Supply and Demand in Oregon: How Equitable is Child Care Access?

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Report in Response to House Bill 2346

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Supply and Demand in Oregon: How Equitable is Child Care Access?

Executive Summary

Through House Bill (HB) 2346, the Oregon Legislature created the Task Force on Access to Quality Affordable Child Care. This bill directed the Early Learning Division to conduct three studies to inform the work of the Task Force. This, the second of three required studies, addresses child care supply and demand. As directed by the Legislature, the study examines how rurality and demographic characteristics of children and families are associated with child care supply. In its charge, the Legislature identified four child, family, or community characteristics whose association to equitable access they wanted studied. These characteristics are geography (rural vs urban), child’s age, child’s race/ethnicity, and language spoken in the home. Because research has shown two additional characteristics associated with access, the study team also examines household income and marital status (single employed parent). This study asks if the characteristics of children and the communities in which they live mean that some children face increased barriers to accessing child care than others.

Concern about supply and demand is, at root, concern about equity. In the case of child care, the question is, does supply and demand align so that all children have equal access to child care and education experiences, or do some children have less access because of their demographic characteristics or where they live? Access operates at two levels: individual child and community. In the case of the child, characteristics of the child, parent, or community in which the child lives can act as a barrier to accessing needed child care. In the case of the community, having a significant portion of children who share a common characteristic may influence a community’s capacity to create and maintain adequate child care supply. A child’s opportunities may be limited by their own characteristics or by the characteristics of their community.

Methods
This study addressed child care access in two ways. First, at the child level, the study addressed how demand characteristics are associated with a child’s access to child care through a review of the literature. A characteristic was defined as an access barrier if research showed having that characteristic was associated with constrained child care usage. Secondly, at the community level, the study related child demographic data across Oregon communities (demand) with community-level data on child care availability (supply); and also investigated the role of public funding.

To estimate child care access at a community level, the study used population counts and demographic characteristics of children using the U.S. Census Bureau’s American Community Survey. These data were paired with administrative licensing data at the community level. Rurality of a community was captured by categorizing a continuous metric that accounted for population density, urbanization, and commuting behaviors of the residents. Public
investment was measured by contracted slots with data on from multiple sources, including information on capacity of publicly funded facilities by age group. Multiple statistical methods were used to capture the associations among community characteristics and supply, including descriptive, bivariate tests, and multiple regression approaches.

Findings
Throughout Oregon, child care supply is severely limited. Indeed, 72% of Oregon communities can be labeled as child care deserts, meaning there are only enough regulated slots available for less than a third of a community’s young children (0-5 years). Oregon’s supply is less adequate than that of many other states (Malik et al., 2018).

Child-level access barriers. Statewide, large percentages of young children have characteristics that limit their ability to access available child care. Indeed, all of the identified characteristics for this study act as access barriers, including rural geography, low household income, and demographics including low-income, as well as being an infant/toddler, being a person of color, and living in limited English proficiency household. These barriers are prevalent across communities across the state: For instance, 23% of Oregon young children live in rural communities, 40% live in low-income households, 36% are children of color, and 36% of children with employed parents live in single employed parent families.

Community-level access barriers. At the community level, three of the five characteristics considered were associated with inadequate supply. Inadequate child care (i.e. child care deserts) are more likely in communities characterized by rurality and above-state-average percent of children living in low-income households. In addition, child care supply is less adequate for infant/toddlers than for preschool age children. Communities with above average percentage of children from a single employed parent household or with higher levels of limited English proficiency were not directly associated with having an inadequate supply of child care. Surprisingly, having a high percentage of children of color in a community was associated with a slightly more adequate child care supply; however, the supply in these communities remains far from adequate. It is possible that this finding about the race/ethnicity association with supply is related to the limitation of our data source. We were not able to analyze by specific racial/ethnic groups. National research (Malik et al., 2018) shows that communities with high percentage of Hispanic or Native American children have less adequate supply and that other racial/ethnic groups have more adequate supply. It also may be that there was a missing factor not included in the study, one whose inclusion would explain the finding. Further research is needed to determine if this finding is meaningful.

Findings also indicate that there was not a clear relationship between a community’s total number of barriers and supply adequacy. Although most Oregon communities have on average just over two barriers to accessing child care, there was wide variation in which barriers a community experienced. Given that no single characteristic predicts inadequate supply and that the combination of barriers varies across communities, it appears important to take multiple community characteristics into account in order to promote equitable access.
The Role of Public Investment. Public investment in child care can improve child care access at the levels of both the individual child and the community. At the child level, public dollars are largely used to reduce or eliminate the fees parents pay; thus, increasing access. At the community level, investments in programs builds and maintains supply. Oregon’s child care supply relies more heavily on parent tuition/fees than other states. Seventy-two percent of the dollars spent on Oregon child care come directly from families (Office of Child Care, 2010) compared to a national estimate of 52% of costs are borne by parents (BUILD Initiative, 2017).

To understand the relationship between public funding and supply adequacy, we explored the role of public funding at the community level. Across the state, we found that 18% of child care slots for 0-5 year olds children are publicly funded by contracts (Oregon Head Start Prekindergarten, Federal Early/Head Start, Preschool Promise), but that the percentage of slots varied widely by community. Nearly two-thirds (66%) of communities with young children do not have any public-funded contracted slots. However, public funding plays a substantial role in improving the adequacy of child care supply in some Oregon communities: for some there would be little to no supply without public funds. The role of public funding in building and maintaining supply varies by characteristics of the children or community, especially low-income communities and/or rural communities. For example, public funding accounts for a larger proportion of the available supply in rural Oregon compared to urban communities, which have more private pay options in the supply pool.

Oregon ranks low among states in the adequacy of its child care supply; and that ranking seems to be explained, at least partially, by the relatively low ranking in public investment in child care and early education programs. To target investments that improve access for all of Oregon's children, considerations at both levels is needed: targeting child level barriers with interventions for families to facilitate access to existing care, along with community interventions to increase supply overall.

Conclusion and Policy Implications
An inadequate supply of child care threatens the well-being of children, families, and communities across Oregon. This report illustrates how children experience multiple barriers to child care access due to their demographic characteristics, even if slots exist where they live. But, the majority of Oregon communities lack adequate supply regardless of demographics. As of 2018, almost three-quarters of Oregon communities are child care deserts, meaning there is less than 1 available space of child care for every 3 children. In addition, about a quarter of communities are severe deserts, with only 1 slot for every 10 children. Desert communities are not restricted to a specific region, but are wide spread throughout the state.

Current realities. Even before the pandemic, Oregon had been suffering from a woefully inadequate child care supply; COVID-19 has certainly increased the severity of inadequate and inequitable access. On the demand side, more children are now living in low-income households due to employment disruptions, making child care more unaffordable. On the
supply side, there are estimates that half of regulated providers are not currently operating and there are concerns that many may not come back. Further, emerging evidence suggests that child care programs that receive public funding are weathering this period of emergency better than those that rely solely on parent tuition. The role of the wildfires plaguing Oregon will further increase access challenges, particularly for the communities hit hardest by the devastation.

**Child care as a community asset.** Child care holds potential to act as a community asset that not only benefits a single child or family unit, but also promotes the well-being of an entire community. For example, having a sufficient supply of quality child care promotes economic development by enabling parents, especially mothers, to fully engage in the workforce and promotes employee productivity. However, to get there, work needs to be done to better understand family and community needs, and strategically targeting policy and public investments with an eye toward equity.

Implications for public policy include the following:

- In targeting resources, it is important to consider the combination of child and community level barriers when assessing need and allocating resources that will effectively build and retain child care options that meet the needs of the community.

- Current public funding plays a significant role in the inadequacy of child care supply in many Oregon communities, however the proportion of supply funded by public investment is relatively small compared to other states. Public investment may be essential to building an adequate supply of child care, especially where communities are predominately low-income, and/or rural. These investments will be most effective when also considering potential child-level barriers and family preferences (e.g., hours of care needed and type of care).

- The role that race/ethnicity plays in child care access needs more attention, as our current understanding is incomplete. It is important to approach this issue from multiple perspectives, including learning directly from families’ firsthand experience, as well as digging into administrative data to identify any unintentional patterns of inequity in program use that can be addressed by policy changes. Further, on the supply-capacity side more work is needed to understand and improve cultural competency and implicit bias awareness skills of teachers/providers who care and educate an growing number of children of color.

- Finally, the use of geospatial analytic techniques are needed to better capture the complicated dynamics between supply and demand at the community level. For example, the current study was unable to capture how a neighboring communities characteristics shape child care access.
Supply and Demand in Oregon: How Equitable is Child Care Access?

