

Is Subsidized Childcare Associated with Lower Risk of Grade Retention for Low-Income Children?

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Research questions

Are low-income children who received federal Child Care and Development Fund (CCDF)-subsidized care in early childhood less likely to be held back in school, from kindergarten onward?

Are low-income children who received CCDF-subsidized *center care* in particular less likely to be held back?

Is this association particularly pronounced for low-income Black and Hispanic children relative to low-income children from other race/ethnic groups?

Low-income young children

Low material resources create difficulties for low-income children in early childhood that can lead to trouble succeeding in school

- More behavior problems, lower knowledge of pre-math and pre-reading concepts when entering school (Duncan et al. 2007)

High-quality childcare promotes

- Cognitive and social development (McCartney et al. 2007) and school-readiness habits (Peisner-Feinberg et al. 2001)
- Parental learning (Sanders, Deihl and Kyler 2007)
- Particularly beneficial to low-income children (Bradley et al. 2001)
- Center-based care is particularly beneficial (Loeb et al. 2004)
 - vs. family daycare, babysitter care, or relative care

Child Care and Development Fund (CCDF)

- Federal means-tested childcare subsidy reaches approximately 1.4 million children each month
- Designed to support the labor force participation of low-income mothers, for whom difficulty affording childcare is a major barrier to employment
- Available to low-income families (<85% of state median) with children aged 13 and under
 - I will focus on care received at age 6 and under (early childhood)
- Positive selection among mothers receiving the subsidy (Grobe, Weber and Davis 2008) relative to eligible non-recipients

Cognitive and social effects of subsidized care?

- Very little evidence to date
- Herbst and Tekin 2010 : Children who receive subsidized care have lower math and reading scores on entering kindergarten and more behavioral problems compared with non-recipient children in single-mother families
- Johnson et al. 2013: Children in subsidized center care have lower math skills than modeled-eligible non-recipient children, but no difference on verbal skills or behavioral outcomes
- These studies are based on survey data with self-reports of both care arrangements and subsidy receipt – both potentially unreliable (Raley, Harris and Rindfuss 2000)

Outcome variable: Grade retention

- Being “held back” in school
- Used as an indirect measure of children’s cognitive development in early grades (Davouzedeh et al. 2015; Magnuson et al. 2014), and how successful in a school environment
- Low-income children are at elevated risk of grade retention (Stearns et al. 2007)
- Low-income Black and Hispanic children are at especially elevated risk of grade retention (Stearns et al. 2007)
 - Discrimination (Saft and Pianta 2010), segregated neighborhoods with highly-concentrated poverty (Lichter, Parisi and Taquino 2015) and under-resourced schools (Frankenberg 2013)

Data and methods: Constructing Data File

I use Child Care and Development Fund administrative records merged to the American Community Survey

Data and methods: Constructing Data File

Children in the CCDF administrative records for fiscal years 2004-2011

- Children born in 1997-2007 observed at ages 6 and under
 - i.e. care received in early childhood, before kindergarten
- Files from states that submitted monthly information on the full universe of recipients, for continuous observation of children's care arrangements
- Parents have a unique protected identifier

Children in the same birth cohorts and states in the ACS observed beginning in the year they turn 7 through age 17 at the oldest

- Match individual CCDF children based on parent's unique, protected identifier, unique household identifier, and child's sex and birth month

Data File Construction

CCDF File

ACS

Ages 0-6
CCDF Children

Ages 7-17
CCDF Children

Ages 7-17
Non-CCDF Children

Observe children
monthly for up to 6
years

Observe each child
only once

N=2,490,419

Data and methods: Constructing Data File

Excluded states are....

Alaska, California, Connecticut, Florida, Indiana, Iowa, Massachusetts, Minnesota, New York, North Carolina, Pennsylvania, Virginia and Washington

Data and methods

Measured in the CCDF file: Focal independent variables

- Receipt of CCDF subsidy in early childhood
 - Child is present or absent in CCDF file
- Among CCDF children, main type of CCDF-subsidized care received*
 - Center, family daycare, babysitter, relative

*No information on care to non-CCDF children

Data and methods

Measured in the ACS file

- Outcome variable: Whether child has been held back in school in later childhood/adolescence
 - Grade retention measure - child is older than modal two ages for the grade in which he/she is enrolled (Bianchi 1984; Frederick and Hauser 2008)

Data and methods

Also measured in the ACS file

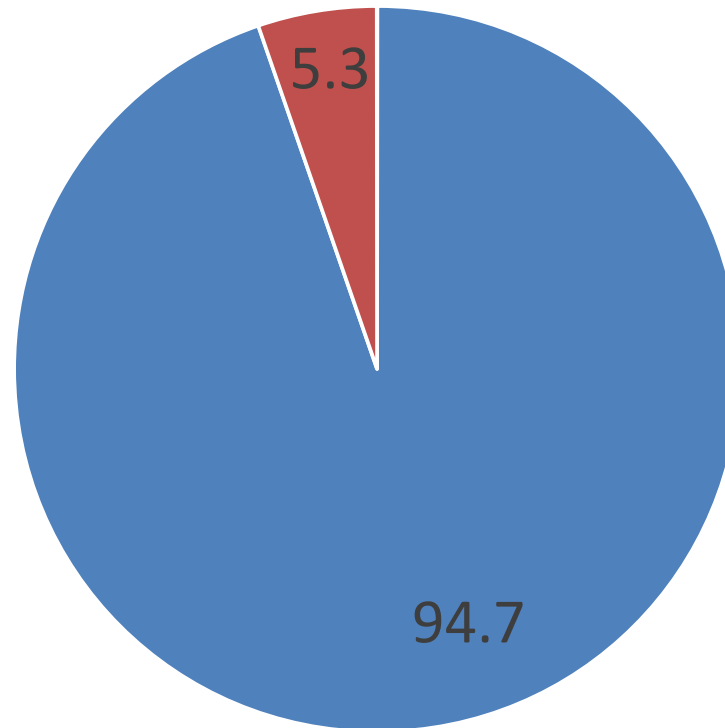
- Whether child's household income at or below 85% of state median *when observed in the ACS*
- Race/ethnicity
- Only child
- Region
- Age observed in the ACS
- Year observed in the ACS

Data and methods

I will present excerpts from

- Descriptive estimates
- Logistic regression of likelihood of grade retention
- Predicted probabilities of grade retention based on regression estimates
- Estimates are weighted. Weights are adjusted for the inverse probability of receiving a unique identifier in the CCDF file, the ACS, or both (as appropriate), and for the total number of years in the data file.

