INSTITUTE FOR
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The Multiple Dimensions of Student Mobility: Evidence from NYC

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Preview the Findings

- Considerable mobility:
  - Between schools
  - Between and within school years
  - Into and out of the school district.
- Significant differences between demographic groups
  - Poor vs. non-poor
  - Whites and Asians vs. blacks and Hispanics
  - Little difference between foreign and native born.
- Mobility negatively affects student performance:
  - Poor, blacks and Hispanics most affected
  - Little impact on non-poor and whites.
- Differences may reflect differences in the kinds of schools to which students move.

Many Ways to Define Mobility

- Annual vs. Cumulative.
- Inter-year vs. Intra-year.
- Between schools within a single district vs. between districts.
- Voluntary vs. Mandatory.

New York City

- Largest School District in the Country
  - 1.1 million plus students
  - 1400 plus schools.
- Diverse student body
  - More than a third black; a third Hispanic; significant shares of whites and Asians
  - Mostly poor (free or red. price lunch eligible.)
  - Many immigrants.
- Diverse schools
  - from very small (100-200) to large (4000+).
  - some entirely poor, some have few poor students
  - some entirely black or hispanic; some largely white or Asian
  - Nationally recognized excellent schools and failing, ineffective schools.

IESP Data Set

- Longitudinal data on millions of students who have attended NYC public schools
  - Student data: socio-demographic, educational
  - All grades
  - 1995-96 through 2007-2008.

- Data on schools (spending, programs), teachers, housing, neighborhoods, property values.

- Grades 1-8 all years; high school a little later

- Follow students to college.

Student Mobility Between Years; Race & Ethnicity 00-01

% of students who moved between:	All	White	Black	Hispanic	Asian
1-2	10.4 (71414)	7.1 (10786)	12.1 (23550)	10.9 (28250)	8.4 (8358)
2-3	11.4 (70913)	6.9 (11030)	13.8 (23922)	12.1 (27393)	7.9 (8248)
3-4	9.5 (71590)	5.9 (10989)	11.5 (24413)	10.0 (27724)	7.4 (8187)
4-5	12.4 (68779)	6.8 (11145)	13.0 (23309)	15.7 (25827)	7.9 (8263)

- On average, 10% of students attending 1st and 2nd grade in NYC attended different schools in the two grades.
- Blacks had the highest rate of change (12%); whites the lowest (7%).

