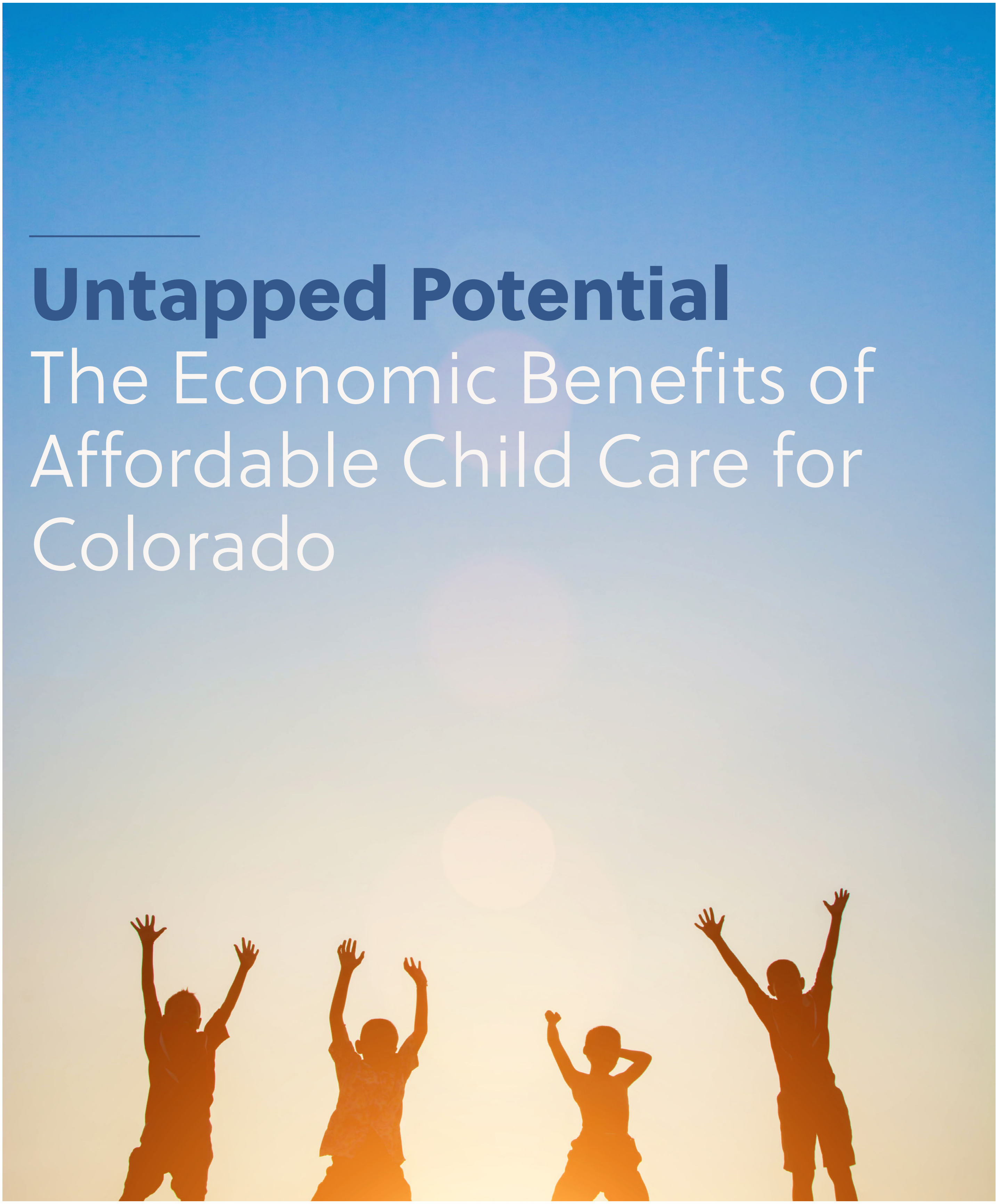

Untapped Potential

The Economic Benefits of Affordable Child Care for Colorado

Colorado Fiscal Institute

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Executive summary

The high cost of child care creates significant barriers to work for many parents across Colorado, and the pandemic only made the situation worse. In this report, the Colorado Fiscal Institute expands on our 2020 report, which provided strong evidence that investing in free child care would lead to more employment and higher incomes for both single-mother and two-parent households.

Here, we update our model using recent data from the American Communities Survey to understand how free child care would affect the economic well-being of families living across the state. Our analysis shows:

- Colorado families with free child care earn $9,450 more on average relative to families who do not have access to free child care.
- Free child care leads to moms working 3.19 hours per week more and boosts their labor force participation rate by 11 percentage points on average compared to moms without access to free child care.

These findings are especially consequential considering the current labor shortage in many of Colorado's female-dominated industries, such as local government, education, health, and leisure and hospitality jobs. Colorado's uneven recovery in key sectors may soon be addressed in part by recent policy reforms such as the recent passage of a new law that will allow parents to receive 10 hours of universal, tuition-free preschool for all 4-year-olds in the state beginning in the 2023-24 school year. While an improvement, this policy change doesn't address the child care needs of parents with kids aged 0-3 when parents typically face the greatest financial barriers to child care.

Moreover, because the program excludes infants and toddlers, who require the most costly care, providers fear the piecemeal program may create unintended consequences that place smaller, home-based providers in a precarious spot. Community-based caregivers, who often provide care to a broader spectrum of children from infancy to preschool age, may struggle to stay afloat if parents whose 4-year-olds are eligible for free preschool are forced to turn elsewhere for free care. Even with the promise of free care, our state's severely limited capacity and poor workforce standards for child care workers mean even with the universal program for older children, some children may not have spots. To ensure all Colorado families and child care providers can provide children with the opportunities to thrive, our care economy requires further investments.

Our analysis suggests that reducing the cost of infant and early childhood care for more Colorado families will make it easier for parents to choose between staying home or working. When child care is cheaper, parents can work more. Stable employment and family income security are within reach for more hardworking families if we reduce or eliminate the financial barriers they face. Our economy works best when everyone has the freedom to decide whether to work or stay home, and free or subsidized child care would also pay economic dividends for Colorado.

Introduction

While high child care costs have created a harmful trade off between work and family for many Colorado parents over recent years, the pandemic further impeded access to care. Though this issue touches nearly all working- and middle-class families, our state's crisis of care has disproportionately affected parents who earn low incomes, parents of color, immigrants, and rural communities. One solution that could pay big dividends would be to fund a universal free or reduced-cost child care program.

A large body of national studies show that expanding access to affordable or free child care allows parents to work more and can produce far-reaching economic benefits. Free child care promotes greater family economic stability in the short term, and better academic and employment outcomes for participating children in the long run.

