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Characteristics of Approved Universal Prekindergarten Programs in Vermont in 2018/19

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In an effort to increase access to high-quality prekindergarten (preK) programs for all young children in Vermont, the state passed universal preK legislation in 2014 (Act 166). All 3- and 4-year-olds have access to 10 hours a week of state-funded preK through a mixed-delivery system of public school and private programs. Families can enroll their children at no cost in any approved preK program across the state regardless of location. In efforts to better understand program availability, program quality, and characteristics related to family choice among universal preK programs in Vermont, this study examined the characteristics of approved preK programs overall, public school and private programs separately, and programs in local education agencies with different population sizes and poverty levels. The study found that in 2018/19 fewer than 50 percent of programs were at preK capacity and that a higher percentage of private programs than of public school programs and a higher percentage of programs in high-poverty local education agencies than of programs in low-poverty local education agencies were at preK capacity. These findings raise questions about the availability of preK programs in high-poverty areas. The study also found that program quality is similar across local education agencies with different population sizes and poverty rates, suggesting that Act 166 allows for an equitable preK system in terms of program quality for families in rural and low-income areas of the state. The findings also suggest that continuing to allow families to access preK in locations other than their local education agency of residence might maximize preK availability for families in local education agencies with few—sometimes only one—preK programs. Private programs reported being open for more hours per day and for more weeks per year than public school programs were, which might reduce the need for transitions throughout the day and year for children in private programs who need additional child care beyond the 10 hours per week funded by the state.

Why this study?

Vermont is committed to providing high-quality early learning experiences to all 3- and 4-year-olds. It is one of only a handful of states with universal prekindergarten (preK), offering every child an opportunity to enroll (Barnett & Gomez, 2016; Wat & Gayl, 2009). Participation in high-quality preK is associated with better outcomes for young children (Phillips et al., 2017; Yoshikawa et al., 2013). As such, many states have increased investment in preK opportunities for children, and overall state funding for preK programs continues to rise (Diffey et al., 2017; Freidman-Krauss et al., 2019). However, funding still might not be high enough to provide access to affordable high-quality preK programs for many children (Morgan, 2019; Phillips et al., 2016). In the 2017/18 school year only 33 percent of 4-year-olds and 6 percent of 3-year-olds nationwide were enrolled in a state-funded preK program (Friedman-Krauss et al., 2019).

In an effort to increase access to high-quality preK programs and close opportunity gaps, Vermont passed a series of legislative acts that culminated in Act 166, on universal preK, in 2014. The state fully implemented universal preK in the 2016/17 school year. Act 166 provides access to 10 hours of state-funded preK per week for 35 weeks per school year for 3-year-olds, 4-year-olds, and 5-year-olds who are not eligible for kindergarten. The preK is provided at no cost to families through a mixed-delivery system of public school programs and private programs (that are both center-based and home-based) similar to those used in many other states (see box 1 for defintions of key terms used in the report).

In Vermont's universal preK model, children can attend a public school preK program run by a local education agency or attend a private preK program (Vermont General Assembly, 2014). Parents can enroll their children in

any program across the state, regardless of location. Many families have multiple options for enrolling their children in universal preK. This report details those options in terms of program availability, program quality, and family choice.

Public school and private preK programs in Vermont can be approved to participate in the universal preK program only if they have obtained a minimum rating of three out of five stars on the state's early childhood quality rating and improvement system (STep Ahead Recognition System [STARS]), met minimum licensure requirements for teachers, and submitted a formal application to the Vermont Agency of Education (Vermont General Assembly, 2014). These requirements ensure that Vermont's publicly funded preK programs meet a minimum level of quality.

Vermont is committed to making evidence-based decisions as it implements and refines its universal preK program. The Regional Educational Laboratory (REL) Northeast & Islands has worked closely with the state to create the Vermont Universal PreK Research Partnership and to develop its research agenda. The partnership conducts research to inform policy decisions regarding changes to and implementation of Act 166. In 2020 the REL Northeast & Islands released a study on the characteristics and location of children enrolled in universal preK programs in Vermont in 2016/17, the first year of implementation of Act 166, and on the factors related to enrollment in particular program options (DeMeo Cook et al., 2020).

The previous study found that families enrolled their children in public school and private programs at similar rates and that 83 percent of families enrolled their children within the boundaries of their local education agency. It also found that children receiving special education services and that children eligible for the national school lunch program were more likely to be enrolled in the highest-quality programs and in public school programs than were children who did not receive special education services and children who were not eligible, indicating that some of the state's most vulnerable children were accessing high-quality preK. However, the study also found that children enrolled in the lowest-quality programs had, on average, two fewer approved programs within the boundaries of their local education agency. As a result, families with fewer preK options in their area—such as those in rural communities—might lack access to the highest-quality programs.