Student Mobility Between Years; Poverty Status & Nativity 00-01

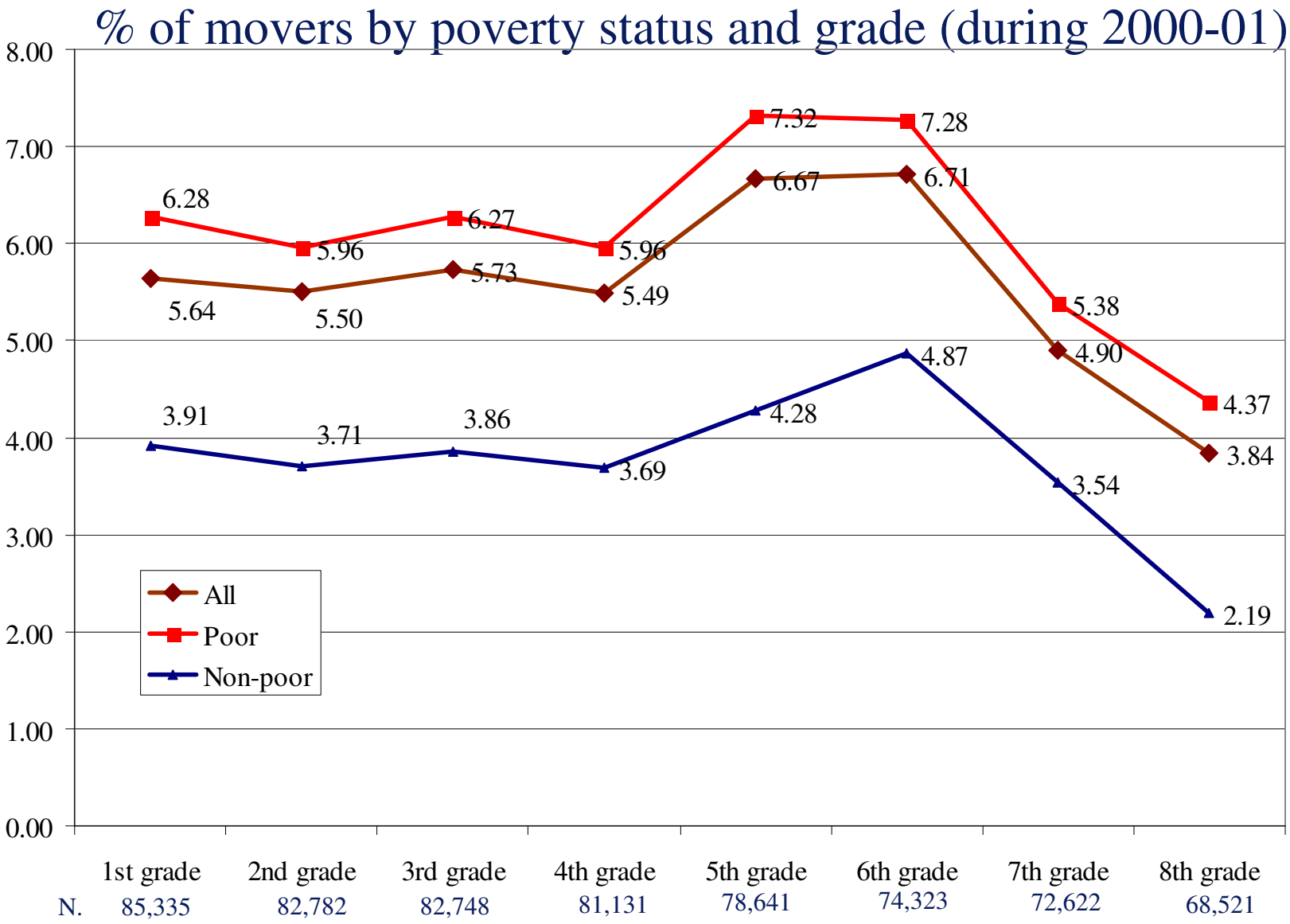
% of students who moved between:	All	Poor	Non-Poor	Foreign Born	Native Born
1-2	10.4 (71414)	11.0 (52385)	7.5 (14182)	11.1 (6585)	10.3 (64829)
2-3	11.4 (70913)	12.2 (53274)	8.5 (14583)	11.2 (7564)	11.4 (63349)
3-4	9.5 (71590)	10.4 (54350)	6.7 (14901)	9.6 (9175)	9.5 (62415)
4-5	12.4 (68779)	13.5 (51492)	8.9 (14913)	12.7 (10119)	12.3 (58660)

- There are also significant differences between poor and non-poor – 11% vs. 7.5%.
- Little difference between foreign born and native born.

Not all moves are made between school years

- Many students move within the school year.
- For example, 56% of all 1st graders attended more than one school in the 1st grade.
- Again, racial differences are important, while there is little difference between foreign born and native born students.