Introduction

Through House Bill (HB) 2346, the Oregon Legislature created the Task Force on Access to Quality Affordable Child Care. This bill directed the Early Learning Division to conduct three studies to inform the work of the Task Force. This, the second of three required studies, addresses child care supply and demand. As directed by the Legislature, the study examines how rurality and demographic characteristics of children and families are associated with child care supply. In its charge, the Legislature identified four child, family, or community characteristics whose association to equitable access they wanted studied. These characteristics are geography (rural vs urban), child’s age, child’s race/ethnicity, and language spoken in the home. Because research has shown two additional characteristics associated with access, the study team also examines household income and marital status (single employed parent). This study asks if the characteristics of children and the communities in which they live mean that some children face barriers to accessing care and education. Throughout the report we utilize the term child care to capture the wide array of early care and education settings children may attend.

Child care access is multifaceted

Child care access is multifaceted and the presence of supply (or the number of child care slots) in a community is critical. However, while availability is important, it is only one of a set of interrelated factors that are critical to making child care work for children and families. “Access to early care and education means that parents, with reasonable effort and affordability, can enroll their child in an arrangement that supports the child’s development and meets the parents’ needs” (Friese, Lin, Forry, & Tout, 2017). Child care slots may exist but not be accessible to a given family because a parent cannot afford the price or because services are offered at times or locations that do not align with parents’ employment or school schedules. In addition, it may be available but not meet a child’s safety or developmental needs. This study examines key aspects of child care access. However, the report cannot speak to all facets of access. For example, within a community’s supply a parent’s use of care is also shaped (and often restricted) by selection factors, like the quality of care available (e.g., do parents feel safe with care option?), parental preferences in type of care (e.g., does the family prefer a child care home versus center?), and operating hours (e.g., do care hours match parents employment schedules?) that further determine if that family has access to care or not.

This study focuses on child care access at two levels: child and community. At the child level, the question is: are these demand indicators associated with whether or not a child can access care? In other words, are some children that share certain characteristics not able to access child care, even if that care exists in their community? At the community1 level, the question is: are the characteristics of child and community associated with the adequacy of child care

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1 We use census tracts as the measure of community.
supply? In other words, is there equity in child care supply across communities, or are there communities in which the majority of children share one of the examined characteristics associated with a less adequate supply? The findings from this report are intended to inform decision-making and support creative solutions at various levels to meet the child care needs of children and communities in our state. This report focuses on young children, generally defined as children aged 0-5, while a companion report focuses on school-aged children.

**Role of Public Investment**

Public investment in child care and education helps improve child care access at the level of both the individual child and the community. At the child level, public dollars are used to reduce or eliminate the fees parents pay. At the community level, investments in programs build the supply. But Oregon relies heavily on parent fees and does not invest in child care to the extent that other states do. Seventy-two percent of the dollars spent on Oregon child care come directly from families (Office of Child Care, 2010). In contrast, the national estimate is that 52% of costs are borne by parents (BUILD Initiative, 2017). Further evidence of low public investment is found in preschool slots. Oregon funds less than half (46%) of care for Oregon’s 3- and 4-year olds compared to a national average of more than half (57%) (Hardy & Huber, 2020).

Public investments come in two main forms: contracts and vouchers. Contracts are direct payments to providers who then enroll children who meet eligibility criteria (e.g., Head Start or Preschool Promise). Contracts contribute to increasing the supply of child care by creating a funded slot that can be filled by any child who fits the eligibility criteria. The state controls where public dollars are invested when it contracts with providers; the state agency decides which communities and which providers in the community are eligible to apply for contracts. Because a contract represents a public commitment to fund a provider for a set period of time, the investment makes those slots available over the length of the contract. In contrast, vouchers are payments made to an eligible provider selected by an eligible parent (e.g., Employment-Related Day Care, ERDC) and do not necessarily create additional supply. In the present report we examine public investment in terms of contracted slots. For more information on the use of vouchers/ERDC across Oregon communities, see Legislative Report A: The State of Child Care & Education and Child Care Assistance in Oregon.

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Current Study

This study focuses on child, family, and community characteristics that are likely to affect a child's child care access or the adequacy of the community's child care supply. In HB 2346, the Oregon Legislature identified the following characteristics of children, families, and communities whose child care access they wanted examined:

- Geography
  - Rurality (vs. Urbanicity)
- Household demographic information, including:
  - Child's age
  - Child's race/ethnicity
  - Language spoken in the home.

The following child and family characteristics are also examined in this study since they have been shown to be associated with individual family child-care selections:

- Household income
- Single employed parent status.

Research shows that each of these characteristics affects an individual child's care access. For example, a child that lives in a household with an income of less than 185% Federal Poverty Level is described as having a low-income access barrier. We also hypothesize that when a high proportion of community children shares a characteristic such as low-income, the community itself will experience an inadequate child care supply (i.e., be a child care desert). For example, we expect that communities with a higher than state average percentage of children living in low-income households will have a low-income access barrier; and thus we hypothesize that they will have a less adequate supply of child care.

It is also important to note that the examined characteristics are interrelated with each other. For example, nonmetropolitan (more rural) communities have higher poverty levels (based on household incomes) than do metropolitan areas (USDA, 2019). Further the income status of communities varies in terms of the racial/ethnic mix of residents. For instance, in Oregon, individuals (of all ages) who identify as Native American, Black, and Hispanic/Latinx have a 22-29% poverty rate compared to 12-15% for those who identify as White, non-Hispanic/Latinx and Asian (U.S. Census Bureau, 2019). Thus, when trying to understand how child care supply varies across communities, it is important to also look at the intersection among community characteristics. It is also important to identify which communities are characterized by having multiple access barriers to child care. Indeed, even if having multiple access barriers does not predict the community’s supply, it can highlight communities where the families likely face additional barriers to actually using any nearby care. This improved understanding of a community’s composition may inform tailored solutions and investments to strengthen child care in light of a community’s unique composition.

In sum, this study addresses child care access by doing two things. First, it addresses how demand characteristics are associated with an individual child’s access to child care through a review of the research literature. Secondly, it relates data about children and families
(demand) with data on child care availability (supply) and does so at the community (census tract) level. In the following section, we describe how we created estimates for all of the elements used to capture supply (child care slots) and demand (characteristics of children and parents).

**Methods**

**Child Level Demand Indicators**

The research team reviewed research on how each child/family or community characteristic in this study has been found to be associated with child care usage in the United States. Child level characteristics included child’s age, child’s race/ethnicity, language spoken in the home, household income, and marital status (single employed parent).

**Access Barrier.** A characteristic was identified as an Access Barrier if research showed having that characteristic to be associated with less child care access.

**Community Level Demand Indicators**

**Definition of Community**

In this study, communities are defined by census tracts. Oregon has 834 census tracts, including some with no regular population (e.g. airports, coasts, national parks) and some with no or very few (<10) young children. Accordingly, 823 census tracts are included in the analyses for this report; excluding those with no child population.

**Young Children in Oregon**

According to U.S. Census Bureau’s American Community Survey (ACS) estimates, there are 277,238 children under age six (0-5 years) living in Oregon. Communities range from a low of zero children to a high of 1,635 children. Communities with zero children are excluded from the analysis.

Although there are differences in the availability of child care by age group, ACS data on community characteristics does not support our ability to study demand for infant/toddlers (0-3) separately from preschoolers (3-5). Therefore, this report primarily focuses on Oregon’s young children ages 0-5 years. A companion report provides findings for school age children age 6-12 years.

**Rurality, Community Characteristics, and Access Barriers**

**Defining a Community as Rural.** The present study defines a community (i.e., census tract) as rural using a continuous metric which takes into account population density, urbanization, plus commuting behaviors of the residents3. This captures the difference between living in an

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3 The Rural/Urban Commuting Area codes (i.e., RUCA codes) provided by the Economic Research Service of the U.S. Department of Agriculture categorize each community (census tract) on a 1-10 scale that supports classification of a community as rural or urban. For the purpose of this report, RUCA codes 1-3 are considered urban and codes 4-10 are considered rural. The most recent RUCA codes are based on data from the 2010 decennial census and the 2006-10 American Community Survey. [https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/](https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/)
isolated rural community from living in a rural area that is within commuting distance to a metropolitan area. This continuous metric was categorized to allow for comparison between rural and urban communities.

**Measuring Community Characteristics.** Community-level data on children and families came from 5-year (2014-2018) estimates from the American Community Survey (ACS) produced by the U.S. Census Bureau. Demographic data on child’s age, ratio of income to poverty status for children, race and ethnicity of children, and parental employment status were obtained for the State of Oregon and for all communities (census tracts). Community characteristics for all geographies were calculated as percentages (e.g. percentage of young children in a community who live in low-income households). For additional details on the ACS data used in this report, see Appendix A.