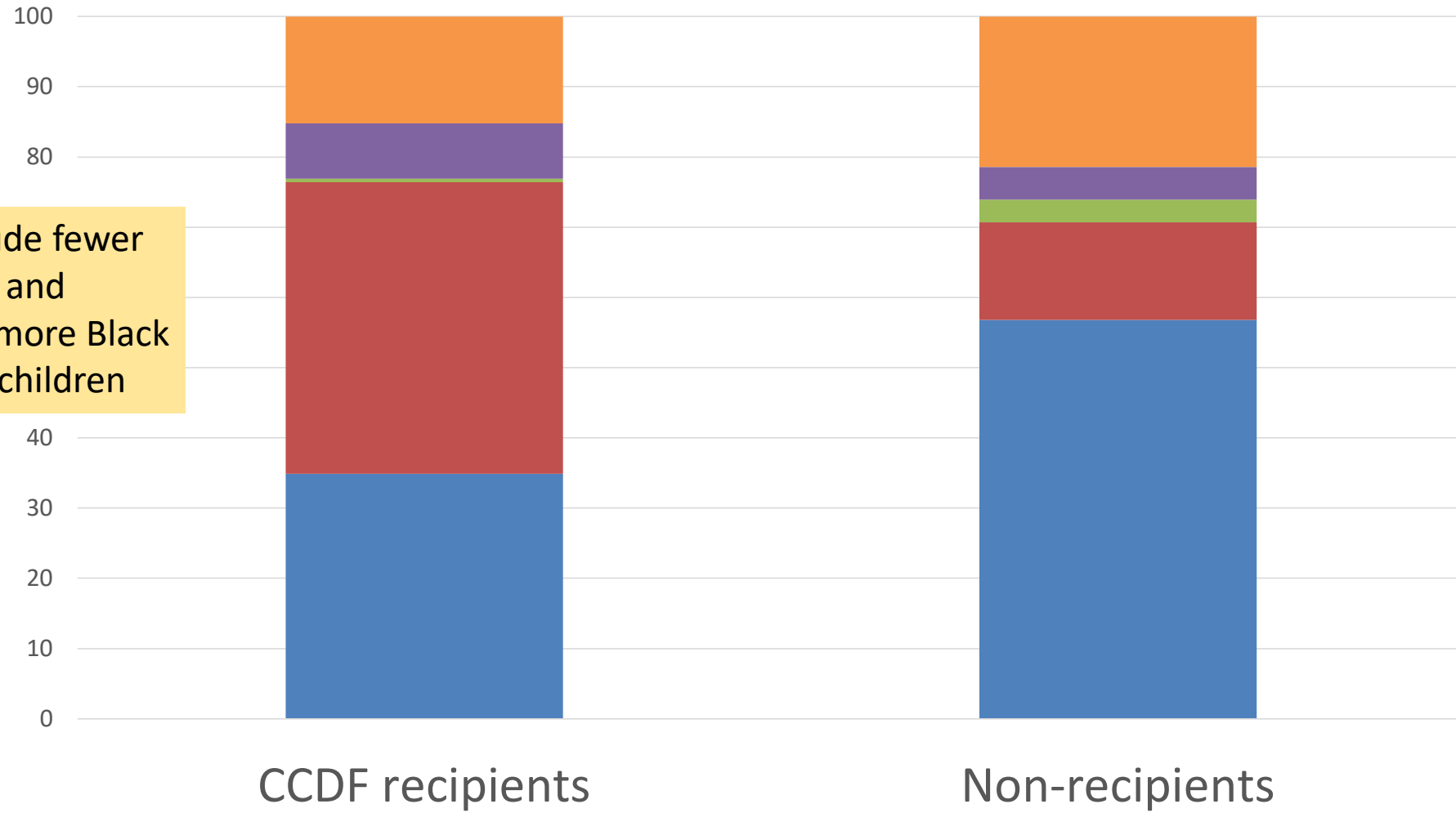
Percentage of Children Aged 7-17 Who Received the CCDF Subsidy at Ages 6 and Under



■ Did not receive the subsidy ■ Received the subsidy

Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

Race/Ethnic Composition

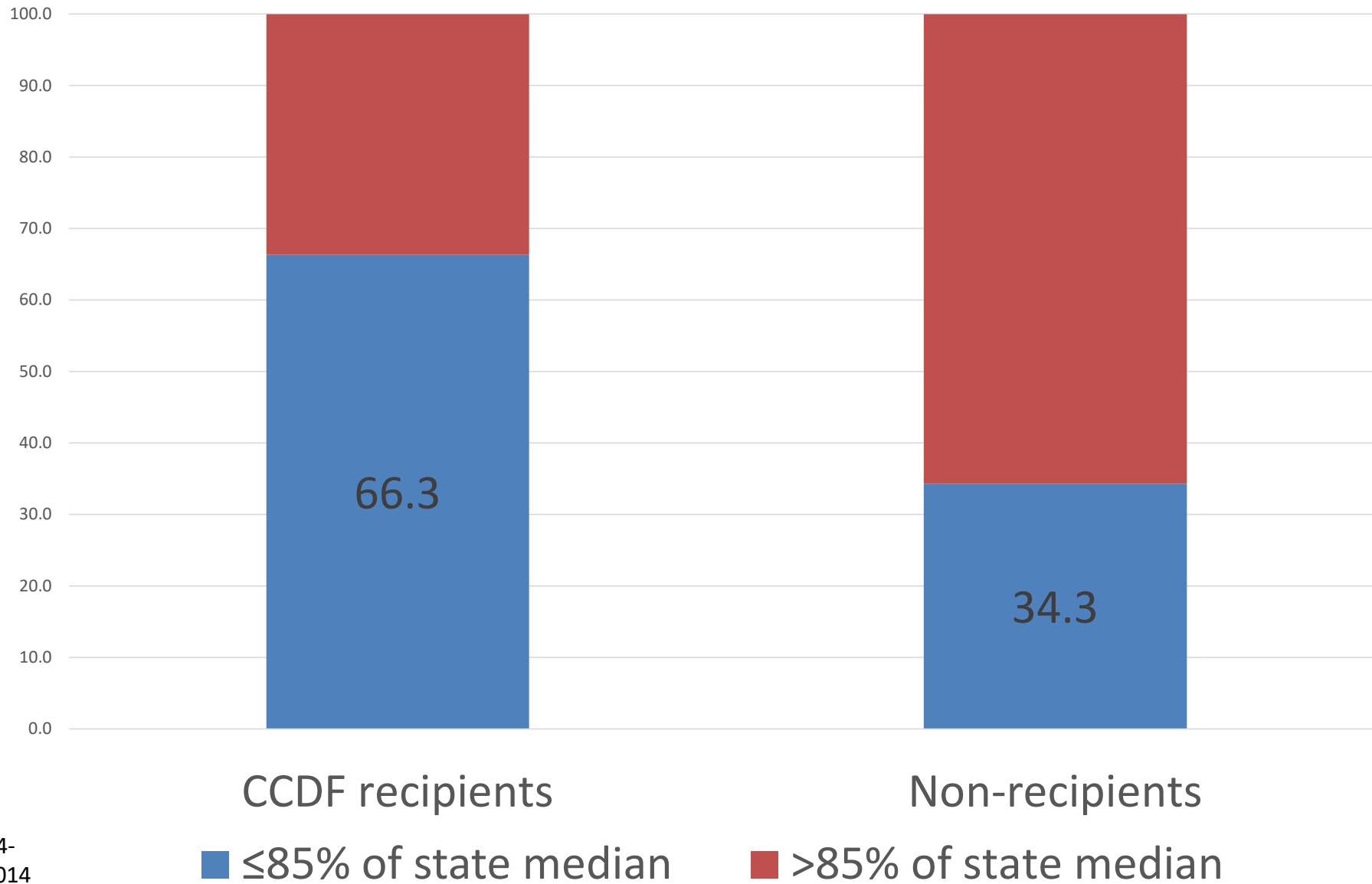


Recipients include fewer Whites, Asians, and Hispanics, and more Black and other race children

Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

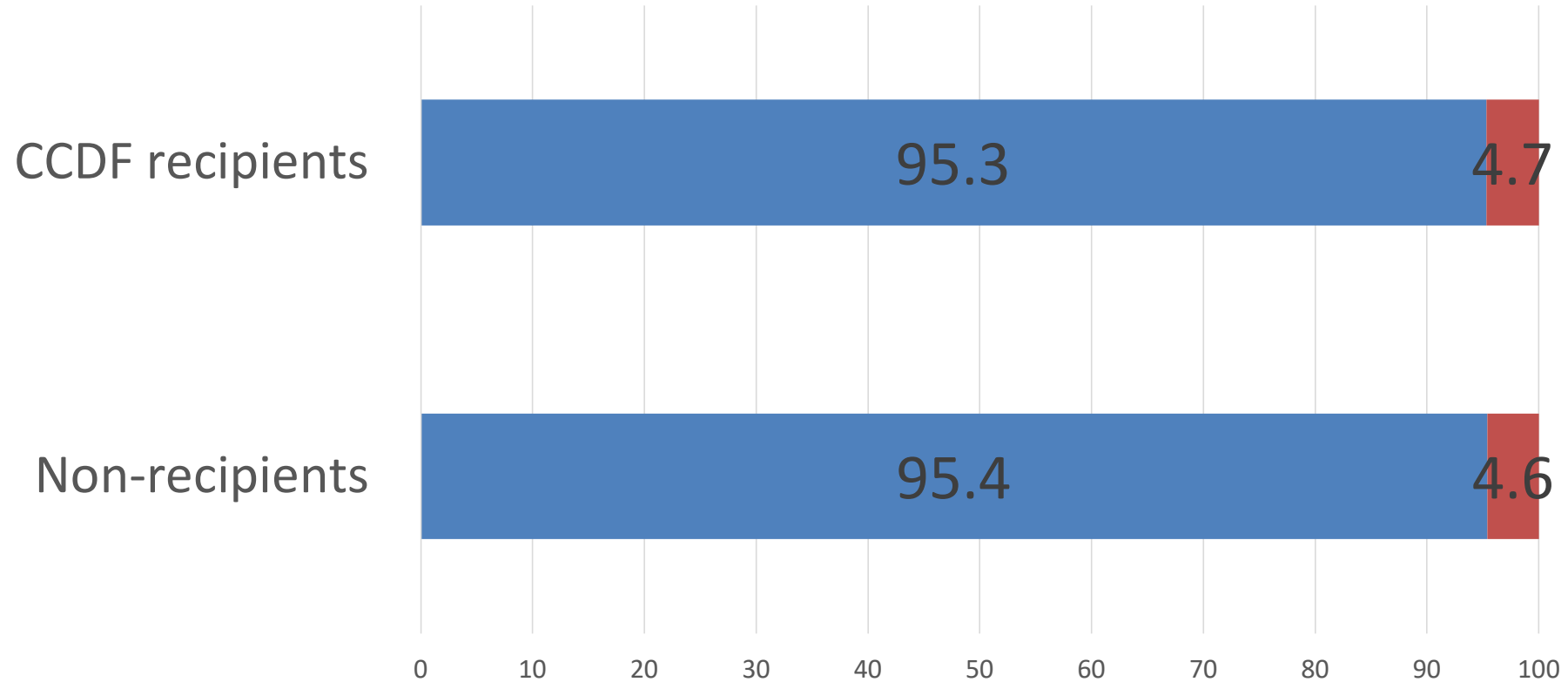
- White, non-Hispanic
- Black, non-Hispanic
- Asian, non-Hispanic
- Other, non-Hispanic
- Hispanic, any race

Household Income at Time of ACS Survey



Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

Percentages Experiencing Grade Retention by Subsidy Receipt are Not Statistically Significantly Different



- Did not experience grade retention
- Experienced grade retention

Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

Table 1: Selected Odds Ratios for Likelihood of Grade Retention*

	Model 1		Model 2	
Received CCDF-subsidized care	1.14	***	1.02	
Race/ethnicity (vs. White, non-Hispanic)				
Black, non-Hispanic	1.47	***	1.27	***
Asian, non-Hispanic	0.75	***	0.74	***
Other, non-Hispanic	1.28	***	1.19	***
Hispanic, any race	1.42	***	1.25	***
Income at or below 85% of annual state median			1.65	***

Source: 2004-2011 Child Care and Development Fund (CCDF) administrative records and 2008-2014 American Community Survey (ACS) files

