The Effect of Paying Parents to Adopt: Evidence from Minnesota's Foster-Care System*

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Abstract

Aimed at increasing the adoption rate of older children out of foster care, Minnesota's 2015 Northstar-Care Program effectively eliminated the "adoption penalty" (i.e., the post-adoption decrease in financial transfers associated with fostering) for children aged six and older. Using a difference-in-differences estimation strategy and controlling for a rich set of covariates, we find that prospective parents were responsive to this policy; the annual adoption rate of foster children age six to eleven increased by approximately 7 percentage points (22% at the mean). These findings suggest that financial incentives are successful and imply a cost-per-induced-adoption of approximately $150,000.

JEL Classification Numbers: D1, J13, I38, H75
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1 Introduction

The foster-care system in the United States is intended to provide a safety net for abused and neglected children in the form of residential placements outside of the birth-parental home. In 2018, there were almost half a million children in foster care and this number had increased in each year 2012 to 2016 (U.S. Department of Health and Human Services, 2021). These children are disproportionately at risk for negative outcomes; foster children are more likely to receive treatment for mental health issues (including post-traumatic stress disorder), more likely to spend time incarcerated, more likely to bear children during their teenage years, more likely to live in poverty, and less likely to complete education at all levels (Casey Family Foundation, 2005). In addition, American taxpayers contributed approximately twenty-eight billion dollars in 2014 in the form of child welfare services for both foster-care program administration and adoption incentives.[1] Historically, the vast majority of the foster-care budget has been focused on maintaining children in foster care. More recently, government policies have shifted funds toward providing financial incentives for the adoption of children out of foster care and into permanent family outcomes, as adoption has been found to significantly improve the outcomes of foster children (Triseliotis, 2002).[2]

This study analyzes the effects of a major 2015 policy in the State of Minnesota, the Northstar Care Program, which was targeted at increasing the number of older children who are adopted out of foster care. It is a costly program that incentivizes the adoption of foster children aged six and older through the continuation of large financial transfers to caregivers post-adoption. Prior to the implementation of the Northstar Care Program, monthly payments from the state to parents fell by at least fifty percent upon adoption from the foster-care system. This reduction in payments is typically referred to as the "adoption penalty." After the implementation of the Northstar Care program, a fifty-percent adoption penalty was continued for children under the age of six but was completely eliminated for children aged six and over (adoptive parents received the same financial transfer as did foster parents).

[1] This excludes spending on other programs focused on child welfare more generally. For example, Temporary Assistance to Needy Families or TANF (with an annual budget of over seventeen billion dollars in 2014) contributes to the protection of foster children. At the extensive margin, TANF keeps children from entering the system; household income is the most important predictor for child maltreatment (Paxson and Waldfogel, 1999) and entry into foster care (Lindsey, 1991). TANF also contributes inframarginally; more than one-third of the children in child-only TANF cases are under the guardianship of a non-parental relative (U.S. Department of Health and Human Services, 2004).

[2] The Family First Prevention Services Act of 2018 increases overall funds to adoption services, yet decreases its budget share. In its budget, an increased share of program funds go to keeping biological families together.

At the same time, Minnesota sought to increase the number of children placed with relatives through the Kinship Assistance arm of the Northstar Care Program by increasing the monthly payments to kin who serve in the foster-care system. Thus, the program would incentivize kin to provide care at higher rates and could also impact the decisions of non-kin caregivers by introducing a competitive channel; kin are given preference in placement decisions in both the pre-Northstar and post-Northstar periods and, therefore, the risk of "losing" a foster child to their kin was dramatically increased as a result of the program.[3]

We implement a difference-in-differences estimation strategy that takes advantage of this large policy change in which direct financial transfers to caregivers were increased substantially. Our focus is to see how the financial incentives for adoptive parents impacted a child's probability of adoption. To do this, we employ a rich dataset describing the universe of children in foster care in the United States during the calendar years 2012 through 2018. These data come from the Adoption and Foster Care Analysis and Reporting System (AFCARS) and follow each child until they exit the system through either adoption, parental reunification, emancipation, or aging-out at age eighteen. We focus our analysis on children under the age of sixteen whose parental rights have already been terminated; for these children, adoption is the only route to exiting the system in our panel. We use this data to isolate the age-specific impacts of the January 2015 policy while controlling for a rich set of child characteristics, including gender, race and ethnicity, disability status, and time spent in the foster-care system, along with location and time-period fixed effects.

Among the targeted older children, for whom monthly transfers more than doubled post-adoption, we find large and statistically-significant increases in their probability of adoption out of foster care. Specifically, children aged six through eleven saw their probability of adoption increase by 7 percentage points (22% at the mean) in the four years post-implementation. For the younger children, from birth through age five, we found small and statistically insignificant effects. This is not surprising as there was little change in the financial incentive to adopt; if anything, one might expect parents to delay adoption until the child's future sixth birthday.

It is important to note that this policy change was not unexpected; caregivers in the system were told about the impending changes at the end of 2013. Allowing for the announcement of the policy to serve as a separate treatment, we find significant but temporary effects of the announcement. Specifically, we find that children under the age

[3]In addition to this risk, non-kin parents who seek to provide permanency through adoption could be given preference over non-kin parents who do not seek permanency through adoption. This channel provides a similar competitive threat.

of six experienced an 11-percentage-point increase (26% at the mean) in their probability of adoption in the year prior to the Northstar Care Program's implementation. This is consistent with parents reacting to the increased risk of competition; both kin and non-kin adoptive parents (who would be facing increased financial transfers in the following calendar year) would be given precedence in placement decisions.

By studying this large-scale policy change with multiple incentives for adoptive parents, this paper speaks to a number of literatures. First, it speaks directly to the ability of financial transfers to improve the well-being of foster children who are some of the most vulnerable members of our society, and where much of the existing literature has been inconclusive. Much of the existing literature on the effect of financial transfers within the foster-care system has been focused on the effect of financial incentives on the decision to become a foster parent, versus the decision to adopt a child out of the system. Early studies found inconclusive results of the effect of financial transfers on the number of foster parents registered in the system (Simon, 1975) and insignificant results on the effect of transfers on the number of children within each foster home (Campbell and Downs, 1987). Later studies, however, found a significant effect of financial transfers. Doyle and Peters (2007) found that the overall supply of adults willing to serve as foster parents is positively impacted by the levels of financial payments in their state. Duncan and Argys (2007) reported that more generous payments for foster families increase the probability that foster children live in a foster home (versus an institutional setting) and decrease the probability that the child will be removed from that setting in a future period. Finally, Doyle (2007a) found that less-generous payments to non-parental family members reduce the probability that they will serve as foster parents. A smaller, but even more recent literature has sought to describe the impacts of subsidies on adoption out of foster care. This, too, has provided mixed conclusions. In cross-state analyses that exploit differences in the age of eligibility for federally-funded adoption subsidies, Argys and Duncan (2013) and Buckles (2013) found that subsidy-eligibility increases a child's probability of adoption out of foster care. Likewise, Brehm (2021) finds that the federal adoption tax credits increase adoption from foster care. Conversely, in a difference-in-differences analysis of a major, age-based national policy reform, Brehm (2018) found that the transfer of federal funds to individual states had effectively no impact on the adoption rates of the targeted, older children (aged nine and above).[4]

Second, this analysis adds to the larger literature related to the impact of financial transfers on family-size decisions. This literature finds a limited impact of direct govern-

[4]In this case, it was unclear how much, if any, of the $\$4,000$ or $\$8,000$, one-time transfers were passed on to adoptive parents from the states, as the use of funds was not stipulated in the federal policy.

ment payments (through pro-natalist policies) on family-size decisions. Perhaps the largest government transfer in the United States that directly affects fertility decisions is the federal income-tax subsidy for children. Using data from 1913 to 2005, Crump et al. (2011) did not find evidence that these United States subsidies affect the level of fertility. Baughman and Dickert-Conlin (2003) found that the fertility effects of the Earned Income Tax Credit (EITC) program are both small and concentrated on first-birth decisions among non-white, income-eligible women. These results mirror those of the earlier literature on government transfers and fertility, reviewed in Hoynes (1997) and Moffitt (1998), which mainly found small and/or insignificant impacts in the United States. Studies on direct government transfers in other nations have produced similarly inconclusive results for pro-natalist policies. For example, Milligan (2005) found that Canadian tax subsidies have a positive impact on fertility while Parent and Wang (2007) found that Canadian subsidies only affect the timing of fertility decisions. González (2013) found that Spanish tax subsidies increased overall fertility while Cohen et al. (2013) found that the positive fertility impacts of Israeli tax subsidies are concentrated among low-income mothers specifically. In contrast, our results suggest that adoptive parents are relatively sensitive to financial transfers in their family-composition decisions although we are unable to rule out long-run intertemporal substitution patterns in the data or to control for the income of adoptive families.