**Identifying Communities with Access Barriers.** In this report, a community characteristic was defined as an access barrier if, in a community, the percentage of children or families with that characteristic was at or above the state average of children and families with that characteristic4. The characteristic also had to be identified in the existing research literature as a barrier to accessing child care.

Below we describe the variable creation process for each community characteristic and the related community indicator being hypothesized as an access barrier, which is labeled in parenthesis in the bullets below:

- **Household Income (Low-Income).** We used the percentage of young children in households with annual incomes below 185% of the Federal Poverty Limit (FPL) to examine the association between household income and child care supply. After first investigating different levels of household income in relation to supply, we choose to use 185% FPL5 as that is the current income eligibility limit for ERDC. A community is characterized as low-Income when the percentage of young children living in households with incomes below 185% FPL is higher than the state average of 40% of children living in a household with low income.

- **Single Employed Parent (Single Parent).** We estimated the percentage of young children who live with a single employed parent. This does not include all single parent households, but rather reflects the portion of fully-employed households6 that are single parents and, thus, more likely to be using child care than an unemployed single

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4 To be more specific, the count of children who share a given characteristic in the state was divided by the total count of children in the state to calculate the percentage who share that characteristic. The same percentages were created for each census tract and compared to the state average. Using one characteristic as an example, the number of Oregon children under age six who lived in a low-income family (109,692) was divided by the total count of Oregon children under six (271,267), finding that 40% of all Oregon young children lived in low-income households. If the percentage of young children living in a low-income household in a community was greater than the state percentage of 40%, we described the community as having the access barrier of low income.

5 For reference, 185% of Federal Poverty Limit in 2020 is equivalent to $40,182 a year/$3,349 a month for a family of three.

6 A fully-employed household is one that has either both parents employed in a two parent-household, or a single parent employed in a single-parent household.
A community is characterized as high in single employed parents when the rate of single employed parent households is higher than the state average of 36% of children of fully employed parents in the community living with a single employed parent.

- **Language Spoken in Home (Limited English).** The U.S. Census reports the prevalence of young children who live in limited English proficiency households only for children age 5-17 years. In a limited English proficiency household, everybody over 14 has at least some difficulty with English (that is, none speak only English or speak English “very well” in addition to another language). Although we cannot speak specifically to households with young children, limited English proficiency is used to describe the community in which those young child households live. A community is characterized as being a limited English community when the rate is higher than the state average of 4% of children over age five in the community living in a limited English-speaking home.

- **Child Race/Ethnicity (Children of Color).** Given low percentages and uncertainty of estimates for children who identify as specific races or ethnicities (particularly Black, Native American, Asian, Native Hawaiian, Hispanic/Latinx, and two or more races) in many Oregon communities, we were limited to the use of a combined measure for children of color. Thus, we use two categories to capture race/ethnicity: White (non-Hispanic/Latinx) and Children of Color. A community is characterized as a children of color community when the rate of young children of color is higher than the state average of 36% of children in the community identifying as a child of color.

### Child Care Supply

Community child care supply is captured by the total number of slots present in a given census tract for children 0-5 years of age. The child care supply estimates reported here are from the 2018 Estimating Supply dataset put together by Oregon State University with assistance from Central Coordination at Western Oregon University. This data compared licensing (Child Care Regulatory Information System) and Child Care Resource & Referral (NACCRRAware) databases to capture all child care facilities who were active as of January 1, 2018. The facility’s regulatory status and desired capacity by age group were then updated by contacting each facility to ensure all data were comparable and current.

This report uses the desired capacity, or the number of slots an early care and education provider desires to fill, as the measure of supply. This metric may differ from their licensed capacity since a facility may be licensed for more slots than they chose to fill. Additionally, slots represent the number of children a facility can have at one time. If a program has part day programs (i.e., separate a.m. and p.m. sessions), then two children can be served with one slot.

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The number of slots does not reflect the number of children who are actually enrolled in programs, but instead represents the number of slots available to children in the community. Another way to think of this is that the slots represent the number of children a provider can have at their facility at any one point in time.

Statewide in 2018, Oregon had an estimated 67,393 regulated\(^8\) child care slots for young children ages 0-5, with 62% of slots in certified centers, 12% slots in large (certified) home-based care, and 12% in small (registered) home-based care. Table 1 displays the number of regulated slots by type of facility.

<table>
<thead>
<tr>
<th>Type of Care</th>
<th>Young Children 0-5 Slots</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centers</td>
<td>48,970</td>
<td>62%</td>
</tr>
<tr>
<td>Large Home-Based</td>
<td>9,229</td>
<td>12%</td>
</tr>
<tr>
<td>Small Home-Based</td>
<td>9,194</td>
<td>12%</td>
</tr>
<tr>
<td>Total All Types</td>
<td>67,393</td>
<td></td>
</tr>
</tbody>
</table>

Child Care Desert

To measure adequacy of community supply, we use the percentage of children in a community that potentially have access to a child care slot to determine if the community is a child care desert. Communities were defined a child care desert if the community’s slots were available for less than a third (or 33%) of children living in the given community. This was calculated by taking the number of regulated slots in a community (census tract) and dividing it by the number of children 0-5 in that community to get the percentage of children with access to a slot. The percent of children with access has been used as an Oregon benchmark for child care availability since the early 1990s and is reported biennially in the Early Care and Education Profiles\(^9\).

A recent study of Oregon’s counties found that the whole state is a desert for infants and toddlers and that all but nine counties are deserts for preschool-age children (Pratt, Sektnan, & Weber, 2019). The present study extends our understanding of child care supply by assessing child care deserts at a smaller, community level geographic scale.

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\(^8\) Supply for young children was restricted to regulated (licensed) care in this report. Recorded Preschool Programs, which operate for four hours or less a day, and legally-exempt providers, which are not required to report to the state, were excluded. Recorded programs make up 10% of known child care slots for young children, and exempt providers make up 5%. Report analyses were completed on both all known care and the regulated only sample and results were comparable, suggesting robust results. For school-age children, all known care was included due to the different nature of school-age care (i.e., afterschool care) – see School Age Report for details.

\(^9\) Early Care and Education Profiles provide a snapshot of Oregon’s child care and education system and look at policy-relevant information related to Oregon’s children and families, including affordability and availability. [https://health.oregonstate.edu/early-learners/profiles](https://health.oregonstate.edu/early-learners/profiles)
Measurement of Public Investment

To estimate the impact of public investment on the adequacy of the child care supply, we collected data from multiple sources, including information on capacity of publicly funded facilities by age group. The Early Learning Division (ELD) administers several publicly funded early learning programs: Oregon Head Start Prekindergarten (OPK), Early Head Start (EHS), and Preschool Promise (PP). ELD program managers provided lists of funded programs. Lists included facility identification information and numbers of children served or slots funded by each program. In addition to using the ELD lists, we identified programs that had Oregon Child Development Coalition (OCDC) or which had Head Start in their facility name but had not appeared on an ELD list. Many programs have blended public funding and were on multiple lists, but were only counted once.

Public slots included in this report do not include all public investments in child care. First, as noted earlier, the Employment-Related Day Care program (ERDC) pays for all or a portion of a participating parent’s child care fees, but does not create a funded slot. Likewise, this report is focused on slots in facility-based early learning programs so public funds used to support home visiting programs are not represented. In addition, the number of publicly funded slots is likely underestimated due to data limitations. Local entities such as school districts or counties sometimes use their own public funds to deliver child care services, but that information is not collected by the state. Also, if a program that received only federal Head Start dollars did not have “Head Start” in its name, researchers may not have identified it as publicly funded. Head Start Child Care Partnerships use federal dollars to fund child care slots within community facilities, but those community facilities were not identified in the dataset. Also, families receiving Relief Nursery services often participate in a publicly funded early learning program, but a reliable number of those who participated in an early learning program was not available.

Analysis

At the child level, the analysis was based on a review of the literature. We report the association between each characteristic and a child’s access to child care. At the community level, this report aims to assess the relationship between community characteristics and the child care supply in Oregon communities. Multiple statistical methods were used to capture the association between characteristics and supply, including general descriptives (e.g., frequencies, means, ranges), bivariate analyses (e.g., T-tests, Chi-2 tests), and multiple regression approaches (e.g., logistic regressions).
Findings

At the child level, all six characteristics are associated with reduced child care access. Further, large percentages of Oregon’s young children have characteristics that limit their child care access. For example, 40% of Oregon young children live in low-income households, 36% are children of color, and 36% of children with employed parents live in single employed parent families. At the community level, supply inadequacy marks the state and is greater than that of other states (Malik et al., 2018). Child care supply is inadequate across the state with 72% of Oregon communities being child care deserts, meaning there are only enough regulated slots available for less than a third of a community’s children.

