



Early Achievers Evaluation: *Access to Providers Meeting Early Achievers Quality Standards*

In the Early Start Act of 2015, the Washington State Legislature required all child care and early learning (CC/EL) providers serving children with state funding to participate in the Early Achievers Quality Rating and Improvement System (QRIS). One stated objective of implementing Early Achievers was to “close the disparities in access to quality care,” particularly for children from low-income families.¹

In a legislatively directed evaluation of Early Achievers (EA), the Washington State Institute for Public Policy (WSIPP) found that, on average, children who attend CC/EL programs that meet EA quality standards are more likely to be “kindergarten ready,” compared to children attending a CC/EL program not yet rated at quality.² This finding further underscores the potential importance of access to quality child care.

In this report, we estimate low-income family access to publicly supported CC/EL that meets EA quality rating standards. Specifically, our evaluation considers access to subsidized child care or ECEAP/Head Start programs that are rated at quality. We focus on access in the year 2019 which is the end of the initial Early Achievers implementation period.

¹ [Second Engrossed Second Substitute House Bill 1491, Chapter 7, Laws of 2015.](#)

² Goodvin, R., Rashid, A., & He, L. (2020). *Early Achievers evaluation report two: Pre-Kindergarten quality and child outcomes in kindergarten* (Doc. No. 20-12-2203). Olympia: Washington State Institute for Public Policy.

Summary

The 2015 Washington State Legislature passed the Early Start Act, requiring all child care and early learning programs receiving state funds to participate in Early Achievers, the state’s quality rating and improvement system. The Early Achievers program was intended to improve access to high-quality care for low-income families and other groups.

In this report, we examine low-income family access to subsidized child care, Early Childhood Education and Assistance Program (ECEAP), or Head Start programming that meets Early Achiever’s quality standards in 2019. We find that, on average in Washington, there are roughly three low-income children nearby for each high-quality publicly supported child care/early learning “slot.”

Our results indicate that there is considerable variation in local access to quality child care across the state. However, we do not observe that this variation is largely driven by urban/rural regionality, majority/minority BIPOC population makeup, or higher/lower vulnerability designation.

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The report is organized as follows. In [Section I](#), we summarize information about the Early Achievers program, CC/EL access in Washington, and existing research on access disparities. In [Sections II](#) and [III](#), we summarize research methods and results, respectively. In [Section IV](#), we outline limitations and conclusions.

Legislative Assignment

The Washington state institute for public policy shall conduct a longitudinal analysis examining relationships between the early achievers program quality ratings levels and outcomes for children participating in subsidized early care and education programs. (b) The institute shall submit the first report to the appropriate committees of the legislature and the early learning advisory council by December 31, 2019. The institute shall submit subsequent reports annually to the appropriate committees of the legislature and the early learning advisory council by December 31st, with the final report due December 31, 2022. The final report shall include a cost-benefit analysis.

2E2SHB 1491, Early Start Act of 2015

I. Background

Early Achievers Overview

Quality rating and improvement systems (QRIS) for child care and early learning (CC/EL) aim to support workforce development, enrich care quality, and ultimately improve children's care experiences. Washington's QRIS, Early Achievers (EA), was first introduced as a voluntary program in July 2012. The Early Start Act (ESA) of 2015 made EA participation mandatory for sites serving non-school-age children with state funding, and optional for all other licensed or certified CC/EL providers.

The ESA also required all sites serving children with public funding to meet defined quality rating standards. All sites receive an overall rating from Level 2 to Level 5 based on points earned across five quality standard areas.³ Publicly funded programs offering Early Childhood Education Assistance Program (ECEAP) services must receive a Level 4 or higher to meet EA quality rating standards. Private licensed child care sites accepting child care subsidies must receive a Level 3 or higher.

The ESA directed WSIPP to produce an evaluation of Early Achievers addressing the relationship of quality ratings to child outcomes over time for "children participating in subsidized early care and education programs."⁴

³ EA quality ratings are most strongly tied to the learning environment and interactions standard area. Other standard areas include curriculum, staff support and training, child outcomes, and family partnerships.

⁴ See WSIPP's Early Achievers Report One for a more detailed summary of subsidized CC/EL programs encompassed under this direction. Goodvin, R., & Hansen, J. (2019). *Early Achievers evaluation report one: Background and research*

Additionally, the assignment directed WSIPP to produce a benefit-cost analysis, which we are releasing concurrently with the present report.

Access to Child Care and Early Learning

Improving access to high-quality CC/EL for low-income children is a priority at both the federal and state level.⁵ While access can be defined to incorporate multiple dimensions, in the current study, we center access around a family's ability to enroll and attend care with reasonable effort.⁶

Existing Literature on Quality CC/EL Access

Several studies have found that the supply of child care in the United States does not adequately support the number of families in the labor force with young children.⁷ Further, low-income neighborhoods in both urban and rural areas tend to have lower levels of child care access than higher-income neighborhoods.⁸

design (Doc. No. 19-12-2202). Olympia: Washington State Institute for Public Policy.

⁵ Davis, E.E., Lee, W.F., & Sojourner, A. (2019). Family-centered measures of access to early care and education. *Early Childhood Research Quarterly*, 47, 472-486; Paschall, K., & Maxwell, K. (2022). *Defining and measuring access to child care and early education with families in mind*. OPRE Report #2021-232. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services; and The [Early Start Act of 2015](#) directly states that "clos[ing] the disparities in access to quality care" is one objective of the Early Achievers program (Section 2.2.e).

⁶ Paschall & Maxwell (2022).

⁷ Smith, L.K., Bagley, A., & Wolters, B. (2020). *Child Care in 25 States: What we know and don't know*; Malik, R., Hamm, K., Schochet, L., Novoa, C., Workman, S., & Jessen-Howard, S. (2018). America's child care deserts in 2018. *Center for American Progress*, 3-4; and Sandstrom, H., Claessens, A., Stoll, M., Greenberg, E., Alexander, D., Runes, C., & Henly, J.R. (2018). *Mapping child care demand and the supply of care for subsidized families*.

⁸ Malik, R. & Hamm, K. (2017). *Mapping America's child care deserts*. Center for American Progress and Sandstrom et al. (2018).

Recent research focusing on family income and access to *high-quality* care is mixed. An examination of child care in Minnesota reported that low-income families have slightly higher access than higher-income families to both market and public providers with a high QRIS rating.⁹ Other studies have found that lower-income households still have relatively limited access to childcare providers recognized as high-quality.¹⁰

Further research has focused on community-level access to child care and how this access differs across local geographic and demographic characteristics. Studies have found that there is greater child care availability in urban communities versus rural communities.¹¹ There is also evidence that children of color are more likely than their White counterparts to reside in child care deserts.¹²

Recent studies from other states find similar disparities across community characteristics when specifically examining access to high-quality CC/EL providers.¹³ These findings highlight the importance of examining statewide access to care that meets Early Achievers quality standards, and the characteristics associated with community-level differences in access to quality care.

Access in Washington

In 2020, a study commissioned by the Washington Department of Commerce (WDOC) found that “Across the state, the capacity of (licensed) providers located within a 20-minute drive time can only meet 37% of the potential demand of nearby families. The level of access varies from a low of 18% in Garfield County to a high of 86% in San Juan County.”¹⁴

The WDOC study also finds that families living in poverty tended to have more nearby child care capacity than families with an income above the federal poverty line (FPL). However, this study examines access to *any* child care and does not consider provider quality or affordability.