In 2020, the Colorado Fiscal Institute (CFI) analyzed the potential impact of free child care for families in Pueblo, Colorado, showing the city's most common occupations do not pay workers enough to make child care cost-effective. CFI's model confirmed that Pueblo families who receive free child care work more, earn higher incomes, and are less likely to experience poverty.

CFI's analysis showed free child care would boost employment and incomes in both single-mother and two-parent households in Pueblo, suggesting that the recent creation of Colorado's universal, tuition-free preschool for all 4-year-olds will be helpful for parents when their children reach that age. While this recent development is good, the highest child care costs accrue at the earliest stages of a child's life, which is also often when parents have the least means or assistance to afford care. The annual cost of center-based infant care comprises 45.3% of an average single parent's household income, and 2022 data indicates that 12.4% of Colorado parents make career sacrifices due to child care issues.

In this report, we expand on our initial analysis to uncover the potential benefits of providing universal child care for all Coloradan children. We provide evidence that subsidizing care for Coloradan children of all ages, particularly parents with children ages 0-3 who may not currently have access to affordable care, would help ensure all working families have the tools to succeed and lay the groundwork for a resilient economy where we can all thrive.

High Costs, Low Access, and Insufficient Capacity

Child care eats away at a growing slice of working parents' paychecks in Colorado, and high-quality care continues to be inaccessible for many families.

Skyrocketing costs of care may keep some parents from participating fully in the state's labor force. The average annual cost of center-based infant care in Colorado was $15,600 in 2020, while home-based care cost $10,400. Those rose to $15,881 per year and $10,587, respectively, as of January 2022.

Access to subsidized care is also insufficient. The most recent available data from the First Five Years Fund indicates that while state and federal funding enabled more than 56,815 children and families in Colorado to access early childhood programs in 2022, they covered less than 10% of the total number of families and children in the state who are eligible for assistance.

Even for families that can take on these costs, many live in areas of the state where care is out of reach. A child care desert is defined as a census tract with at least 50 kids under age 5 which has either no child care center in that neighborhood or at least three children waiting in line for one open spot. As of 2022, 51% of Colorado residents live in a licensed child care desert, and this percentage is even higher for Black and Latino families.

5 OUT OF 10

Coloradans live in a childcare desert as of 2022, defined as an area with either no childcare center or at least three children waiting in line for one open spot. This percentage is even higher for Black and Latino families.[5]

The supply of child care fell short of meeting parents' needs long before the pandemic. In 2019, the Colorado Children's Campaign found over 246,000 Colorado kids under 6 lived in families where all parents were actively participating in the labor workforce, but Colorado's licensed child care providers and preschools only had the capacity to serve approximately 152,000 children. This only covered 62% of Colorado's young children, leaving 94,000 young children (38% of all children in the state) and their families without access to child care. In a Bipartisan Policy Institute study of 35 states across the country, Colorado's care gap of 38% is higher than the 35-state average of 31%. Relative to many other states with top ranking economies, Colorado is lagging: Arizona's gap sits at 25.2%, Massachusetts at 33.8%, Idaho at 28.0%, and Connecticut at 29.7%.

A strong body of evidence suggests high quality and accessible early child care is an underprovided public good, creating lifelong benefits for families, children, and the economy at large. We also know that expanding access to care for families who earn low incomes often produces the most economic benefits, but the current patchwork of national public programs is both underfunded and under capacity, limiting access for the children and families who need it most.

National funding for public child care assistance programs is capped and dependent on annual Congressional appropriations, which hinders the ability of programs to aid all eligible families. Moreover, the purchasing power of federal child care funding has decreased over time—total funding for child care in 2018 was $1 billion less than in 2001, once adjusted for inflation. The gap in public spending at the federal and state level combines with the realities of the child care industry to create a profession with high turnover and high rates of burnout. The costs of turnover drive prices higher and make it difficult for providers to serve many young families who are unable to afford the true costs of care.

A recent report from the U.S. treasury identifies lack of borrowing power, labor market discrimination against providers, and insufficient investment in child care as the major factors for the problems in the care economy. First, the report argues that while most families' incomes and savings increase as their children age, many face liquidity constraints, meaning that parents aren't able to borrow against their future savings to cover child care costs when their children are young. Additionally, because "the vast majority of the providers are women and disproportionately women of color, the sector benefits from existing unfairness and discrimination in labor markets." Finally, Colorado's child care economy falls short of meeting demand because federal and state public spending fails to account for the positive externalities that early child development can produce, for both children, families, and the economy at large.

Public and Service Sectors Face Persistent Labor Shortages

The state unemployment rate is still 0.5 percentage points higher than in February 2020, when it was 2.8%. Colorado's economy is still experiencing a "jobs deficit" of 31,000 jobs, with the bulk of this shortage caused by sluggish recovery in female-dominated sectors where work is continually undervalued with poor wages and working conditions.

While the state added 43,300 new jobs since the pandemic began in February 2020, the state's economy needed to expand by 74,300 new jobs to keep up with the booming 2.6% population growth during that time. What's more, while construction, manufacturing, and the financial sector have exceeded pre-pandemic trajectories, the state's care economy and public sector (which are kept afloat by predominantly female employees) have experienced a slow, incomplete recovery as these workers are struggling to balance work and family. Colorado's public sector has been facing a major labor shortage, with state and local government jobs trailing February 2020 number by 3.7%, while the leisure and hospitality and education and health sector sat at 0.7% and 0.4% below pre-pandemic trends as of July 2022.

Colorado employment is still slightly lower than it was in 2020 when the pandemic began. As of late 2022, the state was still 31,000 jobs short of a full recovery.