Although at the individual child level we were able to explore access based on child’s age and we could compare infant and toddler access to preschool-age access, we were not able to investigate age-related differences in community level characteristics as the ACS data were not available by 0-3 vs 3-5 age groups. Therefore, for community demographics we had to examine young children as one age group of 0-5.

In this section, we first describe the inadequacy of child care supply across Oregon communities. We then describe findings about the association between each community characteristic and access, first at the individual child level and then at the community level.

Inadequate Supply—Child Care Deserts

The vast majority of Oregon communities are child care deserts, meaning there are only enough regulated slots available for less than a third of a community’s children. As seen in Table 2, communities vary in their adequacy of supply, with almost three-fourths of Oregon’s communities (72%) being child care deserts. In addition, just over a third of Oregon’s communities are extreme deserts where there is, at most, one slot for every 10 children. Seventy-seven percent of Oregon young children live in a child care desert. Oregon has one of the highest percentages of children living in a desert in the nation (Malik et al., 2018).

<table>
<thead>
<tr>
<th>Percent Access to a Slot</th>
<th>Communities</th>
<th>Child Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Severe Desert (0 - 10%)</td>
<td>279</td>
<td>34%</td>
</tr>
<tr>
<td>Desert (10 - 33.4%)</td>
<td>314</td>
<td>38%</td>
</tr>
<tr>
<td>Not a Desert (33.4 - 50%)</td>
<td>108</td>
<td>13%</td>
</tr>
<tr>
<td>Adequate Supply (&gt;50%)</td>
<td>122</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>823</td>
<td></td>
</tr>
</tbody>
</table>

Desert 593 72% 212,812 77%
Non-Desert 230 28% 64,426 23%
As can be seen on Map 1: Percent of Young Children with Access to a Regulated Child Care Slot, not only are most Oregon communities child care deserts, these deserts are not limited to certain regions, but rather are spread across the state.

Map 1: Percent of Young Children with Access to a Regulated Child Care Slot

For larger view of map, see Appendix B, page 43.

Characteristics of Children and Communities

In this section we report findings on the association between child and community characteristics and child care access. For each characteristic, we report first at the child level and then at the community level.

Age: Infants/Toddlers Face Access Barrier at Child and Community Level

Child Level. Child age is associated with child care choices. Parents of very young children have severely limited choices (Van Horn et al., 2001). These limitations are associated with less use of center care and heavy use of home-based care for these young children (Wolfe & Scrivner, 2004).

Community Level. As seen in Table 3, a higher percent of communities are child care deserts for infants and toddlers than for preschool age children. Over 84% of communities in Oregon are infant/toddler child care deserts, compared to 61% of communities being deserts for preschool age children. The difference is particularly noticeable for severe deserts where there is, at most, one slot for every 10 children. Over half (53%) of Oregon’s communities are a severe desert for infant and toddlers, whereas less than one-third (29%) of communities are severe deserts for preschoolers. Although the child care supply is nowhere near adequate for either age group, this demonstrates that younger children, particularly infants and toddlers, face increased barriers to child care access.
Table 3

Percentage of Communities Ranked by Desert Status for Infant/Toddlers and Preschool Aged Children

<table>
<thead>
<tr>
<th>Percent Access to a Slot</th>
<th>Infant/Toddlers 0-3 years</th>
<th>Preschool 3-5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe Desert (0 - 10%)</td>
<td>432 53%</td>
<td>234 29%</td>
</tr>
<tr>
<td>Desert (10 - 33.4%)</td>
<td>258 32%</td>
<td>269 33%</td>
</tr>
<tr>
<td>Not a Desert (33.4 - 50%)</td>
<td>67 8%</td>
<td>106 13%</td>
</tr>
<tr>
<td>Adequate Supply (&gt;50%)</td>
<td>60 7%</td>
<td>211 26%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>817</strong></td>
<td><strong>820</strong></td>
</tr>
</tbody>
</table>

| Desert                        | 690 84%                   | 503 61%             |
| Non-Desert                    | 127 16%                   | 317 39%             |

Rurality: An Access Barrier at Child and Community Levels

**Child Level.** Past work has documented differences in child care used by families in rural and urban communities (Davis, Grobe, & Weber, 2010). Rural families are significantly less likely to use center care and significantly more likely to use relative care (Henly & Adams, 2018; Swenson, 2008). Multiple barriers such as small numbers of children and high percentages of low-income households, restrict the number of centers operating in rural areas. The challenges to creating and maintaining child care in rural areas exceed those in urban areas (Henly & Adams, 2018).

**Community Level.** To capture community-level geography, the current study uses a community-level designation of rurality to understand families’ experience of access in their immediate community. Additionally, living in a rural community differs for those living within ‘driving distance’ of a population center like Medford, Eugene, or Portland than for rural families outside metropolitan commuting areas. Use of rural-urban commuting areas at a community level instead of counties allows for a more nuanced picture of how rurality relates to child care accessibility throughout Oregon. For the purpose of this report, rurality is defined using Rural-Urban Commuting Area (RUCA) codes which take into account measures of population density, urbanization, and commuting behaviors of the residents.

Twenty-seven percent of Oregon communities are classified as rural. As seen in Map 2: Rurality and Urbanicity of Oregon Communities, rural communities are displayed in shades of green with deeper colors indicating more rurality.
Rurality represents a substantial and significant barrier to child care access at the community level. As shown in Table 4 and Figure 1, a larger percentage of rural communities are deserts compared to urban communities (81% vs 70%--a 11% difference). Rural communities are significantly more likely to be a child care desert than urban communities\(^\text{10}\). Therefore, we classify rurality as an access barrier to community level supply.

### Table 4

<table>
<thead>
<tr>
<th>Percent Access to a Slot</th>
<th>Urban Communities</th>
<th>Rural Communities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe Desert (0 - 10%)</td>
<td>N=190</td>
<td>N=89</td>
</tr>
<tr>
<td></td>
<td>%31%</td>
<td>%41%</td>
</tr>
<tr>
<td>Desert (10 - 33.4%)</td>
<td>N=225</td>
<td>N=86</td>
</tr>
<tr>
<td></td>
<td>%37%</td>
<td>%40%</td>
</tr>
<tr>
<td>Not a Desert (33.4 - 50%)</td>
<td>N=90</td>
<td>N=21</td>
</tr>
<tr>
<td></td>
<td>%15%</td>
<td>%10%</td>
</tr>
<tr>
<td>Adequate Supply (Greater than 50%)</td>
<td>N=101</td>
<td>N=21</td>
</tr>
<tr>
<td></td>
<td>%17%</td>
<td>%10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>606</strong></td>
<td><strong>217</strong></td>
</tr>
</tbody>
</table>

\(^\text{10}\) Odds ratio [\(OR\)] = 1.95912, \(p = .001\); chi-squared [\(\chi^2\)] \(p < .001\).
Low-Income Households: An Access Barrier at Child and Community Levels

Child Level. Studies have shown an association between household income and parents’ child care selections (Dowsett et al., 2008; Laughlin, 2013). Families with very low incomes are less likely to use centers or family child care homes. The lowest income families may be eligible for public programs such as Head Start (100% FPL), Preschool Promise (200% FPL), or a child care subsidy (185% FPL) to help with the cost of care. Families with limited incomes, but above publicly funded program eligibility limits, struggle to find ways to afford paid care; this, in turn, makes it difficult for child care businesses to survive in lower income communities if they are not publicly funded. In the state of Oregon as a whole, 40% of young children live in low-income households.

Community Level. At the community-level, almost half (47%) of Oregon communities are characterized by having a high proportion of low-income households (i.e., above the state average of 40%). As seen in Table 5, 51% of Oregon children live in these low-income communities.

<table>
<thead>
<tr>
<th>Percent in Low-Income Households</th>
<th>Communities</th>
<th>Child Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Very Low (0-25%)</td>
<td>278</td>
<td>34%</td>
</tr>
<tr>
<td>Low (25-40%)</td>
<td>156</td>
<td>19%</td>
</tr>
<tr>
<td>High (40-50%)</td>
<td>110</td>
<td>13%</td>
</tr>
<tr>
<td>Very High (Greater than 50%)</td>
<td>279</td>
<td>34%</td>
</tr>
<tr>
<td>Total</td>
<td>823</td>
<td>277,238</td>
</tr>
</tbody>
</table>
As seen in Map 3: Percentage of Young Children in Low-Income Households across Oregon Communities, communities with above the state average percentage of children in low-income households are distributed across the state (two deeper colors).