⁹ Davis et al. (2019).

¹⁰ Bassok, D., Fitzpatrick, M., & Loeb, S. (2011). *Disparities in child care availability across communities: Differential reflection of targeted interventions and local demand*.

¹¹ Sipple, J.W., McCabe, L.A., & Casto, H.G. (2020). Child care deserts in New York State: Prekindergarten implementation and community factors related to the capacity to care for infants and toddlers. *Early Childhood Research Quarterly*, 51, 167-177.

¹² Hardy, E., Joshi, P., Ha, Y., & Schneider, K.G. (2018). *Subsidized child care in Massachusetts; Exploring geography, access, and equity*. Waltham, MA: Institute for Child, Youth, and Family Policy, Brandeis University, Massachusetts Child Care Research Partnership and diversitydatakids.org; Malik & Hamm (2017).

Child Care Aware of America and the Center for American Progress define child care deserts as “areas or communities with little or no access to child care. More specifically areas with greater than 50 children, and a child-to-slot ratio greater than 3 to 1 are considered to be deserts. See *Dobbins et al. (2016)*.

¹³ Bassok, D., & Galdo, E. (2016). Inequality in preschool quality? Community-level disparities in access to high-quality learning environments. *Early Education and Development*, 27(1), 128–144.; Hatfield, B.E., Lower, J.K., Cassidy, D.J., & Faldowski, R.A. (2015). Inequities in access to quality early care and education: Associations with funding and community context. *Early Childhood Research Quarterly*, 30(Part B), 316–326.; Latham, S., Corcoran, S.P., Sattin-Bajaj, C., & Jennings, J.L.. (2020). *Racial Disparities in Pre-K Quality: Evidence from New York City's Universal Pre-K Program. (EdWorkingPaper: 20-248)*. Retrieved from Annenberg Institute at Brown University.

¹⁴ Washington (State), Department of Commerce. *Child Care Collaborative Task Force Industry Assessment Report (2020)*.

Current Study

The current study builds on the work commissioned by the WDOC and focuses on low-income families' access to publicly funded CC/EL programming that has met EA quality standards. Publicly funded CC/EL at EA quality standards is intended to be affordable and to support child development. For families to benefit from these services, they must also be able to access them.

We explore access to subsidized child care, Early Childhood Education and Assistance Program (ECEAP), or Head Start (HS) programming that meets quality standards as determined by state-defined rating levels in the Early Achievers QRIS. Similar to the WDOC study, our measure of access accounts for both proximity to a provider and local competing demand for that provider's capacity.

II. Data, Measures, and Methods

Data on Child Care Providers

Data on CC/EL providers in Washington in 2019 were provided by the Department of Children, Youth, and Families (DCYF) and the Education Research and Data Center (ERDC).

Our dataset includes four types of providers: 1) licensed child care centers (CCC) that provide subsidized care, 2) licensed family homes (FH) that provide subsidized care, 3) Early Childhood Education and Assistance Program (ECEAP) providers, and 4) Head Start and Early Head Start Program (HS) providers.¹⁵

Our sample is restricted to *quality* providers that are operational in 2019. For the purpose of this study, ***a provider qualifies as a “quality provider” if they are participating in the Early Achievers program, and in 2019, hold a rating level that indicates the provider has met quality standards.***¹⁶ Per the 2015 Early Start Act, a subsidy provider (i.e., CCC or FH) meets quality standards if they receive a rating of Level 3 or more, and a public provider (ECEAP or HS) meets quality standards if they receive a rating of Level 4 or more.¹⁷

¹⁵ Child care providers in our sample may fit into more than one category. For example, there are providers that both provide ECEAP services and provide subsidized care.

¹⁶ According to the 12/12/19 EA Data Dashboard: 94% of EA-rated sites are rated at quality (2353/(5264-2768 unrated sites). *Note:* In Dec 2019 there were 911 sites that provide publicly funded care (and are required to participate in EA) that did not yet have a rating. These sites are omitted from our study.

¹⁷ As a federal program, sites providing only HS services are not required to participate in EA. However, HS programs electing to participate will typically be on the HS/ECEAP rating pathway, in which reciprocity points are awarded for meeting HS program standards. HS programs are most like ECEAP programs in that they will typically receive a Level 4

For each provider, we have information about their site address and capacity. In this study, capacity does *not* refer to a provider’s total licensed capacity, *instead, it is the capacity dedicated to subsidized and/or public enrollment.*¹⁸ For example, if a provider has a total licensed capacity of 30 children, and on average they care for 20 private pay children and 10 children with subsidies, we define the provider capacity as 10. In Washington’s mixed delivery system, sites’ capacity can include a combination of ECEAP/HS slots and subsidized care.

Our study focuses on access to quality subsidized child care or ECEAP/HS programs because these are programs that are publicly supported, participate in EA, and for which we have the necessary data. Note, there are alternative, potentially high-quality, early learning opportunities to support low-income families that are not accounted for in our sample because these providers do not participate in EA.¹⁹ However, based on program enrollments in 2019-20, we believe this omission is small in scale and should not significantly impact results.²⁰

rating by meeting expectations on the Learning Environment and Interactions quality standard. For this reason, we set Level 4 as the rating threshold for HS sites to meet quality standards.

¹⁸ ECEAP capacity is defined by contracted funding for slots. Child care does not have “slots” reserved for children with subsidy funding, so we proxy for subsidy capacity using child-level records from the Social Service Payment System. We calculate site-specific subsidy capacity as the average number of subsidy-enrolled children in a given site in 2019.
¹⁹ Examples include city (e.g., Seattle Public Preschool) and school district programs (e.g., Transitional Kindergarten) most of which are license-exempt and therefore not required to participate in Early Achievers.

²⁰ In the 2019-20 school year the Seattle Public Preschool program enrolled approximately 1,500 students. Transitional Kindergarten programs operated by school districts across

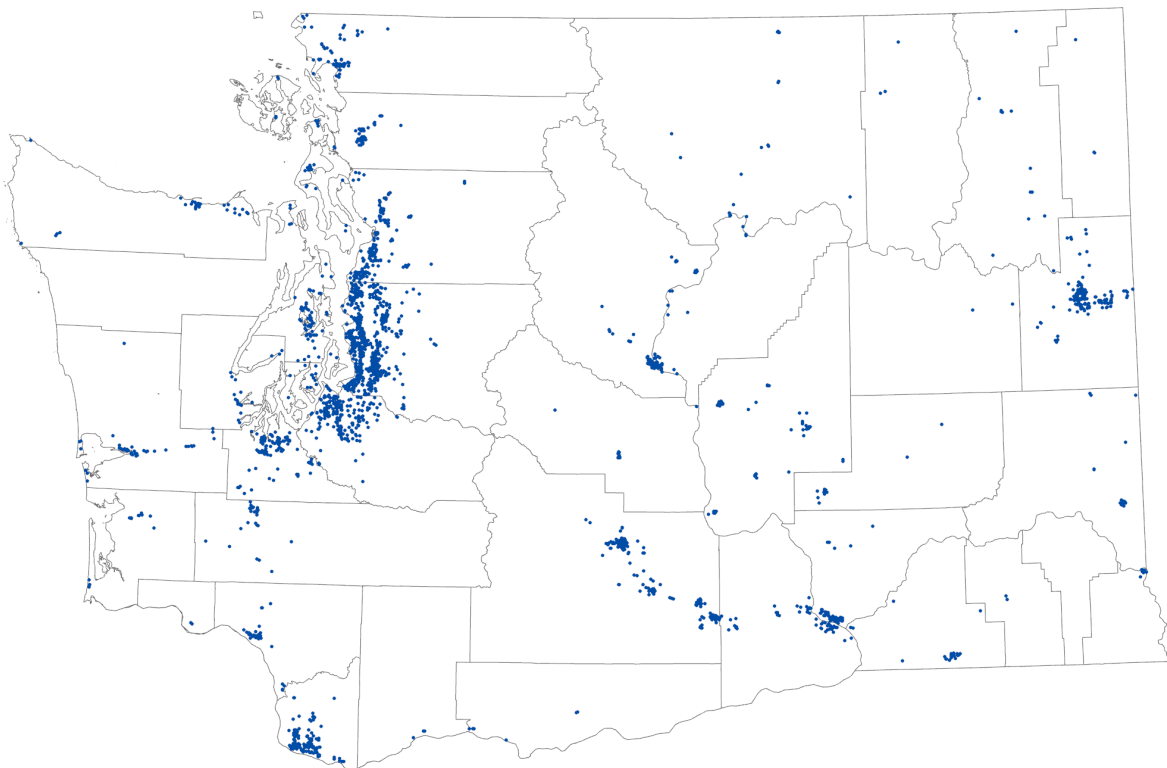
Furthermore, our analysis omits the capacity for private-pay enrollment which may serve as a competing option for low-income families.

