Financial Incentives for Adoption and Kin Guardianship Improve Achievement for Foster Children

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Northstar's Payment Equalization Policy

Aimed to Reduce Financial Disincentive to Adopt or to Become Kin Guardian

Research questions & design

- **RQ**: Do higher financial incentives in permanency (adoption/kin guardianship) for a child in foster care improve the child's outcomes?

- **RQ**: Do higher incentives increase speed and likelihood of foster care exit to permanency? Erode match quality?

- **Methods**: Leverage 2015 Minnesota policy change that, for children in foster care at ages 6+, raised potential permanency payments to equal foster care payments, in a difference-in-differences (DiD) design.

  Effects = outcome change among kids entering foster care when older less the change among kids entering younger.

Findings: 3 years after foster-care case start

- ↑ ↑ ↑ MCA math & reading scores
- Why?
  1. ↑ $2K payments,
  2. ↑ school stability,
  3. ↓ 5 months in time to adoption or kin guardianship
  4. ↓ school suspensions,
- Evidence suggests it is more than just money, but financial incentives aid in matching process.
- Expected lifetime earnings benefit from test score growth is **16X** average cost.

Test Scores Rose Much More for Older Children

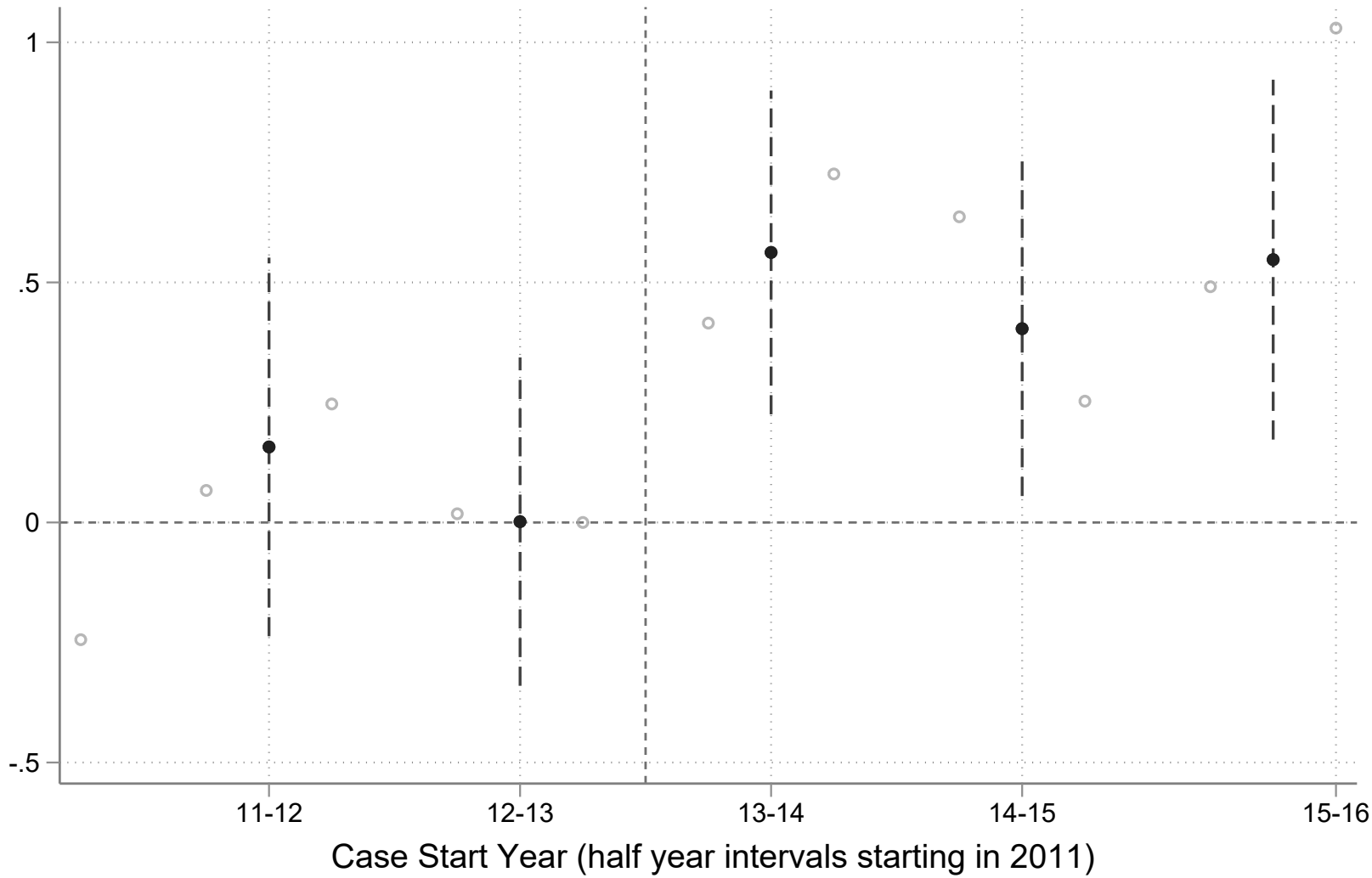
Effect on MCA Math and Reading Scores 3 Years After Case Start

