

Vermont Early Care and Education Financing Study

Estimated Costs, Financing Options, and Economic Impacts



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Presented to the Vermont Senate Committees on Appropriations, Health & Welfare, and Finance and Vermont House Committees on Appropriations, Human Services, and Ways & Means

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January 2023



Thank you all for inviting us to present the results of our Vermont Early Care and Education Financing Study. We hope this presentation and the conversations that follow over the next two days can provide critical guidance. I am Christopher Doss, a policy researcher at the RAND Corporation, a nonpartisan, nonprofit research organization. I am joined, via Zoom, by my colleagues Lynn Karoly and Aaron Strong. Lynn is a senior economist at RAND and is a leader in the early care and education field, particularly around the cost of early care. Aaron is a senior economist at RAND who specializes in the modelling the effects of policy changes at the state and federal level. His work has been influential in guiding investments in California, Puerto Rico, among other states.

Vermont has demonstrated a commitment to ensuring access to high-quality early care and education

- In recent years, Vermont has focused on expanding access to and the quality of early care and education (ECE)
 - Increasing the income eligibility for ECE subsidies
 - Expanding the pre-kindergarten program to reach universality
 - Using the SStep Ahead Recognition System (STARS) to define and incentivize quality
- Even with these investments, many families cannot afford the cost of ECE and may not participate in high-quality programs
- Further investments raise two key policy questions:
 - How much will it cost?
 - How can it be paid for?

Slide 2

This study comes at the heels of substantial investments already made by Vermont in early care and education – often abbreviated as ECE. These investments in recent years have targeted three general areas. The first is making ECE more affordable by expanding the generosity and reach of public subsidies. Second, Vermont has expanded access to ECE through the establishment of the state-funded universal prekindergarten program that serves children one or two years before kindergarten entry. In Vermont, that program provides 10 hours of early education per week during the school year. Finally, Vermont has focused on improving the quality of ECE through the SStep Ahead Recognition System, or STARS.

Despite these critical investments, many families still cannot afford the high cost of ECE and thus may not participate in high-quality programs. As one example, though the current subsidy system is available to families that make up to 3.5 times the federal poverty guidelines, there is not enough money in the system to provide subsidies for all eligible families. So further investments present us with two key policy questions: How much will expanded access for high-quality ECE cost? And how can it be paid for? This study seeks to estimate the answer to the first question, while posing potential options for the second question.

2021 Act 45 requested a financing study to inform future investments

- Motivation
 - Immediate investments are necessary to support Vermont’s economy, provide access to high-quality ECE, and ensure Vermont’s early educators are fairly compensated and well supported
 - Continue and build upon the five-year redesign of the Child Care Financial Assistance Program (CCFAP) that began in fiscal year 2020
- Legislation requires a “Financing Study” that
 - Projects the costs of expanding the State’s ECE benefit to more families, requiring commensurate compensation for providers, and utilizing cost of care in the CCFAP (Study 1)
 - Identifies and determines the feasibility of implementing stable, long-term funding sources to finance an affordable, high-quality early ECE system for children from birth through five years of age (Study 2)

Slide 3

This study was statutorily commissioned by Act 45. The parameters of Act 45 touch on some of the most pressing policy issues today. First, Act 45 acknowledges that ECE is intertwined with the broader Vermont economy and can be seen as an investment to support the economy. Second, it acknowledges that early educators face very low pay and consideration should be given to pay that is commensurate with the required knowledge, skills and competencies. Third, it acknowledges that this act builds off the advancements we just delineated, including the redesign of the subsidies disbursed through the Child Care Financial Assistance Program (CCFAP).

Our study has two components that correspond to the two objectives of the financing study delineated in Act 45. The first component aims to project the costs of expanding the State’s ECE benefits to more families, requiring commensurate compensation for providers, and utilizing a cost of care model to reimburse providers. This last point means that when estimating the cost of a high-quality ECE system, we will estimate the value of the resources required to provide high-quality services instead of relying on prices charged by providers. The second component aims to identify feasible, stable, long-term funding sources for this expanded system and estimates the expected fiscal and economic impacts.

Today's presentation

- Background on ECE system in Vermont
- Study 1 (Cost Study) methods and key findings
- Study 2 (Finance Study) methods and key findings
- Other considerations



Slide 4

This is a roadmap of today's presentation. We will begin by providing you background on the ECE system in Vermont to illustrate some of the underlying features that drive our approach and results. We will then provide an overview of the methods and key results of each study, taking each study in turn. The purpose of this presentation is to provide a broad overview of the Vermont ECE sector, the methodologies employed in the study, and the key findings from each study. We hope that this can set the stage for more detailed and substantive discussions with each of the interested committees. The report contains much more detail as well and is publicly available.

Today's presentation

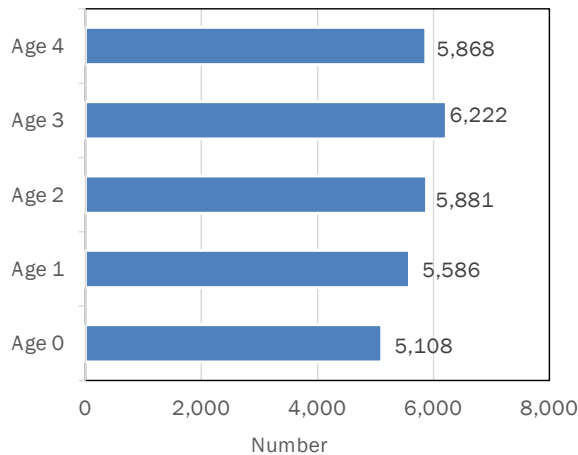
- **Background on ECE system in Vermont**
- Study 1 (Cost Study) methods and key findings
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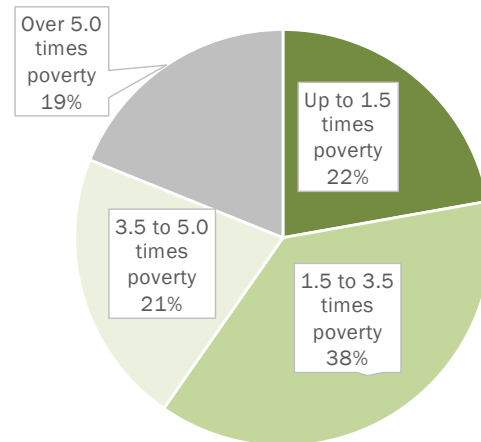
Slide 5

Key demographics of pre-school-age children in Vermont

- About 5,800 children per annual cohort



- About 60% of pre-school-age children are in families with income up to 3.5 times poverty



SOURCE: Authors' analysis of American Community Survey public use data for 2015–2019. See RAND report Tables A.1 and 2.1.

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Our study focuses on children from age zero to kindergarten entry, a group we call pre-school-age children. We group annual cohorts of children by kindergarten entry groups. At any point in time, for example, 4-year-olds is the group that will enter kindergarten in the following fall. During that pre-K year, some will have already turned age 5. The three-year-olds will enter kindergarten a year later; again, this cohort will gradually turn age 4 by the fall when they would enter preK. Vermont has about 5,800 children on average in each of these annual cohorts, or close to 30,000 pre-school-age children.

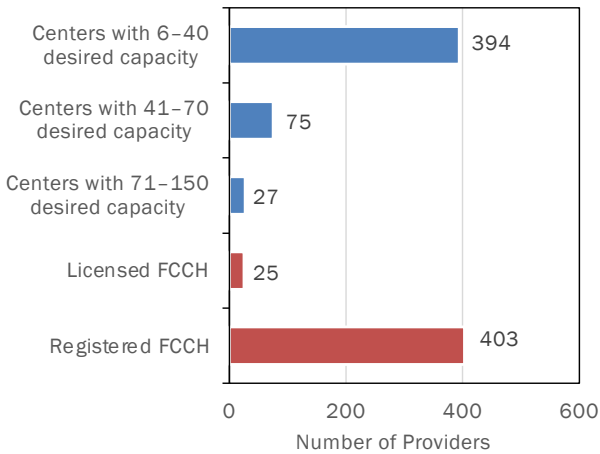
As we talk about access to ECE and subsidies to help families pay for the cost of care, we will refer to family income groups based on the ratio of family income to the poverty level. Much of our analysis focuses on children in families with income up to 3.5 times poverty, which represents about 60% of pre-school-age children in Vermont (the first two darker green pie slices in the diagram). For reference, as of 2022, 3.5 times poverty corresponds to about \$80,600 for a family of 3. This is the group of children that is currently eligible for subsidized ECE under CCFAP – the Child Care Financial Assistance Program.

