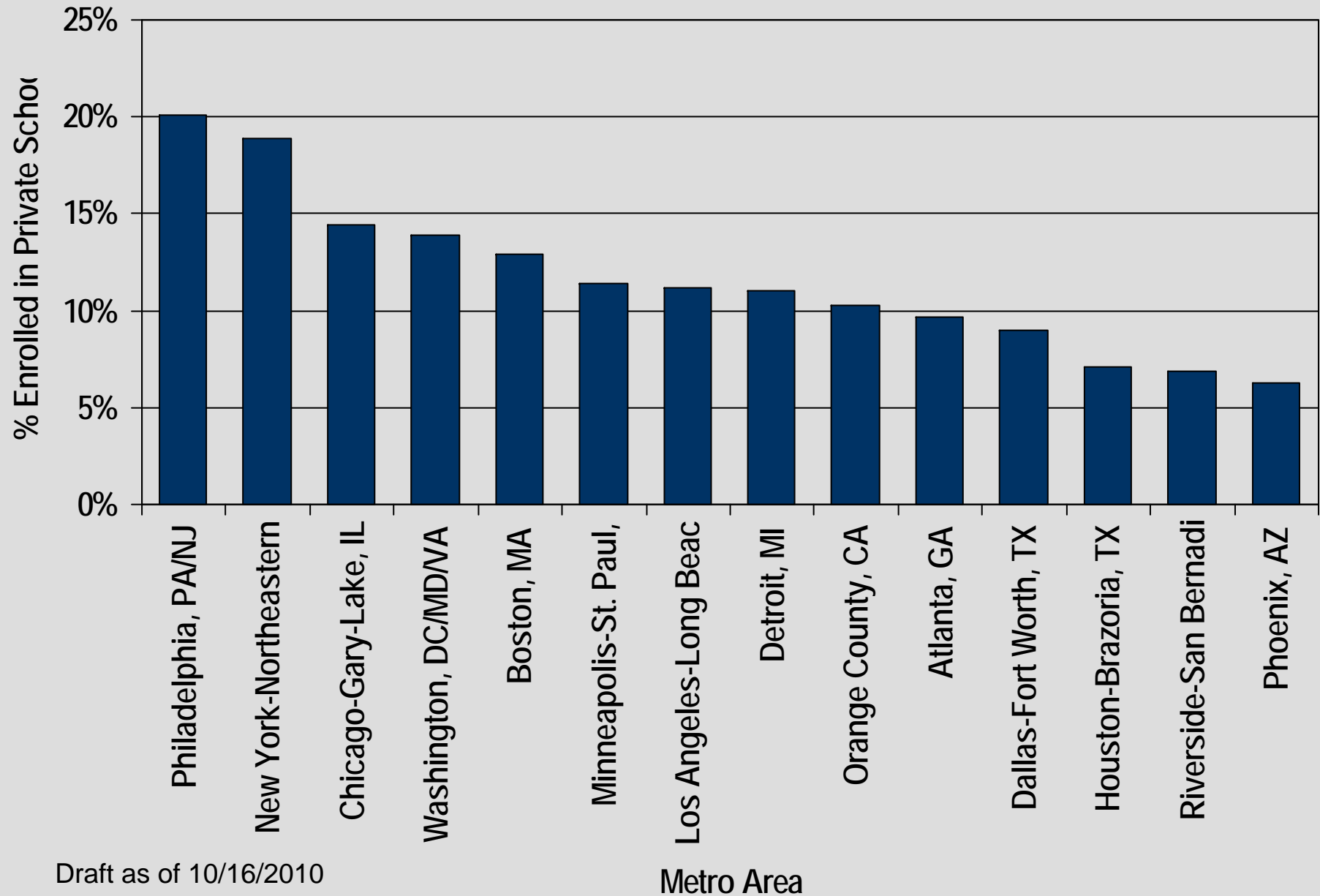


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Data Source: U.S. Census and American Community Survey Data from www.ipeds.org

Private School Enrollment by Metropolitan Area

Largest Metro Areas (ACS 2000 to 2007)



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Metro Area

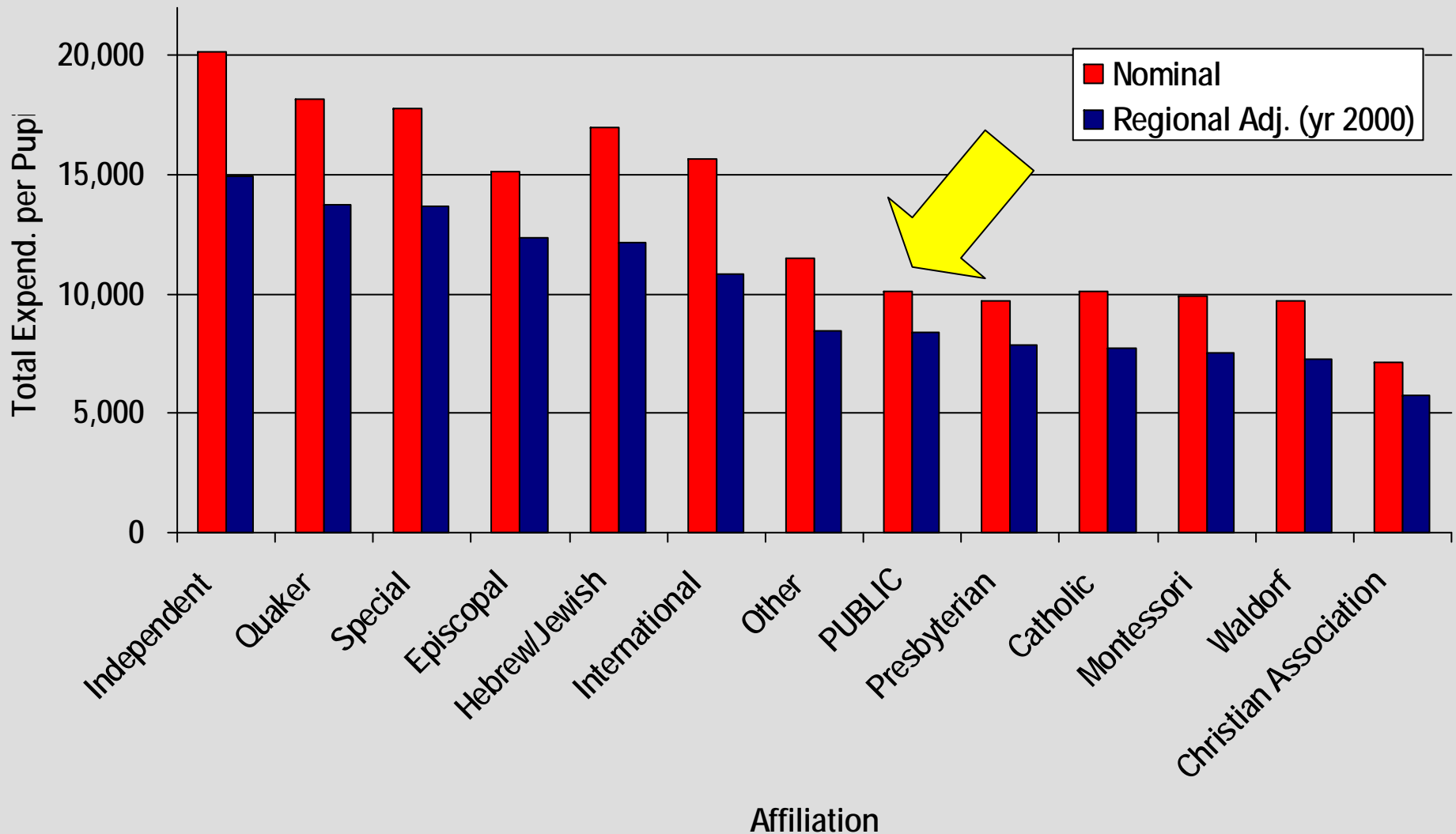
Data Source: U.S. Census and American Community Survey Data from www.ipums.org

Variations in Private School Resources

By Affiliation and Location

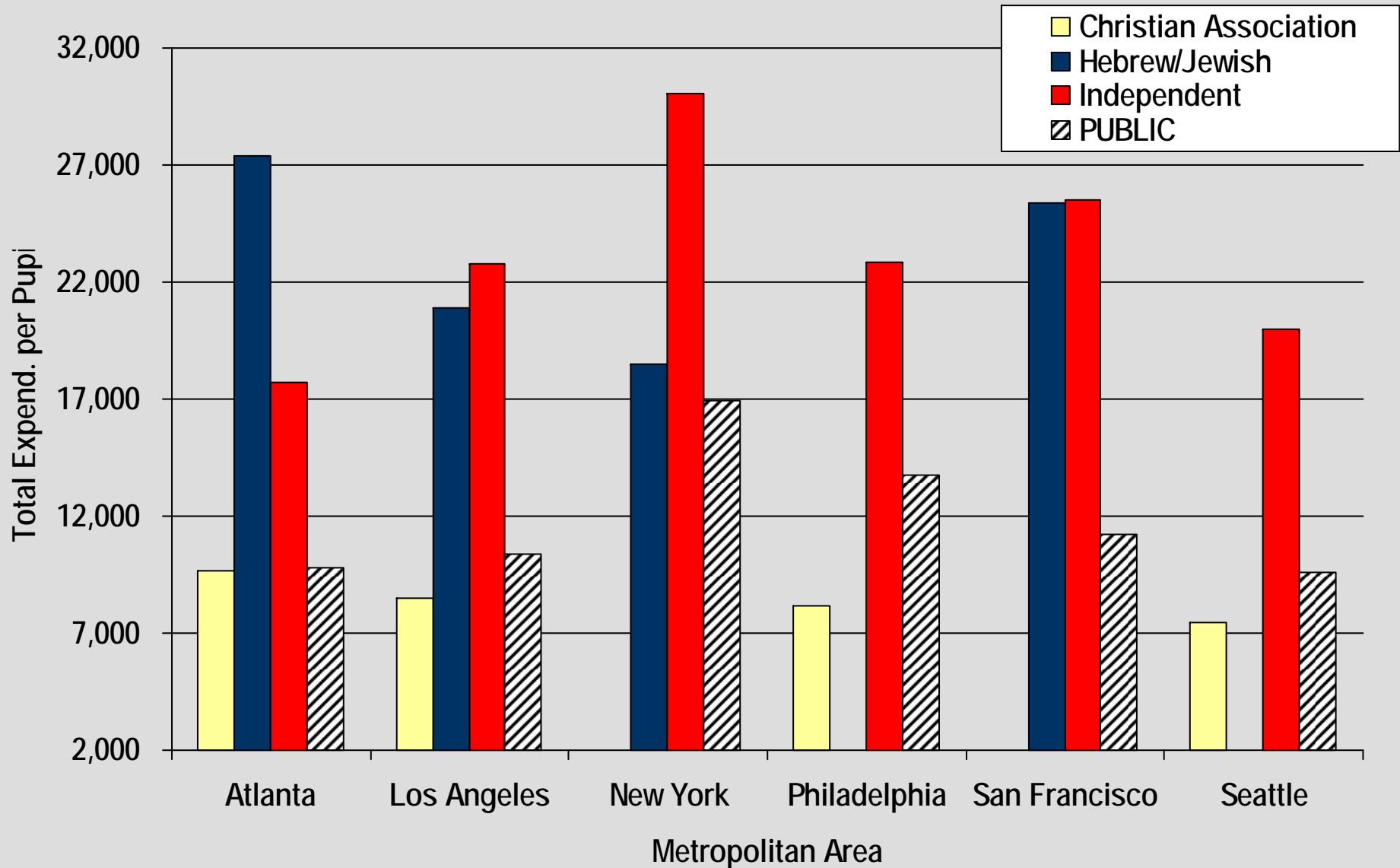
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Mean (enrollment weighted) nominal and regionally adjusted total expenditures per pupil