The current study builds on the previous study to further inform the implementation and modification of Vermont's preK model. Specifically, this study helps Vermont stakeholders consider requirements for approved preK programs by exploring characteristics of program availability (number of hours open per day, number of weeks open per year, whether the program is at capacity, where the program is located, and whether the program plans to renew preK approval); program quality (use of a formal preK curriculum, National Association for the Education of Young Children [NAEYC] accreditation status, number of licensed teachers, and STARS quality ratings); and family choice (public school or private setting, provision of additional child care, and acceptance of child care subsidy; see appendix A for a review of the literature on these characteristics).

The results can inform stakeholders in Vermont and other states about differences in a variety of characteristics across preK programs. Knowing whether program availability, program quality, and program characteristics related to family choice vary between these two program types is important for understanding how preK experiences might differ for children attending each program type. The study also presents the distribution of preK programs across local education agencies with different population sizes and poverty levels for a variety of characteristics related to program availability, program quality, and family choice characteristics. Therefore the study findings can inform conversations about changes to Vermont's preK legislation that might increase equity and access in the state; which is important particularly in states such as Vermont where there is great geographic variation in rurality and economic opportunity and where road systems and topography can further complicate access to services.

Research questions

This study addressed two research questions on universal preK programs in Vermont in 2018/19:

- How do characteristics related to program availability, program quality, and family choice differ between public school and private programs?

- How do characteristics related to program availability, program quality, and family choice differ by local education agency population size and by poverty level?

See box 2 and appendix B for details on the study's data sources, sample, and methods.

Box 1. Key terms

Accepts subsidy payments. Private preK programs that also provide child care above and beyond preK may accept child care payments from the state for services for families who qualify for child care financial assistance, which is often referred to as subsidy payments. If a private program reported that it accepted such payments on the survey administered by the Vermont Agency of Education survey whose results this study draws from, that program was identified as a program that accepted subsidy payments. Public school programs are not eligible to accept subsidy payments for child care services.

Approved preK program. An early childhood public school or private program that has applied to become a universal preK program and has met the criteria for providing state-funded preK in Vermont, including receiving a minimum rating of 3 stars in the STep Ahead Recognition System (STARS; see below) and teacher licensure requirements (Vermont General Assembly, 2014).

Licensed teacher. Act 166 includes teacher licensure requirements that preK programs must meet to be approved to participate in the universal preK program; these requirements vary depending on the type of preK program. In public school programs each classroom's lead preK teacher must hold a Vermont teaching license issued by the Agency of Education with either an Early Childhood or an Early Childhood Special Education endorsement. In center-based private programs the program site must have at least one teacher on staff who holds a Vermont teaching license issued by the Agency of Education with either an Early Childhood or an Early Childhood Special Education endorsement, though each preK classroom does not need to be led by a licensed teacher. In home-based private programs the preK provider needs to contract with a mentor who holds a Vermont teaching license issued by the Agency of Education with either an Early Childhood or an Early Childhood Special Education endorsement, unless the provider is a licensed teacher.

Local education agency birth-to-5 population size. The birth-to-5 population for each local education agency was calculated by adding the population of all children under age 5 for all zip codes within that local education agency. Zip codes did not cross boundaries of local education agencies except in one location; for this location the zip code was counted toward both local education agency calculations. Local education agencies with fewer than 420 children under age 5 were designated as small population, local education agencies with 420–620 children under age 5 were designated as medium population, and local education agencies with more than 620 children under age 5 were designated as large population. These cutpoints were determined by examining the distribution of the study data and setting cutpoints so that approximately one-third of the population falls within each level. The maximum number of children under age 5 within a local education agency's geographic boundaries was 1,748.

Local education agency total population size. The total population for each local education agency was calculated by adding the total population for all zip codes within that local education agency. Zip codes did not cross boundaries of local education agencies except in one location; for this location the zip code was counted toward both local education agency calculations. Local education agencies with fewer than 8,000 residents were designated as small population, local education agencies with 8,000–12,499 residents were designated as medium population, and local education agencies with 12,500 or more residents were designated as large population. These cutpoints were determined by examining the distribution of the study data and setting cutpoints so that approximately one-third of the population fell within each level. The maximum number of residents within a local education agency's geographic boundaries was 38,299.

Local education agency poverty level. Poverty level was determined using data from the 2017 American Community Survey (U.S. Census, 2017). For each local education agency the percentage of the population living below the poverty level was

averaged for all zip codes within that local education agency. In Vermont local education agencies generally cover a group of towns, except in rare locations that have larger populations; therefore it was relatively straightforward to link each zip code to one local education agency. Local education agencies for which the percentage of the population below the poverty level was one standard deviation below the overall mean for all local education agencies in the state (10.3 percent) were designated as low poverty (6 local education agencies), local education agencies for which the percentage of population below the poverty level was within one standard deviation of the overall mean were designated as average poverty (39 local education agencies), and local education agencies for which the percentage of the population below the poverty level was one standard deviation above the overall mean were designated as high poverty (7 local education agencies). This approach is similar to approaches taken in other studies (for example, Battistich et al., 1995; Mohan et al., 2014); however this leaves the majority of the sample in the average poverty range.