We also consider expanding ECE subsidies for families with income up to 5.0 times poverty, which adds another 21% of this age group. As of 2022, 5 times poverty equates to \$115,150 for a family of three.

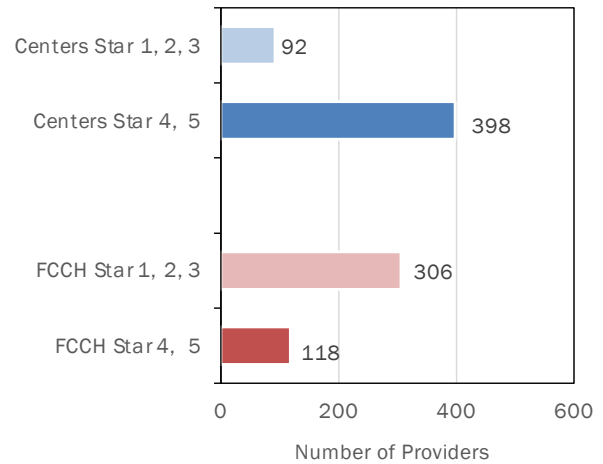
For families with pre-school age children, most families – 71 percent – have just one pre-school aged child.

Landscape of mixed-delivery ECE providers in Vermont

- Regulated providers include centers and family child care homes (FCCHs); mostly small in size



- Quality ratings are higher for centers compared with FCCHs



SOURCE: Authors' analysis of Vermont Child Care Provider Data as of September 2022. See RAND report Tables 2.4 and 2.5.

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A few aspects of the landscape of Vermont's ECE providers are important to understand.

We focus on regulated providers, namely licensed centers, Head Starts and public school preK, and family child care homes – a mixed delivery system of private and public providers.

Vermont stands out for the relatively small size of most of its providers. Nearly 80 percent of centers (shown in the blue bars on the left figure) have a maximum desired capacity of 40 children and represent just over half of all center- or school-based slots. FCCHs (represented in the red bars) have a maximum enrollment of 12 children. We account for this size distribution in estimating the per child-hour cost of ECE.

As noted earlier, Vermont has been investing in quality through the STep Ahead Recognition System (STARS), the state's quality recognition and improvement system. Just over 80 percent of centers (again, in the blue bars) have achieved a top rating of Star 4 or Star 5, but this is the case for fewer than 30% of FCCHs (in the red bars).

Wages and benefits for the ECE workforce remain low

Occupation	Mean	Median
Hourly wage		
Child care workers	14.85	13.72
Preschool teachers, except special ed.	17.27	16.48
Annual earnings		
Child care workers	30,880	28,540
Preschool teachers, except special ed.	35,920	34,290
Preschool teachers, special ed.	58,920	55,610
Kindergarten teachers, except special ed.	57,340	56,090
Elementary school teachers, except special ed.	63,480	59,850

SOURCE: U.S. Bureau of Labor Statistics occupational wage data for Vermont as of May 2019. See RAND report Table 2.6.

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ECE educators in Vermont, like in many areas of the country, have relatively low pay. Bureau of Labor Statistics data for Vermont show that the average or median annual earnings is below \$35,000 for child care or preschool teachers, well below earnings for kindergarten or elementary school teachers, yet the ECE field increasingly expects lead teachers to have a bachelor's degree, the same as public school teachers. These ECE workforce members are also less likely to have employer-provided benefits such as health insurance and retirement plans. This issue of low compensation predates COVID but has made it especially difficult to recruit and retain ECE staff as the state emerges from the pandemic economy. This is one reason why Act 45 required that the financing study assume a commensurate compensation level, which we do.

3 main federal and state ECE funding streams

Funding stream /Source (F=federal, S=state)	Eligible ages	Maximum family income	2018–2019 Funding Level (millions \$)	2018–2019 Per-child funding (\$)
Early Head Start (F)	0 to 2	1.0 times poverty	22.364	15,453
Head Start (F)	3 to 4			
Universal PreK (S)	3 to 4	Universal	41.146	4,591
CCFAP (F, S)	0 to 4, 5 to 12	3.5 times poverty	31.452	5,353
Child care tax credits (F)	0 to 12	Universal	7.148	508 per filer
Child care tax credits (S)	0 to 12	Universal	1.738	123 / 213 per filer
Misc. (Title I, meals)	0 to 12	Targeted	5.472	—
TOTAL	—	—	109.320	—

SOURCE: See RAND report Table 2.8.

NOTE: Excludes funds for school-age care, early intervention (0 to 3) and special needs pre-K (3 to 5). CCFAP = Child Care Financial Assistance Program.

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There are three major sources of funding for ECE in Vermont as shown in the rows shaded in green:

- Federally funded Head Start and Early Head Start
- State-funded universal preK under Act 166
- CCFAP which is funded by combination of federal and state monies.

Smaller funding streams include federal and state tax credits for child care.

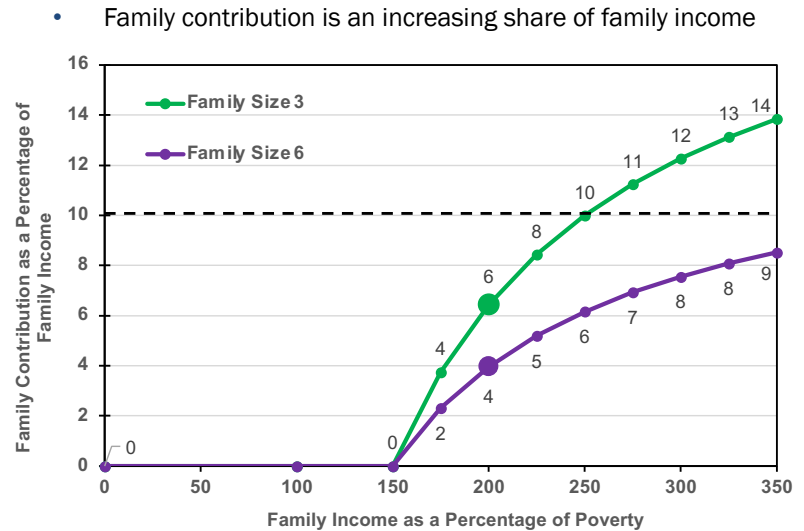
Federal and state funding for subsidized ECE programs in Vermont in 2018–2019 totaled approximately \$109 million.

You will see this figure later expressed in 2022 dollars as \$125 million.

Note that these estimates EXCLUDE funding for school-age children and funding for special needs preschoolers.

CCFAP subsidies are relatively generous compared with other states

- Subsidies extend up to 3.5 times poverty
- No family contribution for families with income below 1.5 times poverty
- Family contributions do not vary with the number of children
- The weekly dollar family contribution increases with family income (starting at \$25/week)
- But some smaller-sized families may contribute more than 10% of their income



SOURCE: CCFAP subsidy schedule. See RAND report Figure 2.2.

NOTE: Family income shares are the maximum in each income bracket.

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CCFAP is a key part of Vermont's subsidy system and the main focus of our expansion of subsidies. In terms of the current system, Vermont is one of the more generous in that:

- Subsidies are available to families with income up to 3.5 times poverty, one of the highest levels in the country
- There is no contribution from families with income below 1.5 times poverty
- The family contribution does not vary with the number of children

This figure illustrates the current subsidy schedule by plotting the family contribution as a share of family income along the income distribution up to 3.5 times poverty. This schedule varies depending on family size, so we show results for families of size 3 and size 6 to capture the upper and lower bounds. For example, a family of size 3 with income of 2x poverty will contribute 6 percent of their income toward ECE under CCFAP (the larger circle on the green line) and a family of size 6 with income of 2x poverty will contribute 4 percent of their family income (the larger circle on the purple line).

The current subsidy structure means that some families of size three (and also size 4) have family contributions that exceed 10 percent of their income (the horizontal dashed line).

As part of our analysis, we consider this same schedule but with a cap of 10 percent of family income.

Parents with pre-school-age children are a relatively small share of the Vermont labor force

	Number	Number in the Labor Force	Labor Force Participation Rate (%)	Number of Potential New Entrants
Parents with at least one pre-school-age child	38,722	32,637	84.3	6,085
With income up to 3.5 times poverty	21,416	16,611	77.6	4,805
With income over 3.5 times poverty	17,306	16,026	92.6	1,280

- Vermont labor force ages 20 to 64 is about 300,000 persons

SOURCE: Authors' analysis of American Community Survey public use data for 2015–2019. See RAND report Table 2.3.