Public and Service Sectors Face Persistent Labor Shortages

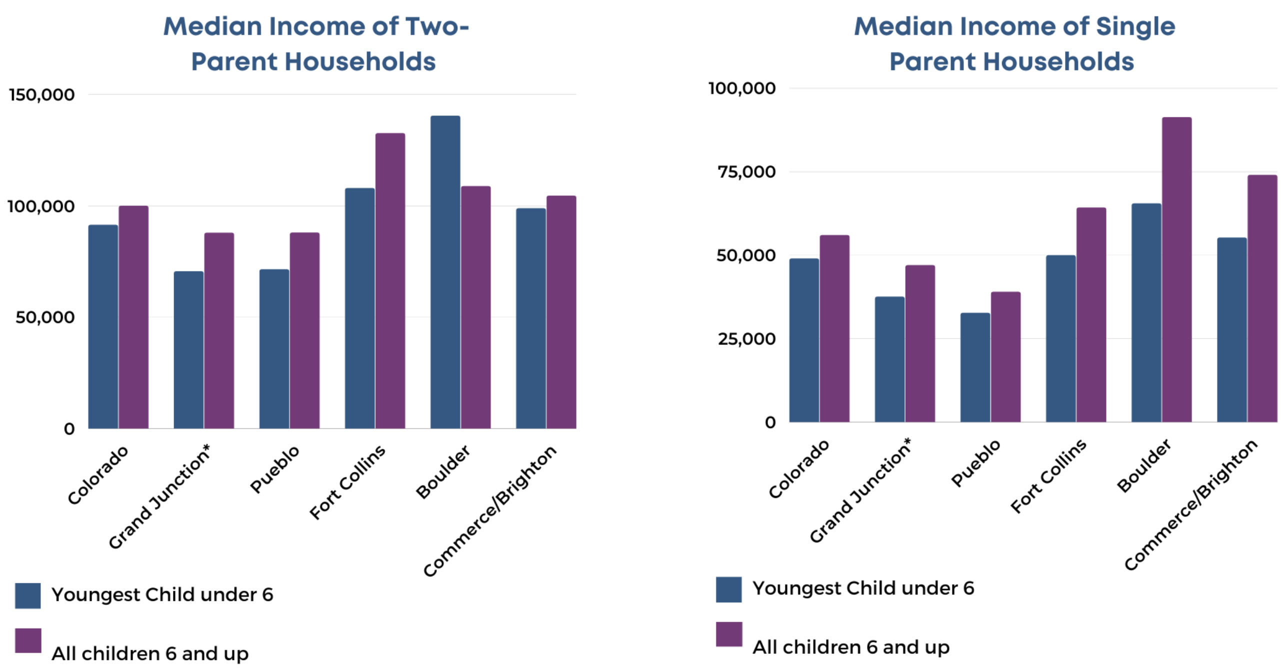
Colorado mirrors national trends in early childhood investment. Our infant care systems ask the most of parents when they are newer to the labor force and haven't yet increased their earnings. A national analysis by the Hamilton Project at the Brookings Institution shows that the public invests only around $1,500 per child through age 5, when most parents have the least earning and borrowing power, but invests $12,800 annually per child from age 6-18, when parents have more savings to draw from. This is apparent in Colorado's decision to offer free preschool only to parents of 4-year-olds.

All Colorado families would benefit from greater access to affordable child care, but more comprehensive infant care policies would be especially beneficial for parents who earn low incomes. To expand on our 2020 analysis which focused chiefly on the city of Pueblo, this analysis explores the impact of child care costs on working hours, labor force participation, child care costs, and hourly wages across multiple regions in the state.

This data, and the analysis that follows, show that free child care would expand economic opportunities for single-parent households, particularly those living in regions with lower median household incomes such as Pueblo and Grand Junction. Families living in these cities also have lower average hours worked per week, indicating that these regions may also have more potential to boost labor outcomes and economic activity through child care investments.

Our analysis uses compulsory schooling as an artificial threshold to measure the impact of free child care (school) on families that we assume would otherwise face similar constraints when choosing whether to participate in the labor force.

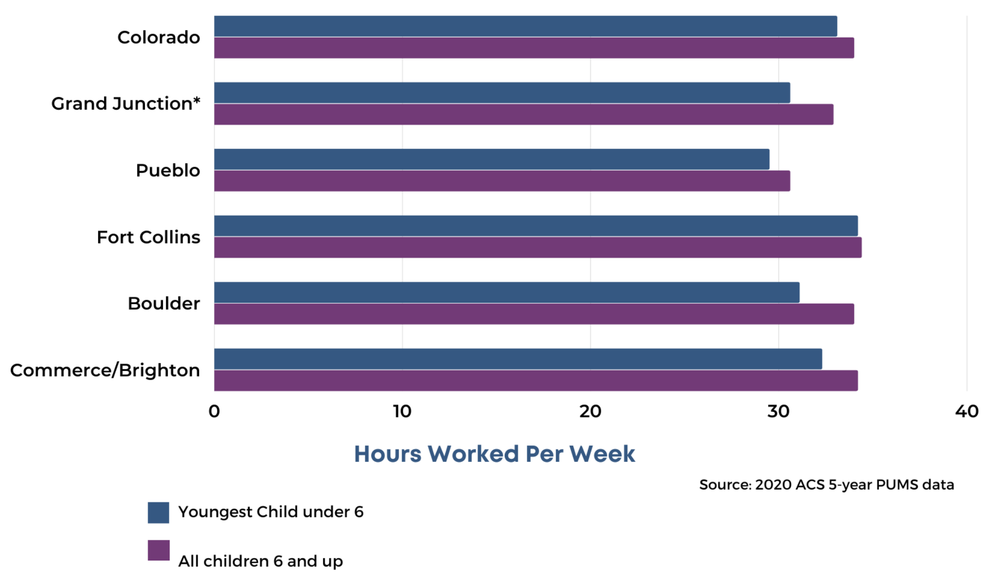
Rural Colorado Has More to Gain



Source: 2020 ACS 5-year PUMS data

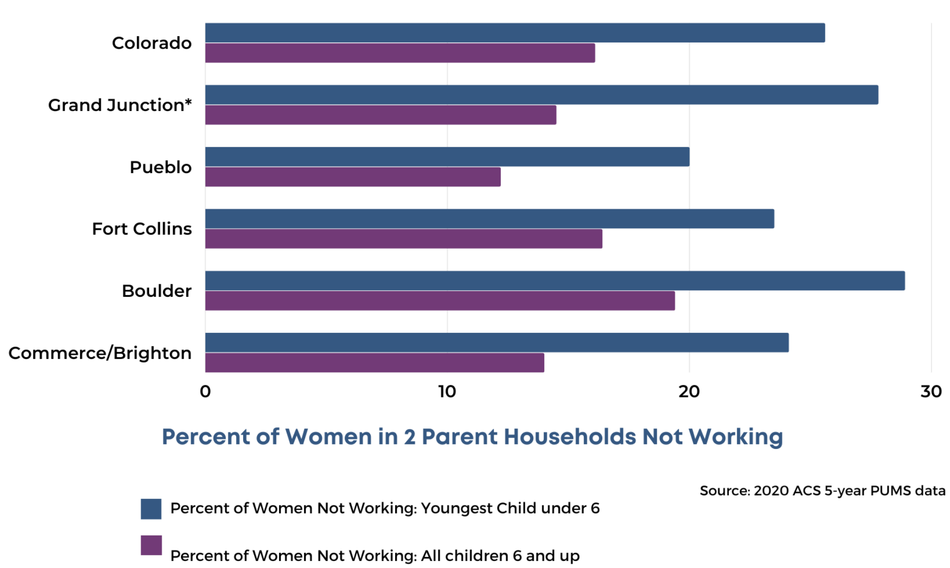
Median Household Income data reveals that families living in rural areas such as Pueblo and Fort Collins may have more to gain, as evidenced by the steep increase in median incomes upon the entry of children to free public school. For both two-parent and single-parent households, median household income increases by an average of 11% when all children in the household are 6 or over and attend school. Single-parent households benefit disproportionately, experiencing a 14.3% increase in median household income on average.

