

Technical Documentation for:

# Think Small's Ramsey County Early Childhood Academy

Impact Analysis and Social Return on Investment

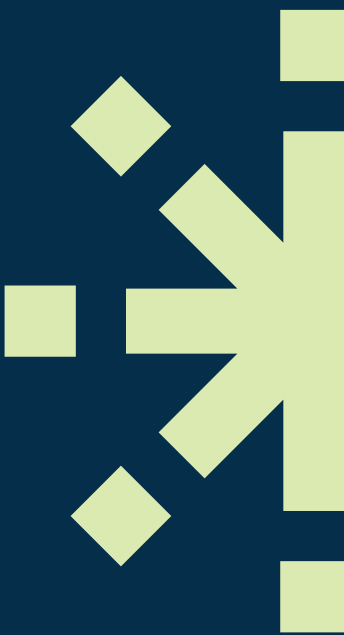
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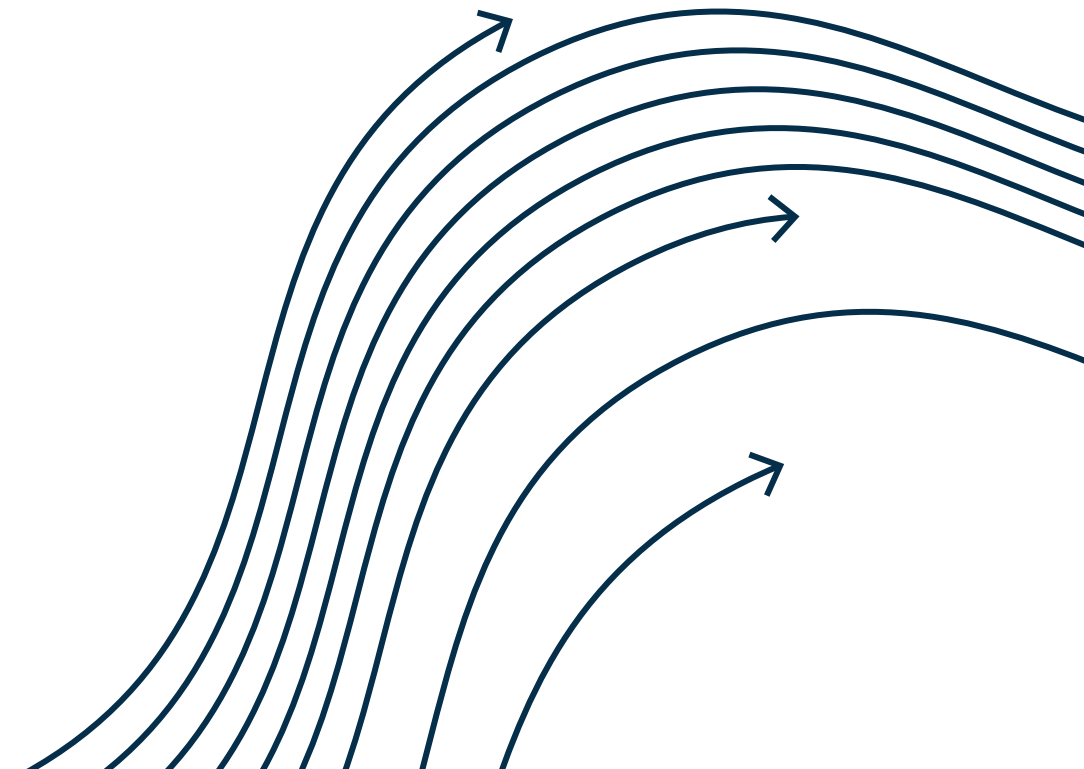
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## About this Report

Ecotone Analytics conducted this impact analysis and calculated the projected social return on investment for Think Small. This report considers the impact of Think Small's Ramsey County Early Childhood Academy, a strategy designed to incentivize child care providers to progress from licensed care to quality programs.



## About Ecotone Analytics

Ecotone Analytics is an impact accounting organization that does benefit-cost analysis for clients' social and environmental impacts. Combining evidence-based research analysis and monetization of impact outcomes, Ecotone derives a social return on investment ratio and identifies the key stakeholder groups to whom those impact benefits accrue. Results are communicated using a proprietary visualization of the flows of value that result from the initial investment.

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*Disclaimer:* This assessment addresses the impact measurement and management systems, practices, and metrics employed by the impact assessment consultants. It does not address financial performance and is not a recommendation to invest. Each investor must evaluate whether a contemplated investment meets the investor's specific goals and risk tolerance. Ecotone Analytics GBC (Ecotone), its staff, and Ecotone analysts are not liable for any decisions made by any recipient of this assessment.

This assessment relies on the written and oral information provided by the analyst at the time of the Ecotone analysis. Under no circumstances will Ecotone, its staff, or the Ecotone analysts have any liability to any person or entity for any loss of damage in whole or in part caused by, resulting from, or relating to any error (negligent or otherwise) or other circumstances related to this assessment.

# Executive Summary

Ramsey County Workforce Solutions and Think Small partnered to create the Ramsey County Early Childhood Academy (Early Childhood Academy), a 3-year initiative designed to build an inclusive care and education system where children and child care providers reach their full potential. The Early Childhood Academy strengthens child care provider knowledge, improves business retention with its support services, and recruits new child care industry talent through incentives and professional development. Ecotone Analytics conducted an impact analysis and calculated a social return on investment (SROI) for the Early Childhood Academy.

This analysis began with an agreed upon depiction of the Early Childhood Academy logic model, i.e. the roadmap for how a given set of inputs and activities will generate the outcomes and impact desired. From there, external literature's study of the effect of business and quality support services on child care business outcomes, the role of professional development and mentorship on child care provider wellbeing, the impact of access to child care on children's academic outcomes, the benefits of quality child care, the impact of access to child care for parents and loved ones, among other subjects, all informed the identification of outcomes to monetize for this SROI.

Following our research and analysis, we project that the SROI generated by the Early Childhood Academy is \$2.46 [1]. That is, **for every \$1 dollar spent by Think Small to serve Early Childhood Academy providers, there is a projected \$2.46 in social value generated through improved physical and mental health for child care providers, increased earnings for child care providers, parents, and children, reduced special education placement, and reduced grade retention.**

The largest outcome monetized was the increased lifetime earnings for parents from avoided child care closure (\$1,134,750), followed by increased lifetime earnings from increased educational attainment for children (\$473,500). Amongst stakeholders, the leading beneficiary are parents and loved ones, followed by taxpayers and children served.

Based on this analysis, we have identified recommendations for future impact measurement, operational management, and strategic opportunities to consider pursuing. This includes leveraging the UN Sustainable Development Goals as well as the Impact Management Project's 5 dimensions of impact to communicate the type of change being facilitated by the Early Childhood Academy. Further discussion on recommendations are included starting on page 26.

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[1] The SROI here is communicated as a benefit-cost ratio. SROI can also be communicated as a percent return, similar to a financial ROI which reflects a net SROI. Using the two definitions, the Early Childhood Academy can be framed as \$2.46 or 146%. Each is valid although we utilize the benefit-cost ratio framing throughout for consistency and to minimize potential confusion.

# Introduction and Research Question

The Early Childhood Academy is a 3-year initiative created by Ramsey County Workforce Solutions and Think Small to build early child care provider capacity and strengthen business sustainability. The initiative was designed in response to the not only growing need to stabilize early child care businesses after the Covid-19 pandemic, but also to support community members in the return to work. As such, the Early Childhood Academy is not solely a workforce program, but rather, a community support initiative designed to boost child care providers' sustainability and wellbeing, decrease barriers to child care and increase employment and education opportunities for parents, and advance the quality of care and education children receive.

To build a stronger child care system, the Early Childhood Academy focuses its services in three main areas:

- **Workforce retention and development** – supporting licensed child care programs with training requirements and providing retention bonus and wage subsidy to keep businesses operating
- **Workforce recruitment and development** - encouraging additional child care programs to open by providing career development, training, and retention bonus
- **Business startup supports** - support child care providers in becoming licensed by providing coaching, mentorship, and training

Services are individualized, and each of the areas of work incentivizes child care providers to move from licensed to quality child care businesses. The academy prioritizes family, friends, and neighbors providers in child care desert areas, along with English Language Learners (ELL) and BIPOC child care providers.

Ecotone Analytics conducted an impact analysis and calculated a social return on investment (SROI) for Think Small and Ramsey County Workforce Solutions. The analysis takes a benefit-cost approach to external literature of the highest available level of evidence of causality to project the social value generated by the Early Childhood Academy. The analysis is guided by the following research question:

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## Research Question:

What is the estimated social return on investment for Think Small's Ramsey County Early Childhood Academy and what are the the key outcomes experienced, and to whom do the benefits accrue?

# Structuring the Analysis

# Scoping

Ecotone collaborated with Ramsey County Workforce Solutions and Think Small, discussing the Early Childhood Academy mission, vision, and planned service offerings. Over a series of meetings, we learned more about the primary areas of service, including workforce retention and development, workforce recruitment and development, and business startup support. The scope of this analysis was refined, narrowing the focus on home-based child care providers. While the Early Childhood Academy may serve center-based child care providers, this report considers only home-based child care given the academy’s priority to serve family, friends, and neighbors providers as well as Think Small and Ramsey County Workforce Solutions’ goal to serve the more diverse communities typically reached by home-based child care providers.

From there, the scoping process was informed by our own review of external literature and additional meetings with Think Small and the Ramsey County Workforce Solutions teams. These meetings covered the projected costs required to deliver the academy, the variability in individual child care provider needs, characteristics of child care providers served, and the potential incentives structure. Our review of external literature focused on research aligned to the Early Childhood Academy, including understanding the impact of incentives on early child care providers; the role of business supports on business outcomes; the role of quality supports on ratings; the impact of mentorship and learning communities on child care provider wellbeing; the impact of access to care on child education outcomes; the need to support the child care industry given the Covid-19 pandemic impacts and barriers to return to work; and the variation between home-based, center-based, and parental- or guardian-only child care. Table 1 summarizes the analysis scope.

**Table 1. Scoping Summary**

Target Audience for Analysis	Policy makers, Board members, Ramsey County Commissioners, and American Rescue Plan evaluators care
Population Served	Serving Ramsey County early child providers, including those with established programs and those starting their own in the County. Priority is given to family, friends, and neighbors (FFN) in child care desert areas as well as English Language Learners (ELL) and BIPOC providers.
Scale	The Early Childhood Academy is estimated to serve nearly 100 providers each year. Incentives range from \$500 to \$1,500, disbursed in two payments (Think Small, Wage Subsidy Models).
Community Need	The Early Childhood Academy serves Ramsey County, which ranks 67th on quantity of child care among Minnesota’s 87 counties (UMN Early Care & Education Access Report, 2020). The Covid-19 pandemic has only worsened access to child care. A Center for American Progress analysis estimated that 55% of Minnesota’s child care supply is at risk of disappearing if they are unable to receive adequate support during pandemic closures (Jessen-Howard & Workman, 2020). Investment in the Ramsey County Early Childhood Academy will stabilize child care and ensure new opportunities, connecting individuals to essential resources.
Theory of Change	Build an inclusive care and education system to support children’s full potential by strengthening provider knowledge, retaining businesses, and recruiting talent through incentives and professional development to advance quality care and education.



# Key Stakeholders

**Table 2.** Key Stakeholders

Public	Private	Community	Cross-sector
<ul style="list-style-type: none"> <li>· Department of Employment and Economic Development</li> <li>· Department of Human Services</li> <li>· Department of Public Safety</li> <li>· Department of Treasury</li> <li>· Other public health agencies</li> <li>· Federal Reserve Bank</li> <li>· County Commissioners</li> <li>· Policy makers</li> <li>· Educators &amp; education system</li> </ul>	<ul style="list-style-type: none"> <li>· Future employers</li> <li>· Ramsey County businesses</li> </ul>	<ul style="list-style-type: none"> <li>· Early childhood providers, prioritizing promise neighborhoods, BIPOC, and ELL providers</li> <li>· Children and their families, parents, siblings, guardians, caretakers, etc.</li> <li>· Ramsey County residents</li> <li>· First Children’s Finance</li> <li>· Community organizations &amp; nonprofits working in early childhood, education, health, human services, and homelessness</li> </ul>	<ul style="list-style-type: none"> <li>· ECE providers, advocates, and workforce nationwide</li> <li>· Early childhood certificate &amp; degree programs</li> <li>· Donors</li> <li>· Researchers</li> </ul>



# Assumptions

This analysis is a projected social return on investment for the Early Childhood Academy. The following are the core assumptions. Additional assumptions are built into the individual outcome estimates and are available in Appendix B.

- **Counterfactual:** This analysis is assumed to be in comparison to child care providers not otherwise accessing and participating in a business support and incentive program.
- **Characteristics of family child care providers and children:** Given Think Small's focus on serving family, friends, and neighbors care, this analysis considers home-based or family-child care providers. While there are differences between the participating child care providers and children reached, we assign an average benefit per person served / reached in alignment with the secondary research or based on Think Small provided data, where possible.
- **Number of child care providers served:** Annually, Think Small estimates reaching 100 child care providers, or a total of 300 child care providers over the course of the 3 year project. Of these, we assume Think Small will serve several child care providers for multiple years and estimate the number of unique providers served at approximately 170. See outcome estimations in Appendix B for more details.
- **Number of children reached:** Licensed family care providers can serve a maximum of 12 children, with 10 under school age. This analysis assumes child care providers are typically operating at 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minneapolis Federal Reserve Bank survey (Tran, 2022).

- **Duration of impact:** Different outcomes have a different projected duration based on the type of outcome and who is receiving the value of the outcome.
- **Multi-year benefits** are discounted to a present value with a 4% discount rate.

### *Additional Clarifications*

This is a prospective analysis framed by the planned Early Childhood Academy service offerings. We do not know the true value generated by the Early Childhood Academy. While each child care provider, parent and loved one, and child reached will have a different experience and realize different types of benefits, our analysis frames the benefits as the total average value created. This should not diminish the stories of the individuals engaged.

# Logic Model

## Logic Model Key

### 1. How to Read It

Reads from left to right, with each column collectively influencing the column to its right and being influenced by the column on its left.