Finally, our paper is related to the large and growing policy-evaluation literature used to inform policy-makers about the effectiveness of costly government programs. Using our estimates, we calculate the number of policy-induced adoptions in each year and the financial costs associated with increased transfers to all adoptive parents. These figures imply an average cost per policy-induced adoption of $154,841.

This paper proceeds as follows: Section 2 describes the Northstar Care Program, Section 3 describes our data, Section 4 presents our estimation approach and results, and Section 5 provides a discussion and concludes.

2 Minnesota's Northstar Care Program

In 2012, after thirteen years of continued decline in both the overall foster-care population and in the share of children in foster care, the trend reversed with relatively more children entering the system in each year, 2012-2016. This increase was mainly driven by the opioid epidemic, specifically children being removed from their home due to parental drug use or parental neglect which was thought to be the result of drug use (National Conference of State Legislature, 2019; National Council for Adoption, 2019). In 2014, when the Northstar

Care Program was about to take effect, there were approximately 265,000 children in the system nationwide and over 6,200 in Minnesota (Casey Foundation, 2023).

In terms of policy-relevance, Minnesota is a larger-than-average state with a 2015 population of approximately 5.5 million people (Minnesota State Demographic Center, 2015). It is also a relatively-representative U.S. state in terms of demographics, as the makeup of Minnesota's population described by percentage of the population under age eighteen (23 percent versus 24 percent), percentage of the population living in an urban area (73 percent versus 80 percent), and percentage of the population that reports as non-white (19 percent versus 28 percent) roughly matches the United States as a whole.[5]

The goal for foster children in the United States is typically described as permanency. Foster children who attain permanency have been found to fare better in a variety of outcomes than children who do not (Triseliotis, 2002). At any given time, birth parents' rights are legally intact for approximately three-quarters of foster children. The preferred permanent outcome for these children is reunification with the birth parents. For the remaining one-quarter of foster children, birth parents' rights have been legally terminated by the state and reunification is not an option. Thus, for the foster children in the most dire situation where parental rights have been terminated, adoption (by kin or other foster parents) is the preferred permanent outcome.[6]

To directly target this goal of permanency for foster children who do not have the option of reunification, the State of Minnesota passed into law the Northstar Care Program in May of 2013. This program was communicated to foster families in late 2013 and took effect on January 1, 2015. By eliminating the adoption penalty for older children, this program sought to increase permanency through adoption for foster children in Minnesota.

First, the Northstar Care Program eliminated the financial penalty associated with the adoption of children aged six and older by equalizing the monthly payments tied to fostering and adopting for non-kin foster caregivers. This financial penalty was large; in 2014, adoptive caregivers would be foregoing $373 per month for a child aged six to eleven, $443 per month for a child aged twelve to fourteen, and $398 per month for a child aged fifteen or older. Thus, adopting a six-year-old foster child in 2014 would be associated with a $43,448 adoption penalty (NPV, assuming a 5% annual discount rate until the child's eighteenth birthday). In percentage terms, this penalty was over 50%. In 2015, after the implementation of the Northstar Care Program, this adoption penalty was $0. The monthly payments for the 2014 and 2015 calendar years are shown for each age group in

[5]These are 2010 statistics taken from the U.S. Census Bureau.

[6]The alternative, less attractive, permanent outcome is transferal of legal custody to an agency (Gueinzius and Hillel, 2014).

Table A1.

For younger children under the age of six, a large adoption penalty remained in place after the implementation of the program. For example, by adopting a newborn in 2015, a foster family would face a 50% adoption penalty, foregoing $45,840 (NPV) in transfers from the state until the child turned eighteen.[7]

Second, the program changed payments to kin foster parents through the Kinship Assistance arm of the program. Pre-Northstar, kin caregivers received at most the post-adoption monthly payments given to non-kin, the payments were means tested, and there was no adoption penalty. Post-implementation of the Northstar Care Program, payments to kin caregivers more than doubled for all age groups, these payments were not means tested, and kin caregivers continued to face no adoption penalty. Thus, the impact of the policy would likely be seen in increased placements with kin. This would impact non-kin caregivers through a competitive channel, as kin were given preference in placement decisions throughout the time period.

Finally, the program slightly modified the overall level of monthly payments for new, non-kin foster placements. Specifically, payments were increased for children older than six years old (with the exception of children aged twelve, for whom monthly payments decreased by approximately 11%) and decreased for children under the age of six by 13.1%.[8] The effects of this would likely be seen in the decision to foster, and would make older children financially more attractive relative to younger ones. As we do not have a unique identifier for caregivers, our data do not allow us to investigate the decision to foster.

3 Data

The federal government requires all states and territories to collect and submit data describing the children and families in their foster-care system each year, including the reason for a child's exit from the system. We access these administrative records containing unique identifiers for all children in the foster-care system for the years 2011 through 2018 from the Adoption and Foster Care Analysis Reporting System (AFCARS). These data were accessed through the National Data Archive on Child Abuse and Neglect at Cornell University. In our main analyses, we drop the data for 2011, given the refundability of Adoption Tax Credits at the federal level that existed in 2010 and 2011 and may have had differ-

[7] In 2014, the adoption of a newborn would have been associated with a slightly higher 58% adoption penalty.

[8] Monthly payments were increased by 3.1% for placements involving children aged six to eleven, 5.3% for children aged thirteen to fourteen, and 1.9% for children aged fifteen to eighteen.

ential effects by state (see Brehm (2021) for a discussion of the effects of this policy on adoptions from foster care). The 2012-2018 time period corresponds to three years prior to and four years after the implementation of the Northstar Care Program. We use these data to construct an unbalanced panel of children in the foster-care system in the United States.[9]

The data include a rich set of covariates describing the children in the foster-care system, including month and year of birth, gender, race and ethnicity, and disability status.[10] We additionally observe whether the child is eligible for additional federal funds through Title IV-E of the Social Security Act. These children, who are deemed to require a greater deal of care, are eligible for additional medical-assistance funds.[11] We limit our sample to children who are eligible for adoption, i.e., those whose parental rights have been terminated.[12] In addition, we limit our sample to children who are under the age of sixteen, as older children are eligible for legal emancipation, and often exit the system through this route. Summary statistics for eligible children in Minnesota are shown Column I of Table 1.

The number of foster children eligible for adoption under the age of sixteen in Minnesota is large and increasing over our sample period. Figure 1 shows the number of children falling into each age bin in each year. Age is measured for the last day of the calendar year. The age bins correspond to the age groups defined by State of Minnesota's Department of Human Services that faced the same treatment (age 0-5, age 6-11, age 12, age 13-14, and age 15). In all years, the number of eligible children in the youngest two age bins is relatively large when compared with the number of eligible children in the oldest three age bins, even after adjusting for the number of ages in each bin. In addition, over time, the growth rate of eligible children in the youngest two age bins is relatively large when compared with the growth rate of the oldest three age bins. Our preferred specifications will focus on the children in the youngest two age bins, i.e., children under the age of twelve.