Change in post- minus pre-reform average test scores was 0.3 SD larger for older kids than younger.

	0.319*	0.311**	0.455**
	(0.170)	(0.155)	(0.214)
Mean	-0.78	-0.78	-0.78
# of cases	6,908	6,908	3,155
Controls	No	Yes	Yes
Sample	Full	Full	$\sim$ reunify

Timing of Test Score Effect Sensible

Sample Predicted Not To Reunify



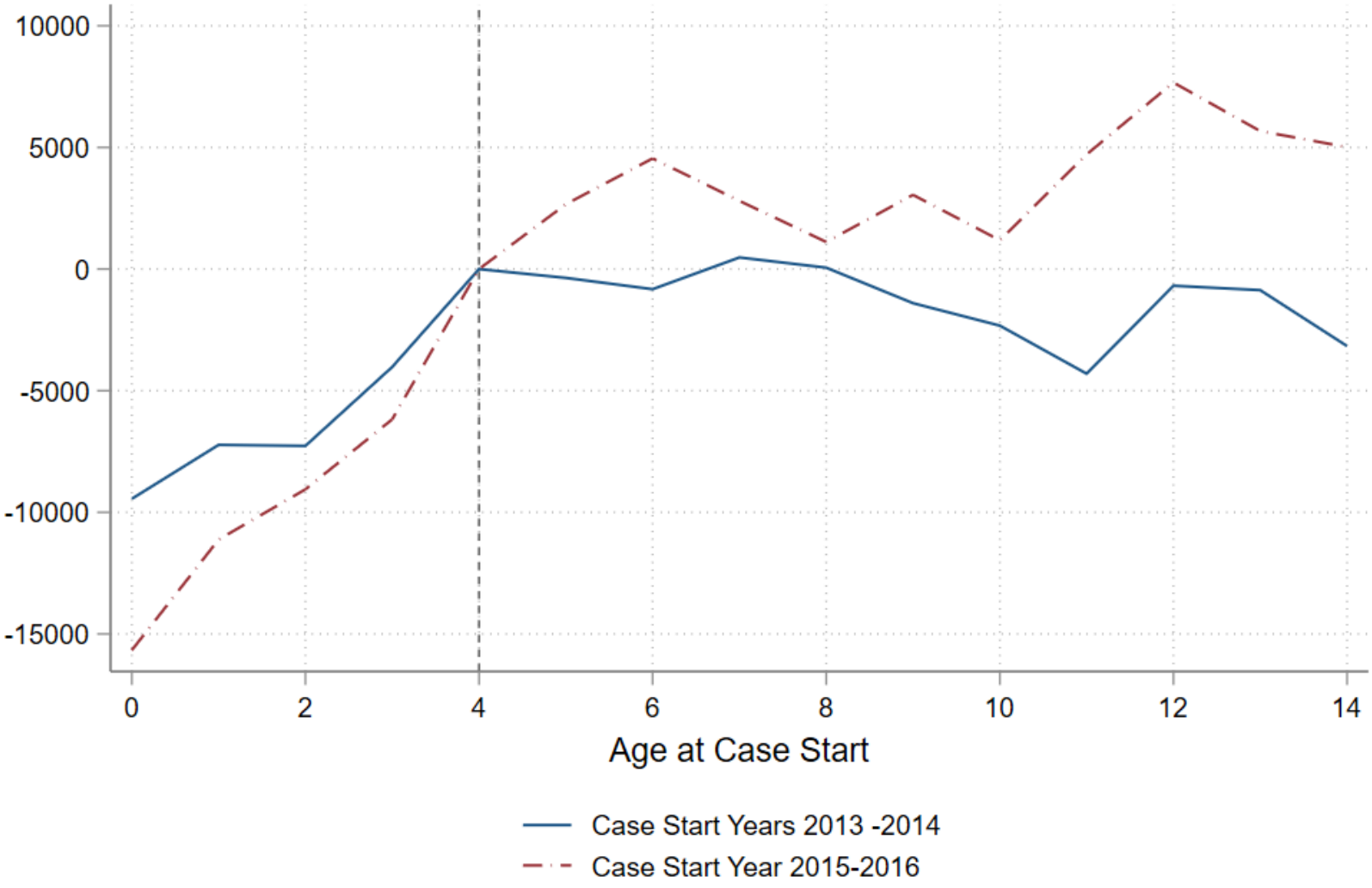
Payments: costs to get benefits