### 2. Relationship Between Columns

Individual lines do not necessarily link directly to those immediately on their left or right, although these specific causal chains will be established in our next steps.

### 3. Purpose

Connects 'Inputs', those resources required to begin, with the projected final 'Impact' resulting and attributed to the Early Childhood Academy.

### 4. In Comparison to What

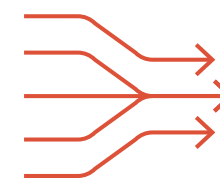
Outcomes and Impact described in the logic model are assumed to be in comparison to not having access to the Early Childhood Academy.

The following tables show the logic model, identifying the planned inputs, activities, and outputs for the Early Childhood Academy, and from there, describing the outcomes accruing from all those activities conducted. These outcomes can be distinguished by whether they were short-term outcomes, intermediate outcomes or long-term outcomes (those achieved indirectly from the short-term and intermediate outcomes achieved). Last are the impacts directly attributed to the Early Childhood Academy. The logic model serves as the map of the analysis, as intermediate and long-term outcomes are those we seek to monetize to calculate the final SROI.

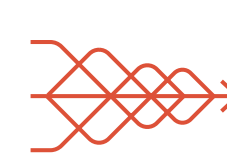
Of note, while pursuing monetization for all those pathways identified in the logic model, inevitably some have a better evidence base than others, and in some cases, the data is too lacking to pursue monetization with a reasonable causal understanding. The following sections will describe in detail those pathways that were successfully monetized.

Logic Model components and their sequence:

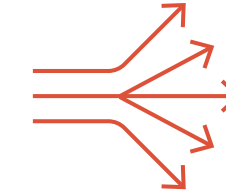
Inputs



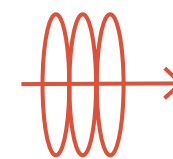
Activities



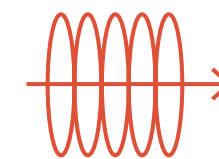
Outputs



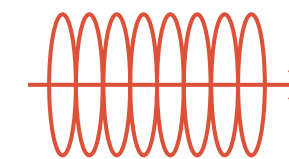
Short-term Outcomes



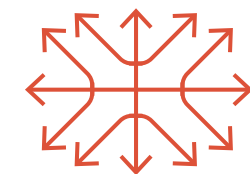
Intermediate Outcomes



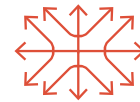
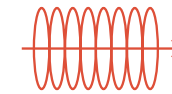
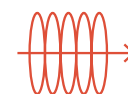
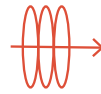
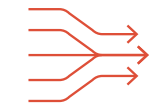
Long-term Outcomes



Impact



# Think Small Complete Logic Model



**Inputs**

**Activities**

**Outputs**

**Short-term Outcomes**

**Intermediate Outcomes**

**Long-Term Outcomes**

**Impact**

- Think Small staff & leadership
- Early childhood providers, currently serving or starting to serve Ramsey County
- Partnerships with state agencies, school districts, early childhood advocates, other nonprofits

**Administration**

- Data management system
- Results Based Accountability (RBA) framework
- Overhead expenses (office space, utilities, internet, equipment, etc.)

**Funding**

- Government Grants, including American Rescue Plan Act
- Independent donors

**Ramsey County Early Child Academy**

- Intake process with eligibility surveys
- Coaching and case records for providers

*Workforce Retention & Development*

- Retention Bonus
- In-service training

*Workforce Recruitment & Development*

- Retention bonus
- Recruitment
- Child Development Associate (CDA) Training
- Pre-service training

*Business Startup Support*

- Learning Community
- Mentorship & stipend
- Licensing requirements support
- Pre-service training
- Parent Aware Training

**Early Care Providers**

- Building quality, safe learning and care environments
- Engaging children in developmentally appropriate learning activities
- Assessing childrens' progress
- Implementing research-based best practices

**Ramsey County Early Child Academy**

- # of providers
- Total \$ retention bonus
- Avg. \$ retention bonus per provider
- # of programs earning Parent Aware rating
- Avg. Parent Aware rating
- # and % of quality child care programs
- Retention rate for businesses & employees

**Early Care Providers**

- # and % of children participating in quality child care programs
- # of days / % of year children participate in quality program
- Avg. child to provider ratio

**Providers**

- Increased business education, training, technical support
- Increased business creation
- Increased understanding of licensing process and Parent Aware ratings
- Increased support for children's development
- Increased access to resources to help children learn and develop essential skills and behaviors

- Improved Parent Aware rating
- Increased immediate earnings from bonus and wage stipend
- Decreased financial stress
- Increased positive relationships with children
- Increased job satisfaction
- Increased interest in pursuing ECE degrees / education (for those currently not operating a business)
- Improved business skills & knowledge
- Increased job creation
- Increased provider retention

- Improved business sustainability
- Improved early care environment
- Improved health and wellbeing
- Increased participation in education, learning and improving business

- Inclusive and equitable care and education system
- Increased quality of life
- Increased self-sufficiency
- Increased family economic security
- More qualified, diverse ECE workforce
- Increased equity in provider salary
- Increased local economic activity

**Children**

- Improved / stable learning environment
- Improved child-provider relationships
- Improved social and academic developmental progress

- Increased age-appropriate social-emotional skills
- Increased kindergarten readiness
- Improved literacy and language skills
- Reduced special education placement / need for remedial support
- Improved achievement and literacy test scores

- Reduced arrests for drug, property and violent crimes
- Increased educational attainment / high school graduation rate
- Increased earnings
- Improved health and safety
- Improved well-being

**Families of Children and Community**

- Increased availability and accessibility of child care (and reduced pandemic-related child care losses)
- Increased accessibility of quality child care
- Increased number of child care providers licensed
- Increased number of Parent Aware rated child care providers
- Increased parenting knowledge and engagement with care provider

- Increased opportunities to pursue education and career pathways
- Increased productivity from fewer missed workdays
- Increased support for child's development and kindergarten readiness

- Reduced stress
- Increased earnings
- Improved family stability
- Improved child care capacity and resiliency

# Projected Costs

Costs for the SROI calculation use the total 3 year expenditures of the Early Childhood Academy and were derived from the budget provided by Think Small. This includes all costs borne to deliver the program including staff, financial incentives paid to child care providers, supplies, data software and services, as well as mentorship, apprenticeship, and training costs. Table 3 shows the budgeted annual and total expenditures for the 3 years.

**Table 3. Annual and Total Early Childhood Academy Expenditures**

Year 1	Year 2	Year 3	Total
\$234,538	\$236,931	\$239,437	\$710,906

# Projected Outcomes

Below are the long-term outcome benefits attributed to the Early Childhood Academy. These outcomes are referred to as the marginal benefit (the cost / benefit of an event occurring multiplied by the likelihood of that cost / benefit occurring). Multi-year benefits are presented here as net present value (NPV).

Shaded cells denote outcomes that were either trumped by other outcomes (i.e. overlap in some way) or were outcomes that we built projections for but due to current data limitations, were not incorporated into the total SROI. Appendix B details these pathways further.

**Table 4. Monetized Pathways – the Net Present Value (NPV) of benefits valued**

Stakeholders	Outcomes	Marginal Benefit
Families / Loved Ones	Avoided lost lifetime income (avoided business closure)	\$1,134,749
Children	Increased earnings from additional education (increased kindergarten readiness)	\$113,191
Children	Increased earnings from increased educational attainment (quality program)	\$360,310
Children	Reduced special education placement (quality program)	\$33,483
Children	Reduced grade retention (quality program)	\$42,577
Providers	Improved mental health from decreased financial stress	\$55,005
Providers	Increased earnings from increased enrollment from higher quality rating	\$7,483
Providers	Improved physical health / reduced mortality from incentive payment	\$59
Providers	Increased earnings for provider from avoided business closure	-
Children	Increased earnings from increased educational attainment (avoided business closure)	-
Providers	Increased job satisfaction / reduced risk of burnout	-
Children	Increased social emotional skills from reduced educator burnout / improved educator-child relationships	-
Children	Improved academic outcomes from reduced educator burnout / improved educator-child relationships	-
Children	Reduced special education placement (kindergarten readiness)	-
Children	Reduced grade retention (kindergarten readiness)	-
<b>Total</b>		<b>\$1,746,858</b>

# Key Metrics

The key metrics that drive value creation in this estimation include:

- Proportional change in likelihood of provider business closure from business supports
- Proportional change in provider's financial stress from incentive payment
- Reduction in likelihood of child's special education placement or grade retention from quality home-based care
- Increased educational attainment by child from participation in quality child care program
- Increase in child's kindergarten readiness from participation in home-based care and likelihood of graduating high school from improved kindergarten readiness
- Additional earnings from child's high school graduation vs. not graduating high school
- Avoided lost income for parents from avoided time out of work due to increased access to child care
- Likelihood of provider becoming 3- or 4-star quality Parent Aware rated from business supports
- Proportional change in enrollment with provider due to program quality gains

These metrics were especially important to delivering the outcome values projected. However, we do not expect each of these to be readily trackable by Think Small or Ramsey County Workforce Solutions. As a result, a later section notes the recommended Key Performance Indicators (KPIs) that Think Small or Ramsey County Workforce Solutions may track to help understand the impact of the Early Childhood Academy. Further, as these metrics were the most important for determining the monetized outcomes, that is not to say there are not other metrics that are valuable and important to track as well. The following paragraphs describe the estimation process in more detail and show why several of the above metrics became important to the monetized outcomes.



## KEY METRICS

### *Avoided lost lifetime income for parents and loved ones*

A Center for American Progress analysis estimated that 55% of Minnesota's child care supply is at risk of disappearing if they are unable to receive adequate support during pandemic closures (Jessen-Howard & Workman, 2020). Stabilizing these businesses and maintaining access to child care is essential for not only child care providers, but parents, employers, and community members. This monetized pathway explores the impact of stabilized child care on parents and loved ones.

We first estimate the number of families who would be impacted by Think Small and its Early Childhood Academy. Beginning with the maximum number of children a licensed family care provider can serve, we modify child care providers' operation to 80% capacity based on information from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022). Then, we take the proportion of children per provider that are pre-kindergarten or younger and not in multiple child care arrangements. We include this assumption to control for the potential barriers parents face, as parents with children old enough to attend kindergarten face different barriers to child care and work. Based on this number of children reached per child care provider, we include an additional assumption around the number of children per family to understand how many unique families are impacted per child care provider. This analysis assumes one working adult is impacted per family.

With this number of families reached per provider, we scale the outcome to the number of providers Think Small will reach. Current modeling assumes the Early Childhood Academy will reach 100 child care providers per year, or 300 total child care providers over the course of the program. Since the program allows for multiple years of child care provider participation and it is still in development, we must include an assumption for how many unique providers are served. We assume

that in the first year, all 100 providers are unique, and in the second and third years, 75% providers will return. The second and third year estimate is based on the Parent Aware evaluation, which reported the number of programs receiving a second rating after the initial rating.

To explore how much more accessible child care is to these parents and to what extent they are avoiding child care breakdowns, we leverage Think Small's Pathways to Quality report, which found that providers receiving business support services closed their businesses at a lower rate than those who did not receive business supports (Baker et al., 2019). We apply this decreased rate of business closure to the percent of child care businesses at risk of closing, based on a 2019 legislative report (Minnesota Department of Human Services, 2020).

This avoided closure is valued using the cost of a year out of work. A Center for American Progress report explores the lifetime income loss from being out of work due to child care, including lost annual salary, lost potential wage growth, and lost retirement savings (Center for American Progress, n.d.). We assume that the parents impacted are primarily mothers who earn the median Ramsey County salary and leave the workforce for 1 year at age 30. We control for the cost of child care and apply this to the 20% of mothers not currently working who would look for a job if they had better access to child care.

## KEY METRICS

### *Increased earnings from children's increased educational attainment*

While Think Small works with child care providers to strengthen their knowledge and businesses, a core part of a strong and inclusive care and education system is the children served. This outcome includes two monetized pathways: increased earnings from children's improved educational attainment due to quality child care and increased earnings from children's improved educational attainment due to increased kindergarten readiness.

### Increased earnings from improved educational attainment due to quality child care

This pathway takes the proportion of children not in multiple child care arrangements and between the ages 3 and 5. This is to align with evidence on the benefits of early childcare (as opposed to serving school-age children).

As described in the "Avoided lost lifetime income for parents and loved ones" section, we assume that the academy will serve 170 unique providers and they are operating at 80% capacity. However, we only apply this outcome to the child care providers who are 2-star rated. We combine this with the increased likelihood of quality rating improvement from participation in the Early Childhood Academy. This likelihood is derived from the Minnesota Parent Aware evaluation, which found that most providers increased their rating by at least one star (Tout et al., 2011). This one star improvement is why we apply this outcome to only 2-star rated providers, as we assume they move from 2-stars to 3-stars, with 3-stars being considered the quality rating threshold to be categorized as "high-quality". This helps us ensure alignment with the evidence base and its focus on high-quality programs.

With the number of children participating in quality child care, we leverage McCoy et al (2017), a meta-analysis on early childhood care and education. We reference the improvement in high school graduation from participation in quality early care programs; however, we must modify the expected increase in graduation rates as the programs included in the meta-analysis are primarily center-based programs. We are limited in our understanding of how center-based early care programs compare to home-based care. As a result, we leverage Bassok et al (2016) to modify the effectiveness of center-based early child care on educational attainment. Bassok et al. (2016) includes the Early Childhood Environment Rating Scale (ECERS) and Family Day Care Rating Scale scores for center- and home-based care, which we use to estimate the difference in home-based and center-based care. We assume this average applies to high quality care as well, isolating how much less effective high quality home-based care is than high quality center-based care on average.

This pathway is monetized by the additional earnings from graduating high school compared to those without a high school diploma. We control for likelihood of going on to college if graduating high school as well as the proportion of earnings causally attributable to education level. Lifetime earnings gains are based on the net present value (NPV) at age 3 at a 4% discount rate, estimated based on Tamborini et al. (2015).