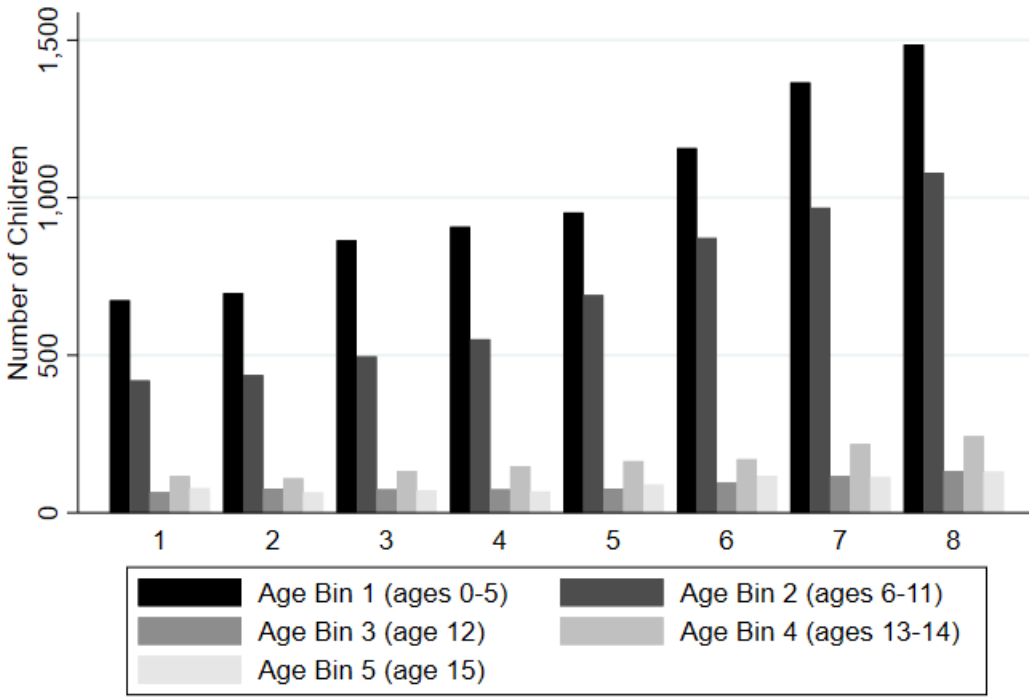
[9]Unfortunately, the same cannot be done for foster parents in our data due to lack of identifiable covariates. For the parents, we see only race and ethnicity, marital status, and age of currently-matched foster parents. We do not control for these in our analysis, as children may transition to adoption via alternate routes than from current foster placements.

[10]Disability is a binary variable denoting a previous diagnosis of a disability. We note that we do not observe the presence of siblings, which could be an important factor in adoption decisions.

[11]The State of Minnesota also has an internal assessed level of required care that entitles parents to additional funds called Minnesota Assessment of Parenting for Children and Youth, or MAPCY. We do not observe MAPCY scores in our data. Thus, our indicator for Title IV-E status may additionally proxy for MAPCY eligibility in our analysis.

[12]Table A2 in the Appendix shows the impact of this restriction on summary statistics separately for Minnesota, its adjacent states, and the entire Midwest Census Division.

Figure 1: Number of Minnesota Children by Age Bin, 2012 to 2018



Notes: Data are from the Adoption and Foster Care Analysis and Reporting System (AFCARS). This figure shows, by age bin, the annual number of observations of children in Minnesota whose parental rights had been terminated. The age bins are defined by the age of the child at the end of the calendar year.

In our difference-in-differences estimation approach, we compare the probability of adoption for children in the state of Minnesota to the probability of adoption for children living in the states directly adjacent to Minnesota (i.e., Iowa, North Dakoka, South Dakota, and Wisconsin). In a robustness check, we compare the probability of adoption for children in the state of Minnesota to that of children living in the remaining states of the Midwest Census Division of the United States (i.e., Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin). We refer to these control groups as "Adjacent States" and "Midwest," respectively. Summary statistics for these control groups are shown in Columns II and III of Table 1.[13]

As may be seen in Table 1, foster children living in the state of Minnesota were less likely to be adopted than foster children living in both control areas during our sample period, but had spent slightly less time in the foster-care system, on average. In addition, foster children living in Minnesota were more likely to be disabled relative to foster children

[13]In an alternative specification, we define a control group, "Contiguous," comprised of eligible foster children in the Contiguous United States. Summary statistics for this group are shown in Table A2 in the Appendix.

Table 1: Summary Statistics of Observations of Adoption-Eligible Foster Children

	I Minnesota $obs = 16,362$		II Adjacent States $obs = 28,913$		III Midwest $obs = 179,284$	
	mean	s.d.	mean	s.d.	mean	s.d.
Adopted	0.37	0.48	0.50	0.50	0.42	0.49
Disabled	0.50	0.50	0.38	0.49	0.40	0.49
Female	0.49	0.50	0.48	0.50	0.47	0.50
Non-Hispanic White	0.44	0.50	0.52	0.50	0.55	0.50
Non-Hispanic Black	0.17	0.38	0.18	0.39	0.26	0.44
Non-Hispanic Native American	0.11	0.32	0.10	0.30	0.02	0.04
Non-Hispanic Asian	0.02	0.13	0.01	0.08	0.00	0.05
Non-Hispanic Pacific Islander	0.00	0.01	0.00	0.00	0.00	0.02
Non-Hispanic Mult. Race	0.15	0.35	0.09	0.28	0.09	0.28
Hispanic (All Races)	0.11	0.31	0.11	0.31	0.08	0.27
Age Bin 1 (ages 0-5)	0.50	0.50	0.52	0.50	0.47	0.50
Age Bin 2 (ages 6-11)	0.34	0.47	0.34	0.48	0.35	0.48
Age Bin 3 (age 12)	0.04	0.20	0.04	0.20	0.05	0.21
Age Bin 4 (ages 13-14)	0.08	0.27	0.07	0.25	0.09	0.28
Age Bin 5 (age 15)	0.05	0.21	0.03	0.17	0.04	0.21
Title IV-E eligible	0.51	0.50	0.39	0.49	0.41	0.49
# years in foster care	2.19	1.46	2.74	1.77	3.08	1.93
# years since parental rights term.	1.20	1.41	1.05	1.42	1.30	1.57

Notes: Annual data describing 2011-2018 are from the Adoption and Foster Care Analysis and Reporting System (AFCARS). Means and standard deviations are calculated for child-year observations and describe children younger than age 16 whose parental rights have been previously terminated. The Minnesota sample includes children in the state of Minnesota. The Adjacent States sample includes children in Iowa, North Dakota, South Dakota, and Wisconsin. The Midwest sample includes children in the Midwest Census Division not including Minnesota, i.e., Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

living in both control groups. These underlying differences in disability status are likely also reflected in the differences observed in Title IV-E eligibility. Finally, it may be seen that the racial distribution in Minnesota follows that observed in the Adjacent States, including the share of children who are Non-Hispanic Native American.

