

CSP31
Technical Appendix
2023

Table of Contents

State Level Match Rates	4
Match rates by racial/ethnic group	4
Match rate by racial/ethnic group by year of data.	7
Match rates by poverty/non-poverty	7
Match rates by state	7
Match rates by year of data	8
Match rates by English Language Learner (ELL) status	8
Match rate by state	8
Match rate by year	9
Match rates by Special Education (SPED) status	10
Match rate by state	10
Match rate by year	11
Student Characteristics – Matched Data Set	11
Matched students’ race/ethnicity by state	11
Matched students’ race/ethnicity by year	12
Matched students’ race/ethnicity by locale	12
Matched students’ race/ethnicity by school level	13
Matched students’ race/ethnicity by state achievement decile	13
Special populations by state	13
Special populations by year	14
Special populations by locale	14
Special populations by grade level	15
Special populations by state achievement decile	15
Locale of school	16
Comparison of Student Characteristics to Previous Studies	17
Student Characteristics by Study, Percent of Students by Characteristic	17

Average Starting Achievement and Growth Scores	19
Scores by state	19
Scores by year	21
Scores by online or brick	21
Scores by race/ethnicity	21
Scores by special populations	22
Scores by sector	22
Student Decile of Achievement	23
Reading	23
New Student Decile of Achievement Differences (Charter – TPS)	24
Math	24
Comparison between CREDO's Classic Matching and Rematching Every Period	25
Regression output reading	25
Regression output math	27
State-level Regressions	29
Charter Growth Effect by State, Reading and Math	29
Marginal Charter Effects by Race/Ethnicity by State	30
Reading	30
Math	37
Marginal Charter Effects by Poverty by State	44
Reading	44
Math	47
Marginal Charter Effect by SPED by State	49
Reading	49
Math	52
Marginal Charter Effect by ELL by State	54
Reading	54
Math	56

State Level Match Rates

The tables below provide the match rates for various subpopulations within the study. The detailed match rates can be useful for assessing the composition of the larger results provided in the study and can allow for better understanding of the representativeness of the overall results to smaller subpopulations.

Match rates by racial/ethnic group

The match rates for racial/ethnic groups by state are listed below.

State	Race/Ethnicity	Match Rate
AR	Asian/Pacific Islander	36.9%
AR	Black	87.6%
AR	Hispanic	69.0%
AR	Multiracial	52.1%
AR	Native American	25.1%
AR	White	90.8%
AZ	Asian/Pacific Islander	57.2%
AZ	Black	60.4%
AZ	Hispanic	81.1%
AZ	Multiracial	57.5%
AZ	Native American	45.7%
AZ	White	83.9%
CA	Asian/Pacific Islander	77.1%
CA	Black	75.5%
CA	Hispanic	88.9%
CA	Multiracial	65.1%
CA	Native American	40.4%
CA	White	84.6%
CO	Asian/Pacific Islander	50.7%
CO	Black	68.8%
CO	Hispanic	84.7%
CO	Multiracial	55.3%
CO	Native American	30.1%
CO	White	86.1%
DC	Asian/Pacific Islander	11.9%
DC	Black	76.3%
DC	Hispanic	46.2%

State	Race/Ethnicity	Match Rate
DC	Multiracial	20.0%
DC	Native American	40.5%
DC	White	38.7%
FL	Asian/Pacific Islander	54.0%
FL	Black	84.8%
FL	Hispanic	87.7%
FL	Multiracial	55.6%
FL	Native American	10.9%
FL	White	86.4%
ID	Asian/Pacific Islander	33.7%
ID	Black	23.8%
ID	Hispanic	75.8%
ID	Multiracial	47.6%
ID	Native American	28.7%
ID	White	88.3%
IL	Asian/Pacific Islander	56.3%
IL	Black	87.9%
IL	Hispanic	87.4%
IL	Multiracial	42.3%
IL	Native American	16.3%
IL	White	72.9%
IN	Asian/Pacific Islander	47.5%
IN	Black	89.6%
IN	Hispanic	78.2%
IN	Multiracial	64.5%
IN	Native American	22.4%
IN	White	89.9%

State	Race/Ethnicity	Match Rate
LA	Asian/Pacific Islander	20.1%
LA	Black	82.9%
LA	Hispanic	49.8%
LA	Multiracial	37.3%
LA	Native American	34.3%
LA	White	76.5%
MA	Asian/Pacific Islander	55.7%
MA	Black	64.8%
MA	Hispanic	69.4%
MA	Multiracial	41.4%
MA	Native American	27.7%
MA	White	86.5%
MD	Asian/Pacific Islander	33.2%
MD	Black	88.3%
MD	Hispanic	60.4%
MD	Multiracial	39.0%
MD	Native American	6.8%
MD	White	62.8%
MI	Asian/Pacific Islander	47.9%
MI	Black	90.3%
MI	Hispanic	67.4%
MI	Multiracial	55.6%
MI	Native American	41.3%
MI	White	85.4%
MN	Asian/Pacific Islander	78.4%
MN	Black	82.0%
MN	Hispanic	71.1%
MN	Multiracial	69.8%
MN	Native American	54.8%
MN	White	86.0%
MO	Asian/Pacific Islander	27.4%
MO	Black	82.8%
MO	Hispanic	63.8%
MO	Multiracial	38.4%
MO	Native American	42.2%
MO	White	47.2%

State	Race/Ethnicity	Match Rate
NC	Asian/Pacific Islander	55.8%
NC	Black	84.4%
NC	Hispanic	68.7%
NC	Multiracial	52.1%
NC	Native American	38.9%
NC	White	87.6%
NJ	Asian/Pacific Islander	58.6%
NJ	Black	79.7%
NJ	Hispanic	76.6%
NJ	Multiracial	34.0%
NJ	Native American	48.5%
NJ	White	64.9%
NM	Asian/Pacific Islander	22.2%
NM	Black	32.1%
NM	Hispanic	68.2%
NM	Multiracial	51.8%
NM	Native American	47.6%
NM	White	58.6%
NV	Asian/Pacific Islander	82.5%
NV	Black	85.8%
NV	Hispanic	89.6%
NV	Multiracial	82.7%
NV	Native American	32.7%
NV	White	91.4%
NX	Asian/Pacific Islander	41.6%
NX	Black	71.8%
NX	Hispanic	61.7%
NX	Multiracial	39.9%
NX	Native American	26.4%
NX	White	65.2%
NY	Asian/Pacific Islander	62.9%
NY	Black	73.0%
NY	Hispanic	73.9%
NY	Multiracial	19.4%
NY	Native American	22.8%
NY	White	62.4%

State	Race/Ethnicity	Match Rate
OH	Asian/Pacific Islander	33.6%
OH	Black	77.1%
OH	Hispanic	55.5%
OH	Multiracial	62.7%
OH	Native American	29.4%
OH	White	79.7%
OR	Asian/Pacific Islander	39.5%
OR	Black	42.7%
OR	Hispanic	64.0%
OR	Multiracial	48.0%
OR	Native American	29.2%
OR	White	81.7%
PA	Asian/Pacific Islander	58.8%
PA	Black	87.1%
PA	Hispanic	80.5%
PA	Multiracial	68.6%
PA	Native American	42.5%
PA	White	85.1%
RI	Asian/Pacific Islander	28.7%
RI	Black	63.6%
RI	Hispanic	72.7%
RI	Multiracial	36.9%
RI	Native American	23.2%
RI	White	68.3%
SC	Asian/Pacific Islander	42.7%
SC	Black	85.8%
SC	Hispanic	69.7%
SC	Multiracial	64.6%
SC	Native American	47.8%
SC	White	86.8%

State	Race/Ethnicity	Match Rate
TN	Asian/Pacific Islander	43.2%
TN	Black	89.1%
TN	Hispanic	72.0%
TN	Native American	23.4%
TN	White	75.0%
TX	Asian/Pacific Islander	65.8%
TX	Black	82.9%
TX	Hispanic	87.1%
TX	Multiracial	52.1%
TX	Native American	40.7%
TX	White	80.3%
UT	Asian/Pacific Islander	55.7%
UT	Black	36.4%
UT	Hispanic	79.1%
UT	Multiracial	53.4%
UT	Native American	28.9%
UT	White	90.5%
WA	Asian/Pacific Islander	74.3%
WA	Black	82.6%
WA	Hispanic	84.4%
WA	Multiracial	81.7%
WA	Native American	64.1%
WA	White	92.5%
WI	Asian/Pacific Islander	51.6%
WI	Black	81.4%
WI	Hispanic	68.0%
WI	Multiracial	42.0%
WI	Native American	26.3%
WI	White	82.8%

Match rate by racial/ethnic group by year of data.

Year	Race/ethnicity	Match Rate	Year	Race/ethnicity	Match Rate
2014	Asian/Pacific Islander	63.6%	2016	Asian/Pacific Islander	63.7%
2014	Black	81.4%	2016	Black	81.4%
2014	Hispanic	82.7%	2016	Hispanic	83.2%
2014	Multiracial	57.7%	2016	Multiracial	57.8%
2014	Native American	40.7%	2016	Native American	36.7%
2014	White	84.5%	2016	White	84.3%
2015	Asian/Pacific Islander	64.5%	2017	Asian/Pacific Islander	64.0%
2015	Black	81.0%	2017	Black	82.0%
2015	Hispanic	82.9%	2017	Hispanic	84.3%
2015	Multiracial	59.2%	2017	Multiracial	57.6%
2015	Native American	38.7%	2017	Native American	35.9%
2015	White	84.2%	2017	White	84.7%

Match rates by poverty/non-poverty

In these tables, 1=students in poverty and 0=students not in poverty.

Match rates by state

Poverty	State	Match Rate	Poverty	State	Match Rate
0	AR	82.8%	0	LA	66.0%
1	AR	84.4%	1	LA	81.1%
0	AZ	78.9%	0	MA	72.8%
1	AZ	76.7%	1	MA	70.0%
0	CA	82.1%	0	MD	76.6%
1	CA	86.2%	1	MD	86.6%
0	CO	80.9%	0	MI	79.0%
1	CO	82.5%	1	MI	85.0%
0	DC	43.9%	0	MN	81.8%
1	DC	74.2%	1	MN	80.2%
0	FL	83.2%	0	MO	38.5%
1	FL	86.1%	1	MO	77.5%
0	ID	84.9%	0	NC	82.1%
1	ID	75.7%	1	NC	80.5%
0	IL	77.7%	0	NJ	69.1%
1	IL	87.8%	1	NJ	79.0%
0	IN	84.4%	0	NM	61.1%
1	IN	87.3%	1	NM	63.8%

Poverty	State	Match Rate
0	NV	88.1%
1	NV	89.1%
0	NY	59.4%
1	NY	68.9%
0	NYC	64.0%
1	NYC	73.6%
0	OH	77.1%
1	OH	74.1%
0	OR	74.3%
1	OR	75.6%
0	PA	79.4%
1	PA	85.8%
0	RI	60.4%

Poverty	State	Match Rate
1	RI	71.3%
0	SC	81.6%
1	SC	85.9%
0	TN	79.8%
1	TN	86.4%
0	TX	80.2%
1	TX	85.5%
0	UT	86.1%
1	UT	81.2%
0	WA	84.7%
1	WA	86.3%
0	WI	76.9%
1	WI	75.5%

Match rates by year of data

Poverty	Year	Match Rate
0	2014	79.7%
1	2014	82.0%
0	2015	79.7%
1	2015	81.8%
0	2016	79.7%
1	2016	82.1%
0	2017	79.8%
1	2017	83.0%
0	Overall	79.7%
1	Overall	82.3%

Match rates by English Language Learner (ELL) status

In these tables, 1=students in who are English language learners and 0=students who are ELL.

Match rates by state

ELL	State	Match Rate
0	AR	84.5%
1	AR	69.1%
0	AZ	78.7%
1	AZ	61.1%
0	CA	84.8%

ELL	State	Match Rate
1	CA	81.0%
0	CO	81.3%
1	CO	82.8%
0	DC	69.5%
1	DC	38.8%

ELL	State	Match Rate
0	FL	85.1%
1	FL	76.2%
0	ID	84.0%
1	ID	55.2%
0	IL	86.8%
1	IL	77.4%
0	IN	87.2%
1	IN	69.3%
0	LA	79.0%
1	LA	42.8%
0	MA	72.6%
1	MA	59.5%
0	MD	82.2%
1	MD	42.3%
0	MI	85.2%
1	MI	65.9%
0	MN	81.8%
1	MN	76.1%
0	MO	73.5%
1	MO	61.5%
0	NC	82.2%
1	NC	45.7%
0	NJ	76.2%
1	NJ	65.9%
0	NM	63.1%
1	NM	59.6%

Match rates by year of data

ELL	Year	Match Rate
0	2014	81.4%
1	2014	74.5%
0	2015	81.4%
1	2015	74.4%
0	2016	81.6%
1	2016	75.2%
0	2017	82.4%
1	2017	75.3%
0	Overall	81.7%
1	Overall	74.9%

ELL	State	Match Rate
0	NV	88.9%
1	NV	81.4%
0	NY	67.8%
1	NY	43.9%
0	NYC	72.1%
1	NYC	59.3%
0	OH	75.8%
1	OH	45.0%
0	OR	75.2%
1	OR	54.4%
0	PA	84.2%
1	PA	68.8%
0	RI	69.3%
1	RI	53.8%
0	SC	84.2%
1	SC	69.0%
0	TN	85.5%
1	TN	62.5%
0	TX	84.2%
1	TX	82.2%
0	UT	85.3%
1	UT	69.3%
0	WA	86.8%
1	WA	77.0%
0	WI	77.1%
1	WI	60.7%

Match rates by Special Education (SPED) status

In these tables, 1=students in who receive special education services and 0=students who do not.

Match rates by state

SPED	State	Match Rate
0	AR	85.3%
1	AR	68.2%
0	AZ	80.3%
1	AZ	57.8%
0	CA	86.5%
1	CA	63.3%
0	CO	83.0%
1	CO	61.7%
0	DC	69.3%
1	DC	63.1%
0	FL	86.7%
1	FL	66.0%
0	ID	85.7%
1	ID	62.3%
0	IL	87.8%
1	IL	73.6%
0	IN	89.3%
1	IN	73.0%
0	LA	80.4%
1	LA	61.6%
0	MA	74.5%
1	MA	57.2%
0	MD	82.9%
1	MD	74.0%
0	MI	85.4%
1	MI	68.0%
0	MN	84.0%
1	MN	61.1%
0	MO	73.3%
1	MO	61.4%
0	NC	83.4%

SPED	State	Match Rate
1	NC	47.0%
0	NJ	77.8%
1	NJ	62.2%
0	NM	65.5%
1	NM	47.4%
0	NV	90.7%
1	NV	67.4%
0	NY	68.4%
1	NY	51.3%
0	NYC	74.9%
1	NYC	56.3%
0	OH	76.1%
1	OH	36.4%
0	OR	77.5%
1	OR	53.6%
0	PA	84.8%
1	PA	78.8%
0	RI	71.7%
1	RI	46.0%
0	SC	84.8%
1	SC	75.1%
0	TN	85.8%
1	TN	70.2%
0	TX	84.9%
1	TX	49.8%
0	UT	86.7%
1	UT	70.8%
0	WA	88.6%
1	WA	68.8%
0	WI	78.4%
1	WI	58.0%

Match rate by year

SPED	Year	Match Rate
0	2014	82.7%
1	2014	64.2%
0	2015	82.8%
1	2015	63.5%
0	2016	83.2%
1	2016	63.3%
0	2017	83.9%
1	2017	62.7%

Student Characteristics – Matched Data Set

The student characteristics section provides detailed information on the composition of the matched data set. All the students in the matched data set had a VCR and were included in the overall analyses.

Matched students' race/ethnicity by state

This table provides the detailed breakout of the race/ethnicity percentages of the matched student-year records for each state across all years.

State	White	Black	Hispanic	Asian/PI	Native American	Multiracial
AR	54.5%	31.7%	10.5%	1.4%	0.2%	1.7%
AZ	48.6%	4.3%	38.7%	4.5%	1.2%	2.8%
CA	29.2%	6.8%	53.8%	6.5%	0.3%	3.4%
CO	50.1%	5.0%	39.3%	2.9%	0.2%	2.6%
DC	3.3%	86.5%	9.3%	0.2%	0.1%	0.6%
FL	33.2%	18.9%	44.3%	1.7%	0.0%	1.9%
ID	86.9%	0.3%	10.1%	0.7%	0.3%	1.8%
IL	3.2%	51.3%	43.8%	0.9%	0.0%	0.7%
IN	38.1%	45.1%	12.5%	0.5%	0.0%	3.8%
LA	18.9%	76.4%	3.6%	0.3%	0.1%	0.7%
MA	36.4%	26.8%	31.1%	3.8%	0.1%	1.8%
MD	8.1%	85.7%	4.5%	0.7%	0.0%	1.0%
MI	32.2%	55.3%	7.7%	2.2%	0.3%	2.3%
MN	42.8%	26.6%	9.8%	17.1%	1.0%	2.6%
MO	9.3%	73.0%	15.3%	0.7%	0.1%	1.7%
NC	59.6%	26.5%	8.1%	2.3%	0.4%	3.1%

State	White	Black	Hispanic	Asian/PI	Native American	Multiracial
NJ	6.3%	53.6%	36.2%	3.4%	0.1%	0.5%
NM	27.2%	0.9%	66.1%	0.6%	4.1%	1.1%
NV	41.2%	11.5%	32.3%	7.3%	0.2%	7.4%
NY	13.6%	64.3%	18.7%	1.5%	0.2%	1.7%
NYC	3.1%	54.1%	40.0%	2.2%	0.4%	0.2%
OH	36.8%	51.6%	6.0%	0.6%	0.1%	5.0%
OR	82.0%	0.8%	11.1%	1.3%	0.5%	4.3%
PA	30.6%	47.0%	16.9%	2.2%	0.1%	3.3%
RI	20.2%	14.3%	62.7%	0.6%	0.2%	2.0%
SC	62.0%	29.5%	6.4%	1.3%	0.5%	0.4%
TN	7.9%	74.6%	17.0%	0.5%	0.0%	0.0%
UT	77.1%	0.7%	17.3%	2.8%	0.2%	2.0%
WA	39.3%	24.9%	19.8%	5.0%	1.3%	9.7%
WI	53.3%	23.7%	16.9%	4.1%	0.2%	1.7%

Matched students' race/ethnicity by year

This table provides the national-level breakout by race/ethnicity of the student-year records in the data set by year.