Reform raised average payment total between start of case & test by $2,077 with net present value (NPV) of $1,914.

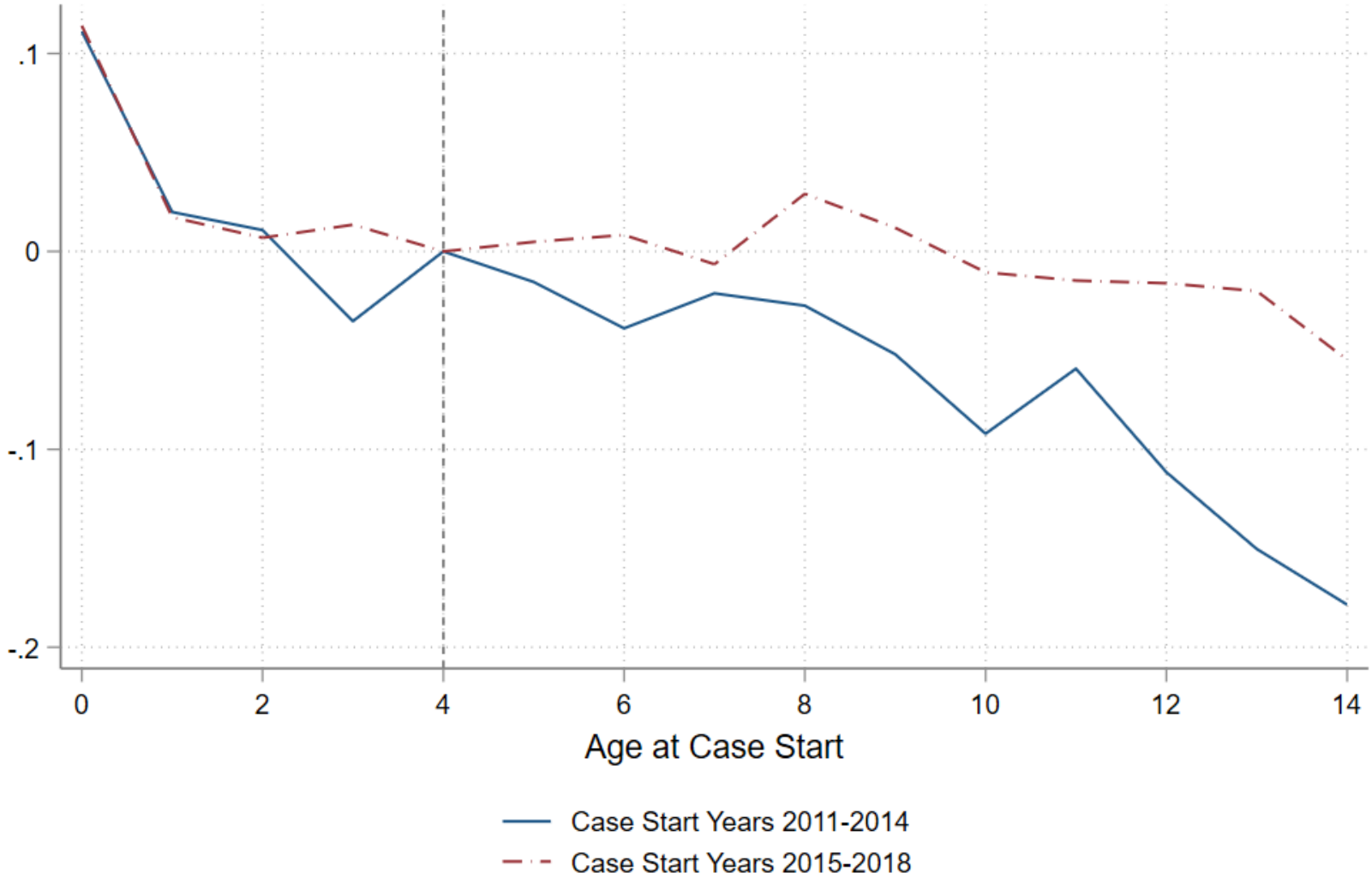
	(1)	(2)	(3)	(4)	(5)	(6)
Payment Outcome:	Total	NPV	All Monthly	Foster	Adoption	Kinship
Policy Exposure	$2,077**	$1,914**	$52**	-$15	$121***	$448***
	(969)	(898)	(23)	(23)	(33)	(43)
pre-policy mean	$23,018	$21,743	$553	$ 1,310	$ 889	$689
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
# of Foster care spells	18,544	18,544	18,544	18,544	3051	1707