Mixed-delivery system. Vermont provides preK through several types of programs: public schools, private center-based programs, and private home-based programs. Private programs may have either for-profit or nonprofit status. Because few preK providers are home based, private centers and homes were grouped together and labeled private programs for the purpose of this study.

National Association for the Education of Young Children (NAEYC) accreditation. Early childhood education programs can become NAEYC accredited by demonstrating that they meet evidence-based standards across 10 categories: relationships; curriculum; teaching; assessment of child progress; health; staff competencies, preparation, and support; families; community relationships; physical environment; and leadership and management. NAEYC accreditation, in addition to identifying a program as high quality, provides programs with access to resources from NAEYC such as continuous quality improvement and training and technical assistance (National Association for the Education of Young Children, n.d.).

Private program. A privately owned preK program that may be considered a child care center or home program. Because so few preK programs are home programs, the study did not analyze center-based and home-based programs separately. Some private programs that were administered the Vermont Agency of Education survey whose results this study draws from were approved to provide publicly funded preK services at the time but were not currently serving any children. This could happen if a private program that provided other early childhood education services, such as child care, applied for and received approval to provide publicly funded preK but was not serving any children eligible for or enrolled in publicly funded preK at the time of the survey. They were included in the study because they were open for business and were thus part of the pool of programs technically available to preK children.

Public school program. An early education program operated by a Vermont local education agency.

STep Ahead Recognition System (STARS). Vermont's early childhood quality rating and improvement system. To become approved to provide publicly funded preK, preK programs must receive at least three stars on the system's five-star rating scale. Through the 2018/19 school year, programs were awarded up to 17 points across five areas of recognition: regulatory history, teacher qualifications and professional development, families and community, program practices, and administration. A program needed to obtain at least 9 points to be awarded three stars, at least 12 points to be awarded four stars, and at least 15 points to be awarded five stars (Vermont Department for Children and Families, 2017).

Box 2. Data sources, sample, and methods

Data sources. This study used existing data collected by the Vermont Agency of Education on all approved universal preK programs in the 2018/19 school year. Administrative program data and data from a survey administered to approved preK programs in spring 2019 were obtained from the agency.

Administrative data included information on program type (public school or private); STep Ahead Recognition System (STARS) rating (three, four, or five stars); the number of years of participation in STARS; program site zip code; and the local education agency with which each town was associated.

The survey provided information on the following characteristics of program quality: National Association for the Education of Young Children (NAEYC) accreditation status, whether the program was a Head Start grantee (an indicator that the program served primarily children from low-income households and provided additional wraparound services such as health and dental screenings and extensive parent engagement), the number of licensed preK teachers employed by the program, and whether the program used a formal preK curriculum. The survey provided information on the following structural

characteristics of programs: the number of hours and weeks the program was open, whether the program accepted child care subsidies for payment, and whether the program was at capacity as of May 2019 (an indicator of program availability because programs that are at capacity are not available for families seeking a preK for their children). The survey asked about the number of hours open per day rather than the number of hours open per week. The daily hours may reflect both publicly funded preK hours and child care hours funded by other sources for private programs and may reflect multiple publicly funded preK offerings in all settings—for example, a morning and an afternoon session.

Data on the total population and the birth-to-5 population from the 2010 census (U.S. Census Bureau, 2010) and estimates of the percentage of the population below the poverty level from the American Community Survey of 2017 (U.S. Census Bureau, 2017) were linked to program data through zip codes.

Sample. This study included all 394 approved preK programs in Vermont at the time that the Vermont Agency of Education administered the state's newly developed preK program survey in spring 2019. The total survey response rate was 87 percent, with 344 programs returning valid survey responses. Survey respondents and nonrespondents were similar in terms of program type and of poverty level in the local education agency in which the program was located(see appendix B). Slightly lower percentages of respondents than of nonrespondents were home based and had four-star quality ratings, and a higher percentage of respondents than of nonrespondents had a five-star quality rating. A higher percentage of respondents were in local education agencies with a medium population size, and a slightly higher percentage of nonrespondents were in local education agencies with a small population size. Because of the high survey response rate, missing survey data were not imputed for this study.

Methodology. Frequencies, percentages, and means were calculated as appropriate. Descriptive statistics were calculated for all preK programs and for public school and private programs separately to compare how the examined characteristics varied between the two program types. To examine characteristics by local education agency, the same descriptive statistics were used to summarize the availability, quality, and family choice characteristics of programs in each local education agency and to examine program characteristics by local education agencies' characteristics (total population, the birth-to-5 population, and poverty level; see table C2 in appendix C for a summary).