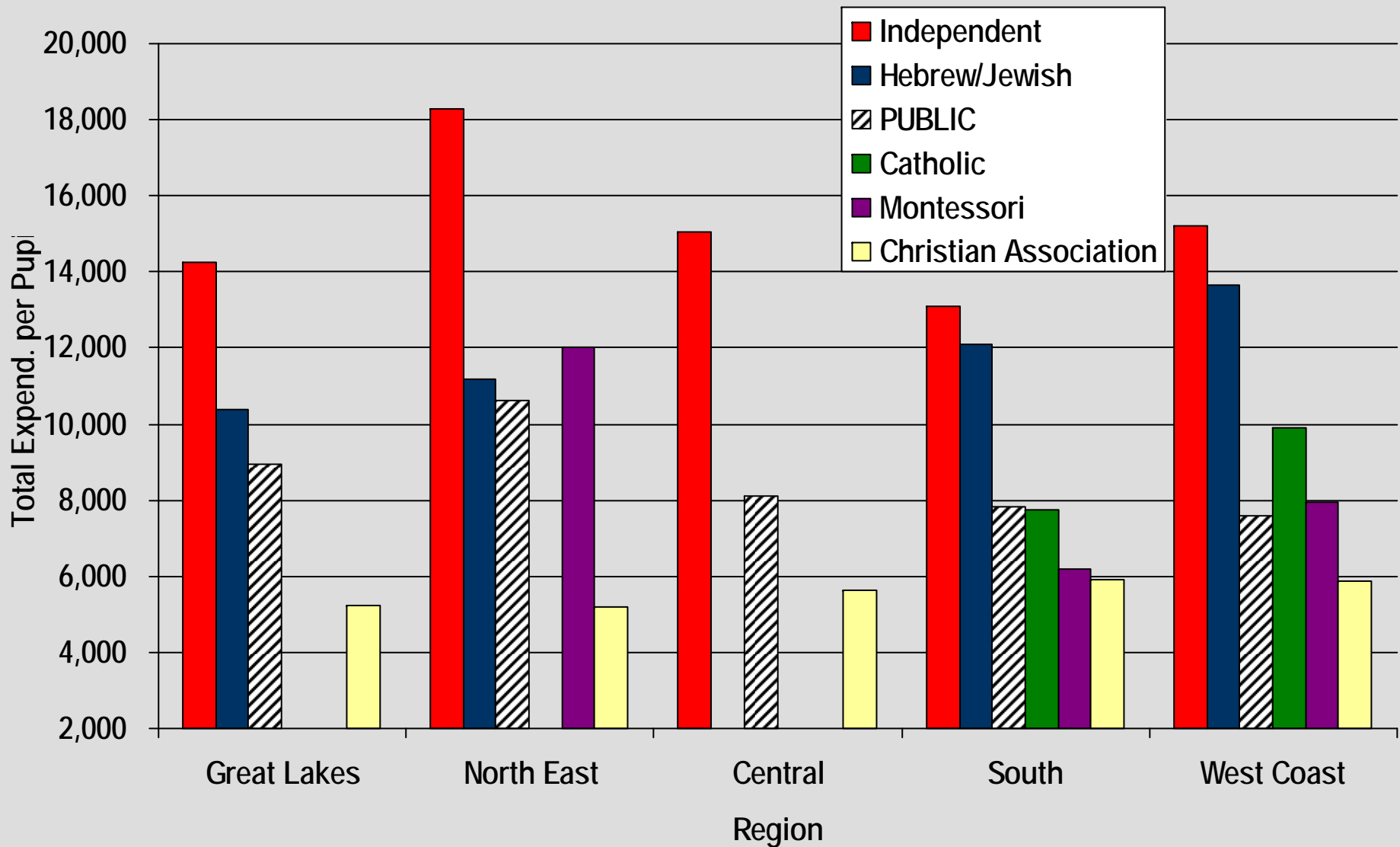
Data Source: Financial data on private schools from Guidestar (IRS 990). Enrollment data for private schools from NCES Private School University Survey and regional data by other sources (school web sites, NAIS, www.privateschoolreview.com). Public school financial data from NCES/US Census Fiscal Survey 2005-06. NCES Comparable Wage Adjustment used for public and private school regional cost adjustment and merged to private school data by labor market of private school zip code.

Mean (enrollment weighted) nominal total expenditures per pupil for major labor markets



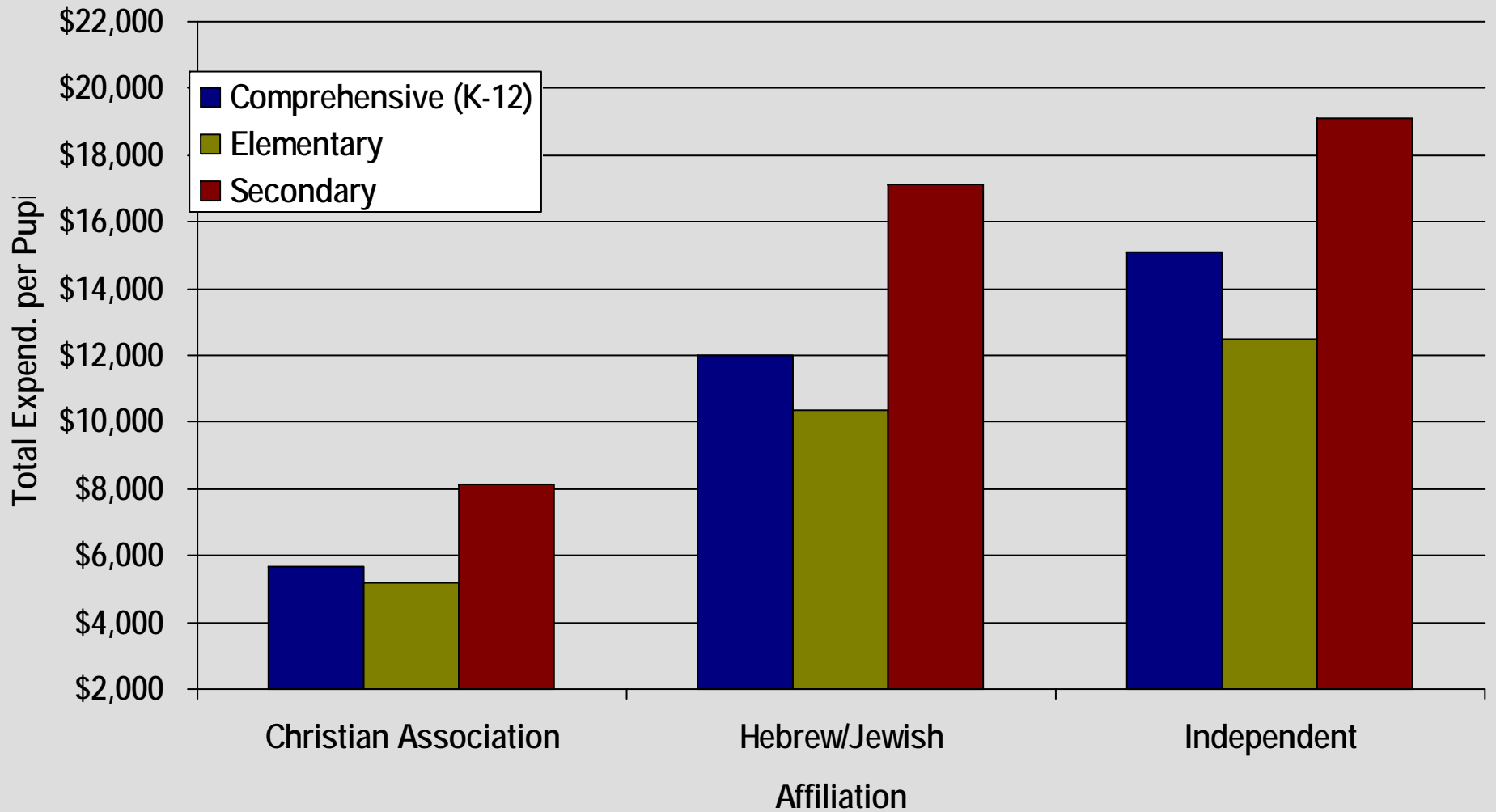
Data Source: Financial data on private schools from Guidestar (IRS 990). Enrollment data for private schools from NCES Private School University Survey and merged with other sources (school web sites, NAIS, www.privateschoolreview.com). Public school financial data from NCES/US Census Fiscal Survey 2005-06. NCES Comparable Wage Adjustment used for public and private school regional cost adjustment and merged to private school data by labor market of private school zip code.