4 Empirical Strategy and Results

4.1 Empirical Specification

To recover the effects of the Northstar Care Program in Minnesota, we employ a difference-in-differences framework where we take advantage of the fact that the financial incentive associated with adoption changed on January 1, 2015. As this policy change was formally announced to parents at the end of 2013, we allow for two separate treatment effects: one for the announcement which we define as occurring on January 1, 2014 and one for the implementation that occurred on January 1, 2015. Hence, we run the following linear-probability regression:

$$\begin{aligned} adopted_{i,j,t} = \beta X_i + \gamma Z_{i,t} + \delta_j + \psi^1(Minn_{i,t} \cdot agebin^1_{i,t}) + \psi^2(Minn_{i,t} \cdot agebin^2_{i,t}) \\ + \sum_{t=2012}^{2018} \zeta^1_t agebin^1_{i,t} + \sum_{t=2012}^{2018} \zeta^2_t agebin^2_{i,t} \\ + \lambda^1(announce_t \cdot Minn_{i,t} \cdot agebin^1_{i,t}) + \lambda^2(announce_t \cdot Minn_{i,t} \cdot agebin^2_{i,t}) \\ + \phi^1(post_t \cdot Minn_{i,t} \cdot agebin^1_{i,t}) + \phi^2(post_t \cdot Minn_{i,t} \cdot agebin^2_{i,t}) + \epsilon_{i,j,t} \quad (1) \end{aligned}$$

where the dependent variable, $adopted_{i,j,t}$, is an indicator that takes the value of 1 if child i living in state j is adopted during year t. We allow the effects of these treatments to differ over two age bins, corresponding to the youngest two age bins laid out by the Northstar Care Program. That is, $agebin^1_{i,t}$ is an indicator that takes the value of 1 if child i is age zero to five years old in year t and $agebin^2_{i,t}$ is an indicator that takes the value of 1 if child i is age six to eleven in year t. X_i is a vector of time-invariant characteristics of the child comprised of gender, race and ethnicity, a dummy for whether the child has ever been diagnosed with a disability, and a dummy for whether the child is eligible for additional funding via the federal Title IV-E program.[14] $Z_{i,t}$ is a vector of time-varying characteristics of the child comprised of the years since they entered foster care and the years since parental rights were terminated (measured at the end of year t). The variable $Minn_{i,t}$ is an indicator that takes the value of 1 if child i is living in Minnesota in year t. δ_j is a vector of state-level fixed effects, which controls non-parametrically for any cross-state differences in adoption rates. The ζ_t terms non-parametrically control for any agebin-specific trends in adoption rates over time. Finally, the variable $announce_t$ is an indicator that takes the value of 1 if year t is 2014, while $post_t$ is an indicator that takes the value of 1 if year t is 2015 or later.

[14] All time-invariant covariates are observed in the data in the child's final period in the unbalanced panel.

4.2 Results

We estimate Equation (1) using data describing eligible foster children in the state of Minnesota and in the Adjacent State sample, i.e., the children available for adoption in the four adjacent states of Iowa, North Dakota, South Dakota, and Wisconsin.[15] The main results of this estimation are shown in Table 2, Column I. The coefficients on the remaining controls are shown in Appendix Table A3. We find a relatively-large and statistically-significant effect for the children in the second age bin (age six to eleven) whose probability of adoption increased by 7.38 percentage points, or 22% of the mean adoption rate, in the four years following the implementation of the policy in January of 2015. This is consistent with the stated goals of the program to increase adoption rates for older children using financial incentives. We also find a small negative effect of the announcement, suggesting that parents delayed the adoption of children in the second age bin until the Northstar Program took effect. This effect is, however, not statistically different from zero.

For the children in the first age bin (under the age of six), for whom the policy did not meaningfully change the adoption penalty, the impact of the program's implementation is much smaller and not statistically different from zero. In a static sense, this result is intuitive; there was no meaningful change in the financial incentive to adopt. In a dynamic sense, however, these parents faced strong financial incentives to delay the adoption of a child in this age bin until the child's sixth birthday, ensuring the full stream of payments until the child's eighteenth birthday. However, we find that for these youngest children, the probability of adoption *increased* by 10.64 percentage points or 26% of the mean adoption rate in the year prior to the program's implementation. This is counter-intuitive when only considering caregivers' financial incentives. It is, however, consistent with foster parents of young children reacting to the potential increased presence of kin, who would face increased financial incentives (and would be given priority in placement decisions) in the Post-Northstar environment. Reliable data describing kin foster placements is not available. However, within Minnesota, there is a striking change in adoptions by kin beginning in 2015.[16] This supportive evidence is shown in Appendix Figure A1.

The difference-in-differences empirical strategy relies on the identifying assumption of common trends in the probability of adoption between Minnesota and the control group before the implementation of the policy. To provide supportive evidence for this identifying

[15] One potential concern with any control group might be the possibility of interstate adoptions out of the Minnesota foster-care system. In these cases, however, the Northstar Care benefits would not continue post-adoption, as the home agency's responsibilities end when the child is legally adopted according to the Interstate Compact on the Placement of Children. This compact covers all interstate placements of foster children between all fifty states, Washington D.C., and the U.S. Virgin Islands.

[16] Unfortunately, reliable data describing kin adoptions in the control states is also not available.

Table 2: Impacts on the Annual Probability of Adoption

	I	II	III	IV	V
	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.1064 (0.0215)	0.1103 (0.0219)	0.0961 (0.0201)	0.1062 (0.0215)	0.1222 (0.0172)
$announce \cdot Minn \cdot agebin^2$	-0.0257 (0.0181)	-0.0216 (0.0196)	-0.0105 (0.0200)	-0.0260 (0.0174)	-0.0074 (0.0192)
$post \cdot Minn \cdot agebin^1$	0.0239 (0.0181)	0.0368 (0.0262)	0.0127 (0.0165)	0.0230 (0.0184)	0.0244 (0.0199)
$post \cdot Minn \cdot agebin^2$	0.0738 (0.0178)	0.0864 (0.0266)	0.0894 (0.0193)	0.0693 (0.0172)	0.0482 (0.0203)
state and year fixed effects	X	X	X	X	X
# eligible children as control		X			
2011 in sample			X		
all age groups in sample				X	
control group	Adj. States	Adj. States	Adj. States	Adj. States	Midwest
observations	34,415	34,415	38,485	40,461	143,111

Notes: Coefficients on the control variables are shown in Appendix Table A3. Column I is our preferred specification. Column II includes as an additional control the state-level number of children who are eligible for adoption. Column III includes an additional year of data (2011) in the estimation sample. Column IV includes additional, older children (ages 12 to 15) in the estimation sample. Column V uses an alternative group of states (the Midwest Census Division versus the set of Adjacent States to Minnesota) to define the control group. Analytical standard errors are clustered at the state-year level and are shown in parentheses. We show robustness to the choice of cluster (Appendix Table A8) and to alternatively bootstrapping standard errors (Appendix Table A9).

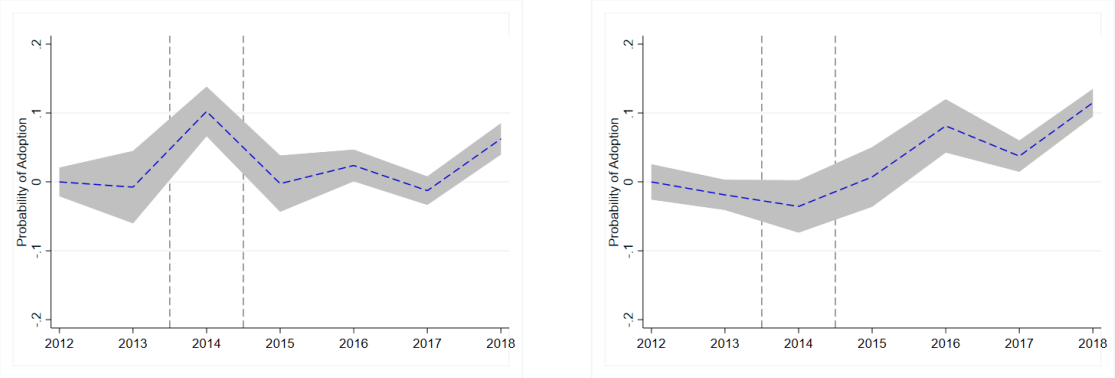
assumption, we estimate an event study replacing $announce_t$ and $post_t$ in Equation 1 with indicators for each year over the sample periods 2012 through 2018:

$$\begin{aligned} adopted_{i,j,t} = \beta X_i + \gamma Z_{i,t} + \delta_j + \psi^1(Minn_{i,t} \cdot agebin^1_{i,t}) + \psi^2(Minn_{i,t} \cdot agebin^2_{i,t}) \\ + \sum_{t=2012}^{2018} \zeta^1_t agebin^1_{i,t} + \sum_{t=2012}^{2018} \zeta^2_t agebin^2_{i,t} \\ + \sum_{k=2012}^{2018} \gamma^1_k(1[year = k] \cdot Minn_{i,t} \cdot agebin^1_{i,t}) + \sum_{k=2012}^{2018} \gamma^2_k(1[year = k] \cdot Minn_{i,t} \cdot agebin^2_{i,t}) + \epsilon_{i,j,t} \end{aligned} \tag{2}$$