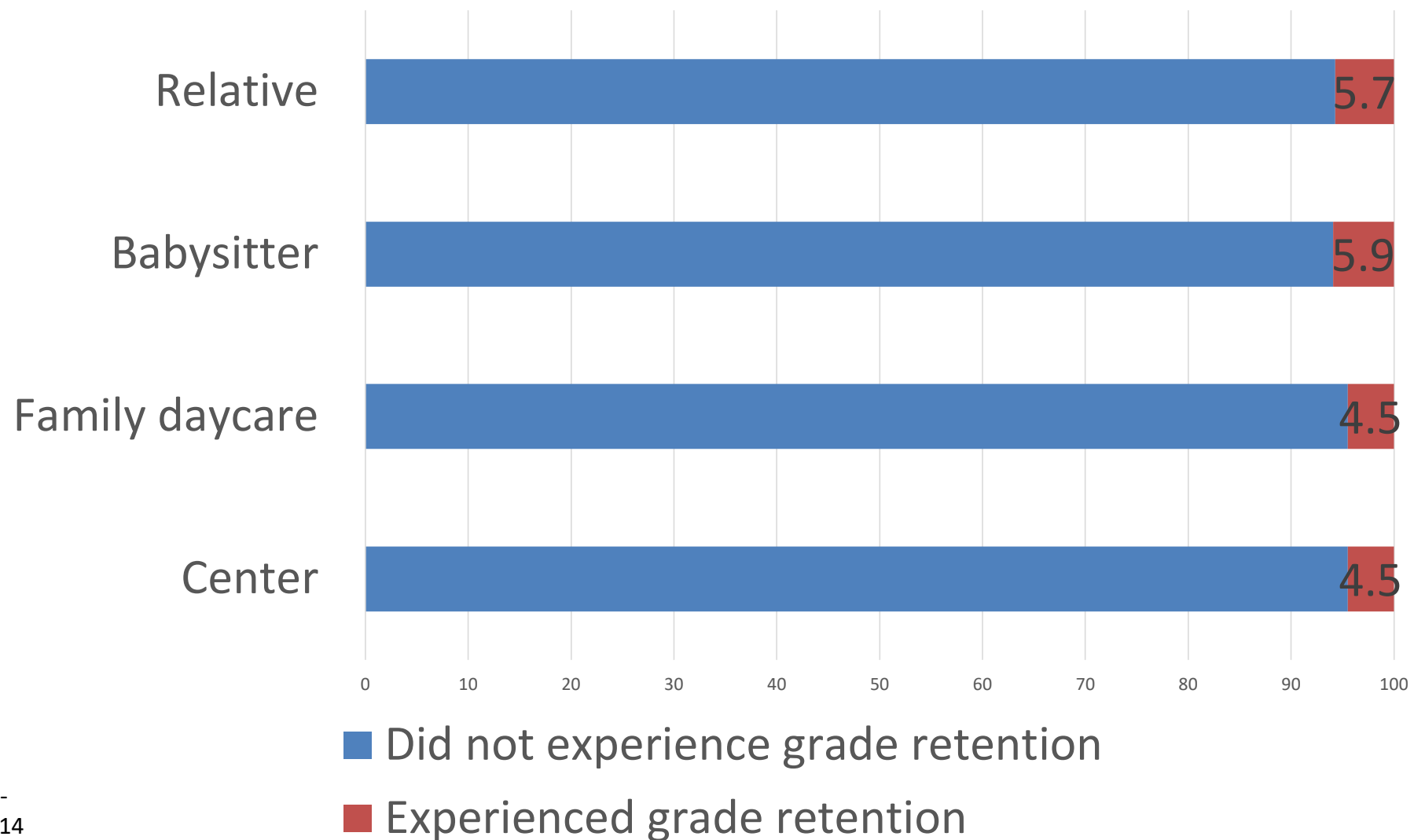
Estimates are weighted

*Also controls for sex, only child status, age, age-squared, region, and year observed

Children in CCDF-subsidized center care

- Majority of CCDF children (62.4%) received primarily center care
- Race/ethnic distribution is comparable to overall distribution of CCDF children
- Slightly lower percentage have household incomes less than 85% of state median

Children in Primarily Center Care and Family Daycare Are Less Likely to Be Held Back



Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

Table 2: Selected Odds Ratios for Likelihood of Grade Retention*

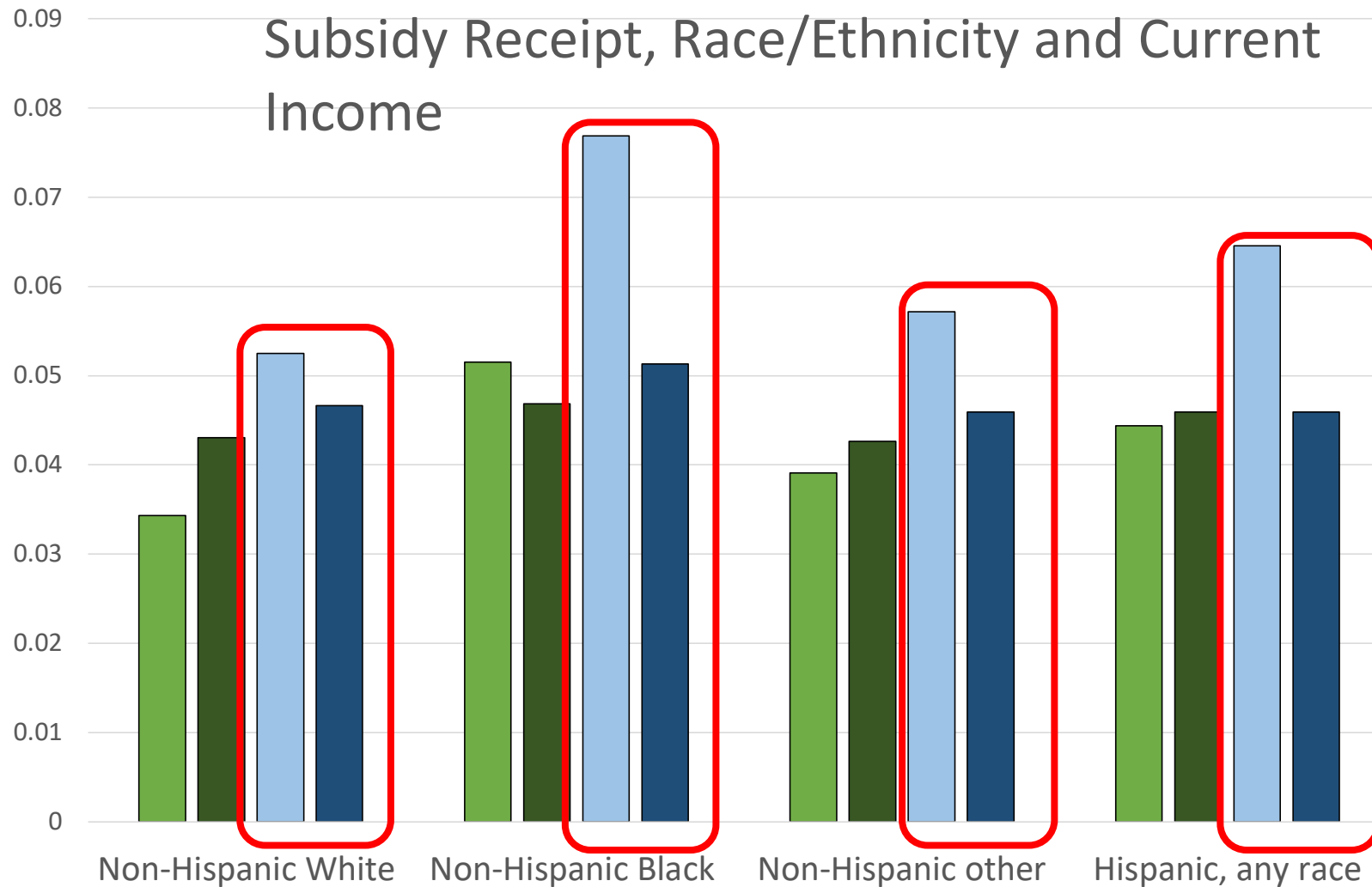
	Model 1		Model 2	
Main type of CCDF-subsidized care (vs. no CCDF-subsidized care)				
Center care	1.08	**	0.98	
Family daycare	1.21	***	1.06	
Babysitter	1.30	*	1.14	
Relative	1.28	***	1.11	*
Race/ethnicity (vs. White, non-Hispanic)				
Black, non-Hispanic	1.47	***	1.27	***
Asian, non-Hispanic	0.74	***	0.74	***
Other, non-Hispanic	1.28	***	1.19	***
Hispanic, any race	1.42	***	1.25	***
Income at or below 85% of annual state median			1.65	***