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With the long-term trend toward increased women's labor force participation, it has become common for women with pre-school-age children to be employed or actively looking for work, albeit at a lower rate compared with their male counterparts. Vermont is no exception with participation rates by parents with pre-school-age children at 84 percent as seen in the first row. These parents represent about 10 percent of the current Vermont workforce of about 300,000 adults. And the 6,000 parents with young children who are not in the labor force—in other words the potential new entrants—represent about 2 percent of the total workforce.

It is the case that low-income parents with pre-school-age children—the group that would be targeted with expanded subsidies—participate in the labor force at lower rates compared with their counterparts with higher income. As shown here, 78 percent of parents with pre-school-age children with income below 3.5 times poverty are in the labor force compared with 93 percent of their counterparts with young children but with income above that threshold.

Even if the labor force participation rate for the lower-income group matched the 93 percent rate of the higher-income group, the labor force would increase by about 3,000 persons or about 1 percent of the labor force.

We will provide the estimated number of new entrants into the labor market when

presenting the results of Study 2, but these figures help to contextualize those estimates.

Today's presentation

- Background on ECE system in Vermont
- **Study 1 (Cost Study) methods and key findings**
 - Estimated cost of high-quality system
 - What families would contribute
 - Gap for public sector to fill
- Study 2 (Finance Study) methods and key findings
- Other considerations

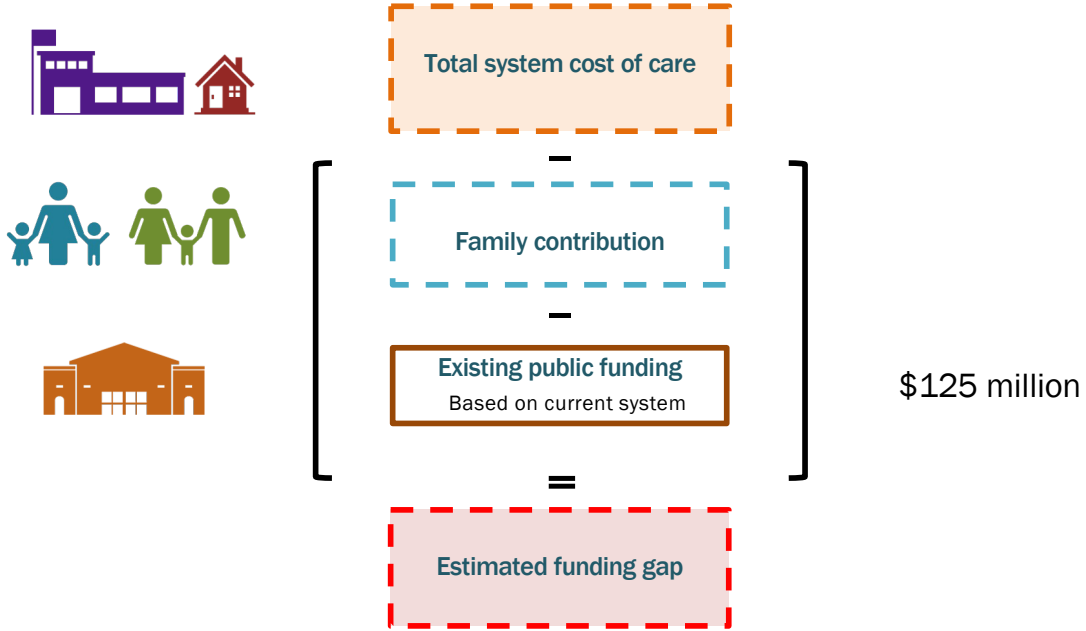


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We now focus on our findings for study 1, presenting our approach and findings in three areas:

- The estimated cost of a quality ECE system in Vermont
- What families might be expected to contribute toward these costs
- What the gap would be for the public sector to fill.

Study 1 involves four components



NOTE: 2022 dollars.

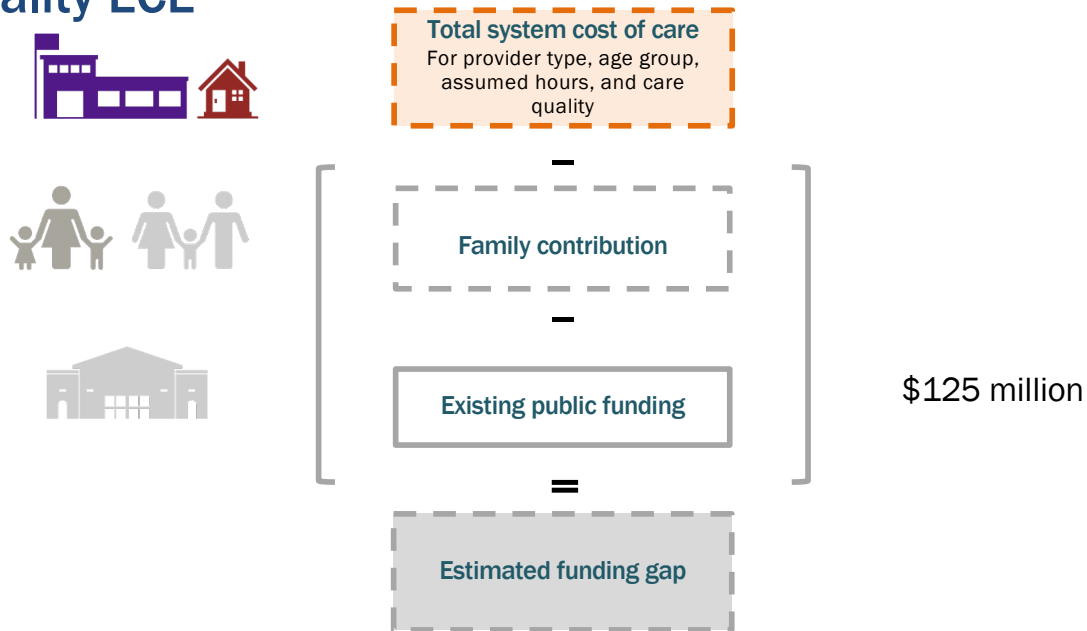
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The cost study or Study 1 involves quantifying 4 components as shown in this diagram. The 3 boxes with dashed lines are based on estimates we generate, while the third box for the amount of public funding for ECE subsidies is based on the current system (the \$125 million in 2022 dollars shown earlier).

All other figures will also be in annual 2022 dollars.

We discuss each of the dashed boxes in turn.

First component is an estimate of the cost of high-quality ECE



NOTE: 2022 dollars.

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For the first component, represented in the top box, we estimate the aggregate Vermont-wide cost of ECE based on estimates from a cost model that assumes high quality program features, including commensurate compensation, and then applies those cost estimates across the assumed hours of care for pre-school-age children in the state.

Key assumptions for the cost estimate, which we now discuss, are the assumed quality features and the commensurate compensation for ECE staff who work with children in the centers and family child care homes.



Key assumptions about program quality in centers and FCCHs



Ratios and group sizes

Same as licensing which are consistent with accreditation standards



Lead teacher education

Bachelor's degree in early childhood field



Assistant teacher education

Associate's degree in early childhood field



Professional development

Paid time for professional activities and other support resources



Other quality features

Evidence-based curriculum
Use of developmental screeners
Use of child formative assessments
Independent classroom/home quality assessments

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This chart lists the key assumptions of what constitute high quality in centers and family child care homes. One key cost driver is the ratio of children to adults and group sizes. For example, classrooms are assumed to have two adults, a lead teacher and an assistant teacher, with up to 8 children for infants and toddlers, 10 children for 2-year-olds, and 20 children for preschoolers. The ratios we use in our models are consistent with accreditation and licensing standards.

We also assume that lead teachers have a bachelor's degree in early childhood, while assistant teachers are assumed to have an associate's degree. This is the standard required in Head Start programs and most state-funded pre-K programs, and is consistent with accreditation standards. It reflects the expanding research evidence on the importance of supporting even the youngest learners in a "whole child" approach that requires early educators to have a deep knowledge of the science and practice of child development across multiple developmental domains.

Our models also account for funds needed for professional development activities and other professional support services to help early educators advance their knowledge, skills, and competencies. Finally, our models assume other quality features such as using an evidence-based curriculum, developmental screeners, formative assessments, and independent assessments of quality.

These quality features are all consistent with accreditation standards and a Star 5 rating under the redesign of Vermont STARS.