Characteristics of Quality CC/EL Providers

In our sample, there are approximately 2,500 quality subsidy and public CC/EL providers that are operational at some point in 2019.

In [Exhibit 1](#), each blue point on the map represents the location of one of these providers. Most providers in the state appear to operate in relatively densely populated urban regions, such as the Seattle metropolitan area (SMA)—the SMA comprises Pierce, King, and Snohomish counties.

Exhibit 1
Subsidy and Public Child Care Providers That Met Early Achievers Quality Standards, Washington (2019)



Notes:

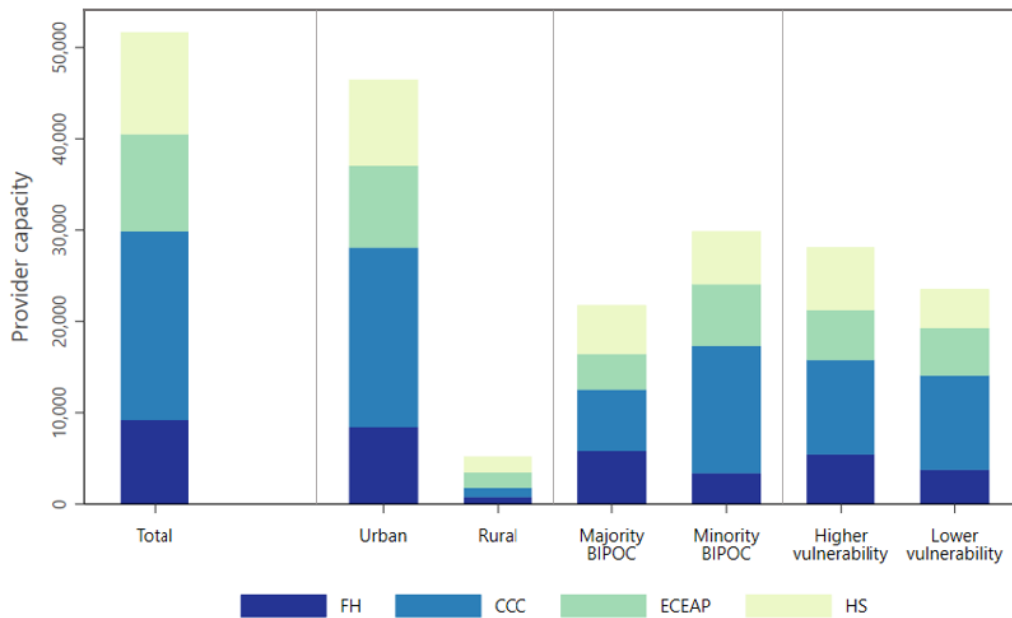
Each point represents a child care provider in our sample. Provider location data were provided by the Department of Children, Youth, and Families (DCYF) and the Education Research and Data Center (ERDC).

Washington enrolled approximately 800 students. District-run developmental preschools—primarily for children with an individualized education plan—enrolled approximately 10,000 students.

Exhibit 2 provides information about CC/EL licensed capacity in our sample in 2019 by program type and census tract (i.e., neighborhood) characteristics. The first bar indicates that providers throughout the state had a total capacity for 51,655 publicly funded and/or subsidized children. Approximately 58% were in licensed child care programs accepting subsidies (18% in FH and 40% in CCC) and 42% were in publicly funded early learning programs (21% in ECEAP and 21% in Head Start).

The second and third bars of Exhibit 2 indicate that roughly 89% of capacity is in urban neighborhoods and 11% is in rural neighborhoods.²¹ Roughly 43% of capacity is in neighborhoods with a majority BIPOC population, and 54% is in more socially vulnerable neighborhoods.²²

Exhibit 2
Capacity of Subsidy/Public Providers That Have Met Early Achievers Quality Standards, by Program Type, Washington (2019)



Note:

Data come from the sample of subsidy and public providers operational at any time in 2019 that have an Early Achievers rating that indicates they have met quality standards.

²¹ A census tract is designated "urban" if the census designates more than 50% of the census tract population as urban residents.

²² A census tract is designated "majority BIPOC" if more than 50% of the census tract population is identified as Black, Indigenous, and people of color (BIPOC) race/ethnicity. A census tract is designated "higher vulnerability" if it ranks in the 75th percentile of the Social Vulnerability Index (SVI). For more information about the SVI see [Section III](#).

Data on Families and Family Location

To construct a distance-based measure of a family's access to quality CC/EL, we would ideally observe the exact residential address of all eligible families with young children.²³ However, due to data limitations and privacy concerns, the residential addresses of eligible families were not available for this study.

Therefore, we use an established method to approximate low-income families' residential locations by combining information from the United States Census Bureau's American Community Survey (ACS) 2011–2019 five-year estimates (2019ACS) and the 2010 decennial census.²⁴ We use census demographic and geographic data to simulate the residential locations of families that 1) have a child under the age of 6 in the household and 2) have a household income below 200% of the federal poverty line (FPL).²⁵

Using the ACS, we estimate that 105,084 families with a child under the age of six and an income below 200% of the FPL lived in Washington in 2019; this is our sample of low-income families.²⁶

²³ For more information about eligibility criteria for ECEAP programming and subsidized child care see Goodvin & Hansen (2019).

²⁴ Davis et al. (2019)

²⁵ We restrict the simulated low-income family sample to households that are 200% FPL, corresponding to the annual income eligibility threshold to receive subsidized child care in 2019. Available census data do not allow us to simulate the residential locations for families with an income below 110% FPL (ECEAP eligibility), 130% FPL (HS eligibility), or those that meet employment/education or child age eligibility requirements.

²⁶ According to the 2019 ACS, there was an average of about 1.4 children below the age of six per household with young children and an income below 200% FPL.

This sample represents the *potential* demand for quality care because not all families will need or will choose to use publicly funded CC/EL.