## KEY METRICS

### Increased earnings from improved educational attainment due to increased kindergarten readiness

This pathway begins in a similar manner as the previous one, “Increased earnings from improved educational attainment due to quality child care”, taking the proportion of children not in multiple child care arrangements, proportion of children between the ages 3 and 5, and assuming child care providers are operating at 80% capacity.

Although we estimate the Early Childhood Academy will reach 170 child care providers, we do not apply this outcome to the entire 170 child care providers reached. Rather, we omit the 2-star rated child care providers to avoid the double counting of benefits and overlap with the children reached in the previous “Increased earnings from improved educational attainment due to quality child care” pathway. Children participating in unrated, 1-, 3-, or 4-star programs may also be experiencing gains in program quality due to Think Small’s business support services; however, at present we are limited in our understanding of how much of a quality change an unrated, 1-, 3-, or 4-star child care provider would experience. As a result, the previous pathway conservatively applied the education gains from changes in quality child care to only children reached by 2-star providers. For the remaining children reached, and the focus of this pathway, we apply education gains from the broader access to child care. We estimate the increased access to care using the same method described in “Avoided lost lifetime income for parents and loved ones”, which referenced Baker et al. (2019) for the lower rate of business closure due to business support services and apply this to the child care businesses at risk of closing.

Then, we reference Trent (2019) for the improved kindergarten readiness from participation in child care. Trent (2019) reported that nearly 30% more children who attended child care were ready compared to those who stayed home prior to kindergarten. Additional studies show the benefit of attending early care programs on kindergarten readiness and early language / literacy scores (Schochet et al., 2020; SRI International, 2015; Magnuson et al., 2007). Much of this research, however, focuses on center-based care, and there is relatively limited understanding for how much home-based care improves children’s readiness compared to no early care / parental only care.

We combine this increased kindergarten readiness with the increased likelihood of graduation from kindergarten readiness scores (INNOVATIONS in Community Research and Program Evaluation, 2020). This is monetized in the same way as the increase in education attainment from access to quality childcare was/is, which controlled for the likelihood of going to college if graduating high school, the proportion of earnings causally attributable to education level, and the net present value (NPV) at age 3 at a 4% discount rate (Tamborini et al., 2015).

## KEY METRICS

### *Improved mental health of providers from decreased financial stress*

A survey of early care and education teachers found that 57% were somewhat to strongly worried about their financial situation. There are uncertainties in how much an incentive from the Early Childhood Academy would reduce child care providers' financial stress and anxiety. Bassok et al (2021) explored the impact of a \$1,500 financial bonus if teachers remained at their teaching site for at least 8-months and found that 57% of teachers said the payments helped very much with personal and family needs.

To understand how much an estimated \$1,000 incentive would impact Early Childhood Academy providers, we reference a Bankrate survey reporting that 56% of people do not have enough savings to cover an unplanned expense of \$1,000. We combine this with the 11% reduction in likelihood of exhibiting anxiety from having an additional debt paid off (Ong et al., 2019). This is valued using the cost of anxiety disorder (Marciniak et al., 2005).

### *Reduced grade retention and special education placement*

These two outcomes closely follow the estimation process for “Increased earnings from improved educational attainment due to quality child care”. We multiply the number of children reached by 2-star Parent Aware rated child care providers with the increased likelihood of a higher Parent Aware rating for child care providers receiving quality supports, multiplied by the reduced special education placement or grade retention from participation in quality early care based on McCoy et al., (2017). We apply the same reduced effectiveness assumption of home-based versus center-based care (based on Bassok et al., 2016) to the McCoy et al.,

(2017) figures. These are valued using the cost of special education and cost of grade retention.

Notably, we only include an estimate for reduced special education and reduced grade retention for improved access to quality child care. We are able to incorporate these outcomes created by access to quality child care because there is evidence to suggest how quality center-based care outcomes may differ in a quality home-based environment (Bassok et al., 2016). We do not include estimates for reduced special education and reduced grade retention due to increased access to child care more broadly and the associated kindergarten readiness. This is because when not considering the quality of the child care program—instead solely examining access to care—there is limited evidence to understand:

1. How access to home-based care compared to no care or parental-only care impacts kindergarten readiness or educational attainment outcomes
2. How home- versus center-based care differ on outcomes when not considering quality

The first limitation described above is also why we are unable to include a more general additional earnings estimate for children due to improved educational outcomes from avoided child care business closure. Ideally, we could combine the number of children reached with the increased access to early child care (from decreased likelihood of business closure from business supports), and multiply this by the increased educational attainment from participation in an early child program compared to no participation. But because we do not know how access to home-based care compared to no care or parental only care impacts kindergarten readiness or educational attainment outcomes we instead rely on other additional earnings estimates. This is an area deserving of future research.

## KEY METRICS

### *Increased earnings to providers from increased enrollment from higher quality rating*

Using the number of 2-star Parent Aware child care providers reached, we multiply by the increased likelihood of quality rating improvement from participation in the Early Childhood Academy based on the Minnesota Parent Aware evaluation. There are uncertainties in how enrollment could change upon higher quality program rating; however, based on milestone meeting conversations, a quality rating increases the likelihood of a child care provider being in business, and evidence suggests that relationships with families are impacted by the ratings (Tout et al., 2019).

Bassok et al., (2019) measured the enrollment differences for center-based programs rating above and below 4.5 on environment rating scale (ERS). We use this as a conservative proxy, saying preserved enrollment will occur when moving from low quality to high quality. As this was a study on center-based care, we assume this is relevant for home-based care as well. This outcome is then valued using the additional annual income per child (Child Aware of Minnesota, 2022).

This is the only earnings estimate we include for child care providers. We attempted to include an earnings estimate for child care providers based on the decreased likelihood of business closure. This outcome was deemed non-monetizable, however, because of the limited understanding of how child care providers' earnings would change upon business closure. Child care providers may move to higher paying positions within the early child care and education industry, or they may exit the industry (retire or become employed in a new field). Future data collection and secondary research could support inclusion of this outcome in subsequent analyses.

### *Improved physical health / reduced mortality of providers from incentive payment*

Lenhart (2019) analyzed the effect of income on health, using the relationship of the Earned Income Tax Credit. The study reported an increased likelihood of insurance from additional income. Because the Earned Income Tax Credit analyzed by Lenhart (2019) includes benefits of up to approximately \$4,000, we scale the benefit. We assume it grows linearly with additional income gained, and if the nominal increase in earnings experienced by providers based on incentive payments is a weighted average of nearly \$1,000, the potential benefits noted by Lenhart (2019) can be reduced by 1/4.

We combine this increased use of health insurance with Goldin et al. (2019), a randomized a randomized study finding a reduction in mortality due to health insurance. We apply this reduced rate of mortality to the 170 child care providers receiving an incentive and value this pathway with the value of statistical life year (Viscusi & Hersch, 2007).

## Non-Monetized Outcomes

Some outcomes are not readily monetizable given limited data to understand how the many impacts may be realized, how they interact and the extent they can be isolated and attributed to the Early Childhood Academy. These potential benefits may accrue to child care providers, parents and loved ones, children, community members, employers, or other stakeholders not yet identified.

It is important to note that where data limitations restrict the ability to monetize an outcome there may continue to be significant value not presently represented in this SROI. The numbers we have calculated in this analysis are conservative and can be considered a baseline onto which additional non-monetized outcomes can be added.

### Examples of non-monetized outcomes include:

- More inclusive and equitable child care and education system
- More qualified, diverse early child care workforce
- Increased local economic activity
- Increased community well-being and social cohesion
- Increased racial equity
- Improved family stability

# Projected Social Return on Investment

Think Small's Ramsey County Early Childhood Academy has a positive social return on investment, generating \$2.46 for every \$1 dollar spent by Think Small to serve child care providers. This is the benefits generated by the child care providers served, divided by the total cost of the Early Childhood Academy. Table 5 displays the SROI by stakeholder.

**Table 5.** Projected SROI by stakeholder

SROI	
Total	\$2.46
Parents	\$1.17
Children	\$0.49
Taxpayers - Federal	\$0.38
Taxpayers - State	\$0.18
Schools	\$0.11
Taxpayers - Local	\$0.07
Health Insurers	\$0.04
Provider	\$0.02

# Outcome Attribution Ratios

In order to estimate the SROI to each stakeholder, we must estimate the extent each outcome affects the relevant stakeholder. The table below shows how the value of each outcome (left column) is allocated to the given stakeholder (top row). Of note, the stakeholders with value assigned to them only include those with associated monetized outcomes. This stakeholder breakdown should be viewed as

a preliminary estimate to note the potential scale of value to target beneficiaries. As future research is developed it will allow us to understand the value created for other stakeholders.

**Table 6. Outcome Attribution Ratios**

Outcome	Provider	Parents	Children	Taxpayers - Federal	Taxpayers - State	Taxpayers - Local	Schools	Health Insurers
Improved physical health / reduced mortality from incentive payment	\$58.67							
Avoided lost lifetime income (avoided business closure)		\$833,113.01		\$180,075.05	\$84,883.21	\$36,677.93		
Increased earnings from additional education (increased kindergarten readiness)			\$83,102.81	\$17,962.44	\$8,467.08	\$3,658.61		
Increased earnings from increased educational attainment (quality program)			\$264,533.47	\$57,178.17	\$26,952.47	\$11,646.13		
Reduced special education placement (quality program)							\$33,483.45	
Reduced grade retention (quality program)							\$42,577.29	
Improved mental health from decreased financial stress	\$6,600.56			\$17,931.53	\$5,170.44			\$25,302.16
Increased earnings from increased enrollment from higher quality rating	\$7,483.22							
Increased earnings for provider from avoided business closure								
Increased earnings from increased educational attainment (avoided business closure)								
Increased job satisfaction / reduced risk of burnout								
Increased social emotional skills from reduced educator burnout / improved educator-child relationships								
Improved academic outcomes from reduced educator burnout / improved educator-child relationships								
Reduced special education placement (kindergarten readiness)							\$0.00	
Reduced grade retention (kindergarten readiness)							\$0.00	
<b>Total</b>	<b>\$14,142.46</b>	<b>\$833,113.01</b>	<b>\$347,636.28</b>	<b>\$273,147.20</b>	<b>\$125,473.20</b>	<b>\$51,982.67</b>	<b>\$76,060.75</b>	<b>\$25,302.16</b>



## Discussion on Methodology and Data Quality

To develop the SROI projection, Ecotone aligns secondary research to the Early Childhood Academy model and leverages the highest level of evidence of causality available. This secondary research is supplemented with data provided by Think Small or milestone meeting discussions throughout the process.

The monetization process utilized a market price method such that we are attaching dollar values to impacts based on the market price associated with that impact (e.g. health care expenditures) and/or utilizing the value in another study when the study is appropriately aligned with the services provided by Think Small. This is in comparison to other valuation methods that may attach value based on surveying individuals for how they perceive the value (referred to as contingent valuation), among other methods.

## Areas of Uncertainty

As with any SROI projection, there are uncertainties in the modeling. We note them here for transparency.

**Number of Unique Child Care Providers Reached** - The Early Childhood Academy is still in development, so we do not know the true number of child care providers served. This analysis relies on the budgeted numbers, which estimate the Early Childhood Academy will reach 100 child care providers each year. As described previously, we make an assumption around how many of those providers will return each year, decreasing the total number of unique child care providers served to 170. This is an uncertainty, and this uncertainty also impacts the estimates for the number of children and parents reached. While numbers on the children and parents reached would be beneficial, we acknowledge that this type of

tracking may be burdensome for Think Small to gather. Future tracking around the number of unique child care providers served would help strengthen the monetized pathways.

**Value of Incentive(s) Received** - As mentioned above, the Early Childhood Academy is still in development and, as a result, we do not know the true value of the incentive each child care provider receives, how many incentives they will receive, or how many years they may receive the incentive. This analysis serves as a conservative baseline, assuming the average value of incentive child care providers receive is \$1,000. Significant changes in the average value could potentially lead to changes in the physical and mental health outcomes or affect rates of business closure.

**Differences in Center-based and Home-based Care** - There is limited evidence to understand the extent that home-based care outcomes differ from center-based care and how outcomes realized will vary by the child care providers or children reached. See page 15 for more details on the assumption around the decreased effectiveness of home-based care compared to center-based care and what that means for the outcome estimation.

**Likelihood of Avoided Business Closure** - This analysis relies on the Pathways to Quality Final Report prepared by Baker et al. (2019). The report describes the lower rate of business closure for child care providers receiving Pathways to Quality business supports compared to those who did not receive these supports; however, it also notes the small sample size of the child care providers receiving Pathways to Quality business supports. As a result, there is some uncertainty in the extent that business closure is solely attributable to the Early Childhood Academy.



## Future Research


This SROI projection is based on the Early Childhood Academy. This is a baseline from which additional data tracking and research may be added as it becomes available, capturing variation in outcomes, services offered, and cost-effectiveness. There are several areas of research and questions that may be beneficial for Think Small and partners to consider:

- A longitudinal quasi-experimental study of child care providers who participate in the Early Childhood Academy versus those who do not would serve to customize future SROIs to be as specific to Think Small as possible and reduce the extent external literature is leveraged to build the monetized pathways. Implementation of this type of longitudinal study may not be readily feasible given the resource intensiveness of those studies, but we note it here to acknowledge its role in future SROI analyses.
- How does receipt of only an incentive versus receipt of an incentive and business support services influence outcomes, particularly for providers themselves?
- Given that stable relationships are important for child development and child-provider relationships can be influenced by a child care provider's level of engagement, do incentives at an earlier age have a stronger effect on child academic performance and attainment? How do relationships change with receipt of financial support?
- How would child care providers employment or income change upon business closure? What new early child care roles are they moving to? Are they exiting the industry? If so, what field, if any, are they employed in?
- How does the type of child care affect child outcomes? How much more effective is center-based or home-based care than no care or parental only care?
- How does access to financial, mentor, and business supports impact child care providers? What additional benefits do child care providers experience? What change, and how much change, do child care providers report for these benefits?

# Impact Risk

A part of understanding impact is the risk of not achieving the desired positive impact and the risk of creating unintended negative impacts. The Impact Management Project (IMP) is a community of 2,000+ organizations building consensus on how to measure, compare and report impact on environmental and social issues. IMP has identified 9 types of impact risk, shown in Figure 1. We include a risk assessment and brief analysis of the 9 types of impact risk, shown in Table 7. These risks present as opportunities for further growing the impact and SROI of Think Small and its Early Childhood Academy.