Commensurate compensation is based on a salary scale

Classroom staff salaries used in cost model, by role

Role	Median Annual Wages	Median Hourly Wages
Assistant Teacher	\$46,553	\$22.38
Lead Teacher	\$69,420	\$33.38

Cost model assumes a 26% fringe benefit rate.

NOTE: 2022 dollars.

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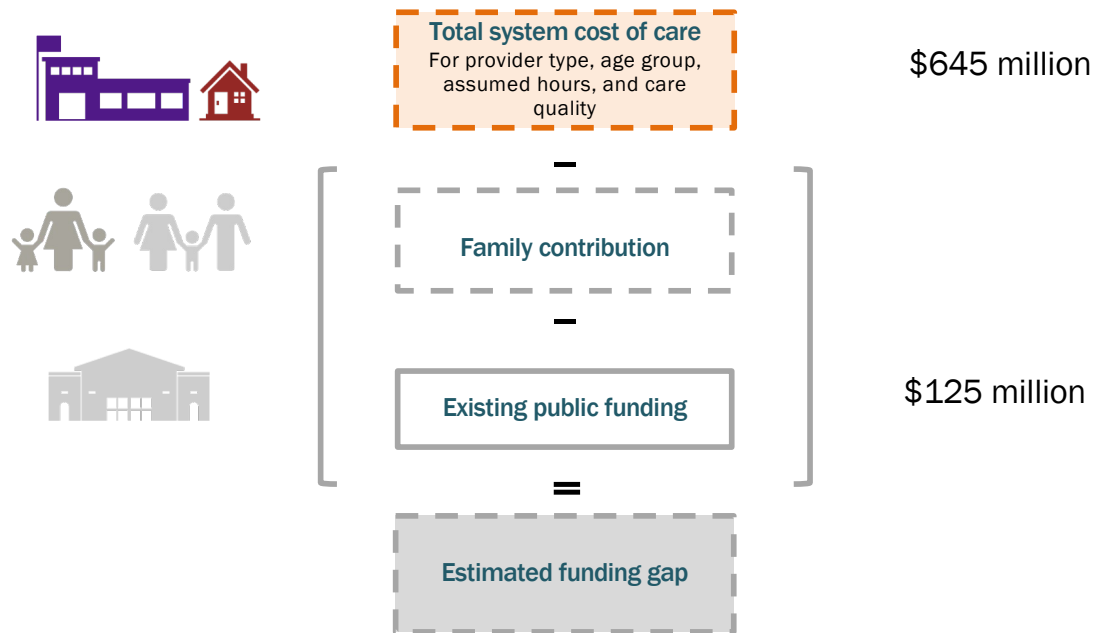
Recall that Bureau of Labor Statistics data for Vermont show median annual wages in 2019 of \$30,000 to \$35,000 for the ECE workforce. Consistent with Act 45, our cost model assumes that staff in high-quality ECE centers and family child care homes receive commensurate compensation with professionals in related fields, such as public school teachers. Drawing on efforts in Vermont to define commensurate compensation for the ECE workforce and similar efforts in other parts of the country, we define a salary schedule tied to qualifications and job role, such as being a lead teacher or an assistant teacher in a classroom.

Because of our assumptions about the lead teachers having a bachelor's degree and assistant teachers having an associate's degree, we use the median wages shown here in 2022 dollars. These same earnings are assumed for family child care home providers. These assumed levels of cash salaries represent a substantial increase compared with the status quo, but are consistent with expectations for knowledge, skills, and competencies in similar occupations such as kindergarten teachers.

We also assume a commensurate package of fringe benefits, consistent with recent recommendations from the Vermont Association for the Education of Young Children Advancing ECE as a Profession Task Force. This includes employer contributions, shared with the employee, for health, dental, and vision insurance; employer contributions for retirement and short- and long-term disability; and paid

time off for 30 days of combined vacation, illness, and personal time off. We model these benefits as a 26 percent fringe benefit rate.

Estimated system annual cost cost is \$645 million

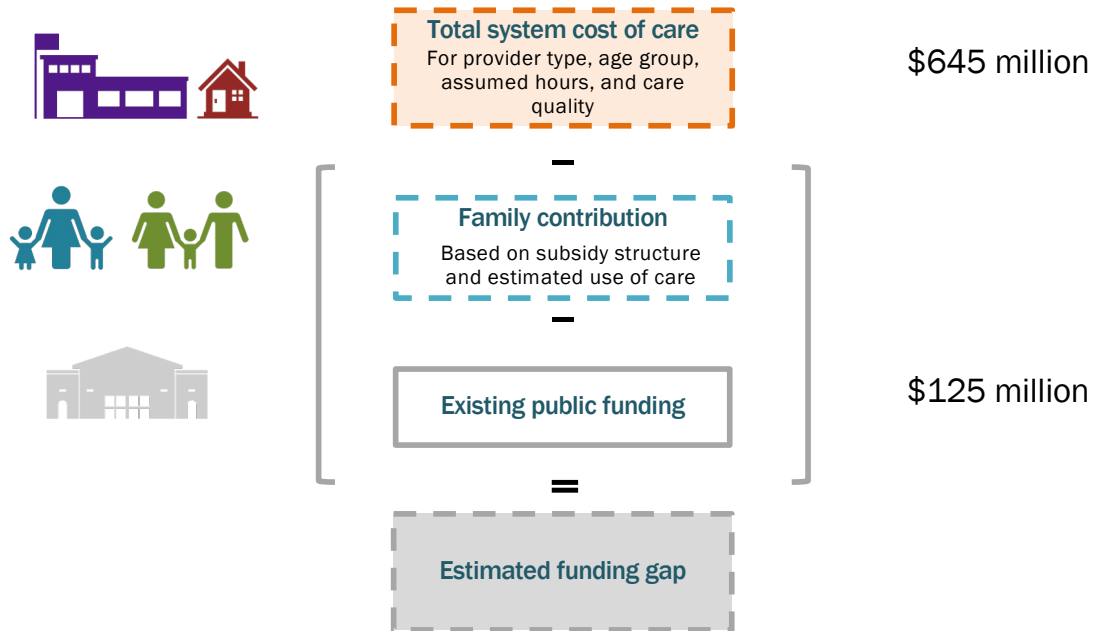


NOTE: 2022 dollars.

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Based on these assumptions about the resources needed for high-quality ECE, the commensurate compensation schedule, and estimates of the hours of care demanded, the estimated cost across all of Vermont's pre-school-age children for high-quality ECE with a well-compensated workforce is estimated to total about \$645 million in 2022 dollars per year. This estimate also includes system-level cost such as administrative costs, data systems, quality improvement supports, and workforce professional development.

Second component is an estimate of family contribution



NOTE: 2022 dollars.

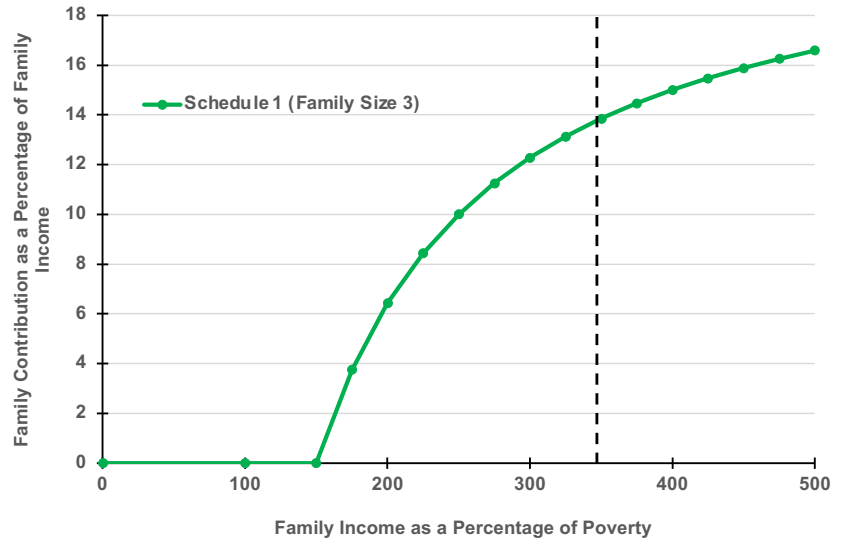
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The next step in our cost study is to estimate how much families would be expected to contribute toward those costs based on several subsidy schedules—like we just showed for CCFAP—and the estimated use of care. This is represented by the second blue box.