Year	White	Black	Hispanic	Asian/PI	Native American	Multiracial
2014	33.5%	26.1%	34.4%	3.5%	0.3%	2.2%
2015	33.1%	24.6%	35.9%	3.7%	0.3%	2.4%
2016	32.3%	25.3%	36.2%	3.5%	0.3%	2.4%
2017	31.5%	25.3%	37.0%	3.5%	0.3%	2.4%

Matched students' race/ethnicity by locale

This table provides the national-level breakout by race/ethnicity of the student-year records in the data set by locale as determined by the locale of the school from the National Center for Education Statistics' (NCES) Common Core of Data. Online charter schools were assigned a value of "Virtual" regardless of their NCES assigned locale.

Locale	White	Black	Hispanic	Asian/PI	Native American	Multiracial
Urban	18.7%	35.3%	40.4%	3.5%	0.2%	1.8%
Suburban	39.0%	16.8%	37.2%	4.3%	0.2%	2.6%
Town	61.3%	12.3%	22.5%	0.9%	1.1%	1.9%
Rural	63.7%	10.1%	19.9%	2.7%	0.7%	2.9%
Virtual	32.4%	12.3%	15.3%	2.3%	0.7%	5.3%

Matched students' race/ethnicity by school level

This table provided the national-level breakout by race/ethnicity of the student-year records in the data set by grade level served by the school.

Level	White	Black	Hispanic	Asian/PI	Native American	Multiracial
Elementary	30.0%	30.1%	33.9%	3.6%	0.2%	2.2%
Middle	19.6%	25.3%	49.4%	3.8%	0.3%	1.6%
High	28.4%	27.0%	40.4%	2.4%	0.4%	1.5%
Multilevel	41.9%	19.7%	31.5%	3.6%	0.4%	3.0%

Matched students' race/ethnicity by state achievement decile

This table provides the national-level breakout by race/ethnicity of student-year records in the data set by the decile of achievement of the record.

State Decile	White	Black	Hispanic	Asian/PI	Native American	Multiracial
10	52.8%	6.6%	24.8%	12.7%	0.1%	3.0%
9	45.6%	12.4%	32.2%	6.9%	0.2%	2.7%
8	41.4%	16.4%	34.7%	4.7%	0.2%	2.7%
7	38.0%	19.6%	35.9%	3.6%	0.3%	2.5%
6	34.4%	22.8%	37.2%	2.8%	0.3%	2.5%
5	31.0%	25.6%	38.3%	2.3%	0.4%	2.4%
4	27.7%	29.2%	38.7%	1.8%	0.4%	2.2%
3	24.1%	33.0%	39.0%	1.4%	0.4%	2.0%
2	20.3%	38.0%	38.3%	1.1%	0.4%	1.9%
1	16.2%	44.1%	36.8%	1.0%	0.3%	1.6%

Special populations by state

This table provides the percentage of student-year records from each state that fall into the special population. Special population categories are not mutually exclusive. A record can be in more than one category.

State	In Poverty	Special Education	English Language Learner	State	In Poverty	Special Education	English Language Learner
AR	58.4%	7.4%	4.3%	IL	82.5%	11.4%	8.9%
AZ	34.9%	7.0%	2.7%	IN	71.1%	14.8%	3.3%
CA	57.4%	6.8%	9.5%	LA	83.9%	9.1%	1.2%
CO	37.8%	5.5%	11.5%	MA	42.4%	13.5%	7.0%
DC	87.1%	18.2%	2.5%	MD	54.7%	11.5%	0.5%
FL	52.4%	7.7%	4.0%	MI	75.6%	9.3%	7.2%
ID	12.9%	6.7%	0.8%	MN	50.9%	9.9%	14.2%

State	In Poverty	Special Education	English Language Learner	State	In Poverty	Special Education	English Language Learner
MO	92.5%	9.2%	10.5%	OR	39.9%	8.0%	1.3%
NC	24.2%	2.7%	0.7%	PA	68.2%	18.4%	2.8%
NJ	72.2%	9.5%	2.1%	RI	74.5%	9.3%	6.2%
NM	59.8%	11.6%	11.5%	SC	49.5%	10.4%	2.9%
NV	35.1%	7.2%	6.0%	TN	64.6%	9.6%	5.1%
NX	81.9%	6.6%	2.3%	UT	29.3%	11.1%	3.5%
NY	81.6%	14.0%	2.9%	WA	63.4%	11.7%	10.0%
OH	77.1%	1.7%	2.0%	WI	51.3%	8.4%	4.6%

Special populations by year

This table provides the national-level the percentage of student-year records that fall into the special population in year as defined as the base year of growth. Special population categories are not mutually exclusive. A record can be in more than one category.

Year	In Poverty	Special Education	English Language Learner
2014	57.1%	7.3%	5.0%
2015	57.3%	7.7%	6.1%
2016	57.8%	8.4%	7.7%
2017	58.8%	8.2%	9.1%

Special populations by locale

This table provides the national-level the percentage of student-year records that fall into the special population by locale. Special population categories are not mutually exclusive. A record can be in more than one category.

Locale	In Poverty	Special Education	English Language Learner
Urban	68.7%	8.3%	9.1%
Suburban	47.5%	7.1%	6.1%
Town	47.4%	6.3%	2.5%
Rural	36.1%	6.9%	3.1%
Virtual	45.7%	11.1%	1.4%

Special populations by grade level

This table provides the national-level the percentage of student-year records that fall into the special population by grade level. Special population categories are not mutually exclusive. A record can be in more than one category.

Level	In Poverty	Special Education	English Language Learner
Elementary	58.8%	7.9%	7.5%
Middle	68.0%	7.6%	10.8%
High	64.2%	7.4%	5.5%
Multilevel	51.3%	8.2%	5.2%

Special populations by state achievement decile

This table provides the national-level the percentage of student-year records that fall into the special population by their states' achievement decile. Special population categories are not mutually exclusive. A record can be in more than one category.

State Decile	In Poverty	Special Education	English Language Learner
10	28.0%	1.0%	0.8%
9	40.1%	1.4%	2.0%
8	46.5%	2.0%	2.7%
7	51.4%	2.8%	3.3%
6	56.2%	3.7%	4.6%
5	60.4%	5.0%	6.0%
4	64.6%	7.2%	7.8%
3	69.3%	10.4%	10.4%
2	73.9%	17.0%	13.6%
1	79.1%	27.9%	18.0%

Locale of school

This table provides the percentage of the student-year records in the data set for each state by locale as determined by the locale of the school from the National Center for Education Statistics' (NCES) Common Core of Data. Online charter schools were assigned a value of "Virtual" regardless of their NCES assigned locale.

State	Urban	Suburban	Town	Rural	Online
AR	36.2%	12.5%	19.4%	20.7%	11.1%
AZ	46.0%	32.9%	4.5%	11.9%	4.7%
CA	54.7%	29.2%	4.3%	7.5%	4.3%
CO	48.7%	38.9%	1.7%	9.0%	1.7%
DC	99.4%	0.0%	0.0%	0.0%	0.6%
FL	24.7%	62.3%	1.6%	10.9%	0.5%
ID	17.3%	28.8%	12.6%	27.2%	14.2%
IL	95.4%	4.0%	0.1%	0.5%	0.0%
IN	64.4%	11.9%	0.1%	2.7%	20.8%
LA	71.3%	9.1%	2.2%	11.2%	6.2%
MA	48.8%	49.5%	0.0%	1.7%	0.0%
MD	62.4%	35.8%	0.0%	1.8%	0.0%
MI	48.9%	32.2%	3.0%	10.0%	5.8%
MN	49.4%	28.1%	3.2%	14.0%	5.4%
MO	100.0%	0.0%	0.0%	0.0%	0.0%
NC	34.4%	28.0%	10.6%	22.6%	4.4%
NJ	66.8%	31.4%	0.0%	1.8%	0.0%
NM	53.9%	16.7%	7.6%	9.6%	12.2%
NV	57.6%	23.2%	1.4%	7.3%	10.5%
NY	67.2%	31.8%	0.0%	1.0%	0.0%
NYC	100.0%	0.0%	0.0%	0.0%	0.0%
OH	57.2%	12.5%	1.3%	0.2%	28.8%
OR	18.5%	21.5%	12.4%	28.2%	19.5%
PA	56.8%	16.7%	0.8%	1.7%	24.1%
RI	45.5%	47.6%	0.0%	6.9%	0.0%
SC	19.8%	21.5%	7.7%	23.8%	27.2%
TN	95.3%	2.8%	0.0%	1.9%	0.0%
UT	14.1%	62.7%	4.0%	16.5%	2.7%
WA	78.3%	21.7%	0.0%	0.0%	0.0%
WI	55.9%	14.2%	4.9%	8.2%	16.8%

Comparison of Student Characteristics to Previous Studies

The characteristics of students represent important factors in educational outcomes. As such, we use statistical models that control for differences in these characteristics. It is still informative to examine how these characteristics have changed over time. There were only minor changes in the student characteristics between the 2013 and 2023 studies. We find a small decrease in the percentage of the student body who identify as White (37 percent down to 33 percent) and a matching increase in the percentage of students who identify as Hispanic (from 30 percent up to 36 percent). Along with these race/ethnicity changes, we see a corresponding increase in the percentage of students in poverty from 55 percent to 58 percent. The changes from the 2009 study to the 2023 study are larger as should be expected due to both the large time gap and a major expansion of the number of states in the study.

Student Characteristics by Study, Percent of Students by Characteristic

Study Release Year	2009	2013	2023
Number of States	16	27	31
Poverty	49%	55%	58%
ELL	7%	6%	7%
SPED	7%	6%	8%
White	39%	37%	33%
Black	27%	27%	25%
Hispanic	30%	30%	36%

Starting scores of charter students are another area that could be affected by changes in the student profiles and impact the growth of charter school students. Starting scores in the 2023 study data look similar to the starting scores of the previous two studies. The starting reading score of 0.00 means that, on average, the starting score for a charter student was at the average across the nation. In some states, charter student-by-year records had higher average starting scores and others lower, but on average, the differences canceled out. In math, the average starting score dropped from -0.02 in 2013 back down to -0.05, which matches the 2009 average starting score. The drops in reading and math suggest charter schools are working with lower achieving students in the 2023 study data than in 2013.

Figure XX: Average Starting Scores by Study

Subject	2009	2013	2023
Reading	0.01	0.03	0.00
Math	-0.05	-0.02	-0.05

The final area of student score comparisons between the three studies is the average growth scores for the VCRs, the twins matched to each group. The VCRs are demographically exact matches for the charter students. This includes both the charter students and their VCRs having the same starting scores. The VCR growth scores form the baseline against which the charter cohort is compared. Any changes in the charter student demographics or previous achievement is mirrored in the VCRs' demographics and previous achievement. Thus, even if large changes to the VCR average growth were present, since the charter growth reported in this paper are marginal to the VCR growth, study-to-study comparisons would still be appropriate. However, this is not a major concern as the average growth rates of the VCRs remain consistent throughout the multiple studies. The 2023 study average growth for reading is -0.01 which falls between the previous two studies. The math average growth for VCRs of 0.00 represents the strongest performance in math growth across the three studies but is still close in value to the previous two studies. These numbers establish a steady baseline to measure the charter performance over the three studies.

Figure XX: Average Growth Score Changes for VCRs by Study

Subject	2009	2013	2023
Reading	0.00	-0.02	-0.01
Math	-0.01	-0.03	0.00

Average Starting Achievement and Growth Scores

Scores by state

This table provides the average starting achievement and growth score of the student-year records by sector in reading and math by state.

State	Sector	Average Starting Achievement		Average Growth	
		Math	Reading	Math	Reading
AR	Charter	0.069	0.013	-0.011	-0.017
AR	TPS	0.069	0.013	-0.017	-0.015
AZ	Charter	0.267	0.228	0.013	-0.005
AZ	TPS	0.267	0.228	-0.021	-0.006
CA	Charter	0.052	0.015	0.012	0.012
CA	TPS	0.052	0.014	-0.007	0.004
CO	Charter	0.090	0.083	0.009	-0.005
CO	TPS	0.090	0.083	-0.017	-0.028
DC	Charter	-0.084	-0.085	-0.015	0.014
DC	TPS	-0.086	-0.086	-0.023	-0.041
FL	Charter	0.192	0.156	0.031	0.061
FL	TPS	0.192	0.155	0.017	0.063
ID	Charter	0.257	0.253	0.009	-0.005
ID	TPS	0.257	0.252	-0.021	-0.019
IL	Charter	-0.313	-0.294	-0.011	0.001
IL	TPS	-0.313	-0.294	-0.080	-0.082
IN	Charter	-0.284	-0.385	0.009	-0.048
IN	TPS	-0.284	-0.385	0.004	-0.003
LA	Charter	-0.145	-0.196	-0.040	-0.035
LA	TPS	-0.145	-0.197	-0.046	-0.045
MA	Charter	-0.067	-0.073	0.058	0.044
MA	TPS	-0.067	-0.073	-0.013	-0.027
MD	Charter	-0.428	-0.346	0.053	0.036
MD	TPS	-0.428	-0.346	-0.011	-0.028
MI	Charter	-0.337	-0.394	0.027	0.003
MI	TPS	-0.338	-0.395	-0.035	-0.038
MN	Charter	-0.199	-0.268	0.052	0.028
MN	TPS	-0.199	-0.268	0.015	0.014
MO	Charter	-0.484	-0.487	0.045	0.065

State	Sector	Average Starting Achievement		Average Growth	
MO	TPS	-0.484	-0.487	-0.023	-0.031
NC	Charter	0.304	0.184	0.007	-0.016
NC	TPS	0.304	0.184	-0.016	0.014
NJ	Charter	-0.173	-0.223	0.049	0.011
NJ	TPS	-0.174	-0.224	-0.008	-0.043
NM	Charter	0.099	0.064	-0.003	-0.005
NM	TPS	0.098	0.064	-0.021	-0.017
NV	Charter	0.211	0.182	0.009	0.004
NV	TPS	0.211	0.182	-0.004	-0.002
NY	Charter	-0.217	-0.276	0.055	-0.003
NY	TPS	-0.218	-0.277	-0.074	-0.128
NYC	Charter	0.075	0.132	0.035	0.040
NYC	TPS	0.074	0.131	-0.038	-0.098
OH	Charter	-0.437	-0.588	-0.003	-0.024
OH	TPS	-0.437	-0.588	0.003	0.040
OR	Charter	0.129	0.059	-0.034	-0.060
OR	TPS	0.129	0.059	-0.002	-0.005
PA	Charter	-0.461	-0.554	-0.001	-0.030
PA	TPS	-0.462	-0.555	0.000	0.007
RI	Charter	-0.050	-0.043	0.080	0.058
RI	TPS	-0.051	-0.044	-0.076	-0.094
SC	Charter	0.140	-0.003	-0.016	-0.043
SC	TPS	0.140	-0.003	-0.002	0.038
TN	Charter	-0.379	-0.410	0.032	0.028
TN	TPS	-0.379	-0.411	-0.027	-0.038
TX	Charter	0.055	-0.032	0.026	0.022
TX	TPS	0.055	-0.032	-0.016	0.030
UT	Charter	0.005	-0.021	0.003	-0.022
UT	TPS	0.005	-0.021	0.007	0.003
WA	Charter	-0.171	-0.174	0.087	0.068
WA	TPS	-0.171	-0.173	0.043	0.000
WI	Charter	-0.111	-0.188	-0.009	-0.018
WI	TPS	-0.111	-0.188	-0.036	-0.046

Scores by year

This table provides the national average starting achievement and growth score of the student-year records by sector in reading and math by the fall year of each growth period.

Year	Average Starting Achievement		Average Growth	
	Math	Reading	Math	Reading
2014	-0.051	-0.002	-0.005	0.016
2015	-0.059	0.001	0.025	0.026
2016	-0.049	0.009	0.011	0.014
2017	-0.042	0.010	0.005	0.007

Scores by online or brick

This table provides the national average starting achievement and growth score of the student-year records by sector in reading and math by the type of charter school.

	Average Starting Achievement		Average Growth	
	Math	Reading	Math	Reading
Brick	-0.035	0.011	0.020	0.022
Online	-0.292	-0.099	-0.159	-0.083

Scores by race/ethnicity

This table provides the national average starting achievement and growth score of the student-year records by sector in reading and math by race/ethnicity.

	Average Starting Achievement		Average Growth	
	Math	Reading	Math	Reading
White	0.247	0.313	-0.021	-0.012
Black	-0.440	-0.358	0.015	0.018
Hispanic	-0.124	-0.095	0.032	0.039
Asian/Pacific Islander	0.667	0.575	0.043	0.040
Native American	-0.252	-0.193	-0.033	-0.012
Multiracial	0.107	0.217	-0.031	-0.019

Scores by special populations

This table provides the national average starting achievement and growth score of the student-year records by sector in reading and math by special population.

		Average Starting Achievement		Average Growth	
		Math	Reading	Math	Reading
In Poverty	No	0.262	0.329	-0.002	0.003
	Yes	-0.278	-0.238	0.017	0.025
Special Education	No	0.023	0.079	0.008	0.016
	Yes	-0.898	-0.933	0.017	0.015
English Language Learner	No	0.000	0.066	0.005	0.011
	Yes	-0.700	-0.845	0.065	0.081
White In Poverty		-0.086	-0.023	-0.041	-0.022
Black In Poverty		-0.495	-0.427	0.016	0.018
Hispanic In Poverty		-0.200	-0.191	0.038	0.047

Scores by sector

This table provides the national average starting achievement and growth score of the student-year records by sector in reading and math by state.

		Average Starting Achievement		Average Growth	
		Math	Reading	Math	Reading
TPS		-0.050	0.005	-0.002	0.016
Charter		-0.050	0.005	0.009	-0.012

Student Decile of Achievement

This table provides the percent of charter students from each state falling in their state's decile of achievement. Data is for 2017 except for Maryland which is 2016.