Intra-Year Mobility by Grade



Mobility During the Academic Year; Race & Ethnicity 00-01

% of students who moved during grade:	All	White	Black	Hispanic	Asian
1	5.6	3.5	7.7	5.8	3.7
2	5.5	2.9	7.1	5.6	3.7
3	5.7	2.9	7.4	6.0	3.2
4	5.5	3.1	6.7	5.9	3.6
5	6.7	3.9	7.9	7.7	3.6

Mobility During the Academic Year; Poverty Status & Nativity 00-01

% of students who moved during grade:	All Students	Poor	Non-Poor	Foreign Born	Native Born
1	5.6	6.3	3.9	5.9	5.6
2	5.5	6.0	3.7	6.0	5.4
3	5.7	6.3	4.0	5.8	5.7
4	5.5	6.0	3.7	5.4	5.5
5	6.7	7.3	4.3	6.5	6.7

Distribution of Cumulative Mobility; Grades 1-3, by Race, Poverty Status and Nativity

Number of Moves, Grades 1-3	0	1	2
All (N. 64828)	83.4	15.2	1.3
White (N. 11057)	90.9	8.7	0.4
Black (N. 22292)	79.8	18.3	1.9
Hispanic (N. 24637)	81.9	16.6	1.5
Asian (N. 6568)	89.2	10.5	0.3
Poor (N. 48701)	81.6	16.8	1.6
Non-Poor (N. 13866)	89.1	10.4	0.5
Foreign Born (N. 6610)	82.7	15.9	1.4
Native Born (N. 58216)	83.5	15.2	1.3

- Cumulative mobility is also important.
- Only 83% of all students who attend NYC public schools in grades 1, 2, and 3 attended the same school for all three years.

Distribution of Cumulative Mobility; Grades 1-5, by Race, Poverty Status and Nativity

Number of Moves, Grades 1-5	0	1	2	3	4
All (N. 52277)	68.5	25.2	5.4	0.8	0.1
White (N. 9485)	81.4	16.1	2.3	0.2	0.0
Black (N. 17507)	62.8	28.5	7.3	1.3	0.1
Hispanic (N. 19296)	64.6	28.3	6.1	1.0	0.1
Asian (N. 5767)	77.6	19.9	2.4	0.1	0.0
Poor (N. 38577)	65.3	27.3	6.3	1.0	0.1
Non-Poor (N. 11888)	77.4	19.7	2.6	0.3	0.0
Foreign Born (N. 5417)	67.3	27.0	5.0	0.7	0.0
Native Born (N. 46858)	68.7	25.0	5.4	0.8	0.1

Mobility and Student Performance

We use a standard regression model to estimate the effect of mobility on performance:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 M_{it} + \varphi_i + \varepsilon_{it},$$

Where:

Y_{it} is the test score of student i in year t

X_{it} is a vector of time-varying characteristics of student i

M_{it} is a measure of mobility for student i through year t

φ_i is a fixed effect for student i

ε_{it} is an statistical error term

Empirical Strategy

- Models estimated for reading and math, third grade and fifth grade separately and pooled with student fixed effects.
- Two specifications of moves − total number and dummy variables (one move, two moves, three moves, four moves).
- Controls for race, gender, nativity, poverty and English language proficiency.
- Results for controls show: Blacks and Hispanics do worse than Asians and whites; girls do a little better than boys; foreign born a little better than the native born; limited English proficiency harms performance.

Key Regression Results: Cross Sectional Models

	Reading				Math			
	3rd Grade		5th Grade		3rd Grade		5th Grade	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cumulative moves through grade 3	**-0.08**	--	0.02	--	**-0.11**	--	**-0.03**	--
	(.01)	--	(.01)	--	(.01)	--	(.01)	--
Cumulative moves through grade 5	--	--	**-0.07**	--	--	--	**-0.06**	--
	--	--	(.01)	--	--	--	(.01)	--
One move	--	**-0.08**	--	**-0.06**	--	**-0.11**	--	**-0.06**
	--	(.01)	--	(.01)	--	(.01)	--	(.01)
Two moves	--	**-0.14**	--	**-0.10**	--	**-0.20**	--	**-0.13**
	--	(.04)	--	(.02)	--	(.03)	--	(.02)
Three moves	--	--	--	**-0.22**	--		--	**-0.28**
	--	--	--	(.04)	--		--	(.04)
Four moves	--	--	--	-0.06	--		--	**-0.30**
	--	--	--	(.12)	--		--	(.13)
Fixed Effects	N	N	N	N	N	N	N	N
Controls	Y	Y	Y	Y	Y	Y	Y	Y
N.	58944	58944	50829	50829	61630	61630	50839	50839