More technical detail on the creation of our simulated family sample can be found in [Appendix I](#).²⁷

Characteristics of Simulated Families

[Exhibit 3](#) provides information about the distribution of simulated low-income families in 2019 by census tract characteristics. The first bar indicates that there are 105,084 families. Of that total, the second bar indicates that 91% of those families reside in an urban neighborhood (versus 9% in rural neighborhoods). Roughly 36% of families reside in neighborhoods with a majority BIPOC population, and 45% in more socially vulnerable neighborhoods.

Access Measure

For each simulated family in our sample, our measure of access accounts for both nearby provider capacity, and the potential number of children nearby competing for the same providers.²⁸ Consistent with the literature, capacity is designated as “nearby” a family if it is located within a 20-minute drive time.²⁹ Estimated access equal to zero implies there is no provider capacity within a 20-minute drive time; the larger the estimated magnitude the greater the availability of nearby capacity.

²⁷ A map depicting the distribution of the simulated families can be found in [Appendix I](#).

²⁸ When estimating child care capacity for a given family, this approach gives greater weight to capacity closer to home.

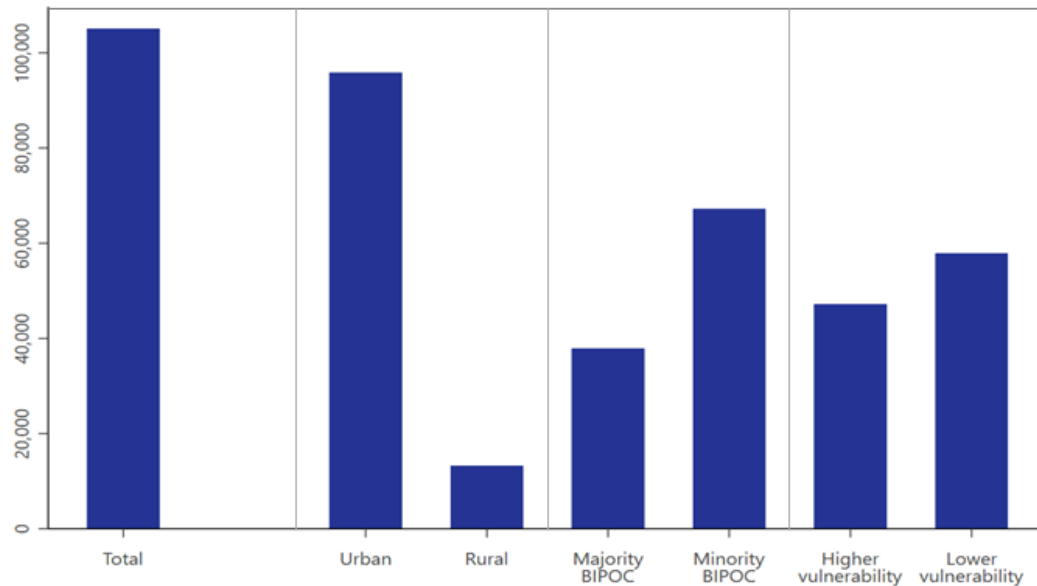
²⁹ Davis et al. (2019); [WDOC \(2020\)](#).

Estimated access for a family increases if they have more child care capacity nearby and decreases if more young children reside nearby.³⁰ More technical detail on the creation of our family-centered access measure can be found in [Appendix II](#).

[Analysis Method](#)

Our research approach uses descriptive statistical analysis methods to estimate average access and compare measures of access by location. Access measures were first estimated for the whole of Washington, and second across census tract characteristics.

Exhibit 3
Number of Simulated Low-Income Families, Washington (2019)



Notes:

Data come from the United States Census Bureau’s American Community Survey 2011–2019 five-year estimates and the 2010 decennial census.

³⁰ When measuring access, we account for the fact that families prefer child care providers located near their home. It does not account for the reality that some individuals may prefer or require child care located near their place of work as opposed to their home.

III. Results

In this section, we describe estimated access to quality subsidy/public child care in 2019 for low-income families.

Total Access

Exhibit 4 depicts estimates of access in Washington. Presented in Column (1), the average low-income family in Washington with young children lives in a location with a third (0.33) of a quality subsidy/public “slot” within a 20-minute drive time adjusting for the number of other young children nearby.³¹ Alternatively, one could say that ***on average in Washington, there are roughly three low-income children nearby for each quality subsidy/public CC/EL “slot.”***

Exhibit 4

Access to quality Subsidy/Public CC/EL, Washington (2019)

	Statewide	By location	
		Seattle metro area	Greater WA
		(2)	(3)
	(1)		
Quality subsidy/public CC/EL	0.33 (0.25)	0.32 (0.21)	0.35 (0.29)

Notes:

Each column (1-3) represents a separate estimate of average access.

Standard deviations are reported in parentheses.

Comparing Columns (2) and (3) of Exhibit 4, we observe that average access to quality subsidy/public child care in the Seattle metro area is similar in value to average access in Greater Washington (0.32 versus 0.35).

If we examine average access at a more granular geographic level, we see that access varies both across the state and within the Seattle metro area. Exhibit 5 denotes the average access in each census tract in all of Washington (Panel A) and the Seattle metro area (Panel B). The darker the shaded region, the higher the average access to nearby care for low-income families with young children in that neighborhood.

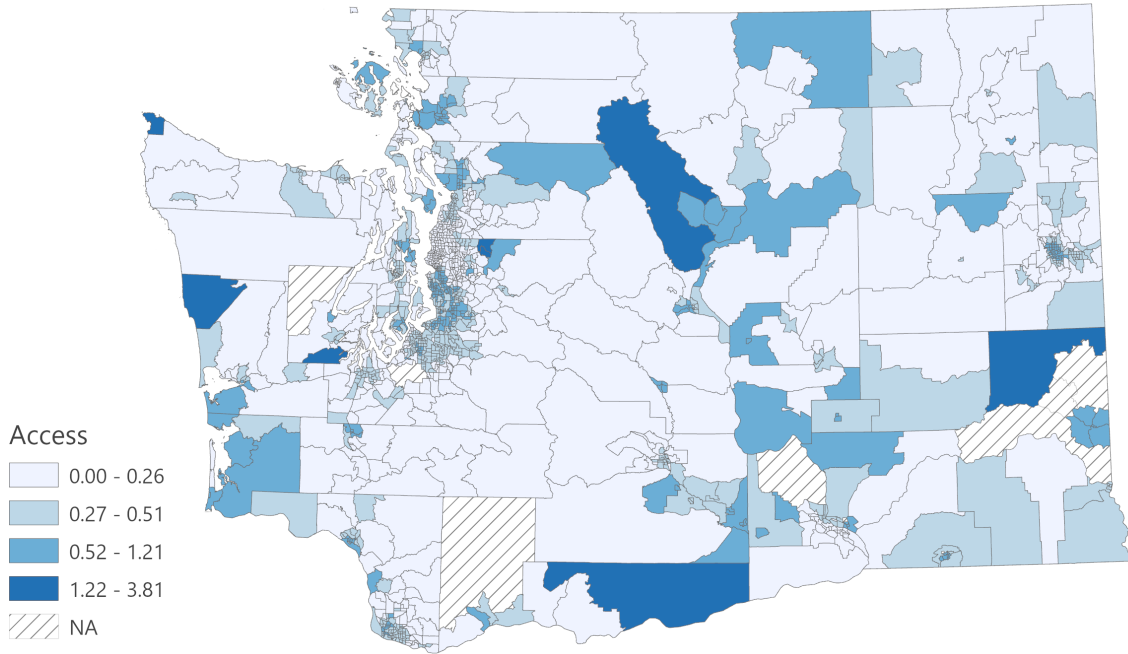
Recall that our measure of access is based on the driving time area around the family’s location and is *not* restricted by census tract boundaries. In Exhibit 5, access is illustrated using the average access of families within each census tract for reference.