Reading

State	1	2	3	4	5	6	7	8	9	10
AR	9.0%	8.6%	9.0%	8.2%	9.2%	10.4%	11.2%	10.8%	13.4%	10.0%
AZ	5.1%	8.3%	7.6%	8.7%	9.1%	10.9%	12.0%	12.0%	12.8%	13.5%
CA	8.5%	9.5%	9.2%	9.4%	9.8%	10.6%	11.3%	11.5%	11.7%	8.3%
CO	7.4%	8.7%	8.8%	9.8%	9.8%	11.2%	11.7%	11.8%	11.4%	9.5%
DC	9.0%	13.0%	10.7%	10.3%	10.2%	11.1%	10.3%	10.2%	9.2%	6.1%
FL	4.9%	6.2%	7.7%	9.2%	10.1%	12.2%	13.2%	13.1%	13.9%	9.5%
ID	6.2%	6.8%	7.2%	7.6%	9.1%	10.5%	11.9%	14.2%	15.5%	10.9%
IL	14.0%	13.5%	12.4%	11.4%	11.0%	10.4%	9.7%	8.6%	6.0%	3.1%
IN	14.7%	15.0%	12.1%	11.5%	10.8%	9.8%	9.0%	7.6%	6.3%	3.3%
LA	12.0%	12.2%	11.5%	12.2%	10.8%	10.1%	9.9%	8.3%	7.6%	5.3%
MA	8.9%	10.9%	11.8%	12.3%	11.8%	12.4%	9.6%	8.4%	8.1%	5.9%
MD	15.9%	15.8%	11.7%	10.6%	10.8%	9.5%	8.9%	7.3%	5.9%	3.7%
MI	17.0%	17.9%	12.3%	9.6%	8.1%	8.0%	7.2%	7.5%	7.2%	5.3%
MN	14.4%	10.5%	9.6%	9.8%	10.6%	10.8%	9.4%	10.2%	8.9%	5.8%
MO	18.7%	16.9%	13.9%	11.3%	10.3%	9.5%	7.4%	6.3%	4.2%	1.5%
NC	4.5%	5.1%	6.6%	7.3%	11.7%	10.1%	15.0%	12.3%	15.4%	12.1%
NJ	10.6%	10.7%	11.3%	11.8%	11.9%	11.2%	9.9%	9.4%	8.0%	5.4%
NM	7.9%	9.3%	8.6%	9.8%	9.0%	10.9%	10.8%	11.6%	11.1%	10.9%
NV	5.7%	8.0%	8.3%	8.3%	8.8%	10.2%	11.5%	12.8%	14.2%	12.3%
NY	11.2%	11.9%	10.4%	11.0%	11.6%	13.1%	10.4%	9.2%	7.6%	3.5%
NYC	4.5%	6.9%	7.4%	9.9%	11.2%	14.5%	13.4%	15.7%	11.0%	5.6%
OH	17.1%	16.0%	14.1%	12.6%	11.0%	8.8%	7.5%	6.1%	4.2%	2.6%
OR	5.6%	7.3%	7.8%	9.0%	10.5%	11.3%	12.9%	13.6%	13.4%	8.6%
PA	18.2%	19.0%	13.6%	11.5%	9.6%	8.8%	7.5%	6.0%	3.7%	2.1%
RI	6.4%	9.9%	10.3%	13.9%	11.8%	13.7%	10.6%	10.1%	8.7%	4.4%
SC	7.3%	10.0%	9.3%	9.0%	9.2%	9.2%	10.5%	10.6%	12.3%	12.7%
TN	13.9%	15.5%	13.5%	11.7%	10.9%	10.1%	8.6%	6.9%	5.7%	3.1%
TX	14.9%	10.5%	9.1%	6.9%	9.8%	10.0%	8.2%	13.4%	11.5%	5.7%
UT	9.5%	9.6%	9.4%	9.5%	10.0%	10.8%	11.0%	11.7%	11.6%	6.8%
WA	12.0%	10.1%	11.2%	10.1%	10.7%	10.0%	10.0%	11.3%	9.4%	5.2%
WI	10.1%	11.2%	10.5%	10.3%	10.3%	10.7%	10.4%	10.3%	9.9%	6.1%

New Student Decile of Achievement Differences (Charter – TPS)

Math

This table provides the differences, charter minus tps, of the percentage of students in each state achievement decile. A positive value indicates charter schools had a higher percentage of students come from that decile.

State	1	2	3	4	5	6	7	8	9	10
AR	-4.69	1.06	3.27	0.75	-3.08	1.57	-0.55	-0.79	0.57	1.90
AZ	-3.88	1.11	1.21	0.56	0.60	0.06	0.09	-0.46	-0.60	1.32
CA	0.59	2.17	1.52	0.98	0.44	-0.16	-0.49	-0.85	-1.24	-2.96
CO	-0.75	3.02	1.44	0.77	-0.10	-1.01	-0.30	-0.64	-0.83	-1.60
DC	-0.08	4.69	4.05	1.78	-0.04	0.13	-1.66	-1.43	-3.11	-4.33
FL	-3.19	-1.39	-0.43	1.08	2.28	1.56	2.44	0.72	0.18	-3.23
ID	-2.71	-2.27	-0.15	0.46	0.22	0.57	0.69	1.48	2.19	-0.50
IL	-1.18	4.18	3.20	1.60	-0.23	0.45	-0.86	-1.37	-2.50	-3.29
IN	6.00	5.21	2.95	1.96	0.35	-1.17	-1.64	-3.40	-3.93	-6.32
LA	0.38	5.36	4.55	2.05	1.86	-0.54	-1.03	-2.88	-4.25	-5.50
MA	1.35	0.71	-0.64	-0.93	-0.67	0.36	0.11	0.29	1.35	-1.92
MD	2.24	2.92	-1.23	-2.19	-0.55	-1.79	-2.72	1.78	3.18	-1.64
MI	11.47	8.89	4.08	1.11	-1.81	-2.22	-4.25	-4.54	-5.91	-6.81
MN	10.53	2.09	0.95	-0.38	0.34	-1.47	-0.66	-1.98	-3.59	-5.85
MO	3.98	3.63	2.78	1.77	1.10	0.67	-0.79	-2.85	-4.45	-5.83
NC	-1.10	0.08	-2.02	-0.49	-0.43	1.21	0.20	2.15	1.37	-0.98
NJ	3.00	4.38	2.22	1.03	-0.41	-0.70	-0.81	-2.18	-2.76	-3.79
NM	-2.04	1.37	1.23	1.13	0.24	-0.60	-0.02	-0.44	-0.25	-0.62
NV	-3.02	-0.19	-0.11	0.40	1.19	1.15	0.44	0.56	0.87	-1.30
NX	1.20	1.12	2.46	2.64	2.76	1.21	-0.74	-2.70	-3.83	-4.14
NY	-3.01	0.97	0.31	3.93	1.59	2.08	1.26	-0.03	-3.03	-4.07
OH	8.21	7.61	4.74	1.27	-0.81	-2.27	-2.81	-4.29	-5.65	-6.02
OR	-2.47	-0.32	1.22	0.58	1.53	1.11	1.51	0.53	-0.59	-3.10
PA	4.98	15.38	5.67	1.16	-2.12	-3.41	-4.51	-5.29	-5.91	-5.96
RI	-7.35	0.45	0.76	4.68	1.69	1.03	2.68	0.59	-1.60	-2.91
SC	-5.12	3.08	2.57	2.07	0.48	0.39	-1.08	-0.24	-1.82	-0.34
TN	0.67	1.85	2.16	2.75	2.54	1.52	-0.31	-1.45	-4.19	-5.55
UT	0.92	-0.45	-1.16	-0.30	0.02	0.64	1.05	1.27	1.46	-3.47
WA	0.19	1.90	0.55	1.62	0.75	-0.12	0.67	-0.18	-1.90	-3.48
WI	1.77	2.70	2.00	0.57	2.49	0.59	-0.59	-1.90	-2.23	-5.38

Comparison between CREDO's Classic Matching and Rematching Every Period

In order to address possible concerns raised by What Works Clearinghouse (WWC) reviewers, we conducted a specification test to examine differences in outcomes resulting from using single-year matches, as requested by WWC reviewers, and multi-year matches which had been used in previous CREDO studies.

In order to address this critique, we matched the charter students for NCSS3 using both methods. We then combined both sets of matched students into a single data set and ran the standard analyses. In the output, records matched using the WWC preferred method were labeled as charter while records using the classic CREDO method were labeled as charter2. The two matching methodologies produced results that were not significantly different based on a Wald test between the two coefficients. Results for reading and math are shown below.

Regression output reading

```
*****
** B1 (wwc vs classic)
*****
```

Full Effects Level: Topline charter
 note: grade_01 omitted because of collinearity.
 note: grade_02 omitted because of collinearity.

```
Linear regression          Number of obs   = 1555368
                          F(57, 14342)    = 2548.17
                          Prob > F      = 0.0000
                          R-squared     = 0.1447
                          Root MSE   = .45291
```

(Std. err. adjusted for 14,343 clusters in licensetype)

	Robust					
grz_state	Coefficient	std. err.	t	P> t	[95% conf. interval]	
z_origin	-.2335804	.0007623	-306.40	0.000	-.2350747	-.2320862
charter	.025392	.0021048	12.06	0.000	.0212662	.0295178
charter2	.0262103	.0020025	13.09	0.000	.022285	.0301355
re_black	-.1172255	.0018359	-63.85	0.000	-.1208241	-.1136269
re_hisp	-.0421772	.0014794	-28.51	0.000	-.045077	-.0392775
re_asianpi	.097304	.003213	30.28	0.000	.0910062	.1036019
re_nativam	-.1027741	.005427	-18.94	0.000	-.1134118	-.0921364
re_multi	-.0229978	.0014878	-15.46	0.000	-.0259141	-.0200815
lunch	-.0661558	.0009482	-69.77	0.000	-.0680144	-.0642971
ell	-.1058805	.0016336	-64.81	0.000	-.1090826	-.1026785
sped	-.1726791	.0011836	-145.90	0.000	-.174999	-.1703591
retained	-.0577703	.0143129	-4.04	0.000	-.0858256	-.0297151
female	.0582913	.0004617	126.26	0.000	.0573864	.0591963
year_grz_2016	.0042838	.0012884	3.33	0.001	.0017585	.0068092
year_grz_2017	-.0120587	.0013596	-8.87	0.000	-.0147237	-.0093937
year_grz_2018	-.01967	.0014777	-13.31	0.000	-.0225665	-.0167735
period_2	.0267546	.0011356	23.56	0.000	.0245285	.0289806

period_3		.0405359	.0014883	27.24	0.000	.0376186	.0434532
period_4		.0409504	.0019021	21.53	0.000	.0372221	.0446786
grade_01		0 (omitted)					
grade_02		0 (omitted)					
grade_03		.5100745	.0161029	31.68	0.000	.4785106	.5416383
grade_04		-.0046817	.0015188	-3.08	0.002	-.0076588	-.0017046
grade_06		.007619	.0015271	4.99	0.000	.0046257	.0106123
grade_07		.0111319	.0014683	7.58	0.000	.0082539	.0140099
grade_08		.0087702	.001531	5.73	0.000	.0057692	.0117711
grade_09		.0757444	.0049647	15.26	0.000	.0660129	.0854759
grade_10		-.0191025	.0032055	-5.96	0.000	-.0253858	-.0128193
grade_11		.0178003	.0045278	3.93	0.000	.0089252	.0266754
grade_12		.0684245	.0151283	4.52	0.000	.038771	.098078
AR		-.0294672	.008381	-3.52	0.000	-.045895	-.0130393
AZ		-.0134709	.0070608	-1.91	0.056	-.027311	.0003693
CA		-.0273316	.0065374	-4.18	0.000	-.0401456	-.0145175
CO		-.0452873	.008018	-5.65	0.000	-.0610036	-.0295709
DC		.0375568	.0089822	4.18	0.000	.0199506	.055163
FL		.0280038	.0067164	4.17	0.000	.0148388	.0411687
ID		-.0409204	.0091672	-4.46	0.000	-.0588894	-.0229515
IL		-.0833972	.0075138	-11.10	0.000	-.0981252	-.0686693
IN		-.0441632	.0085016	-5.19	0.000	-.0608275	-.027499
LA		-.0394194	.0084637	-4.66	0.000	-.0560093	-.0228295
MA		-.0124132	.0085552	-1.45	0.147	-.0291825	.004356
MI		-.0625193	.007449	-8.39	0.000	-.0771204	-.0479183
MN		-.046304	.0089303	-5.19	0.000	-.0638085	-.0287995
MO		-.0443481	.010451	-4.24	0.000	-.0648334	-.0238628
NC		.0014593	.0070544	0.21	0.836	-.0123683	.0152869
NJ		-.0063719	.0114309	-0.56	0.577	-.028778	.0160342
NM		-.0164059	.012151	-1.35	0.177	-.0402235	.0074116
NX		-.0265233	.0114762	-2.31	0.021	-.0490182	-.0040284
NY		.0553183	.0069437	7.97	0.000	.0417077	.0689289
OH		-.1151999	.0088787	-12.97	0.000	-.1326033	-.0977965
OR		-.0610333	.0087396	-6.98	0.000	-.0781642	-.0439025
PA		-.0911557	.008328	-10.95	0.000	-.1074797	-.0748317
RI		-.0244365	.0141667	-1.72	0.085	-.052205	.003332
SC		-.0188802	.0121891	-1.55	0.121	-.0427725	.005012
TN		-.0534372	.0083736	-6.38	0.000	-.0698505	-.0370239
TX		.0049586	.0066861	0.74	0.458	-.0081469	.0180642
UT		-.0721858	.0078099	-9.24	0.000	-.0874942	-.0568775
WA		.0185331	.0296817	0.62	0.532	-.0396469	.076713
WI		-.0908841	.0093945	-9.67	0.000	-.1092986	-.0724696
_cons		.066353	.0064693	10.26	0.000	.0536723	.0790337

(1) charter - charter2 = 0

F(1, 14342) = 0.10
 Prob > F = 0.7568

Regression output math

```
*****
** B1 (wwc vs classic)
*****
```

Full Effects Level: Topline charter
 note: grade_01 omitted because of collinearity.
 note: grade_02 omitted because of collinearity.

```
Linear regression                Number of obs   = 14659892
                                F(57, 14288)    = 1433.96
                                Prob > F              = 0.0000
                                R-squared              = 0.1412
                                Root MSE           = .46078
```

(Std. err. adjusted for 14,289 clusters in licensetype)

	Robust					
grz_state	Coefficient	std. err.	t	P> t	[95% conf. interval]	
z_origin	-.2218349	.0010396	-213.39	0.000	-.2238726	-.2197972
charter	.0093027	.0029851	3.12	0.002	.0034516	.0151538
charter2	.0094044	.003019	3.12	0.002	.0034867	.015322
re_black	-.1240516	.0023444	-52.91	0.000	-.1286468	-.1194563
re_hisp	-.0522621	.0018881	-27.68	0.000	-.055963	-.0485613
re_asianpi	.1290861	.0036127	35.73	0.000	.1220047	.1361676
re_nativam	-.1109803	.0055467	-20.01	0.000	-.1218525	-.1001082
re_multi	-.0341513	.0017716	-19.28	0.000	-.0376238	-.0306789
lunch	-.0651255	.0011295	-57.66	0.000	-.0673395	-.0629114
ell	-.0723375	.0019115	-37.84	0.000	-.0760843	-.0685907
sped	-.1461489	.0012912	-113.19	0.000	-.1486798	-.143618
retained	.0273431	.0087912	3.11	0.002	.0101111	.0445751
female	.0085335	.0004671	18.27	0.000	.0076179	.0094491
year_grz_2016	.0041253	.0016495	2.50	0.012	.000892	.0073587
year_grz_2017	-.0133282	.001716	-7.77	0.000	-.0166919	-.0099646
year_grz_2018	-.0128394	.0018742	-6.85	0.000	-.0165132	-.0091657
period_2	.0344384	.0015987	21.54	0.000	.0313048	.037572
period_3	.0460104	.0020585	22.35	0.000	.0419754	.0500454
period_4	.0312445	.002799	11.16	0.000	.0257582	.0367309
grade_01	0 (omitted)					
grade_02	0 (omitted)					
grade_03	.5186316	.0106406	48.74	0.000	.4977747	.5394885
grade_04	-.0009428	.0020502	-0.46	0.646	-.0049615	.0030758
grade_06	.0225842	.0021532	10.49	0.000	.0183637	.0268047
grade_07	.0527293	.0020539	25.67	0.000	.0487033	.0567552
grade_08	.0707829	.0029657	23.87	0.000	.0649699	.076596
grade_09	-.1041905	.0054471	-19.13	0.000	-.1148674	-.0935135
grade_10	-.0935793	.0059208	-15.81	0.000	-.1051849	-.0819737
grade_11	-.028875	.0054939	-5.26	0.000	-.0396437	-.0181062
grade_12	-.0965984	.0189363	-5.10	0.000	-.133716	-.0594808
AR	.0241415	.0117264	2.06	0.040	.0011562	.0471267

AZ		.0064149	.008079	0.79	0.427	-.0094209	.0222508
CA		-.0177337	.0074122	-2.39	0.017	-.0322626	-.0032049
CO		-.0296089	.0086054	-3.44	0.001	-.0464766	-.0127412
DC		.0615161	.0107689	5.71	0.000	.0404078	.0826245
FL		.0789896	.0079493	9.94	0.000	.063408	.0945713
ID		-.0290985	.0121875	-2.39	0.017	-.0529876	-.0052093
IL		-.0421475	.0085658	-4.92	0.000	-.0589375	-.0253574
IN		-.0791549	.0132809	-5.96	0.000	-.1051871	-.0531227
LA		-.0132376	.0088081	-1.50	0.133	-.0305026	.0040275
MA		-.0182111	.0103414	-1.76	0.078	-.0384815	.0020594
MI		-.0772772	.0084851	-9.11	0.000	-.0939091	-.0606452
MN		-.0743674	.0097848	-7.60	0.000	-.0935468	-.0551879
MO		-.0201058	.0152068	-1.32	0.186	-.049913	.0097014
NC		-.0120484	.0094054	-1.28	0.200	-.0304843	.0063874
NJ		-.0148826	.0132608	-1.12	0.262	-.0408755	.0111103
NM		.0190843	.013156	1.45	0.147	-.0067032	.0448718
NX		-.0677675	.0131116	-5.17	0.000	-.093468	-.042067
NY		.0656076	.0085051	7.71	0.000	.0489365	.0822787
OH		-.1016358	.0104494	-9.73	0.000	-.122118	-.0811536
OR		-.0821535	.0102842	-7.99	0.000	-.102312	-.0619951
PA		-.1096505	.010041	-10.92	0.000	-.1293321	-.0899689
RI		-.0064684	.0182898	-0.35	0.724	-.0423188	.029382
SC		-.0142616	.0127919	-1.11	0.265	-.0393353	.0108121
TN		-.0262995	.0103155	-2.55	0.011	-.0465192	-.0060798
TX		.0268987	.0085347	3.15	0.002	.0101696	.0436278
UT		-.0579875	.0088492	-6.55	0.000	-.0753332	-.0406418
WA		-.0087172	.0333442	-0.26	0.794	-.0740762	.0566418
WI		-.0724346	.0096594	-7.50	0.000	-.0913682	-.053501
_cons		.0665899	.0073593	9.05	0.000	.0521648	.081015

(1) charter - charter2 = 0

F(1, 14288) = 0.00
 Prob > F = 0.9792

State-level Regressions

Charter Growth Effect by State, Reading and Math

This table provides the statistical values for the average charter effects for each state marginal to their state's VCRs as taken from the OLS regression. This table includes the transformation of the statistical values into days of learning.