When comparing findings across demographic groups, such as population size or poverty level, differences between groups that were greater than 5 percentage points and differences between group means that were larger than one standard deviation were considered meaningful—that is, likely larger than a difference that would occur by chance. Tests of statistical significance were not used because the study included the entire population of approved preK programs and such tests are reserved for use with samples. Bivariate correlations were used to examine the magnitude of the association among local education agency characteristics. Finally, to address additional interests of state policymakers, tables C5–C8 in appendix C show the characteristics of preK programs by county.

Findings

This section highlights key findings regarding characteristics related to program availability, program quality, and family choice among universal preK programs in Vermont. The findings regarding differences in characteristics between public school and programs are presented first, followed by the findings by local education agency characteristics (population size and poverty level). Descriptive tables examining the findings by county and by birth-to-5 population are in appendix C.[1]

Overall, fewer than half of preK programs reported being at capacity in May 2019 and a higher percentage of private programs than of public school programs had no additional vacancies for preK children

About 47 percent of public school and private preK programs indicated that they had not reached capacity as of May 2019, and a higher percentage of private programs (51 percent) than of public school programs (39 percent)

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[1] Because the sizes of the overall population and of the birth-to-5 population for each local education agency were similar (though not exactly the same), for space reasons, some tables for the birth-to-5 population sizes are provided in appendix C rather than in the main report.

had reached capacity (table 1). A program that had reached capacity no longer had vacancies available for preK children, which has implications for preK availability for children in areas where a large percentage of programs have reached capacity.

Table 1. Structural and quality characteristics of prekindergarten (preK) programs in Vermont, by program type, 2018/19 (percent)

Program characteristic	All approved programs (*n* = 344)	Public school programs (*n* = 123)	Private programs (*n* = 221)
Is at preK capacity as of May 2019	46.8	39.3	51.4
Is located in public school	39.5	97.6	7.2
Accepts subsidy payments	52.6	na	83.8
Has at least one mixed-age classroom	76.7	77.0	77.6
Is NAEYC accredited	13.4	3.3	19.0
Is a Head Start grantee	7.3	na	11.6
Uses formal preK curriculum	88.1	84.3	91.4
Plans to renew approval	95.6	99.2	95.0

NAEYC is National Association for the Education of Young Children.

na is not applicable.

Source: Authors' analyses based on Vermont Agency of Education survey and administrative data for 2018/19.

On average, preK programs were open for more than the requisite 35 weeks, and private programs operated for more weeks per year and for more hours per day than did public school programs

Overall, preK programs were open for an average of 41 weeks per year and of 8.2 hours per day (table 2). Private programs were open for more weeks per year (an average of 44) and for more hours per day (an average of 9.2) than were public school programs (an average of 35 weeks and 6.4 hours). Some 22 programs, both private and public, indicated they were not open for the requisite 35 weeks, which raises questions about the accuracy of survey responses since Act 166 requires that children have access to 10 hours of publicly funded preK per week for 35 weeks each year. Of those 22 programs, 13 indicated that they were open for 5 weeks, which suggest issues with data entry (respondents might have intended to indicate 50 weeks). However, if the survey responses are accurate, some preK programs are out of compliance with the requirements of Vermont's preK legislation.

The average number of children enrolled in each preK program was lower for private programs than for public school programs

The average number of children enrolled in each preK program was lower for private programs (19) than for public school programs (30; see table 2). The number of children enrolled in each program ranged from 0 to 133, and enrollment was less variable in private programs (range of 0–74) than in public school programs (range of 5–133).

Table 2. Program hours, number of children and of licensed teachers, and STep Ahead Recognition System (STARS) ratings of approved prekindergarten (preK) programs in Vermont, by program type, 2018/19

Program characteristic	All approved programs		Public school programs		Private programs	
	Mean (standard deviation)	Range	Mean (standard deviation)	Range	Mean (standard deviation)	Range
Hours open per day[a]	8.2 (2.2)	2–12	6.4 (1.5)	2–12	9.2 (1.9)	4–12
Weeks open per year[b]	41.0 (10.5)	0–53	35.2 (6.9)	0–43	44.2 (10.8)	5–53
Number of preK children per program[c]	23.1 (17.6)	0–133	30.1 (21.3)	5–133	19.2 (13.7)	0–74
Number of licensed teachers per program[d]	1.7 (1.2)	0–10	2.1 (1.2)	1–10	1.4 (1.0)	0–10
Total STARS rating[e]	4.5 (0.6)	3–5	4.6 (0.5)	3–5	4.5 (0.6)	3–5
STARS: Regulatory history	2.8 (0.6)	0–3	2.9 (0.5)	1–3	2.7 (0.7)	0–3
STARS: Teacher qualifications and professional development	2.6 (0.5)	1–3	2.7 (0.5)	2–3	2.5 (0.5)	1–3
STARS: Families and community	2.7 (0.5)	0–3	2.6 (0.5)	2–3	2.8 (0.5)	0–3
STARS: Program practices	3.3 (1.1)	0–5	3.2 (0.8)	1–5	3.4 (1.2)	0–5
STARS: Administration	2.9 (0.3)	2–4	3.0 (0.1)	2–4	2.9 (0.3)	2–3
Years in STARS[e]	7.9 (3.5)	1–18	8.0 (2.8)	1–13	7.8 (3.8)	1–18