Figure 2 shows the coefficients from this event study relative to the control group of

the Adjacent States (i.e., Iowa, North Dakota, South Dakota, and Wisconsin) for children under the age of six (Figure 2a) and for children age six to age eleven (Figure 2b). Figure A2 in the Appendix plots coefficients when age bins are pooled. As may be seen in the two panels of Figure 2, the adoption rate prior to the program's announcement in 2014 are not significantly different in Minnesota relative to the control group. We note that two years is a short period over which to test pre-trends. In Panel (a) there is the noticeable effect of the policy's announcement in 2014 described above. In Panel (b), the parallel pre-trends hold over three years until the implementation in 2015.

Figure 2: The Probability of Adoption in Minnesota Relative to in its Adjacent States



(a) Age Bin 1 (under age 6)

(b) Age Bin 2 (age 6 to 11)

Notes: Panels (a) and (b) show the year-specific and Age-Bin-specific probability of adoption for a foster child in Minnesota relative to a foster child in an Adjacent State for each year between 2012 to 2018, according to Equation 2. Each panel displays two dashed vertical lines. One corresponding to January 1, 2014 that we treat as the announcement of the Northstar Care program and one corresponding to January 1, 2015 that is the implementation of the Northstar Care program. Estimates to the left of the earlier date are, therefore, considered to be in the pre-announcement period and estimates to the left of the later date are in the pre-implementation period.

In addition, we perform a set of placebo tests to support our empirical design. First, we perform a placebo test treating January 1, 2013 as the "placebo" date of our policy implementation. Specifically, we estimate a version of Equation 1 using only data from the pre-announcement years (2012 and 2013), dropping the $announce_t$ variable, and redefining $post_t$ to be an indicator for the year 2013 only. Results, shown in Appendix Table A5 find no evidence of treatment effects for either age bin. Second, we perform a placebo test where we define the foster children living in the Adjacent States of Iowa, North Dakota, South Dakota, and Wisconsin as the "placebo" treated group and the foster children living in the remaining states of the Midwest Census Division as the control group (i.e., Illinois,

Indiana, Kansas, Michigan, Minnesota, Nebraska, and Ohio). Results, shown in Table A6, show no impact of the Northstar Care program on the probability of adoption. Finally, we perform a placebo test where we define a "placebo" outcome of whether an observation is female. This outcome, which would measure a change in the gender composition of eligible foster children, should not be impacted by the Northstar Care Program. Like our baseline specification, we define the treated group as foster children in Minnesota and the control group as foster children in the four adjacent states to Minnesota. Results, shown in Appendix Table A7 reassuringly show no impact.

4.3 Sensitivity Analysis

Table 2 additionally presents four alternative specifications of Equation (1). First, as the number of children eligible for adoption is increasing in both age groups over the sample period (i.e., the trends seen in Figure 1 for Minnesota) we assess whether the increase in adoptions was driven by a change in the number of foster children by including the total number of foster children eligible for adoption in the state as an additional control. The results of this specification, shown in Column II, indicate that this was not the case. In fact, both the large positive impact of implementation on children in the second age bin and the large positive impact of announcement on children in the first age bin become slightly larger in magnitude.

Second, we assess the impact of including data from the year 2011 in the results shown in Column III of Table 2. As previously described, we exclude year 2011 from our main specification because of the federal adoption policies that were in place during 2010-2011 that may have had differential impacts across states. We find, however, that the results are robust to this inclusion.

Third, we include all children under the age of sixteen in the estimation of Equation (1), allowing the effect of the announcement and the effect of the implementation of the Northstar Care program to vary with the five age bins defined in Figure 1. Results for the two youngest age bins are shown in Column IV of Table 2 and are similar to the results shown in Column I. Coefficients for the remaining age bins are shown in Table A3. With the exception of a statistically-significant negative impact of the announcement on the probability of adoption for fifteen-year-old children (Age Bin 5),[17] the coefficients are

[17]For these children, the probability of adoption fell by 3.65 percentage points or 22% of the mean adoption rate. This effect would be consistent with forward-looking parents who chose to postpone adoption until the post-Northstar period. However, the effect of the implementation of Northstar was also negative for these oldest children (although statistically-indistinguishable from zero) and, thus, not supportive of a strategic delay in adoptions.

relatively small and not statistically different from zero. As the numbers of observations in these age bins are small (i.e., these three age bins comprise less than fifteen percent of the total sample), we choose to exclude them from our primary analysis.

Fourth, we assess the impact of using the Adjacent States as our control group. While these states are likely to be the most similar to Minnesota in unobserved ways, our choice of control group could have, nonetheless, impacted our findings. Column V of Table 2 shows the coefficients from the estimation of Equation (1) when we alternatively use the non-Minnesota states of the entire Midwest Census Division to define the control group.[18] These results are qualitatively similar to those shown in Column I, although the effect of implementation in the second age bin, while retaining statistical significance, is 35% smaller in magnitude. Table A4 shows the results when alternatively using the entire, non-Minnesota Contiguous United States to define the control group. Results are effectively unchanged from those shown in Column V of Table 2.

Additionally, we find robustness to our preferred calculation of standard errors. Specifically, Table A8 shows robustness for the five specifications in Table 2 to alternatively clustering (analytical) standard errors at the coarser state-level. Table A9 shows robustness for the five specifications shown in Table 2 to alternatively bootstrapping standard errors clustered at the state-year level, alleviating concerns about asymptotic bias (Conley and Taber (2011)).

Finally, following Wooldridge (2022), we find robustness to the linear functional form assumed in Equation 1. Table A10 presents the average marginal effects from Logit specifications corresponding to the five columns of Table 2.

5 Discussion and Conclusion

By equalizing the monthly payments paid to foster parents and adoptive parents of older children in the State of Minnesota, the Northstar Care Program had large and statistically-significant impacts on the probability of adoption for the targeted older children. We find that the probability of adoption increased by 7.38 percentage points for children age six through eleven in the four years following the implementation of the program.

Using these estimates, along with the age-specific numbers of eligible children in Minnesota in each year 2015 to 2018, we calculate the number of policy-induced adoptions among children age six to eleven. We find that the Northstar Care Program's elimination

[18] To the best of our knowledge, there were no major policy changes in these control groups that would influence our results.

of the adoption penalty induced 266 additional adoptions in the years 2015 to 2018 among children aged six to eleven. Specifically, we find 53 additional adoptions among six year olds, 48 additional adoptions among seven year olds, 47 additional adoptions among eight year olds, 44 additional adoptions among nine year olds, 39 additional adoptions among ten year olds, and 35 additional adoptions among eleven year olds. We assume that these 266 adoptions would have continued as foster placements in the absence of the program. Aggregating the age-specific monthly payments for these children until their eighteenth birthdays, along with the age-specific monthly payments for the 1,049 children in this age bin who would have been adopted during this time even in the absence of the policy, we estimate the financial cost of the Northstar Care Program to exceed $40 million in monthly payments to adoptive parents of children in this age bin alone. This implies an average cost per policy-induced adoption of $154,841. We leave the important question of how this cost figure compares to the monetized benefits of adoption for future research.