Five alternative family contribution schedules are modelled (Schedule 1)

Subsidy schedules	
1.	Status quo



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The study considers five potential sliding-scale schedules for families to contribute toward the cost of the ECE they use.

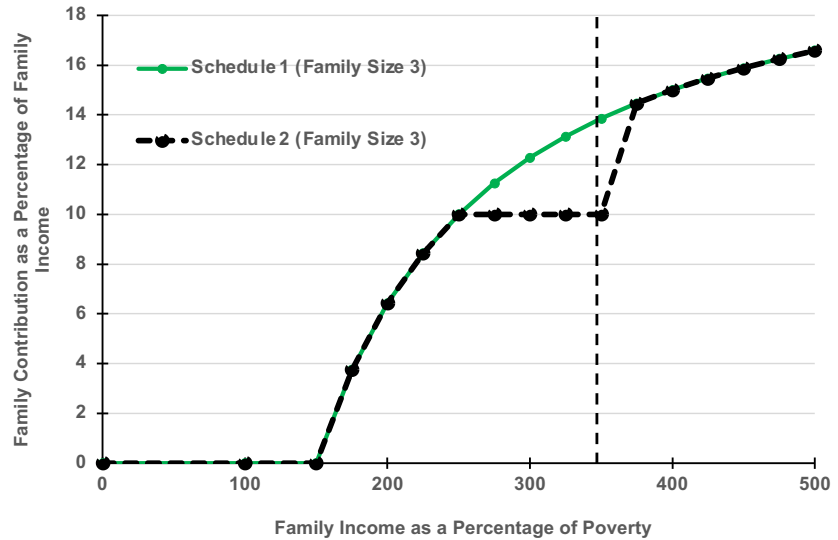
The first schedule, shown in the green line, is the status quo schedule under CCFAP that we showed earlier, for a family of size 3, except that we have extended the subsidy schedule up to 5x poverty following a similar structure. Under this schedule, the family contribution for a family of 3 would reach about 17 percent of family income at 5x poverty. (These maximum family contribution shares would be lower for families of size 4 or higher).



Five alternative family contribution schedules are modelled (Schedule 2)

Subsidy schedules

1. Status quo
2. Status quo, cap costs to 10% of income for families up to 3.5x poverty



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The second schedule imposes a cap at 10 percent of family income up to 3.5 times poverty. As you see, the black dashed line does not exceed 10 percent of family income.

Between 3.5 and 5 times poverty, the family contribution resumes the same family contribution rate as under Schedule 1.

In aggregate, this schedule means that the total family contribution will be somewhat lower, so the public sector would have to fill in the gap.

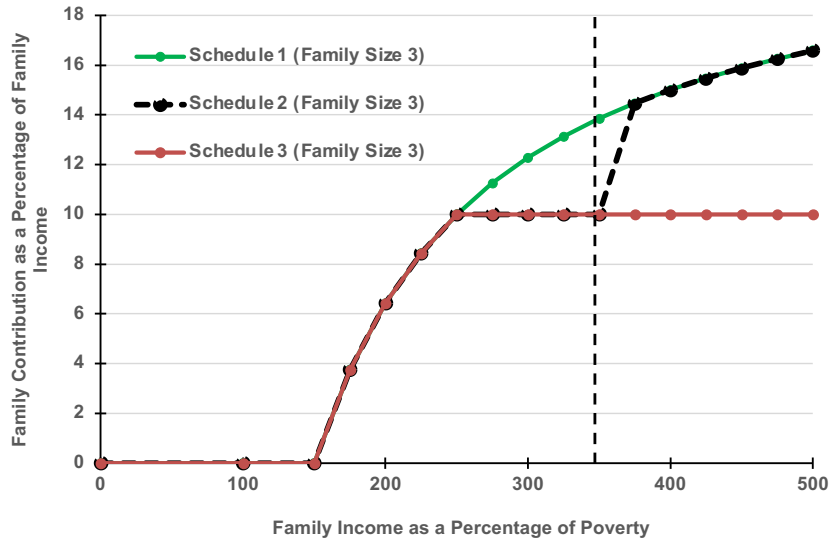
In presenting results, we will focus on this schedule, Schedule 2, as it can be viewed as the one that is closest to what was described under Act 45.



Five alternative family contribution schedules are modelled (Schedule 3)

Subsidy schedules

1. Status quo
2. Status quo, cap costs to 10% of income for families up to 3.5x poverty
3. Extend schedule 2 up to 5x poverty



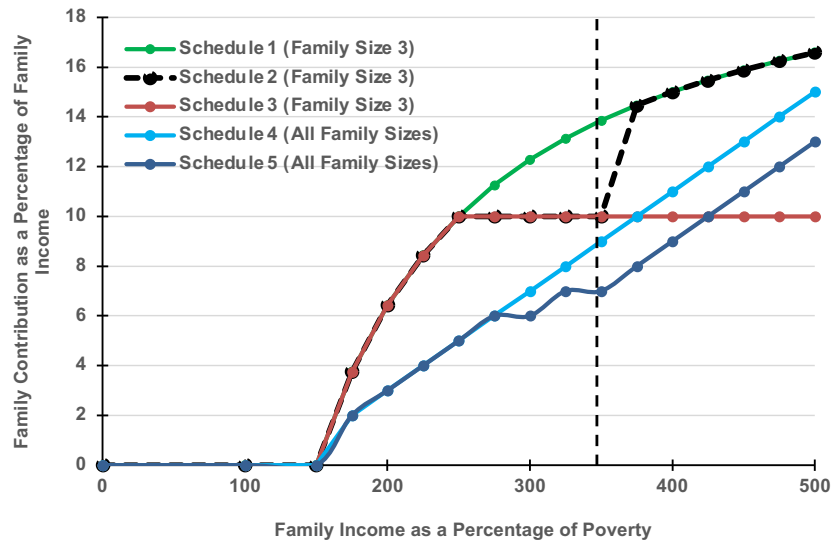
Under this third schedule added with the red line, no family up to 5x poverty pays more than 10 percent of family income.

Thus, Schedule 3 will require an even higher public contribution, given the extended cap at 10 percent.



Five alternative family contribution schedules are modelled (Schedules 4 and 5)

Subsidy schedules	
1.	Status quo
2.	Status quo, cap costs to 10% of income for families up to 3.5x poverty
3.	Extend schedule 2 up to 5x poverty
4.	Sliding scale maxes at 10% by 3.5x poverty and 15% by 5x poverty
5.	Sliding scale maxes at 7% by 3.5x poverty and 13% by 5x poverty



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Finally, we consider two more schedules that have families pay a fixed percentage regardless of size and the percentage increases with family income. Under Schedule 4 (the lighter blue line), the maximum share is under 10 percent for families with income up to 3.5 times poverty, but reaches a maximum of 15 percent at 5x poverty. Schedule 5 reaches a maximum of 7 percent of family income at 3.5 times poverty and a maximum of 13 percent at 5x poverty. Compared with Schedules 1 and 2, Schedules 4 and 5 will require even more of a public sector contribution.

As already noted, we focus on Schedule 2, shown here in the black dashed line which differs from the status quo in capping the family contribution at 10% up to 3.5 times poverty and then extends the schedule without a cap up to 5 times poverty. We choose this schedule because we feel it most closely adheres to the spirit of Act 45. In the report, we provide information on all options.

The options are also ordered from least to most generous. The status quo is therefore the least generous option, with Schedule 5 most generous in having lower family contribution shares compared with the other options. As you will see, there is a direct correlation between generosity and the size of the gap. More generous schedules will create a larger funding gap that will need to be covered by public funds.



Estimated family contribution varies across schedules

Subsidy schedules	Total Family Contributions (In Millions)
1. Status quo	\$263
2. Status quo, cap costs to 10% of income for families up to 3.5x poverty	\$260
3. Extend Schedule 2 up to 5x poverty	\$246
4. Sliding scale maxes at 10% by 3.5x poverty and 15% by 5x poverty	\$249
5. Sliding scale maxes at 7% by 3.5x poverty and 13% by 5x poverty	\$240

NOTE: 2022 dollars.

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This chart summarizes the family contribution based on the 5 subsidy schedules, in all cases using the schedule up to 5x poverty. As is expected, family contributions are greatest under Schedule 1, which provides families with the least generous subsidies and family contributions are the lowest under Schedule 5 given the lower percentage shares that families would contribute.