Map 3: Percentage of Young Children in Low-Income Households across Oregon Communities

For larger view of map, see Appendix B, page 45.

Having a high or very high percentage of children from low-income households is strongly and significantly associated with having an inadequate supply of child care, in other words, being a child care desert. Low-income communities are significantly more likely to be a child care desert\(^\text{11}\). As can be seen in Figure 2, 76% of Oregon communities with more than 40% of children from low-income households are deserts compared to 69% of communities that do not have this barrier (7% difference). Having higher than state average percentage of children from low-income households in a community represents a barrier to establishing and maintaining adequate child care supply. Therefore, we classify low-income communities as an access barrier to community level supply.

\(^{11}\) OR = 1.4348, \( p = .022013 \); \( \chi^2 p = .012 \).
To dig deeper into the relationship with child care supply, we mapped the desert status for communities that have high percentages of low-income children. In **Map 4: Comparison of Desert Status among Communities with High Percentages of Low-Income Children**, communities with high percentages of children in low-income households (above the state average) are indicated in purple, with the deepest purple indicating communities that are child care deserts and the lighter purple indicating low-income communities that are not deserts. As expected, most low-income communities (76%) are child care deserts, with these communities being spread throughout the state.

**Map 4: Comparison of Desert Status among Communities with High Percentages of Low-Income Children**

For larger view of map, see Appendix B, page 46.
More rural Oregon communities are likely to also be low-income communities. One example of how access barriers do not act independently is illustrated by the association between rurality and low-income status. Rural communities are far more likely than urban communities to also have the Low-Income Access Barrier (70% of rural communities are low-income versus 39% of urban communities—a difference of 31%). When we look at Rural and Low-Income Access Barriers in a single statistical model, each uniquely predicts desert status\textsuperscript{12}. Although the two access barriers are significantly correlated with one another\textsuperscript{13}, they do not always occur together, suggesting each plays a unique role in shaping the child care supply in a community. It does not appear the inadequacy of supply can be fully explained by either barrier.

**Single Employed Parents: An Access Barrier at Child Level**

**Child Level.** Most single parent households are headed by women, and in Oregon, the median income of single parent households headed by women is less than one-third the median income of two-adult households with children\textsuperscript{14}. These parents’ child care challenges are not only associated with low incomes, but also with the absence of another adult to share tasks such as getting children to care and home. Even with such challenges, Oregon single parents are more likely to use child care than married parents (Oregon Child Care Research Partnership, 2009). Single employed parents with young children face multiple barriers in using regulated child care including: costs beyond their resources and child care providers’ limited hours of operation. In Oregon, 36% of children in fully employed households live in a household headed by a single employed parent.

**Community Level.** As can be seen in Table 6, nearly half (48%) of communities have higher than the state average of fully employed households headed by an employed single parent. Further, in more than one in four Oregon communities at least half of the young children who live in fully employed households live with a single parent.

<table>
<thead>
<tr>
<th>Table 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percentage of Communities Ranked by Percent of Children of Single Employed Parents</strong></td>
</tr>
<tr>
<td>Percent with Single Employed Parents</td>
</tr>
<tr>
<td>Very Low (0 - 20%)</td>
</tr>
<tr>
<td>Low (20 - 36%)</td>
</tr>
<tr>
<td>High (36 - 50%)</td>
</tr>
<tr>
<td>Very High (Greater than 50%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

\textsuperscript{12} Rural is slightly stronger predictor of desert status than low-income status of a community (Rural ($OR = 1.70, p = .009003$ vs. low-income $OR = 1.4123, p = .04$, respectively).

\textsuperscript{13} $r = .27, p < .001$.

No systematic relationship is detected between single employed parent communities and child care supply. As seen in Figure 3, only slightly more communities with high or very high percentages of employed single parents are child care deserts than are communities with low percentages (75% versus 69%--a 6% difference). Statistical tests do not indicate that a higher percentage of single employed parents is significantly more likely to be a child care desert. Thus, in this study, a high percentage of single employed parents does not represent an access barrier in terms of predicting community level supply.

![Desert Status of Communities by Single Employed Parents](image)

Although single employed parent status of a community is not statistically associated with desert status in a direct way, it is associated with other access barriers. Specifically, single parent communities are likely to also be low-income communities, as well as slightly more likely to be rural, two barriers to adequate child care supply.

**Limited English Proficiency: A Child Level Access Barrier**

**Child Level.** Children whose parents do not speak English as their first language are less likely to participate in center care (Capizzano & Adams, 2004). In fact, non-English speaking parents are less likely to use any form of formal care, but are more likely to do so when more slots are more readily available (Fram & Kim, 2008). When taken into consideration along with race/ethnicity and household income, language spoken in the home does not, by itself, appear to be associated with child care selected (Fram & Kim, 2008). The inability to identify the association may be due to data or analytic limitations (Fram & Kim, 2008) and does not mean that speaking a language other than English does not affect parents’ child care selections.

---

15 Chi² p < .001, 66% are low-income vs. 31% dual-employed parent communities.

16 Chi² p = .04, 34% are rural vs. 20% of dual-employed parent communities.
Some parents seek out providers who speak a family’s home language, while others want their child to speak English when in care. Language spoken in the home is often used a proxy for cultural variation from the dominant US culture. For example, immigrant parents, many of whom speak a language other than English, express preferences for providers who share similar cultural values (Chaudry et al., 2011; Obeng, 2007). The U.S. Census reports data on non-English speaking households only for children ages 5-17. In Oregon, 4% of children ages 5-17 live in a household with limited English proficiency (all household members over age 14 have at least some difficulty with English). Data are not available for children under age 5, so children age 5-17 is used at the community level as an indicator to describe the communities in which young children live.

Community Level. As seen in Table 7, 25% of Oregon communities have relatively high percentages (i.e., above the state average of 4%) of 5-17 years olds living in limited English-speaking households.

<table>
<thead>
<tr>
<th>Percent Limited English Proficiency</th>
<th>Communities</th>
<th>Child Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Very Low (0%)</td>
<td>487</td>
<td>59</td>
</tr>
<tr>
<td>Low (0% - 4%)</td>
<td>129</td>
<td>16</td>
</tr>
<tr>
<td>High (Greater than 4%)</td>
<td>207</td>
<td>25</td>
</tr>
<tr>
<td>Grand Total</td>
<td>823</td>
<td>277,238</td>
</tr>
</tbody>
</table>

We did not find that limited English proficiency of children ages 5-17 represents a barrier to the adequacy of the child care supply at the community level. Slightly fewer communities with high percentages of limited English proficiency are child care deserts than are communities with low percentages (69% versus 73%--a 4% difference; see Figure 4). Statistical modeling shows no statistically significant difference in desert status associated with the percentage of children living in limited English speaking households in a community. Thus, a high percentage of children with limited English proficiency does not appear to represent a barrier to the adequacy of child care supply at the community level. Conclusions taken from this finding should be done cautiously, as the low prevalence of limited English proficiency households as captured here makes identifying meaningful differences across communities challenging to detect.
Although limited English proficiency status of a community is not statistically associated with desert status, it is modestly associated with other access barriers. Specifically, limited English communities are likely to also be low-income communities\textsuperscript{17}, as well as slightly more likely to be single-parent communities\textsuperscript{18}.

**Race/Ethnicity: Being a Child of Color is a Child Level Access Barrier**

**Child Level.** A child’s race/ethnicity is a predictor of lack of access to child care, as well as other opportunities such as lack of access to good schools, healthy foods, parks, and good jobs (Acevedo-Garcia, Noelke, & McArdle, 2020). Indeed, a recent national study illustrated that poor Black and Hispanic children are less likely to live in a neighborhood with sufficient publicly-funded early childhood programming (i.e., Head Start) compared to white counterparts (Hardy et al., 2020). These community-level disparities can be attributed to a strong history of systemic racism and residential segregation in our country which makes it more difficult for people of color to participate in society and in the economy. When researchers have studied the impact of race and ethnicity on parental child care selections, they have found it hard to disentangle race and ethnicity from household income and employment characteristics, which tend to be interrelated with race (Radley & Brewster, 2007). Deeper analyses do suggest that race and ethnicity, apart from household income, negatively affects child care selection (Radley & Brewster, 2007). Importantly, there are differences in access across racial/ethnic groups, with children identifying as Black and Latinx facing more barriers to access than other racial/ethnic groups (Fram & Kim, 2008). Finally, growing evidence suggests that a family’s access may be restricted by additional issues related

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\textsuperscript{17} \textit{Chi}^2 \textit{p} < .001, 60\% are low-income vs. 43\% of communities with few, if any, limited English proficiency families., 19\%

\textsuperscript{18} \textit{Chi}^2 \textit{p} = .023, 53\%< .022, \% are single parent communities vs. 43\% of communities with few, if any, limited English proficiency families., 22\%
to race and racism. For example, children of color, particularly Black boys, are suspended or expelled from public preschools at a significantly higher rate than white children, which reduces the amount of care accessible (see Iruka, Curenton, Durden, & Escayg [2020] for more on the role of racism in the child care and education system). Over a third of Oregon young children (36%) are children of color and thus face the race/ethnicity access barrier.

