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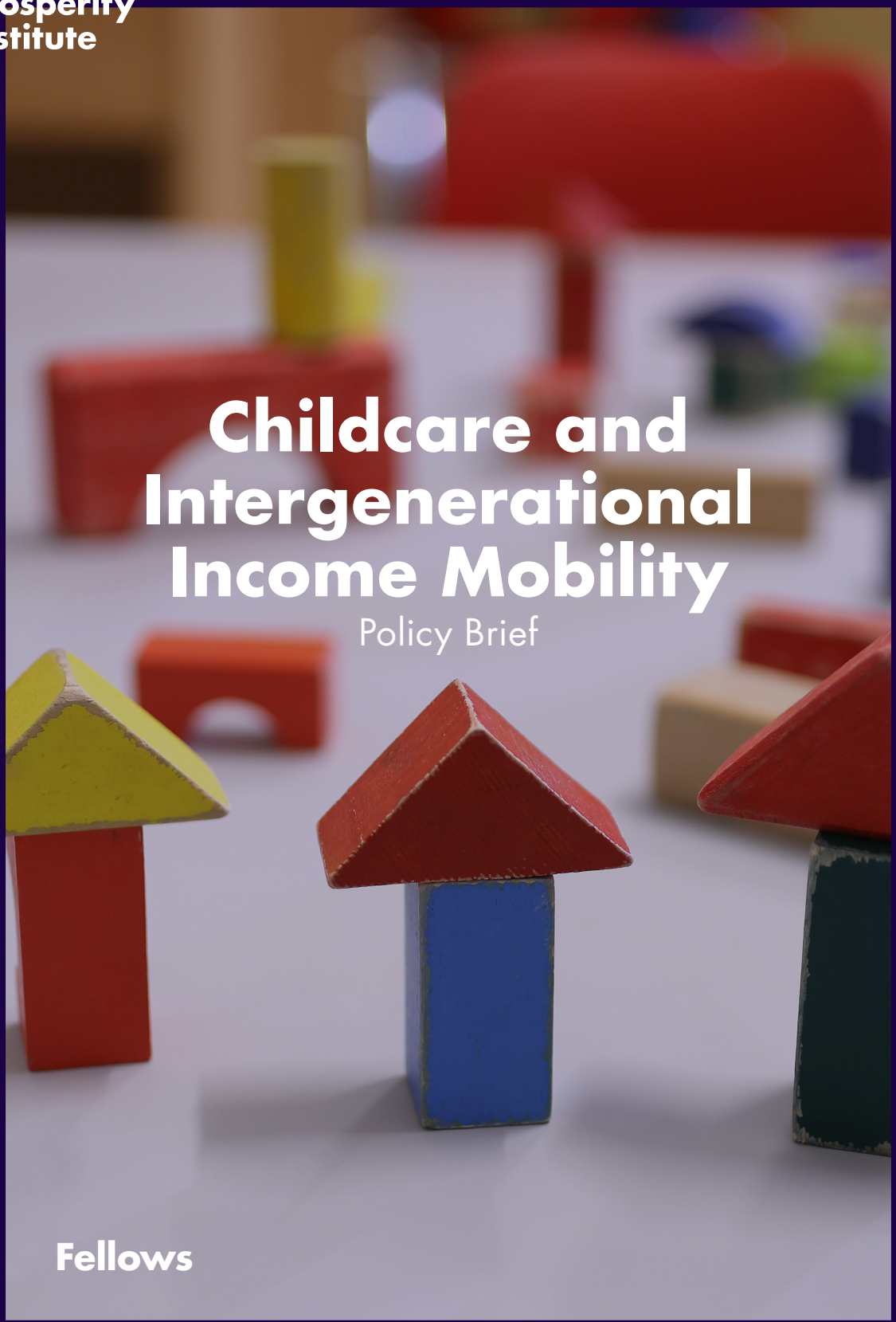

# Childcare and Intergenerational Income Mobility

Policy Brief

Fellows

Rotman

# Abstract:

The chance that a child from a low income family will achieve economic prosperity varies significantly across the United States: economic mobility is more difficult if you are born or grow up in certain parts of the country. There is an urgent need to identify the features that generate mobility in certain places, and those that limit it in others. I explore the role that the availability of childcare plays in local economic mobility. Using county-level measures of intergenerational income mobility, I relate mobility for children from poor and rich families to the availability of center- and home-based childcare providers in a county. I find positive associations between the availability of home-based care and mobility of children from both poor and rich families. I also find negative associations between the availability of center-based care for children from poor families, especially boys. I also explore variation in the local childcare availability rate generated by regulations that require higher student-to-teacher ratios in center-based care. These regulations caused center-based facilities to close, especially in poor neighborhoods. I find that the regulations are associated with lower mobility among children from poor families who live in poor counties, suggesting that the closing of center-based facilities reduced mobility of children born in affected counties and years.