	Days of Learning Equivalence Reading	Reading Effect	Reading Standard Error	Reading Significant	Days of Learning Equivalence Math	Math Effect	Math Standard Error	Math Significant
AR	3	0.006	0.014		-1	-0.002	0.021	
AZ	20	0.034	0.007	**	1	0.001	0.01	
CA	11	0.019	0.005	**	4	0.007	0.006	
CO	15	0.026	0.011	*	13	0.023	0.011	*
DC	5	0.008	0.015		32	0.056	0.019	**
FL	8	0.014	0.005	**	-1	-0.002	0.008	
ID	17	0.03	0.015	*	8	0.013	0.022	
IL	40	0.069	0.011	**	48	0.083	0.013	**
IN	3	0.005	0.017		-27	-0.046	0.034	
LA	3	0.006	0.013		6	0.01	0.014	
MA	41	0.071	0.014	**	41	0.071	0.018	**
MD	37	0.064	0.023	**	37	0.064	0.018	**
MI	36	0.063	0.009	**	24	0.041	0.011	**
MN	21	0.037	0.014	**	8	0.013	0.016	
MO	39	0.068	0.021	**	56	0.097	0.038	*
NC	13	0.023	0.007	**	-17	-0.029	0.015	
NJ	33	0.057	0.021	**	32	0.055	0.025	*
NM	11	0.019	0.029		7	0.012	0.031	
NV	8	0.013	0.015		3	0.006	0.017	
NY	75	0.129	0.021	**	73	0.126	0.023	**
NYC	42	0.073	0.007	**	80	0.139	0.011	**
OH	-4	-0.007	0.018		-38	-0.065	0.023	**
OR	-18	-0.032	0.015	*	-32	-0.055	0.019	**
PA	-1	-0.002	0.016		-21	-0.037	0.019	
RI	90	0.156	0.026	**	88	0.152	0.038	**
SC	-8	-0.014	0.021		-47	-0.082	0.026	**
TN	34	0.058	0.013	**	39	0.067	0.019	**
TX	24	0.042	0.006	**	-5	-0.008	0.013	
UT	-2	-0.003	0.012		-14	-0.025	0.013	
WA	26	0.045	0.064		39	0.068	0.081	
WI	15	0.026	0.017		16	0.028	0.017	

Marginal Charter Effects by Race/Ethnicity by State

The next two tables provide regression results in reading and math for each race/ethnicity subgroup in each state. The values for the state_re_race_charter variables are the marginal difference for charter records of that race/ethnicity in the state relative to the TPS VCR records in that same state. In order to align with the national regressions, the omitted group for reading is AR_re_white and for math TN_re_white. Those groups would have an effect of 0.00.

Reading

Variable	Effect	Standard Error	Variable	Effect	Standard Error
z_origin	-0.24 **	(0.001)	DC_re_white_charter	-0.13 **	(0.036)
AR_re_white_charter	-0.01	(0.017)	DC_re_black_charter	0.033 *	(0.014)
AR_re_black_charter	0.044 **	(0.017)	DC_re_hisp_charter	-0.06 **	(0.016)
AR_re_hisp_charter	0.006	(0.019)	DC_re_asianpi_charter	-0.059	(0.082)
AR_re_asianpi_charter	0.027	(0.052)	DC_re_nativam_charter	-0.034	(0.115)
AR_re_nativam_charter	0.027	(0.089)	DC_re_multi_charter	-0.064	(0.084)
AR_re_multi_charter	0.024	(0.028)	FL_re_white_charter	0.013 *	(0.005)
AZ_re_white_charter	0.031 **	(0.008)	FL_re_black_charter	0.03 **	(0.007)
AZ_re_black_charter	0.044 **	(0.011)	FL_re_hisp_charter	0.02 **	(0.006)
AZ_re_hisp_charter	0.051 **	(0.007)	FL_re_asianpi_charter	-0.008	(0.012)
AZ_re_asianpi_charter	0.023	(0.017)	FL_re_nativam_charter	-0.057	(0.042)
AZ_re_nativam_charter	0.026	(0.021)	FL_re_multi_charter	0.008	(0.008)
AZ_re_multi_charter	0.015	(0.013)	ID_re_white_charter	0.036 *	(0.015)
CA_re_white_charter	-0.026 **	(0.006)	ID_re_black_charter	0.007	(0.069)
CA_re_black_charter	0.049 **	(0.009)	ID_re_hisp_charter	0.021	(0.025)
CA_re_hisp_charter	0.054 **	(0.006)	ID_re_asianpi_charter	-0.033	(0.043)
CA_re_asianpi_charter	0.002	(0.007)	ID_re_nativam_charter	0.014	(0.066)
CA_re_nativam_charter	-0.081 **	(0.020)	ID_re_multi_charter	0.018	(0.030)
CA_re_multi_charter	-0.034 **	(0.009)	IL_re_white_charter	0.03	(0.021)
CO_re_white_charter	0.011	(0.010)	IL_re_black_charter	0.087 **	(0.014)
CO_re_black_charter	0.076 **	(0.017)	IL_re_hisp_charter	0.072 **	(0.016)
CO_re_hisp_charter	0.056 **	(0.016)	IL_re_asianpi_charter	0.016	(0.045)
CO_re_asianpi_charter	0.035	(0.018)	IL_re_nativam_charter	0.126	(0.113)
CO_re_nativam_charter	0.022	(0.049)	IL_re_multi_charter	-0.056	(0.045)
CO_re_multi_charter	0.025	(0.018)	IN_re_white_charter	-0.056 *	(0.022)

Variable	Effect		Standard Error	Variable	Effect		Standard Error
IN_re_black_charter	0.071	**	(0.014)	MN_re_hisp_charter	0.046	**	(0.015)
IN_re_hisp_charter	0.02		(0.017)	MN_re_asianpi_charter	0.045	*	(0.021)
IN_re_asianpi_charter	-0.115	**	(0.040)	MN_re_nativam_charter	-0.001		(0.037)
IN_re_nativam_charter	-0.316	*	(0.130)	MN_re_multi_charter	0.007		(0.020)
IN_re_multi_charter	0.001		(0.027)	MO_re_white_charter	0.004		(0.022)
LA_re_white_charter	-0.002		(0.031)	MO_re_black_charter	0.08	**	(0.025)
LA_re_black_charter	0.009		(0.012)	MO_re_hisp_charter	0.09	*	(0.037)
LA_re_hisp_charter	0.052	**	(0.018)	MO_re_asianpi_charter	0.091		(0.050)
LA_re_asianpi_charter	-0.027		(0.053)	MO_re_nativam_charter	0.145		(0.126)
LA_re_nativam_charter	-0.024		(0.057)	MO_re_multi_charter	0.09		(0.055)
LA_re_multi_charter	-0.002		(0.036)	NC_re_white_charter	0.003		(0.008)
MA_re_white_charter	0.041	*	(0.017)	NC_re_black_charter	0.065	**	(0.012)
MA_re_black_charter	0.089	**	(0.020)	NC_re_hisp_charter	0.057	**	(0.011)
MA_re_hisp_charter	0.126	**	(0.020)	NC_re_asianpi_charter	-0.014		(0.012)
MA_re_asianpi_charter	0.036		(0.022)	NC_re_nativam_charter	0.076		(0.047)
MA_re_nativam_charter	0.064		(0.090)	NC_re_multi_charter	0.037	*	(0.015)
MA_re_multi_charter	0.049		(0.032)	NJ_re_white_charter	0.043		(0.026)
MD_re_white_charter	0.119		(0.063)	NJ_re_black_charter	0.075	**	(0.027)
MD_re_black_charter	0.061	**	(0.024)	NJ_re_hisp_charter	0.044	**	(0.016)
MD_re_hisp_charter	0.095	**	(0.033)	NJ_re_asianpi_charter	0.051		(0.042)
MD_re_asianpi_charter	0.093		(0.058)	NJ_re_nativam_charter	0.142		(0.097)
MD_re_nativam_charter	0.136		(0.181)	NJ_re_multi_charter	0.065		(0.054)
MD_re_multi_charter	0.096		(0.062)	NM_re_white_charter	0.012		(0.041)
MI_re_white_charter	0.028		(0.015)	NM_re_black_charter	0.028		(0.077)
MI_re_black_charter	0.091	**	(0.011)	NM_re_hisp_charter	0.037		(0.027)
MI_re_hisp_charter	0.077	**	(0.018)	NM_re_asianpi_charter	0.026		(0.057)
MI_re_asianpi_charter	0.088	**	(0.024)	NM_re_nativam_charter	-0.003		(0.031)
MI_re_nativam_charter	0.031		(0.043)	NM_re_multi_charter	-0.014		(0.064)
MI_re_multi_charter	0.054	**	(0.017)	NV_re_white_charter	-0.001		(0.019)
MN_re_white_charter	0.021		(0.013)	NV_re_black_charter	0.05	*	(0.021)
MN_re_black_charter	0.099	**	(0.016)	NV_re_hisp_charter	0.041	*	(0.018)

Variable	Effect	Standard Error	Variable	Effect	Standard Error
NV_re_asianpi_charter	-0.007	(0.017)	PA_re_nativam_charter	-0.002	(0.042)
NV_re_nativam_charter	-0.049	(0.075)	PA_re_multi_charter	-0.037 *	(0.019)
NV_re_multi_charter	0.01	(0.020)	RI_re_white_charter	0.121 **	(0.040)
NY_re_white_charter	0.122 **	(0.020)	RI_re_black_charter	0.18 **	(0.027)
NY_re_black_charter	0.132 **	(0.023)	RI_re_hisp_charter	0.174 **	(0.029)
NY_re_hisp_charter	0.14 **	(0.032)	RI_re_asianpi_charter	0.064	(0.089)
NY_re_asianpi_charter	0.127 **	(0.035)	RI_re_nativam_charter	0.159	(0.160)
NY_re_nativam_charter	0.282 **	(0.108)	RI_re_multi_charter	0.148 **	(0.052)
NY_re_multi_charter	0.075	(0.039)	SC_re_white_charter	-0.026	(0.025)
NYC_re_white_charter	-0.059 **	(0.019)	SC_re_black_charter	0.023	(0.019)
NYC_re_black_charter	0.092 **	(0.007)	SC_re_hisp_charter	0.011	(0.029)
NYC_re_hisp_charter	0.082 **	(0.010)	SC_re_asianpi_charter	0.053	(0.059)
NYC_re_asianpi_charter	-0.055 *	(0.022)	SC_re_nativam_charter	-0.034	(0.046)
NYC_re_nativam_charter	0.133 **	(0.040)	SC_re_multi_charter	-0.023	(0.072)
NYC_re_multi_charter	-0.035	(0.041)	TN_re_white_charter	0.123 **	(0.046)
OH_re_white_charter	-0.108 **	(0.015)	TN_re_black_charter	0.04 **	(0.011)
OH_re_black_charter	0.071 **	(0.013)	TN_re_hisp_charter	0.132 **	(0.017)
OH_re_hisp_charter	-0.008	(0.018)	TN_re_asianpi_charter	0.087 *	(0.041)
OH_re_asianpi_charter	-0.029	(0.048)	TN_re_nativam_charter	0.122	(0.195)
OH_re_nativam_charter	-0.168 *	(0.085)	TN_re_multi_charter	0	(.)
OH_re_multi_charter	-0.038	(0.022)	TX_re_white_charter	-0.011	(0.013)
OR_re_white_charter	-0.031	(0.016)	TX_re_black_charter	0.03 **	(0.008)
OR_re_black_charter	-0.043	(0.053)	TX_re_hisp_charter	0.069 **	(0.007)
OR_re_hisp_charter	-0.006	(0.020)	TX_re_asianpi_charter	-0.019 **	(0.007)
OR_re_asianpi_charter	0.058	(0.039)	TX_re_nativam_charter	-0.047	(0.039)
OR_re_nativam_charter	-0.047	(0.066)	TX_re_multi_charter	-0.004	(0.013)
OR_re_multi_charter	-0.056 *	(0.024)	UT_re_white_charter	-0.001	(0.012)
PA_re_white_charter	-0.086 **	(0.023)	UT_re_black_charter	0.01	(0.033)
PA_re_black_charter	0.062 **	(0.011)	UT_re_hisp_charter	0.02	(0.014)
PA_re_hisp_charter	0.038 *	(0.016)	UT_re_asianpi_charter	0.045	(0.024)
PA_re_asianpi_charter	-0.024	(0.031)	UT_re_nativam_charter	-0.048	(0.065)

Variable	Effect	Standard Error	Variable	Effect	Standard Error
UT_re_multi_charter	0.004	(0.021)	grade_08	0.012 **	(0.002)
WA_re_white_charter	0.026	(0.047)	grade_09	0.079 **	(0.005)
WA_re_black_charter	0.072	(0.076)	grade_10	-0.02 **	(0.004)
WA_re_hisp_charter	0.098	(0.085)	grade_11	0.01 *	(0.005)
WA_re_asianpi_charter	0.141	(0.104)	grade_12	0.031 *	(0.015)
WA_re_nativam_charter	-0.062	(0.051)	AR_re_black	-0.185 **	(0.009)
WA_re_multi_charter	-0.002	(0.091)	AR_re_hisp	-0.031 **	(0.010)
WI_re_white_charter	-0.03	(0.018)	AR_re_asianpi	0.119 **	(0.040)
WI_re_black_charter	0.145 **	(0.030)	AR_re_nativam	-0.087 *	(0.042)
WI_re_hisp_charter	0.061 *	(0.031)	AR_re_multi	-0.05 **	(0.014)
WI_re_asianpi_charter	0.083 **	(0.026)	AZ_re_white	0.005	(0.006)
WI_re_nativam_charter	-0.109	(0.078)	AZ_re_black	-0.11 **	(0.008)
WI_re_multi_charter	-0.026	(0.035)	AZ_re_hisp	-0.097 **	(0.006)
ch_lunch	0.003	(0.002)	AZ_re_asianpi	0.134 **	(0.010)
ch_ell	-0.042 **	(0.004)	AZ_re_nativam	-0.173 **	(0.013)
ch_sped	-0.057 **	(0.002)	AZ_re_multi	-0.011	(0.009)
ch_retained	0.041	(0.023)	CA_re_white	0.001	(0.006)
lunch	-0.069 **	(0.001)	CA_re_black	-0.18 **	(0.007)
ell	-0.093 **	(0.002)	CA_re_hisp	-0.084 **	(0.006)
sped	-0.149 **	(0.001)	CA_re_asianpi	0.093 **	(0.007)
retained	-0.136 **	(0.023)	CA_re_nativam	-0.079 **	(0.011)
female	0.06 **	(0.001)	CA_re_multi	0.001	(0.007)
period_2	0.025 **	(0.001)	CO_re_white	-0.017 *	(0.007)
period_3	0.028 **	(0.002)	CO_re_black	-0.162 **	(0.011)
period_4	0.023 **	(0.002)	CO_re_hisp	-0.132 **	(0.010)
grade_01	0	(.)	CO_re_asianpi	0.071 **	(0.011)
grade_02	0	(.)	CO_re_nativam	-0.124 **	(0.025)
grade_03	0.555 **	(0.018)	CO_re_multi	-0.017	(0.011)
grade_04	-0.005 **	(0.002)	DC_re_white	0.27 **	(0.013)
grade_06	0.011 **	(0.002)	DC_re_black	-0.095 **	(0.009)
grade_07	0.015 **	(0.002)	DC_re_hisp	0.067 **	(0.010)

Variable	Effect	Standard Error	Variable	Effect	Standard Error
DC_re_asianpi	0.196 **	(0.050)	LA_re_nativam	-0.047	(0.043)
DC_re_nativam	-0.109	(0.056)	LA_re_multi	-0.026	(0.017)
DC_re_multi	0.155 **	(0.056)	MA_re_white	-0.036 **	(0.010)
FL_re_white	0.005	(0.006)	MA_re_black	-0.13 **	(0.008)
FL_re_black	-0.086 **	(0.007)	MA_re_hisp	-0.116 **	(0.009)
FL_re_hisp	0.019 **	(0.007)	MA_re_asianpi	0.084 **	(0.014)
FL_re_asianpi	0.133 **	(0.008)	MA_re_nativam	0.016	(0.043)
FL_re_nativam	-0.002	(0.028)	MA_re_multi	-0.047 *	(0.019)
FL_re_multi	-0.006	(0.007)	MD_re_white	-0.051 *	(0.025)
ID_re_white	-0.041 **	(0.008)	MD_re_black	-0.187 **	(0.017)
ID_re_black	-0.113 **	(0.039)	MD_re_hisp	-0.086 **	(0.024)
ID_re_hisp	-0.103 **	(0.009)	MD_re_asianpi	0.09 **	(0.033)
ID_re_asianpi	0.076 **	(0.026)	MD_re_nativam	-0.487 **	(0.113)
ID_re_nativam	-0.213 **	(0.037)	MD_re_multi	-0.07 *	(0.033)
ID_re_multi	-0.045 *	(0.022)	MI_re_white	-0.046 **	(0.008)
IL_re_white	-0.043 **	(0.009)	MI_re_black	-0.233 **	(0.006)
IL_re_black	-0.242 **	(0.008)	MI_re_hisp	-0.091 **	(0.008)
IL_re_hisp	-0.138 **	(0.009)	MI_re_asianpi	0.11 **	(0.014)
IL_re_asianpi	0.048	(0.029)	MI_re_nativam	-0.136 **	(0.015)
IL_re_nativam	-0.229 **	(0.084)	MI_re_multi	-0.136 **	(0.011)
IL_re_multi	-0.08 *	(0.032)	MN_re_white	-0.012	(0.007)
IN_re_white	-0.011	(0.009)	MN_re_black	-0.172 **	(0.008)
IN_re_black	-0.184 **	(0.007)	MN_re_hisp	-0.127 **	(0.011)
IN_re_hisp	-0.052 **	(0.009)	MN_re_asianpi	-0.061 **	(0.013)
IN_re_asianpi	0.106 **	(0.026)	MN_re_nativam	-0.123 **	(0.023)
IN_re_nativam	0.143 *	(0.071)	MN_re_multi	-0.061 **	(0.013)
IN_re_multi	-0.067 **	(0.014)	MO_re_white	-0.01	(0.012)
LA_re_white	0.003	(0.011)	MO_re_black	-0.198 **	(0.008)
LA_re_black	-0.156 **	(0.008)	MO_re_hisp	-0.096 **	(0.030)
LA_re_hisp	-0.05 **	(0.011)	MO_re_asianpi	0.028	(0.029)
LA_re_asianpi	0.119 **	(0.028)	MO_re_nativam	-0.251 **	(0.076)