Source: 2004-2011 Child Care and Development Fund (CCDF) administrative records and 2008-2014 American Community Survey (ACS) files

Estimates are weighted

*Also controls for sex, only child status, age, age-squared, region, and year observed

Predicted Probability of Grade Retention by Subsidy Receipt, Race/Ethnicity and Current Income

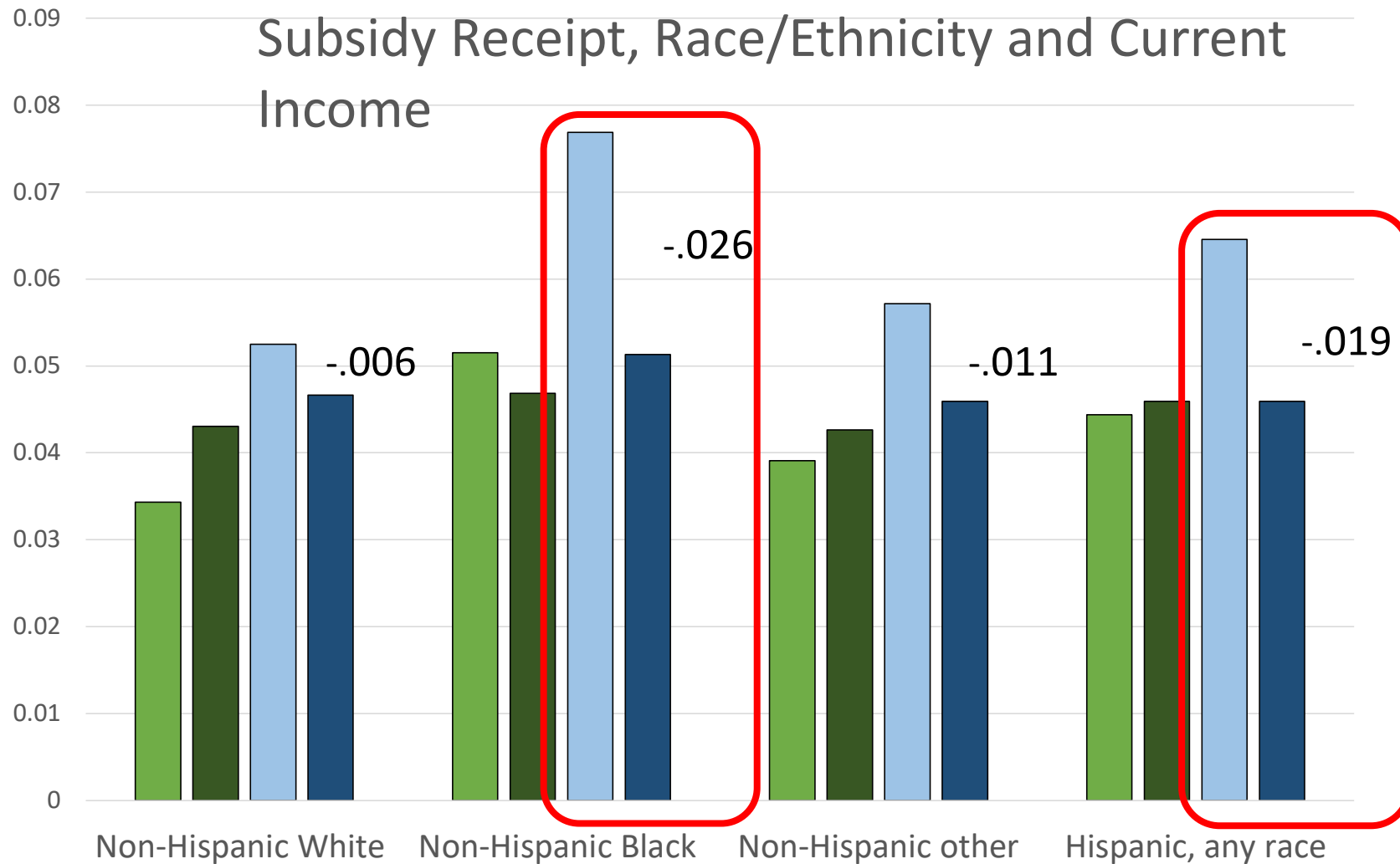


Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

■ No CCDF subsidy, income >85% of median
■ No CCDF subsidy, income ≤85% of median

■ Received CCDF subsidy, income >85% of median
■ Received CCDF subsidy, income ≤85% of median

Predicted Probability of Grade Retention by Subsidy Receipt, Race/Ethnicity and Current Income



Source: CCDF Administrative Records, 2004-2011 and ACS 2008-2014

- No CCDF subsidy, income >85% of median
- Received CCDF subsidy, income >85% of median
- No CCDF subsidy, income ≤85% of median
- Received CCDF subsidy, income ≤85% of median

Conclusions

- CCDF-subsidized care is associated with a lower probability of grade retention for low-income children
- Receiving CCDF-subsidized *center care* in particular is associated with the lowest probability of grade retention among subsidy recipients
 - Cognitive/social development (Peisner-Feinberg et al. 2001), parental learning (Sanders, Deihl and Kyler 2007), positive selection (Hawkinson et al. 2013; Johnson et al. 2013)
- CCDF-subsidized care appears to benefit most the children who are the highest risk of grade retention—low-income Black and Hispanic children
 - Preference for center care among Black parents (Shlay 2010), and social support for center care in Black communities (Sanders et al. 2007)

Conclusions

- I contribute to literature on the association between subsidized childcare and cognitive/school outcomes (Herbst and Tekin 2010; Johnson et al. 2013), but show a positive association
- I use administrative records to measure subsidy receipt and primary type of care, so avoid potential for misreporting present in survey data (Raley, Harris and Rindfuss 2000)

Thank you!

Appendices

Table 1

Table 1: Years When Birth Cohorts of Children Were Observed in the CCDF File and ACS

Birth years of children in the CCDF file	Years observed in the CCDF file	Years observed in the ACS
1997	2003-2004	2008-2014
1998	2003-2005	2008-2014
1999	2003-2006	2008-2014
2000	2003-2007	2008-2014
2001	2003-2008	2008-2014
2002	2003-2009	2009-2014
2003	2003-2010	2010-2014
2004	2004-2011	2011-2014
2005	2005-2011	2012-2014
2006	2006-2011	2013-2014
2007	2007-2011	2014

App Table 1

Appendix Table 1: Types of Care Received at Ages 6 and Under, Observed in Years 2004-2011, among CCDF Children in the Analytic Sample from Full-Universe States Who Matched to Respective State Files of the ACS^a

All Matched CCDF children		CCDF children who received multiple types of care	
Center care only	52.5	Center care and family daycare	62.4
Family daycare only	13.9	Center care and babysitter care	2.4
Babysitter care only	0.9	Center care and relative care	11.7
Relative care only	10.2	Family daycare and babysitter care	2.4
Multiple types of care	22.5	Family daycare and relative care	13
		Babysitter care and relative care	3.2
		Center care, family daycare and babysitter care	1.5
		Family daycare, babysitter care and relative care	2.2
		Center care, family daycare, babysitter care and relative care	1.2
Unweighted total	120,464		25,187

^aStates included are Alabama, Arizona, Colorado, Delaware, Georgia, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, Wyoming, and the District of Columbia. These states submitted files containing their full universe of children to the CCDF national data file.