a. Sample included 323 programs (114 public school and 209 private).

b. Sample included 343 programs (122 public school and 221 private).

c. Sample included 342 programs (122 public school and 220 private).

d. Sample included 341 programs (121 public school and 220 private).

e. For all STARS variables sample included 387 programs (139 public school and 248 private). Programs are awarded three stars if they obtain at least 9 points across the five subdomains of regulatory history, teacher qualifications and professional development, families and community, program practices, and administration; four stars if they obtain at least 12 points; and five stars if they obtain at least 15 points.

Source: Authors' analyses based on Vermont Agency of Education survey and administrative data (2018/19).

Private preK programs were more likely than public school preK programs to be accredited

Only 13 percent of preK programs were NAEYC accredited, which indicates that programs have met minimum criteria for high quality and have undergone NAEYC's process for receiving accreditation. A higher percentage of private programs (19 percent) than of public school programs (3 percent) were NAEYC accredited (see table 1).

The average number of licensed teachers employed by each preK program was higher for public school programs than for private programs

Overall, the average number of licensed teachers employed by each preK program was 1.7, and the average was higher for public school programs (2.1) than for private programs (1.4; see table 2). This finding indicates that private programs have met teacher licensure requirements, which for center-based private programs means having at least one licensed teacher on staff and for home-based private programs means having a licensed teacher mentor. Two private preK programs, both home-based, indicated they did not have any licensed teachers on staff. Assuming these programs contracted with a licensed educator mentor during the school year, they would be in line with preK approval requirements in Vermont. Public school programs are required to have a licensed lead teacher for each classroom, but because data were not available on the number of classrooms per program, the study could not ascertain the degree to which public school programs were meeting this requirement.

Formal preK curriculum use was widespread, especially among private preK programs

Overall, 88 percent of programs used a formal preK curriculum (see table 1), and a higher percentage of private programs (91 percent) than of public school programs (84 percent) used a formal curriculum. Use of a formal preK curriculum may indicate higher-quality early learning practices in the classroom (Bierman et al., 2008; Clements & Sarama, 2008; Fantuzzo et al., 2011).

Local education agencies with larger total populations had more children under age 5, more preK programs, and more children enrolled in preK programs than did local education agencies with smaller populations

As expected, based on bivariate correlations, local education agencies with larger total populations had more children under age 5 (r = .97), more children enrolled in preK programs (r = .85), and more preK programs (r = .77; see table C1 in appendix C). The number of preK programs ranged from 1 to 22 across all local education agencies (see table C2). About 12 percent of local education agencies had only one or two approved preK programs within their boundaries; of these local education agencies, all but one had fewer than 400 children under age 5 living within the local education agency boundaries.

The average percentage of the local education agency population below the poverty level was not associated with the number of preK programs or the total number of children enrolled in preK programs

There does not appear to be a systematic difference in preK enrollment among local education agencies with varying percentages of their populations below the poverty level (see table C1 in appendix C). In particular, the correlation between the average percentage of the population below the poverty level in a local education agency and the number of preK programs within the boundaries of the local education agency was small (r = .01). Further, the correlation between the average percentage of the population below the poverty level in a local education agency and the total number of children enrolled in preK programs was also small (r = -.03). Correlations with less than .30 magnitude are considered negligible, those between .30 and .50 are considered small, those between .50 and .70 are considered moderate, and those larger than .70 in magnitude are considered large (Hinkle et al., 2003).[2]

Local education agencies with larger population sizes had higher percentages of private preK programs than did local education agencies with smaller population sizes

Local education agencies with larger population sizes, both total and birth to 5, had higher percentages of private preK programs than did local education agencies with smaller population sizes (table 3). Conversely, local education agencies with larger population sizes, both total and birth to 5, had lower percentages of public school preK programs than did local education agencies with smaller population sizes.

Program hours and quality were not associated with a local education agency's population size or poverty level

Program characteristics were similar across local education agencies with different population sizes and poverty levels (tables 4 and 5). The lack of differences in characteristics across local education agencies with different population sizes and poverty levels indicates that the quality of programs is similar across the state.