Parents Can Work More When Their Kids Are School Aged



One reason for this boost to median household income may be that work is more accessible when parents have access to free, predictable child care arrangements through public schools. Across all areas of the state, average hours worked per week in the past 12 months for Coloradan parents increase when all children are school-aged. Likewise, per the chart below, the percentage of two-parent households where a mother is unemployed or not in the labor force reduces steeply once children enter compulsory schooling.

For Two-Parent Households, Women are Much More Likely to Work with School-aged Kids



Challenges for Parents in Colorado and Across the Country

Existing evidence shows that access to child care has a large impact on a parent's choices of how much to work, so the harmful impact of the pandemic on mother's employment outcomes came as no surprise to many researchers. The pandemic served as both a cautionary tale and a natural experiment for many researchers to understand how parents were directly impacted by child care shutdowns.

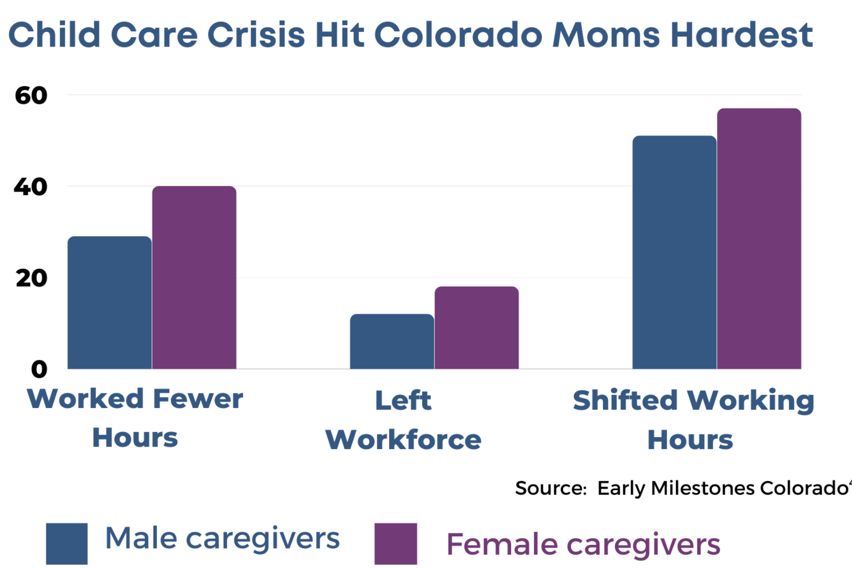
Of Colorado parents with children ages 0-4, recent 2022 data indicates 24% of households cut work hours and 7% of these parents didn't look for a job to care for kids during the pandemic.

36.7%

of Colorado's workers **earned less than $12.32/hour in 2020** (Colorado's minimum wage) when accounting for the hourly costs of childcare[1]. Working parents in rural areas may face even higher barriers to care; nearly 55% and 53% of the workforce in Grand Junction and Pueblo, respectively, made less than minimum wage after paying for child care.

High care costs and low wages often make it more appealing for working parents to care for their children full-time, rather than pay for care while earning a subminimum wage.

While all parents across Colorado were affected by the pandemic's effect on child care facilities at the start of the pandemic, women were much more likely to be forced to leave their employment than men. Throughout the first year of the pandemic, 15% of Colorado's female caregivers left their jobs, 19% were laid off or furloughed, and 30% reduced their hours, with many of those surveyed citing child care as the reason behind these changes. These numbers are especially striking when compared to male labor market outcomes during the same period.



Throughout the pandemic, national research indicates that women increased their weekly time spent on child care more than men and were more likely to take leave, reduce their hours, or leave the labor force entirely. A study by Caitlyn Collins and colleagues utilized US Current Population Survey Data and person-level fixed effects models to show that the gender gap in work hours grew by 20–50% over the early pandemic, as mothers with young children reduced their work hours four to five times more than fathers.

A study from the U.S. Census Bureau study used monthly panel data from the Current Population Survey (CPS) to compare mothers' labor market outcomes in areas with early school closures to areas with delayed or no pandemic closures. The analysis found that mothers with jobs in the early closure states were 68.8% more likely than mothers in late closure states to have a job but be on leave from work due to child care center shutdowns, though their research found that losing access to care had no immediate impact on unemployment or labor force participation. One study by Petts and Carlson indicates that some women exited the workforce altogether as a result of closures. The authors analyzed new data from 989 parents to examine the impact of the loss of child care and forced homeschooling impacted employment outcomes for mothers and fathers. The loss of full-time child care was associated with an increased risk of unemployment for mothers of young children, but not fathers; women bore the brunt of joblessness when child care was no longer available.

While the evidence is mixed on how this affects their decisions to leave the labor force, child care affordability and availability has clear consequences for some female workers. Working mothers without a four-year college degree were particularly likely to reduce their hours in response to increased child care responsibilities. An analysis by Garcia and Cowen used county-level school and child care closure data to conclude that while child care closures had little impact on parents' choices to enter or exit the labor force altogether, they did have significant effects on whether parents chose to work full time (35 hours or more) and the number of hours parents worked per week. Garcia and Cowen also found the pandemic had a disproportionate impact on less highly-educated working parents, confirmed by strong evidence from an analysis of the Current Population Survey (CPS) by Furman and colleagues which found that excess job loss was driven by mothers without a four-year degree, who are more likely to earn low incomes and be workers of color.

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The Pandemic and the Care Shortage

A national study by the St. Louis Fed found that while the child care sector may not seem particularly large in terms of its jobs and wages, it has an "outsize impact on the ability of parents to participate in the labor market." That impact should be of major concern because the costs of child care have been rising much faster than overall prices. This holds especially true in Colorado, where many centers are still recovering from the pandemic and dealing with rising costs or have been forced to close permanently. A 2022 study on the impact of the virus on the child care market shows that pandemic policy responses likely drove up the cost of production when a time when demand was collapsed. The authors concluded that the closures of many centers may be difficult to reverse because of the high cost of entry and low profitability in the industry.

Many national researchers predicted that as many as 40% of child care centers may shut down permanently due to the pandemic, but Early Milestones Colorado reported that fewer Colorado Child Care Providers closed permanently than expected, with a closure rate of only 7% between April 2020 and March 2021. While closures weren't as dramatic as predicted during the pandemic, providers warn the long-term deterioration of the sector is still concerning. Colorado's care economy has experienced a chronic decline as child care providers across the state have been closing permanently at a faster rate than new child care centers have opened.