³¹ Results are robust to alternative sampling of simulated families. More information on these alternative analyses can be found in Appendix III.

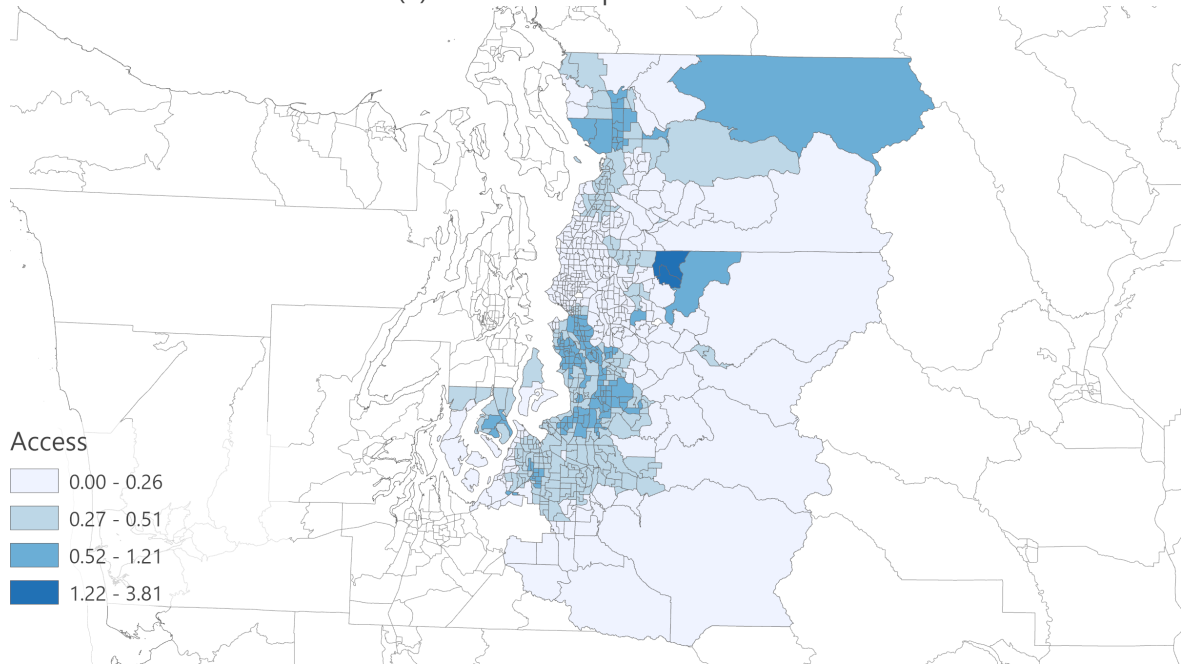
Exhibit 5

Average Access to quality Subsidy/Public Child Care—by Census Tract, Washington (2019)

(A) Washington State



(B) Seattle Metropolitan Area



Notes:

A larger access value implies greater nearby child care capacity for the average family residing within the census tract. An NA value indicates that access could not be measured for that census tract.

Access by Census Tract Characteristics

We next examine differences in average access across census tract characteristics: urban/rural designation, racial/ethnic makeup, and social vulnerability ranking.

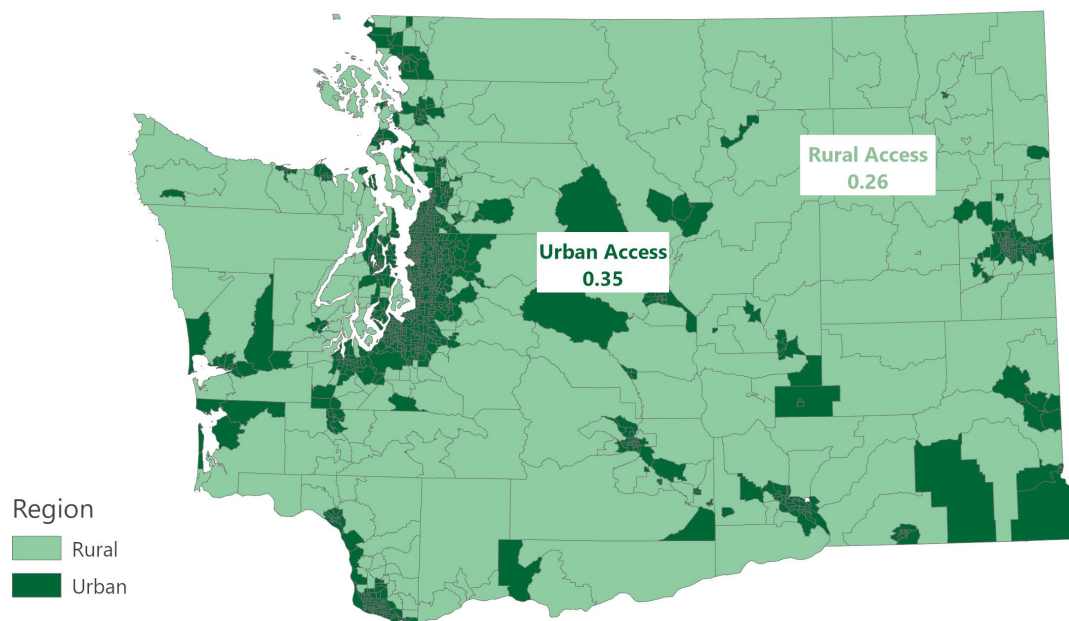
Urban/Rural Designation

Exhibit 6 is a map of Washington depicting average access in urban census tracts (dark green) and rural census tracts (light green).

Average access across urban census tracts (0.35) is higher than average access across rural census tracts (0.26). That is, in the average urban census tract, CC/EL capacity is about one to every three nearby children. In the average rural census tract, CC/EL capacity is about one to every four nearby children.

Exhibit 6

Average Census Tract Access to quality Subsidy/Public Child Care—by Urban/Rural Designation, Washington (2019)



Notes:

A census tract is designated "Urban" if the census designates more than 50% of the census tract population as urban residence.