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[2] It is not currently possible to compare local education agencies with respect to the relationship between preK participation and poverty level. Any comparison based on a correlation using each agency's number of enrolled preK children would likely be biased given geographic variations in population size (the average population of low-poverty local education agencies was 11,874, with a standard deviation of 6,148; the average population of average-poverty local education agencies was 11,426, with a standard deviation of 6,448; and the average population of high-poverty local education agencies was 12,804, with a standard deviation 12,103). Basing this correlation instead on the percentage of the agency's population enrolled in preK programs would address the issue; however, there are currently no data on this metric. Addressing this data limitation would allow the state to confirm whether there is any systematic variation across local education agencies in terms of the relationship between preK participation and poverty level.

Table 3. Distribution of public school and private prekindergarten (preK) programs, by local education agency population size and poverty level

Characteristic of local education agency	Percent		Number of programs
	Public school	Private	
Overall, 2018/19	35.8	64.2	394
Total population size, 2010[a]			
Small	49.3	50.7	69
Medium	41.0	59.0	117
Large	28.4	71.6	208
Birth-to-5 population size, 2010[b]			
Small	50.0	50.0	68
Medium	33.6	66.4	125
Large	32.3	67.7	201
Poverty level, 2017[c]			
Low	30.2	69.8	43
Average	38.1	61.9	302
High	26.5	73.5	49

a. Local education agencies with fewer than 8,000 residents were designated as small population, local education agencies with 8,000–12,499 residents were designated as medium population, and local education agencies with 12,500 or more residents were designated as large population. The maximum number of residents within a local education agency's geographic boundaries was 38,299.

b. Local education agencies with fewer than 420 children ages birth to 5 were designated as small population, local education agencies with 420–620 children ages birth to 5 were designated as medium population, and local education agencies with more than 620 children ages birth to 5 were designated as large population. The maximum number of children ages birth to 5 within a local education agency's geographic boundaries was 1,748.

c. Local education agencies for which the percentage of population below the poverty level was one standard deviation below the overall mean for all local education agencies in the state (10.3 percent) were designated as low poverty (6 local education agencies), local education agencies for which the percentage of population below the poverty level was within one standard deviation of the overall mean were designated as average poverty (39 local education agencies), and local education agencies for which the percentage of population below the poverty level was one standard deviation above the overall mean were designated as high poverty (7 local education agencies).

Note: Population sizes were determined by the distribution of census data rather than by census designations because the census designates almost all of Vermont as rural, which would have limited the ability to look across communities with different population sizes.

Source: Authors' analyses based on Vermont Agency of Education survey and administrative data (2018/19) and U.S. Census Bureau (2010, 2017).

Table 4. Program hours, number of children and of licensed teachers, and STep Ahead Recognition System (STARS) ratings of approved prekindergarten (preK) programs in Vermont, by local education agency population size

Program characteristic, 2018/19	Local education agency total population size, 2010[a]			Local education agency birth-to-5 population size, 2010[b]		
	Small Mean (standard deviation)	Medium Mean (standard deviation)	Large Mean (standard deviation)	Small Mean (standard deviation)	Medium Mean (standard deviation)	Large Mean (standard deviation)
Hours open per day[c]	7.9 (2.2)	8.3 (2.0)	8.3 (2.3)	7.9 (2.2)	8.6 (1.9)	8.1 (2.3)
Weeks open per year[d]	40.6 (8.8)	39.8 (11.5)	41.9 (10.4)	40.1 (10.2)	41.5 (10.7)	41.0 (10.5)
Number of preK children per program[e]	20.2 (14.4)	21.1 (14.0)	25.2 (20.1)	18.3 (10.4)	21.7 (13.5)	25.5 (21.1)
Number of licensed teachers per program[f]	1.6 (1.1)	1.5 (0.8)	1.8 (1.5)	1.4 (0.8)	1.6 (1.0)	1.8 (1.5)
Total STARS rating[g]	4.4 (0.6)	4.5 (0.5)	4.5 (0.6)	4.5 (0.5)	4.5 (0.6)	4.5 (0.6)
STARS: Regulatory history	2.8 (0.6)	2.8 (0.6)	2.7 (0.6)	2.9 (0.4)	2.6 (0.7)	2.8 (0.6)
STARS: Teacher qualifications and professional development	2.7 (0.5)	2.6 (0.5)	2.6 (0.5)	2.7 (0.5)	2.6 (0.5)	2.6 (0.5)
STARS: Families and community	2.6 (0.6)	2.8 (0.4)	2.8 (0.5)	2.6 (0.5)	2.7 (0.5)	2.7 (0.5)
STARS: Program practices	3.3 (1.1)	3.2 (0.9)	3.4 (1.2)	3.3 (1.1)	3.2 (1.0)	3.4 (1.2)
STARS: Administration	2.9 (0.3)	3.0 (0.2)	2.9 (0.3)	2.9 (0.3)	2.9 (0.3)	2.9 (0.3)
Years in STARS[g]	7.7 (3.4)	8.3 (3.3)	7.7 (3.6)	7.8 (3.3)	7.9 (3.5)	7.8 (3.5)

a. Local education agencies with fewer than 8,000 residents were designated as small population, local education agencies with 8,000–12,499 residents were designated as medium population, and local education agencies with 12,500 or more residents were designated as large population. The maximum number of residents within a local education agency's geographic boundaries was 38,299.