Sources: 2004-2011 Child Care Development Fund (CCDF) administrative records, and 2008-2014 American Community Survey (ACS)

Note: Estimates are weighted.

Table 2

Table 2: Comparison of the Characteristics of Children Who Appear in the CCDF File, Who Appear in the ACS File, and Who Did and Did Not Match between these Two Files^a

	All Children in the CCDF File ^a		CCDF Children Who Did Not Match to the ACS ^a		Statistical Significance of Point Estimate Difference ^b	CCDF Children Who Matched to the ACS ^a		Statistical Significance of Point Estimate Difference ^c	ACS Children Who Do Not Appear in the CCDF File ^a		All Children in the ACS File ^a	
	Percentage	S.E.	Percentage	S.E.		Percentage	S.E.		Percentage	S.E.	Percentage	S.E.
Sex												
Girl	49.4	0.01	49.4	0.01	*	49.1	0.14	*	48.6	0.03	48.6	0.03
Boy	50.6	0.01	50.6	0.01	*	50.9	0.14	*	51.4	0.03	51.4	0.03
Race/ethnicity												
White, non-Hispanic	31.7	0.00	31.4	0.00	*	42.3	0.14	*	62.3	0.03	61.4	0.03
Black, non-Hispanic	49.5	0.01	49.7	0.01	*	34.6	0.14	*	10.9	0.02	11.9	0.02
Asian, non-Hispanic	0.7	0.00	0.7	0.00	*	0.6	0.02	*	2.9	0.01	2.8	0.01
Other, non-Hispanic	3.1	0.00	3.1	0.00	*	9.2	0.08	*	5.4	0.01	5.6	0.01
Hispanic, any race	14.9	0.00	15.1	0.00	*	13.4	0.10	*	18.5	0.02	18.3	0.02

Year of birth ^d	All Children in the CCDF File ^a		CCDF Children Who Did Not Match to the ACS ^a		Statistical Significance of Point Estimate Difference ^b	CCDF Children Who Matched to the ACS ^a		Statistical Significance of Point Estimate Difference ^c	ACS Children Who Do Not Appear in the CCDF File ^a		All Children in the ACS File ^a	
	Percentage	S.E.	Percentage	S.E.		Percentage	S.E.		Percentage	S.E.	Percentage	S.E.
1996						0.1	0.01	*	10.4	0.02	10.0	0.02
1997	3.8	0.00	3.7	0.00	*	6.1	0.07	*	10.5	0.02	10.3	0.02
1998	5.5	0.00	5.4	0.00	*	8.2	0.08	*	10.3	0.02	10.2	0.02
1999	7.2	0.00	7.1	0.00	*	10.6	0.09	*	10.1	0.02	10.1	0.02
2000	9.2	0.00	9.1	0.00	*	12.9	0.10	*	10.0	0.02	10.2	0.02
2001	10.5	0.00	10.3	0.00	*	14.0	0.10	*	9.6	0.02	9.8	0.02
2002	11.6	0.00	11.5	0.00	*	13.1	0.10	*	9.4	0.02	9.6	0.02
2003	12.1	0.00	12.1	0.00	*	11.8	0.09	*	8.1	0.02	8.3	0.02
2004	11.7	0.00	11.8	0.00	*	9.6	0.08	*	6.9	0.02	7.0	0.02
2005	10.7	0.00	10.9	0.00	*	7.0	0.07	*	5.7	0.01	5.7	0.01
2006	9.8	0.00	10.0	0.00	*	4.5	0.06	*	4.4	0.01	4.4	0.01
2007	7.9	0.00	8.1	0.00	*	2.1	0.04	*	2.9	0.01	2.9	0.01
2008						0.0	0.00	*	1.5	0.01	1.4	0.01

	All Children in the CCDF File ^a		CCDF Children Who Did Not Match to the ACS ^a		Statistical Significance of Point Estimate Difference ^b	CCDF Children Who Matched to the ACS ^a		Statistical Significance of Point Estimate Difference ^c	ACS Children Who Do Not Appear in the CCDF File ^a		All Children in the ACS File ^a	
	Percentage	S.E.	Percentage	S.E.		Percentage	S.E.		Percentage	S.E.	Percentage	S.E.
Main type of CCDF- subsidized care												
Center care	63.7	0.00	63.9	0.01	*	59.5	0.14	-	-	-	-	-
Family daycare	22.1	0.00	22.0	0.00	*	24.3	0.12	-	-	-	-	-
Babysitter care	1.7	0.00	1.7	0.00	*	1.6	0.04	-	-	-	-	-
Relative care	12.6	0.00	12.5	0.00	*	14.6	0.10	-	-	-	-	-
Total	96,114,828		95,992,115			122,713			2,640,829		2,763,542	

Table 3

Table 3: Characteristics of Children Observed at Ages 6 to 17 in the Years 2008-2014, by Whether They Previously Received the Child Care Development Fund (CCDF) Subsidy When Aged 6 and Under

	Total		Received CCDF subsidy		Did not receive CCDF subsidy		Statistical Significance of Point Estimate Difference ^a	χ^2 p-value ^b
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.		
Percentages								
Received CCDF-subsidized care ^c	5.3	0.02	-	-	-	-	-	-
Main type of CCDF-subsidized care ^c								-
Center care	3.3	0.02	62.4	0.18	-	-	-	
Family daycare	1.2	0.01	21.9	0.15	-	-	-	
Babysitter care	0.1	0.01	1.7	0.13	-	-	-	
Relative care	0.7	0.00	14.0	0.13	-	-	-	
Ever held back a grade ^d	4.6	0.02	4.7	0.08	4.6	0.02		0.050
Sex ^d								0.037
Girl	48.9	0.04	49.3	0.19	48.9	0.04	*	
Boy	51.1	0.04	50.7	0.19	51.1	0.04	*	

	Total		Received CCDF subsidy		Did not receive CCDF subsidy		Statistical Significance of Point Estimate Difference ^a	χ^2 p-value ^b
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.		
Race/ethnicity ^d								<.001
White, non-Hispanic	55.7	0.04	34.9	0.17	56.8	0.04	*	
Black, non-Hispanic	15.3	0.03	41.5	0.19	13.9	0.03	*	
Asian, non-Hispanic	3.0	0.01	0.5	0.03	3.2	0.01	*	
Other, non-Hispanic	4.9	0.02	7.9	0.10	4.7	0.02	*	
Hispanic, any race	21.1	0.04	15.2	0.14	21.4	0.04	*	
Only child ^d	19.6	0.03	18.9	0.14	19.6	0.03	*	<.001
Income at or below 85% of annual state median ^d	36.0	0.04	66.3	0.18	34.3	0.04	*	<.001
Region ^d								<.001
Northeast	8.1	0.02	4.3	0.07	8.3	0.02	*	
Midwest	26.5	0.03	39.0	0.18	25.8	0.03	*	
South	50.8	0.04	41.9	0.19	51.2	0.04	*	
West	14.7	0.03	14.7	0.13	14.7	0.03		