**Figure 1.**

Enterprises and investors face nine types of impact risks		Risk 
Impact Risk	Definition	
1 Evidence risk	→ The probability that insufficient high-quality data exists to know what impact is occurring	
2 External risk	→ The probability that external factors disrupt our ability to deliver the impact	
3 Stakeholder participation risk	→ The probability that the expectations and/or experience of stakeholders are misunderstood or not taken into account	
4 Drop-off risk	→ The probability that positive impact does not endure and/or that negative impact is no longer mitigated	
5 Efficiency risk	→ The probability that the impact could have been achieved with fewer resources or at a lower cost	
6 Execution risk	→ The probability that the activities are not delivered as planned and do not result in the desired outcomes	
7 Alignment risk	→ The probability that impact is not locked into the enterprise model	
8 Endurance risk	→ The probability that the required activities are not delivered for a long enough period	
9 Unexpected impact risk	→ The probability that significant unexpected positive and/ or negative impact is experienced by people and the planet	

Source: Impact Management Project



## PROJECTED SOCIAL RETURN ON INVESTMENT

**Table 7. Impact Risk Assessment of Think Small’s Ramsey County Early Childhood Academy**

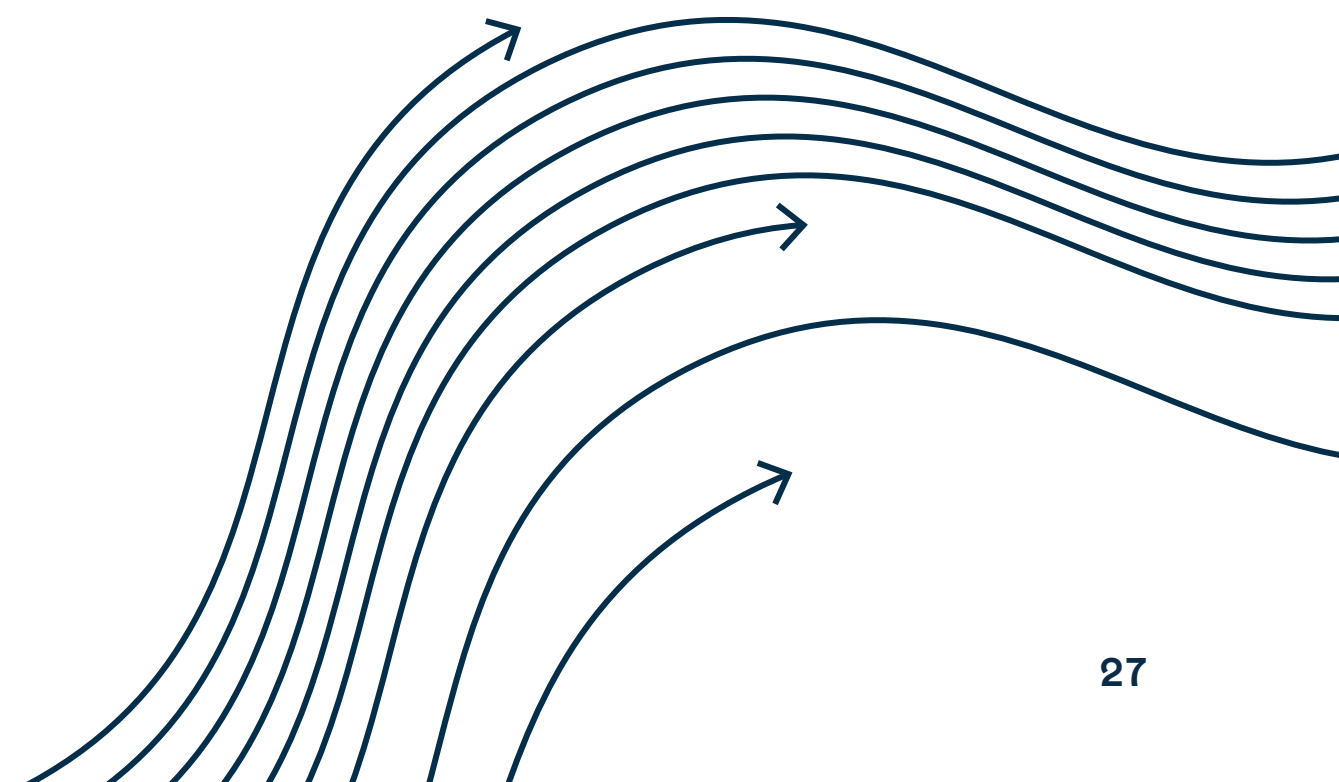
Impact Risk	Assessment	Analysis of perceived risk
Evidence Risk	High	There are numerous studies on early childhood education. Much of this research, however, focuses on center-based care. There is limited evidence to suggest how applicable these center-based studies are to home-based child care. Further, early child care professional development, including aspects of mentorship, learning communities, and business support services would benefit from additional research, particularly the impact on child care providers.
External Risk	Medium	The COVID-19 pandemic has significantly impacted the child care industry, with businesses closing due to public health mandates, financial challenges, workforce shortages, and burnout, among other reasons. This business closure and instability negatively impacts child care providers’ ability to create quality environments and deliver services. Think Small recognizes this negative impact and is designing the Early Childhood Academy around stabilizing child care programs, preserving existing child care workers, and supporting those entering the industry. For this reason, we assign this risk as medium instead of high.
Stakeholder Participation Risk	Low	The Early Childhood Academy combines financial incentives with individualized business support. Provider survey responses further inform the services available, as Think Small adapts to child care provider needs and experience, increasing the likelihood of participation. Access to multiple incentives promotes a culture of continuous learning and improvement, strengthening long-term positive impact for child care providers and, families served.
Drop-off Risk	Medium	As described in the evidence risk, further study is needed to understand how professional development and incentives support provider outcomes. There is uncertainty in how often and for how long professional development or incentives should be provided.
Efficiency Risk	Medium	The Early Childhood Academy is available to child care providers currently in or looking to operate in Ramsey County. The academy is designed to advance quality and access to child care in the county. While it prioritizes family, friends, and neighbor care in child care desert areas, there is some risk that more child care providers who are already stable businesses and high quality rated will be served, meaning Think Small could potentially be serving child care providers with the least to be gained from the academy. This is an efficiency risk in advancing quality child care in the county; however, given the large impact of the Covid-19 pandemic, many providers regardless of quality rating are likely in need of support. As the pandemic and its numerous impacts subside, it will be important for Think Small to consider targeting child care providers in most need of access to quality and business supports.
Execution Risk	Low	The Early Childhood Academy is designed to provide individualized support, responding to the specific child care provider needs rather than prescribing a single solution. Think Small has a well-established track record of supporting providers suggesting strong program execution abilities.
Alignment Risk	Low	The Early Childhood Academy was built around supporting new child care businesses, preserving child care workers, and stabilizing businesses already in the industry. The impact on providers, children, and community members remains core to the model and Think Small.
Endurance Risk	Low	Think Small has a long history of supporting child care providers. As a result, it has long-standing relationships with partner organizations and child care providers. While the Early Childhood Academy is a 3 year program, there is uncertainty in how many providers will participate and how many will participate over multiple years. Given the uncertainty noted in evidence and drop-off risk in how long child care providers should receive support, there is a risk that child care providers do not participate for enough time to realize the benefits of professional development and support services. This is deemed a low risk, as opposed to a medium risk, based on Think Small’s multi-year program, available incentives for licensing to quality, and individualized support.
Unexpected Impact Risk	Low	Unexpected impact is, by its nature, difficult to foresee. Potential risks may stem from receipt of incentives. With the influx of income, child care providers may change services offered or alter the structure of their program. At the close of the academy, when providers are no longer receiving this additional income, these changes to services offered or changes to the structure of their program may be at risk. The changes to services offered or program structure changes may require further modification, or potentially may need to end. Given that the incentives are relatively small, this risk is deemed low at present.

# Takeaways and Recommendations

# Takeaways and Recommendations

Think Small's Ramsey County Early Childhood Academy has a positive social return on investment. For every \$1 dollar spent by Think Small to serve child care providers, there is \$2.46 in social value generated. This value is realized through improved physical and mental health for child care providers; increased earnings for child care providers, parents, and children; reduced special education placement; and reduced grade retention.

This analysis suggests that resources devoted to the Early Childhood Academy creates benefits beyond the child care providers themselves, extending to parents and loved ones, children, K-12 schools, health insurers, and community members (taxpayers). Parents and loved ones are the leading beneficiary, receiving \$1.17 for every \$1 spent by Think Small to serve child care providers. This is due to the large avoided lost lifetime income from avoided child care closure. These benefits beyond the child care providers served illustrate that the Early Childhood Academy is not simply a workforce development program. It provides support to the community, creating opportunities for parents and loved ones to pursue education or careers.



# Impact Strategy Recommendations

The following recommendations are based on the assessed impact risk and are opportunities for Think Small and Ramsey County Workforce Solutions to grow and protect their impact:

**Continue surveying child care providers** — Think Small already surveys child care providers to measure financial stressors, job satisfaction, and more. Pre- and post-Early Childhood Academy participation survey results will be helpful for understanding the types and scale of benefits child care providers experience. Because of the limited research on early child care provider professional development, there is a potential misalignment between those investing time and resources in the Early Childhood Academy (child care providers) and those benefiting the most (parents, loved ones, and children). This surveying could provide insight into potential benefits experienced by child care providers beyond those included in this analysis.

**Increase the value of incentives** - Low compensation is a major challenge in the early child care industry. Attracting and retaining talent is challenging with the low compensation prospects, especially compared to kindergarten and elementary school educator earnings (Minnesota’s B8 Workforce Core Team, 2018; U.S. Department of Education, 2016; Whitebook & Sakai, 2003; Howes, 2002; Larson & Lakin, 1999; Phillips et al., 2000; and Whitebook & Bellm, 1999).

Totenhagen et al., (2016) found that “for every dollar increase in hourly wage, the likelihood of a child care worker having left the center. . .decreased by 6%”. Child care provider turnover is a critical issue as research suggests that stable relationships are important for child development. Child care providers who are engaged or feel their work is adequately compensated are more likely to have positive interactions with children (Thornburg et al., 2005; Whitebook et al., 2014; Bridges et al., 2011; Grunewald et al., 2022).

**Promoting the broader workforce benefits**, namely how the Early Childhood Academy helps keep parents in the workforce, may be important in developing new partnerships, generating additional investment to increase the incentive value that child care providers receive, and as a result, increasing the impact on child care provider wages.

In addition to mitigating impact risks which protect the SROI, there are additional means to grow the SROI. These include:

- **Increasing the number of unique child care providers served**, boosting the number of child care providers avoiding business closure, experiencing mental and physical health improvements, and earnings benefits. This may be done without changing the cost by working with new child care providers in each year of the Academy. This may not be a strategic priority, as multi-year participation may be necessary, especially for child care providers becoming licensed and receiving their first quality rating.
- **Targeting child care providers at greater risk of business closure or with lower Parent Aware ratings**, ensuring that the academy serves child care providers with the most to be potentially gained from the academy.
- **Increasing the number of children and families reached**, increasing the number of people experiencing earnings gains and avoiding special education placement or grade retention. This may be done without changing the cost by working with child care providers at operating closer to the maximum capacity.



# Recommended Key Performance Indicators (KPIs)

The KPIs in Table 8 are recommended for tracking the Early Childhood Academy’s impact. KPIs noted are those that align closely with the outcomes monetized in this analysis, would be useful for future monetization efforts, and are metrics that are most feasible for Think Small and Ramsey County Workforce Solutions to track.

Scale KPIs are outputs and subsets of outputs that can be used to understand the scale of impact of Early Childhood Academy. Quality KPIs are those incremental improvements that can be used to help understand the benefits generated per child care provider. These are often short-term or intermediate outcomes within the logic model. These figures can take various forms, such as indicators tracked on a cumulative basis or over designated time periods. They may also be lead or lag indicators, depending on the extent they are a signal of future value potentially created vs. a measurement of benefits already created. Use of these KPIs will be helpful in understanding the value generated by the Early Childhood Academy as well as serve as strong communication points to help other stakeholders understand the types of impact Think Small and Ramsey County Workforce Solutions are generating.

**Table 8.** Key Performance Indicators

Scale KPIs	Quality KPIs
<ul style="list-style-type: none"> <li>Number of unique child care providers served (per year &amp; by type of service)</li> <li>Number of center-based and home-based child care providers</li> <li>Average number of years of child care provider participation</li> <li>Average number of incentives received per provider</li> <li>Average incentive (\$) per child care provider</li> <li>Average Parent Aware rating of child care providers</li> <li>Child care business retention rate</li> <li>Number of families reached</li> </ul>	<ul style="list-style-type: none"> <li>Change in Parent Aware rating</li> <li>Change in child care business retention rate</li> <li>Change in child care providers’ enrollment / capacity</li> <li>Proportion of child care providers remaining in the industry</li> <li>Proportion of child care providers reporting increased job satisfaction</li> <li>Proportion of child care providers reporting decreased financial stress</li> <li>Proportion of child care providers served who are English language learners, Black, Indigenous, and people of color</li> <li>Proportion of child care providers served who operate in child care desert areas</li> </ul>



# Data Collection Framework

The model built to estimate this SROI can also be used as a framework going forward to allow for continual updating as additional data is collected. This will serve to create SROI benchmarks for the Early Childhood Academy on a year over year basis, capturing variation in academy participation or resource utilization, changes in service offerings, and resulting cost-effectiveness of the Academy.

The following table identifies key metrics, associated outcomes, current metric estimation, along with options for measurement going forward to support ready input into future SROI estimations. In addition to those metrics in Table 9, detailed accounting of the annual expenditures of the Academy will be important for generating updated SROI estimates.