b. Local education agencies with fewer than 420 children ages birth to 5 were designated as small population, local education agencies with 420–620 children ages birth to 5 were designated as medium population, and local education agencies with more than 620 children ages birth to 5 were designated as large population. The maximum number of children ages birth to 5 within a local education agency's geographic boundaries was 1,748.

c. Sample included 51 programs in local education agencies with a small total population size, 101 programs in local education agencies with a medium total population size, and 171 programs in local education agencies with a large total population size and 52 programs in local education agencies with a small birth-to-5 population size, 104 programs in local education agencies with a medium birth-to-5 population size, and 167 programs in local education agencies with a large birth-to-5 population size.

d. Sample included 57 programs in local education agencies with a small total population size, 106 programs in local education agencies with a medium total population size, and 180 programs in local education agencies with a large total population size and 56 programs in local education agencies with a small birth-to-5 population size, 112 programs in local education agencies with a medium birth-to-5 population size, and 175 programs in local education agencies with a large birth-to-5 population size.

e. Sample included 57 programs in local education agencies with a small total population size, 106 programs in local education agencies with a medium total population size, and 179 programs in local education agencies with a large total population size and 56 programs in local education agencies with a small birth-to-5 population size, 111 programs in local education agencies with a medium birth-to-5 population size, and 175 programs in local education agencies with a large birth-to-5 population size.

f. Sample included 57 programs in local education agencies with a small total population size, 105 programs in local education agencies with a medium total population size, and 179 programs in local education agencies with a large total population size and 56 programs in local education agencies with a small birth-to-5 population size, 110 programs in local education agencies with a medium birth-to-5 population size, and 175 programs in local education agencies with a large birth-to-5 population size.

Table 5. Program hours, number of children and of licensed teachers, and STep Ahead Recognition System (STARS) ratings of approved prekindergarten (preK) programs in Vermont, by local education agency poverty level

| Program characteristic, 2018/19 | Local education agency poverty level, 2017[a] | | |
	Low Mean (standard deviation)	Average Mean (standard deviation)	High Mean (standard deviation)
Hours open per day[b]	8.4 (2.3)	8.1 (2.1)	8.4 (2.2)
Weeks open per year[c]	39.1 (12.3)	40.9 (10.6)	43.3 (7.2)
Number of preK children per program[d]	27.2 (24.0)	21.7 (15.2)	27.8 (22.9)
Number of licensed teachers per program[e]	1.6 (1.3)	1.6 (1.0)	2.3 (2.1)
Total STARS rating[f]	4.4 (0.6)	4.5 (0.6)	4.7 (0.4)
STARS: Regulatory history	2.8 (0.6)	2.7 (0.6)	2.8 (0.6)
STARS: Teacher qualifications and professional development	2.4 (0.5)	2.6 (0.5)	2.7 (0.5)
STARS: Families and community	2.7 (0.6)	2.7 (0.5)	2.9 (0.3)
STARS: Program practices	3.4 (1.1)	3.2 (1.1)	3.8 (1.0)
STARS: Administration	2.9 (0.3)	2.9 (0.3)	2.9 (0.3)
Years in STARS[f]	7.2 (3.5)	7.7 (3.5)	9.2 (3.1)

Local education agencies serving communities with high levels of poverty had higher percentages of programs designed to serve low-income families and accredited programs than did local education agencies serving communities with lower poverty levels, but they also had a higher percentage of programs that were at preK capacity

Head Start serves low-income families, and subsidy payments are provided for families that are below certain income thresholds and that need child care. Local education agencies serving communities with high poverty had higher percentages of preK programs that met the following criteria (table 6):

- Were at preK capacity as of May 2019 (69 percent).

- Accepted subsidy payments for child care (90 percent).

- Were Head Start grantees (17 percent).

- Had received NAEYC accreditation (24 percent).

Because children from low-income families are most in need of high-quality early care and education (Yoshikawa et al., 2013), ensuring that high-quality and comprehensive services are available in high-poverty areas is important and was one of the driving factors for Vermont's preK legislation.