Read the full working paper:
"The Effect of Childcare Availability and Intergenerational Income Mobility"

The Martin Prosperity Institute, housed at the University of Toronto's Rotman School of Management, explores the requisite underpinnings of a democratic capitalist economy that generate prosperity that is both robustly growing and broadly experienced.

# Childcare and Intergenerational Income Mobility

Policy Brief

Lauren Jones

As middle incomes stagnate and inequality increases, there is growing concern that one of the fundamental values of western society — intergenerational income mobility — is disappearing. New evidence suggests that children do not enjoy equal chances of getting ahead. Children from higher income families are more likely than are children from low income families to complete college and earn high incomes themselves. Furthermore, the chance that a child from a low income family will achieve economic prosperity varies significantly across the United States: economic mobility is more difficult if you are born or grow up in certain parts of the country (Chetty et al. 2014). The variation in mobility across areas suggests that mutable, community-level characteristics may foster intergenerational mobility, and that there may be policy approaches available to improve opportunities for children in low-mobility areas. As such, there is an urgent need to identify the features that generate mobility in certain places, and those that limit it in others.

The growing body of literature showing that very early life experiences have large effects on adulthood outcomes provides one clue as to which factors are important ingredients for mobility. Inequalities in adulthood outcomes manifest at very young ages. Children from high and low income families exhibit an achievement gap — a gap which is already large and apparent at five years old (Bradbury et al. 2015). While some of these inequalities are due to prenatal experiences (Currie 2011), childcare arrangements may also play an important role in cementing the opportunities children will enjoy over the lifespan. However, due to the difficulty of following children from early childhood into adulthood, we know little about the extent to which

childcare arrangements may facilitate intergenerational mobility for children from low-income households.

In this paper, I examine the extent to which local availability of childcare can improve intergenerational income mobility. Using a variety of data sources, I explore the relationship between county-level childcare capacity and social mobility measures for American children born in the early- to mid-1980s. I estimate these relationships for both home-based and center-based care, and explore how the relationships differ for children from poorer families (25th percentile of the income distribution) and children from richer families (75th percentile); I also compare the relationships for boys versus girls, and children from two-parent versus single-parent households. In addition to estimating correlations between available childcare and mobility, I also employ several techniques to help identify the causal effect of center-based childcare availability on mobility. These techniques allow me to overcome the challenge that arises from the fact that places with more childcare capacity are likely different than places with less, and may produce more or less mobile children simply by virtue of these differences.

## 2. Background

Childcare availability may improve adulthood outcomes through several potential mechanisms. First, availability and affordability of childcare options allow parents to work (Herbst 2017; Baker, Gruber and Milligan 2008). Parental employment can help children succeed because it provides economic stability to a household, allows for asset building and can reduce financial stress. In particular, work opportunities for mothers can improve child wellbeing by reducing maternal stress, and modeling economic independence, especially for girls (McGinn, Ruiz Castro and Long Lingo, forthcoming).

Second, high-quality, enriching center-based childcare can improve developmental outcomes for children in the short-term. Many studies have uncovered short- and medium-term positive effects of wide-reaching childcare interventions on child outcomes (Gupta and Simonsen 2010; Black et al. 2014; Herbst and Tekin 2012; 2016; Gormley and Gayer 2005; Fitzpatrick 2008; Barnett et al. 2013; Cascio and Schanzenbach 2013; Weiland and Yoshikawa 2013). Across a large set of early childhood interventions — including both small demonstration programs like Perry Preschool, and larger, public preschool and pre-kindergarten programs — evaluations generally show improvements in cognitive outcomes (i.e. IQ, early reading skills, etc.) (Duncan and Magnuson, 2013; Camilli et al. 2010; Puma et al. 2005). Evidence on the noncognitive effects (i.e. socio-emotional development) of such programs is more mixed, but at least a few studies have found that attendance at a quality childcare facility can reduce hyperactivity and acting-out, and increase classroom engagement (Heckamn, Pinto and Savelyev 2012; Puma et al. 2005; Gormley et al. 2011). However, recent studies have also demonstrated some negative non-cognitive effects of large-scale, public pre-school programs (Baker et al. 2008; Baker et al. 2015), suggesting that expansions of low-quality care may be damaging to children.