**Table 9.** Recommended Metrics for SROI Estimation

Metric	Associated Outcome(s)	Current Metric Estimation	Recommended Measurement
Number of providers receiving an incentive	1. Improved physical health from incentive payment 2. Improved mental health from decreased financial stress	Utilizes the “Wage Subsidy Models” spreadsheet provided by Think Small and leverages Tout et al., (2011) to estimate the number of unduplicated child care providers served	Track the: <ul style="list-style-type: none"> <li>Number of child care providers utilizing each Early Childhood Academy service:                             <ul style="list-style-type: none"> <li>Workforce Retention &amp; Development</li> <li>Business Recruitment &amp; Development</li> <li>Business Startup Support</li> </ul> </li> <li>Total number of unique child care providers participating each year of the academy</li> <li>Number of center-based child care providers served</li> <li>Number of family-based child care providers served</li> </ul>
Average value of incentive received	1. Improved physical health from incentive payment 2. Improved mental health from decreased financial stress	Estimates the value based on the weighted average of the yearly incentive reported in the “Wage Subsidy Models” spreadsheet provided by Think Small	Survey Early Childhood Academy participants, asking: <ul style="list-style-type: none"> <li>How many years did you participate in the Early Childhood Academy?</li> <li>What incentives did you receive, and what was the value of each incentive?</li> <li>Did you receive:                             <ul style="list-style-type: none"> <li>Incentives only?</li> <li>Incentives and business support services?</li> </ul> </li> <li>If you received business support services in addition to the incentive(s), what services did you access?</li> </ul>

# Data Collection Framework

Metric	Associated Outcome(s)	Current Metric Estimation	Recommended Measurement
Number of providers reporting financial stress	1. Improved mental health from decreased financial stress	Utilizes the unique number of child care providers reached by the Early Childhood Academy, modified by the proportion of early care and education teachers somewhat to strongly worried about their financial situation (Whitebook, Philips, Howes, 2014)	<p>Compare pre- and post-Early Childhood Academy participation, asking child care providers:</p> <ul style="list-style-type: none"> <li>• How worried are you about your financial situation?</li> <li>• Are you able to cover an unexpected expense?</li> <li>• How you satisfied with your (on a scale from 1 - 5):                             <ul style="list-style-type: none"> <li>• Job overall</li> <li>• Salary</li> <li>• Benefits</li> <li>• Work environment</li> <li>• Business outlook &amp; growth potential</li> </ul> </li> </ul>
Number of parents reached	1. Avoided lost lifetime income (avoided business closure)	Estimate begins with the maximum number of children reached per provider, modified by typical operating capacity as informed by Tout et al., (2011) and Tran, (2022). Modified by the proportion of children that could be pre-Kindergarten age or younger, not in multiple child care arrangements, then by the number of unique child care providers served. This number of children reached is modified by the proportion of families with 1 or 2+ children, which is used to represent the 1 working adult per family impacted.	<p>Survey Early Childhood Academy participants, asking:</p> <ul style="list-style-type: none"> <li>• How many children do you expect to serve this year?</li> <li>• How many families do you expect to serve this year?</li> <li>• How long are children typically enrolled in your program?</li> <li>• What is the average age of children served?</li> </ul>
Number of children reached	1. Avoided lost lifetime income (avoided business closure) 2. Increased earnings from additional education (increased kindergarten readiness) 3. Increased earnings from increased educational attainment (quality program) 4. Reduced special education placement (quality program) 5. Reduced grade retention (quality program)	Estimate begins with the maximum number of children reached per provider, modified by typical operating capacity as informed by Tout et al., (2011) and Tran (2022), then by the proportion of children that could be pre-Kindergarten age or younger and not in multiple child care arrangements. Multiplied by the number of providers served.	<p>Survey Early Childhood Academy participants, asking:</p> <ul style="list-style-type: none"> <li>• How many children do you expect to serve this year?</li> <li>• How many families do you expect to serve this year?</li> <li>• How long are children typically enrolled in your program?</li> <li>• What is the average age of children served?</li> </ul>

# Data Collection Framework

Metric	Associated Outcome(s)	Current Metric Estimation	Recommended Measurement
Change in likelihood of child care business closure	<ol style="list-style-type: none"> <li>1. Avoided lost lifetime income (avoided business closure)</li> <li>2. Increased earnings from additional education (increased kindergarten readiness)</li> </ol>	Leverages Think Small's Pathways to Quality report, finding the change in business closure by comparing child care providers receiving business support to those who did not (Baker et al., 2019)	<p>Track the number of child care providers currently operating at the beginning and end of each year of the academy.</p> <ul style="list-style-type: none"> <li>Of the child care providers that close their businesses, how many are temporarily versus permanently closed?</li> </ul> <p>Follow up with child care providers who permanently closed their businesses, asking:</p> <ul style="list-style-type: none"> <li>What are you doing now?                             <ul style="list-style-type: none"> <li>Working in another role within early child care industry?</li> <li>Working in the education field, but at an older age?</li> <li>Working in a new field?</li> <li>Retired?</li> </ul> </li> </ul>
Change in quality rating	<ol style="list-style-type: none"> <li>1. Increased earnings from increased educational attainment (quality program)</li> <li>2. Reduced special education placement (quality program)</li> <li>3. Reduced grade retention (quality program)</li> <li>4. Increased earnings from increased enrollment from improved quality rating</li> </ol>	Leverages Think Small's Pathways to Quality report, finding the proportion of child care providers increasing their Parent Aware rating by comparing child care providers receiving quality support to those who did not (Baker et al., 2019)	<p>Compare pre- and post-Early Childhood Academy quality ratings, tracking:</p> <ul style="list-style-type: none"> <li>The number of child care providers who are:                             <ul style="list-style-type: none"> <li>Unrated</li> <li>1-star Parent Aware rated</li> <li>2-star Parent Aware rated</li> <li>3-star Parent Aware rated</li> <li>4-star Parent Aware rated</li> </ul> </li> <li>What proportion of child care providers move from unrated, 1-, or 2-star rated to 3- or 4-star rated after their participation in the academy?</li> </ul>
Change in enrollment	<ol style="list-style-type: none"> <li>1. Increased earnings from increased enrollment from higher quality rating</li> </ol>	Uses a proxy based on Bassok et al (2019) to say enrollment will be preserved when moving from low quality to high quality	Compare child care providers' responses to "number of children reached" survey questions pre- and post-academy participation.

# Data Collection Framework

In addition to the recommended measurement opportunities described in Table 9, Think Small should track the following operational metrics. These will provide deeper insight into potential differences in service utilization or delivery across years, generating additional signals into the quality of service provided for each child care provider.

- Number of times Think Small connects with each child care provider
- Length of engagement with each child care provider for a given service (Build Your Own Child Care, CDA training, Pathways to Quality rating, etc.)
- Number of topics covered and/or resources provided in learning community
- Availability of mentors
  - Number of mentors available in a given child care area
  - Number of mentor-mentee meetings or engagements
  - Number of mentees to a given mentor
- Average starting point for child care providers
  - What services does Think Small provide most often?
  - What resources could Think Small connect child care providers to before participating in the Early Childhood Academy?

# Impact Communication

# United Nations Sustainable Development Goals

Established by the United Nations (UN), the Sustainable Development Goals (SDGs) provide a blueprint to achieving a better and more sustainable future. There are 17 distinct goals that serve as an easily recognizable marker of agreed upon impact areas for stakeholders. See below for the UNSDGs that Think Small is impacting.

**For more information on UN SDGs:** [un.org/sustainabledevelopment](https://un.org/sustainabledevelopment)



## Goal 4:

### **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

#### Target 4.2

By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.

#### Indicator 4.2.1

Proportion of children aged 24-59 months who are developmentally on track in health, learning and psychosocial well-being, by sex

#### Indicator 4.2.2

Participation rate in organized learning (one year before the official primary entry age), by sex

#### Target 4.4

By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

#### Target 4.5

By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

#### Indicator 4.5.1

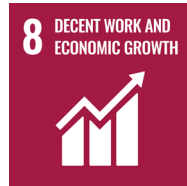
Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict affected, as data become available) for all education indicators on this list that can be disaggregated

#### Target 4.a

Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.



# United Nations Sustainable Development Goals



## Goal 8:

**Promote sustained, inclusive, and sustainable economic growth, full productive employment and decent work for all**

Target 8.5

By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Indicator 8.5.1

Average hourly earnings of female and male employees, by occupation, age and persons with disabilities

Indicator 8.5.2

Unemployment rate, by sex, age and persons with disabilities



## Goal 10:

**Reduce inequality within and among countries**

Target 10.2

By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status

Indicator 10.2.1

Proportion of people living below 50 per cent of median income, by age, sex and persons with disabilities



## Goal 11:

**Make cities and human settlements inclusive, safe, resilient and sustainable**






Target 11.1

By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

# Impact Management Project Five Dimensions of Impact: Defined

The Impact Management Project (IMP) is a community of 2,000+ organizations building consensus on how to measure, compare and report impact on environmental and social issues. The IMP community has developed a set of 5 dimensions of impact in order to help build consensus and a common language when organizations and investors discuss their impact. This has been a rapidly growing field, and future alignment to the 5 dimensions could help attract additional investment. The following table outlines the dimensions of impact for the Early Childhood Academy.

**Table 10.** Impact Management Project’s Five Dimensions of Impact Defined

Impact Dimension	Impact Questions Each Dimension Seeks to Answer
 <b>What</b>	<p>What outcome occurs in period?                      How important is the outcome to the people (or planet) experiencing it?</p>
 <b>Who</b>	<p>Who experiences the outcome?                      How under served are the affected stakeholders in relation to the outcome?</p>
 <b>How Much</b>	<p>How much of the outcome occurs--across scale, depth and duration?</p>
 <b>Contributions</b>	<p>What is the enterprise’s contribution to the outcome accounting for what would have happened anyway?</p>
 <b>Impact Risk Mitigation</b>	<p>What is the risk to the people and planet that impact does not occur as expected?</p>

Impact Management Project: Creative Commons Attribution-NoDerivatives





# Impact Management Project Five Dimensions of Impact

**Table 11.** Think Small’s Ramsey County Early Childhood Academy Five Dimensions of Impact


## IMPACT MANAGEMENT PROJECT


Impact Management Project: Creative Commons Attribution-NoDerivatives

 **WHAT:** An initiative designed to incentivize early childhood education providers to progress from licensed to quality programs, increasing the availability and quality of early care in the county.

 **WHO:** Serving Ramsey County early child providers, including those with established programs and those starting their own in the county. Priority is given to family, friends, and neighbors (FFN) in child care desert areas as well as English Language Learners (ELL) and BIPOC educators.

 **HOW MUCH:** Aiming to reach at least 300 providers over 3 years with a total funding allocation of approximately \$710,000. Goals include increasing enrollment capacity by 420, creating 230 new jobs, and preserving 970 enrollment slots and 90 child care jobs.

 **CONTRIBUTION:** The incentive and quality rating strategy is based on growing evidence that shows home-based providers and the children served benefit from the financial support and quality improvements.

 **IMPACT RISK MITIGATION:** Combining incentives with business support, the Early Childhood Academy provides individualized support, adapting to educator survey responses, needs and experience, increasing the likelihood of participation. Access to multiple incentives promotes a culture of continuous learning and improvement, strengthening long-term positive impact for educators and families served.

# Appendix A: Sensitivity Analysis

*Variation in costs and benefits without specificity to a given assumption*

The following scenarios are developed to test the sensitivity of the SROI estimation to a simultaneous change in costs and benefits without specificity to a given assumption. Table A1 shows how the SROI model for the Early Childhood Academy could change given a 50% increase or decrease in costs and benefits. There are instances where the SROI goes below \$1, meaning that there are scenarios where the SROI is a positive social return and where the SROI is a negative social return. While there are scenarios with a negative SROI, these would require significant changes in the total program cost or a large reduction in the projected benefits for the SROI to go below \$1.

		Table A1: SROI Sensitivity for the Early Childhood Academy										
		% Change in Outcome Benefits										
		-50%	-40%	-30%	-20%	-10%	0%	10%	20%	30%	40%	50%
% Change in Early Childhood Academy Cost	-50%	\$2.46	\$2.95	\$3.44	\$3.93	\$4.42	\$4.91	\$5.41	\$5.90	\$6.39	\$6.88	\$7.37
	-40%	\$2.05	\$2.46	\$2.87	\$3.28	\$3.69	\$4.10	\$4.50	\$4.91	\$5.32	\$5.73	\$6.14
	-30%	\$1.76	\$2.11	\$2.46	\$2.81	\$3.16	\$3.51	\$3.86	\$4.21	\$4.56	\$4.91	\$5.27
	-20%	\$1.54	\$1.84	\$2.15	\$2.46	\$2.76	\$3.07	\$3.38	\$3.69	\$3.99	\$4.30	\$4.61
	-10%	\$1.37	\$1.64	\$1.91	\$2.18	\$2.46	\$2.73	\$3.00	\$3.28	\$3.55	\$3.82	\$4.10
	0%	\$1.23	\$1.47	\$1.72	\$1.97	\$2.21	\$2.46	\$2.70	\$2.95	\$3.19	\$3.44	\$3.69
	10%	\$1.12	\$1.34	\$1.56	\$1.79	\$2.01	\$2.23	\$2.46	\$2.68	\$2.90	\$3.13	\$3.35
	20%	\$1.02	\$1.23	\$1.43	\$1.64	\$1.84	\$2.05	\$2.25	\$2.46	\$2.66	\$2.87	\$3.07
	30%	\$0.95	\$1.13	\$1.32	\$1.51	\$1.70	\$1.89	\$2.08	\$2.27	\$2.46	\$2.65	\$2.84
	40%	\$0.88	\$1.05	\$1.23	\$1.40	\$1.58	\$1.76	\$1.93	\$2.11	\$2.28	\$2.46	\$2.63
50%	\$0.82	\$0.98	\$1.15	\$1.31	\$1.47	\$1.64	\$1.80	\$1.97	\$2.13	\$2.29	\$2.46	

# Appendix B: Monetized Pathways

This section will detail the estimation process for each monetized pathway, describing how each outcome was monetized, the sources utilized to inform the estimate, and any additional assumptions required to make the estimation.

Shaded pathways were either deemed not monetizable for this analysis, were ‘trumped’ by other pathways addressing the same or similar outcomes, or use lower levels of evidence compared to other pathways addressing the same outcome.