**Community Level.** Forty percent of Oregon communities have high or very high percentages of children of color (i.e., above the state average of 36%). As seen in Table 8, 47% of Oregon’s children live in these communities with high percentages of children of color.

<table>
<thead>
<tr>
<th>Percent Children of Color</th>
<th>Communities</th>
<th>Child Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Low (0-20%)</td>
<td>297</td>
<td>83,083</td>
</tr>
<tr>
<td>Low (20-36%)</td>
<td>192</td>
<td>65,969</td>
</tr>
<tr>
<td>High (36-50%)</td>
<td>142</td>
<td>51,460</td>
</tr>
<tr>
<td>Very High (Greater than 50%)</td>
<td>192</td>
<td>76,726</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>823</strong></td>
<td><strong>277,238</strong></td>
</tr>
</tbody>
</table>

As can be seen in **Map 7: Percent of Young Children who are Children of Color across Oregon Communities**, communities with above the state average percentage of children of color are spread across the state. However, more racial diversity is seen in urban areas than rural areas (43% of urban communities are high children of color communities, compared to 34% rural). Communities with the two deepest shades of blue have over 36% of children who are children of color, with the deepest shade representing communities that have 50% or more children of color.

**Map 5: Percent of Young Children who are Children of Color across Oregon Communities**

For larger view of map, see Appendix B, page 47.
The role that race and ethnicity plays in shaping child care supply is complex. A national study of community-level child care supply adequacy (Malik et al., 2018) found substantial differences in access within the group we are calling children of color, with some racial/ethnic groups having above average supply and others having very inadequate supply. A limitation of the U.S. Census community-level data that we use for this study is that we could not look at racial/ethnic groups separately. Rather we had to combine all children who are not non-Hispanic White children into one group (children of color) for analysis. This prevented looking at supply adequacy for each racial/ethnic group; which may make it hard to get a clear picture of what is going on. Indeed, statistical tests suggest that children of color communities are slightly less likely to be child care deserts compared to other Oregon communities that are predominately White/non-Hispanic.19

As can be seen in Map 8: Comparison of Desert Status among Communities with High Percentages of Children of Color, communities colored in blue have an above-average percentages of children of color, with the deeper color indicating that the community is a child care desert.

For larger view of map, see Appendix B, page 48.

Findings on the association of race/ethnicity and child care adequacy show that race/ethnicity increases awareness of the complexity of this relationship. Having high percentages of children of color, single employed parents, and limited English proficiency are all associated with being low-Income. And being low-Income is strongly associated with inadequate supply. Further, research shows that, at the individual child level, each of these characteristics acts as

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19 Our results indicated that fewer (67%) of children of color communities are deserts for young children compared to communities with lower rates of children of color (75%) (8% difference).
an access barrier. Each characteristic is significantly associated with being a children of color community as shown below:

- Low-Income: 58% are low-income communities (18% more than communities with lower children of color)\(^{20}\)
- Single Employed Parent: 54% are single-parent communities (14% more than communities with lower children of color)\(^{21}\)
- Limited English Proficiency: 42% are limited English communities (29% more than communities with lower children of color)\(^{22}\)

Child-level barriers play a substantive role in children of color families’ access to the care available in their community. Research is clear that children of color, particularly Black and Brown/Latinx students are at a disadvantage when it comes to accessing existing child care supply due to discrimination/racism in the system – implicit bias, higher rates of exclusion (expulsion/suspension), and cultural mismatch. Thus, until additional research can more accurately identify which families have access to the care in their communities; our understanding of child care access, especially for children of color, will be incomplete.

**Multiple Barriers**

We find that rural or predominantly low-income communities are directly associated with inadequate child care supply. Further, having higher percentages of children with single employed parents, limited English proficient adults, or children of color are indirectly related through their association with being predominantly low-income communities. Overall, we found that communities averaged just over two barriers to utilizing existing child care\(^{23}\). Only 8% of communities had no access barriers and 6% had all five. Yet, we did not find that the total number of barriers predicted a community’s supply adequacy\(^{24}\); this suggests that simply adding up the number of barriers in a community fails to signal which communities are likely to struggle with inadequate supply. We did expect, however, that the combination of barriers a community faces matters.

To investigate how potential combinations of barriers may vary across communities, we descriptively analyzed the co-occurrence of the five barriers plus desert status to see if we could detect observable patterns. Descriptive results suggested that the combinations of barriers experienced by communities varied widely. For example, the most prevalent pattern of barriers accounted for only 13% of communities, with the rest of the patterns constituting 6% or less of Oregon communities. No individual indicator best describing any of these patterns.

---

\(^{20}\) Chi2 \(p < .001\).

\(^{21}\) Chi2 \(p < .001\).

\(^{22}\) Chi2 \(p = .023\).

\(^{23}\) \(M = 2.383, SD = 1.4248, range = 0-6\). Community-level barriers included desert status, rurality, low-income, Children of Color, limited English, single employed parent, and no public funding.

\(^{24}\) Cumulative Index predicting child care desert status was not significant, \(OR = 1.066, p = .245\).
Findings suggest that most Oregon communities have some barriers to accessing child care and that no single barrier (or combination of barriers) can describe the child care demands across all communities. This finding has implications for policy-making and practice. No single community characteristic provides a clear assessment of need on its own. Rather, each community presents its own unique profile of access barriers, which suggests that targeting of resources needs take multiple community characteristics into consideration.

Public Investment
In the United States, the child care and early education system is predominantly a market system with family ability to pay for care being the major predictor of use for a child and children living in higher income households being a predictor of the adequacy of the community’s supply. Being from a low-income household or living in a community with a high percentage of children from low-income households are access barriers. Although this is true across the nation, it is especially true in Oregon where less care is publicly funded and the regulated child care supply is substantially less adequate than that of other states. To further understand and document the relationship between public funding and supply adequacy, we explored the role of public funding at the community level. In this section, we seek to answer the following questions: To what extent do publicly funded slots contribute to the overall child care supply? Do public funds play a more substantial role in some communities than in others? Are there differences by community characteristics?

Communities vary in terms of the amount public funded slots. Eighteen percent of Oregon’s supply for young children is funded by public investment (12,197 of the 67,393 regulated slots). This includes slots funded by Oregon Head Start Prekindergarten, Early Head Start, Preschool Promise, Federal and Tribal Head Start, and Federal Migrant and Seasonal Head Start managed by the Oregon Child Development Coalition. This public investment however, is not evenly distributed among Oregon communities. The presence of public slots for young children is substantial in some communities and nonexistent in others. As seen in Table 9, almost two-thirds of communities with young children (66%) do not have any public funding in the form of contracted slots. In 20% of communities between 0 and 50% of their slots are publicly funded. For some communities there would be little to no supply without public funds. One in seven communities (14%) have over 50% of slots from public funding, and one in twenty communities (5%) have over 75% of slots publicly funded. Seventeen (2%) communities have 100% of their slots from public funding.
Table 9

<table>
<thead>
<tr>
<th>Percent Public Slots</th>
<th>Communities</th>
<th>Child Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>0%</td>
<td>545</td>
<td>66%</td>
</tr>
<tr>
<td>0 - 25%</td>
<td>85</td>
<td>10%</td>
</tr>
<tr>
<td>25 - 50%</td>
<td>79</td>
<td>10%</td>
</tr>
<tr>
<td>Greater than 50%</td>
<td>114</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>823</td>
<td></td>
</tr>
</tbody>
</table>

The amount of publicly funded slots systematically varies by community characteristics, most notably communities’ rurality and, to a lesser extent, low-income status. Rural communities have twice as much of their supply funded by public slots than urban communities (24% vs 12%; a 12% difference). Low-income communities also have twice as much of their supply funded by public slots than communities with fewer children in low-income households (20% vs 10%; a 10% difference).

Additionally, the role of public funding among communities with high children of color differs by whether or not the community is rural. Specifically, among rural children of color communities, 29% of slots are publicly funded compared to 22% of slots in rural communities with fewer children of color (a 7% difference). In contrast, among urban communities, about 11% of slots are publicly funded regardless of the racial status of children in those communities. No substantive differences in public funding were detected across single employed parent, or limited English-speaking communities.