To conclude, this paper provides an analysis of a major reform to the foster care system in the State of Minnesota in 2015. This reform, the Northstar Care Program, was targeted at increasing the adoption rate of older foster children in the state. Our results, which are robust to many alternative specifications of our empirical design, show that the policy induced a large increase in adoptions, and directly speak to government's ability to pay caregivers to adopt.

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A Supplemental Appendix for Online Publication

A.1 Monthly Payments in the State of Minnesota

Table A1: Monthly Payments to New Foster and Adoptive Families in Minnesota

	Pre-Northstar				Post-Northstar			
Age	I Foster (non-kin)	II Foster (kin)	III Adopt (<6)	IV Adopt (≥6)	V Foster (non-kin)	VI Foster (kin)	VII Adopt (<6)	VIII Adopt (≥6)
0-5	$650	$247	$247	-	$565	$565	$283	-
6-11	$650	$277	$277	$277	$670	$670	$335	$670
12	$750	$307	$307	$307	$670	$670	$335	$670
13-14	$750	$307	$307	$307	$790	$790	$395	$790
15+	$775	$377	$377	$377	$790	$790	$395	$790

Notes: This table shows the basic monthly payments received by foster and adoptive parents before and after the implementation of the Northstar Care Program. All payments vary with the child's age, according to five age bins (age 0-5, age 6-11, age 12, age 13-14, and age 15+). Columns I to IV exhibit the pre-policy payments and Columns V to VIII exhibit the post-policy payments. *Source:* Minnesota Department of Human Services (2014). According to the policy, payments in subsequent years are adjusted annually based on changes to the USDA's Estimates of the Cost of Raising a Child index. We note that the Northstar Care Program equated post-implementation foster payments and adoption payments. Existing caregivers in 2014 became eligible for Northstar Care payments upon a change in status (like adoption or a new foster match). Thus, existing foster caregivers would receive the payments shown in Column I in 2015 and move to the payments in Column VIII post-adoption. This implies a negative adoption "penalty" for some age groups.

A.2 Additional Summary Statistics

Table A2: Summary Statistics by Whether Parental Rights (PR) Terminated

	Minnesota				Adjacent States				Midwest			
	PR intact $n = 42,714$		PR term. $obs = 16,362$		PR intact $n = 91,849$		PR term. $obs = 28,913$		PR intact $n = 542,991$		PR term. $obs = 179,284$	
	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.	mean	s.d.
Adopted	–	–	0.37	0.48	–	–	0.50	0.50	–	–	0.42	0.49
Disabled	0.23	0.42	0.50	0.50	0.15	0.36	0.38	0.49	0.22	0.42	0.40	0.49
Female	0.47	0.50	0.49	0.50	0.47	0.50	0.48	0.50	0.48	0.50	0.47	0.50
Non-Hisp. White	0.37	0.48	0.44	0.50	0.53	0.50	0.52	0.50	0.56	0.50	0.55	0.50
Non-Hisp. Black	0.14	0.35	0.17	0.38	0.19	0.39	0.18	0.39	0.25	0.43	0.26	0.44
Non-Hisp. Native Am.	0.11	0.32	0.24	0.43	0.10	0.30	0.11	0.31	0.02	0.04	0.02	0.15
Non-Hisp. Asian	0.02	0.13	0.02	0.15	0.01	0.08	0.01	0.09	0.00	0.05	0.00	0.06
Non-Hisp. Pacific Isl.	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.03
Non-Hisp. Mult. Race	0.15	0.35	0.12	0.33	0.09	0.28	0.06	0.24	0.09	0.28	0.07	0.25
Hispanic (All Races)	0.09	0.29	0.11	0.31	0.10	0.30	0.11	0.31	0.09	0.28	0.08	0.27
Age	8.06	4.93	6.81	4.40	7.97	4.81	6.63	4.12	7.56	4.73	7.14	4.27
Title IV-E	0.20	0.40	0.51	0.50	0.26	0.44	0.39	0.49	0.27	0.45	0.41	0.49
# yrs in system	0.95	1.22	2.19	1.46	1.18	1.44	2.74	1.77	1.32	1.50	3.08	1.93
# yrs since PR term.	–	–	1.20	1.41	–	–	1.05	1.43	–	–	1.30	1.57

Note: Annual data describing 2012-2018 are from the Adoption and Foster Care Analysis and Reporting System (AFCARS). Means and standard deviations are calculated for child-year observations and describe children under the age of sixteen.

A.3 Additional Results

Table A3: All Coefficients from the Main Results Table

	I	II	III	IV	V
announce · *Minn* · *agebin*^{1}	0.1064	0.1103	0.0961	0.1062	0.1222
	(0.0215)	(0.0219)	(0.0201)	(0.0215)	(0.0172)
announce · *Minn* · *agebin*^{2}	-0.0257	-0.0216	-0.0105	-0.0260	-0.0074
	(0.0181)	(0.0196)	(0.0200)	(0.0174)	(0.0192)
announce · *Minn* · *agebin*^{3}				-0.0716	
				(0.0607)	
announce · *Minn* · *agebin*^{4}				-0.0396	
				(0.0361)	
announce · *Minn* · *agebin*^{5}				-0.1078	
				(0.0419)	
post · *Minn* · *agebin*^{1}	0.0239	0.0368	0.0127	0.0230	0.0244
	(0.0181)	(0.0262)	(0.0165)	(0.0184)	(0.0199)
post · *Minn* · *agebin*^{2}	0.0738	0.0864	0.0894	0.0693	0.0482
	(0.0178)	(0.0266)	(0.0193)	(0.0172)	(0.0203)
post · *Minn* · *agebin*^{3}				0.0321	
				(0.0597)	
post · *Minn* · *agebin*^{4}				0.0159	
				(0.0287)	
post · *Minn* · *agebin*^{5}				-0.0388	
				(0.0413)	
agebin^2	-0.1360	-0.0885	-0.1321	-0.1241	-0.1437
	(0.0186)	(0.0331)	(0.0173)	(0.0170)	(0.0234)
agebin^3				-0.2023	
				(0.0300)	
agebin^4				-0.2111	
				(0.0220)	
agebin^5				-0.2684	
				(0.0247)	
Female	0.0112	0.0112	0.0101	0.0131	0.0150
	(0.0040)	(0.0040)	(0.0038)	(0.0041)	(0.0029)
Non-Hispanic Black	-0.0750	-0.0750	-0.0742	-0.0780	-0.0771
	(0.0164)	(0.0164)	(0.0147)	(0.0149)	(0.0058)
Non-Hispanic Native American	-0.0991	-0.0990	-0.1033	-0.0890	-0.0902
	(0.0206)	(0.0206)	(0.0190)	(0.0181)	(0.0156)
Non-Hispanic Asian	-0.0322	-0.0322	-0.0315	-0.0180	-0.0380
	(0.0426)	(0.0426)	(0.0412)	(0.0412)	(0.0344)
Non-Hispanic Pacific Islander	-0.0050	-0.0040	-0.0014	-0.0320	-0.0180
	(0.0875)	(0.0876)	(0.0821)	(0.0843)	(0.0670)
Non-Hispanic Mult. Race	-0.0501	-0.0501	-0.0485	-0.0451	-0.0338
	(0.0113)	(0.0113)	(0.0112)	(0.0115)	(0.0068)
Hispanic	-0.0435	-0.0435	-0.0462	-0.0384	-0.0249
	(0.0157)	(0.0157)	(0.0143)	(0.0143)	(0.0075)
Disability	-0.1333	-0.0135	-0.0166	-0.0175	-0.0064
	(0.0172)	(0.0172)	(0.0156)	(0.0162)	(0.0240)
Title IV-E	0.0246	0.0247	0.0303	0.0251	0.0019
	(0.0095)	(0.0096)	(0.0096)	(0.0085)	(0.0132)
# years in system	-0.0043	-0.0042	-0.0028	-0.0002	0.0095
	(0.0054)	(0.0054)	(0.0050)	(0.0035)	(0.0026)
# years since PR term.	0.0137	0.0137	0.0162	-0.0117	0.0049
	(0.0124)	(0.0123)	(0.0117)	(0.0064)	(0.01046)
state and year fixed effects	X	X	X	X	X
# eligible children as control		X			
2011 in sample			X		
all age groups in sample				X	
control group	Adj. States	Adj. States	Adj. States	Adj. States	Midwest
observations	34,415	34,415	38,485	40,461	143,111