Payment stream +$2,077 more for older than younger kids.

Relative NPV of Payments by Age at Case Start



Share in Permanency Two Years After Case Start



Feedback welcome. Thank you!

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Appendix

Data

Department of Human Services: Child Protective Services

- **Sample**: 52,344 foster cases from 1/2011–7/2019. 6,907 cases linked with child test scores. Probabilistic linking, verified by hand.
- **Covariates fixed at start**: birth date, case start date, reason for removal, race/ethnicity, gender
- **Child Welfare Outcomes**
  - Exit type and timing, foster re-entry (proxy for poor match)

Data

Linked administrative data across multiple state agencies

- **K12 Outcomes**: standardized test scores (reading, math, and average); disciplinary records; attendance rate; schools attended.
  - Test scores first observed spring of 3rd grade.
  - Effectively limits sample to those age 4 - 14 at foster care start.
  - Focus on score 3 to 4 years post-case start.

- **Medicaid**: any mental health service use.

Summary Statistics:

Sample of cases:	All	Subsample linked to: K12 Records	Subsample linked to: Test Scores
Panel A: Case Characteristics at Start			
Age, years	8.34	7.27	8.57
Average number of cases per child	1.37	1.37	1.28
White	37%	37%	41%
African American	20%	20%	18%
American Indian	15%	16%	16%
Hispanic	10%	10%	10%
Removed for neglect	26%	30%	32%
Removed for physical abuse	10%	12%	14%
Removed for caretaker drug Use	24%	22%	23%
Removed due to child behaviors	19%	15%	8%
Panel B: Case Outcomes			
Average case length, months	11.42		13.38
Exit to family reunification	58%	—	62%
Exit to any permanency	19%	—	27%
Average Z-Score	—	—	-0.77
Number of Cases	52,344	20,407	6,908

Basic Strategy of Identification & Estimation

Model outcome for child i at time t who is $a(it)$ years of age:

$$Y_{it} = \alpha_1 \mathbf{1}(t \geq 2015)\mathbf{1}(a(it) \geq 6) + \alpha_2 X_{it} + \gamma_{a(it)} + \delta_t + \epsilon_{it}$$

- α_1: differences-in-differences estimate
- interaction = 1 if post-reform and over age 6 years.
- $\gamma_{a(it)}$: Age in year fixed effects
- δ_t: Calendar year-month fixed effects
- X_{it}: case characteristic covariates

Modify this approach depending on outcome/data.

Estimation Strategy

Student achievement

- Each observation is a foster case.
- Do not want to use observed length of foster case: endogenous to policy
- Do want to use exogenous variation: when foster the case begins and age of child at case start.
  - Predict expected foster care length L_i
  - Preferred method is $L_i \equiv 16$ months = pre-reform observed length for cases eventually adopted

DiD: Estimating Equation

For child-i in a case started in year-month-t at age-a_0:

$$Y_{iat} = \beta_1 PolicyExposure_{at} + \beta_2 X_{iat} + \gamma_{a_i^0} + \delta_{t_i^0} + \epsilon_{iat} \quad (1)$$

- Y standardized test Z-score.
- *PolicyExposure*: % of months between case start through expected foster care length (L_i) when child is both age 6+ and post-2014.
  - 0 if entered 16 months before 2015 or 16 months before turning six
  - 1 if entered on/after 2015 and 6 or older at entry
  - $\in (0, 1)$ for intermediate cases

Case Type Heterogeneity

Majority of foster care cases never "at risk" for adoption

- **Reunification**: 58% of foster care cases end in reunification with origin family. Less severe cases. Parents typically just require support or counseling before reuniting with child.