In considering these family contributions, it is important to keep in mind three features of the subsidy schedules:

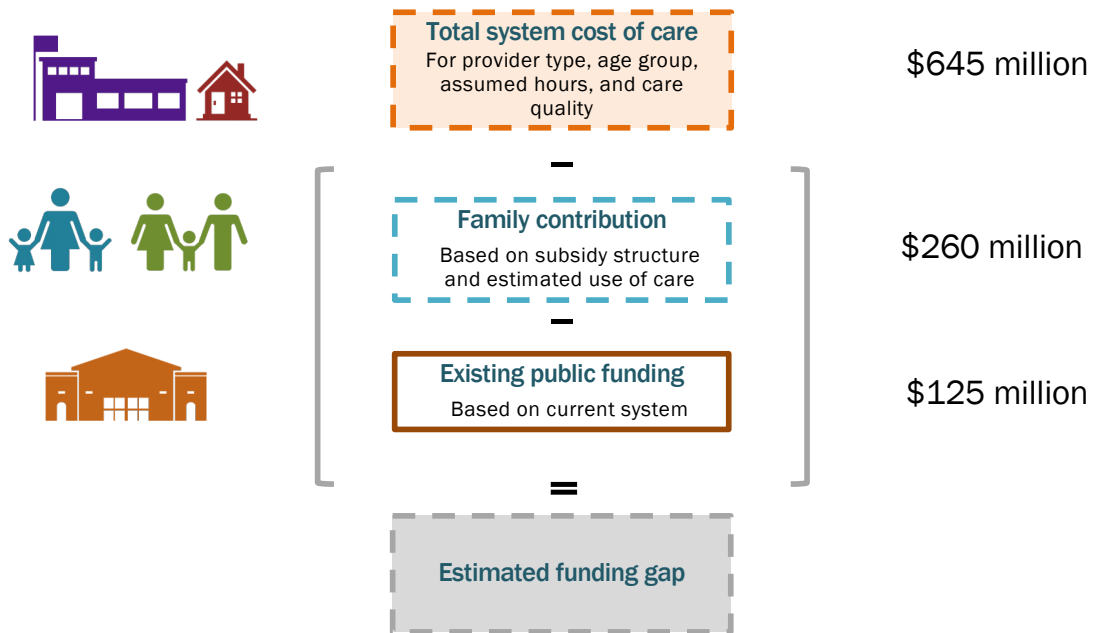
- First, all schedules maintain the current policy of requiring zero family contribution when family income is below 1.5 times the poverty level.
- Second, contributions from families between 1.5 and 3.5 times the poverty level are capped at 10 percent or 7 percent of income for Schedules 2 to 5, depending on the schedule.
- Third, families with incomes of more than five times the poverty level would not be subsidized under the subsidy schedules considered in the study. Indeed, those families contribute \$162 million of the total family contribution amounts shown under each schedule.

We focus on Schedule 2, where families in total would contribute \$260 million per

year toward the cost of care, or about 40% of the total cost. The contribution from families with incomes under 5x poverty would be about \$100 million of that total.

Note that if we assumed Schedule 5, the most generous, families would contribute about \$20 million less than under Schedule 2, which means funding an additional \$20 million in cost with public funds.

Estimates of first three components lead to gap estimate



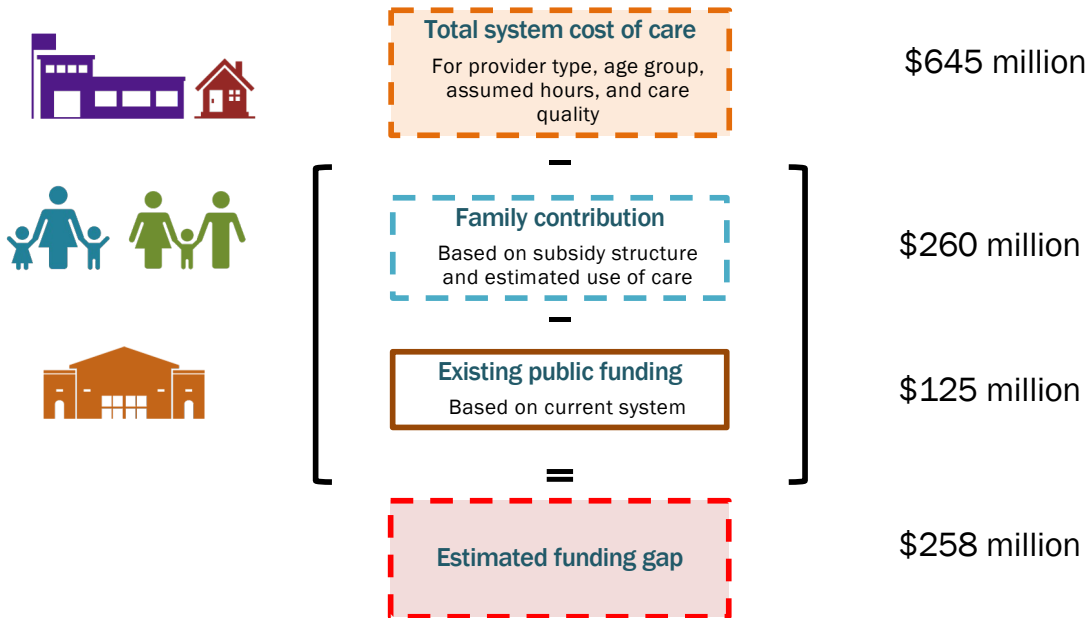
NOTE: 2022 dollars using subsidy Schedule 2.

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In our accounting, we now show the estimate of \$260 million for the family contribution under subsidy Schedule 2.

And we have retained our estimate of \$125 million in current federal and state funding for pre-school-age children to subsidize ECE.

Size of the funding gap is \$258 million with subsidy schedule 2



NOTE: 2022 dollars using subsidy Schedule 2.

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In the final step, the estimate of the gap in funding that would need to be raised by additional state revenues is then computed as the residual after the family contribution and existing public funds are subtracted from total cost. The resulting gap under Schedule 2 is \$258 million.

Looking across the 5 subsidy schedules:

- The smallest gap estimates are \$179 million to \$193 million and retain the status quo of limiting subsidies to families making 3.5 times the poverty level or less.
- The larger gap estimates of \$256 million to \$279 million extend subsidies to higher-income families, up to 5x poverty.

Today's presentation

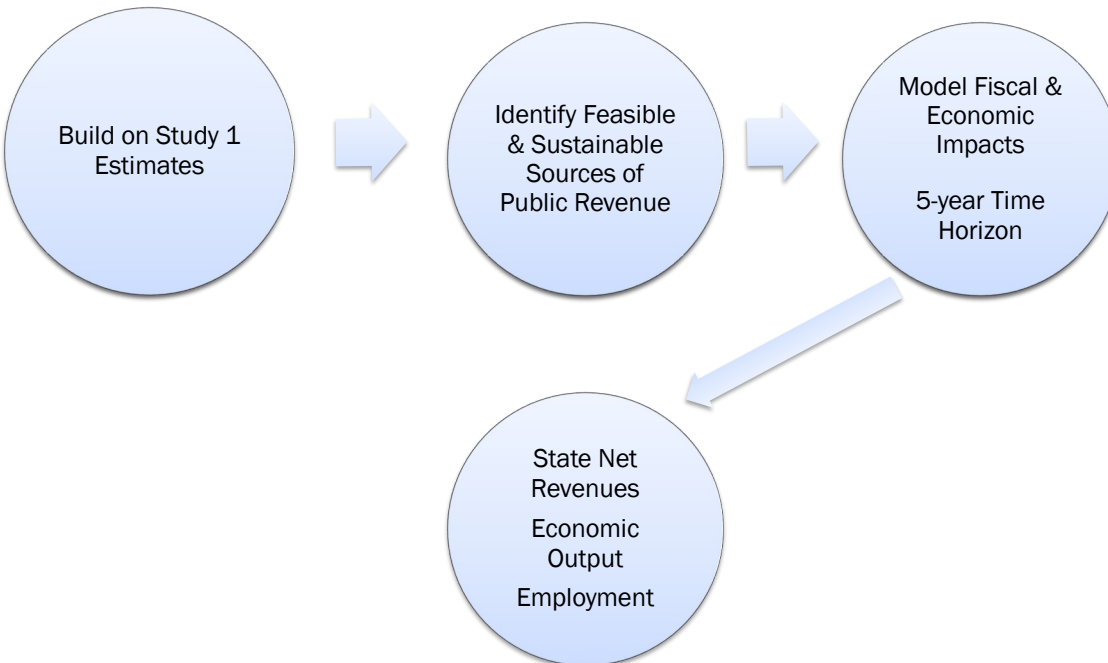
- Background on ECE system in Vermont
- Study 1 (Cost Study) methods and key findings
- **Study 2 (Finance Study) methods and key findings**
 - Potential funding sources
 - Other fiscal and economic impacts
- Other considerations



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We will now turn to Study 2. As in Study 1, we will provide a brief overview of the methods, followed by the key findings.