Mean (enrollment weighted) regionally adjusted total expenditures per pupil by affiliation and region



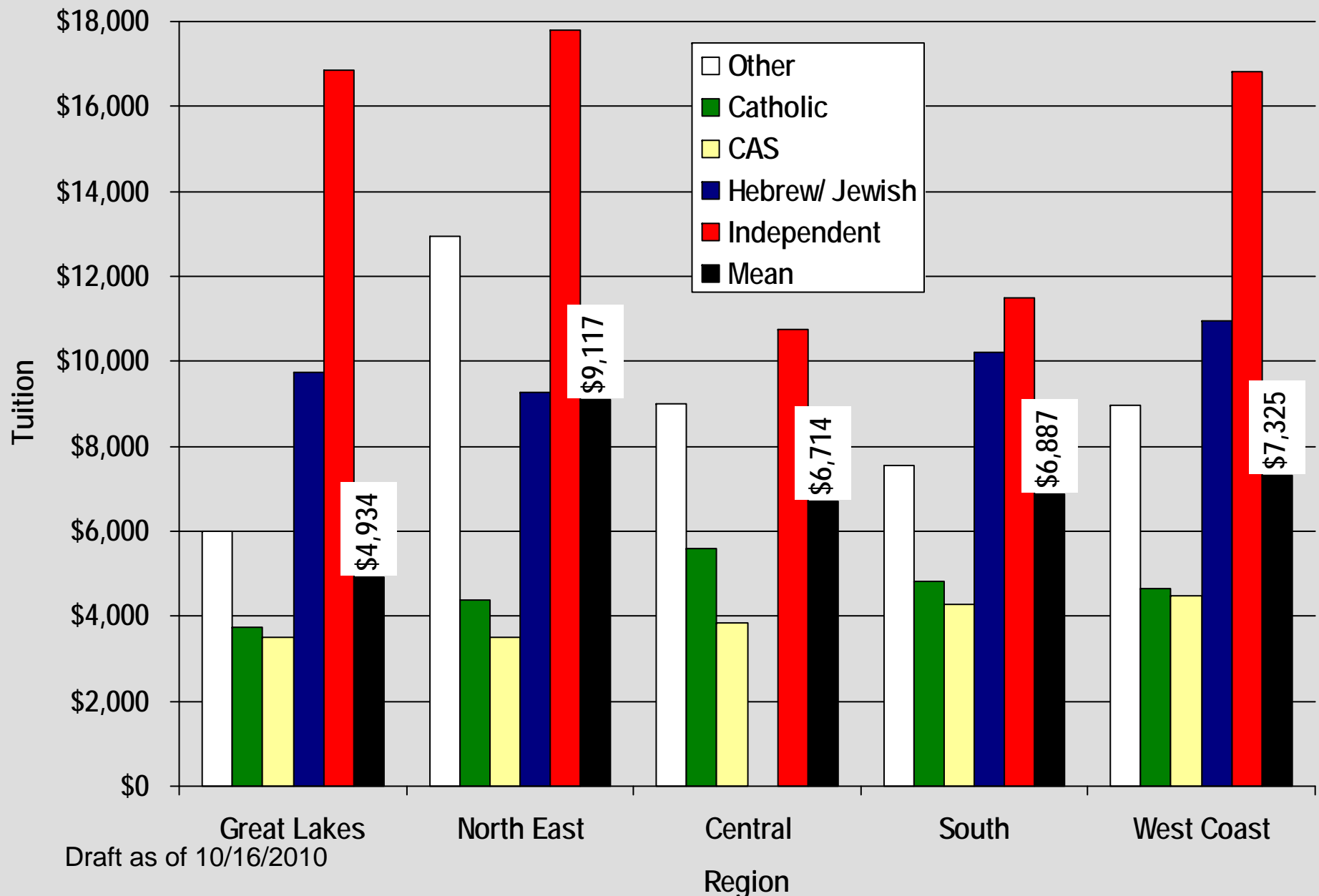
Data Source: Financial data on private schools from Guidestar (IRS 990). Enrollment data for private schools from NCES Private School University Survey and compiled by other sources (school web sites, NAIS, www.privateschoolreview.com). Public school financial data from NCES/US Census Fiscal Survey 2005-06 NCES Comparable Wage Adjustment used for public and private school regional cost adjustment and merged to private school data by labor market of private school zip code.

Mean (enrollment weighted) regionally adjusted total expenditures per pupil by affiliation and grade level



Data Source: Financial data on private schools from Guidestar (IRS 990). Enrollment and grade level data for private schools from NCES Private School Universe Survey and compiled by other sources (school web sites, NAIS, www.privateschoolreview.com). Public school financial data from NCES/US Census Fiscal Survey 2005-06. NCES Comparable Wage Adjustment used for public and private school regional cost adjustment and merged to private school data by labor market of private school zip code.

Tuition rate charged by private schools by affiliation and region (2003-04)



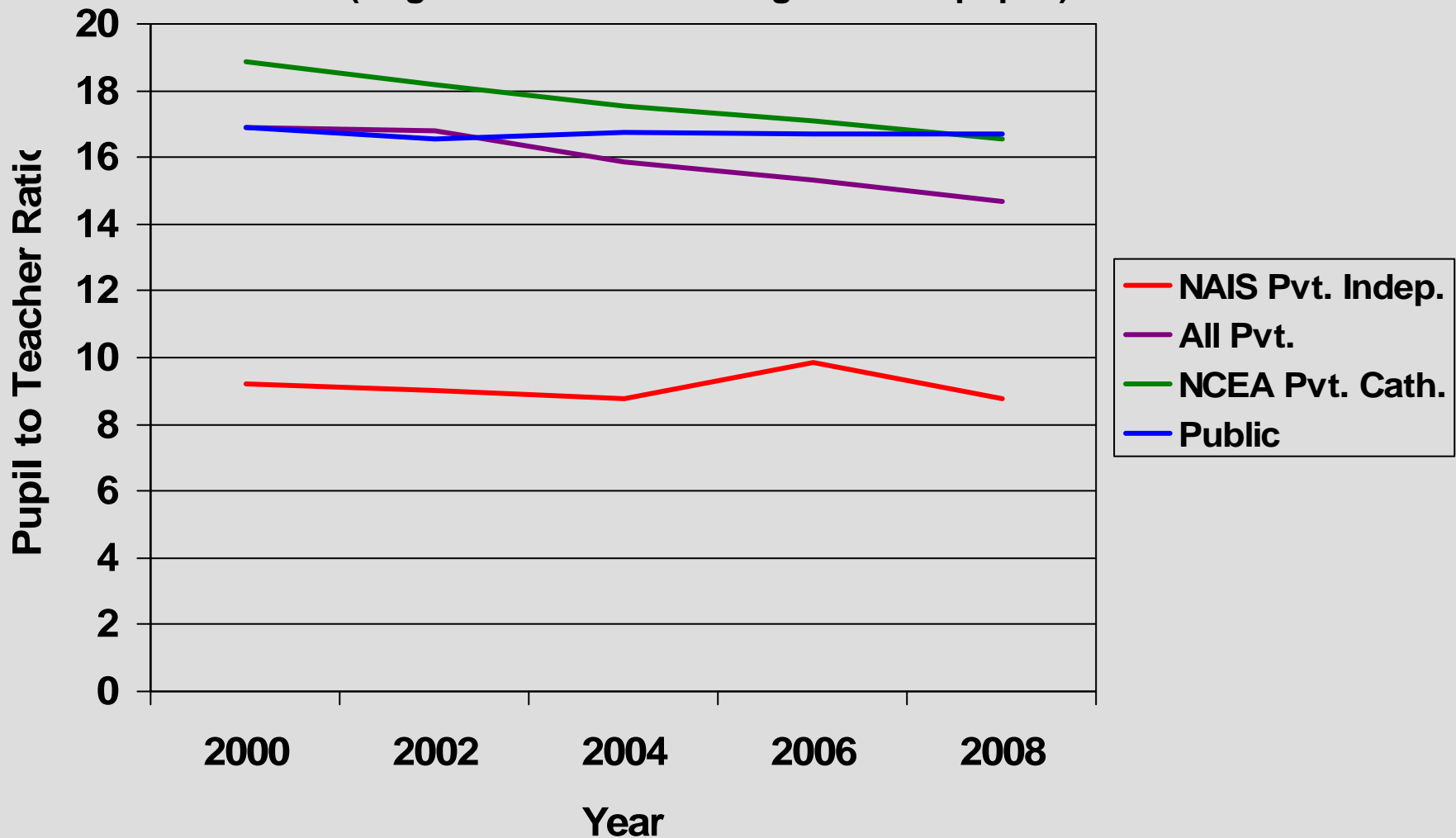
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Data Source: National Center for Education Statistics, Schools and Staffing Survey 2003-04

Resource Allocation

Draft as of 10/16/2010

Pupil to Teacher Ratios in Public and Private Independent (NAIS) and Catholic (NCEA) Schools (Regular schools enrolling over 300 pupils)



Data Sources: NCES Common Core of Data, <http://nces.ed.gov/ccd/bat/> (build a table tool, used for public school districts, NCES Private School Survey, data panel constructed from downloadable data at: <http://nces.ed.gov/surveys/pss/pssdata.asp>
 NAIS - National Association of Independent Schools, NCEA - National Catholic Education Association

Expenditures, Teachers and Student Outcomes in Public and Private Schools

Affiliation	Tuition ^[a] Nominal	Expend per Pupil ^[b] Nominal (CWI adjusted)	Teacher Salary Diff. ^[c] (rel. to public)	Pupil/Teacher All PSS ^[d] (990 Data)	% Teachers High/Most Selective Undergraduate Colleges ^[e]	Outcome Differential - NAEP Scale Score Relative to Public Schools (Lubienski & Lubienski, 2006) 4 th /8 th
Independent	\$14,910	\$20,131 (\$14,940)	-\$2,914	9.87 (9.02)	34.36%	na
Hebrew	\$9,622	\$17,008 (\$12,149)	-\$9,162	10.14 (8.52)	24.14%	na
Public	NA	\$10,140 (\$8,402)	Comparison Group	16.83	8.17%	Comparison Group
Catholic	\$4,363	\$10,135 (\$7,743)	-\$14,400	16.59 (13.52)	8.53%	-7.2/-3.8
Christian Association Schools (CAS)	\$4,016	\$7,118 (\$5,727)	-\$14,652	13.53 (13.30)	3.42%	-11.9/-10.6

[a] Average highest tuition charged by private schools in states included in this study, not adjusted for regional cost variation, based on Schools and Staffing Survey (variable = TUITIN) of 2003-04

[b] Public expenditures based on Census Fiscal Survey 2005-06, weighted for student enrollment and including public school districts in states included in the present study. Nominal expenditures (not regionally adjusted) expressed outside of parentheses, and adjusted expenditures reported inside parentheses. Private school expenditures based on IRS 990 data set described in this report.