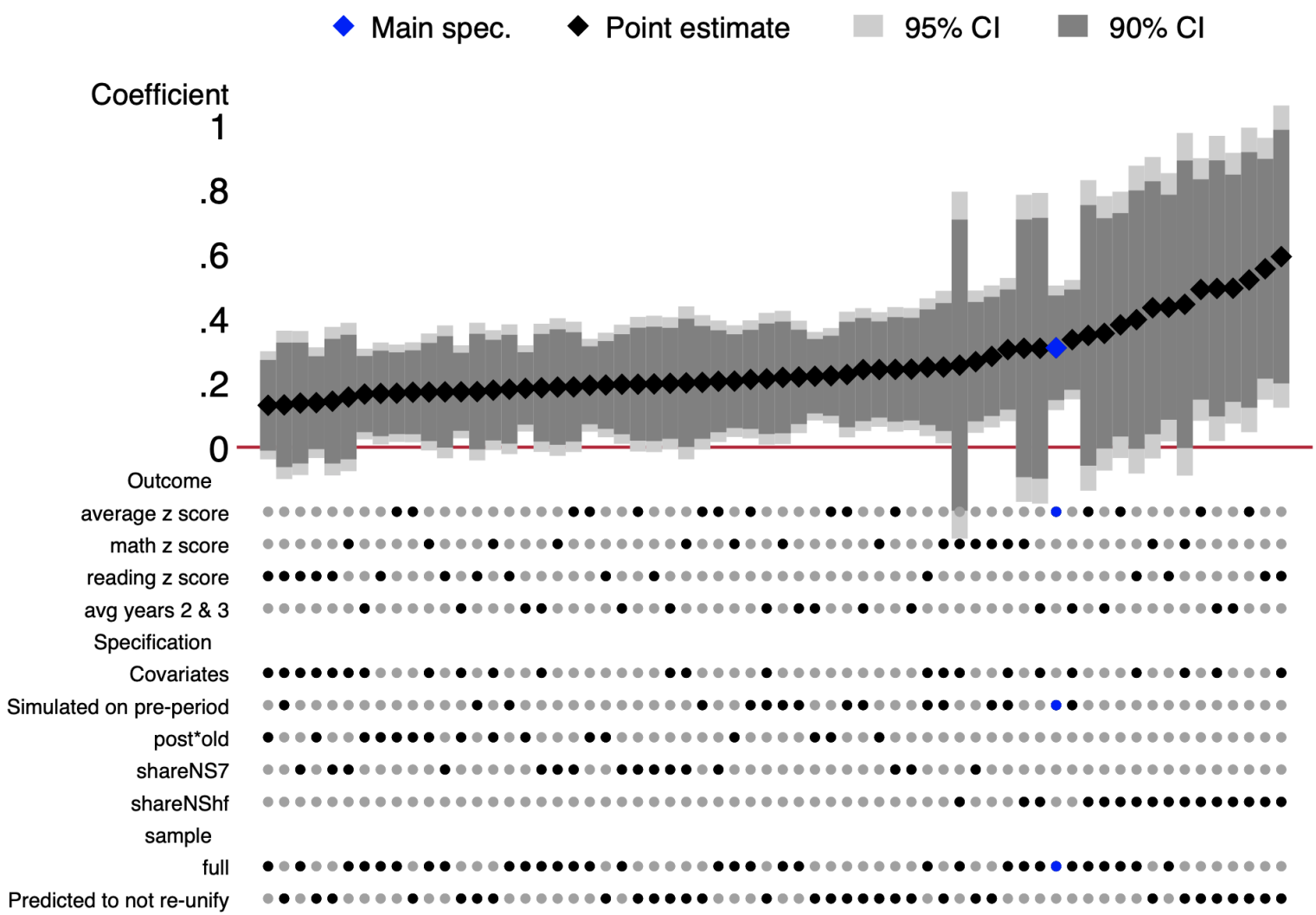
- **Challenge**: Can mute detection of policy's long term effects; obscure trends in the event study.

- **Solution**: Use random forest to classify these cases; in some models exclude them from the sample.

Results: Tightening Age Bandwidth

	(1)	(2)	(3)	(4)
Sample:	All Ages	Ages 2-9	Ages 3-8	Ages 4-7
Bandwidth from 6th Birthday:	[-6,12]	[±4]	[±3]	[±2]
Policy Exposure	0.31**	0.28*	0.27*	0.25
	(0.16)	(0.16)	(0.162)	(0.16)
pre-policy mean	-0.78	-0.73	-0.73	-0.69
# of foster cases	6,908	4597	3772	2908

Results: Specification Curve



Mechanisms

- **Substitution**: Policy eliminates "penalty" for adopting, making it *relatively* more attractive
- **Income**: higher permanency payments increases total $ going into household
- **Match quality**: pecuniary incentives may change marginal child to:
  - lower: attract cash motivated (crowd-out altruism)
  - higher: enable caring family to adopt (empower altruism)

Why is Achievement Improving?