Variable	Effect	Standard Error	Variable	Effect	Standard Error
MO_re_multi	-0.109 **	(0.025)	NY_re_white	0.132 **	(0.013)
NC_re_white	0.018 *	(0.007)	NY_re_black	-0.081 **	(0.007)
NC_re_black	-0.141 **	(0.007)	NY_re_hisp	-0.036 **	(0.008)
NC_re_hisp	-0.055 **	(0.007)	NY_re_asianpi	0.175 **	(0.011)
NC_re_asianpi	0.147 **	(0.010)	NY_re_nativam	-0.058 *	(0.026)
NC_re_nativam	-0.119 **	(0.031)	NY_re_multi	0.076 *	(0.031)
NC_re_multi	-0.042 **	(0.010)	OH_re_white	-0.044 **	(0.010)
NJ_re_white	-0.006	(0.014)	OH_re_black	-0.259 **	(0.010)
NJ_re_black	-0.136 **	(0.013)	OH_re_hisp	-0.135 **	(0.014)
NJ_re_hisp	-0.085 **	(0.010)	OH_re_asianpi	0.049	(0.028)
NJ_re_asianpi	0.124 **	(0.013)	OH_re_nativam	-0.053	(0.055)
NJ_re_nativam	-0.112 **	(0.034)	OH_re_multi	-0.135 **	(0.018)
NJ_re_multi	-0.094 *	(0.037)	OR_re_white	-0.031 **	(0.007)
NM_re_white	0.011	(0.009)	OR_re_black	-0.169 **	(0.037)
NM_re_black	-0.098 **	(0.032)	OR_re_hisp	-0.079 **	(0.009)
NM_re_hisp	-0.071 **	(0.008)	OR_re_asianpi	0.029	(0.025)
NM_re_asianpi	0.109 **	(0.024)	OR_re_nativam	-0.131 **	(0.034)
NM_re_nativam	-0.059 **	(0.011)	OR_re_multi	-0.051 **	(0.012)
NM_re_multi	0.003	(0.030)	PA_re_white	-0.041 **	(0.007)
NV_re_white	0.018 *	(0.009)	PA_re_black	-0.218 **	(0.006)
NV_re_black	-0.137 **	(0.012)	PA_re_hisp	-0.163 **	(0.009)
NV_re_hisp	-0.053 **	(0.009)	PA_re_asianpi	0.097 **	(0.011)
NV_re_asianpi	0.094 **	(0.009)	PA_re_nativam	-0.155 **	(0.024)
NV_re_nativam	-0.039	(0.049)	PA_re_multi	-0.112 **	(0.009)
NV_re_multi	0.001	(0.009)	RI_re_white	-0.037 **	(0.014)
NY_re_white	-0.088 **	(0.011)	RI_re_black	-0.222 **	(0.014)
NY_re_black	-0.197 **	(0.016)	RI_re_hisp	-0.149 **	(0.011)
NY_re_hisp	-0.136 **	(0.016)	RI_re_asianpi	-0.095 *	(0.046)
NY_re_asianpi	0.056	(0.032)	RI_re_nativam	-0.282 **	(0.105)
NY_re_nativam	-0.239 **	(0.069)	RI_re_multi	-0.091 *	(0.038)
NY_re_multi	-0.161 **	(0.024)	SC_re_white	0.009	(0.014)

Variable	Effect	Standard Error	Variable	Effect	Standard Error
SC_re_black	-0.146 **	(0.012)	UT_re_hisp	-0.133 **	(0.008)
SC_re_hisp	-0.004	(0.016)	UT_re_asianpi	-0.07 **	(0.015)
SC_re_asianpi	0.133 **	(0.018)	UT_re_nativam	-0.168 **	(0.035)
SC_re_nativam	-0.005	(0.029)	UT_re_multi	-0.07 **	(0.012)
SC_re_multi	-0.075 *	(0.031)	WA_re_white	-0.002	(0.025)
TN_re_white	-0.047 **	(0.016)	WA_re_black	-0.097 **	(0.027)
TN_re_black	-0.193 **	(0.007)	WA_re_hisp	-0.073 **	(0.027)
TN_re_hisp	-0.138 **	(0.011)	WA_re_asianpi	0.112	(0.066)
TN_re_asianpi	0.045 *	(0.022)	WA_re_nativam	-0.087 **	(0.020)
TN_re_nativam	-0.249 *	(0.117)	WA_re_multi	0.001	(0.039)
TN_re_multi	0	(.)	WI_re_white	-0.04 **	(0.008)
TX_re_white	0	(0.007)	WI_re_black	-0.313 **	(0.010)
TX_re_black	-0.113 **	(0.006)	WI_re_hisp	-0.155 **	(0.024)
TX_re_hisp	-0.059 **	(0.006)	WI_re_asianpi	-0.009	(0.011)
TX_re_asianpi	0.128 **	(0.007)	WI_re_nativam	-0.204 **	(0.047)
TX_re_nativam	-0.029	(0.018)	WI_re_multi	-0.122 **	(0.021)
TX_re_multi	-0.018 *	(0.009)	_cons	0.059 **	(0.006)
UT_re_white	-0.047 **	(0.007)	Obs	7838784	
UT_re_black	-0.174 **	(0.016)	R-Sqr	0.156	

Math

Variable	Growth		Standard Error	Variable	Growth		Standard Error
z_origin	-0.228	**	(0.001)	DC_re_multi_charter	-0.101		(0.076)
AR_re_white_charter	-0.028		(0.027)	FL_re_white_charter	-0.011		(0.009)
AR_re_black_charter	0.047	*	(0.022)	FL_re_black_charter	0.019		(0.011)
AR_re_hisp_charter	-0.023		(0.022)	FL_re_hisp_charter	-0.002		(0.011)
AR_re_asianpi_charter	0.018		(0.071)	FL_re_asianpi_charter	-0.029		(0.016)
AR_re_nativam_charter	-0.067		(0.071)	FL_re_nativam_charter	-0.034		(0.054)
AR_re_multi_charter	-0.024		(0.040)	FL_re_multi_charter	-0.014		(0.013)
AZ_re_white_charter	-0.015		(0.011)	ID_re_white_charter	0.019		(0.022)
AZ_re_black_charter	0.01		(0.015)	ID_re_black_charter	-0.016		(0.063)
AZ_re_hisp_charter	0.025	*	(0.010)	ID_re_hisp_charter	-0.024		(0.035)
AZ_re_asianpi_charter	-0.02		(0.020)	ID_re_asianpi_charter	0.08		(0.054)
AZ_re_nativam_charter	0.003		(0.029)	ID_re_nativam_charter	0.149	*	(0.076)
AZ_re_multi_charter	-0.023		(0.017)	ID_re_multi_charter	0.039		(0.039)
CA_re_white_charter	-0.044	**	(0.008)	IL_re_white_charter	0.005		(0.029)
CA_re_black_charter	0.028	**	(0.010)	IL_re_black_charter	0.091	**	(0.014)
CA_re_hisp_charter	0.04	**	(0.006)	IL_re_hisp_charter	0.083	**	(0.020)
CA_re_asianpi_charter	-0.011		(0.010)	IL_re_asianpi_charter	-0.02		(0.037)
CA_re_nativam_charter	-0.111	**	(0.019)	IL_re_nativam_charter	0.341	*	(0.144)
CA_re_multi_charter	-0.057	**	(0.011)	IL_re_multi_charter	0.001		(0.042)
CO_re_white_charter	-0.001		(0.012)	IN_re_white_charter	-0.157	**	(0.044)
CO_re_black_charter	0.073	**	(0.020)	IN_re_black_charter	0.045		(0.024)
CO_re_hisp_charter	0.053	**	(0.014)	IN_re_hisp_charter	-0.015		(0.031)
CO_re_asianpi_charter	-0.004		(0.022)	IN_re_asianpi_charter	-0.141	*	(0.063)
CO_re_nativam_charter	0.028		(0.051)	IN_re_nativam_charter	-0.15		(0.113)
CO_re_multi_charter	0.034		(0.019)	IN_re_multi_charter	-0.052		(0.043)
DC_re_white_charter	-0.103	**	(0.036)	LA_re_white_charter	-0.04		(0.037)
DC_re_black_charter	0.079	**	(0.019)	LA_re_black_charter	0.019		(0.012)
DC_re_hisp_charter	-0.068	*	(0.033)	LA_re_hisp_charter	0.019		(0.022)
DC_re_asianpi_charter	-0.095		(0.073)	LA_re_asianpi_charter	-0.011		(0.051)
DC_re_nativam_charter	-0.066		(0.120)	LA_re_nativam_charter	-0.066		(0.075)

Variable	Growth	Standard Error
LA_re_multi_charter	-0.035	(0.040)
MA_re_white_charter	0.018	(0.020)
MA_re_black_charter	0.104 **	(0.027)
MA_re_hisp_charter	0.131 **	(0.021)
MA_re_asianpi_charter	0.006	(0.031)
MA_re_nativam_charter	0.063	(0.119)
MA_re_multi_charter	0.018	(0.032)
MD_re_white_charter	0.042	(0.052)
MD_re_black_charter	0.066 **	(0.019)
MD_re_hisp_charter	0.108 **	(0.028)
MD_re_asianpi_charter	-0.016	(0.054)
MD_re_nativam_charter	-0.242	(0.346)
MD_re_multi_charter	0.08	(0.046)
MI_re_white_charter	-0.009	(0.020)
MI_re_black_charter	0.068 **	(0.011)
MI_re_hisp_charter	0.054 **	(0.021)
MI_re_asianpi_charter	0.056	(0.044)
MI_re_nativam_charter	0.009	(0.056)
MI_re_multi_charter	0.011	(0.023)
MN_re_white_charter	-0.045 *	(0.023)
MN_re_black_charter	0.076 **	(0.017)
MN_re_hisp_charter	0.025	(0.023)
MN_re_asianpi_charter	0.081 **	(0.024)
MN_re_nativam_charter	-0.009	(0.047)
MN_re_multi_charter	-0.009	(0.027)
MO_re_white_charter	-0.039	(0.025)
MO_re_black_charter	0.112 *	(0.044)
MO_re_hisp_charter	0.092 *	(0.045)
MO_re_asianpi_charter	0.251 **	(0.065)

Variable	Growth	Standard Error
MO_re_nativam_charter	-0.132	(0.181)
MO_re_multi_charter	0.08	(0.075)
NC_re_white_charter	-0.048 **	(0.017)
NC_re_black_charter	0.01	(0.016)
NC_re_hisp_charter	0	(0.024)
NC_re_asianpi_charter	-0.076 **	(0.025)
NC_re_nativam_charter	0.023	(0.093)
NC_re_multi_charter	-0.077 **	(0.028)
NJ_re_white_charter	0.027	(0.029)
NJ_re_black_charter	0.072 *	(0.030)
NJ_re_hisp_charter	0.034	(0.022)
NJ_re_asianpi_charter	0.009	(0.040)
NJ_re_nativam_charter	0.146	(0.097)
NJ_re_multi_charter	0.102 *	(0.040)
NM_re_white_charter	-0.006	(0.041)
NM_re_black_charter	0.076	(0.058)
NM_re_hisp_charter	0.024	(0.032)
NM_re_asianpi_charter	0.035	(0.106)
NM_re_nativam_charter	0.004	(0.036)
NM_re_multi_charter	-0.026	(0.053)
NV_re_white_charter	-0.012	(0.021)
NV_re_black_charter	0.044	(0.023)
NV_re_hisp_charter	0.028	(0.019)
NV_re_asianpi_charter	-0.015	(0.020)
NV_re_nativam_charter	-0.085	(0.068)
NV_re_multi_charter	-0.003	(0.023)
NY_re_white_charter	0.074 **	(0.026)
NY_re_black_charter	0.133 **	(0.026)
NY_re_hisp_charter	0.126 **	(0.033)
NY_re_asianpi_charter	0.113 *	(0.052)

Variable	Growth	Standard Error
NY_re_nativam_charter	0.069	(0.109)
NY_re_multi_charter	0.049	(0.032)
NYC_re_white_charter	0.032	(0.019)
NYC_re_black_charter	0.158 **	(0.012)
NYC_re_hisp_charter	0.13 **	(0.015)
NYC_re_asianpi_charter	0.01	(0.024)
NYC_re_nativam_charter	0.148 **	(0.040)
NYC_re_multi_charter	0.004	(0.053)
OH_re_white_charter	-0.197 **	(0.021)
OH_re_black_charter	0.024	(0.016)
OH_re_hisp_charter	-0.076 **	(0.025)
OH_re_asianpi_charter	-0.083	(0.059)
OH_re_nativam_charter	-0.167 **	(0.065)
OH_re_multi_charter	-0.1 **	(0.027)
OR_re_white_charter	-0.053 **	(0.020)
OR_re_black_charter	-0.062	(0.059)
OR_re_hisp_charter	-0.052 **	(0.020)
OR_re_asianpi_charter	-0.083 *	(0.039)
OR_re_nativam_charter	-0.159 **	(0.061)
OR_re_multi_charter	-0.061 *	(0.029)
PA_re_white_charter	-0.124 **	(0.031)
PA_re_black_charter	0.02	(0.011)
PA_re_hisp_charter	-0.004	(0.016)
PA_re_asianpi_charter	-0.068 *	(0.035)
PA_re_nativam_charter	-0.136 *	(0.053)
PA_re_multi_charter	-0.087 **	(0.022)
RI_re_white_charter	0.113	(0.062)
RI_re_black_charter	0.156 **	(0.043)
RI_re_hisp_charter	0.165 **	(0.035)
RI_re_asianpi_charter	0.107	(0.056)

Variable	Growth	Standard Error
RI_re_nativam_charter	0.078	(0.176)
RI_re_multi_charter	0.087	(0.086)
SC_re_white_charter	-0.109 **	(0.032)
SC_re_black_charter	-0.035 *	(0.018)
SC_re_hisp_charter	-0.029	(0.054)
SC_re_asianpi_charter	-0.004	(0.094)
SC_re_nativam_charter	-0.131 **	(0.041)
SC_re_multi_charter	-0.036	(0.083)
TN_re_white_charter	0.151 *	(0.068)
TN_re_black_charter	0.03	(0.016)
TN_re_hisp_charter	0.179 **	(0.028)
TN_re_asianpi_charter	0.258 **	(0.078)
TN_re_nativam_charter	0.009	(0.142)
TN_re_multi_charter	0	(.)
TX_re_white_charter	-0.121 **	(0.033)
TX_re_black_charter	-0.027 *	(0.013)
TX_re_hisp_charter	0.02	(0.011)
TX_re_asianpi_charter	-0.062 **	(0.017)
TX_re_nativam_charter	-0.106 *	(0.049)
TX_re_multi_charter	-0.115 **	(0.037)
UT_re_white_charter	-0.027 *	(0.014)
UT_re_black_charter	-0.013	(0.038)
UT_re_hisp_charter	0.004	(0.019)
UT_re_asianpi_charter	0.024	(0.029)
UT_re_nativam_charter	-0.069	(0.068)
UT_re_multi_charter	-0.054 *	(0.025)
WA_re_white_charter	-0.022	(0.059)
WA_re_black_charter	0.145	(0.077)
WA_re_hisp_charter	0.122	(0.111)
WA_re_asianpi_charter	0.184	(0.113)
WA_re_nativam_charter	-0.04	(0.070)

Variable	Growth	Standard Error	Variable	Growth	Standard Error
WA_re_multi_charter	0.1	(0.082)	AR_re_black	-0.142 **	(0.021)
WI_re_white_charter	-0.046 **	(0.018)	AR_re_hisp	0.041 *	(0.020)
WI_re_black_charter	0.172 **	(0.028)	AR_re_asianpi	0.251 **	(0.049)
WI_re_hisp_charter	0.073 **	(0.020)	AR_re_nativam	0.041	(0.044)
WI_re_asianpi_charter	0.02	(0.030)	AR_re_multi	0.021	(0.026)
WI_re_nativam_charter	-0.094	(0.072)	AZ_re_white	0.061 **	(0.017)
WI_re_multi_charter	-0.053	(0.029)	AZ_re_black	-0.084 **	(0.018)
ch_lunch	0.009 **	(0.002)	AZ_re_hisp	-0.048 **	(0.017)
ch_ell	-0.021 **	(0.004)	AZ_re_asianpi	0.214 **	(0.021)
ch_sped	-0.049 **	(0.003)	AZ_re_nativam	-0.104 **	(0.021)
ch_retained	0.015	(0.021)	AZ_re_multi	0.034	(0.018)
lunch	-0.07 **	(0.001)	CA_re_white	0.038 *	(0.017)
ell	-0.069 **	(0.002)	CA_re_black	-0.147 **	(0.017)
sped	-0.126 **	(0.002)	CA_re_hisp	-0.06 **	(0.017)
retained	-0.021	(0.020)	CA_re_asianpi	0.15 **	(0.018)
female	0.009 **	(0.001)	CA_re_nativam	-0.049 *	(0.019)
period_2	0.033 **	(0.002)	CA_re_multi	0.036 *	(0.018)
period_3	0.035 **	(0.002)	CO_re_white	0.019	(0.018)
period_4	0.019 **	(0.003)	CO_re_black	-0.129 **	(0.018)
grade_01	0	(.)	CO_re_hisp	-0.107 **	(0.017)
grade_02	0	(.)	CO_re_asianpi	0.168 **	(0.021)
grade_03	0.55 **	(0.016)	CO_re_nativam	-0.115 **	(0.034)
grade_04	-0.001	(0.003)	CO_re_multi	-0.014	(0.020)
grade_06	0.025 **	(0.003)	DC_re_white	0.287 **	(0.034)
grade_07	0.057 **	(0.002)	DC_re_black	-0.08 **	(0.018)
grade_08	0.075 **	(0.003)	DC_re_hisp	0.083 **	(0.029)
grade_09	-0.102 **	(0.006)	DC_re_asianpi	0.306 **	(0.048)
grade_10	-0.093 **	(0.007)	DC_re_nativam	0.035	(0.053)
grade_11	-0.033 **	(0.006)	DC_re_multi	0.176 *	(0.071)
grade_12	-0.085 **	(0.020)	FL_re_white	0.096 **	(0.017)
AR_re_white	0.091 **	(0.020)	FL_re_black	-0.026	(0.017)