[c] Relative teacher salary based on wage regression of public and private school teachers in the NCES Schools and Staffing Survey of 2003-04, as explained in the attached report. Dollar values represent the amount over/under public school teacher salaries at same degree, experience and location.

[d] Based on pupil-to-teacher ratios for public school districts in states included in this study, where public school pupil-to-teacher ratios are generated by dividing total teachers reported in the NCES Core of Data 2006-07 by total enrollments and where private school pupil-to-teacher ratios are drawn from the NCES Private School Survey variable indicating pupil-to-teacher ratio.

Public and private ratios may not be directly comparable, but private school ratios are comparable across affiliations.

[e] Based on competitiveness ratings from Barron's Guide to the Most Competitive Colleges, applied to undergraduate institutions attended by teachers in the 2003-04 NCES Schools and staffing survey.

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Primary factors in resource level differences?

- Religious affiliation
- Region
- Grade Level
- We know little about student population differences

Resource allocation

- Systematically (and substantially) smaller class size (even when excluding small schools)
- To some extent, salary differences
- Associated with teacher undergraduate background

Study #2: Resource heterogeneity across NYC Charter Schools

Fall 2010

Draft as of 10/16/2010

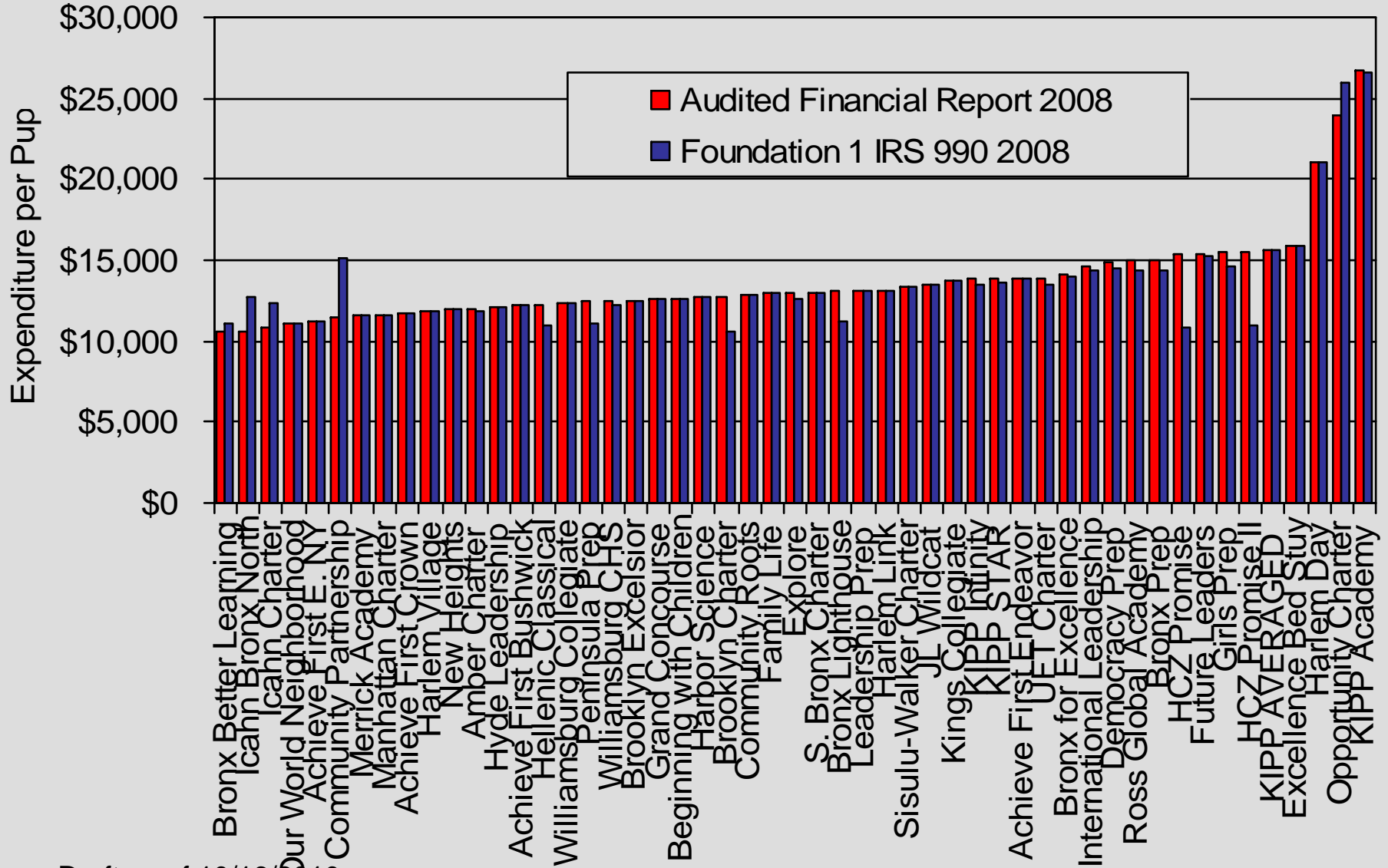
Overview

- Reviewed financial data on 60 NYC charter schools from 2006-08
 - Annual financial reports
 - School site IRS 990
 - CMO IRS 990 (multi-level)
- Linked with State Report Card Data & NCES Common Core
 - Evaluated factors associated with spending variation
 - Evaluated “resource allocation” measures

Resource Variation across NYC Charters

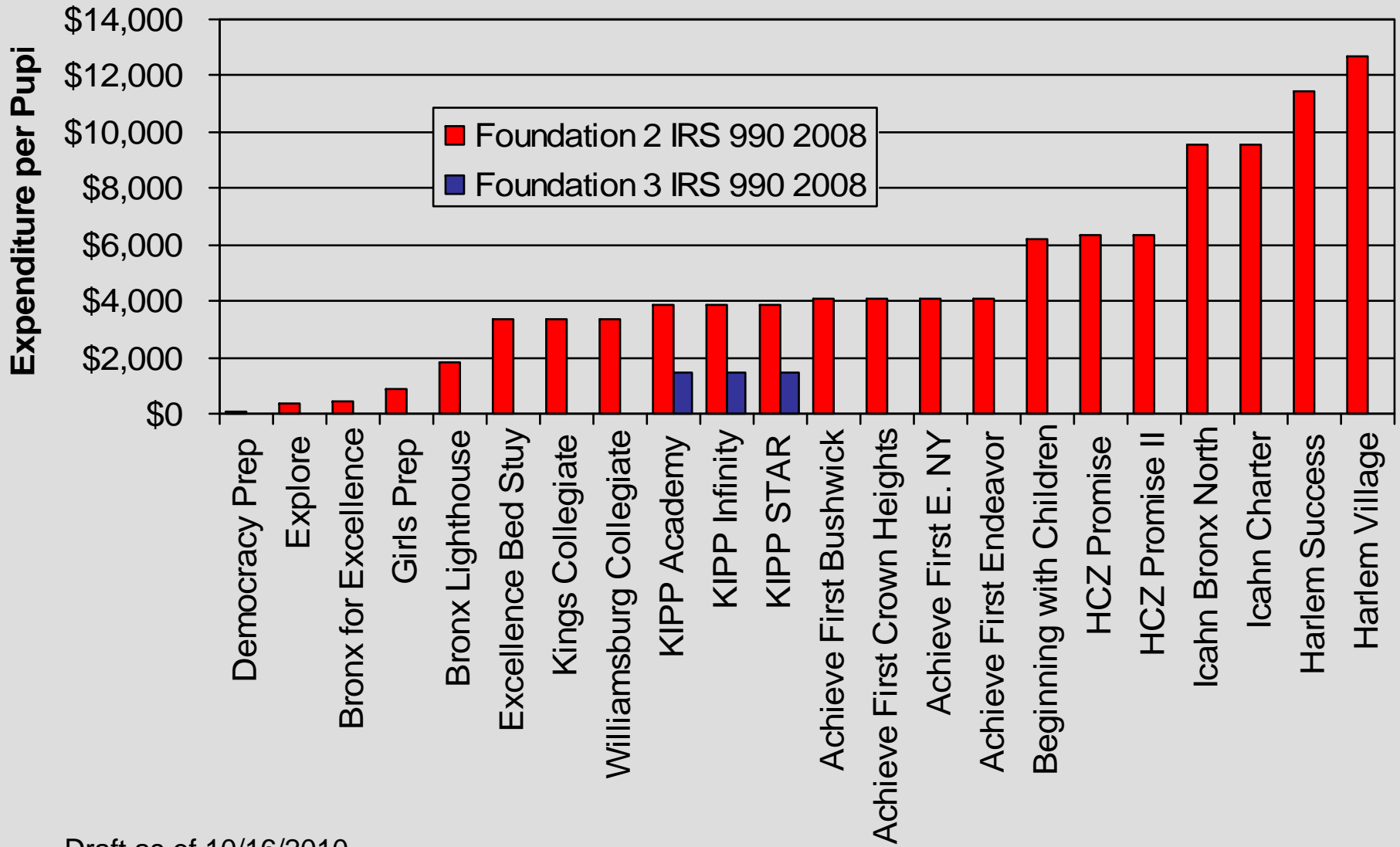
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Charter School per Pupil Spending in NYC 2008



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Charter School CMO Level per Pupil Spending 2008



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Dobbie and Fryer (2009)

- The New York Department of Education provided every charter school, including the Promise Academy, \$12,443 per pupil in 2008-2009. HCZ estimates that they added an additional \$4,657 per-pupil for in-school costs and approximately \$2,172 per pupil for after-school and “wrap-around” programs. This implies that HCZ spends \$19,272 per pupil.
- (this is a low estimate!)