Other Outcomes: Education and Health

- Split before (< 4 years) and after test scores (4-5 years) can be measured in all groups.
- $\downarrow$ suspensions
- $\downarrow$ use of mental health services, but not robust.
- $\downarrow$ school attendance short term
- $\uparrow$ school stability

Suspensions and Mental Health Services

Years after CPE start	< 4	< 4	4 to 5	4 to 5
	Panel A: School Suspensions			
Policy	-0.035***	-0.021***	-0.038***	-0.030***
	(0.008)	(0.007)	(0.010)	(0.010)
Mean outcome	0.17	0.17	0.14	0.14
Obs	33824	33824	20407	20407
	Panel B: Mental Health Services			
hareNS15	-0.016***	-0.007	-0.007	-0.004
	(0.006)	(0.006)	(0.007)	(0.007)
Mean outcome	0.09	0.09	0.06	0.06
Obs	33,824	33,824	20,407	20,407
Controls	No	Yes	No	Yes
Sample	Full	Full	Full	Full

Attendance and School Stability

Years after CPE start	< 4	< 4	4 to 5	4 to 5
		Panel A: Attendance		
	-0.012**	-0.014***	0.0001	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)
Mean outcome	0.88	0.88	0.89	0.89
Obs	27393	27393	17204	17204
	Panel B: Average # of Schools per Year			
shareNS15	-0.082***	-0.041**	-0.005	0.009
	(0.019)	(0.018)	(0.023)	(0.023)
Mean outcome	1.66	1.66	1.49	1.49
Obs	33824	33824	20407	20407
Controls	No	Yes	No	Yes
Sample	Full	Full	Full	Full

Mechanisms: Money / Time / Stability?

Seems too big to just be money to that point

- Large effects on achievement
- +$2,000 leads to a 0.31 SD increase in test scores
- 2-3 X larger than other papers on how much money affects child achievement. Normalize existing estimates to also be worth $2,000.
  - +0.06 SD from EITC [Dahl and Lockner 2015; Duncan et al. 2011]
  - +0.12 SD from a child care subsidy [Black et al. 2014]
  - +0.09 SD from income under the Canadian tax credit [Milligan and Stabile (2011)].

Mechanisms: Money / Time / Stability?

- Why the larger impacts?
  - More adoptions / less time in foster care.
  - Parental rights yields bargaining power and stability
  - Higher expected payments over childhood: total payment amount between case start and age 18: $11,397 for adoption and $35,571 for kin guardianship.

Heterogeneity

- Not a clear story by subgroups (small sample sizes)
- Larger effects on Boys / Native Americans

Heterogeneity in test score effects

By child demographics and by reason for removal

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	All	Female	Male	White	Black	Hispanic	Native
Policy Exposure	0.311**	0.084	0.618***	0.273	-0.001	0.262	0.620*
	(0.155)	(0.231)	(0.228)	(0.286)	(0.324)	(0.471)	(0.324)
Pre-Reform Mean	-0.78	-0.69	-0.87	-0.54	-1.20	-0.87	-0.84
% impact	48.7 %	12.7 %	71.03 %	50.56 %	0.08 %	30.11 %	73.81 %
# Cases	6908	3399	3509	2806	1221	703	1071
Sample:	All	Neglect/Behavior	Abuse	Drug Use	Other		
Policy Exposure	0.311**	0.34	0.327	0.403	0.044		
	(0.155)	(0.26)	(0.506)	(0.287)	(0.308)		
Pre-Reform Mean	-0.78	-0.86	-0.95	-0.57	-0.72		
% impact	39.74%	39.53 %	34.42 %	75.44%	6.11%		
	(0.008)	(0.011)	(0.024)	(0.014)	(0.015)		
# Cases	6908	2266	940	1563	2139		