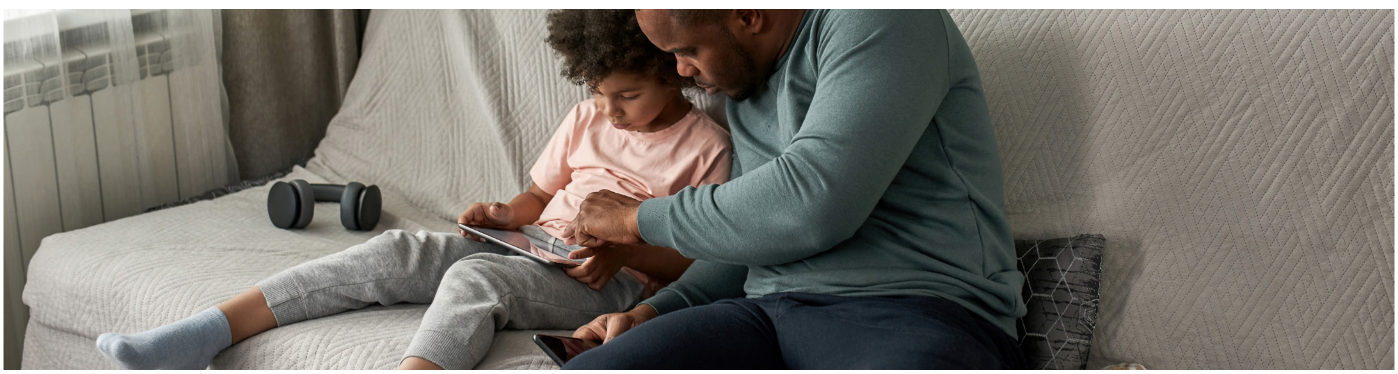
One major driver of the shortage of care is the poor working conditions for child care workers themselves, with low returns to work for professional caregivers who may also be balancing their salaried job with caregiving work off the clock as parents. In 2019, UC Berkeley's Center for the Study of Child Care Employment found the median wage for child care workers in Colorado was $13.79, a meager 5% increase since 2017. The poverty rate for early educators in Colorado is 15.1%, much higher than for Colorado workers in general (8.6%), and over six times as high as the poverty rate for K-8 teachers. Colorado educators who take on the essential, formative work of supporting the development of the state's youngest children face a wage penalty for choosing this work, and as a result, they often cannot afford care for their own families.

Free Child Care Helps Parents Work and Earn More

The pandemic brought to light the importance of child care in determining mothers' labor market outcomes, drawing attention to the strong and growing body of econometric literature that explores the relationship between child care costs and female labor force participation prior to the pandemic. Since the late 1980s, study after study has found that lower child care costs are associated with higher employment, especially among single moms with young kids.

Almost all studies agree that lower child care costs produce a positive effect on female labor force participation, but Dr. Taryn Morrissey's 2016 literature review on child care and labor force participation exposed considerable heterogeneity in the resulting effect size. Her review of evidence since the 1990s found that a 10% reduction in the cost of child care could lead to an increase in maternal employment as low as 0.25%, and as high as 11%. Nevertheless, a positive effect of some size was broadly evident, and Morrissey estimates a high probability that the 10% reduction in cost could produce as much as a 0.5–2.5% increase in labor force participation.

Reducing child care costs is associated with greater increases in employment for single mothers than for married mothers. Economists Stacy Dickert-Conlin and Scott Houser first explored this effect in 1998 using Survey of Income and Program Participation (SIPP) data. This was supported by Han and Waldfogel's 1998 study using the same data. Dickert-Conlin and Houser's model found that a 50% child care subsidy would increase the labor force participation of single parents by 2.9 percentage points, while Han and Waldfogel later projected that policies that reduce the costs of child care could raise the employment rates of married mothers by 3 to 14 percentage points and single mothers by 5 to 21 percentage points.



Younger mothers are also more likely to benefit. In 2016, researcher So Kubota found that the rising cost of child care resulted in an estimated 5% decline in total employment of females, and 13% decline in the employment of mothers with children under age 5, all else constant. These results suggest that providing free child care to students earlier than 5 years old could boost the employment of these mothers by 5 to 13%. Another 2016 study by the Child Care and Development Fund (CCDF) drew similar conclusions, using a decade of demographic and state-level income and employment data to prove that a 10% increase per child in CCDF spending resulted in increased employment for low-income women with young children by over half of a percent.

Not only does affordable child care boost employment, it may also increase economic self-sufficiency and reduce spending on welfare programs. Drs. Rachel Connelly and Jean Kimmel investigated the relationship between AFDC (welfare) recipients and child care costs in their 2003 paper, which found that higher child care prices mean less employment and more welfare recipiency. Their analysis showed that the child care price elasticity of welfare recipiency varied from 1.0 to 1.9, and that the child care price elasticity of employment varied from -1.3 to -1.1. Even if modest means-tested subsidies were made available to single mothers, the authors estimate this would result in increased labor force participation by women with young children.

Benefits of Early Child Care for Children and Communities

Since the 1960s, a handful of groundbreaking studies have found that early education results in higher educational attainment, improved physical and mental health, and better socio-economic outcomes. What's more, a recent meta-analysis of existing studies suggests that the earlier the intervention, the larger the effect on academic and other life outcomes for participating children and their communities.

A 2017 study estimated there is a 13.7% rate of return to long-term investments in early childhood education, with a benefit-cost ratio of 7.3. The investigation followed children in these programs between 8 months and 5 years of age, revisited them at ages 6-8, then revisited them again at age 35. They found significant evidence to support that quality early childhood development improves adult physical health.

Over the last 57 years, the Perry Preschool Project based in Ypsilanti, Michigan has also proven that early childhood education pays dividends for communities that invest early in low-income children and families. The study provided a group of Black children from families who earn low incomes with an experimental, high-quality preschool program. The study found that, despite no changes between the experimental and control groups in IQ, there were significant gains for the experimental group in terms of educational performance and socioemotional effects.

In 2019, Nobel-prize-winning economist James Heckman followed up with the participants in the Perry Preschool study, and his findings revealed that the preschool project produced continuing long-term positive effects for program participants. Children who had access to quality early childhood care had lower rates of crime and health problems, and higher rates of employment, cognitive, and non-cognitive skills.

Is Child Care Worth It? Wage and Cost Comparison

A rule for determining the affordability of child care is that it shouldn't be more than 10% of a household's budget, conservatively. According to the U.S. Department of Health and Human Services (HHS), child care is considered affordable if it costs families no more than 7% of their income. The broken child care market makes it almost impossible for families to access affordable care; national census data indicates that in 2017, families with children under 5 spent an average of 13% of their income on care.

Children who had access to quality early childhood care had lower rates of crime and health problems, and higher rates of employment, cognitive, and non-cognitive skills.

Child care costs that exceed 10% of household income can lead to declining employment and wages. In Colorado, the high cost of child care keeps it out of reach for many families—a March 2020 study showed the average cost of infant child care in Colorado was 31% of the average household income ($15,600 in costs versus $50,960 in income on average).