Potentially Conflicting Choice & Equity Objectives in NYC

Draft as of 10/16/2010

Stated principles of NY FSF

- *All children should receive the same base funding levels, and children who cost more to educate should receive additional funding.*
- *Funding formulas should encourage schools to succeed in educating all children.*
- *Funding decisions should balance the goals of equity and stability.*

Estimation of Fair Funding for the Typical Charter and Typical Public Elementary School in NYC

	Typical Charter in NYC	Typical Public Elementary	Appropriate Gap
Enrollment	300	300	
%FREE Lunch	57%	68%	
%LEP	3%	17%	
#Free Lunch	171.0	204.0	
#LEP	9.3	52.2	
WPU [1]	480.3	556.2	
Foundation	\$10,000	\$10,000	
Estimated Need per Pupil	\$16,011	\$18,540	\$2,529

[1] **Weighted Pupil Units** applying a 100% additional weight for each ELL or Free Lunch child, similar to but slightly lower than weights estimated to NY State data by Duncombe and Yinger (2005)

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Fair Student Funding and Relevant Per Pupil Building Level Costs in Traditional Public NYC Schools (Harlem/East Harlem)

Traditional Public School	Total Budget Per Capita under FSF 0708 [1]	Per Student Site Expenditure (2007-08) [2]	Grade Levels	% Free Lunch (SRC 08) [3]	% ELL/LEP (SRC 08) [3]	Nearby
PS 007 SAMUEL STERN	\$9,002	\$12,476	pk-8	86	19	Harlem Day
PS 076 A. PHILIP RANDOLPH	\$9,048	\$14,123	k-7	81	12	Link/Leaders
PS 180 HUGO NEWMAN	\$9,199	\$13,263	k-8	82	10	Link/Leaders

[1] FY08BudgetFSFData_FINAL.xls

[2] See appendix C for detail

[3] NYSED School Report Cards 2008

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Per Pupil Spending of Nearby Charter Schools (Harlem/East Harlem)

Charter School	Total	Less Occupancy/ Facilities[1]	Less Management [2]	% Free Lunch (SRC 08)[3]	% ELL/LEP (SRC 08) [3]
Harlem Day	21,090	19,632	17,632	62	0
Harlem Link	13,171	13,105	11,105	70	1
Leadership Village	10,383	10,383	8,383	52	1

[1] based on actual AFR2008 occupancy costs per pupil

[2] based on a \$2,000 per pupil management cost, which is similar to that reported by Gittleson,¹ and is slightly lower than all central office and regional expenditures per pupil for traditional public schools (sum of budget areas II, III and IV divided by enrollment in Appendix C).

[3] NYSED School Report Cards 2008

¹ for management fee data, see: <http://www.box.net/shared/static/ylujon73uu.xls>

Are Charter Spending Disparities “Explainable?”

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Regression Models of Per Pupil School-site Spending as a Function of Cost and Need Factors

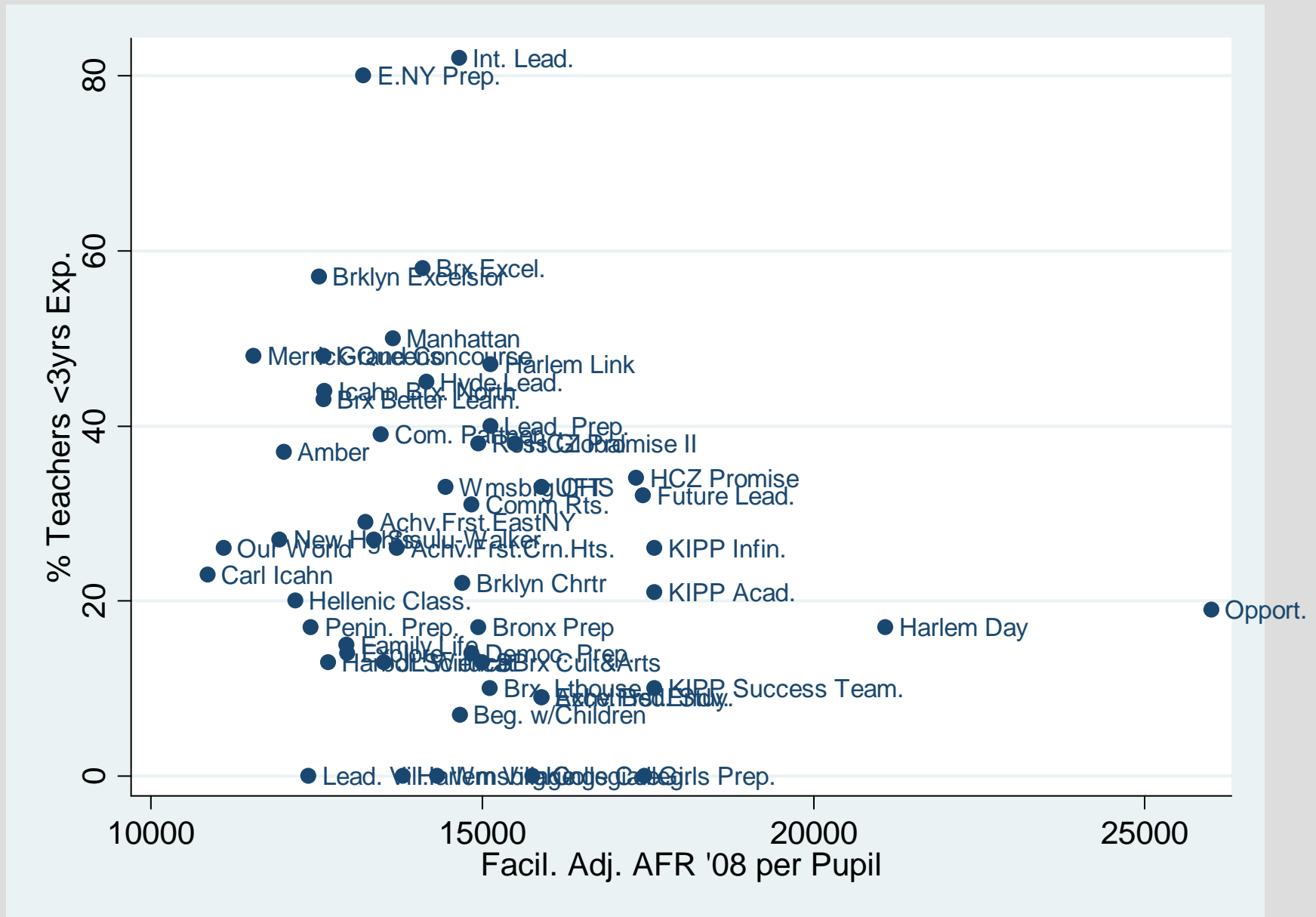
		DV = Natural Log of Adj. Spending per Pupil			DV = Natural Log of AFR Reported Spending per Pupil 2008		
		Coef.	Std. Err.		Coef.	Std. Err.	
Student Needs							
	% Free Lunch	0.000	0.002		0.000	0.002	
	% LEP	-0.001	0.005		-0.002	0.005	
Economies of Scale							
	Ln of Enrollment	-2.808	0.445	*	-2.849	0.490	*
	Ln of Enrollment Squared	0.240	0.043	*	0.243	0.047	*
Grade Range							
	Elementary School						
	Middle School	0.117	0.095		0.216	0.105	
	Elem/Middle School	0.024	0.083		0.026	0.091	
	High School	0.056	0.126		0.051	0.139	
	Middle/High	0.288	0.130	*	0.286	0.143	
BOE Facility							
	Constant	17.646	1.134		17.804	1.251	
R-squared			0.662			0.631	
Adj. R-squared			0.600			0.552	

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p. 35

Allocation of Resources in NYC Charters

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School Level Expenditures per Pupil and Novice Teachers 2008



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 Data source: NYSED School Report Cards 2008 & Charter Finance Database
 (compiled by authors)

Drivers of Resource Differences

- School Size
- Access to Philanthropy
- Not a factor...
 - Differences in student needs!