	Total		Received CCDF subsidy		Did not receive CCDF subsidy		Statistical Significance of Point Estimate Difference ^a	χ^2 p-value ^b
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.		
Year observed ^d								<.001
2008	9.6	0.02	7.3	0.10	9.7	0.02	*	
2009	11.2	0.03	9.5	0.11	11.3	0.03	*	
2010	12.9	0.03	12.6	0.12	12.9	0.03	*	
2011	14.4	0.03	14.4	0.13	14.4	0.03		
2012	16.0	0.03	16.9	0.14	16.0	0.03	*	
2013	17.5	0.03	18.8	0.15	17.4	0.03	*	
2014	18.3	0.03	20.3	0.15	18.2	0.03	*	
Means								
Age ^d	10.4	0.00	9.6	0.01	10.5	0.00	*	<.001
Unweighted Total	2,490,419		120,464		2,369,955			

Table 3: Characteristics of Children Observed at Ages 6 to 17 in the Years 2008-2014, by Whether They Previously Received the Child Care Development Fund (CCDF) Subsidy When Aged 6 and Under

Sources: 2004-2011 Child Care Development Fund (CCDF) administrative records and 2008-2014 American Community Survey (ACS) files from the states of Alabama, Arizona, Arkansas, Colorado, Delaware, Georgia, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

Notes: All estimates are weighted.

^a A * indicates that the difference in a given point estimate is statistically significantly different at at least the .05 level between CCDF recipient and non-recipient children.

^b χ^2 p-value indicates statistical significance of the overall difference in the distribution of characteristics between CCDF subsidy recipients and non-recipients.

^c Variable measured in CCDF administrative records.

^d Variable measured in the ACS.

Table 4

Table 4: Characteristics of CCDF Recipient Children Observed at Ages 6 to 17 in the Years 2008-2014, by the Main Type of CCDF-Subsidized Care They Received When Aged 6 and Under

	All CCDF Children		Center care		Family daycare		Babysitter care		Relative care		Statistical Significance of Point Estimate Differences ^a	χ^2 p-value ^b
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.		
Percentages												
Ever held back a grade ^c	4.7	0.08	4.5	0.10	4.5	0.16	5.9	0.67	5.7	0.22	<i>E, F, G, H</i>	<.001
Sex ^c												0.673
Girl	49.3	0.19	49.2	0.24	49.7	0.39	48.7	1.42	49.2	0.48		
Boy	50.7	0.19	50.8	0.24	50.3	0.39	51.3	1.42	50.8	0.48		
Race/ethnicity ^c												<.001
White, non-Hispanic	34.9	0.17	34.6	0.22	40.1	0.37	22.4	1.18	29.6	0.43	<i>D, E, F, G, H, I</i>	
Black, non-Hispanic	41.5	0.19	41.5	0.24	38.5	0.38	61.9	1.37	43.6	0.48	<i>D, E, F, G, H, I</i>	
Asian, non-Hispanic	0.5	0.03	0.6	0.03	0.4	0.04	0.3	0.11	0.7	0.08	<i>D, E, G, H, I</i>	
Other, non-Hispanic	7.9	0.10	7.7	0.12	7.9	0.21	4.6	0.55	9.1	0.27	<i>E, F, H, I</i>	
Hispanic, any race	15.2	0.14	15.5	0.18	13.2	0.27	10.8	0.86	17.0	0.38	<i>D, E, F, G, H, I</i>	
Only child ^c	18.9	0.14	20.7	0.19	17.2	0.29	13.6	0.99	14.2	0.33	<i>D, E, F, G, H</i>	<.001
Income at or below 85% of annual state median ^c	66.3	0.18	62.6	0.23	70.2	0.35	75.3	1.24	66.3	0.18	<i>D, E, F, G, H, I</i>	<.001

	All CCDF Children		Center care		Family daycare		Babysitter care		Relative care		Statistical Significance of Point Estimate Differences ^a	χ^2 p-value ^b
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.		
Region ^c												<.001
Northeast	4.3	0.07	4.7	0.10	4.3	0.15	3.2	0.49	2.8	0.16	<i>D, E, F, G, H</i>	
Midwest	39.0	0.18	29.9	0.21	54.0	0.39	57.9	1.43	54.1	0.48	<i>D, E, F, G, I</i>	
South	41.9	0.19	52.4	0.24	26.1	0.35	29.3	1.37	21.5	0.42	<i>D, E, F, G, H, I</i>	
West	14.7	0.13	13.0	0.16	15.7	0.29	9.6	0.86	21.6	0.40	<i>D, E, F, G, H, I</i>	
Year observed ^c												<.001
2008	7.3	0.10	7.0	0.12	7.7	0.21	10.1	0.88	8.0	0.26	<i>D, E, F, G, I</i>	
2009	9.5	0.11	9.3	0.14	9.2	0.23	10.7	0.91	11.1	0.31	<i>F, H</i>	
2010	12.6	0.12	12.3	0.16	12.5	0.26	12.4	0.98	14.3	0.35	<i>F, H</i>	
2011	14.4	0.13	14.4	0.17	14.3	0.27	13.3	0.91	14.8	0.35		
2012	16.9	0.14	17.0	0.17	17.1	0.28	17.7	1.08	16.3	0.34		
2013	18.8	0.15	19.1	0.19	18.9	0.30	16.8	1.09	17.7	0.37	<i>E, F, H</i>	
2014	20.3	0.15	20.9	0.19	20.3	0.31	19.1	1.08	17.9	0.36	<i>D, F, H</i>	

Table 4: Characteristics of CCDF Recipient Children Observed at Ages 6 to 17 in the Years 2008-2014, by the Main Type of CCDF-Subsidized Care They Received When Aged 6 and Under

Means												
Age ^c	9.6	0.01	9.5	0.01	9.5	0.02	10.0	0.03	10.4	0.08	<i>D, E, F, G, H, I</i>	<.001
Unweighted Total	2,490,419		71,684		29,252		1,956		17,572			

Sources: 2004-2011 Child Care Development Fund (CCDF) administrative records, and 2008-2014 American Community Survey (ACS) files from the states of Alabama, Arizona, Arkansas, Colorado, Delaware, Georgia, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, West Virginia, Wisconsin, Wyoming, and the District of Columbia.

Notes: All estimates are weighted.

^aPoint estimate differences that are statistically significant at at least the .05 level are indicated as follows. D: center care versus family day care; E: center care versus babysitter care; F: center care vs. relative care; G: family day care versus babysitter care; H: family daycare versus relative care; I: babysitter care versus relative care.