Heterogeneity in other outcomes

By child demographics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	All	Female	Male	White	Black	Hispanic	Native
			Panel A: School Suspensions				
Policy Exposure	-0.026***	-0.009	-0.037***	-0.018*	-0.033	-0.004	-0.040
	(0.008)	(0.010)	(0.011)	(0.011)	(0.021)	(0.024)	(0.018)
Pre-Policy Mean	0.19	0.14	0.22	0.13	0.31	0.18	0.16
			Panel B: Attendance				
Policy Exposure	-0.014***	-0.008	-0.018***	-0.006	-0.020	0.002	-0.026 **
	(0.005)	(0.007)	(0.007)	(0.008)	(0.021)	(0.011)	(0.011)
Pre-Policy Mean	0.88	0.88	0.88	0.90	0.84	0.88	0.88
			Panel C: Average # of Schools per Year				
Policy Exposure	-0.047**	-0.040	-0.048*	-0.040	-0.078	-0.047	0.022
	(0.018)	(0.027)	(0.025)	(0.026)	(0.060)	(0.060)	(0.041)
% impact	2.73 %	2.40 %	2.73 %	2.53%	3.94 %	2.67%	1.36%

Difference-in-differences (DiD) hazard

- Each observation is a child-month in foster care.
- Estimate exit probabilities controlling for duration dependence.
- Estimate -30% time (-5 months) in foster care, larger for those ages 4-14, unlikely to reunify, about .

Difference-in-differences (DiD) hazard

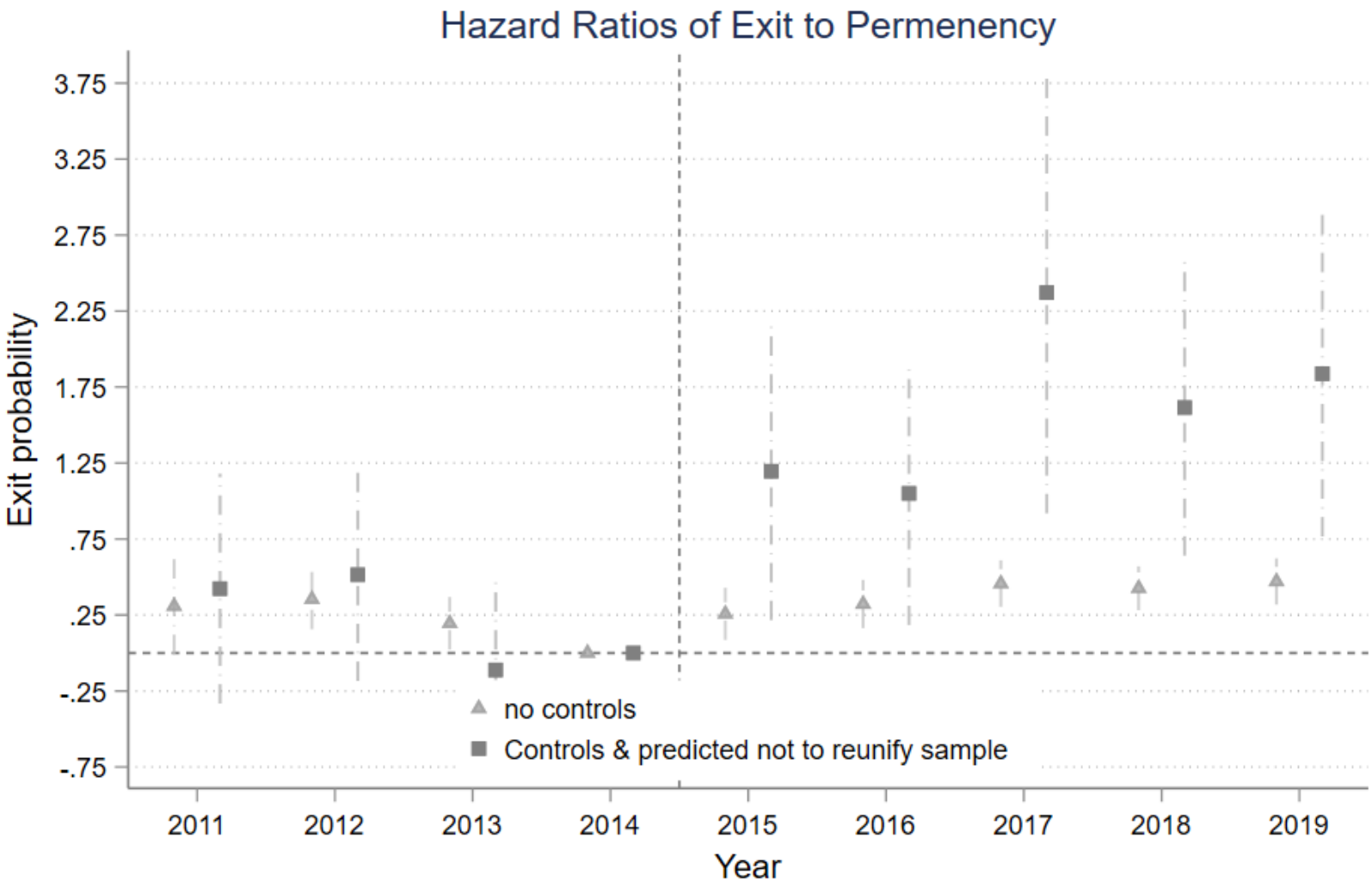
For child i at time t who is age $a(it)$, consider a hazard of exit to permanency given child has remained in foster care for p periods so far:

$$h_{iat,p|\mathbf{x},\beta} = h_0(p)e^{\mathbf{x}'\beta}$$

$$\ln(h_{iat,p}) = \beta_1 \mathbf{1}(t \geq 2015)\mathbf{1}(a(it) \geq 6) + \lambda(p) + \beta_2 X_i + \gamma_a + \delta_t + \epsilon_{iat}$$

- β_1: DiD hazard ratio -1: relative % differences in exit.
- X_i: covariates
- γ_a age in year fixed effects; δ_t time in month FE
- Models: Cox proportional hazard. Robust to discrete time hazard, and to LPM.

Results: Event Study, Exit to Adoption



Results: Exit to Permanency

	(1)	(2)	(3)	(4)
	All Ages	Ages 2-9	Ages 3-8	Ages 4-7
(Age 6+) x (Post 2014)	0.29***	0.14***	0.16***	0.22***
	(0.06)	(0.07)	(0.08)	(0.10)
# of Foster care spells	54,577	24,812	18,742	13,582
Observations	699,413	284,601	195,376	150,845
model	cox	cox	cox	cox
controls	No	No	No	No

Placement Stability: Re-Entry to Foster care

- For each child who exits to permanency, study hazard of re-entry to foster care.
- Estimate effect on likelihood of re-entry back into foster care
- If anything $\downarrow$ in re-entry

Placement Stability: Re-Entry to Foster care

	(1)	(2)
(Age 6+) x (Post 2014)	-0.45	-0.45
	(0.32)	(0.32)
# of Permanency Spells	10,032	10,032
# of Re-entries	87	87
Model	Cox	Cox
Controls	No	Yes

Notes: An observation is a year-month that a child is observed in a permanency arrangement after leaving foster care. Results are from a DD regression on the interaction between being age 6+ in the post Northstar period (2015+) with age and year-month fixed effects on the likelihood of being placed *back* into foster care after permanency. We estimate these models using a cox-proportional hazard model. Column 2 includes controls for:race (white, African-American/Black, Native American, Asian, Pacific Islander, Unknown, and other), Hispanic Ethnicity, reason for removal (neglect, physical abuse, care taker drug use, behavioral problems,

				Sample: Full				
	Female	Black	Native	White	Hispanic	Neglect	Abuse	Drug Use
Policy Exposure	-0.095	0.019	-0.045	0.019	0.019	0.025	-0.020	0.030
	(0.091)	(0.069)	(0.068)	(0.089)	(0.052)	(0.084)	(0.056)	(0.080)
Pre-Policy Mean	0.48	0.19	0.16	0.40	0.09	0.33	0.14	0.20
Obs	6908	6908	6908	6908	6908	6908	6908	6908
				Sample: Predicted to Not-reunify				
	Female	Black	Native	White	Hispanic	Neglect	Abuse	Drug Use
Policy Exposure	-0.047	0.066	-0.087	-0.061	0.024	-0.033	-0.038	0.027
	(0.125)	(0.070)	(0.102)	(0.121)	(0.084)	(0.115)	(0.057)	(0.117)
Mean	0.49	0.12	0.22	0.43	0.09	0.35	0.08	0.31
Obs	3073	3073	3073	3073	3073	3073	3073	3073

Mechanisms Revisited

- Large effects relative to literature on $ and achievement.
- Adoption itself likely matters for this disadvantaged group
- Commitment from the parents to responsibility to child, commitment from the state to continue regular payments.
- Fewer behavioral problems and greater stability of schools / placements.

Conclusion

- **Value Added**: 1st paper to show causal improvements in child outcomes from $ adoption incentives
- **Time to Permanency** $\downarrow$ by 29% = approx. -5 months.
- **Substitution Effect** eliminates disparity with foster payment
- **Income Effect** approx. +$2,000 to families.
- **Test Scores** $\uparrow$ 0.31 SD
- **Implications** Stipend, shortened time in FC, and match quality improves child outcomes substantially.