**Table B1.** Monetized Pathways – the Net Present Value (NPV) of benefits valued

Stakeholders	Outcomes	Marginal Benefit
Providers	Improved physical health / reduced mortality from incentive payment	\$59
Families / Loved Ones	Avoided lost lifetime income (avoided business closure)	\$1,134,749
Children	Increased earnings from additional education (increased kindergarten readiness)	\$113,191
Children	Increased earnings from increased educational attainment (quality program)	\$360,310
Children	Reduced special education placement (quality program)	\$33,483
Children	Reduced grade retention (quality program)	\$42,577
Providers	Improved mental health from decreased financial stress	\$55,005
Providers	Increased earnings from increased enrollment from higher quality rating	\$7,483
Providers	Increased earnings for provider from avoided business closure	-
Children	Increased earnings from increased educational attainment (avoided business closure)	-
Providers	Increased job satisfaction / reduced risk of burnout	-
Children	Increased social emotional skills from reduced educator burnout / improved educator-child relationships	-
Children	Improved academic outcomes from reduced educator burnout / improved educator-child relationships	-
Children	Reduced special education placement (kindergarten readiness)	-
Children	Reduced grade retention (kindergarten readiness)	-
<b>Total</b>		<b>\$1,746,858</b>

# Estimation Process

The following tables detail the estimation process of each outcome, identifying where the effect size and outcome costs noted above came from and their level of evidence. Outcomes on the following pages show the estimated value per person. These values are then projected over multiple years, scaled to the respective number of providers, children and/or parents, and discounted to present value. The present value figures are those that appear in Table 1C.

**Table B2. Monetized Pathways Map**

Outcomes	Effect size 1	Effect size 2	Effect size 3	Effect Size 4	Value per Person	Projected Marginal Benefit
Improved physical health / reduced mortality from incentive payment	170	0.25	0.012	0.001	\$100,000	\$32
Avoided lost lifetime income (avoided business closure)	818	0.04			\$37,678	\$1,134,749
Increased earnings from additional education (increased kindergarten readiness)	777	0.04	0.279	0.192	\$73,935	\$113,191
Increased earnings from increased educational attainment (quality program)	126	0.398	0.097		\$73,935	\$360,310
Reduced special education placement (quality program)	126	0.398	0.069		\$9,670	\$33,483
Reduced grade retention (quality program)	126	0.398	0.071		\$12,000	\$42,577
Improved mental health from decreased financial stress	97	0.062			\$9,215	\$55,005
Increased earnings from increased enrollment from higher quality rating	24	0.398	0.08		\$9,880	\$7,483
Increased earnings for provider from avoided business closure						
Increased earnings from increased educational attainment (avoided business closure)						
Increased job satisfaction / reduced risk of burnout						
Increased social emotional skills from reduced educator burnout / improved educator-child relationships						
Improved academic outcomes from reduced educator burnout / improved educator-child relationships						
Reduced special education placement (kindergarten readiness)						
Reduced grade retention (kindergarten readiness)						



# Monetized Outcomes

These are the outcomes presently accounted for in the SROI.

## MONETIZED OUTCOMES

### Improved physical health / reduced mortality from incentive payment

Projected Marginal Benefit per Year: **\$32**

Estimation Calculation:  $170 * 0.25 * 0.0121 * 0.00063 * \$100,000$

**Figure: 170**

**Type: Number of providers receiving an incentive**

**Notes:** Annually, Think Small estimates reaching 100 educators, or a total of 300 educators over the course of the 3 year project. Of these 300 providers, we assume Think Small will serve several providers for multiple years and estimate the number of unique individuals served at approximately 170. This unduplicated count is based on the assumptions that in the first year, all 100 providers are unique and in the second and third years, 75% providers will return. 75% is estimated based on the Parent Aware evaluation, which noted that “471 early care and education programs had received an initial rating from Parent Aware. One-hundred programs received one rating and chose not to pursue a second rating.”

**Source:** Think Small and Ecotone Assumption, Level of Evidence - N/A - Fact

**Figure: 0.25**

**Type: Scale of benefit**

**Notes:** The Earned Income Tax Credit analyzed by Lenhart (2019) includes benefits of up to approximately \$4000. If we assume the benefits grow linearly with additional income gained and if the nominal increase in earnings experienced by providers based on incentive payments is a weighted average of nearly \$1,000, the potential benefits noted by Lenhart (2019) can be reduced by 1/4.

**Source:** Ecotone assumption

**Figure: 0.0121**

**Type: Increased likelihood of insurance**

**Notes:** Treated households are 1.21 percentage points more likely to have any type of insurance compared to those forming the control group following the law change ( $p < 0.01$ ).

**Source:** Lenhart, 2019 — Level of Evidence: 2

**Figure: 0.00063**

**Type: Reduced mortality from health insurance**

**Notes:** “The overall mortality rate for the control group during this period was approximately 1%. Given the randomized design, the difference in the mortality rate between the treatment and control groups (i.e., the intent-to-treat) captures the causal effect of the intervention on mortality. We estimate that the intervention reduced mortality by 6.3 basis points during the 2-year sample period (Column 1). The p-value associated with this estimate is approximately  $p = 0.01$ ; a permutation test yields similar results. The estimated effect is similar, but slightly smaller in magnitude (6.1 basis points), when individual- and household-level controls are included in the regression (Column 2). Focusing on this more conservative result, we estimate that one fewer death occurred during our sample period for every 1,648 individuals in this population that were sent a letter.”

**Source:** Goldin et al., 2019 — Level of Evidence: 2

**Figure: \$100,000**

**Type: Value of statistical life year**

**Notes:** VSL annual figure of approximately \$100,000 for those 65+.

**Source:** Viscusi, W. K. and Hersch, J. (2007). — Level of Evidence: 7

### Avoided lost lifetime income (avoided business closure)

Projected Marginal Benefit: **\$1,134,749**

Estimation Calculation:  $818 * 0.04 * \$37,678$

#### Figure: 818

##### Type: Number of families reached

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). Each provider reaches 12 children. We modify the number of children reached by the proportion of families that have 1 child or 2+ children to understand how many adults are impacted (Assumes a similar break down as U.S., where 45% of families have 1 child, and 55% have 2 or more children in the U.S.). This is assumed to impact one working adult per family.

We modify by the proportion of kids per provider that are pre-k or younger and not in multiple child care arrangements (assuming all kids can go to full-day kindergarten & as a result barriers parents face change). We also assume providers operate at 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022).

**Source:** Statista Research Department, 2022 and Minnesota Administrative Rules, 9502.0367 CHILD/ADULT RATIOS; AGE DISTRIBUTION RESTRICTIONS and Think Small, Level of Evidence - N/A - Fact

#### Figure: 0.04

##### Type: Decreased likelihood of business closure from business supports

**Notes:** Think Small's Pathways to Quality report found "providers who received P2Q business supports had lower rates of business closure (from July 2016 to July 2019) compared to providers who did not receive P2Q business supports (11% versus 34%, respectively). Multiplied by the 16% of providers at risk of closing based on the Minnesota Department of Human Services legislative report (2020).

**Source:** Baker et al., 2019, Level of Evidence - 6

#### Figure: \$37,678

##### Type: Avoided lost lifetime income loss from 1 year out of work

**Notes:** A survey conducted by Center for American Progress and GBA Strategies found that 20% of mothers not currently working would look for a job if they had better access to child care and 10% of fathers in the same position. Given that women's rate of stay-at-home parenting is greater than father's rate of stay-at-home parenting (27% to 7%, Pew Research Center), we estimate the cost of a year out of work assuming a woman earns the median Ramsey County salary (\$67,200) and leaves the workforce for 1 year at age 30 (a total income loss of \$198,274). We apply this to the 20% of mothers not currently working who would look for a job.

**Source:** Center for American Progress, 2016

## MONETIZED OUTCOMES

# Increased earnings from additional education (increased kindergarten readiness)

Projected Marginal Benefit: **\$113,191**

Estimation Calculation:  $777 * 0.04 * 0.279 * 0.192 * \$73,935$

### Figure: 777

#### Type: Number of children reached

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). For group family child care, the total licensed capacity is 12 children to 1 adult. Of these, 10 children may be under school age and no more than 2 can be infants and toddlers. The remaining 8 children would be ages 3 - 5, ages well aligned to evidence on the benefits of early childcare (as opposed to serving school-age children). We reduce this figure based on a 2010 report estimating that for the total children under 5 years, 17% are in more than one type of child care arrangement. We also assume providers operate at 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022).

**Source:** Minnesota Administrative Rules, 9502.0367 CHILD/ADULT RATIOS; AGE DISTRIBUTION RESTRICTIONS, Laughlin, 2010 Level of Evidence - N/A - Fact

### Figure: 0.04

#### Type: Increased access to early care (from decreased likelihood of business closure from business supports)

**Notes:** Think Small's Pathways to Quality report found "providers who received P2Q business supports had lower rates of business closure (from July 2016 to July 2019) compared to providers who did not receive P2Q business supports (11% versus 34%, respectively). Multiplied by the 16% of providers at risk of closing based on the Minnesota Department of Human Services legislative report (2020).

**Source:** Baker et al., 2019 — Level of Evidence: 6

### Figure: 0.279

#### Type: Improved kindergarten readiness

**Notes:** 48.7% of children who attending child care prior to kindergarten were "ready" compared to 20.8% of children who stayed home, a 27.9% difference. Additional studies show the benefit of attending early care programs on kindergarten readiness and early language / literacy scores (Schochet et al., 2020; SRI International, 2015; Magnuson et al., 2007). Much of this research, however, focuses on center-based care, and there is relatively limited understanding for how much home-based care improves children's readiness compared to no early care / parental only care.

**Source:** Trent, 2019 — Level of Evidence: 4

### Figure: 0.192

#### Type: Increased likelihood of graduation from kindergarten readiness scores

**Notes:** "Of students who were on-track for kindergarten, 63.0% graduated within four years of entering 9th grade compared to 43.8% of students who were not on-track"

**Source:** INNOVATIONS in Community Research and Program Evaluation, 2020

## MONETIZED OUTCOMES

### Increased earnings from additional education (increased kindergarten readiness) (continued)

Projected Marginal Benefit: **\$113,191**

Estimation Calculation:  $777 * 0.04 * 0.279 * 0.192 * \$73,935$

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**Figure: \$73,935**

**Type: Additional lifetime earnings from high school graduation**

**Notes:** Difference in median earnings (figure 1.1 in Baum et al., 2013) between high school diploma (\$35,400) and less than high school diploma (\$25,100) is \$10,300.

When accounting for lifetime gains in earnings associated with graduating high school, the NPV at age 3 (at 4%) equates to approximately \$74,000 when controlling for likelihood of going on to college if graduating high school as well as the proportion of earnings causally attributable to education level. This is estimated based on Tamborini et al., 2015.

**Source:** Baum et al., 2013 — Level of Evidence: 4, Tamborini et al., 2015 — Level of Evidence: 4

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## MONETIZED OUTCOMES

### Increased earnings from increased educational attainment (quality program)

Projected Marginal Benefit: **\$360,310**

Estimation Calculation:  $126 * 0.398 * 0.0969 * \$73,935$

**Figure: 126**

**Type: Number of children reached**

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). For group family child care, the total licensed capacity is 12 children to 1 adult. Of these, 10 children may be under school age and no more than 2 can be infants and toddlers. The remaining 8 children would be ages 3 - 5, ages well aligned to evidence on the benefits of early childcare (as opposed to serving school-age children). We reduce this figure based on a 2010 report estimating that for the total children under 5 years, 17% are in more than one type of child care arrangement. We then multiply by the proportion of providers who are 2-star rated (based on the wage subsidy model where 42 providers or about 14% are 2-star), assuming these are the providers moving to quality programs. Assumes providers operating at about 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022).

**Source:** Minnesota Administrative Rules, 9502.0367 CHILD/ADULT RATIOS; AGE DISTRIBUTION RESTRICTIONS, Laughlin, 2010, Level of Evidence - N/A - Fact

**Figure: 0.398**

**Type: Increased likelihood of quality Parent Aware Rating from provider participation in Early Childhood Academy**

**Notes:** Based on Think Small's Pathway's to Quality report, 48.24% of providers receiving quality supports increased their Parent Aware rating, compared to 8.46% of providers who did not receive quality supports. This is a 39.78% difference in the number

of providers increasing their rating. A study on MN Parent Aware program found that "70% of family child care providers improved their rating by at least one star from their initial rating to their second rating". For the 42 providers Think Small engages that are rated 2 stars or lower, we assume 39.78% will improve their rating by at least 1 star.

**Source:** Baker et al., 2019 and Tout et al., 2011 — Level of Evidence: 6

**Figure: 0.0969**

**Type: Increased educational attainment from participation in high-quality early child program**

**Notes:** A meta-analysis on early childhood care and education found that children who attend high-quality early care programs are 11.4 percentage points more likely to graduate from high school. McCoy et al., 2017 findings are primarily from center-based programs, so we modify the 11.4 percentage point increased educational attainment by the effectiveness of home- vs. center-based care (using ERS scores found in Bassok et al., 2016).

**Source:** McCoy et al., 2017 — Level of Evidence: 1, Bassok et al., 2016 — Level of Evidence: 4



## MONETIZED OUTCOMES

### Increased earnings from increased educational attainment (quality program) (continued)

Projected Marginal Benefit: **\$360,310**

Estimation Calculation:  $126 * 0.398 * 0.0969 * \$73,935$

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**Figure: \$73,935**

**Type: Additional lifetime earnings from high school graduation**

**Notes:** Difference in median earnings (figure 1.1 in Baum et al., 2013) between high school diploma (\$35,400) and less than high school diploma (\$25,100) is \$10,300.

When accounting for lifetime gains in earnings associated with graduating high school, the NPV at age 3 (at 4%) equates to approximately \$74,000 when controlling for likelihood of going on to college if graduating high school as well as the proportion of earnings causally attributable to education level. This is estimated based on Tamborini et al., 2015.