Finally, while high-quality childcare is associated with positive outcomes for all children, evaluations tend to demonstrate especially large gains for children from low income families (Gormley et al. 2008; Weiland and Yoshikawa 2013; Hill, Waldfogel, & Brooks-Gunn, 2002). If children from low income families disproportionately benefit from childcare programs, then such programs may help close achievement gaps between high and low income children as they enter adulthood. The effects of childcare could translate into later-life prosperity either

directly, by changing developmental trajectories or establishing life-long habits, or indirectly, by increasing school readiness and allowing children to learn more and achieve additional educational qualifications.

While there is substantial evidence demonstrating positive short-run effects of high-quality, early childcare programs, fewer studies have explored the long-term impacts of such programs on adult outcomes. One curious fact is that many of the evaluations of landmark programs (i.e. Perry preschool, Abecedarian and Head Start) show that the positive gains of attendees disappear within a few years, at least in terms of test scores, which converge with those of their non-attendee peers (Campbell et al. 2002; Heckman et al. 2010; Currie and Thomas 1995). Yet, despite the convergence of test scores, the few existing evaluations of the long-term effects of these programs are promising. Studies of participants in small demonstration programs targeted at low income families like Perry Preschool and Abecedarian show positive effects as late as age 40 on educational attainment, earnings and criminal behavior (Campbell et al. 2002; Belfied et al. 2006; Heckman et al. 2010; Schweinhart et al. 2005). An evaluation of a targeted preschool programs in Chicago revealed positive associations between program attendance and educational attainment at 24 (Reynolds, Temple and Suh-Ruu Ou 2010). Evaluations of the largest, U.S. to-scale program providing public quality childcare to low income families, Head Start, also found positive effects on young adult outcomes. Deming (2009) and Carneiro and Ginja (2015) showed that children who attend Head Start programs score better than their peers who did not attend on dimensions including educational attainment and delinquency behaviors in young adulthood. However, the oldest people exposed to the large Head Start expansions are not yet old enough to allow study of the effects of the program on earnings. Finally, a recent study by Herbst (2017) shows that expansions to publicly funded childcare during World War II resulted in significant economic gains over the lifecycle. The results of this study build on this literature.

## 3. Methods

I combine data from three sources in a novel way to estimate the relationship between early childcare availability and intergenerational mobility measures at the county level. I use data on county-level intergenerational income mobility compiled by Chetty et al. (2014; 2018a; 2018b) from tax records of over 40 million children and their parents. These come from IRS data on all individuals with a Social Security Number or Tax Identification Number who were born between 1980 and 1991, and who were US citizens in 2013 — approximately 40 million individuals. These records are linked to tax returns of individuals who first claim these children as dependents as of 1996 and who were between the ages of 15 and 40 when the child was born — individuals who are likely the parents.[1] Using these data, Chetty and co-authors compute county-level measures of intergenerational income mobility. These measures tell us the expected rank in the adult income distribution of children who grew up in poor (25th percentile) or rich (75th percentile) families. For example, if a child from a poor family grew up to earn income that placed her at the 25th percentile in the adult income distribution, we would say she had no mobility.

I combine the county-level measures of mobility with data on the number of center- and home-based childcare employees in each county during the 1980s. These come from the Economic Census of Services, a census of all

1 See Chetty et al. (2014) for details on the data, how children and parents are linked, and other specifics of how the data were created. See Jones (2018) for details on how I use the Chetty et al. data, and details on other methodological and data issues.

establishments conducted every five years (in 1987 and 1992), and from the County Business Patterns data compiled annually by the Census Bureau from a variety of sources. I have measures of the total number the home-based childcare employees per county in 1992 and 1987 (where the 1987 measure is proxied by the total number of social services employees); and the total number of center-based employees per county for 1981 through 1992 (where the1981 through 1987 measures are proxied by the total number of social services employees).[2]

I begin by estimating a naïve, descriptive correlation between the rate of childcare availability in each county and the local income mobility measures for children from poor and rich families. I relate the childcare availability measures to the mobility measures for all children from rich and poor families, as well as to separate measures of mobility for girls, boys, and children from two-parent and single-parent households. For each approach, I include a series of county-level control variables that Chetty et al. (2014) show are relevant predictors of mobility.[3] I weight all regression models by county-level population in 2000, and I cluster all standard errors at the state level.