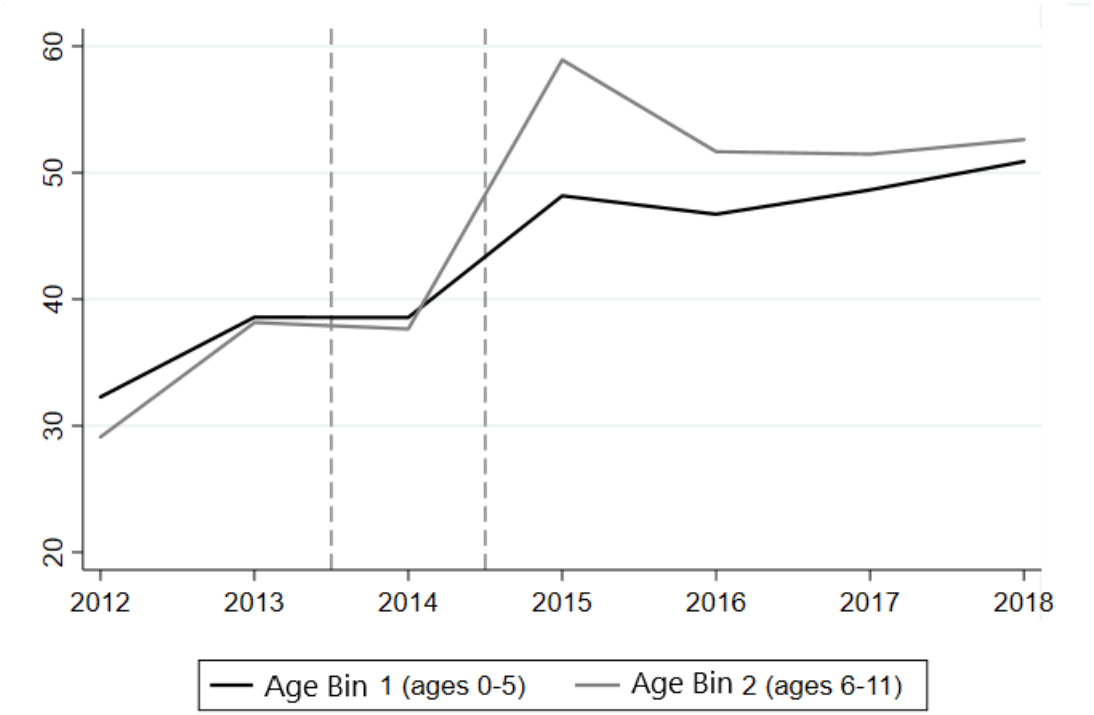
Note: Column I is our preferred specification. Column II includes as an additional control the state-level number of children who are eligible for adoption. Column III includes an additional year of data (2011) in the estimation sample. Column IV includes additional, older children (ages 12 to 15) in the estimation sample. Column V uses an alternative group of states (the Midwest Census Division versus the set of Adjacent States to Minnesota) to define the control group. Analytical standard errors are clustered at the state-year level. The excluded race is Non-Hispanic White.

Table A4: Impacts on the Annual Probability of Adoption Relative to the Contiguous US

	Coefficient (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.1179
	(0.0135)
$announce \cdot Minn \cdot agebin^2$	-0.0095
	(0.0107)
$post \cdot Minn \cdot agebin^1$	0.0124
	(0.0185)
$post \cdot Minn \cdot agebin^2$	0.0445
	(0.0159)
control group	Contiguous US
observations	646,125

Notes: The specification is analogous to Columns I and V in Table 2 but with the Contiguous US defining the control group. We include state and year fixed effects and use data from 2012 to 2018. Standard errors are clustered at the state-year level and are shown in parentheses.

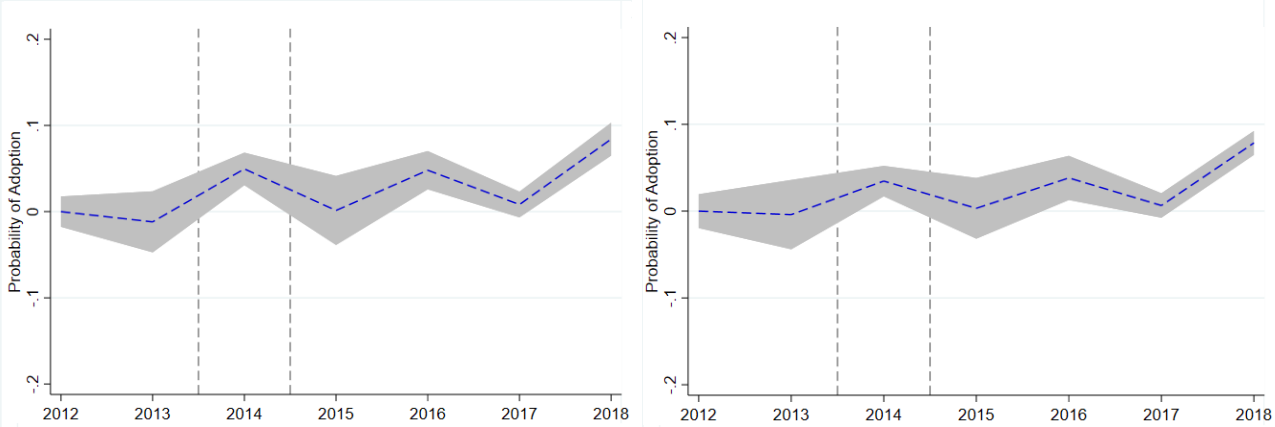
Figure A1: Share of Minnesota Foster-Care Adoptions by Kin, 2012 to 2018



Notes: This figure shows, by age bin, the annual number of observations of adopted children in Minnesota who are adopted by kin in that year. Data are from the adoption files from the Adoption and Foster Care Analysis and Reporting System (AFCARS). These files, which are not those used in our main analysis (foster-care files), do not include a unique identifier to link children across files.

A.4 Pre-Trends for Pooled Age Bins

Figure A2: The Probability of Adoption in Minnesota Relative to in its Adjacent States



(a) Pooled Age Bins 1-2 (age 0 to 11) (b) Pooled Age Bins 1-5 (age 12 to 15)

Notes: Panels (a) and (b) show the year-specific probability of adoption for a foster child in Minnesota relative to a foster child in an Adjacent State for each year between 2012 to 2018, according to Equation 2. Each panel displays two dashed vertical lines. One corresponding to January 1, 2014 that we treat as the announcement of the Northstar Care program and one corresponding to January 1, 2015 that is the implementation of the Northstar Care program. Estimates to the left of the earlier date are, therefore, considered to be in the pre-announcement period and estimates to the left of the later date are in the pre-implementation period.