Use of resources

- Nothing particularly systematic!
- Some evidence of fewer novice teachers in higher spending schools

Study #3: Public School Resources

Ongoing – Multiple Studies

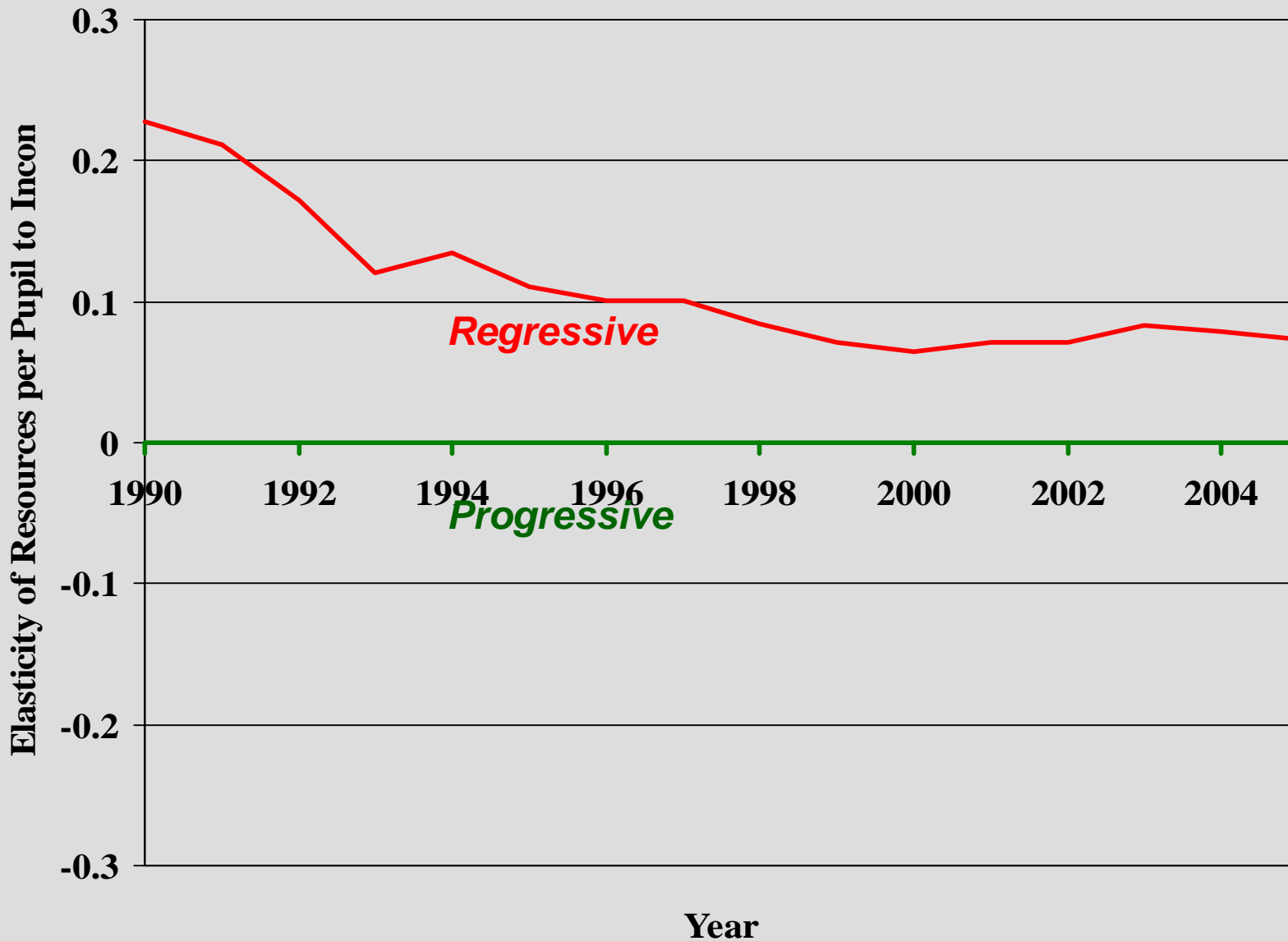
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Overview

- Premature Celebrations (2009)
 - Challenging the presumption that “within district” disparities are the primary remaining challenge of school funding equity
 - Using national longitudinal data to model income and poverty related disparities
- Is school funding fair? (2010)
 - Using national longitudinal data to model income and poverty related disparities

National Progress in Reducing Income-Revenue Relationship

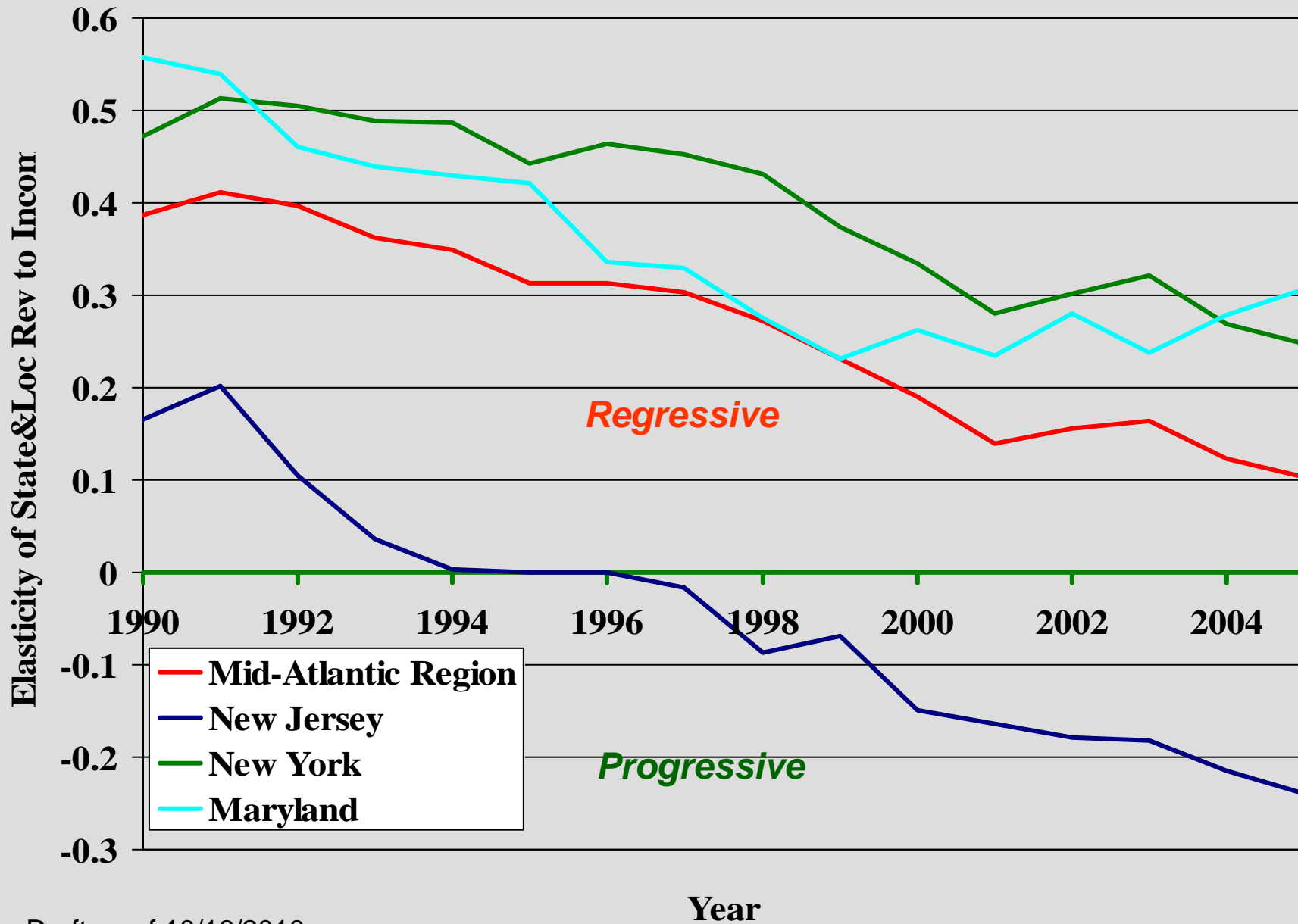
Unfinished business!



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Source: Based on regression ($\ln \text{State\&Local} = f(\text{CWI}, \text{Year}, \text{MedHouseInc}, \text{MedHouseInc} \times \text{Year}, \text{Scale}, \text{State})$) of federal data on 10,189 observations per year, matched over time.