The estimated relationships above are descriptive. It may be that counties with more or less available childcare differ in unobserved ways for other counties, or that families that locate in counties with more available childcare produce inherently more or less mobile children. In this case, the relationships I estimate could either reflect the effect that childcare has on mobility, or they could reflect these underlying differences. To overcome this issue, I use two approaches. First, I estimate a model relating changes in local income mobility between the 1983 and 1988 cohorts to changes in the childcare rates between 1987 (or 1988) and 1992. The benefit of estimating the model in differences is that it will net out some time-invariant unobserved county-level characteristics that could bias estimation. Of course, this approach is not a perfect solution, since counties that are adding childcare capacity may be doing so in response demographic shifts that also impact mobility.

As such, I also exploit a finding from Hotz and Xiao (2011), who study the effects of state-level regulations governing the necessary child-teacher ratio in center-based childcare. The regulations that Hotz and Xiao study were intended to improve the quality of childcare by regulating inputs to quality (i.e. teacher training and attention to individual children). However, their primary findings show that increasingly stringent requirements in the number of staff per student in childcare centers substantially decreases the number of open facilities, especially in low income neighborhoods. They also show that while reducing quantity, the regulations increased accreditation rates in center-based care. In sum, the regulation likely decreased supply of center-based care in low income neighborhoods, but also increased the quality in centers that remained operational.

I use this source of variation in the quantity of the center-based childcare markets to help tease

2 Along with childcare services, total social services include individual and family services, job training and related services, residential care, and other. In the years where I have data, I validate that home-based childcare employees represent over 90 percent of all non-employer social service employees, and center-based childcare employees represent about 40 percent of total employer social service employees.

3 I control for the female labor force participation rate, the unemployment rate, the poverty rate, the college graduation rate, the divorce rate, the fraction of the population who identify as black, an indicator for metro counties, average population density, the Gini coefficient, a measure of the affordability of place for the median family and the local tax rate. These are all measured using different data sources, and are measured at some point between 1980 and 1988. More details in the appendix.

out the causal effect of center-based care on mobility measures. I estimate models where I relate the county-level, cohort-specific mobility measures to measures that capture cohort-specific exposure to the regulations governing the staff-to-child ratio at center-based childcare facilities.[4] The regulations are captured by two measures: an indicator of moderate restrictiveness, with a rule of 1 to 1.5 teachers per 10 students, and an indicator of strict restrictiveness, with average exposure to rules that require over 1.5 teachers per 10 students. If available, center-based child care is good for mobility, I should find that these indicators are negatively related to mobility, especially among children from poor families who live in poor counties.

## 4. Results

*Figure 1*, *panels a* and *b*, show the distribution of center- and home-based employees per 100 children in US counties in the late 1980s. There is significant variation across counties in both home- and center-based childcare employee rates. On average, there are about 1.9 home-based childcare providers per 100 children in a county, and about 1.6 center-based providers. By 1992, the number of center-based providers per 100 children in a county had grown to 1.9, while the number of home-based providers had grown to 3.9.

*Panels b* and *c* show the raw relationships between county-level intergenerational income mobility for children from families at the 25th and 75th percentiles of the income distribution, and the measures of center- and home-based childcare availability. The figures show a positive relationship between the home-based employee rate and mobility, and a negative relationship between the center-based employee rate and mobility. For center-based care, the relationship between mobility and availability is similar for rich and poor families; for home-based care, however, the correlation appear stronger for lower-income families. When I estimate the magnitude of these relationships using regression analysis, I find that one additional home-based childcare provider per 100 children is associated with a 1.6 percentile higher rank in the national income distribution at age 24 for children who grew up in poor families, and a 0.72 percentile higher income rank for children who grew up in rich families. I find that one additional center-based childcare provider per 100 children is associated with a 0.57 percentile decrease in the expected rank in the national income distribution at age 24 for children who grew up in poor families. There is no significant relationship between center-based care and mobility for children who grew up in rich families.