**Source:** Baum et al., 2013 — Level of Evidence: 4, Tamborini et al., 2015 — Level of Evidence: 4

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## MONETIZED OUTCOMES

### Reduced special education placement (quality program)

Projected Marginal Benefit: **\$33,483**

Estimation Calculation:  $126 * 0.398 * 0.06885 * \$9,670$

**Figure: 126**

**Type: Number of children reached**

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). For group family child care, the total licensed capacity is 12 children to 1 adult. Of these, 10 children may be under school age and no more than 2 can be infants and toddlers. The remaining 8 children would be ages 3 - 5, ages well aligned to evidence on the benefits of early childcare (as opposed to serving school-age children). We reduce this figure based on a 2010 report estimating that for the total children under 5 years, 17% are in more than one type of child care arrangement. We then multiply by the proportion of providers who are 2-star rated (based on the wage subsidy model where 42 providers or about 14% are 2-star), assuming these are the providers moving to quality programs. Assumes providers operating at about 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022).

**Source:** Minnesota Administrative Rules, 9502.0367 CHILD/ADULT RATIOS; AGE DISTRIBUTION RESTRICTIONS, Laughlin, 2010, — Level of Evidence: N/A - Fact

**Figure: 0.398**

**Type: Increased likelihood of quality Parent Aware Rating from provider participation in Early Childhood Academy**

**Notes:** Based on Think Small's Pathway's to Quality report, 48.24% of providers receiving quality supports increased their Parent Aware rating, compared to 8.46% of providers who did not receive quality supports. This is a 39.78% difference in the number

of providers increasing their rating. A study on MN Parent Aware program found that "70% of family child care providers improved their rating by at least one star from their initial rating to their second rating". For the 42 providers Think Small engages that are rated 2 stars or lower, we assume 39.78% will improve their rating by at least 1 star.

**Source:** Baker et al., 2019 and Tout et al., 2011, LOE 6

**Figure: 0.06885**

**Type: Reduced special education placement from participation in quality early child program**

**Notes:** A meta-analysis on early childhood care and education found that children who attend quality early care programs are 8.1 percentage points less likely to be enrolled in special education. McCoy et al., 2017 findings are primarily from center-based programs, so we modify the 8.1 percentage point increased educational attainment by the effectiveness of home- vs. center-based care (using the ERS scores in Bassok et al., 2016).

**Source:** McCoy et al., 2017 — Level of Evidence: 1, Bassok et al., 2016 — Level of Evidence: 1

**Figure: \$9,670**

**Type: Cost of special education**

**Notes:** "Annual per pupil expenditures for special education and retention amounting to more than \$8,000 and \$12,000, respectively" Approximately \$9,670 in 2022\$.

**Source:** McCoy et al., 2017 — Level of Evidence: 1

## MONETIZED OUTCOMES

### Reduced grade retention (quality program)

Projected Marginal Benefit: **\$42,577**

Estimation Calculation:  $126 * 0.398 * 0.07055 * \$12,000$

**Figure: 126**

**Type: Number of children reached**

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). For group family child care, the total licensed capacity is 12 children to 1 adult. Of these, 10 children may be under school age and no more than 2 can be infants and toddlers. The remaining 8 children would be ages 3 - 5, ages well aligned to evidence on the benefits of early childcare (as opposed to serving school-age children). We reduce this figure based on a 2010 report estimating that for the total children under 5 years, 17% are in more than one type of child care arrangement. We then multiply by the proportion of providers who are 2-star rated (based on the wage subsidy model where 42 providers or about 14% are 2-star), assuming these are the providers moving to quality programs. Assumes providers operating at about 80% capacity based on results from the Parent Aware evaluation (Tout et al., 2011) and a Minnesota Federal Reserve Bank survey (Tran, 2022).

**Source:** Minnesota Administrative Rules, 9502.0367 CHILD/ADULT RATIOS; AGE DISTRIBUTION RESTRICTIONS, Laughlin, 2010, — Level of Evidence: N/A - Fact

**Figure: 0.398**

**Type: Increased likelihood of quality Parent Aware Rating from provider participation in Early Childhood Academy**

**Notes:** Based on Think Small's Pathway's to Quality report, 48.24% of providers receiving quality supports increased their Parent Aware rating, compared to 8.46% of providers who did not receive quality supports. This is a 39.78% difference in the number

of providers increasing their rating. A study on MN Parent Aware program found that "70% of family child care providers improved their rating by at least one star from their initial rating to their second rating". For the 42 providers Think Small engages that are rated 2 stars or lower, we assume 39.78% will improve their rating by at least 1 star.

**Source:** Baker et al., 2019 and Tout et al., 2011 — Level of Evidence: 6

**Figure: 0.07055**

**Type: Reduced grade retention from participation in quality early child program**

**Notes:** A meta-analysis on early childhood care and education found that children who attend quality early care programs are 8.3 percentage points less likely to be retained. McCoy et al., 2017 findings are primarily from center-based programs, so we modify the 8.1 percentage point increased educational attainment by the reduced effectiveness of home- vs. center-based care (15% less effective) (Bassok et al., 2016).

**Source:** McCoy et al., 2017 — Level of Evidence: 1, Bassok et al., 2016 — Level of Evidence: 1

**Figure: \$12,000**

**Type: Cost of grade retention**

**Notes:** "Annual per pupil expenditures for special education and retention amounting to more than \$8,000 and \$12,000, respectively" Approximately \$14,300 in 2022\$.

**Source:** McCoy et al., 2017 — Level of Evidence: 1

## MONETIZED OUTCOMES

### Improved mental health from decreased financial stress

Projected Marginal Benefit: **\$55,005**

Estimation Calculation:  $97 * 0.0616 * \$9,215.00$

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#### Figure: 97

**Type:** Number of educators reporting financial stress and receiving an incentive

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). A survey of early care and education teachers found that 57% were somewhat to strongly worried about their financial situation.

**Source:** Whitebook, Philips, Howes, 2014, — Level of Evidence: N/A - Fact

#### Figure: 0.0616

**Type:** Estimated proportion of educators reducing financial stress from incentive payment

**Notes:** There are uncertainties in how much an incentive or financial bonus would reduced financial stress and anxiety. A study of the VA Teacher Recognition Program (teachers receive \$1,500 if they remained at their teaching site for at least 8-months) found that 57% of teachers said the payments helped very much with personal and family needs. This is higher than the 44% of people who report having enough savings to cover an unplanned expense of \$1,000.

We use the conservative estimate of 56% of people who do not have enough savings to cover an unplanned expense and combine that with the 11% reduction in likelihood of exhibiting anxiety from having an additional debt paid off.

**Source:** Ong et al., 2019 — Level of Evidence: 3, and Bassok et al., 2021 (2) and Bennett, 2022

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#### Figure: \$9,215

**Type:** Cost of anxiety disorder

**Notes:** The mean estimated total medical cost for individuals diagnosed with any anxiety disorder was \$6,475. \$9,215 in 2022.

**Source:** Marciniak et al., 2005 — Level of Evidence: 4

## MONETIZED OUTCOMES

### Increased earnings from increased enrollment from quality rating

Projected Marginal Benefit: **\$7,483**

Estimation Calculation:  $24 * 0.3978 * 0.08 * \$9,880$

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#### Figure: 24

##### Type: Number of providers

**Notes:** Think Small will reach 170 providers (see effect size 1 notes for "Improved physical health" pathway). Of these, about 14% will be 2 star rated.

**Source:** Think Small

#### Figure: 0.3978

##### Type: Increased likelihood of quality Parent Aware Rating from provider participation in Early Childhood Academy

**Notes:** Based on Think Small's Pathway's to Quality report, 48.24% of providers receiving quality supports increased their Parent Aware rating, compared to 8.46% of providers who did not receive quality supports. This is a 39.78% difference in the number of providers increasing their rating. A study on MN Parent Aware program found that "70% of family child care providers improved their rating by at least one star from their initial rating to their second rating". For the 42 providers Think Small engages that are rated 2 stars or lower, we assume 39.78% will improve their rating by at least 1 star.

**Source:** Baker et al., 2019 and Tout et al., 2011 — Level of Evidence: 6

#### Figure: 0.08

##### Type: Increase enrollment from higher quality program

**Notes:** Bassok et al., 2019 measured the enrollment differences for center-based programs rating above and below 4.5 on ERS. We use this as a conservative proxy, saying preserved enrollment will occur when moving from low quality to quality. As this was a study on center-based care, we assume this is relevant for home-based care as well.

**Source:** Bassok et al., 2019 — Level of Evidence: 3

#### Figure: \$9,880

##### Type: Additional annual income per child

**Notes:** The average cost of family child care is approximately \$190 weekly or \$9,880 annually

**Source:** Child Aware of Minnesota, 2022, Level of Evidence - N/A - Fact

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# Non-Monetized Outcomes

These outcomes are currently non-monetized due to uncertainties or overlap with other pathways.



## NON-MONETIZED OUTCOMES

### Increased earnings for provider from avoided business closure

**Notes:** This pathway is not currently monetized due to limited understanding of how providers earnings would change upon business closure. Educators may move to higher paying positions within early child care industry or in education, or they may exit the industry (retire or employed in new field).

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### Increased earnings from increased educational attainment (avoided business closure)

**Notes:** Ecotone has estimated various increased earnings outcomes for children, using increased kindergarten readiness and participation in quality early care. While there is evidence on the impact of center-based early care on high school graduation rate, there is limited evidence to understand the impact of home-based early care on graduation rate (compared to no early care / parent only care) or how home- versus center-based care differ on academic outcomes (when not considering quality). Due to this limited availability of evidence, we do not include a projection for this outcome, instead relying on increased earnings estimations that utilize higher quality evidence.

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### Increased job satisfaction / reduced risk of burnout

**Notes:** Research on the impact of professional development on educators' wellbeing or feelings of burnout is limited. Mentorship and professional support are likely to reduce feelings of burnout; how much, however, is unclear.

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### Increased social emotional skills from reduced educator burnout / improved educator-child relationships

**Notes:** Research suggests that stable relationships are important for child development, and engaged educators are more likely to have positive interactions with children (Thornburg et al., 2005; Whitebook et al., 2014; Brdiges et al., 2011; Grunewald et al., 2022). There is limited evidence on how much these relationships impact child or educator outcomes.

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### Reduced special education placement and grade retention (kindergarten readiness)

**Notes:** As described in the "Increased earnings from additional education (increased kindergarten readiness)", there is limited research on how much home-based care improves children's readiness compared to no early care. Further, there is limited research on how much kindergarten readiness affects the likelihood of grade retention or special education placement.

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# Appendix C: Levels of Evidence and Bibliography

On the following pages, specific sources referenced or whose figures were directly used are included. Each study is ranked by its level of evidence and includes its relevant finding. This helps to communicate the relative strength of the findings estimated and used. Whenever possible, the highest level of evidence is utilized.

## Levels of Evidence of Causality

**1 is Highest, 7 is Lowest**

- 1** Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
- 2** Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
- 3** Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
- 4** Evidence from well-designed case-control or cohort studies.
- 5** Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
- 6** Evidence from a single descriptive or qualitative study.
- 7** Evidence from the opinion of authorities and/or reports of expert committees.

## APPENDIX

Level of Evidence	Citation	Relevant Finding
Level 1 Evidence	McCoy, D. C., Yoshikawa, H., Ziol-Guest, K. M., Duncan, G. J., Schindler, H. S., Magnuson, K., Yang, R., Koepf, A., & Shonkoff, J. P. (2017). Impacts of Early Childhood Education on Medium- and Long-Term Educational Outcomes. <i>Educational Researcher</i> , 46(8), 474–487. <a href="https://doi.org/10.3102/0013189X17737739">https://doi.org/10.3102/0013189X17737739</a>	Quality early care education increased high school graduation rates and reduces use of special education and grade retention.
Level 2 Evidence	Goldin, J., Lurie, I.Z., & McCubbin, J. (2019). Health insurance and mortality: Experimental evidence from taxpayer outreach. NBER Working Paper Series.	Health care coverage reduces mortality.
Level 3 Evidence	Lenhart, O. (2019). The effects of income on health: New evidence from the Earned Income Tax Credit. <i>Review of Economics of the Household</i> , 17, 377–410. <a href="https://doi.org/10.1007/s11150-018-9429-x">https://doi.org/10.1007/s11150-018-9429-x</a>	Income from tax credits can boost access to health insurance
	Ong, Q., Theseira, W., & Ng, I.Y.H. (2019). Reducing debt improves psychological functioning and changes decision-making in the poor. <i>Proceedings of the National Academy of Sciences</i> , 116, 7244–7249.	Avoiding a debt account can improve cognitive functioning
	Schochet, O. N., Johnson, A. D., & Phillips, D. A. (2020). The Effects of Early Care and Education Settings on the Kindergarten Outcomes of Doubly Vulnerable Children. <i>Exceptional Children</i> , 87(1), 27–53. <a href="https://doi.org/10.1177/0014402920926461">https://doi.org/10.1177/0014402920926461</a>	Early care programs lead to increased kindergarten readiness
Level 4 Evidence	Baker, J., Davis, L., Haulcy, D., Keller, C., May, J., Medhanie, A., & Yates, B. (2019). Pathways to quality: Final report. Think Small. <a href="https://www.thinksmall.org/wp-content/uploads/2020/01/P2Q-Final-Report.pdf">https://www.thinksmall.org/wp-content/uploads/2020/01/P2Q-Final-Report.pdf</a>	Business support services positively impact provider outcomes
	Bassok, D., Dee, T.S., & Latham, S. (2019). The effects of accountability incentives in early childhood education. <i>Journal of Policy Analysis and Management</i> , 38(4), 838-866. <a href="https://doi.org/10.1002/pam.22149">https://doi.org/10.1002/pam.22149</a>	Center-based program ratings impacts enrollment.
	Bassok, D., Doromal, J. B., Michie, M., & Wong, V. C. (2021). The effects of financial incentives on teacher turnover in early childhood settings: Experimental evidence from Virginia. University of Virginia, EdPolicyWorks. <a href="https://vecf.org/wp-content/uploads/2021/12/6de6fd54-e921-4c88-a452-ad7cabccc362.pdf">https://vecf.org/wp-content/uploads/2021/12/6de6fd54-e921-4c88-a452-ad7cabccc362.pdf</a>	Incentives positively impact educator retention.
	Bassok, D., Fitzpatrick, M., Greenberg, E. and Loeb, S. (2016), Within- and Between-Sector Quality Differences in Early Childhood Education and Care. <i>Child Dev</i> , 87: 1627-1645. <a href="https://doi.org/10.1111/cdev.12551">https://doi.org/10.1111/cdev.12551</a>	Informed the estimated difference in home-based and center-based care.