^b χ^2 p-value indicates statistical significance of the overall difference in the distribution of characteristics among CCDF subsidy recipients with different primary care types.

^c Variable measured in the ACS.

Table 5

Table 5: Logistic Regression Estimates of Having Experienced Grade Retention in Grades K-12 among Children Aged 6-17 in Years 2008-2014

	Model 1			Model 2			Model 3		
	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value
Received CCDF-subsidized care ^c	0.14	0.02	<.001	0.02	0.02	0.32	0.42	0.04	<.001
Main type of CCDF-subsidized care (vs. no CCDF-subsidized care) ^c									
Center care									
Family daycare									
Babysitter									
Relative									
Girl ^a	-0.39	0.01	<.001	-0.39	0.01	<.001	-0.39	0.01	<.001
Race/ethnicity (vs. White, non-Hispanic) ^d									
Black, non-Hispanic	0.39	0.01	<.001	0.24	0.01	<.001	0.26	0.01	<.001
Asian, non-Hispanic	-0.29	0.02	<.001	-0.31	0.02	<.001	-0.30	0.02	<.001
Other, non-Hispanic	0.24	0.02	<.001	0.17	0.02	<.001	0.18	0.02	<.001
Hispanic, any race	0.35	0.01	<.001	0.22	0.01	<.001	0.22	0.01	<.001
Only child ^d	-0.11	0.01	<.001	-0.12	0.01	<.001	-0.12	0.01	<.001
Income at or below 85% of annual state median ^d				0.50	0.01	<.001	0.51	0.02	<.001

	Model 1			Model 2			Model 3		
	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value
Age observed ^d	0.44	0.01	<.001	0.45	0.01	<.001	0.45	0.01	<.001
Age observed, squared ^d	-0.02	0.00	<.001	-0.02	0.00	<.001	-0.02	0.00	<.001
Year observed ^d	-0.04	0.00	<.001	-0.04	0.00	<.001	-0.04	0.00	<.001
Region (vs. Northeast) ^d									
Midwest	0.21	0.04	<.001	0.23	0.04	<.001	0.23	0.04	<.001
South	0.60	0.03	<.001	0.64	0.03	<.001	0.64	0.03	<.001
West	-0.04	0.05	0.361	-0.04	0.05	0.367	-0.04	0.05	0.338
Received CCDF subsidy x Income at or below 85% of annual state median							-0.31	0.04	<.001
Received CCDF subsidy x Race/ethnicity									
CCDF subsidy x Black, non-Hispanic							-0.33	0.04	<.001
CCDF subsidy x Asian, non-Hispanic							-0.05	0.28	0.856
CCDF subsidy x Other, non-Hispanic							-0.20	0.07	0.002
CCDF subsidy x Hispanic, any race							-0.13	0.06	0.026

	Model 4 ^a				Model 5			Model 6 ^b		
	Coeff.	O.R.	S.E.	p-value	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value
Main type of CCDF-subsidized care (vs. no CCDF-subsidized care) ^c										
Center care	0.08	1.08	0.03	0.005	-0.02	0.03	0.548	0.43	0.04	<.001
Family daycare	0.19	1.21	0.04	<.001	0.06	0.04	0.138	0.41	0.09	<.001
Babysitter	0.26	1.30	0.11	0.023	0.13	0.11	0.253	0.42	0.42	0.317
Relative	0.24	1.28	0.04	<.001	0.10	0.04	0.014	0.45	0.10	<.001
Girl ^a	-0.39		0.01	<.001	-0.39	0.01	<.001	-0.39	0.01	<.001
Race/ethnicity (vs. White, non-Hispanic) ^d										
Black, non-Hispanic	0.39		0.01	<.001	0.24	0.01	<.001	0.26	0.01	<.001
Asian, non-Hispanic	-0.30		0.02	<.001	-0.31	0.02	<.001	-0.30	0.02	<.001
Other, non-Hispanic	0.25		0.02	<.001	0.17	0.02	<.001	0.18	0.02	<.001
Hispanic, any race	0.35		0.01	<.001	0.22	0.01	<.001	0.22	0.01	<.001
Only child ^d	-0.11		0.01	<.001	-0.12	0.01	<.001	-0.12	0.01	<.001
Income at or below 85% of annual state median ^d					0.50	0.01	<.001	0.51	0.02	<.001

	Model 4 ^a				Model 5			Model 6 ^b		
	Coeff.	O.R.	S.E.	p-value	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value
Age observed ^d	0.44		0.01	<.001	0.45	0.01	<.001	0.45	0.01	<.001
Age observed, squared ^d	-0.02		0.00	<.001	-0.02	0.00	<.001	-0.02	0.00	<.001
Year observed ^d	-0.04		0.00	<.001	-0.04	0.00	<.001	-0.04	0.00	<.001
Region (vs. Northeast) ^d										
Midwest	0.23		0.04	<.001	0.23	0.04	<.001	0.23	0.04	<.001
South	0.60		0.03	<.001	0.64	0.03	<.001	0.64	0.03	<.001
West	-0.05		0.05	0.345	-0.04	0.05	0.359	-0.05	0.05	0.329
Type of CCDF subsidized care x Income at or below 85% of annual state median										
Center care x Income ≤85% annual state median								-0.36	0.05	<.001
Family day care x Income ≤85% annual state median								-0.25	0.09	0.008
Babysitter care x Income ≤85% of national median								-0.24	0.31	0.439
Relative care x Income ≤85% annual state median								-0.30	0.09	0.00

	Model 4 ^a				Model 5			Model 6 ^b						
	Coeff.	O.R.	S.E.	p-value	Coeff.	S.E.	p-value	Coeff.	S.E.	p-value				
Type of CCDF subsidized care x														
Race/ethnicity														
Center care x Black, non-Hispanic								-0.40	0.05	<.001				
Family day care x Black, non-Hispanic								-0.30	0.08	0.000				
Babysitter care x Black, non-Hispanic								-0.07	0.29	0.803				
Relative care x Black, non-Hispanic								-0.18	0.10	0.062				
Center care x Asian, non-Hispanic								0.13	0.36	0.719				
Family day care x Asian, non-Hispanic								-1.18	1.39	0.395				
Babysitter care x Asian, non-Hispanic								-4.53	0.90	<.001				
Relative care x Asian, non-Hispanic								-0.04	0.89	0.964				
Center care x Other, non-Hispanic								-0.24	0.08	0.005				
Family day care x Other, non-Hispanic								-0.17	0.15	0.255				
Babysitter care x Other, non-Hispanic								-1.18	0.78	0.131				
Relative care x Other, non-Hispanic								-0.07	0.17	0.679				
Center care x Hispanic, any race								-0.11	0.07	0.104				
Family day care x Hispanic, any race								-0.17	0.12	0.139				
Babysitter care x Hispanic, any race								-0.37	0.55	0.506				
Relative care x Hispanic, any race								-0.14	0.13	0.276				
Intercept					77.73		5.74	<.001	76.33	5.94	<.001	76.32	5.93	<.001

N=2,490,419