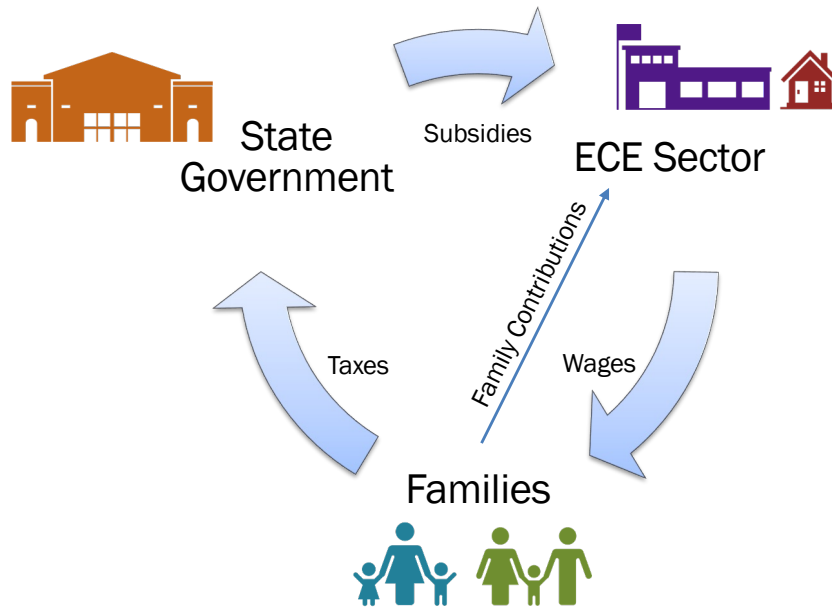
Approach: Address questions from macro-level



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This component of the study takes findings from Study 1, such as the gap in funding of each subsidy schedule, and proposes feasible and sustainable public revenue sources to fill that gap. Using these sources of funding and other outputs of Study 1, such as the size of the funding gap across the different schedules, we then model the effects on the VT economy over a 5-year time horizon and produce estimates of state net revenues, economic output, among others. The models we use have been implemented by RAND researchers in many other contexts and capture not only changes in revenue to the state, but also how households and firms react to those changes in the economic landscape across all sectors of the VT economy – not just the ECE sector.

ECE in the Circular Economy



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This figure gives you a sense of how the model works. The model sees the VT economy as a circular system. Families pay taxes to the state government, which in turn distributes that money across different sectors. For example, the government provides money to the ECE sector through the subsidy system. This is in addition to money families directly pay the ECE system through their family contributions. However, the ECE sector also provides wages to the families in the system, who in turn pay taxes and may themselves pay for ECE services. Though this figure concentrates on the ECE sector, the model considers the entire VT economy in the same way. The key takeaway here is that changes in taxes, subsidies or compensation has downstream effects that the model will capture. But also, effects such as changes in labor force participation have to be looked at in terms of the overall economy, which this model also accounts for. We will return to this latter point later.

Methods: Modeling approach and data

Modeling will account for three sources of policy change



INCREASED
COMPENSATION



INCREASED SUBSIDIES



FISCAL FINANCING
(TAXES, ETC.)

- Use models developed by RAND for prior studies

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You can see that each of the three major arrows will be a source of policy change in this study. Wages will increase for ECE workers, which will affect the amount of taxes that they will pay, in addition to the change in taxes that would come from the implementing the funding instruments. Of course, these increases in government revenue will be used to increase the subsidies to families, which will flow to ECE providers.

Funding source options



OPTION 1: NEW
PAYROLL TAX



OPTION 2: INCREASE
SALES AND USE TAX



OPTION 3: NEW
LIMITED SERVICE TAX
(PERSONAL SERVICES
AND EQUIPMENT)



OPTION 4: NEW
EXTENDED SERVICE TAX
(LIMITED SERVICE TAX +
BROADCASTING AND
PUBLISHING)



OPTION 5: NEW SODA TAX
INCREASE HOSPITALITY TAX
NEW PAYROLL TAX



OPTION 6: NEW SODA TAX
INCREASE HOSPITALITY TAX
INCREASE SALES TAX

- Options 1 – 4 are single-source options that rely on one type of tax to produce the needed revenue
- Options 5 and 6 are options composed of bundles of different taxes, meant to minimize increases in any one type of tax

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The first task of Study 2 is to posit potential feasible, stable, and sustainable sources of funding. Though Act 45 asked for three possible sources, we provided a menu of six possible options. The first four options are what we call single-source options, which use just one revenue source to cover the full gap. Possibilities include adding a payroll tax, increasing the sales and use tax, or adding service taxes. For the service taxes, we provide two options: taxing a limited or extended set of services. The limited set of services concentrates on personal services and equipment (auto mechanics, household repairs, dry cleaning, etc.). The extended services include the limited services and then add broadcasting and publishing (newspapers, magazines, radio, cable TV, movies, etc.). The last two options are what we call “bundles” and combine three sources of revenue. Each bundle option contains a soda tax and a hospitality tax and then either a new payroll tax or an increase in the sales and use tax. We provide bundles as options to reduce the dependence on any one revenue source. We also considered other sources of funding. We considered adding a lottery, though VT already has a lottery and adding a second one will likely cause current participants to simply spread their current purchases across the full set of new lottery options, not necessarily spend more. We also considered property taxes, but that system is complicated in VT and our data did not allow us to properly model such increases. Finally, we considered a novel tax on digital advertising that Maryland attempted to institute, but a Maryland circuit court recently struck that down. In the end, the charge of finding feasible and sustainable sources of revenue makes proposing novel

revenue sources challenging for two reasons: (1) projecting the revenue is difficult without prior information and (2) the sustainability and stability is inherently unknown.

Baseline estimates of potential revenue

Tax	Type of Change	Revenue Generated
Payroll tax	1%	\$196 million
Sales tax	1 percentage point increase from base	\$85 million
Limited services tax	6%	\$105 million
Extended services tax	6%	\$143 million
Hospitality tax	1 percentage point increase from base	\$14 million
Soft drink tax	15%	\$24 million

NOTE: 2022 dollars.

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Before we focus on proposed rates for these funding options, we want to benchmark approximately how much money the sources can raise. If we were to establish a 1% payroll tax, we would generate about \$196M in revenue for the government. A sales tax already exists, and if we were to increase that by one percentage point, that would produce \$85M in revenue. A one percentage point increase means increasing the rate from the current 6 percent to 7 percent. Similarly, establishing a six percent tax on limited services will produce \$105M in revenue, while taxing the extended set of services will produce \$143M. Hospitality and soft drink taxes will produce less income. Increasing the hospitality tax by 1 percentage point (for example, moving from 9% on meals to 10%) will bring in \$14M, and establishing a soft drink tax of 15% will bring in \$24M. We obtain the soft drink tax amount based on what other jurisdictions, such as Philadelphia do.

Phase-in funding for Schedule 2

		Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Phase-in Stage	Gap (\$ millions)	Payroll Tax	Sales Tax	Limited Services Tax	Extended Services Tax	Bundle of Taxes	Bundle of Taxes
25%	65	0.29%	0.66pp	3.09%	2.25%	Soda: 15% Hospitality: 1pp Payroll: 0.09%	Soda: 15% Hospitality: 1pp Sales: 0.21pp
50%							
75%							
100%	258	1.14%	2.64pp	13.60%	9.65%	Soda: 15% Hospitality: 1pp Payroll: 0.94%	Soda: 15% Hospitality: 1pp Sales: 2.18pp

NOTES: 2022 dollars. "pp" represents the percentage point increase in hospitality or sales tax from their current rates. As payroll, services, and soda taxes would be new to Vermont, amounts are proposed tax rates.