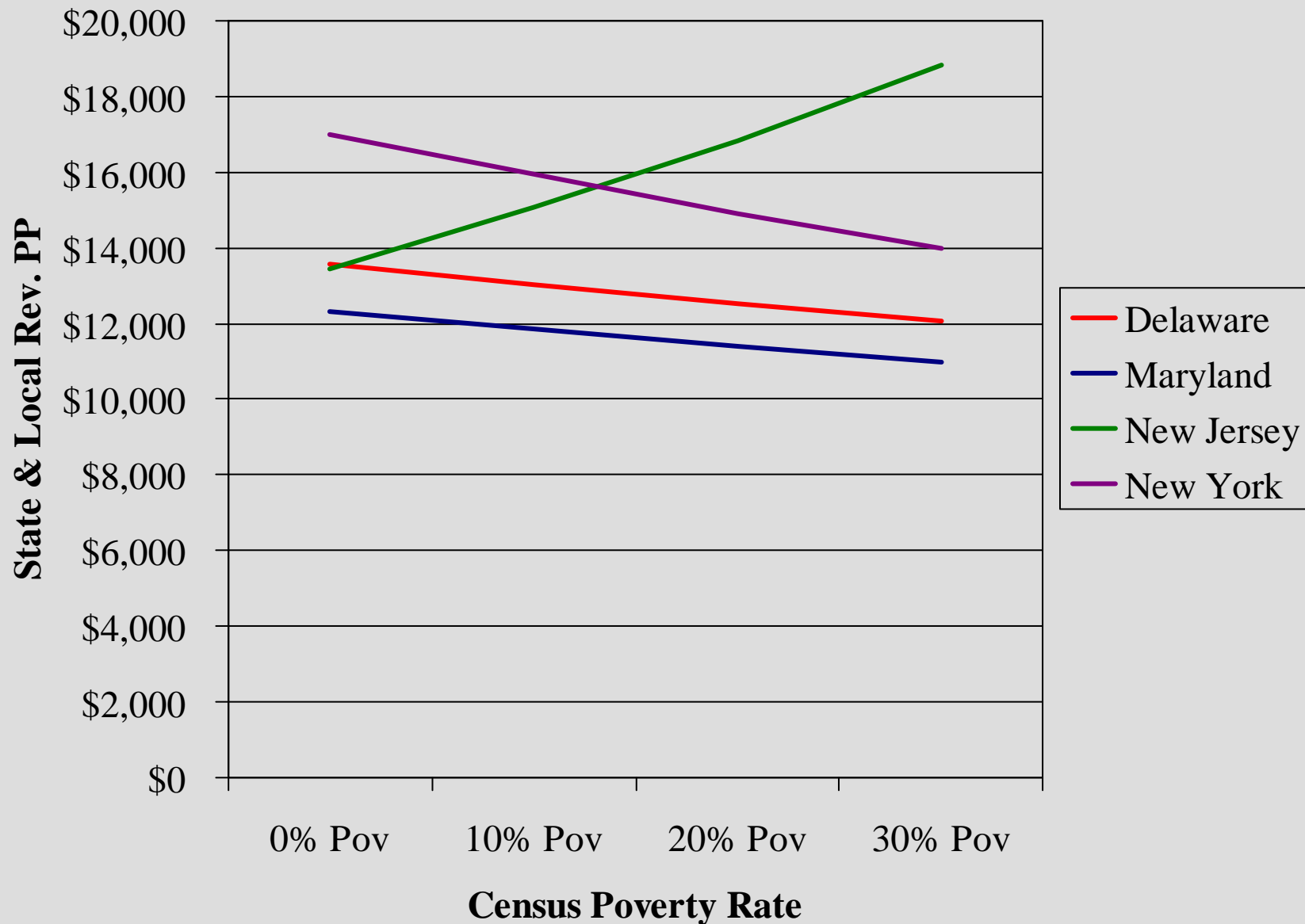
Regional Variation - Mid-Atlantic



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Source: Based on regression $(\ln \text{State\&Local} = f(\text{CWI}, \text{Year}, \text{MedHouseInc}, \text{MedHouseInc} \times \text{Year}, \text{Scale}, \text{State}))$ of federal data on 10,189 observations per year, matched over time.

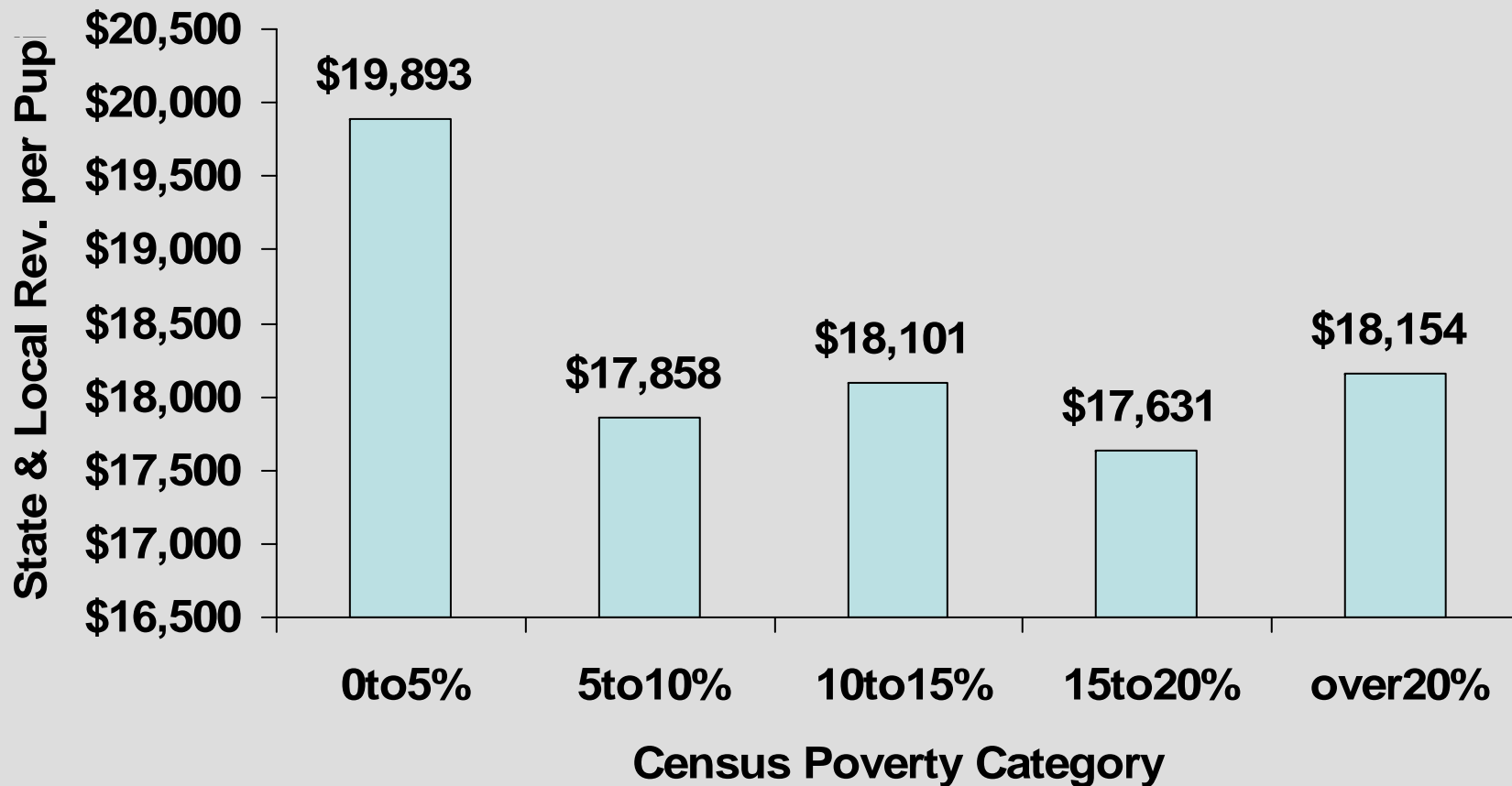
Most recent 3 years



Draft as of 10/16/2010

Source: Based on regression of over 13,000 observations per year for 2004-05, 2005-06 and 2006-07 with state and local revenue per pupil as dependent variable, and CWI, Scale, Density, Year, Census Poverty Rate and State as independent variables.

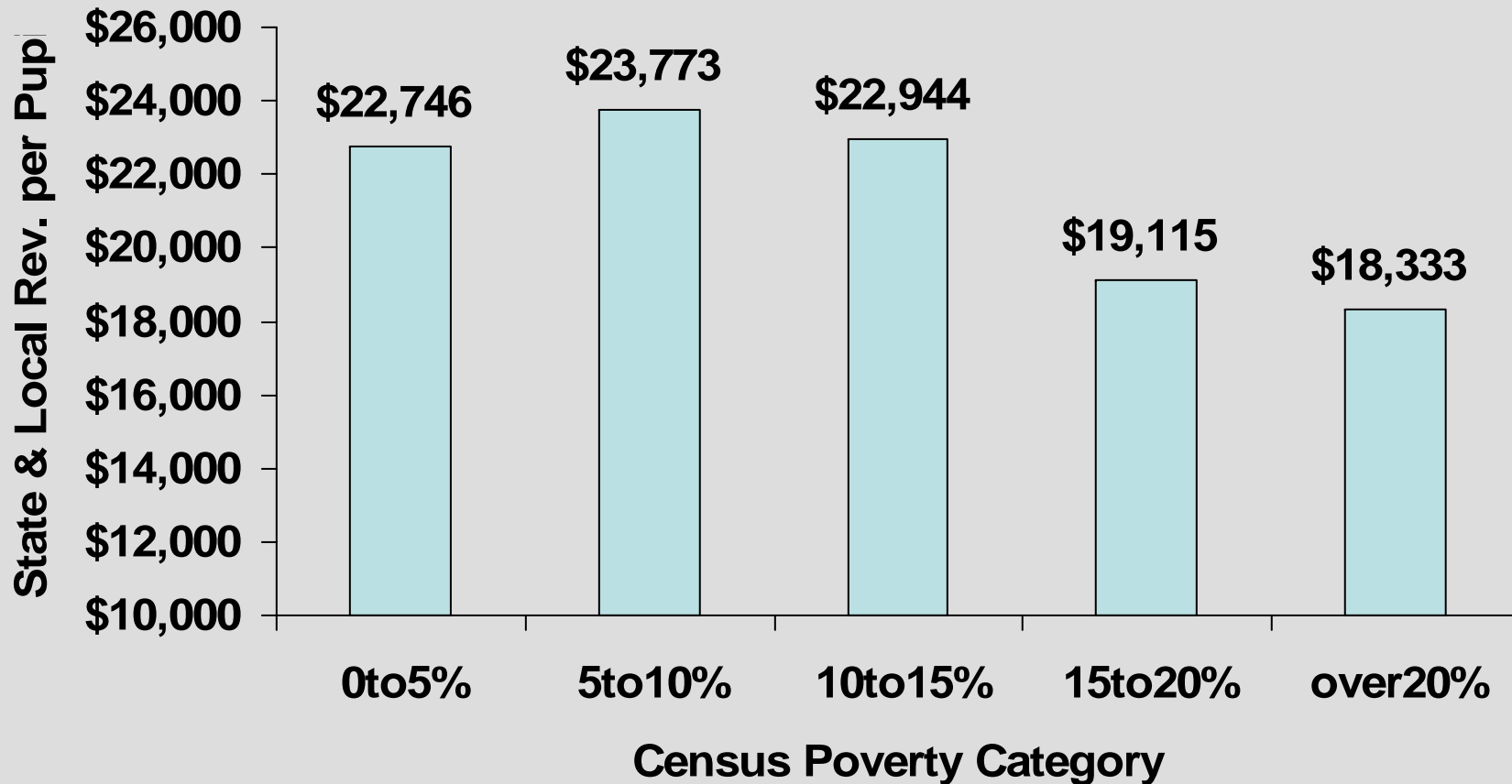
New York State Disparities in Nominal* State and Local Revenues per Pupil Statewide Disparities by Poverty 2007-08



*Includes NO ADJUSTMENTS FOR STUDENT NEEDS OR REGIONAL COSTS

Draft as of 10/16/2010
Data Source: U.S. Census Small Area Income and Poverty Estimates (2008) & U.S. Census Fiscal Survey of Local Governments, Public Elementary and Secondary Finances.