Variable	Growth		Standard Error
FL_re_hisp	0.081	**	(0.018)
FL_re_asianpi	0.24	**	(0.019)
FL_re_nativam	0.042		(0.043)
FL_re_multi	0.069	**	(0.018)
ID_re_white	0		(0.018)
ID_re_black	-0.066		(0.045)
ID_re_hisp	-0.089	**	(0.022)
ID_re_asianpi	0.095	**	(0.023)
ID_re_nativam	-0.273	**	(0.044)
ID_re_multi	-0.038		(0.025)
IL_re_white	0.008		(0.025)
IL_re_black	-0.196	**	(0.018)
IL_re_hisp	-0.09	**	(0.018)
IL_re_asianpi	0.149	**	(0.024)
IL_re_nativam	-0.187	**	(0.054)
IL_re_multi	-0.104	**	(0.034)
IN_re_white	0.012		(0.018)
IN_re_black	-0.183	**	(0.018)
IN_re_hisp	-0.071	**	(0.020)
IN_re_asianpi	0.076		(0.045)
IN_re_nativam	-0.092		(0.088)
IN_re_multi	-0.087	**	(0.022)
LA_re_white	0.059	**	(0.020)
LA_re_black	-0.121	**	(0.017)
LA_re_hisp	-0.019		(0.019)
LA_re_asianpi	0.163	**	(0.042)
LA_re_nativam	-0.031		(0.036)
LA_re_multi	-0.02		(0.024)
MA_re_white	-0.013		(0.020)
MA_re_black	-0.13	**	(0.018)
MA_re_hisp	-0.118	**	(0.019)

Variable	Growth		Standard Error
MA_re_asianpi	0.154	**	(0.028)
MA_re_nativam	-0.024		(0.039)
MA_re_multi	-0.011		(0.027)
MD_re_white	0.051		(0.029)
MD_re_black	-0.156	**	(0.018)
MD_re_hisp	-0.082	**	(0.020)
MD_re_asianpi	0.157	**	(0.036)
MD_re_nativam	0.245		(0.213)
MD_re_multi	-0.033		(0.029)
MI_re_white	-0.018		(0.018)
MI_re_black	-0.229	**	(0.017)
MI_re_hisp	-0.097	**	(0.018)
MI_re_asianpi	0.165	**	(0.033)
MI_re_nativam	-0.092	**	(0.032)
MI_re_multi	-0.135	**	(0.019)
MN_re_white	-0.004		(0.018)
MN_re_black	-0.185	**	(0.018)
MN_re_hisp	-0.131	**	(0.020)
MN_re_asianpi	-0.008		(0.024)
MN_re_nativam	-0.194	**	(0.023)
MN_re_multi	-0.08	**	(0.021)
MO_re_white	0.02		(0.022)
MO_re_black	-0.176	**	(0.018)
MO_re_hisp	-0.067		(0.038)
MO_re_asianpi	-0.017		(0.052)
MO_re_nativam	-0.016		(0.120)
MO_re_multi	-0.076	**	(0.029)
NC_re_white	0.055	**	(0.018)
NC_re_black	-0.13	**	(0.018)
NC_re_hisp	-0.043	*	(0.018)
NC_re_asianpi	0.254	**	(0.024)

Variable	Growth		Standard Error
NC_re_nativam	-0.079	**	(0.023)
NC_re_multi	-0.002		(0.020)
NJ_re_white	0.032		(0.019)
NJ_re_black	-0.135	**	(0.022)
NJ_re_hisp	-0.081	**	(0.019)
NJ_re_asianpi	0.168	**	(0.023)
NJ_re_nativam	-0.123	**	(0.045)
NJ_re_multi	-0.089	**	(0.031)
NM_re_white	0.087	**	(0.020)
NM_re_black	-0.076	*	(0.033)
NM_re_hisp	-0.024		(0.019)
NM_re_asianpi	0.188	**	(0.071)
NM_re_nativam	-0.078	*	(0.031)
NM_re_multi	0.07		(0.041)
NV_re_white	0.041	*	(0.018)
NV_re_black	-0.123	**	(0.020)
NV_re_hisp	-0.036	*	(0.018)
NV_re_asianpi	0.136	**	(0.019)
NV_re_nativam	-0.043		(0.040)
NV_re_multi	0.018		(0.019)
NY_re_white	-0.09	**	(0.023)
NY_re_black	-0.231	**	(0.022)
NY_re_hisp	-0.152	**	(0.021)
NY_re_asianpi	-0.001		(0.026)
NY_re_nativam	-0.103		(0.088)
NY_re_multi	-0.126	**	(0.024)
NYC_re_white	0.112	**	(0.018)
NYC_re_black	-0.094	**	(0.017)
NYC_re_hisp	-0.04	*	(0.018)
NYC_re_asianpi	0.197	**	(0.020)
NYC_re_nativam	-0.041		(0.027)

Variable	Growth		Standard Error
NYC_re_multi	0.035		(0.037)
OH_re_white	0.018		(0.019)
OH_re_black	-0.2	**	(0.018)
OH_re_hisp	-0.081	**	(0.022)
OH_re_asianpi	0.118	**	(0.038)
OH_re_nativam	-0.114	*	(0.049)
OH_re_multi	-0.088	**	(0.025)
OR_re_white	-0.025		(0.017)
OR_re_black	-0.199	**	(0.047)
OR_re_hisp	-0.07	**	(0.018)
OR_re_asianpi	0.126	**	(0.026)
OR_re_nativam	-0.058		(0.034)
OR_re_multi	-0.052	*	(0.021)
PA_re_white	-0.037	*	(0.018)
PA_re_black	-0.193	**	(0.017)
PA_re_hisp	-0.154	**	(0.018)
PA_re_asianpi	0.138	**	(0.022)
PA_re_nativam	-0.122	**	(0.026)
PA_re_multi	-0.116	**	(0.018)
RI_re_white	0.013		(0.027)
RI_re_black	-0.153	**	(0.022)
RI_re_hisp	-0.129	**	(0.019)
RI_re_asianpi	-0.115	**	(0.040)
RI_re_nativam	-0.215	**	(0.057)
RI_re_multi	-0.118	**	(0.042)
SC_re_white	0.067	**	(0.019)
SC_re_black	-0.089	**	(0.018)
SC_re_hisp	0.026		(0.022)
SC_re_asianpi	0.261	**	(0.068)
SC_re_nativam	0.036		(0.026)
SC_re_multi	-0.067		(0.046)

Variable	Growth		Standard Error
TN_re_black	-0.143	**	(0.017)
TN_re_hisp	-0.142	**	(0.016)
TN_re_asianpi	0.021		(0.031)
TN_re_nativam	-0.169		(0.088)
TN_re_multi	0		(.)
TX_re_white	0.066	**	(0.018)
TX_re_black	-0.053	**	(0.017)
TX_re_hisp	0.004		(0.017)
TX_re_asianpi	0.242	**	(0.019)
TX_re_nativam	0.042		(0.027)
TX_re_multi	0.052	**	(0.019)
UT_re_white	-0.002		(0.017)
UT_re_black	-0.156	**	(0.029)
UT_re_hisp	-0.109	**	(0.018)
UT_re_asianpi	-0.006		(0.023)
UT_re_nativam	-0.118	**	(0.040)

Variable	Growth		Standard Error
UT_re_multi	-0.018		(0.019)
WA_re_white	-0.023		(0.021)
WA_re_black	-0.109	**	(0.030)
WA_re_hisp	-0.066	**	(0.020)
WA_re_asianpi	0.036		(0.030)
WA_re_nativam	-0.107		(0.062)
WA_re_multi	-0.069	*	(0.031)
WI_re_white	0.008		(0.018)
WI_re_black	-0.296	**	(0.020)
WI_re_hisp	-0.136	**	(0.019)
WI_re_asianpi	-0.009		(0.028)
WI_re_nativam	-0.074		(0.047)
WI_re_multi	-0.076	**	(0.024)
_cons	0.035	*	(0.017)
Obs	7389392		
R-Sqr	0.152		

Marginal Charter Effects by Poverty by State

The next two tables provide regression results in reading and math for charter students in poverty in each state. The growth values for the state_lunch_charter variables are the marginal difference for charter records of students in poverty in the state relative to the TPS VCR records in poverty in that same state. In order to align with the national regressions, the omitted group for reading is AR_nolunch_tps and for math TN_nolunch_tps. Those groups would have a value of 0.00.

Reading

Variable	Growth		Standard Error	Variable	Growth		Standard Error
z_origin	-0.239	**	(0.001)	IL_nolunch_tps	-0.12	**	(0.014)
ell	-0.111	**	(0.002)	IN_nolunch_tps	-0.011		(0.012)
sped	-0.178	**	(0.001)	LA_nolunch_tps	-0.013		(0.014)
retained	-0.116	**	(0.016)	MA_nolunch_tps	-0.026	*	(0.010)
female	0.06	**	(0.001)	MD_nolunch_tps	-0.04		(0.021)
period_2	0.025	**	(0.001)	MI_nolunch_tps	-0.038	**	(0.010)
period_3	0.028	**	(0.002)	MN_nolunch_tps	-0.023	*	(0.011)
period_4	0.023	**	(0.002)	MO_nolunch_tps	-0.037	*	(0.016)
grade_01	0		(.)	NC_nolunch_tps	0.019	*	(0.009)
grade_02	0		(.)	NJ_nolunch_tps	-0.037	**	(0.013)
grade_03	0.557	**	(0.018)	NM_nolunch_tps	0.003		(0.011)
grade_04	-0.005	**	(0.002)	NV_nolunch_tps	0.014		(0.011)
grade_06	0.011	**	(0.002)	NY_nolunch_tps	-0.089	**	(0.017)
grade_07	0.014	**	(0.002)	NYC_nolunch_tps	0.028	**	(0.011)
grade_08	0.012	**	(0.002)	OH_nolunch_tps	-0.053	**	(0.015)
grade_09	0.079	**	(0.005)	OR_nolunch_tps	-0.02	*	(0.010)
grade_10	-0.021	**	(0.004)	PA_nolunch_tps	-0.049	**	(0.011)
grade_11	0.01	*	(0.005)	RI_nolunch_tps	-0.05	**	(0.018)
grade_12	0.033	*	(0.016)	SC_nolunch_tps	0.025		(0.017)
AZ_nolunch_tps	0.003		(0.009)	TN_nolunch_tps	-0.073	**	(0.011)
CA_nolunch_tps	0		(0.009)	TX_nolunch_tps	-0.002		(0.009)
CO_nolunch_tps	-0.02	*	(0.010)	UT_nolunch_tps	-0.045	**	(0.009)
DC_nolunch_tps	0.126	**	(0.029)	WA_nolunch_tps	0.03		(0.036)
FL_nolunch_tps	0.035	**	(0.009)	WI_nolunch_tps	-0.043	**	(0.010)
ID_nolunch_tps	-0.032	**	(0.010)	AR_lunch_charter	-0.005		(0.013)

Variable	Growth		Standard Error
AZ_lunch_charter	0.034	**	(0.008)
CA_lunch_charter	0.038	**	(0.006)
CO_lunch_charter	0.044	**	(0.015)
DC_lunch_charter	0.018		(0.013)
FL_lunch_charter	0.016	**	(0.005)
ID_lunch_charter	0.009		(0.019)
IL_lunch_charter	0.072	**	(0.012)
IN_lunch_charter	0.017		(0.017)
LA_lunch_charter	-0.004		(0.011)
MA_lunch_charter	0.088	**	(0.017)
MD_lunch_charter	0.055	**	(0.021)
MI_lunch_charter	0.062	**	(0.009)
MN_lunch_charter	0.053	**	(0.016)
MO_lunch_charter	0.068	**	(0.022)
NC_lunch_charter	0.044	**	(0.012)
NJ_lunch_charter	0.059	*	(0.023)
NM_lunch_charter	0.007		(0.029)
NV_lunch_charter	0.027		(0.020)
NX_lunch_charter	0.127	**	(0.022)
NY_lunch_charter	0.077	**	(0.007)
OH_lunch_charter	0.01		(0.017)
OR_lunch_charter	-0.048	**	(0.015)
PA_lunch_charter	0.032	**	(0.012)
RI_lunch_charter	0.169	**	(0.027)
SC_lunch_charter	-0.014		(0.018)
TN_lunch_charter	0.048	**	(0.012)
TX_lunch_charter	0.05	**	(0.007)
UT_lunch_charter	-0.008		(0.013)
WA_lunch_charter	0.06		(0.075)
WI_lunch_charter	0.057	**	(0.019)
AR_nolunch_charter	0.021		(0.019)

Variable	Growth		Standard Error
AZ_nolunch_charter	0.038	**	(0.011)
CA_nolunch_charter	-0.008		(0.010)
CO_nolunch_charter	-0.004		(0.013)
DC_nolunch_charter	0.072	**	(0.022)
FL_nolunch_charter	0.049	**	(0.009)
ID_nolunch_charter	0.001		(0.015)
IL_nolunch_charter	-0.065	**	(0.016)
IN_nolunch_charter	-0.036		(0.019)
LA_nolunch_charter	0.041		(0.026)
MA_nolunch_charter	0.033	*	(0.015)
MD_nolunch_charter	0.035		(0.021)
MI_nolunch_charter	0.026		(0.014)
MN_nolunch_charter	-0.001		(0.015)
MO_nolunch_charter	0.033		(0.026)
NC_nolunch_charter	0.035	**	(0.010)
NJ_nolunch_charter	0.015		(0.018)
NM_nolunch_charter	0.039		(0.038)
NV_nolunch_charter	0.02		(0.016)
NY_nolunch_charter	0.048	*	(0.021)
NYC_nolunch_charter	0.087	**	(0.011)
OH_nolunch_charter	-0.112	**	(0.016)
OR_nolunch_charter	-0.041	*	(0.019)
PA_nolunch_charter	-0.121	**	(0.022)
RI_nolunch_charter	0.069	*	(0.032)
SC_nolunch_charter	0.012		(0.024)
TN_nolunch_charter	0.003		(0.019)
TX_nolunch_charter	0.021	*	(0.010)
UT_nolunch_charter	-0.046	**	(0.015)
WA_nolunch_charter	0.048		(0.047)
WI_nolunch_charter	-0.049	**	(0.018)
re_black	-0.12	**	(0.002)

Variable	Growth		Standard Error	Variable	Growth		Standard Error
re_hisp	-0.044	**	(0.002)	NC_lunch	-0.074	**	(0.009)
re_asianpi	0.101	**	(0.003)	NJ_lunch	-0.072	**	(0.013)
re_nativam	-0.103	**	(0.006)	NM_lunch	-0.07	**	(0.010)
re_multi	-0.024	**	(0.002)	NV_lunch	-0.055	**	(0.010)
AR_lunch	-0.084	**	(0.009)	NY_lunch	-0.137	**	(0.014)
AZ_lunch	-0.094	**	(0.009)	NYC_lunch	-0.023	*	(0.009)
CA_lunch	-0.094	**	(0.009)	OH_lunch	-0.17	**	(0.014)
CO_lunch	-0.129	**	(0.012)	OR_lunch	-0.094	**	(0.010)
DC_lunch	-0.023	*	(0.011)	PA_lunch	-0.145	**	(0.009)
FL_lunch	-0.011		(0.009)	RI_lunch	-0.158	**	(0.012)
ID_lunch	-0.113	**	(0.011)	SC_lunch	-0.071	**	(0.012)
IL_lunch	-0.156	**	(0.010)	TN_lunch	-0.126	**	(0.009)
IN_lunch	-0.097	**	(0.010)	TX_lunch	-0.064	**	(0.009)
LA_lunch	-0.085	**	(0.010)	UT_lunch	-0.12	**	(0.010)
MA_lunch	-0.096	**	(0.011)	WA_lunch	-0.062	**	(0.021)
MD_lunch	-0.133	**	(0.014)	WI_lunch	-0.186	**	(0.014)
MI_lunch	-0.151	**	(0.009)	_cons	0.052	**	(0.008)
MN_lunch	-0.13	**	(0.012)	Obs	7838784		
MO_lunch	-0.126	**	(0.011)	R-Sqr	0.153		

Math

Variable	Growth		Standard Error
z_origin	-0.227	**	(0.001)
ell	-0.076	**	(0.002)
sped	-0.15	**	(0.001)
retained	-0.015		(0.014)
female	0.009	**	(0.001)
period_2	0.033	**	(0.002)
period_3	0.035	**	(0.002)
period_4	0.019	**	(0.003)
grade_01	0		(.)
grade_02	0		(.)
grade_03	0.553	**	(0.016)
grade_04	-0.001		(0.003)
grade_06	0.025	**	(0.003)
grade_07	0.056	**	(0.002)
grade_08	0.075	**	(0.003)
grade_09	-0.103	**	(0.006)
grade_10	-0.094	**	(0.007)
grade_11	-0.033	**	(0.006)
grade_12	-0.089	**	(0.020)
AR_nolunch_tps	0.12	**	(0.014)
AZ_nolunch_tps	0.091	**	(0.009)
CA_nolunch_tps	0.066	**	(0.008)
CO_nolunch_tps	0.048	**	(0.010)
DC_nolunch_tps	0.143	**	(0.040)
FL_nolunch_tps	0.147	**	(0.009)
ID_nolunch_tps	0.038	**	(0.011)
IL_nolunch_tps	-0.027		(0.014)
IN_nolunch_tps	0.039	**	(0.013)
LA_nolunch_tps	0.061	**	(0.014)
MA_nolunch_tps	0.024	*	(0.011)