Key Regression Results: Pooled Models, by Race

Reading	All		White		Black		Hispanic		Asian	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
# of Moves	**-0.06**	--	-0.01	--	**-0.03**	--	**-0.08**	--	-0.02	--
	(.01)	--	(.02)	--	(.01)	--	(.01)	--	(.02)	--
1	--	**-0.05**	--	0.00	--	-0.03	--	**-0.08**	--	-0.02
	--	(.01)	--	(.02)	--	(.01)	--	(.01)	--	(.03)
2	--	**-0.12**	--	-0.03	--	**-0.07**	--	**-0.14**	--	0.00
	--	(.02)	--	(.06)	--	(.03)	--	(.03)	--	(.06)
3	--	**-0.20**	--	-0.20	--	**-0.12**	--	**-0.19**	--	0.12
	--	(.04)	--	(.22)	--	(.05)	--	(.06)	--	(.09)
4	--	**-0.27**	--	--	--	0.03	--	**-0.70**	--	**-0.96**
	--	(.14)	--	--	--	(.15)	--	(.26)	--	(.07)
Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N.	94320	94320	18290	18290	33664	33664	31322	31322	10628	10628

Key Regression Results: Pooled Models, by Poverty Status and Nativity

Reading	All		Poor		Non-Poor		Foreign Born		Native Born	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
# of Moves	**-0.06**	--	**-0.06**	--	-0.01	--	**-0.04**	--	**-0.06**	--
	(.01)	--	(.00)	--	(.02)	--	(.02)	--	(.01)	--
1	--	**-0.05**	--	**-.06**	--	0	--	-0.03	--	**-0.06**
	--	(.01)	--	(.01)	--	(.02)	--	(.03)	--	(.01)
2	--	**-0.12**	--	**-.13**	--	-.05	--	-0.08	--	**-0.12**
	--	(.02)	--	(.02)	--	(.04)	--	(.06)	--	(.02)
3	--	**-0.20**	--	**-.2**	--	-.05	--	**-0.26**	--	**-0.19**
	--	(.04)	--	(.03)	--	(.11)	--	(.12)	--	(.04)
4	--	**-0.27**	--	**-.26**	--	**-.31**	--	--	--	**-0.26**
	--	(.14)	--	(.15)	--	(.14)	--	--	--	(.14)
Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N.	94320	94320	67976	67976	26344	26344	8472	8472	85844	85844

Key Regression Results: Pooled Models, by Race

Math	All		White		Black		Hispanic		Asian	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
# of Moves	**-0.03**	--	**0.05**	--	-0.02	--	**-0.05**	--	-0.02	--
	(.01)	--	(.02)	--	(.01)	--	(.01)	--	(.02)	--
1	--	**-0.03**	--	**0.06**	--	-0.01	--	**-0.06**	--	-0.03
	--	(.01)	--	(.02)	--	(.01)	--	(.01)	--	(.03)
2	--	**-0.07**	--	0.07	--	**-0.05**	--	**-0.07**	--	0.01
	--	(.02)	--	(.05)	--	(.03)	--	(.03)	--	(.06)
3	--	**-0.09**	--	0.01	--	-0.05	--	-0.03	--	**-0.44**
	--	(.04)	--	(.11)	--	(.06)	--	(.07)	--	(.21)
4	--	**-0.31**	--	--	--	-0.14	--	-0.43	--	**-0.87**
	--	(.13)	--	--	--	(.12)	--	(.35)	--	(.07)
Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N.	97818	97818	18276	18276	33670	33670	34778	34778	10672	10672