4 These data were used in Hotz and Xiao (2011) and are publicly available on the American Economic Association website. The data indicate the minimum allowable teacher-student ratios for children of different age groups (infants, 1, 2, 3 and 4 year olds) in each state and each year. I convert these data into cohort-specific exposure measures for each cohort from 1980 through 1988. See Jones (2018) for details.

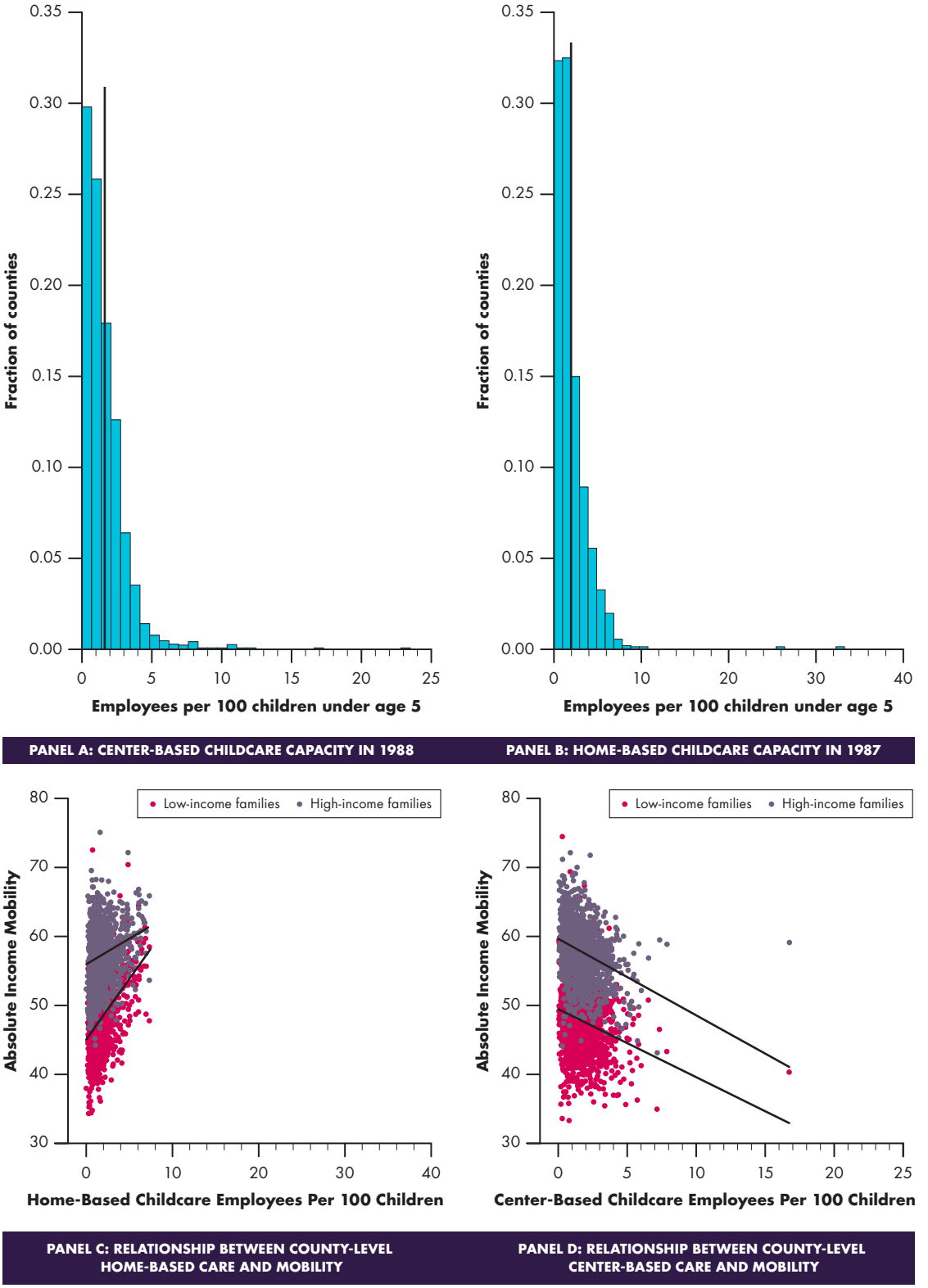


**Figure 1: Distribution of home-based and center-based childcare facilities and relationships between available childcare and mobility**