Variable	Growth		Standard Error
MD_nolunch_tps	0.021		(0.013)
MI_nolunch_tps	0.015		(0.011)
MN_nolunch_tps	0.016		(0.012)
MO_nolunch_tps	0.007		(0.016)
NC_nolunch_tps	0.084	**	(0.010)
NJ_nolunch_tps	0.011		(0.013)
NM_nolunch_tps	0.113	**	(0.017)
NV_nolunch_tps	0.07	**	(0.010)
NY_nolunch_tps	-0.092	**	(0.017)
NYC_nolunch_tps	0.049	**	(0.009)
OH_nolunch_tps	0.042	**	(0.014)
OR_nolunch_tps	0.021	*	(0.009)
PA_nolunch_tps	-0.014		(0.010)
RI_nolunch_tps	0.023		(0.022)
SC_nolunch_tps	0.121	**	(0.012)
TX_nolunch_tps	0.094	**	(0.009)
UT_nolunch_tps	0.032	**	(0.008)
WA_nolunch_tps	0.02		(0.013)
WI_nolunch_tps	0.028	**	(0.011)
AR_lunch_charter	-0.005		(0.021)
AZ_lunch_charter	0.019		(0.012)
CA_lunch_charter	0.029	**	(0.006)
CO_lunch_charter	0.055	**	(0.014)
DC_lunch_charter	0.061	**	(0.018)
FL_lunch_charter	0.002		(0.009)
ID_lunch_charter	-0.035		(0.025)
IL_lunch_charter	0.089	**	(0.013)
IN_lunch_charter	-0.021		(0.032)
LA_lunch_charter	0.004		(0.012)
MA_lunch_charter	0.099	**	(0.023)

Variable	Growth		Standard Error
MD_lunch_charter	0.064	**	(0.019)
MI_lunch_charter	0.042	**	(0.011)
MN_lunch_charter	0.046	**	(0.017)
MO_lunch_charter	0.1	**	(0.037)
NC_lunch_charter	-0.013		(0.020)
NJ_lunch_charter	0.058	*	(0.028)
NM_lunch_charter	0.016		(0.035)
NV_lunch_charter	0.023		(0.022)
NY_lunch_charter	0.128	**	(0.024)
NYC_lunch_charter	0.143	**	(0.011)
OH_lunch_charter	-0.04		(0.022)
OR_lunch_charter	-0.069	**	(0.019)
PA_lunch_charter	-0.003		(0.014)
RI_lunch_charter	0.161	**	(0.035)
SC_lunch_charter	-0.075	**	(0.026)
TN_lunch_charter	0.058	**	(0.018)
TX_lunch_charter	0.008		(0.012)
UT_lunch_charter	-0.025		(0.015)
WA_lunch_charter	0.076		(0.089)
WI_lunch_charter	0.071	**	(0.019)
AR_nolunch_charter	0.121	**	(0.026)
AZ_nolunch_charter	0.082	**	(0.012)
CA_nolunch_charter	0.045	**	(0.010)
CO_nolunch_charter	0.052	**	(0.012)
DC_nolunch_charter	0.165	**	(0.021)
FL_nolunch_charter	0.141	**	(0.010)
ID_nolunch_charter	0.058	**	(0.022)
IL_nolunch_charter	0.029		(0.016)
IN_nolunch_charter	-0.067		(0.039)
LA_nolunch_charter	0.101	**	(0.028)
MA_nolunch_charter	0.075	**	(0.017)
MD_nolunch_charter	0.086	**	(0.018)

Variable	Growth		Standard Error
MI_nolunch_charter	0.053	**	(0.017)
MN_nolunch_charter	-0.005		(0.018)
MO_nolunch_charter	0.065		(0.050)
NC_nolunch_charter	0.05	**	(0.015)
NJ_nolunch_charter	0.057	**	(0.019)
NM_nolunch_charter	0.119	**	(0.031)
NV_nolunch_charter	0.067	**	(0.017)
NY_nolunch_charter	0.023		(0.026)
NYC_nolunch_charter	0.171	**	(0.014)
OH_nolunch_charter	-0.104	**	(0.020)
OR_nolunch_charter	-0.025		(0.022)
PA_nolunch_charter	-0.124	**	(0.025)
RI_nolunch_charter	0.149	**	(0.049)
SC_nolunch_charter	0.033		(0.029)
TN_nolunch_charter	0.082	**	(0.026)
TX_nolunch_charter	0.048	*	(0.019)
UT_nolunch_charter	0.008		(0.016)
WA_nolunch_charter	0.075		(0.070)
WI_nolunch_charter	0.011		(0.018)
re_black	-0.127	**	(0.003)
re_hisp	-0.054	**	(0.002)
re_asianpi	0.133	**	(0.004)
re_nativam	-0.111	**	(0.006)
re_multi	-0.035	**	(0.002)
AR_lunch	0.013		(0.013)
AZ_lunch	-0.012		(0.008)
CA_lunch	-0.031	**	(0.008)
CO_lunch	-0.069	**	(0.009)
DC_lunch	0.032	**	(0.010)
FL_lunch	0.092	**	(0.008)
ID_lunch	-0.049	**	(0.011)
IL_lunch	-0.076	**	(0.009)

Variable	Growth	Standard Error	Variable	Growth	Standard Error
IN_lunch	-0.062 **	(0.011)	OH_lunch	-0.077 **	(0.013)
LA_lunch	-0.013	(0.009)	OR_lunch	-0.059 **	(0.009)
MA_lunch	-0.06 **	(0.011)	PA_lunch	-0.091 **	(0.008)
MD_lunch	-0.051 **	(0.009)	RI_lunch	-0.091 **	(0.012)
MI_lunch	-0.109 **	(0.008)	SC_lunch	0.011	(0.010)
MN_lunch	-0.103 **	(0.011)	TN_lunch	-0.049 **	(0.007)
MO_lunch	-0.067 **	(0.011)	TX_lunch	0.038 **	(0.008)
NC_lunch	-0.023 *	(0.009)	UT_lunch	-0.056 **	(0.009)
NJ_lunch	-0.033 *	(0.014)	WA_lunch	-0.039 *	(0.019)
NM_lunch	0.003	(0.011)	WI_lunch	-0.127 **	(0.013)
NV_lunch	-0.006	(0.010)	_cons	-0.004	(0.008)
NY_lunch	-0.123 **	(0.013)	Obs	7389392	
NYC_lunch	0.005	(0.008)	R-Sqr	0.15	

Marginal Charter Effect by SPED by State

The next two tables provide regression results in reading and math for charter students receiving special education services in each state. The growth values for the state_sped_charter variables are the marginal difference for charter records of students in receiving special education services in the state relative to the TPS VCR records in receiving special education services in that same state. In order to align with the national regressions, the omitted group for reading is AR_nosped_tps and for math TN_nosped_tps. Those groups would have a value of 0.00.

Reading

Variable	Growth	Standard Error	Variable	Growth	Standard Error
z_origin	-0.239 **	(0.001)	grade_03	0.562 **	(0.018)
lunch	-0.069 **	(0.001)	grade_04	-0.005 **	(0.002)
ell	-0.112 **	(0.002)	grade_06	0.011 **	(0.002)
retained	-0.116 **	(0.016)	grade_07	0.014 **	(0.002)
female	0.06 **	(0.001)	grade_08	0.012 **	(0.002)
period_2	0.025 **	(0.001)	grade_09	0.079 **	(0.005)
period_3	0.028 **	(0.002)	grade_10	-0.021 **	(0.004)
period_4	0.023 **	(0.002)	grade_11	0.01 *	(0.005)
grade_01	0	(.)	grade_12	0.034 *	(0.016)
grade_02	0	(.)	re_black	-0.122 **	(0.002)

Variable	Growth		Standard Error
re_hisp	-0.045	**	(0.002)
re_asianpi	0.1	**	(0.003)
re_nativam	-0.106	**	(0.006)
re_multi	-0.025	**	(0.002)
AZ_nosped_tps	-0.002		(0.006)
CA_nosped_tps	-0.014	*	(0.006)
CO_nosped_tps	-0.034	**	(0.008)
DC_nosped_tps	0.062	**	(0.012)
FL_nosped_tps	0.051	**	(0.006)
ID_nosped_tps	-0.027	**	(0.008)
IL_nosped_tps	-0.099	**	(0.008)
IN_nosped_tps	-0.022	**	(0.009)
LA_nosped_tps	-0.012		(0.008)
MA_nosped_tps	-0.026	**	(0.008)
MD_nosped_tps	-0.046	**	(0.017)
MI_nosped_tps	-0.074	**	(0.007)
MN_nosped_tps	-0.044	**	(0.010)
MO_nosped_tps	-0.053	**	(0.009)
NC_nosped_tps	0.016	*	(0.007)
NJ_nosped_tps	-0.012		(0.011)
NM_nosped_tps	-0.001		(0.008)
NV_nosped_tps	0.017	*	(0.008)
NY_nosped_tps	-0.07	**	(0.013)
NYC_nosped_tps	0.045	**	(0.007)
OH_nosped_tps	-0.088	**	(0.015)
OR_nosped_tps	-0.022	**	(0.007)
PA_nosped_tps	-0.067	**	(0.008)
RI_nosped_tps	-0.076	**	(0.011)
SC_nosped_tps	0.012		(0.013)
TN_nosped_tps	-0.056	**	(0.007)
TX_nosped_tps	0.006		(0.006)
UT_nosped_tps	-0.047	**	(0.007)
WA_nosped_tps	0.022		(0.027)

Variable	Growth		Standard Error
WI_nosped_tps	-0.076	**	(0.010)
AR_spед_charter	-0.058	**	(0.021)
AZ_spед_charter	-0.029	**	(0.008)
CA_spед_charter	-0.055	**	(0.007)
CO_spед_charter	-0.057	**	(0.011)
DC_spед_charter	-0.013		(0.015)
FL_spед_charter	-0.02	*	(0.009)
ID_spед_charter	-0.012		(0.020)
IL_spед_charter	0.008		(0.013)
IN_spед_charter	-0.05	*	(0.021)
LA_spед_charter	-0.04	**	(0.013)
MA_spед_charter	0.021		(0.015)
MD_spед_charter	-0.011		(0.020)
MI_spед_charter	0.004		(0.010)
MN_spед_charter	-0.038	*	(0.017)
MO_spед_charter	0.027		(0.027)
NC_spед_charter	-0.04	**	(0.015)
NJ_spед_charter	-0.007		(0.021)
NM_spед_charter	-0.037		(0.029)
NV_spед_charter	-0.016		(0.017)
NY_spед_charter	0.077	**	(0.028)
NYC_spед_charter	0.065	**	(0.009)
OH_spед_charter	-0.188	**	(0.025)
OR_spед_charter	-0.096	**	(0.022)
PA_spед_charter	-0.027		(0.015)
RI_spед_charter	0.1	**	(0.024)
SC_spед_charter	-0.065	**	(0.014)
TN_spед_charter	0.056	**	(0.016)
TX_spед_charter	-0.1	**	(0.013)
UT_spед_charter	-0.066	**	(0.013)
WA_spед_charter	-0.043		(0.060)
WI_spед_charter	0.008		(0.020)
AR_nosped_charter	0.011		(0.014)

Variable	Growth		Standard Error	Variable	Growth		Standard Error
AZ_nosped_charter	0.037	**	(0.009)	CA_sped	-0.111	**	(0.007)
CA_nosped_charter	0.008		(0.007)	CO_sped	-0.169	**	(0.008)
CO_nosped_charter	-0.003		(0.011)	DC_sped	-0.115	**	(0.011)
DC_nosped_charter	0.075	**	(0.013)	FL_sped	-0.128	**	(0.007)
FL_nosped_charter	0.068	**	(0.007)	ID_sped	-0.263	**	(0.011)
ID_nosped_charter	0.006		(0.014)	IL_sped	-0.192	**	(0.008)
IL_nosped_charter	-0.022		(0.012)	IN_sped	-0.176	**	(0.011)
IN_nosped_charter	-0.007		(0.017)	LA_sped	-0.182	**	(0.010)
LA_nosped_charter	-0.002		(0.013)	MA_sped	-0.174	**	(0.010)
MA_nosped_charter	0.053	**	(0.015)	MD_sped	-0.241	**	(0.014)
MD_nosped_charter	0.027		(0.019)	MI_sped	-0.181	**	(0.007)
MI_nosped_charter	-0.005		(0.011)	MN_sped	-0.171	**	(0.011)
MN_nosped_charter	0.002		(0.012)	MO_sped	-0.208	**	(0.011)
MO_nosped_charter	0.02		(0.022)	NC_sped	-0.152	**	(0.011)
NC_nosped_charter	0.041	**	(0.008)	NJ_sped	-0.147	**	(0.011)
NJ_nosped_charter	0.052	**	(0.020)	NM_sped	-0.131	**	(0.011)
NM_nosped_charter	0.025		(0.030)	NV_sped	-0.146	**	(0.009)
NV_nosped_charter	0.032	*	(0.016)	NY_sped	-0.213	**	(0.013)
NY_nosped_charter	0.063	**	(0.019)	NYC_sped	-0.119	**	(0.008)
NYC_nosped_charter	0.12	**	(0.009)	OH_sped	-0.106	**	(0.016)
OH_nosped_charter	-0.091	**	(0.014)	OR_sped	-0.157	**	(0.013)
OR_nosped_charter	-0.048	**	(0.016)	PA_sped	-0.224	**	(0.007)
PA_nosped_charter	-0.063	**	(0.017)	RI_sped	-0.24	**	(0.017)
RI_nosped_charter	0.086	**	(0.026)	SC_sped	-0.135	**	(0.011)
SC_nosped_charter	0.005		(0.020)	TN_sped	-0.255	**	(0.011)
TN_nosped_charter	0.002		(0.014)	TX_sped	-0.108	**	(0.010)
TX_nosped_charter	0.05	**	(0.008)	UT_sped	-0.195	**	(0.008)
UT_nosped_charter	-0.043	**	(0.012)	WA_sped	-0.181	**	(0.015)
WA_nosped_charter	0.079		(0.060)	WI_sped	-0.273	**	(0.013)
WI_nosped_charter	-0.048	**	(0.015)	_cons	0.049	**	(0.006)
AR_sped	-0.245	**	(0.011)	Obs	7838784		
AZ_sped	-0.188	**	(0.007)	R-Sqr	0.153		

Math

Variable	Growth		Standard Error
z_origin	-0.226	**	(0.001)
lunch	-0.067	**	(0.001)
ell	-0.076	**	(0.002)
retained	-0.016		(0.014)
female	0.009	**	(0.001)
period_2	0.033	**	(0.002)
period_3	0.035	**	(0.002)
period_4	0.019	**	(0.003)
grade_01	0		(.)
grade_02	0		(.)
grade_03	0.559	**	(0.016)
grade_04	-0.001		(0.003)
grade_06	0.025	**	(0.003)
grade_07	0.056	**	(0.002)
grade_08	0.074	**	(0.003)
grade_09	-0.103	**	(0.006)
grade_10	-0.094	**	(0.007)
grade_11	-0.033	**	(0.006)
grade_12	-0.091	**	(0.019)
re_black	-0.129	**	(0.003)
re_hisp	-0.055	**	(0.002)
re_asianpi	0.131	**	(0.004)
re_nativam	-0.114	**	(0.007)
re_multi	-0.036	**	(0.002)
AR_nosped_tps	0.085	**	(0.012)
AZ_nosped_tps	0.068	**	(0.007)
CA_nosped_tps	0.036	**	(0.007)
CO_nosped_tps	0.017	*	(0.008)
DC_nosped_tps	0.09	**	(0.012)
FL_nosped_tps	0.142	**	(0.007)
ID_nosped_tps	0.028	**	(0.010)

Variable	Growth		Standard Error
IL_nosped_tps	-0.03	**	(0.008)
IN_nosped_tps	0.007		(0.010)
LA_nosped_tps	0.045	**	(0.008)
MA_nosped_tps	0.007		(0.010)
MD_nosped_tps	0.006		(0.010)
MI_nosped_tps	-0.043	**	(0.008)
MN_nosped_tps	-0.023	*	(0.011)
MO_nosped_tps	-0.015		(0.010)
NC_nosped_tps	0.062	**	(0.009)
NJ_nosped_tps	0.012		(0.013)
NM_nosped_tps	0.069	**	(0.013)
NV_nosped_tps	0.057	**	(0.009)
NY_nosped_tps	-0.075	**	(0.013)
NYC_nosped_tps	0.059	**	(0.007)
OH_nosped_tps	-0.011		(0.014)
OR_nosped_tps	0.003		(0.008)
PA_nosped_tps	-0.04	**	(0.007)
RI_nosped_tps	-0.025		(0.014)
SC_nosped_tps	0.086	**	(0.009)
TX_nosped_tps	0.09	**	(0.007)
UT_nosped_tps	0.014		(0.008)
WA_nosped_tps	0.02		(0.014)
WI_nosped_tps	-0.03	*	(0.012)
AR_spед_charter	-0.062	*	(0.024)
AZ_spед_charter	-0.049	**	(0.009)
CA_spед_charter	-0.017	**	(0.007)
CO_spед_charter	-0.027	*	(0.011)
DC_spед_charter	0.008		(0.018)
FL_spед_charter	-0.046	**	(0.012)
ID_spед_charter	-0.051	*	(0.022)
IL_spед_charter	0.011		(0.015)

Variable	Growth		Standard Error
IN_spед_charter	-0.09	**	(0.033)
LA_spед_charter	-0.045	**	(0.012)
MA_spед_charter	0.028		(0.018)
MD_spед_charter	0.024		(0.018)
MI_spед_charter	-0.019		(0.012)
MN_spед_charter	-0.055	**	(0.016)
MO_spед_charter	-0.013		(0.038)
NC_spед_charter	-0.101	**	(0.016)
NJ_spед_charter	-0.02		(0.015)
NM_spед_charter	-0.014		(0.028)
NV_spед_charter	0.004		(0.018)
NY_spед_charter	0.143	**	(0.028)
NYC_spед_charter	0.133	**	(0.013)
OH_spед_charter	-0.179	**	(0.026)
OR_spед_charter	-0.098	**	(0.020)
PA_spед_charter	-0.057	**	(0.018)
RI_spед_charter	0.101	**	(0.028)
SC_spед_charter	-0.102	**	(0.022)
TN_spед_charter	0.026		(0.019)
TX_spед_charter	-0.167	**	(0.017)
UT_spед_charter	-0.088	**	(0.013)
WA_spед_charter	-0.002		(0.055)
WI_spед_charter	0.008		(0.028)
AR_nosped_charter	0.087	**	(0.020)
AZ_nosped_charter	0.073	**	(0.011)
CA_nosped_charter	0.046	**	(0.008)
CO_nosped_charter	0.043	**	(0.012)
DC_nosped_charter	0.156	**	(0.018)
FL_nosped_charter	0.144	**	(0.009)
ID_nosped_charter	0.046	*	(0.022)
IL_nosped_charter	0.062	**	(0.014)
IN_nosped_charter	-0.03		(0.034)