Racial Makeup

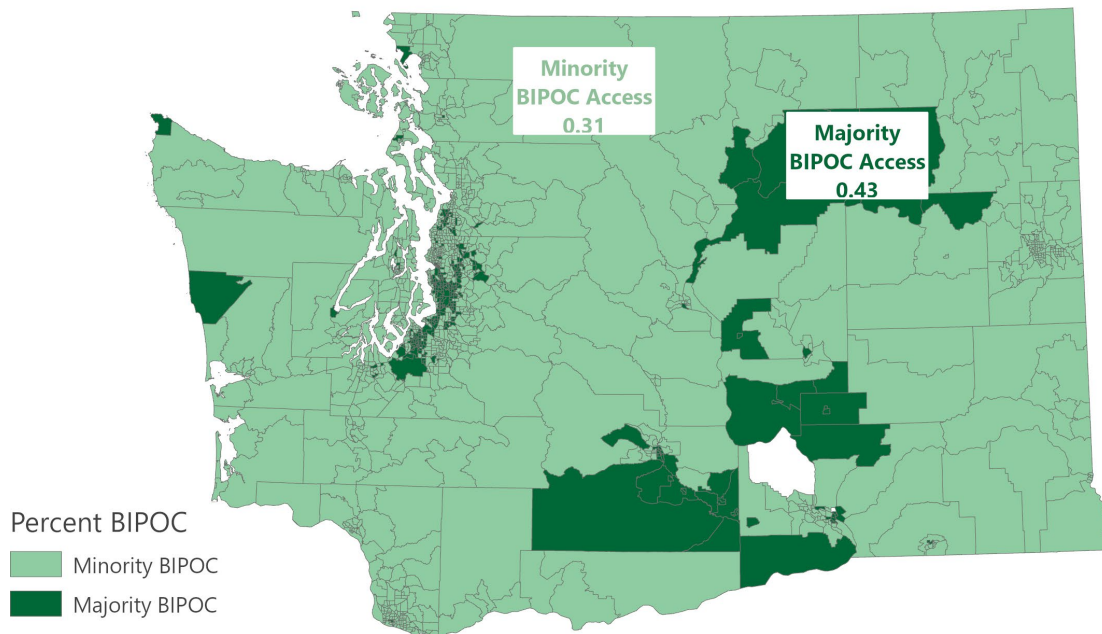
Exhibit 7 differentiates majority BIPOC census tracts and minority BIPOC census tracts.

In our sample, there are fewer quality CC/EL providers in census tracts with a majority BIPOC population, but there are also fewer low-income families potentially competing for child care—only 36% of simulated families reside in majority BIPOC neighborhoods. Therefore, the average access in majority BIPOC population census tracts (0.43) is slightly higher than the average access in minority BIPOC population census tracts (0.31).

Note, most census tracts with a majority BIPOC population are also urban-designated census tracts. Therefore, this difference in access by racial makeup may reflect, at least in part, the difference in access we observe across urban/rural designation. That is, on average, greater access to quality CC/EL providers in majority BIPOC census tracts may primarily reflect the greater estimated access in any urban census tract (versus rural census tracts).

Exhibit 7

Average Census Tract Access to quality Subsidy/Public Child Care—by Racial Makeup, Washington (2019)



Note:

A census tract is designated "majority BIPOC" if more than 50% of the census tract population are identified as Black, Indigenous, and people of color (BIPOC) race/ethnicity.

Social Vulnerability

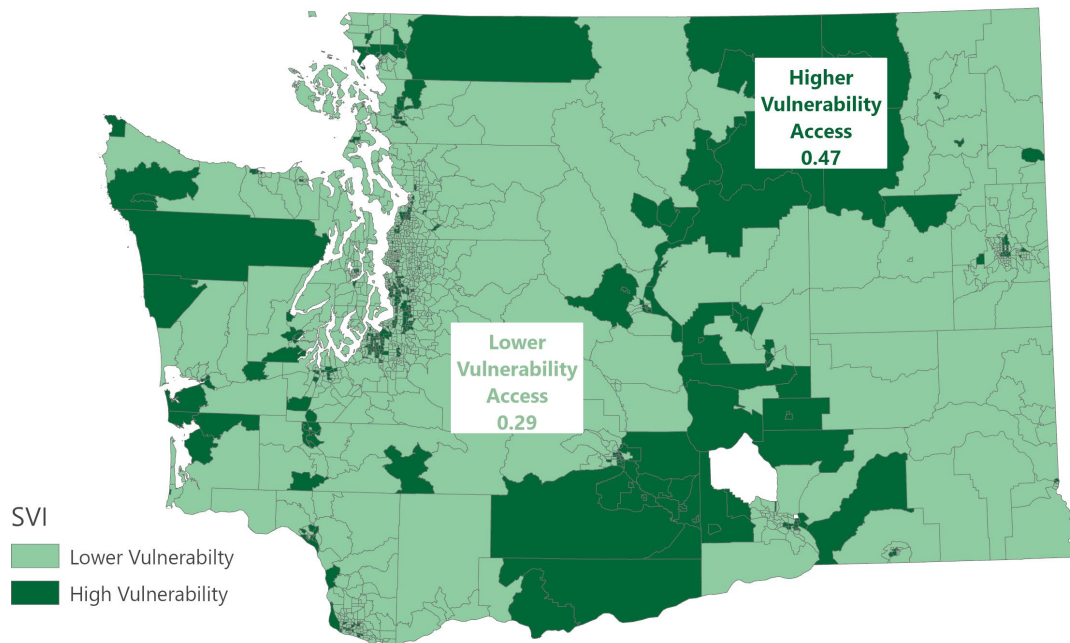
Exhibit 8 differentiates higher vulnerability census tracts and lower vulnerability census tracts.

We define census tract vulnerability using the CDC's Social Vulnerability Index (SVI) database.³² In this context, "social vulnerability" refers to the potential negative effects on communities caused by external stressors on human health.³³

In this analysis, we designate a census tract as "higher vulnerability" if it has an SVI ranking in the 25% most vulnerable census tracts in Washington, and a census tract is designated "lower vulnerability" if it has an SVI ranking below the 25% most vulnerable (i.e., the remaining 75%). More information about the SVI measure can be found in WSIPP's Early Achievers Report Three.³⁴

Exhibit 8

Average Census Tract Access to quality Subsidy/Public Child Care—by Social Vulnerability Index (SVI) Ranking, Washington (2019)



Note:

A census tract is designated "higher vulnerability" if it ranks in the 75th percentile of the Social Vulnerability Index (SVI).

³² Centers for Disease Control and Prevention/ Agency for Toxic Substances and Disease Registry/ Geospatial Research, Analysis, and Services Program. CDC/ATSDR Social Vulnerability Index 2018 Database Washington.

³³ The SVI was designed to help local officials identify communities that need support during a disaster. However, studies have established that the SVI can be used to examine community vulnerability in contexts other than emergency preparedness.

³⁴ Rashid, A., Goodvin, R., & Krnacik, K. (2021). *Early Achievers evaluation report three: Variation in links between quality and kindergarten readiness for children with childcare subsidy* (Document Number 21-12-2201). Olympia: Washington State Institute for Public Policy

The map in [Exhibit 8](#) differentiates higher vulnerability census tracts from lower vulnerability census tracts. With more quality CC/EL capacity and fewer children potentially competing for these slots, the average access in higher vulnerability census tracts (0.47) is slightly greater than the average access in lower vulnerability census tracts (0.29).

Overall, CC/EL access across these census tract characteristics is similar and consistently around a capacity of one spot to every three nearby children.

IV. Discussion and Conclusion

Limitations

Determining demand for child care can be difficult given the limited available information about family eligibility for publicly supported child care and family preference for formal child care.

We measure demand by estimating the number of families that are 200% FPL and have a child under the age of six. However, there are additional program eligibility requirements we cannot account for when generating the simulated family sample. For example, to qualify for subsidized child care the custodial parent(s) must participate in approved activities including employment or schooling.

To examine how sensitive our estimated access measure may be to a more restricted sample of eligible families we conducted a supplementary analysis and focused our attention on the potential demand and supply for quality subsidized child care—explicitly omitting ECEAP/HS slots from consideration.³⁵ While we cannot precisely simulate the population eligible for subsidized child care, we can estimate what percentage of our low-income simulated sample belongs to a household in which the custodial parent(s) is(are) employed or enrolled in school—we estimated this to be roughly 60%.³⁶

³⁵ Due to data limitations, we cannot complete a comparable exercise for the sample of ECEAP or HS-eligible families.

³⁶ Using household 2019 ACS data.