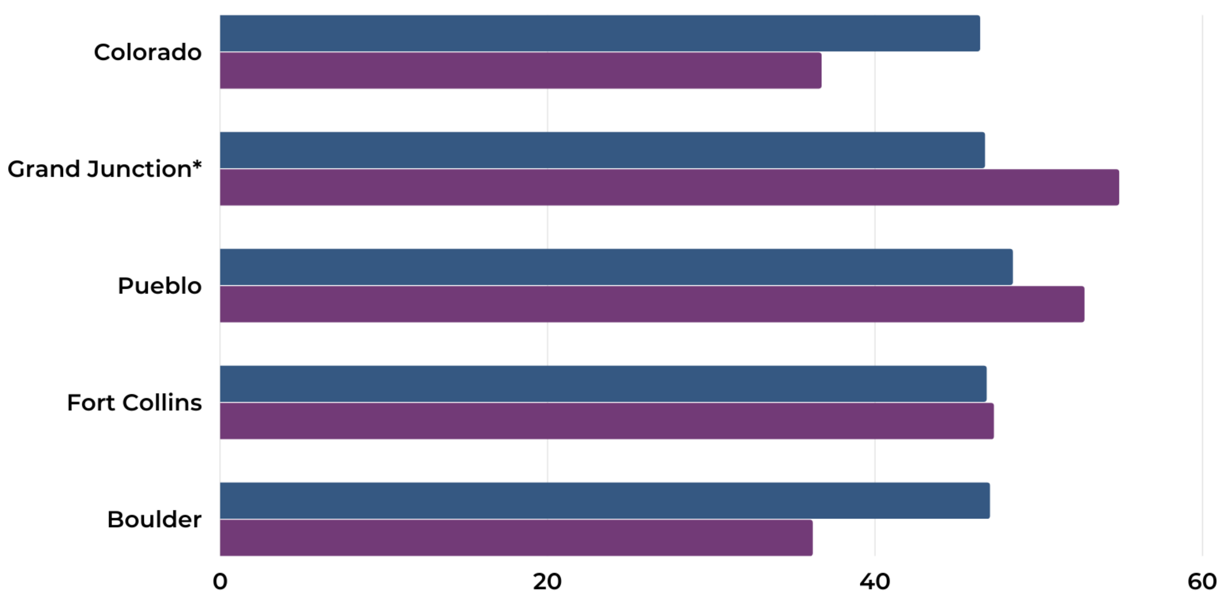
In the following charts, the Colorado Fiscal Institute compared hourly child care costs to hourly wages in occupations across Colorado to illustrate the thought process of many Coloradan parents when deciding whether to work and pay for child care or not work at all. We wanted to answer the central question facing working parents faced with real budget constraints: "Do I work this hour and pay for child care or do I choose not to work and watch the kids instead?" We rely on May 2021 State Occupational Employment and Wage Estimates from the Bureau of Labor Statistics as well as five-year American Communities Survey Data from 2016 to 2020.

In 2021, a conservative estimate of the average cost of center-based infant care is $15,600 annually, based on 2020 data from Child Care Aware America. Based on this data point, we estimate for a parent working 40 hours per week, child care costs them $7.48 per hour on average for all Coloradans. To find the threshold of hourly wages that would make working and paying for child care worthwhile for a Coloradan parent, we assume a worker would have to earn minimum wage after $7.48 of their hourly earnings are spent on child care. To earn a take-home wage equivalent to the state's 2021 minimum wage of $12.32, we estimate that a worker would have to have made above the threshold of $19.80 an hour for child care to be worth it.

Since costs of child care vary across the state, we used estimates of localized child care costs via the Economic Policy Institute's Family Budget Calculator, which also uses data from Child Care Aware's 2020 State Child Care Resource and Referral Network survey. Because counties within Colorado did not report data, EPI researchers adjusted costs to the county level by creating a ratio of the county-level costs of rent for two-, three-, and four-bedroom apartments to the population-weighted state average of the same costs, and then adjusted 50% of the child care costs using this ratio to estimate the variation in child care costs by county. This data set provides estimates for one and two parents families with both one and two children; based on the high frequency of two-child families in Colorado, we use the estimate for families with 2 children.

Using BLS data to estimate wages in areas across the state and lower-wage sectors with large female workforces, we deploy a linear interpolation methodology to project the portion of the Colorado workforce across different regions or sectors who do not earn enough to make child care worthwhile.

Median Wages in Many Colorado Counties Don't Make Childcare Worth the Cost



Source: BLS May 2021 State Occupational Employment and Wage Estimates and 2020 ACS 5-year PUMS data

Women Often Work Jobs that Don't Pay Enough to Make Childcare Worth It

Source: BLS May 2021 State Occupational Employment and Wage Estimates and 2020 ACS 5-year PUMS data

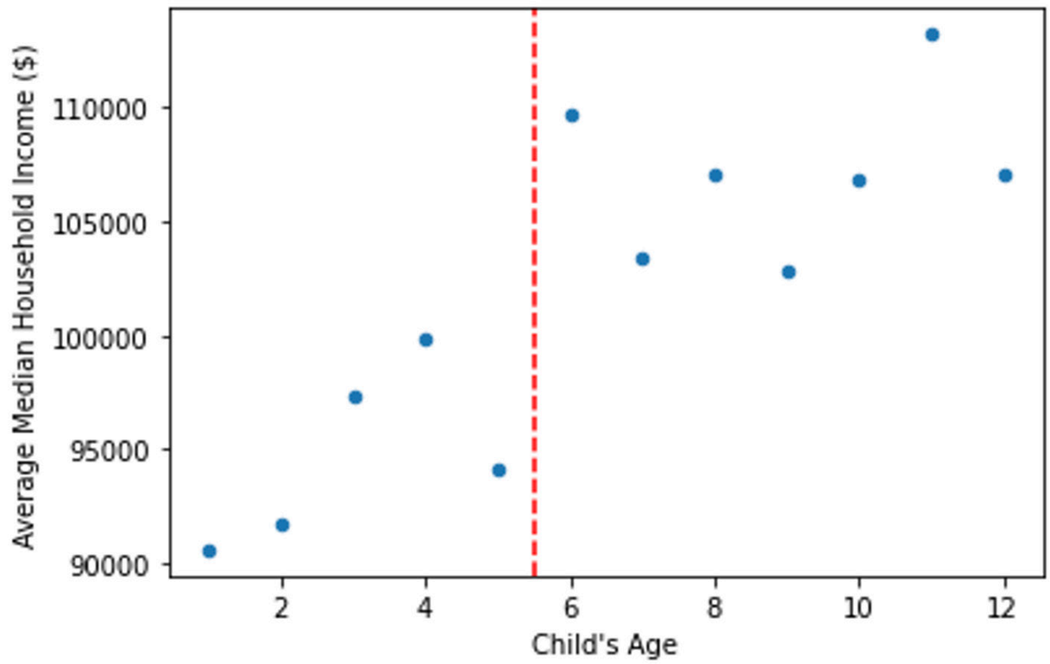
Methods and Data

Theoretical framework: Regression Discontinuity

In the policy world, it is very difficult, and often too expensive, to conduct randomized controlled trials to learn about the effectiveness of a policy. For example, to understand the effect of providing free child care, the state could run an experiment by randomly assigning families to treatment and control groups, providing free child care only to the treatment group, and measuring the effect of the policy. However, implementing such an experiment at a large scale is very costly, there are concerns about the true randomness of the assignment process, as well as equity concerns.