**Public funding is modestly related to community-level child care supply.** To extend our understanding of the role of public funding in determining the adequacy of child care supply, we examined the relationship between public funding and the desert status of a community. Statistical analyses found that desert communities have significantly smaller percentage of publicly funded slots than do non-desert communities. Although significant, the difference is modest. Desert communities have (on average) 14% public slots, while non-desert communities have (on average) 18% public slots.

To further dig into this relationship, we examined how many more communities would become child care deserts if public slots were removed. In other words, to get a picture of what the child care supply would look like if public funding disappeared. As seen in Table 10, we found that 7% (54 communities) would become child care deserts without public funding. In addition, the number of severe desert communities would increase by 10% (from 34% to 44% of communities being severe deserts). Without public funding 11 communities would move from non-desert to desert status, and another 72 that were already deserts would become

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25 Tests sig p < .001
26 Test sig p = .024. OR = .53 p = .024.
even more severe deserts if public slots were removed. Even though limited, public funding is having an observable impact of the adequacy of child care supply in many Oregon communities.

Table 10

Comparison of Current Desert Status and Desert Status if Public Slots were Removed

<table>
<thead>
<tr>
<th>Percent Access to a Slot</th>
<th></th>
<th>Current Desert Status</th>
<th></th>
<th>Desert Status If Public Slots Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Severe Desert (0 - 10%)</td>
<td>279</td>
<td>34%</td>
<td>362</td>
<td>44%</td>
</tr>
<tr>
<td>Desert (10 - 33.4%)</td>
<td>314</td>
<td>38%</td>
<td>285</td>
<td>35%</td>
</tr>
<tr>
<td>Not a Desert (33.4 - 50%)</td>
<td>108</td>
<td>13%</td>
<td>88</td>
<td>11%</td>
</tr>
<tr>
<td>Adequate Supply (&gt;50%)</td>
<td>122</td>
<td>15%</td>
<td>88</td>
<td>11%</td>
</tr>
<tr>
<td>Total</td>
<td>823</td>
<td>823</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Map 7: Shift in Desert Status without Publicly Funded Slots illustrates the change in communities when publicly funded slots are removed. Seventy-two percent of communities (593) remain as a desert even when the investment of publicly funded slots are removed (blue). Twenty-one percent of communities are not deserts with or without public investment (turquoise). As noted above, 7% (54) of communities become child care deserts when public slots are removed (orange).

Map 7: Shift in Desert Status without Publicly Funded Slots

For larger view of map, see Appendix B, page 49.
Among the 54 communities that would become a desert without public funding, the majority of these communities are urban (72%) and low-income (61%). A third (35%) are limited English speaking communities. These communities were no more or less likely to be children of color communities or single employed parent communities (~50%).

Another important subgroup are communities that would move from a desert (i.e., enough supply for 10%-33% of children have access) into a more severe desert status (0% -10% of children have access). Seventy-two communities would become severe deserts where there is enough supply for at most 1 in 10 young children (average 4% of children have access). Similar to the communities that changed from non-desert to desert status, these communities were also majority low-income communities (67%) and a quarter (25%) were limited English communities. They were no more or less likely to be rural, children of color communities, or single employed parent communities (~50).

In sum, even though limited, public funding plays a substantial role in the adequacy of child care supply in Oregon communities. Public investment may be essential to having an adequate supply of child care, especially where communities are predominately low-income and/or rural, where relying on parent fees to cover the cost of providing sustainable, quality care appears to be particularly challenging.
Discussion

Prior to conducting this study, we hypothesized that child and community characteristics would be associated with child care access at both the individual child and community levels. Prior research has shown that the six studied access indicators represent barriers at the child level (rurality, child age, household income, limited English proficiency, single employed parent, or race/ethnicity). At the community level, three characteristics are associated with inadequate child care supply (rurality, child age, and low-income) while three other characteristics (single employed parent, limited English proficiency, or race/ethnicity) are significantly correlated with being from a low-income household but not directly with inadequate supply.

Our analyses were limited by the available data. For example, the small number of limited English proficient households (only 4%) makes it hard to find an association, even if it exists. In the case of race/ethnicity, we are challenged by not being able to examine associations by specific racial/ethnic groups due to data limitations. A national study finds substantial differences in supply adequacy for different groups so it seems likely that when more group-specific data become available we will find the same kinds of differences in Oregon.

More research is needed at the family-level to understand issues of access beyond the presence or absence of supply. Future work needs to expand beyond the child care desert framework calculated by a ratio of the child population and number of child care slots available. This can be done in many ways, a few starting places are presented below:

Specifically, capturing statewide parent reports of child care experiences that include information on child’s race/ethnicity and language can improve our understanding of who is experiencing restricted access to care (e.g., suspension and expulsion), which is disproportionately experienced by children of color. Capturing parent reports of parent employment schedules would also improve our understanding of the extent to which existing formal child care options restrict access for those who work outside of typical, standard hours. A greater attention to family needs and preferences is needed as well, ranging from issues of affordability, child needs in the case of delay or disability, to perceptions of what type of care is trustworthy and safe, shape the type and amount of care a family chooses for their young child(ren).

More research is also needed to evaluate how issues around the type of child care families use across the state (e.g., centers, home-based care, family and friend) factor into who has access and who doesn’t. Research has illustrated that family characteristics are associated with using some care types over others. For example, rural families are more likely to enroll their children in home-based care (in part because centers are few and far between in rural areas). This issue may be especially salient in this time of COVID-19 and Emergency Child Care, when providers struggle to keep their doors open and parents struggle to make decisions about whether or not to use formal care options, or instead choose informal options like friends and neighbors to meet their care needs. To gain an accurate understanding of the child care families are using
(particularly if that care is outside of the regulated supply) and why they selected this care, one must ask the families themselves.

Future work to better understand the supply and demand of child care would benefit from use of sophisticated geospatial analytic methods to take into account the characteristics and supply of the neighboring communities. Although the vast majority of low-income families choose child care that is within their community, this is not always the case. Thus, taking into account the density of child care options in the communities around the area of interest is an important next step in understanding Oregon’s supply and demand dynamics. For example, living in a child care desert community that is surrounded by other child care desert communities puts a family at much greater risk of not being able to find care than if that desert community is surrounded by communities with ample supply. In the latter case, the family may be able to drive another few minutes out of the way to access care.

**Conclusion and Policy Implications**

The vast majority of Oregon communities are child care deserts, and a third of communities are severe child care deserts. Large percentages of Oregon children face barriers to accessing child care: 40% of Oregon children are from low-income households, 36% are children of color. Thirty-six percent of children of employed parents live with a single employed parent. Children living in rural or low-income communities are most likely to live in a child care desert community. The role of the race/ethnicity composition of Oregon communities has a complicated relationship with child care usage and supply. Although communities with a high proportion of children of color do not appear more or less likely to be a desert than less racially diverse communities as a whole, almost two-thirds of communities with a high percentage of children of color are child care deserts. It is notable that desert communities are characterized by a wide variety of different co-occurring access barriers: limited English proficiency, low-income, and single employed parents.

Findings indicating complicated patterns of co-occurring access barriers across communities indicates the need to consider the intersection of multiple barriers when targeting solutions to child care needs. Basing decisions about which children or which communities to target based on a single characteristic, such as rurality, may lead decision makers to overlook high-need communities whose combination of barriers threaten both: (1) the ability of individual families to select and utilize the available care and, (2) the adequacy of the child care supply from which parents can choose.

No single barrier can provide an adequate picture of community need. Communities have somewhat unique combinations of barriers and thus in allocating resources it will be important to look at multiple access barriers. It will be important to examine the combination of characteristics within communities in allocating resources. Solutions will be most effective when considering multiple access barriers and how they interact at the community level. Lack of access and inadequate supply are serious problems in Oregon. Families whose children have
access barriers are challenged to access child care. They are doubly challenged if the child has individual level access barriers and an adequate supply does not exist in their community. A family cannot use an arrangement that is not available, and many families cannot access care even if it is available.

Oregon ranks low among states in the adequacy of its child care supply. That ranking seems to be explained, at least in part, by the relatively low ranking of the State’s public investment in child care and early education. Without increased public investment at both the individual child and community levels, Oregon children are not likely to have equal access to child care. And child care access matters because it affects participation in child care and early education which has been shown to improve outcomes for low-income children. Access to child care and education can have life-long impacts on a child’s development (Burchinal et al., 2000; NICHD ECCRN, 2005; Peisner-Feinberg et al., 2001; Schweinhart et al., 2005).

Large percentages of Oregon’s children experience one or more barriers to participation in these early learning experiences. Characteristics of individual children, families, or the community in which they live are associated with child care access at the individual and/or community level. Finally, public funding emerges as an essential component of access at both child and community level. Data sources limited these analyses to the role played by publicly funded slots. Future research should identify data and methods to include other public investments including those made through the child care subsidy program or by local governments and K-12.