Key Regression Results: Pooled Models, by Poverty Status and Nativity

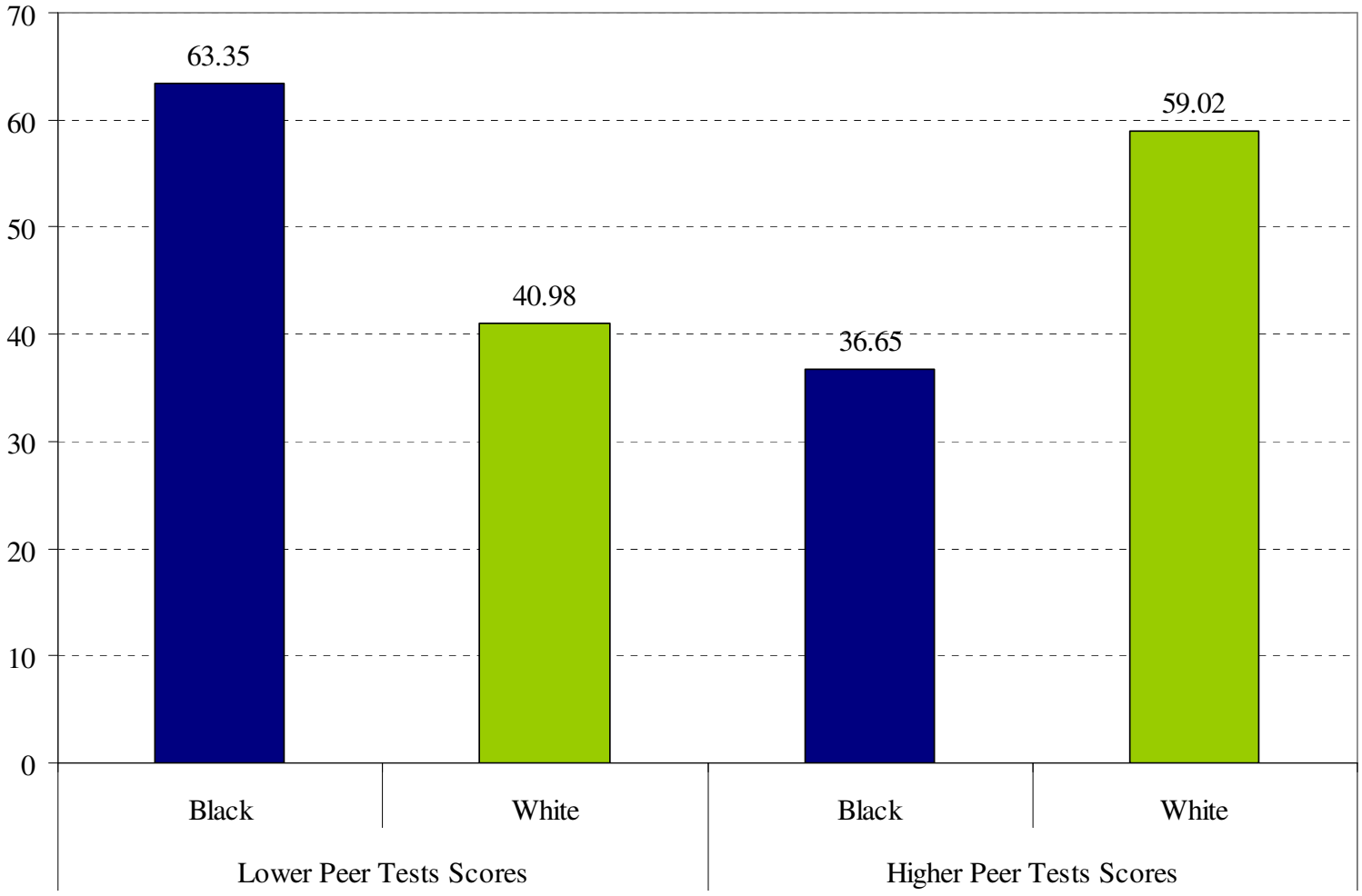
Math	All		Poor		Non-Poor		Foreign Born		Native Born	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
# of Moves	**-0.03**	--	**-.04**	--	0.01	--	**0.04**	--	**-0.03**	--
	(.01)	--	(.01)	--	(.01)	--	(.02)	--	(.01)	--
1	--	**-0.03**	--	**-.04**	--	.01	--	-0.03	--	**-0.03**
	--	(.01)	--	(.01)	--	(.02)	--	(.03)	--	(.01)
2	--	**-0.07**	--	**-.09**	--	.03	--	-0.10	--	**-0.07**
	--	(.02)	--	(.02)	--	(.04)	--	(.06)	--	(.02)
3	--	**-0.09**	--	**-.11**	--	.02	--	**-0.22**	--	-0.07
	--	(.04)	--	(.05)	--	(.08)	--	(.11)	--	(.02)
4	--	**-0.31**	--	**-.31**	--	-.34	--	--	--	**-0.30**
	--	(.13)	--	(.15)	--	(.21)	--	--	--	(.13)
Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
N.	97818	97818	71388	71388	26430	26430	9404	9404	88410	88410