Variable	Growth		Standard Error
LA_nosped_charter	0.06	**	(0.015)
MA_nosped_charter	0.085	**	(0.019)
MD_nosped_charter	0.075	**	(0.018)
MI_nosped_charter	0.005		(0.012)
MN_nosped_charter	-0.002		(0.016)
MO_nosped_charter	0.092	*	(0.038)
NC_nosped_charter	0.035	*	(0.015)
NJ_nosped_charter	0.074	**	(0.025)
NM_nosped_charter	0.085	**	(0.031)
NV_nosped_charter	0.064	**	(0.017)
NY_nosped_charter	0.05	*	(0.022)
NYC_nosped_charter	0.199	**	(0.013)
OH_nosped_charter	-0.073	**	(0.020)
OR_nosped_charter	-0.048	*	(0.020)
PA_nosped_charter	-0.073	**	(0.020)
RI_nosped_charter	0.132	**	(0.039)
SC_nosped_charter	0.007		(0.027)
TN_nosped_charter	0.071	**	(0.020)
TX_nosped_charter	0.084	**	(0.014)
UT_nosped_charter	-0.003		(0.015)
WA_nosped_charter	0.097		(0.084)
WI_nosped_charter	0		(0.015)
AR_spед	-0.051	**	(0.014)
AZ_spед	-0.092	**	(0.007)
CA_spед	-0.086	**	(0.007)
CO_spед	-0.117	**	(0.009)
DC_spед	-0.03	**	(0.010)
FL_spед	-0.006		(0.008)
ID_spед	-0.183	**	(0.013)
IL_spед	-0.107	**	(0.010)
IN_spед	-0.16	**	(0.016)
LA_spед	-0.097	**	(0.010)

Variable	Growth	Standard Error	Variable	Growth	Standard Error
MA_sped	-0.149 **	(0.010)	OR_sped	-0.131 **	(0.012)
MD_sped	-0.116 **	(0.015)	PA_sped	-0.138 **	(0.008)
MI_sped	-0.145 **	(0.008)	RI_sped	-0.151 **	(0.014)
MN_sped	-0.156 **	(0.011)	SC_sped	-0.04 **	(0.010)
MO_sped	-0.094 **	(0.017)	TN_sped	-0.127 **	(0.009)
NC_sped	-0.033 **	(0.012)	TX_sped	0.034 **	(0.010)
NJ_sped	-0.074 **	(0.010)	UT_sped	-0.129 **	(0.009)
NM_sped	-0.018	(0.012)	WA_sped	-0.177 **	(0.028)
NV_sped	-0.111 **	(0.010)	WI_sped	-0.153 **	(0.018)
NY_sped	-0.199 **	(0.019)	_cons	0.008	(0.007)
NYC_sped	-0.097 **	(0.009)	Obs	7389392	
OH_sped	-0.036 *	(0.016)	R-Sqr	0.149	

Marginal Charter Effect by ELL by State

The next two tables provide regression results in reading and math for English language learner charter students in each state. The growth values for the state_ell_charter variables are the marginal difference for charter records of English language learner students in the state relative to the TPS VCR records for English language learners in that same state. In order to align with the national regressions, the omitted group for reading is AR_noell_tps and for math TN_noell_tps. Those groups would have a value of 0.00.

Reading

Variable	Growth	Standard Error	Variable	Growth	Standard Error
z_origin	-0.239 **	(0.001)	grade_06	0.011 **	(0.002)
lunch	-0.069 **	(0.001)	grade_07	0.014 **	(0.002)
sped	-0.177 **	(0.001)	grade_08	0.012 **	(0.002)
retained	-0.115 **	(0.016)	grade_09	0.079 **	(0.005)
female	0.06 **	(0.001)	grade_10	-0.02 **	(0.004)
period_2	0.025 **	(0.001)	grade_11	0.01	(0.005)
period_3	0.028 **	(0.002)	grade_12	0.033 *	(0.016)
period_4	0.023 **	(0.002)	re_black	-0.121 **	(0.002)
grade_01	0	(.)	re_hisp	-0.044 **	(0.002)
grade_02	0	(.)	re_asianpi	0.1 **	(0.003)
grade_03	0.557 **	(0.018)	re_nativam	-0.107 **	(0.006)
grade_04	-0.005 **	(0.002)	re_multi	-0.025 **	(0.002)

Variable	Growth	Standard Error
AZ_noell_tps	0.005	(0.007)
CA_noell_tps	-0.002	(0.006)
CO_noell_tps	-0.026 **	(0.008)
DC_noell_tps	0.064 **	(0.011)
FL_noell_tps	0.055 **	(0.006)
ID_noell_tps	-0.024 **	(0.008)
IL_noell_tps	-0.085 **	(0.008)
IN_noell_tps	-0.014	(0.009)
LA_noell_tps	-0.006	(0.008)
MA_noell_tps	-0.02 *	(0.008)
MD_noell_tps	-0.043 **	(0.016)
MI_noell_tps	-0.067 **	(0.007)
MN_noell_tps	-0.028 **	(0.009)
MO_noell_tps	-0.051 **	(0.008)
NC_noell_tps	0.023 **	(0.007)
NJ_noell_tps	-0.003	(0.011)
NM_noell_tps	0.008	(0.008)
NV_noell_tps	0.024 **	(0.008)
NY_noell_tps	-0.062 **	(0.013)
NYC_noell_tps	0.052 **	(0.007)
OH_noell_tps	-0.081 **	(0.015)
OR_noell_tps	-0.012	(0.007)
PA_noell_tps	-0.058 **	(0.008)
RI_noell_tps	-0.072 **	(0.012)
SC_noell_tps	0.02	(0.013)
TN_noell_tps	-0.053 **	(0.007)
TX_noell_tps	0.008	(0.006)
UT_noell_tps	-0.037 **	(0.007)
WA_noell_tps	0.025	(0.026)
WI_noell_tps	-0.071 **	(0.011)
AR_ell_charter	-0.06 **	(0.023)
AZ_ell_charter	-0.001	(0.012)
CA_ell_charter	0.005	(0.007)
CO_ell_charter	-0.016	(0.018)
DC_ell_charter	-0.132 **	(0.029)
FL_ell_charter	-0.028 **	(0.011)
ID_ell_charter	-0.066	(0.046)

Variable	Growth	Standard Error
IL_ell_charter	0.03 *	(0.015)
IN_ell_charter	-0.018	(0.024)
LA_ell_charter	-0.049	(0.025)
MA_ell_charter	0.034	(0.027)
MD_ell_charter	0.032	(0.061)
MI_ell_charter	-0.01	(0.022)
MN_ell_charter	0.006	(0.024)
MO_ell_charter	0.01	(0.035)
NC_ell_charter	0.038	(0.024)
NJ_ell_charter	0.013	(0.027)
NM_ell_charter	0.011	(0.034)
NV_ell_charter	0.025	(0.024)
NY_ell_charter	0.172 **	(0.044)
NYC_ell_charter	0.023	(0.018)
OH_ell_charter	-0.046	(0.025)
OR_ell_charter	-0.093 **	(0.034)
PA_ell_charter	0.021	(0.021)
RI_ell_charter	0.106 *	(0.041)
SC_ell_charter	-0.01	(0.044)
TN_ell_charter	0.087 **	(0.024)
TX_ell_charter	0.034 **	(0.009)
UT_ell_charter	-0.057 **	(0.021)
WA_ell_charter	0.093	(0.073)
WI_ell_charter	0.052	(0.036)
AR_noell_charter	0.009	(0.014)
AZ_noell_charter	0.04 **	(0.009)
CA_noell_charter	0.018 *	(0.007)
CO_noell_charter	0.006	(0.011)
DC_noell_charter	0.076 **	(0.013)
FL_noell_charter	0.071 **	(0.007)
ID_noell_charter	0.007	(0.015)
IL_noell_charter	-0.013	(0.012)
IN_noell_charter	-0.008	(0.017)
LA_noell_charter	0	(0.013)
MA_noell_charter	0.054 **	(0.014)
MD_noell_charter	0.022	(0.019)
MI_noell_charter	0.001	(0.011)

Variable	Growth	Standard Error
MN_noell_charter	0.014	(0.012)
MO_noell_charter	0.024	(0.023)
NC_noell_charter	0.046 **	(0.009)
NJ_noell_charter	0.055 **	(0.020)
NM_noell_charter	0.028	(0.031)
NV_noell_charter	0.036 *	(0.016)
NY_noell_charter	0.066 **	(0.018)
NYC_noell_charter	0.127 **	(0.009)
OH_noell_charter	-0.087 **	(0.014)
OR_noell_charter	-0.043 **	(0.016)
PA_noell_charter	-0.06 **	(0.016)
RI_noell_charter	0.087 **	(0.025)
SC_noell_charter	0.007	(0.019)
TN_noell_charter	0.004	(0.014)
TX_noell_charter	0.051 **	(0.008)
UT_noell_charter	-0.038 **	(0.012)
WA_noell_charter	0.064	(0.059)
WI_noell_charter	-0.046 **	(0.015)
AR_ell	-0.088 **	(0.013)
AZ_ell	-0.169 **	(0.008)
CA_ell	-0.143 **	(0.007)
CO_ell	-0.131 **	(0.011)
DC_ell	0.083 **	(0.021)
FL_ell	-0.006	(0.009)
ID_ell	-0.116 **	(0.033)
IL_ell	-0.169 **	(0.009)

Variable	Growth	Standard Error
IN_ell	-0.086 **	(0.012)
LA_ell	-0.061 **	(0.014)
MA_ell	-0.073 **	(0.011)
MD_ell	-0.101 *	(0.040)
MI_ell	-0.1 **	(0.009)
MN_ell	-0.168 **	(0.015)
MO_ell	-0.104 **	(0.030)
NC_ell	-0.102 **	(0.014)
NJ_ell	-0.091 **	(0.017)
NM_ell	-0.083 **	(0.013)
NV_ell	-0.084 **	(0.011)
NY_ell	-0.157 **	(0.030)
NYC_ell	-0.032 *	(0.012)
OH_ell	-0.095 **	(0.017)
OR_ell	-0.112 **	(0.019)
PA_ell	-0.157 **	(0.013)
RI_ell	-0.122 **	(0.016)
SC_ell	-0.034	(0.023)
TN_ell	-0.163 **	(0.014)
TX_ell	-0.073 **	(0.007)
UT_ell	-0.153 **	(0.011)
WA_ell	-0.079 *	(0.034)
WI_ell	-0.189 **	(0.032)
_cons	0.042 **	(0.006)
Obs	7838784	
R-Sqr	0.153	

Math

Variable	Growth	Standard Error
z_origin	-0.226 **	(0.001)
lunch	-0.067 **	(0.001)
sped	-0.149 **	(0.001)
retained	-0.016	(0.014)
female	0.009 **	(0.001)
period_2	0.033 **	(0.002)
period_3	0.035 **	(0.002)
period_4	0.019 **	(0.003)

Variable	Growth	Standard Error
grade_01	0	(.)
grade_02	0	(.)
grade_03	0.555 **	(0.016)
grade_04	-0.001	(0.003)
grade_06	0.025 **	(0.003)
grade_07	0.057 **	(0.002)
grade_08	0.075 **	(0.003)
grade_09	-0.102 **	(0.006)

Variable	Growth		Standard Error
grade_10	-0.094	**	(0.007)
grade_11	-0.034	**	(0.006)
grade_12	-0.091	**	(0.019)
re_black	-0.127	**	(0.003)
re_hisp	-0.054	**	(0.002)
re_asianpi	0.132	**	(0.004)
re_nativam	-0.114	**	(0.007)
re_multi	-0.036	**	(0.002)
AR_noell_tps	0.079	**	(0.012)
AZ_noell_tps	0.064	**	(0.007)
CA_noell_tps	0.036	**	(0.006)
CO_noell_tps	0.017	*	(0.008)
DC_noell_tps	0.085	**	(0.011)
FL_noell_tps	0.136	**	(0.007)
ID_noell_tps	0.019	*	(0.010)
IL_noell_tps	-0.029	**	(0.008)
IN_noell_tps	0		(0.011)
LA_noell_tps	0.039	**	(0.008)
MA_noell_tps	0		(0.009)
MD_noell_tps	0.003		(0.009)
MI_noell_tps	-0.048	**	(0.007)
MN_noell_tps	-0.024	*	(0.010)
MO_noell_tps	-0.021	*	(0.009)
NC_noell_tps	0.058	**	(0.009)
NJ_noell_tps	0.011		(0.012)
NM_noell_tps	0.073	**	(0.012)
NV_noell_tps	0.052	**	(0.009)
NY_noell_tps	-0.08	**	(0.013)
NYC_noell_tps	0.05	**	(0.007)
OH_noell_tps	-0.016		(0.014)
OR_noell_tps	-0.001		(0.007)
PA_noell_tps	-0.037	**	(0.007)
RI_noell_tps	-0.031	*	(0.013)
SC_noell_tps	0.083	**	(0.009)
TX_noell_tps	0.078	**	(0.007)
UT_noell_tps	0.01		(0.007)
WA_noell_tps	0.011		(0.016)

Variable	Growth		Standard Error
WI_noell_tps	-0.032	**	(0.012)
AR_ell_charter	-0.067	**	(0.025)
AZ_ell_charter	0.007		(0.016)
CA_ell_charter	0.029	**	(0.007)
CO_ell_charter	0.014		(0.015)
DC_ell_charter	-0.133	**	(0.039)
FL_ell_charter	-0.042	*	(0.017)
ID_ell_charter	-0.051		(0.077)
IL_ell_charter	0.05	**	(0.016)
IN_ell_charter	0.025		(0.037)
LA_ell_charter	-0.008		(0.031)
MA_ell_charter	0.089	*	(0.036)
MD_ell_charter	0.087		(0.077)
MI_ell_charter	-0.012		(0.025)
MN_ell_charter	0.039		(0.022)
MO_ell_charter	0.062		(0.043)
NC_ell_charter	0.042		(0.039)
NJ_ell_charter	0.001		(0.035)
NM_ell_charter	0.036		(0.040)
NV_ell_charter	0.039		(0.025)
NY_ell_charter	0.137	*	(0.055)
NYC_ell_charter	0.089	**	(0.024)
OH_ell_charter	-0.072	**	(0.026)
OR_ell_charter	-0.056		(0.031)
PA_ell_charter	-0.019		(0.014)
RI_ell_charter	0.145	**	(0.045)
SC_ell_charter	-0.037		(0.072)
TN_ell_charter	0.149	**	(0.031)
TX_ell_charter	0.001		(0.012)
UT_ell_charter	-0.061	*	(0.026)
WA_ell_charter	0.21	**	(0.066)
WI_ell_charter	0.044		(0.031)
AR_noell_charter	0.079	**	(0.020)
AZ_noell_charter	0.064	**	(0.011)
CA_noell_charter	0.041	**	(0.008)
CO_noell_charter	0.041	**	(0.012)
DC_noell_charter	0.146	**	(0.017)

Variable	Growth		Standard Error
FL_noell_charter	0.136	**	(0.009)
ID_noell_charter	0.033		(0.022)
IL_noell_charter	0.058	**	(0.014)
IN_noell_charter	-0.048		(0.034)
LA_noell_charter	0.049	**	(0.014)
MA_noell_charter	0.07	**	(0.018)
MD_noell_charter	0.067	**	(0.017)
MI_noell_charter	-0.003		(0.012)
MN_noell_charter	-0.015		(0.016)
MO_noell_charter	0.08	*	(0.040)
NC_noell_charter	0.029		(0.015)
NJ_noell_charter	0.067	**	(0.023)
NM_noell_charter	0.082	**	(0.030)
NV_noell_charter	0.056	**	(0.017)
NY_noell_charter	0.046	*	(0.021)
NYC_noell_charter	0.191	**	(0.012)
OH_noell_charter	-0.08	**	(0.020)
OR_noell_charter	-0.055	**	(0.020)
PA_noell_charter	-0.075	**	(0.020)
RI_noell_charter	0.121	**	(0.037)
SC_noell_charter	0		(0.026)
TN_noell_charter	0.062	**	(0.019)
TX_noell_charter	0.068	**	(0.016)
UT_noell_charter	-0.013		(0.014)
WA_noell_charter	0.063		(0.076)
WI_noell_charter	-0.004		(0.015)
AR_ell	0.037	**	(0.014)
AZ_ell	-0.075	**	(0.009)
CA_ell	-0.078	**	(0.007)
CO_ell	-0.096	**	(0.009)

Variable	Growth		Standard Error
DC_ell	0.125	**	(0.028)
FL_ell	0.084	**	(0.008)
ID_ell	-0.106	**	(0.034)
IL_ell	-0.098	**	(0.010)
IN_ell	-0.107	**	(0.014)
LA_ell	-0.016		(0.018)
MA_ell	-0.07	**	(0.016)
MD_ell	-0.145	**	(0.034)
MI_ell	-0.071	**	(0.009)
MN_ell	-0.121	**	(0.013)
MO_ell	-0.045		(0.033)
NC_ell	-0.056	**	(0.018)
NJ_ell	-0.064	**	(0.016)
NM_ell	-0.024		(0.013)
NV_ell	-0.048	**	(0.011)
NY_ell	-0.133	**	(0.029)
NYC_ell	0.018		(0.013)
OH_ell	-0.019		(0.014)
OR_ell	-0.087	**	(0.019)
PA_ell	-0.1	**	(0.009)
RI_ell	-0.072	**	(0.022)
SC_ell	0.022		(0.022)
TN_ell	-0.16	**	(0.014)
TX_ell	0.039	**	(0.008)
UT_ell	-0.095	**	(0.014)
WA_ell	-0.083	**	(0.018)
WI_ell	-0.144	**	(0.024)
_cons	0.013		(0.007)
Obs	7389392		
R-Sqr	0.149		