Steven Ruggles, Sarah Flood, Ronald Goeken, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 12.0 [dataset]. [Minneapolis, MN: IPUMS, 2022.](#)

We then scaled our simulated family sample to 60% and restricted our supply to only subsidized child care capacity. With these adjustments, we estimated that access to nearby quality subsidized child care is 0.33, which is qualitatively similar to our overall findings. Due to data limitations, we cannot separately measure access for each eligible population to the corresponding provider type, but this exercise demonstrates that if we could, we would likely find similar access measures.

Other study limitations relate to our determination of the supply of child care. For instance, although we are capturing most quality providers that have participated in Early Achievers, there may be other organizations in the state which provide affordable high-quality CC/EL for low-income families and are not accounted for in our study. Also note that as of December 2019, roughly 900 subsidized private child care and public early learning providers in the state of Washington had not yet completed an Early Achievers rating and as such are not included in our analysis.³⁷

Furthermore, when estimating travel times, we assume travel is from the family home to the child care provider in a car. We do not account for travel by other means of transportation (bus, train, walking, etc.), and we are unable to account for travel times between work locations and child care.

³⁷ If all 911 providers waiting to be rated were operating with a quality rating level, we project this could increase average capacity by up to 11,835 (11,835/51,655=23% increase).

Last, our measure of access does not account for family preferences such as hours of care, cultural or linguistic preferences, or care by relatives. The only preference our measure accounts for is site proximity to the home.

Regardless of these limitations, our measure which approximates access to affordable quality child care for low-income families in Washington provides new insights and useful information for policymakers.

Conclusion

This study examines access to quality publicly funded child care and early learning programs in the state of Washington. Here, *quality* is defined by a site meeting quality standards within the Early Achievers QRIS. The Early Achievers program was intended to improve access to high-quality care for low-income families and other groups, and ultimately to close access disparities. In this study, we find that in 2019, the intended end of the initial Early Achievers roll-out, there are roughly three low-income children nearby for each quality subsidy/public CC/EL slot. Given our assessment, low-income families may live close enough to quality providers yet are unable to enroll due to high competing demand.³⁸

Our results indicate that there is considerable variation in local access to EA quality child care across the state (see [Exhibit 5](#)). However, we do not observe that this variation is primarily driven by urban versus rural regionality, majority versus

minority BIPOC population makeup, or higher versus lower vulnerability—we find that differences in CC/EL access across these census tract characteristics are not large.

In light of our previous findings—that children who experience care with a provider that has met quality standards are more likely to be kindergarten ready than children who do not—access to quality care for low-income families takes on increased importance.

Information from this analysis can give insight to policymakers and planners about local child care markets and may be used to determine whether and where to support the expansion of quality CC/EL provision for low-income families and provider participation in Early Achievers. Furthermore, as the EA system evolves in Washington, changes in access to quality publicly supported child care can be tracked using this access measure to provide meaningful information about the communities in which families have better or worse access to CC/EL programs.

³⁸ Less than 5% of low-income families in our simulated population do not have access to a quality subsidy/public child care slot within a 20-minute drive time of their residence.



Appendices

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Appendices

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I. Constructing Synthetic Family Locations

To construct a distance-based measure of low-income families’ access to child care, we need information on the eligibility and residential location of families with young children. We do not have actual residential information on eligible families with young children, so we approximate low-income family locations based on census block-group level child density information from the 2015–2019 five-year estimates from the American Community Survey (ACS).³⁹ The ACS data give us:

- The percentage of families with a household income below 200% of the federal poverty line (FPL) in each block group
- The number of households with a child under the age of six in each block group
- The total population of blocks within each block group

We multiply the percentage of families with income below 200% FPL by the number of households with a child under six to get an estimate of the total number of families within a block group that is below 200% FPL and has a child under six. We then assign these families to blocks proportionally based on the relative block population within a block group.

For computational feasibility, we produce a 25% population sample of synthetic families to approximate the spatial distribution of families’ residential locations. The probability of a synthetic family residential location being in a particular block is proportional to the probability that a real family with children under age six and an income 200% below the FPL lives in that block. The exact location assigned to any synthetic family within a block is random assuming a uniform distribution of families within the livable areas of census block boundaries.⁴⁰ A map of the synthetic family residential locations is presented in [Exhibit A1](#).

Travel time between each family residence and child care provider is then estimated to identify providers within a 20-minute drive time.⁴¹

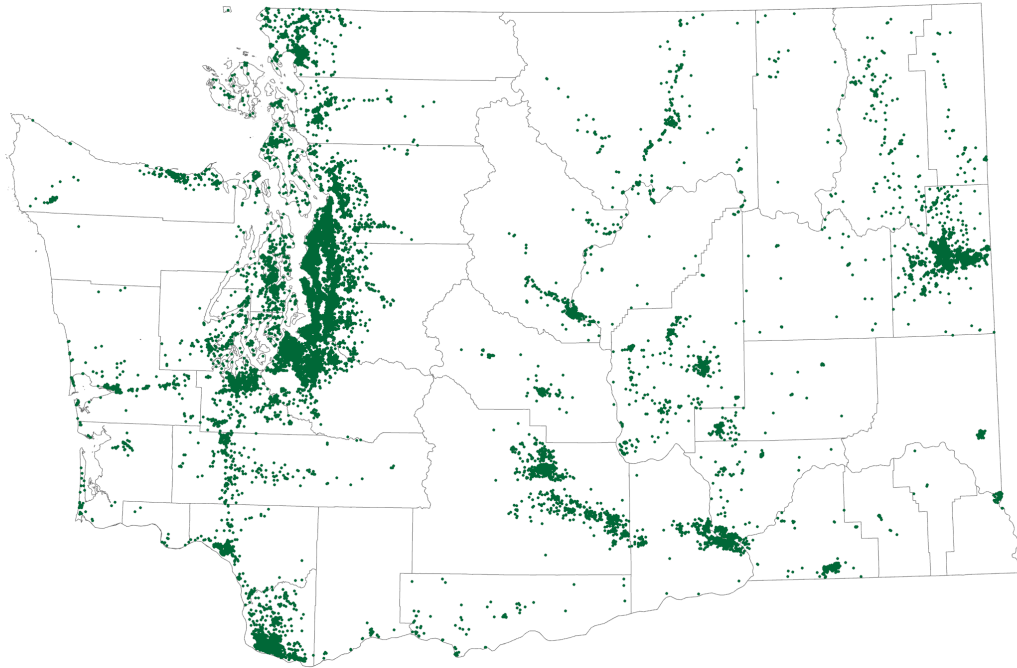
³⁹ Steven Manson, Jonathan Schroeder, David Van Riper, Tracy Kugler, and Steven Ruggles. IPUMS National Historical Geographic Information System: Version 17.0 [dataset]. [Minneapolis, MN: IPUMS. 2022.](#)

⁴⁰ We include census block boundaries that are on a tax parcel with a building present or on a military base.

⁴¹ The synthetic family sample and drive times were generated using ArcGIS Pro.

Exhibit A1

Simulated Families with Income 200% FPL and Children Below the Age of Six, Washington (2019)



Notes:

Each point represents a simulated family residence.

Maps depict our sample of synthetic low-income family locations generated using 2015–2019 five-year estimates from the American Community Survey (ACS).