New York State Disparities in Nominal* State and Local Revenues per Pupil NYC Labor Market Disparities by Poverty 2007-08

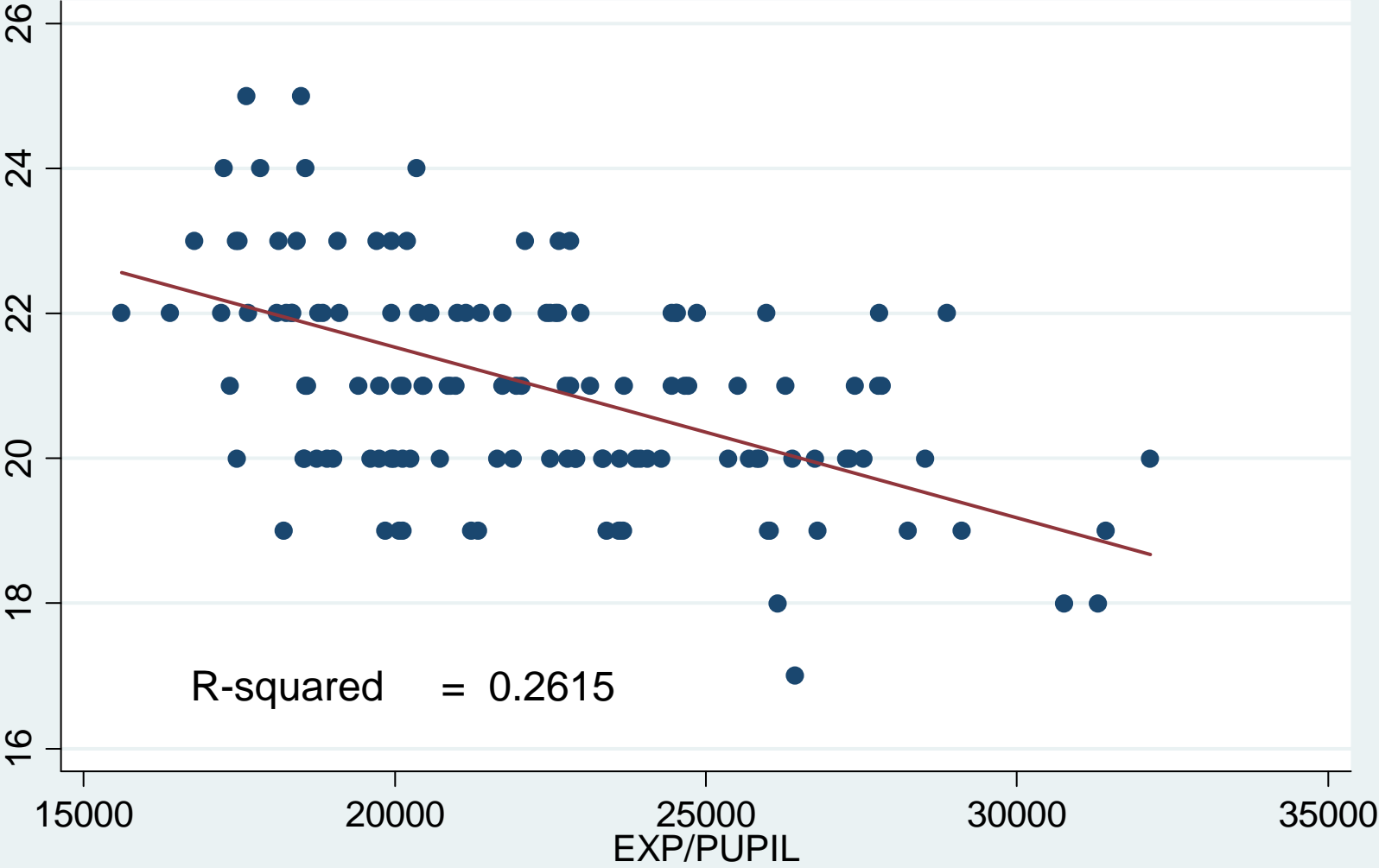


*Includes NO ADJUSTMENTS FOR STUDENT NEEDS OR REGIONAL COSTS

Labor market based on NCES Education Comparable Wage Index: New York-Wayne-White Plains, NY-NJ (analysis includes only NY State Districts)

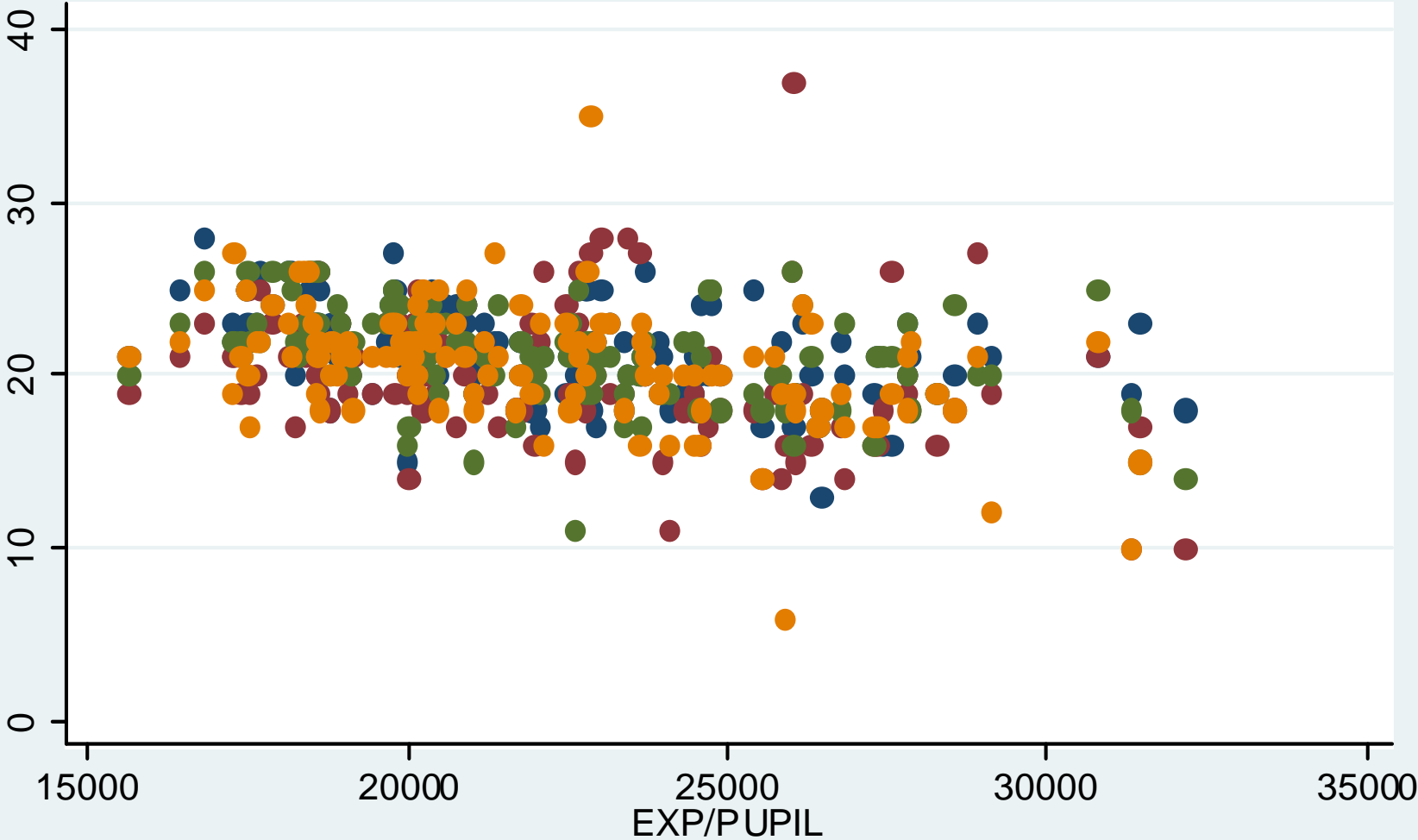
Data Source: U.S. Census Small Area Income and Poverty Estimates (2008) & U.S. Census Fiscal Survey of Local Governments, Public Elementary and Secondary Finances.

Spending and Elementary Class Size District Level - NYC Metro (excluding NYC)



● COMMON_BRANCH — Fitted values

Spending and Secondary Class Size District Level - NYC Metro (excluding NYC)



Pondering the Intersections of all 3 studies

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General Policy Concerns

- Improving equity both across and within districts
- Understanding the “cost” of education with respect to the quality of education demanded (by whom?)
- Ensuring revenue stability

Charter conundrum

- There is simultaneous pressure to
 - a) increase between school, need-based equity within large districts
 - b) increase the number of charter schools and diversify the types of charter schools
- Yet...
 - The unevenness of charter philanthropy creates new, largely unmeasured and largely **LARGE**, disparities

Charter conundrum cont'd

- For decades, there was much concern that property-tax based financing of public schooling led to a system of haves and have-nots.
- But, with the '01-'02 and more recent (ongoing), more severe downturn, some states (and local districts) have noticed one virtue of property tax revenues – *their relative stability* (inelasticity)
 - That is, property tax revenues are inequitable but stable!
- **PHILANTHROPY IS BOTH INEQUITABLE AND POTENTIALLY HIGHLY UNSTABLE!**

Private Schools & Demand

Disconnect with public school “market-oriented” reform rhetoric

- Private school truthiness:
 - That private schools invariably spend less than public schools, yet perform better
 - Reality – private schools vary widely!
 - Range from bargain (price point) markets to “luxury” markets
 - Private independent schools far outspend (196%) traditional public schools in same market
- Preferred attributes of “luxury” schooling
 - **Small class size**
 - Teachers who attended selective private colleges*

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Trends...

- The share of children in private schools has remained relatively constant
 - Catholic schools are declining, and conservative Christian schools increasing
 - Resources vary widely across these children
- The share of children in charter schools continues to grow
 - Resources vary widely across these children
 - Charter management organizations have been unable to wean themselves off of philanthropy
 - More charters going to the same philanthropy trough
 - Philanthropy could be de-stabilized?