*Figure 2* shows how the estimated effects vary by subgroup. In Panel a, I show results for children from poor families. I find that, in general, the estimated effects are stronger for children who grew up in single-parent families as compared to two-parent families. I also find that the negative relationship between center-based childcare availability and mobility is driven by boys from low-income families. There is a growing body of literature suggesting that low quality childcare may be especially harmful for boys from lower income households (Datta-Gupta and Simonsen 2010; Kottelenberg and Lehrer 2018). In that sense, the correlation aligns with predictions from existing literature.

For children from richer families, I do not estimate significant relationships between center-based care and mobility for any subgroup. For home-based care, I find that the positive relationship between availability and mobility is especially strong for children from single-parent families. We might expect to find that childcare plays a more important role in mobility for children from single- versus two-parent families. It may be surprising that this is

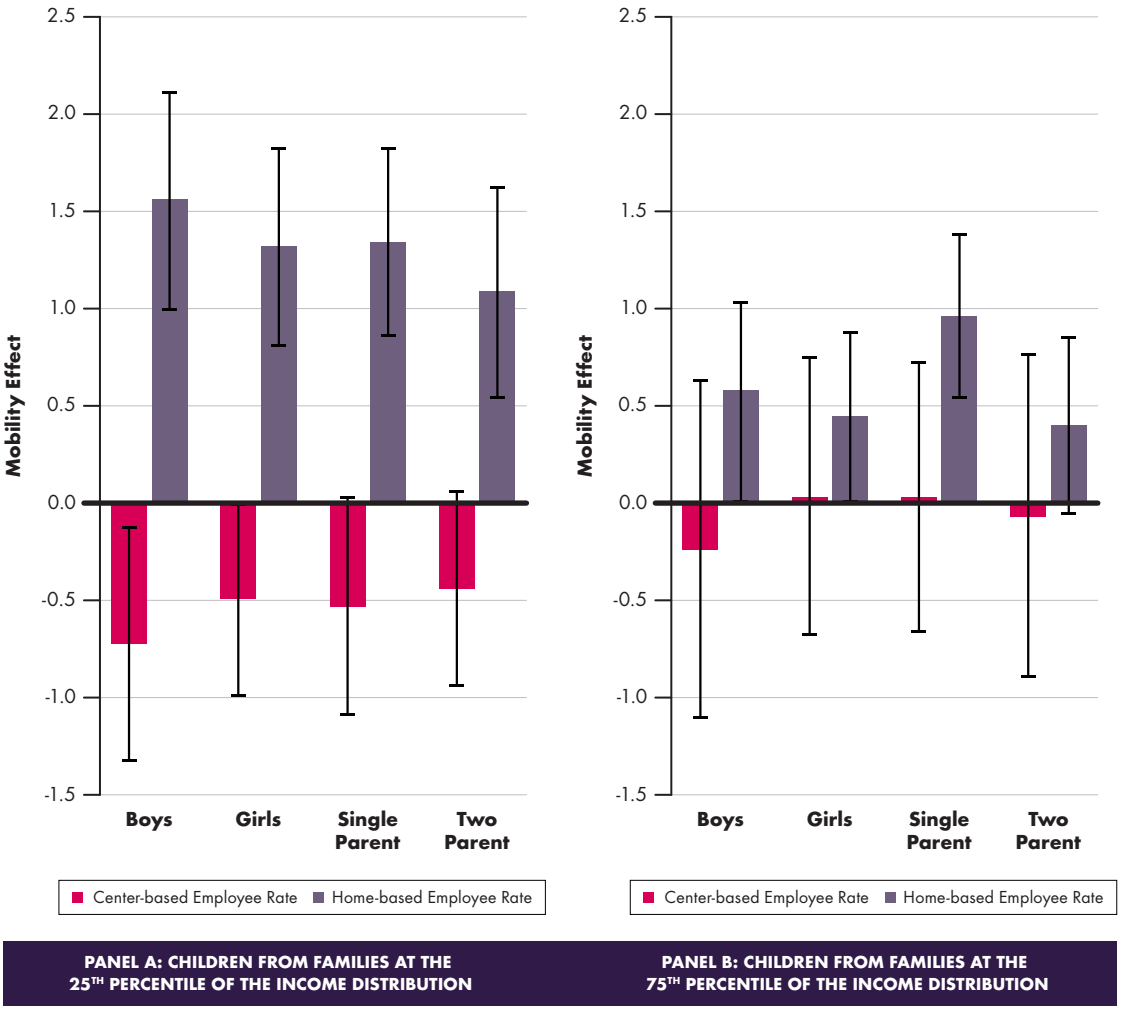


**Figure 2: Relationships between available childcare and mobility by subgroup**

especially true among children from higher-income families. However, this makes sense if single and two-parent families with lower incomes use similar types of care — namely, informal care — while higher income families with different family structures have different care arrangements.

The estimated relationships described above are only correlations. They capture both the causal effect of available childcare on mobility, as well as any selection effects due to the fact that families with inherently more mobile children may locate in areas with different access to childcare. I use several other approaches to help isolate the causal effect of center-based care availability. First, I estimate a model that relates changes in availability over children born in different years in the same county to changes in mobility measures across birth cohorts. This approach nets out many family- or area-specific differences in the types of people who tend to live in certain areas. These results are presented in *Figure 3*. Where