II. Distance-Based Access Measure: Enhanced Two-Stage Floating Catchment Area Method

We use a distance-based approach to measure the supply of child care and early learning (CC/EL) while adjusting for nearby demand that was introduced in 2019.⁴² Area-based measures of access to child care typically measure the ratio of the total capacity of child care providers in an administrative area unit (e.g., census tract) to the estimated number of eligible children in that area. Distance-based analysis, unlike the area-based approach, focuses on residential location and assumes families prefer nearby providers whether-or-not these providers are in the same administrative area unit. The location of all families with young children is not publicly available, so this approach requires us to generate synthetic family locations (see [Appendix I](#)).

This distance-based approach to measure access to child care uses an enhanced two-stage floating catchment area (E2SFCA) method.⁴³ The E2SFCA method measures the number of slots within a family-specific catchment area while adjusting each nearby provider's capacity based on the number of eligible children nearby who require child care.⁴⁴ The two stages are a reference to the two catchment areas: the first is the catchment area around the provider's site location, and the second is the catchment area around the location of each family with young children.⁴⁵

Stage One: Calculate the Slot-to-Population Ratio for Each Provider j

To do this, we first:

- (a) Identify all synthetic families i within a 20-minute drive-time t of provider j . Denote these families as $\{i: t_{ij} \leq 20\}$.⁴⁶
- (b) Use census population-level data to find the average number of children ages five and younger per family. Denote this as P_i .

To account for the assumption that children who reside closer to a site are more likely to attend the site, we use a Gaussian decay function:

$$f(t, \beta) = e^{\frac{-t^\beta}{1,000}}$$

Where t represents drive time, and β represents the friction-of-distance parameter. Note, the greater the value of β the less weight will be placed on children who live further away from a provider.⁴⁷

We then sum the distance-weighted number of children across all families residing nearby a provider:

$$\sum_{\{i: t_{ij} \leq 20\}} P_i \times f(t, \beta)$$

⁴² Davis et al. (2019).

⁴³ Luo, W., & Qi, Y. (2009). An enhanced two-step floating catchment area (E2SFCA) method for measuring spatial accessibility to primary care physicians. *Health & Place*, 15(4), 1100-1107.

⁴⁴ A "catchment area" is defined as the area that is accessible from the family's residence, or a provider's site location, within a 20-minute drive time.

⁴⁵ The steps, terminology, and notation used in this section are adapted from Davis et al. (2019) [Appendix A. Supplementary data](#).

⁴⁶ For more information about the construction of our sample of synthetic families refer to [Appendix I](#).

⁴⁷ For our primary analysis, we set Beta equal to three. Findings are robust to alternate values of Beta. For more information see [Appendix III](#).

This represents the nearby demand for provider j 's slots.

Last, we calculate the (distance-weighted) **slots-per-population ratio for each provider j (SPR_j)**:

$$SPR_j = \frac{S_j}{\sum_{\{i:t_{ij} \leq 20\}} P_i \times f(t_{ij}, \beta)}$$

Where S_j is the number of slots available from provider j .

For each provider, this number represents the capacity available to each nearby family (accounting for the fact that families that reside closer to a site are most likely to attend the site).

Stage Two: Measure the Number of Slots Available Nearby Family i (Adjusting for the Number of Other Young Children Nearby)

First, we identify all providers j within a 20-minute drive-time of a family i . Denote these providers as: $\{j: t_{ij} \leq 20\}$.

Then we compute each family-provider pair's slots-to-population ratio discounting for travel time using the same Gaussian distance-decay function:

$$S_{ij} = SPR_j \times f(t_{ij}, \beta)$$

Last, we sum the distance-weighted slots-to-population ratio across all providers nearby a family i . This allows us to calculate the **demand-adjusted supply for each family i** .

$$S_i = \sum_{\{j:t_{ij} \leq 20\}} S_{ij}$$

S_i (i.e., demand-adjusted supply) is our measure of child care access for a family i . To interpret our access measure, suppose we calculate an average demand-adjusted supply of 0.5, this would imply that, on average, there is one-half of a quality subsidy/public child care slot available nearby for each child. Access *increases* the more slots are available nearby a family, and access *decreases* the more competing children reside nearby these slots.

III. Sensitivity Analysis

In this section, we explore the sensitivity of our main findings to alternate sampling and specifications.

Synthetic Family Sample

Our analysis does not use actual information about the residential location of eligible families with young children. Rather, we use ACS data to produce a 25% population sample of synthetic family points which approximate the spatial distribution of family residential locations. We assume that the likelihood of a synthetic family residential location being in a particular block is proportional to the likelihood that a real family lives there. The exact location assigned to any synthetic family within a block is random assuming a uniform distribution of families within the livable areas of census block boundaries. In [Exhibit A2](#), we examine the sensitivity of our primary results to an alternative 25% sampling of families and random assignment to block location. Estimated access measures are qualitatively equivalent across both synthetic family samples.

Exhibit A2

Access to Quality Subsidy/Public Child Care—Alternative Synthetic Family Sampling, Washington (2019)

	Statewide	Rural	Urban	Minority BIPOC	Majority BIPOC	Lower vulnerability	Higher vulnerability
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quality Subsidy/Public CC/EL- Primary analysis	0.33 (0.25)	0.26 (0.39)	0.35 (0.21)	0.31 (0.24)	0.43 (0.26)	0.29 (0.23)	0.47 (0.26)
Quality Subsidy/Public CC/EL- Alternative Synthetic Family Sample	0.32 (0.25)	0.23 (0.25)	0.35 (0.22)	0.31 (0.23)	0.42 (0.21)	0.31 (0.23)	0.42 (0.21)

Notes:

Each column represents a separate estimate of the average demand-adjusted supply. Standard deviations are reported in parentheses.

Friction-of-Distance Parameter

The Gaussian distance-decay function allows us to integrate a preference for CC/EL site proximity into our measure of access to child care. In the Gaussian distance-decay function, the friction-of-distance parameter, Beta (β), dictates how much weight is placed on children who live further away from a provider (or providers located further away from a family’s residence). The larger the value of β the less weight is placed on a child/provider that resides further away (within a 20-minute radius). That is, we assume families are less likely to attend a CC/EL site that is further away the larger the value of β . For our primary analysis, we measure access with a β value equal to three. In [Exhibit A3](#), we examine the sensitivity of our main results to alternate values of Beta: $\beta=2$ and $\beta=4$. Estimated access measures are qualitatively equivalent across all three values of β .

Exhibit A3

Access to quality Subsidy/Public Child Care—by Alternate Values of Beta,
Washington (2019)

	Statewide	Rural	Urban	Minority BIPOC	Majority BIPOC	Lower vulnerability	Higher vulnerability
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Quality Subsidy/Public CC/EL ($\beta=3$)	0.33 (0.25)	0.26 (0.39)	0.35 (0.21)	0.31 (0.24)	0.43 (0.26)	0.29 (0.23)	0.47 (0.26)
Quality Subsidy/Public CC/EL ($\beta=2$)	0.33 (0.24)	0.28 (0.24)	0.36 (0.19)	0.32 (0.19)	0.42 (0.21)	0.31 (0.18)	0.44 (0.20)
Quality Subsidy/Public CC/EL ($\beta=4$)	0.32 (0.31)	0.25 (0.48)	0.35 (0.28)	0.31 (0.31)	0.45 (0.33)	0.29 (0.31)	0.49 (0.33)

Notes:

Each column represents a separate estimate of the average demand-adjusted supply.
Standard deviations are reported in parentheses.

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For further information, contact:
Amani Rashid at 360.664.9804, amani.rashid@wsipp.wa.gov

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