Table 6. Structural and quality characteristics of prekindergarten (preK) programs in Vermont (2018/19), by local education agency poverty level (2017)

| | Local education agency poverty level[a] | | | | | |
| | Low | | Average | | High | |
Program characteristic	Percent	Number of programs	Percent	Number of programs	Percent	Number of programs
Is at preK capacity as of May 2019	50.0	38	43.1	262	69.0	42
Is located in public school	42.1	38	40.1	264	31.0	42
Accepts subsidy payments[b]	83.3	24	82.7	162	90.0	30
Has at least one mixed-age classroom	65.8	38	76.6	261	92.9	42
Is NAEYC accredited	15.8	38	11.4	264	23.8	42
Is a Head Start grantee[b]	8.3	24	11.1	162	16.7	30
Uses formal preK curriculum	81.6	38	90.8	261	83.3	42
Plans to renew approval	94.7	38	97.3	261	92.9	42

NAEYC is National Association for the Education of Young Children.

a. Local education agencies for which the percentage of population below the poverty level was one standard deviation below the overall mean for all local education agencies in the state (10.3 percent) were designated as low poverty (6 local education agencies), local education agencies for which the percentage of population below the poverty level was within one standard deviation of the overall mean were designated as average poverty (39 local education agencies), and local education agencies for which the percentage of population below the poverty level was one standard deviation above the overall mean were designated as high poverty (7 local education agencies).

b. Public school programs cannot accept subsidy payments for their services or be Head Start grantees.

Source: Authors' analyses based on Vermont Agency of Education survey and administrative data (2018/19) and U.S. Census Bureau (2017).

Limitations

This study examined preK program characteristics using existing administrative and survey data, limiting the range of possible analyses that could be conducted. Neither source of those data covers all preK program characteristics that would be of interest to include in this study (for example, data on teacher experience, child–teacher interactions, transportation options, and attendance). In addition, data on the percentage of eligible children enrolled in preK and number of children who can be served by existing preK programs are unavailable, precluding examination of differences in access to preK across the state. Furthermore, the study was unable to assess the quality of child–teacher interactions within programs or parents' perspectives on the ease of accessing various preK options. Finally, because this study is strictly descriptive, differences across groups cannot be interpreted as evidence that program types or local education agency characteristics cause programs to display particular characteristics.

Implications

Several implications from this study can help inform policy and programmatic changes to Vermont's Act 166.

To better meet the needs of working parents, the state might want to consider how to provide more hours of public school preK or encourage more private programs to become approved, because public school preK programs operate for fewer weeks per year and for fewer hours per day on average than do private preK programs. This might be important, especially in rural parts of the state where a higher proportion of available

preK programs are public school programs. This finding raises questions about how to meet the afterschool and child care needs of children during hours when public school preK programs are not available. If families need child care beyond the allotted 10 hours of publicly funded preK, the number of times a child transitions to different program settings over the course of the day might be higher for children who attend public school programs and have working parents. But private programs that operate for more than the allotted 10 hours per week of publicly funded preK could provide additional child care at the same location and during the summer months, thereby reducing the need for children with working parents to transition to multiple programs throughout the day or year. Because local education agencies with small and medium population sizes had a higher proportion of public school preK programs than did local education agencies with large populations, this issue might be exacerbated in more rural areas of the state.

This study supports continuing to allow families to send their children to preK programs outside the boundaries of their local education agency of residence. Local education agencies with smaller population sizes have fewer preK programs. In fact, several local education agencies have only one preK program available within their geographic boundaries, and several others have only two or three, a finding mirrored in the previous Vermont preK study, conducted using 2016/17 program data (DeMeo Cook et al., 2020). As the Vermont legislature continues deliberations over possible changes to Act 166, it might want to consider retaining this aspect of portability; otherwise care should be taken to ensure that families that live long distances from preK programs within the boundaries of their local education agency of residence can access some other option. Although portability is not the only way to ensure access to preK programs, limiting portability could reduce access, particularly for families in more rural areas of the state. Furthermore, the previous study found that 17 percent of children enrolled in preK in Vermont were enrolled outside the boundaries of their local education agency and that having fewer preK programs within their local education agency increased a child's likelihood of being enrolled outside the boundaries and of being enrolled in a lower-quality program (DeMeo Cook et al., 2020).

Local education agencies serving high-poverty communities might need to increase the number of preK programs available in order to reasonably meet demand. It is encouraging that high-poverty local education agencies have higher percentages of programs that aim to serve low-income families and provide wraparound social programs, as was evidenced by the higher percentages of Head Start programs in these areas. Education agencies serving high-poverty communities also had higher percentages of programs with NAEYC accreditation, which signals high-quality programming. However, these local education agencies also have higher percentages of programs that are at capacity, raising questions about whether enough preK spots are available for children in these areas. This situation suggests that future studies could benefit from data on the total number of preK slots available in each region compared with the total number of eligible preK children and commute times to preK programs.

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