## APPENDIX

Level of Evidence	Citation	Relevant Finding
Level 4 Evidence	Baum, S., Ma, J. & Payea, K. (2013). Education Pays: The benefits of higher education for individuals and society. The College Board.	There are financial benefits associated with additional education.
	Bridges, M., Fuller, B., Huang, D.S., & Hamre, B.K. (2011) Strengthening the early childhood workforce: How wage incentives may boost training and job stability. <i>Early Education and Development</i> , 22(6), 1009-1029. DOI: 10.1080/10409289.2010.514537	Stable relationships are important for child development, and engaged educators are more likely to have positive interactions with children.
	INNOVATIONS in Community Research and Program Evaluation, & Cincinnati Public Schools. (2020). Kindergarten readiness, preschool attendance, and academic achievement. <a href="https://www.researchconnections.org/childcare/resources/37868">https://www.researchconnections.org/childcare/resources/37868</a>	Students on-track for kindergarten are more likely to graduate high school on time.
	Magnuson, K., Ruhm, C. & Waldfogel, J. (2007). Does prekindergarten improve school preparation and performance? <i>Economics of Education Review</i> , 26(1): 33-51.	Early care programs lead to increased kindergarten readiness
	Marciniak, M. D., Lage, M. J., Dunayevich, E., Russell, J. M., Bowman, L., Landbloom, R. P., & Levine, L. R. (2005). The cost of treating anxiety: the medical and demographic correlates that impact total medical costs. <i>Depression and anxiety</i> , 21(4), 178–184. <a href="https://doi.org/10.1002/da.20074">https://doi.org/10.1002/da.20074</a>	There is an incremental cost associated with depression, other anxiety disorders, and prior mental health diagnoses
	SRI International. (2015). Early Learning Scholarships Program Evaluation Report Appendix C: Minnesota State Early Learning Scholarships: Evaluation Report on Child Outcomes.	Early care programs lead to increased kindergarten readiness
	Tamborini, C. R., Kim, C., & Sakamoto, A. (2015). Education and Lifetime Earnings in the United States. <i>Demography</i> , 52(4), 1383–1407. <a href="https://doi.org/10.1007/s13524-015-0407-0">https://doi.org/10.1007/s13524-015-0407-0</a>	There are financial benefits associated with additional education.
	Tout, K., Starr, R., Isner, T., Cleveland, J., Albertson-Junkans, L., Soli, M., & Quinn, K. (2011). Evaluation of Parent Aware: Minnesota’s quality rating and improvement system pilot. Minnesota Early Learning Foundation. <a href="http://mnachievementgap.mnpo.org/shelf_list/doc97_MELF_2011_Evaluation_of_Parent_Aware.pdf">http://mnachievementgap.mnpo.org/shelf_list/doc97_MELF_2011_Evaluation_of_Parent_Aware.pdf</a>	From the initial to second rating, family care providers improved their Parent Aware rating.
	Trent, A. (2019). The impact of prior settings in early childhood on kindergarten readiness (Publication No. 604) [Doctoral dissertation, Eastern Kentucky University]. Online Theses and Dissertations.	Children attending early care are more likely to be kindergarten 'ready'
Viscusi, W. K., & Hersch, J. (2008). The mortality cost to smokers. <i>Journal of health economics</i> , 27(4), 943–958.	Value of a Statistical Life Year for those 65+ is approximately \$100,000	
Level 5 Evidence	Center for American Progress. (n.d.). The hidden cost of a failing child care system. <a href="https://interactives.americanprogress.org/childcarecosts/?_ga=2.265256971.566241979.1658515325-317624085.1654202493">https://interactives.americanprogress.org/childcarecosts/?_ga=2.265256971.566241979.1658515325-317624085.1654202493</a>	The cost of a year out of work assuming a woman earns the median Ramsey County salary and leaves the workforce for 1 year at age 30 is nearly \$200,000.

# APPENDIX

Level of Evidence	Citation	Relevant Finding
Level 5 Evidence	Stormont, M. & Young-Walker, L. (2017). Supporting professional development needs for early childhood teachers: an exploratory analysis of teacher perceptions of stress and challenging behavior. <i>International Journal on Disability and Human Development</i> , 16(1), 99-104. <a href="https://doi.org/10.1515/ijdhhd-2016-0037">https://doi.org/10.1515/ijdhhd-2016-0037</a>	Early childhood providers' experience feelings of burnout and stress, and many feel like leaving or quitting.
	Thornburg, K.R., Raikes, H.A., Wilcox, B.L., Edwards, C.P., Torquati, J.C., Hegland, S.M., Peterson, C.A., Summers, J.A., & Atwater, J.B. (2005). Policy Brief: Compensation of Early Childhood Teachers: What Value do we Place on Young Children? Publications of the Center on Children, Families, and the Law (and related organizations), 18. <a href="https://digitalcommons.unl.edu/ccflpubs/18">https://digitalcommons.unl.edu/ccflpubs/18</a>	Stable relationships are important for child development, and engaged educators are more likely to have positive interactions with children.
	Totenhagen, C., Hawkins, S., Casper, D., Bosch, L., Hawkey, K. & Borden, L. (2016) Retaining Early Childhood Education Workers: A Review of the Empirical Literature, <i>Journal of Research in Childhood Education</i> , 30:4, 585-599, DOI: 10.1080/02568543.2016.1214652	Increases in hourly wage increase the likelihood of child care worker retention.
	Whitebook, M., Phillips, D., & Howes, C. (2014). Worthy work, STILL unlivable wages: The early childhood workforce 25 years after the National Child Care Staffing Study. Berkeley, CA: Center for the Study of Child Care Employment, University of California, Berkeley.	Stable relationships are important for child development, and engaged educators are more likely to have positive interactions with children.
Level 6 Evidence	Tonyan, H.A., Paulsell, D. & Shivers, E.M. (2017). Understanding and Incorporating Home-Based Child Care Into Early Education and Development Systems, <i>Early Education and Development</i> , 28:6, 633-639, DOI: 10.1080/10409289.2017.1324243	Research on home-based care is limited.
	Whitebook, M. & Sakai, L. (2003). Turnover begets turnover: an examination of job and occupational instability among child care center staff. <i>Early Childhood Research Quarterly</i> , 18(3): 273-293.	Attracting and retaining talent in the early care industry is challenging with the low compensation prospects.
Level 7 Evidence	Grunewald, R., Nunn, R., & Palmer, V. (2022). Examining teacher turnover in early care and education. Federal Reserve Bank of Minneapolis. <a href="https://www.minneapolisfed.org/article/2022/examining-teacher-turnover-in-early-care-and-education">https://www.minneapolisfed.org/article/2022/examining-teacher-turnover-in-early-care-and-education</a>	Stable relationships are important for child development, and engaged educators are more likely to have positive interactions with children.
	Minnesota Department of Human Services. (2020). Status of child care in Minnesota, 2019. <a href="https://edocs.dhs.state.mn.us/lfserver/Public/DHS-7660B-ENG">https://edocs.dhs.state.mn.us/lfserver/Public/DHS-7660B-ENG</a>	Minnesota's family child care closure rate is around 16%.
	Minnesota's B8 Workforce Core Team. (2018). Policy Brief on Minnesota's Early Childhood Workforce Planning Efforts: An Action Plan for the State of Minnesota from the B8 Workforce Core Team.	Attracting and retaining talent in the early care industry is challenging with the low compensation prospects.
	Schochet, L. (2019). The child care crisis is keeping women out of the workforce. The Center for American Progress. <a href="https://www.americanprogress.org/article/child-care-crisis-keeping-women-workforce/">https://www.americanprogress.org/article/child-care-crisis-keeping-women-workforce/</a>	20% of mothers not currently working would look for a job if they had better access to child care and 10% of fathers in the same position.
	Tran, T.U. (2022). Half of Minnesota child care providers unsure how long they'll remain in business. Federal Reserve Bank of Minneapolis. <a href="https://www.minneapolisfed.org/article/2022/half-of-minnesota-child-care-providers-unsure-how-long-theyll-remain-in-business">https://www.minneapolisfed.org/article/2022/half-of-minnesota-child-care-providers-unsure-how-long-theyll-remain-in-business</a>	Providers are near 80% capacity.

## APPENDIX

Level of Evidence	Citation	Relevant Finding
Level 7 Evidence	U.S. Department of Education. (2016). High-Quality Early Learning Settings Depend on a High-Quality Workforce: Low Compensation Undermines Quality. U.S. Department of Health and Human Services.	Attracting and retaining talent in the early care industry is challenging with the low compensation prospects.
N/A - Fact	Bennett, K. (2022). Survey: Less than half of Americans have savings to cover a \$1,000 surprise expense. Bankrate. <a href="https://www.bankrate.com/banking/savings/financial-security-january-2022/">https://www.bankrate.com/banking/savings/financial-security-january-2022/</a>	44% of people who report having enough savings to cover an unplanned expense of \$1,000
	ChildCare Aware of Minnesota. (2021). Cost of care. <a href="https://www.childcareawaremn.org/community/cost-of-care/">https://www.childcareawaremn.org/community/cost-of-care/</a>	Cost of family child care ranges from \$160 - \$202 per week depending on child age.
	Laughlin, L. L. (2010). Who's minding the kids?: Child care arrangements: Spring 2005/Summer 2006. United States Bureau of the Census.	Nearly 1/5 of children are in more than one type of child care arrangement
	Morse, A. (2022). Stable fertility rates 1990-2019 mask distinct variations by age. United States Census Bureau. <a href="https://www.census.gov/library/stories/2022/04/fertility-rates-declined-for-younger-women-increased-for-older-women.html?utm_campaign=20220406msacos1ccstors&amp;utm_medium=email&amp;utm_source=govdelivery">https://www.census.gov/library/stories/2022/04/fertility-rates-declined-for-younger-women-increased-for-older-women.html?utm_campaign=20220406msacos1ccstors&amp;utm_medium=email&amp;utm_source=govdelivery</a>	To estimate the cost of a year out of work, we leverage the average age that a woman leaves the workforce to have a child (30).
	State of Minnesota Office of the Revisor of Statutes. (2007, October 8). 9502.0367 Child/adult ratios; Age distribution restrictions. <a href="https://www.revisor.mn.gov/rules/9502.0367/">https://www.revisor.mn.gov/rules/9502.0367/</a>	For group family child care, the total licensed capacity is 12 children to 1 adult.
	Statista. (2022, July 27). Number of families in the United States by number of children under 18 living in the household from 2000 to 2021. <a href="https://www.statista.com/statistics/183790/number-of-families-in-the-us-by-number-of-children/">https://www.statista.com/statistics/183790/number-of-families-in-the-us-by-number-of-children/</a>	45% of families have 1 child, and 55% have 2 or more children in the U.S.
	Think Small. (2022a). Ramsey ECA Process Map. [unpublished raw data, personal communication].	Ramsey County Early Childhood Academy will have 3 main program service areas.
Think Small. (2022b). Wage Subsidy Models. [unpublished raw data, personal communication].	Think Small estimates reaching 100 providers each year.	



# Appendix D: Glossary

## Common Terms in the Ecotone Analysis

<b>Discount Rate</b>	The annual rate of reduction of the value of outcomes accrued in the future, designed to account for uncertainty and the time value of money when calculating a present value
<b>Effect Size</b>	The change in the likelihood of a cost occurring given the program
<b>Estimated Return</b>	Present value of all monetized outcomes
<b>External Data</b>	Data not gathered by and/or studies not conducted by the program being analyzed
<b>External Validity</b>	The extent to which results of a given study are applicable across other contexts
<b>Evidence Based</b>	An approach to the program’s work which is designed based on existing research and applications
<b>Evidence Informed</b>	An approach to program’s work which is designed with the knowledge and influence of existing research
<b>Impact</b>	The change in outcomes derived exclusively from the given program
<b>Internal Data</b>	Data gathered by the program itself
<b>Internal Validity</b>	The extent to which results of a given study are only applicable to the context of that study
<b>Intermediate Outcome</b>	The change resulting from the short-term outcome
<b>Levels of Evidence of Causality</b>	Level 1 = greatest level of evidence that there is a causal relationship between the variables, Level 7 = lowest level of evidence that there is a causal relationship between the variables
<b>Logic Model (Theory of Change)</b>	The planned methodology for accomplishing the desired change(s)
<b>Long-term Outcome</b>	The change resulting from the intermediate outcome

<b>Marginal Cost</b>	The effect size multiplied by the outcome cost. The average change in cost accrued
<b>Monetized Outcome</b>	An outcome which has been linked to a cost occurring event, thereby placing a dollar value on the outcome
<b>Net Present Value (NPV)</b>	The aggregation of benefits and costs valued in the present day given an assumed time period and discount (interest) rate
<b>Non-Monetized Outcome</b>	The change which is not or could not be linked, due to data quality, to a cost occurring event, thereby keeping the outcome from having a dollar value placed on it
<b>Outcome</b>	The resulting change occurring from the program’s inputs and activities
<b>Outcome Cost</b>	The total cost of an event occurring
<b>Output</b>	The product from the inputs and activities of the program (e.g. number of people served)
<b>Present Value (PV)</b>	A single annuitized benefit or cost (depending on the outcome) valued in the present day given an assumed time period and discount rate
<b>Short-term Outcome</b>	The initial change generated from the program
<b>Trumping Rules</b>	Selecting certain outcomes over others when they are interlinked to avoid double counting



# Ecotone Analytics is an impact accounting organization that does benefit-cost, strategy and portfolio analysis for clients' social and environmental impacts.

**Disclaimer:** This assessment addresses the impact measurement and management systems, practices, and metrics employed by the impact assessment consultants. It does not address financial performance and is not a recommendation to invest. Each investor must evaluate whether a contemplated investment meets the investor's specific goals and risk tolerance. Ecotone Analytics GBC (Ecotone), its staff, and Ecotone analysts are not liable for any decisions made by any recipient of this assessment.

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