the descriptive estimates indicated a negative relationship between the level of center-based care availability in a county and mobility, these models show the opposite pattern. Increases in center-based care employees are associated with increases in mobility between cohorts from the same county. This holds true among children from both poor and rich families, for whom an increase of one center-based care employee per 100 children in a county is associated with a about a 0.01 percentile increase in expected income ranks. While these estimates are small, they do suggest that increases in availability lead to improvements in mobility. For home-based care, I estimate a positive relationship between increases in availability and increases in mobility, but the estimate is only statistically significant for children from rich families.

Finally, I estimate the relationships between the state level regulations governing staff-to-child ratios in center-based care and mobility. Hotz and Xiao (2011) show that the regulations caused a significant reduction of centers in low-income areas. Thus, if the availability of center-based care is good for mobility, I should find that cohorts more exposed to the regulations have lower mobility. I plot the

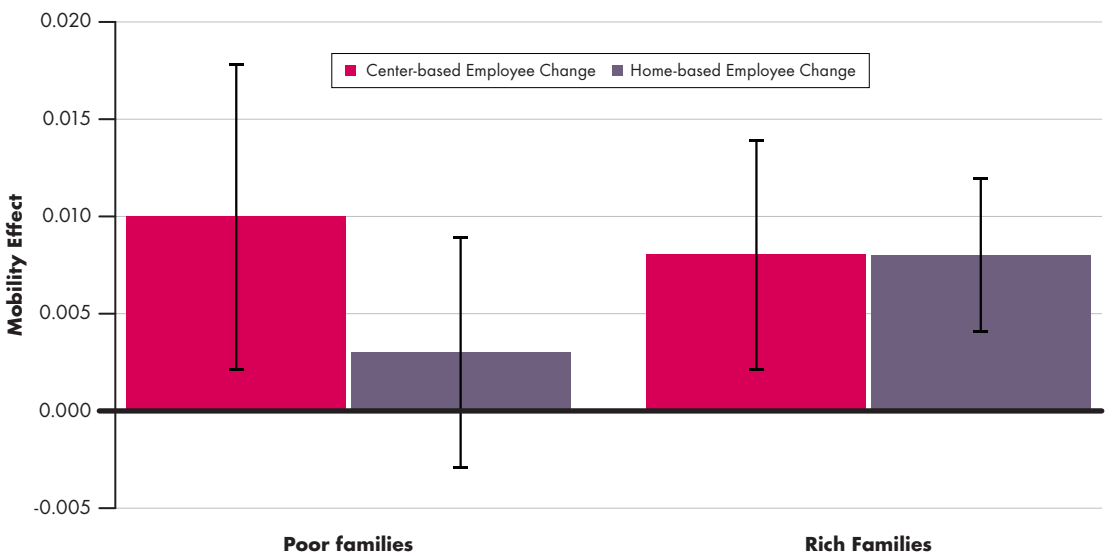


**Figure 3: Relationships between changes in available childcare and changes in mobility across cohorts**

estimates from this analysis in *Figure 4*. I show the estimated effects of moderate regulation in red, and the effects of strict regulation in grey. In addition to the results for children from rich families, I show results from the full set of children from poor families, as well as results for children from poor families who live in poor counties versus those who live in richer counties. The results confirm that the regulations are associated with lower mobility, but only among children from poor families, and especially so among children who live in poor counties. I also use the regulations in an instrumental variables approach, which allows me to isolate the causal effect of one additional center-based employee on mobility. I estimate that one additional center-based childcare employee in a poor county increases the expected rank of children from poor families by about 1 percentile.