In absence of randomized trials in social sciences, "observational" approaches are used to create a hypothetical control group and build a "counterfactual" scenario that shows us what would have happened in absence of the implemented policy.

Regression Discontinuity Design (RDD) measures the treatment effect at a cutoff or threshold, the RDD compares subjects that are just above and just below the threshold, assuming that for subjects who are close to the cutoff, the difference in outcome mostly comes from the treatment because they are very close to each other in terms of the X variable.



Methodology and Data
In Colorado (prior to the rollout of the new, statewide universal preschool program from children ages 4 and up in the 2023-24 school year), most parents with children under 6 must make the decision of whether to work and arrange for paid child care, or not work and spend time caring for their child. Parents with children over 6 must still consider these decisions but are required by Colorado law for the child to begin school. All Colorado municipalities provide free public schooling to their citizens, and in effect, provide free child care for parents of children ages 6 and over.

We use data from the American Community Survey (ACS) 5-year estimates, which are Public Use Microdata files collected by the US Census Bureau. The 5-year estimate is a "period" estimate that represents data collected over the 2016-2020 period. The ACS is an ongoing survey that provides representative data on employment, income, family living situations, children in households, and the demographic and economic circumstances of individuals.

The data consists of all families with children from 0 to 17 years old, however, in order to apply RDD to estimate the effect of free child care on employment and income, we need to restrict the dataset to a narrower bandwidth around the threshold so the treatment and control groups are similar enough to compare. Otherwise, we would be comparing those with very young children to the families who have teenagers, and the second group likely has higher income due to factors such as more years of work experience rather than the availability of free child care. We limit the bandwidth to families with children between the ages of 3 and 10, so those with 3 to 5-year-old children are in the control group, and those with children 6 to 10 years old are in the treatment group.

Moreover, we limit the analysis to households that make under $250,000 a year, since, for very high-income families, child care cost is not a significant barrier for parents to enter the labor force.

Regression Discontinuity Model and Controls
The equation below shows the model we use for our analysis. Y is the outcome variable (household income, hours worked per week, or labor force participation), and the variable "treated" represents those in the treatment group (families with children 6 years or older). We know that household income is affected by various factors

and the availability of free child care is not the only factor impacting it. For this reason, we need to control for variables such as parent's education level, parents' age (since it can represent years of work experience), the industry in which parents are employed, and the presence of siblings under 6 years of age.

The error term (ε) represents all the unobservable factors that affect a household's income but are not explicitly controlled for in the model (e.g. a person's skills can significantly impact their income level, but cannot be observed or measured):

$$Y = \beta 0 + \beta 1 \text{ treated} + \beta 2 \text{ child's age} + \beta 3 \text{ mother's education} + \beta 4 \text{ mother's age} + \beta 5 \text{ father's education} + \beta 6 \text{ father's age} + \beta 7 \text{ sibling under 6} + \beta 8 \text{ industry controls} + \varepsilon$$

Coefficients β show the magnitude of the effect of each of the variables above on the outcome Y. Our main coefficient of interest is β1 which shows the effect of free child care on our outcomes.

Results

	Household Income	**Mothers' hours worked**	**Mothers' labor force participation**
Treatment group	$9,450*	3.19*	0.11**
Child's age	-$1,498	0.29	-0.008
Mother's education	$4,518***	1.1***	0.03***
Mother's age	$1,200***	0.02	0.003
Father's education	$4,429***	-0.79***	-0.01**
Father's age	$1,034***	-0.02	0.003
Sibling under 6 years old	-$5,521*	-4.9***	-0.10***
Industry controls	Yes	Yes	Yes
Number of observations	1295	1295	1295
Adjusted R-squared	0.34	0.09	0.09
* significant at p=0.1 ** significant at p=0.05 *** significant at p=0.01			

Grand Junction

	Household Income	Mothers' hours worked	Mothers' labor force participation
Treatment group	$5,155	0.72	-0.03
Number of observations	230	230	230
Adjusted R-squared	0.26	0.24	0.16
* significant at p=0.1 ** significant at p=0.05 *** significant at p=0.01			

Pueblo

	Household Income	Mothers' hours worked	Mothers' labor force participation
Treatment group	$4,727	0.36	0.14
Number of observations	330	330	330
Adjusted R-squared	.25	0.16	0.17
* significant at p=0.1 ** significant at p=0.05 *** significant at p=0.01			

Fort Collins

	Household Income	Mothers' hours worked	Mothers' labor force participation
Treatment group	$7,843	3.3	0.08
Number of observations	537	537	537
Adjusted R-squared	0.32	0.13	0.13
* significant at p=0.1 ** significant at p=0.05 *** significant at p=0.01			

Boulder

	Household Income	Mothers' hours worked	Mothers' labor force participation
Treatment group	$25,000	10.47**	0.35**
Number of observations	198	198	198
Adjusted R-squared	0.35	0.18	0.07
* significant at p=0.1 ** significant at p=0.05 *** significant at p=0.01			

Poverty Rates for Single Parents Higher in Rural Areas

	Children Under 6 Years Only	Children Between 6 and 17 only	Children Under 6 and Between 6 and 17
Grand Junction	29%	22%	42%
Pueblo	33%	25%	58%
Fort Collins	21%	14%	34%
Boulder	NA	11%	38%

Additional Considerations and Limitations

While our model clearly illustrates the need for affordable child care, it's important to understand the assumptions and limitations of this analysis before making causal conclusions. First, we assume that even if kids go to private school after 6, parents will go to work more and earn a higher income because education is compulsory by law. Parents don't have a choice of not sending kids to school, regardless of the amount of public dollars funding their child's education.

Second, not all mothers choose to stay at home, some choose to go to work and pay for child care. This choice doesn't reflect in the household income after the child turns 6, but rather in their savings.