Why?

- Many possible explanations
  - Differences in the kinds of schools students move to (and from).
  - Differences in the reasons for the moves (push vs. pull, family disruption)
  - Differences in supports following moves…

There are Significant Racial Differences in New Schools

Look at moves made by 3rd graders, 1995-96 to 1996-97



School Mobility vs. Residential Mobility?

- We also attempted to disentangle the impact of moving schools from that of moving neighborhoods (proxied by moving zip codes).

- Little evidence that moving zip codes matters.

- More work to be done.

The Broader Context of Mobility

Cumulative Prospective Cohort Analysis

	Year	Continued from the Previous Grade	New Entrants to District	Entered Grade from Non-standard Grade	Number of Registered Students	Continued to Next Grade	Continued to Other Than Next Grade	Exited
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
3rd Grade	1995-96				73,642			
4th Grade	1996-97				71,778			
5th Grade	1997-98				70,192			
6th Grade	1998-99				68,752			
7th Grade	1999-00				67,896			
8th Grade	2000-01				68,521			

Cumulative Prospective Cohort Analysis

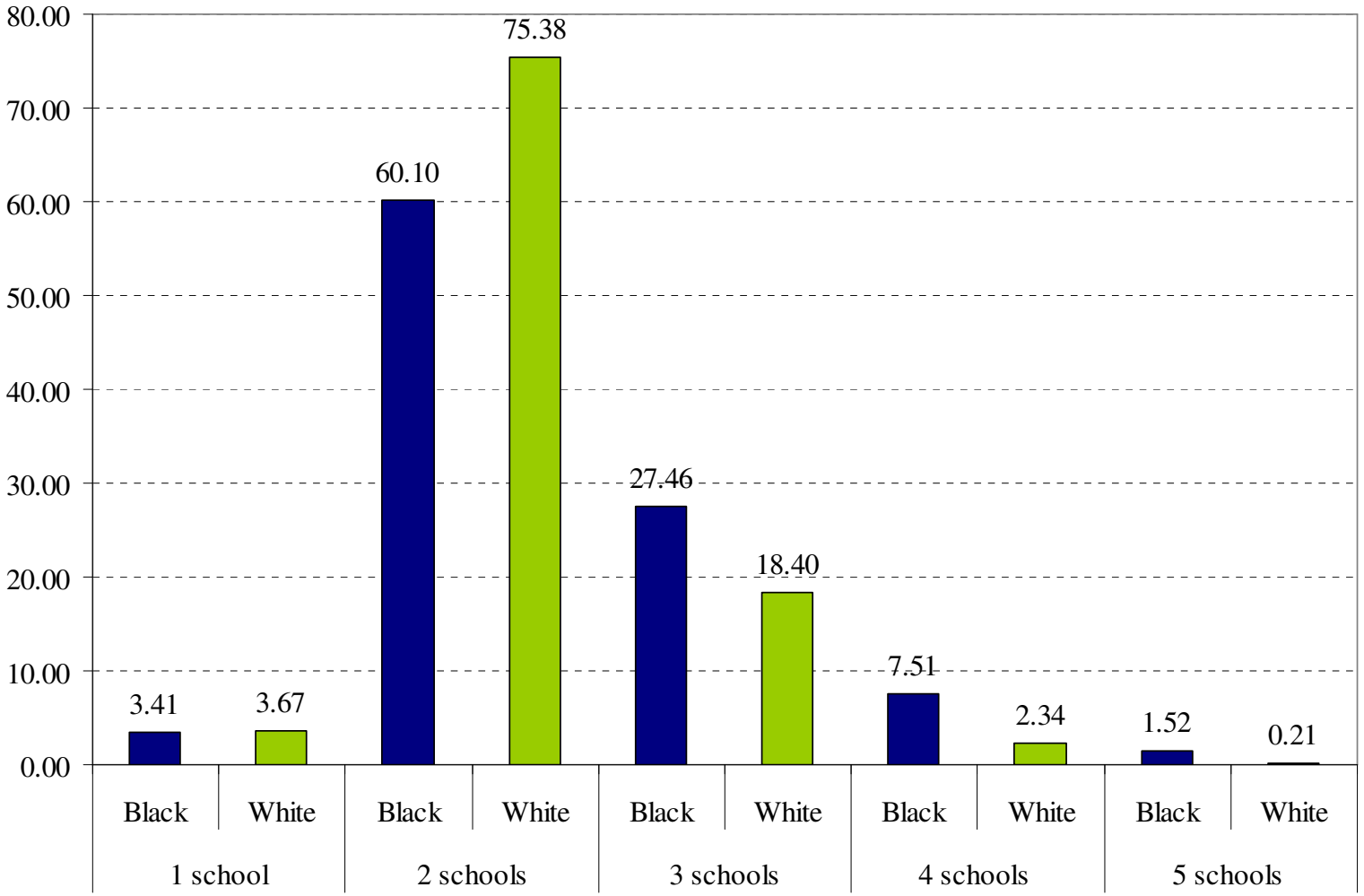
	Year	Continued from the Previous Grade	New Entrants to District	Entered Grade from Non-standard Grade	Number of Registered Students	Continued to Next Grade	Continued to Other Than Next Grade	Exited