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As you may recall, Study 1 provided six subsidy schedules and the gaps they are likely to produce. In the report, we further break out the gaps within subsidy schedules to show how the gap grows as the subsidies are applied up the income ladder. For the purposes of this presentation, we show the options for Schedule 2, which is what we believe hews most closely to the spirit of Act 45. Recall this option caps family contributions to 10% of their income for families making up to 3.5x the poverty level. Fully implementing that schedule will produce a gap of approximately \$258M. Vermont may not be able to cover that full gap immediately, so we illustrate a situation where 25% of the gap is instituted in a year so that the policy is phased in over four years. With this approach, fewer people would be eligible for the subsidy in the earlier years, but in four years, all people covered by the scenario would receive a benefit. The first year, where 25% of the gap is incurred with \$65M, if Option 1 is chosen, a payroll tax of 0.29% would cover the gap. If Option 2 were chosen, the gap would require an increase in the sales tax of 0.66p. For Option 3, we would need a limited services tax of 3.09%. For Option 4, we would need an extended services tax of 2.25%. The bundling options shown decreases these amounts when combined. By the fourth year, when the full \$258M gap is incurred, a payroll tax of 1.14%, an increase in the sales tax of 2.64pp, a limited services tax of 13.60%, or an extended services tax of 9.65% will cover the full gap. Again, the bundles reduce increases on any one type of tax.

Funding estimates takeaways

- **Funding the smallest gap estimates that maintain the status quo of funding families up to 3.5x the poverty level could be accomplished with single sources of revenue**
 - 0.9 percent payroll tax OR
 - 2.0 percentage point increase in the sales tax OR
 - A new limited services tax of 9.9 percent OR
 - A new expanded services tax of 7.1 percentBundling sources can lower the increases in any one tax source
- The larger gaps generated by expanding subsidies to higher-income families cannot be funded by a single revenue source without increasing the magnitude of the tax to a rate not typically seen in other states
- Tax increases are expected to have a small impact on household economic well-being

Slide 33

The results we presented pose a few key takeaways. First, the smallest gap estimates based on maintaining the status quo of subsidizing families up to 3.5 times the poverty level can be covered with single sources of revenue. This gap estimate is on the order of \$190M and can be covered by a 0.9 percent payroll tax, a 2 pp increase in the sales tax, a new limited services tax of 9.9 percent, or an expanded services tax of 7.1 percent. Again, using the bundling options will reduce the tax level of any one source. However, the larger gaps generated by expanding subsidies to higher-income families cannot be funded by a single source without rates that are larger than what is seen in other states. In those cases, the bundles are the most feasible options. In all cases, even with the taxes needed to cover the highest gaps, the effect on household economic well-being is small. Of course, the options presented here and in the report are merely potential options. Vermont can use our estimates as a starting point for creating other bundles of taxes or for funding other subsidy schedules.

Effects of expanded subsidies on labor force participation

- Our estimates indicate between 612 – 2,800 persons would enter the labor force, depending on generosity of subsidy and assumptions
 - Estimates are less than 1% of the labor force
- Will likely lead to
 - \$59 – \$218 million in additional Gross State Product
 - \$1.5 – \$18 million in state and local tax revenue
- Larger gap estimates (\$255M – \$279M) represent
 - 0.6% of Gross State Product
 - 2.8% of appropriations

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A key feature of our model is that it takes into account the effects of the expected increase in labor force participation. As we stated in Study 1, the structure of the Vermont labor market constrains the possible number of new workers that will be induced to work because of the policy. Our models indicate that we can expect between 612 and 2,800 people to enter the labor market, depending on the subsidy schedule adopted and other assumptions. These estimates are less than one percent of the labor force. When taking into account all the economic benefits of this potential increase in the number of workers, we anticipate \$59M to \$218M more in gross state product and \$1.5M to \$18M in additional state and local tax revenue. It is important to note that these are liberal estimates that assume all these workers enter the labor market. This is optimistic for a variety of reasons. First, though these workers may start looking for jobs, there is no guarantee all will find jobs and it may result in increases to the unemployment rate. Second, these jobs may simply reshuffle some current workers from one sector to another. Reshuffling of workers does not result in a net increase in labor force participation.

Finally, to juxtapose the increases in Gross State Product with the gaps. Our largest gap estimates, which are on the order of \$255 to \$279M, are about 0.6 percent of gross state product or about 2.8 percent of yearly appropriations.

Today's presentation

- Background on ECE system in Vermont
- Study 1 (Cost Study) methods and key findings
- Study 2 (Finance Study) methods and key findings
- **Other considerations**



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Other considerations

- Use 2019 data because last full year of data before pandemic
 - Data from pandemic era would not be representative pre- or post-pandemic era
 - We do not try to model a “new normal” due to the uncertainty of what that would look like
 - We present dollar amounts in 2022 values
- Estimates are state-level
 - Data are too limited to disaggregate by region (e.g., rural vs. urban)
- Our results indicate what a long-run, stable ECE system would look like
 - We do not model the transition, but provide phase in funding possibilities

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We want to leave you with a few additional considerations to help you contextualize our results.

First, we use 2019 data for baseline estimates of demographics, ECE program spending, and other parameters in our cost and economic models because that is the last full year of data before the pandemic. It's important to note that data from the pandemic era would not be representative of the pre- or post-pandemic era and could lead to erroneous conclusions. We also do not try to model the new normal because of the uncertainty of what that would look like. Perhaps this past year is the first year of this new normal, but that data is not available yet. However, to make the numbers more useful to the current environment, we inflate the numbers to 2022 dollars.

Second, our estimates are state-level and not disaggregated by region, for example rural vs. urban, because the data are too limited to accurately make those distinctions. However, some of the features that differ across the regions are accounted for in our model. For example, Vermont has a high share of small ECE centers in part because a substantial part of the state is rural with less densely populated areas that can only support small centers. Small centers cost more on a per child basis because the overhead cannot be spread out across a higher enrollment – that has been accounted for in our models.

Finally, our results are indicative of what you can expect in the long-run with a stable, expanded ECE system in place. Though we do not model the transition, we do provide phase in funding possibilities.

Other considerations

- Added cost for children with special needs are not included
 - Estimates indicate about 10% of young children have special needs but those needs vary considerably
 - Assumptions about high-quality settings and compensation would provide more resources than the current system
 - Estimates suggest total costs might increase by 1% over our estimates
- We do not explicitly model after school care for school-aged children
 - Using estimates from Vermont’s Taskforce of Universal Afterschool Access, additional funding for this population is likely to represent 10 percent of the estimated gap
- Downstream benefits to children and society are expected from increased ECE investments, but they would accrue beyond our 5-year time horizon

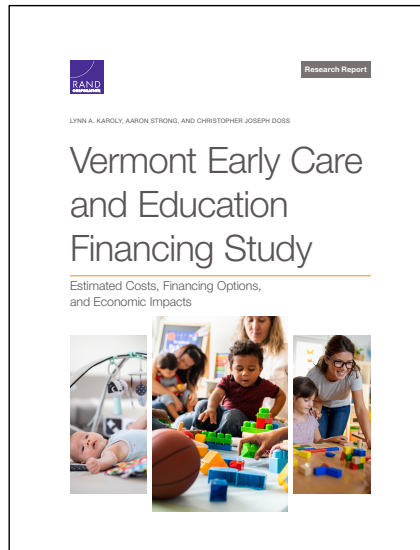
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Further, our models do not explicitly account for children the additional costs associated with providing ECE for pre-school-age children with special needs. Estimates indicate about 10% of children would be identified with special needs prior to kindergarten entry, but the range of needs is variable, making it difficult to estimate the additional cost for serving these children. These children are included in our cost estimates at the same cost as their typically developing peers. Other estimates suggest that the added cost beyond the high-quality features we already assume (for example, teacher compensation levels that would allow for hiring teachers with early childhood special education degrees) may be in the range of 10 percent. That increment, applied to 10 percent of children at these ages, implies additional cost of 1 percent that we have not accounted for. Further, we have not counted the current federal and state funds used to pay for preschool special education in our estimates of the funds in the current system. Thus, those funds are available to pay for the additional costs of meeting the ECE needs of these children.

We also do not explicitly model after school care for school-aged children. Using prior estimates of the cost of school-age care and the funding already in the system suggest expanding the subsidy system to include school-age care would likely add another 10 percent to our estimates of the gap.

Finally, research shows that there is the potential for downstream benefits to

children and society from expanding ECE access and quality. These benefits are realized as children progress through the school-age years and enter society. They are well beyond the 5-year time horizon of this study and therefore we could not account for them. In that sense, such longer-term benefits are underestimated in this study.



Available at www.rand.org/t/rra2213-1

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Thank you very much for your time and attention. The full report is publicly available on RAND's website, www.rand.org, at the URL shown here.