Another limitation of this model is the small sample size at the local level. We are unable to draw statistically significant conclusions from the main regression at the local level for the Fort Collins, Pueblo, and Grand Junction metro areas because when we break down the data by location, we are left with fewer observations in each area. Additionally, our ability to disaggregate data on poverty rates for single parents was limited; the percentages in the data come from a small number of observations. While it's clear that higher poverty rates among single parents occur for parents of younger children and parents living in rural areas, the number of observations in each child age group is relatively low. For example, in Boulder there were less than 10 single-parent households with children under 6 only, limiting our ability to compare across geographies.

Despite these limitations to our analysis, we are still able to conclude from the body of existing research and our statewide data that investments in child care would be particularly beneficial for single parents, particularly mothers, and those with younger children. Further, based on our linear interpolation models which estimated the percentage of the workforce making less than minimum wage when we account for child care, we estimate that there would be greater returns to lowering the cost of child care in rural areas, where median incomes are much lower and poverty rates are higher on average. However, the small number of observations in rural areas like Pueblo and Grand Junction limits our ability to draw the same conclusion from our regression analysis.

Gaps in existing data at the local level present an opportunity for future research. In theory, areas like Pueblo could benefit more from child care investments, this hypothesis could be confirmed by using a larger data set to analyze the impact of costs on parents' workforce participation in Colorado's rural areas.

Conclusions and Policy Implications

This analysis tells us that free child care will boost mothers' workforce participation, bolster family economic security by allowing parents to earn more income, and increase the hours that mothers are able to work each week. When families had access to free child care, using our proxy of children turning 6 and having access to free compulsory schooling, families experienced a $9,450 increase in household income on average. Mother's hours worked each week also increased 3.19 hours per week, on average, and women were 11 percentage points more likely to participate in Colorado's workforce.

Increasing investments in the state care economy may be an economically efficient short and long-run strategy to address the current labor shortage and stymied job recovery in female-dominated sectors and boost long-run growth. Job numbers have lagged in Colorado's education and health, leisure and hospitality, and the state and local government sectors, which are portions of the economy that disproportionately employ Coloradan women and mothers. Child care is a significant barrier to work that could increase female employment in these sectors. Our analysis, along with dozens of economic studies over recent decades, also clearly show that bolstering the care economy would increase family economic security and improve life outcomes for Colorado's children.

Early evidence of successful policy responses to address the shortage in cities like Fort Collins indicates that strategies involving flexible work schedules for caregivers boost labor force participation in public sector jobs. Workplace policies targeted at working parents and caregivers might be complemented by increased investments in child care to further boost female workforce participation and hours.

Federal policies could make significant headway for working families by providing federal funds for states like Colorado for subsidizing child care costs for low and moderate-income families. The Child Care for Working Families Act, for example, would provide adequate funding for the Child Care and Development Block Grant (CCDBG) program, requiring states to base family co-payments on a sliding scale so that no family receiving assistance pays more than 7% of its household income on child care. It also provides the means for states like Colorado to close gaps in their care economy capacity by increasing the supply of child care providers and ensuring a living wage for child care workers. Finally, it would establish grants for states to create preschool programs for low and moderate-income families, ensuring that programs like the recent universal preschool program reach the families that need it most, including those with infants and toddlers who aren't currently eligible.

While federal action remains in flux, state lawmakers must take immediate action to address Colorado's care gap during the 2023 legislative session. The state has the authority to set subsidy reimbursement rates for the CCDBG program and could expand access to care for more families by basing these rates on alternative cost-based methodologies, as opposed to the rates set by the dysfunctional market, in order to ensure fair access and a model that accurately accounts for the high costs of providing care in Colorado.

Colorado's new Department of Early Childhood must prioritize both living wages for care workers and setting a high bar for the quality of care when determining the wage rates and setting standards for the new universal preschool program. Some child care providers and workers have noted that while child care workers may benefit from setting a high wage rate for the 10 hours of services provided to the 4-year-olds enrolled in the preschool program, "it's only 10 hours of those 4-year-olds' schedule." The limits to the program's scope and ages of eligibility mean that the wage standards set by the state may not be sufficient to improve working conditions and address the shortage of care across the state.

Lawmakers could address the wage penalties facing early child care workers by increasing the existing Early Childhood Educator Tax Credit to incentivize a strong workforce and further bolster the supply and quality of care across the state. One study found that modest bonuses of $1,500 for child care providers could have a large impact on retention, cutting departures from positions in half, from nearly 30% to only 13%. Improving retention in Colorado's care workforce through tax credits or pay raises could improve the quality of care for children, while also reducing the costs of turnover within the broken business model and help bolster capacity by ensuring care workers make a living wage.

Another issue with the program is the limited age range that it subsidizes care for; many advocates and providers are concerned the new program may have unintended consequences, particularly for small, home-based providers who cater to a larger age range that includes infants and toddlers. Some are questioning if they should accept children under the program, largely due to questions of the costs of altering their curricula and capacity to take on more preschoolers. However, because infants and toddlers are much more expensive to care for than older preschoolers, if these community-based providers opt out of the state's new universal preschool program, they risk families pulling their children out to send them to free programs elsewhere when they are old enough to enroll in it. One provider in Weld county voiced concern that losing these students could "probably decimate (my bottom line)," putting her at risk of closing at a time when capacity in Weld, along with the rest of the state, is already strained.

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Capacity is a major issue- even with the subsidy for 10 hours a week, there may not be enough licensed spots for the 4-year-olds who are eligible for the program, largely due to the continuing harms of the pandemic, poverty wages experiences by the child care workforce, and small margins for providers.

Universal Preschool was a step in the right direction but falls woefully short of building a care economy where providers can bear the costs, workers are paid a living wage, and families with children of all ages have the support they need to participate fully in the labor force.

Other long-term solutions may involve drawing from federal policy proposals; akin to the Universal Child Care and Early Learning Act, Colorado could expand the state's new universal preschool program to cover all infants and children. A full public option for all children would ensure that new parents of infants ages 0-3 aren't left behind at a time when families often need the most support.

While the existing, 10-hour-a-week program for 4-year-olds was funded with a voter-approved nicotine tax, equitably financing more robust early childhood care for all Coloradan families requires the state to explore different revenue-raising strategies. In order to lock down a sustainable and equitable revenue stream, Colorado could look into more fairly taxing income, wealth, or property.

Finally, Colorado's TABOR law hinders almost any effort on the part of legislators to utilize such funding streams. Not only does TABOR ban statewide property taxes, but it also mandates that Colorado's income tax rate is not allowed to go up as earnings increase. This eliminates the possibility of legislators passing creative revenue-raising ideas like taxing investment income at a higher rate or a millionaire's surtax. Until we can enact significant constitutional fiscal reform, critical programs like early child care will continue to rely on regressive consumption taxes, or they will compete with priorities in Colorado's already-tight budget.

With momentum building to address this issue and finally lower child care costs for parents of kids of all ages, this new data and modeling should help show why investing in child care now will pay big dividends in the future.