## 5. Conclusions

In this paper, I explore the relationship between county-level measures of income mobility and availability of childcare. Childcare availability may improve mobility if it allows parents to work, or if it encourages healthy development in children. Childcare options may also be more important for children from low income families, since such families may be required to have both parents working, or may face more time constraints than richer families. Because of the difficulty of tracking people over the long-term, however, there is limited existing research linking childcare to adulthood outcomes in large, representative samples.

The results discussed here add to this literature. I find positive relationship between available home-based childcare providers and mobility measures, relationships that are

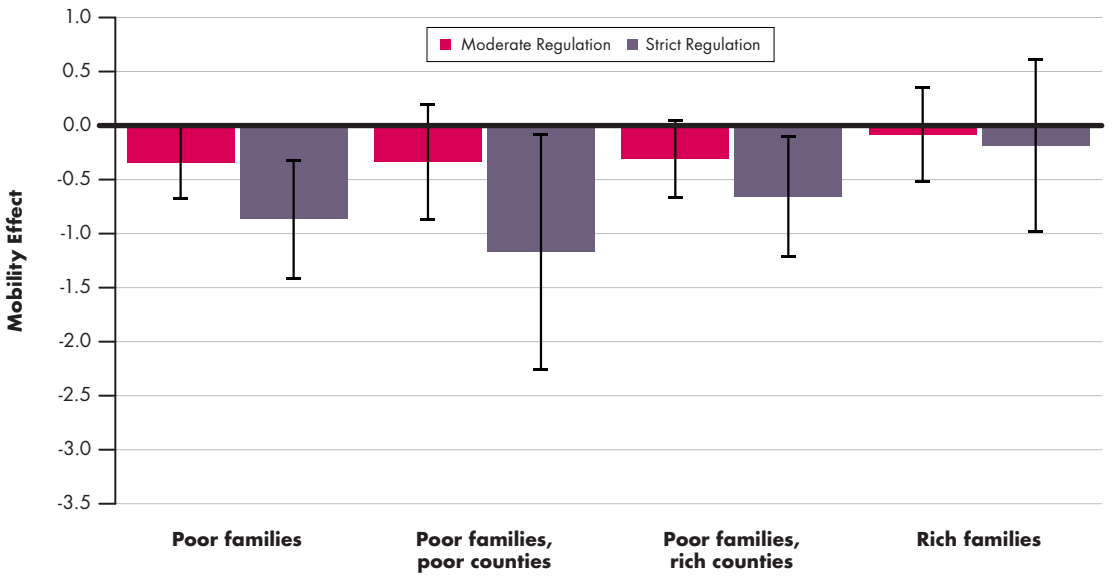


**Figure 4: Effects of state-level regulations limiting supply of center-based care and mobility measures**

generally stronger for children from poor families than from rich families. I also find that for center-based care, there is a negative relationship between available childcare providers and income mobility for children from lower-income families. I also find some evidence that these relationships are stronger for boys relative to girls, and for children from single-parent households.

However, the two pieces of quasi-experimental evidence I uncover suggest the opposite relationship. When I estimate a model in changes, I uncover positive — but small — associations between the change in available childcare providers in a county and the cohort-to-cohort change in mobility for children from both low- and higher-income families. I also estimate a positive relationship between available center-based providers and mobility when I use the instrumental variables approach. Using variation in regulations that limited the supply of childcare providers in low income communities, I estimate that a one-employee increase in available center-based childcare providers per 100 children in a county leads to a one-percentile increase in the expected rank of children from low income families who live in low income counties. To put this estimate in context, the difference in the expected ranks of children from poor families who grow up in the best and worst counties for mobility is about 45 percentiles. If the worst county added one center-based childcare employee per 100 children, they county make up about 2 percent of that gap. This suggests that childcare availability may be a good tool to help remedy the mobility gap between children from poor and rich families.

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