A.5 Placebo Tests

Table A5: Impacts on the Annual Probability of Adoption, Placebo Year (2013)

	Coefficient (s.e.)
$post \cdot Minn \cdot agebin^1$	-0.0074
	(0.0259)
$post \cdot Minn \cdot agebin^2$	-0.0175
	(0.0189)
control group	Adjacent States
years	2012-2013
observations	8,238

Notes: The specification corresponds to Equation 1 using only pre-treatment data (years 2012-2013). It drops the $announce_t$ variable and redefines $post_t$ to be an indicator that takes the value of 1 if the year is 2013 and zero otherwise. We include state and year fixed effects and define the control group as foster children living in the Adjacent States to Minnesota of Iowa, North Dakota, South Dakota, and Wisconsin. Standard errors are clustered at the state-year level and shown in parentheses.

Table A6: Impacts on the Annual Probability of Adoption, Placebo Group (Adjacent States)

	Coefficient (s.e.)
$announce \cdot AS \cdot agebin^1$	0.0203
	(0.0290)
$announce \cdot AS \cdot agebin^2$	0.0231
	(0.0289)
$post \cdot AS \cdot agebin^1$	0.0012
	(0.0234)
$post \cdot AS \cdot agebin^2$	-0.0290
	(0.0255)
control group	Remaining Midwest
years	2012-2018
observations	130,585

Notes: The specification corresponds to Equation 1 where the treated group is comprised of eligible foster children in the Adjacent State (AS) group of Iowa, North Dakota, South Dakota, and Wisconsin. The control group is comprised of eligible foster children in the remaining, non-Minnesota, non-Adjacent State, Midwest Census Division (Illinois, Indiana, Kansas, Michigan, Missouri, Nebraska, and Ohio). The specification controls for child's demographics, states indicators, and year fixed effects for each age-bin. Standard errors are clustered at the state-year level and shown in parentheses.

Table A7: Impacts on the Annual Probability of Adoption, Placebo Outcome (Female)

	Coefficient (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.0186
	(0.0127)
$announce \cdot Minn \cdot agebin^2$	0.0056
	(0.0070)
$post \cdot Minn \cdot agebin^1$	-0.0140
	(0.0090)
$post \cdot Minn \cdot agebin^2$	-0.0036
	(0.0093)
control group	Adjacent States
years	2012-2018
observations	34,415

Notes: The specification corresponds to Equation 1 replacing the depend variable $adopted_{i,j,t}$ for $female_{i,j,t}$ that takes the value of 1 if child i, living in state j, is a female during year t. The specification controls for child's demographics, states indicators, and year fixed effects for each age-bin. The control group is the set of children in the adjacent states of Minnesota. Standard errors are clustered at the state-year level and shown in parentheses.

A.6 Robustness to Clustering and Bootstrapping Standard Errors

Table A8: Impacts on the Annual Probability of Adoption, Clustering at the State Level

	I	II	III	IV	V
	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.1064 (0.0070)	0.1103 (0.0056)	0.0961 (0.0103)	0.1062 (0.0064)	0.1222 (0.0172)
$announce \cdot Minn \cdot agebin^2$	-0.0257 (0.0150)	-0.0216 (0.0199)	-0.0105 (0.0160)	-0.0260 (0.0164)	-0.0074 (0.0204)
$post \cdot Minn \cdot agebin^1$	0.0239 (0.0145)	0.0368 (0.0319)	0.0127 (0.0119)	0.0230 (0.0146)	0.0244 (0.0279)
$post \cdot Minn_{i,t} \cdot agebin^2$	0.0738 (0.0074)	0.0864 (0.0235)	0.0894 (0.0104)	0.0693 (0.0074)	0.0482 (0.0290)
state and year fixed effects	X	X	X	X	X
# eligible children as control		X			
2011 in sample			X		
all age groups in sample				X	
control group	Adj. States	Adj. States	Adj. States	Adj. States	Midwest
observations	34,415	34,415	38,485	40,461	143,111

Notes: Analytical standard errors are shown in parentheses. These standard errors are clustered at the relatively coarser level of the state. Column I is our preferred specification. Column II includes as an additional control the state-level number of children who are eligible for adoption. Column III includes an additional year of data (2011) in the estimation sample. Column IV includes additional, older children (ages 12 to 15) in the estimation sample. Column V uses an alternative group of states (the Midwest Census Division versus the set of Adjacent States to Minnesota) to define the control group.

Table A9: Impacts on the Annual Probability of Adoption, Bootstrapped Standard Errors

	I	II	III	IV	V
	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)	Coeff. (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.1064 (0.0303)	0.1103 (0.0328)	0.0961 (0.0282)	0.1062 (0.0292)	0.1222 (0.0221)
$announce \cdot Minn \cdot agebin^2$	-0.0257 (0.0266)	-0.0216 (0.0309)	-0.0105 (0.0288)	-0.0260 (0.0262)	-0.0074 (0.0258)
$post \cdot Minn \cdot agebin^1$	0.0239 (0.0300)	0.0368 (0.0422)	0.0127 (0.0289)	0.0223 (0.0305)	0.0244 (0.0261)
$post \cdot Minn \cdot agebin^2$	0.0738 (0.0327)	0.0864 (0.0445)	0.0894 (0.0335)	0.0693 (0.0317)	0.0482 (0.0276)
state and year fixed effects	X	X	X	X	X
# eligible children as control		X			
2011 in sample			X		
all age groups in sample				X	
control group	Adj. States	Adj. States	Adj. States	Adj. States	Midwest
observations	34,415	34,415	38,485	40,461	143,111

Notes: Standard errors are bootstrapped using 1,000 repetitions and are clustered at the state-year level. Column I is our preferred specification. Column II includes as an additional control the state-level number of children who are eligible for adoption. Column III includes an additional year of data (2011) in the estimation sample. Column IV includes additional, older children (ages 12 to 15) in the estimation sample. Column V uses an alternative group of states (the Midwest Census Division versus the set of Adjacent States to Minnesota) to define the control group.

A.7 Robustness to a Non-Linear Specification

Table A10: Impacts on the Annual Probability of Adoption, Logit Specification

	I	II	III	IV	V
	AME (s.e.)	AME (s.e.)	AME (s.e.)	AME (s.e.)	AME (s.e.)
$announce \cdot Minn \cdot agebin^1$	0.1056 (0.0223)	0.1099 (0.0226)	0.0950 (0.0207)	0.1017 (0.0220)	0.1213 (0.0173)
$announce \cdot Minn \cdot agebin^2$	-0.0282 (0.0175)	-0.0238 (0.0189)	-0.0135 (0.0196)	-0.0273 (0.0157)	-0.0096 (0.0194)
$post \cdot Minn \cdot agebin^1$	0.0237 (0.0179)	0.0378 (0.0262)	0.0127 (0.0161)	0.0214 (0.0176)	0.0240 (0.0194)
$post \cdot Minn \cdot agebin^2$	0.0744 (0.0183)	0.0882 (0.0268)	0.0898 (0.0196)	0.0667 (0.0172)	0.0502 (0.0208)
state and year fixed effects	X	X	X	X	X
# eligible children as control		X			
2011 in sample			X		
all age groups in sample				X	
control group	Adj. States	Adj. States	Adj. States	Adj. States	Midwest
observations	34,415	34,415	38,485	40,461	143,111

Notes: Average Marginal Effects (AMEs) are shown. All specifications control for demographic characteristics, and state and year fixed effects. Column I is a non-linear version of our preferred specification. Column II includes as an additional control the state-level number of children who are eligible for adoption. Column III includes an additional year of data (2011) in the estimation sample. Column IV includes additional, older children (ages 12 to 15) in the estimation sample. Column V uses an alternative group of states (the Midwest Census Division versus the set of Adjacent States to Minnesota) to define the control group. Analytical standard errors are clustered at the state-year level and are shown in parentheses.