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
3rd Grade	1995-96	--	--	--	73,642			
4th Grade	1996-97	90.4%	7.3%	2.3%	71,778			
5th Grade	1997-98	91.8%	5.9%	2.3%	70,192			
6th Grade	1998-99	89.4%	6.1%	4.5%	68,752			
7th Grade	1999-00	88.3%	7.2%	4.5%	67,896			
8th Grade	2000-01	87.9%	5.8%	6.4%	68,521			

Cumulative Prospective Cohort Analysis

	Year	Continued from the Previous Grade	New Entrants to District	Entered Grade from Non-standard Grade	Number of Registered Students	Continued to Next Grade	Continued to Other Than Next Grade	Exited
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
3rd Grade	1995-96				73,642	88.1%	5.2%	6.7%
4th Grade	1996-97				71,778	89.8%	3.2%	7.0%
5th Grade	1997-98				70,192	87.6%	4.1%	8.3%
6th Grade	1998-99				68,752	87.2%	7.5%	5.2%
7th Grade	1999-00				67,896	88.7%	4.1%	7.2%
8th Grade	2000-01				68,521	--	--	--

A Longer Perspective

Cumulative Mobility of Eighth Graders in 2001-2002, by race



Policy Implications

- "Longer-span" schools like K-8 schools could help to minimize student moves.
- Addressing the academic needs of those students who switch could foster higher performance.
- Targeting high-mobility groups in order to diminish their mobility could improve performance.

Next Steps