Overall, an inadequate supply of child care threatens the well-being of children, families, and communities across Oregon – a supply inadequacy which the COVID-19 pandemic has exacerbated. As of 2018, almost three-quarters of Oregon communities are child care deserts, meaning there is less than 1 available space of child care for every 3 children. In addition, about a quarter of communities are severe deserts, with only 1 slot for every 10 children. COVID-19 has certainly increased the severity of inadequate and inequitable access. On the demand side, even more children now have the characteristics that act as access barriers. On the supply side, there are estimates that half of regulated providers are not currently operating and concerns that many may not come back. Inequitable access is a major concern. Some children experience multiple barriers to child care simply due to characteristics of their family or community, even if slots exist where they live. But in almost all Oregon communities an adequate supply does not exist. The community in which a child lives matters. Inequity characterizes child care access for individual children and for communities. Importantly, findings document that communities with high percentages of inadequate supply are spread across the state, rather than existing in certain regions.

Implications for public policy include the following:

- In targeting resources, it is important to consider the combination of multiple child and community level barriers when assessing need and allocating resources that will effectively build and retain child care options that meet the needs of the community.
• Current public funding plays a significant role in the adequacy of child care supply in many Oregon communities, however the proportion of supply funded by public investment is relatively small compared to other states. Public investment may be essential to building an adequate supply of child care, especially where communities are predominately low-income, and/or rural. These investments will be most effective when also considering potential child-level barriers and family preferences (e.g., hours of care needed and type of care).

• The role that race/ethnicity plays in child care access needs more attention, as our current understanding is incomplete. It is important to approach this issue from multiple perspectives, including learning directly from families’ firsthand experience, as well as digging into administrative data to identify any unintentional patterns of inequity in program use that can be addressed by policy changes. Further, on the supply-capacity side more work is needed to understand and improve cultural competency and implicit bias awareness skills of teachers/providers who care and educate an growing number of children of color.

• Finally, the use of geospatial analytic techniques are needed to better capture the complicated dynamics between supply and demand at the community level. For example, the current study was unable to capture how a neighboring communities characteristics shape child care access.
References


U.S. Census Bureau (2019). See Appendix A for more information.


Appendix A

Why we choose ACS to capture community demographics. The U.S. Census Bureau administers many different surveys to gather data about the people and economy of the United States, including the decennial census and the American Community Survey (ACS). The decennial census, mandated by the Constitution and conducted every ten years, provides a count of all people in the United States, but in recent years has asked fewer and fewer questions that capture the demographic and economic conditions of households. The ACS, begun in 2005, continuously samples the population and asks questions in far more topics than are covered in the decennial census. Other population estimates, such as those from the Population Research Center at Portland State University, do not go into granular geographic detail or do not provide information on topics such as income or employment status. Thus, the ACS provides a broader array of data with more current information available, making it the appropriate data source for this study.

Why we used census tracts as a proxy for communities. Data from the ACS are available at a variety of geographic levels. Census tracts were chosen as the geographic unit of analysis after considering other geographic types. Counties are often too large and county-level analyses obscure the variability found within counties. (All of our maps include county boundaries for reference, and this variability is visually apparent.) Cities or Census Designated Places can be too large (e.g. Portland) and do not capture all of Oregon. Zip code tabulation areas (ZCTAs, similar but not the same as zip codes) do not cover all of Oregon, may not be contiguous, can cross both county and state boundaries, and are not consistent over time.

Census tracts typically provide a smaller geographic scale, are subdivisions of counties, are consistent over time, and cover all of Oregon. The size of census tracts varies as they are delineated by population rather than area. Ideally, a census tract will contain 4,000 people but can vary – including some unpopulated census tracts (e.g. land containing National Parks or airports). Our analyses excluded unpopulated census tracts or census tracts that did not contain young children, leading to 823 of Oregon’s 834 census tracts being considered. An additional benefit of using census tracts is that other research including the Child Opportunity Index produced by diversitydatakids.org at Brandeis University uses this geographic unit, allowing for future analysis or comparison.

Why we kept estimates regardless of margin of error. Because the ACS is a sampled survey, the data are estimates of the population and have margins of error associated with them. For smaller geographies, such as census tracts, the U.S. Census Bureau reports 5-year spanned estimates in order to create the most reliable estimates. However, it is important to recognize that small populations, and especially subsets of small populations, are harder to capture with surveys, leading to potentially large margins of error. We recognize that these margins of error have an impact on our analyses. Experts suggest that when using ACS data to inform high-stakes decision-making (e.g., directing funds), estimates with large margin of errors should be excluded from the analyses. When using data for more descriptive purposes to identify trends in across a large number of cases (in this case communities), it is more acceptable to retain estimates with larger margin of errors.
Why we did not look at demographics for infant/toddlers separate from preschool-age children. Throughout this report, we refer to young children with a general understanding that this means under age 6 (0-5 years). While supply data are available for infant/toddlers (0-3) separately from preschoolers (3-5), the ACS data we used are not reported for these age groups. The community characteristics we studied are likely not evenly distributed across these age ranges, so weighted values would be inappropriate. That is, if a community has 120 low-income children, we cannot assume that 20 are under 1 year old, 20 are 1 year old, 20 are 2 years old, 20 are 3 years old, 20 are 4 years old, and 20 are 5 years old.

Why the child population varied by demographic characteristics. Furthermore, each community characteristic may have a slightly different population universe used to represent young children in our analyses (e.g. “population for whom poverty status is determined” or “under 5” rather than “under 6”). Specific population universes will be explained below with the list of ACS tables used.

Why we reported on children of color rather than disaggregated racial/ethnic groups. In this study, we analyzed children of color while recognizing that different racial/ethnic groups likely have different experiences. Two main data limitations led to the decision to analyze children of color collectively: first, uncertainty in the data increases when considering each racial/ethnic group separately particularly at the neighborhood level; and second, available data by age does not separate any racial groups by Hispanic/Latinx ethnicity, except for White. That is, children who are Black and Hispanic/Latinx are counted in both the Black children estimates and the Hispanic/Latinx estimates. This potential double counting makes comparisons problematic.

At the time of writing, the most recent ACS data available are 2014-2018 estimates. The following lists the variables used for our analyses, organized by community characteristic, and specifies the tables and columns used:

**Child Care Desert**

*Children under age 6 (denominator)*
- Table used: B09001: Population Under 18 Years by Age
- Universe: Population under 18 years
- Columns: Summation of “In households” – Under 3 years; 3 and 4 years; 5 years

**Low Income**

*Low income children under age 6 (numerator)*
- Table used: B17024: Age by Ratio of Income to Poverty Level in the Past 12 Months
- Universe: Population for whom poverty status is determined
- Columns: Summation of “Under 6 years:” – Under .50; .50 to .74; .75 to .99; 1.00 to 1.24; 1.25 to 1.49; 1.50 to 1.74; 1.75 to 1.84

*Children under 6 with poverty determination (denominator)*
- Table used: B17024: Age by Ratio of Income to Poverty Level in the Past 12 Months
- Universe: Population for whom poverty status is determined
- Column: Under 6 years
**Single Parent**

*Children under 6 with single fully employed parent (numerator)*
- Table used: B23008: Age of Own Children under 18 Years in Families and Subfamilies by Living Arrangements by Employment Status of Parents
- Universe: Own children under 18 years in families and subfamilies
- Columns used: Summation of: “Under 6 years:” – Living with father in labor force; Living with mother in labor force

*Children under 6 with fully employed parent(s) (denominator)*
- Table used: B23008: Age of Own Children under 18 Years in Families and Subfamilies by Living Arrangements by Employment Status of Parents
- Universe: Own children under 18 years in families and subfamilies
- Columns used: Summation of: “Under 6 years:” – Living with two parents both parents in labor force; Living with father in labor force; Living with mother in labor force

**Limited English**

*Youth aged 5-17 in Limited English Speaking Households (numerator)*
- Table used: B16003: Age by Language Spoken at Home for the Population 5 Years and Over in Limited English Speaking Households
- Universe: Population 5 years and over in households in which no one 14 and over speaks English only or speaks a language other than English at home and speaks English very well
- Column: 5 to 17 years

*Youth aged 5-17 (denominator)*
- Table used: B16007: Age by Language Spoken at Home for the Population 5 Years and Over
- Universe: Population 5 years and over
- Column: 5 to 17 years

**Children of Color**

*Children of color under age 5 (numerator)*
- Tables used: B01001: Sex by Age and B01001H: Sex by Age (White Alone, Not Hispanic or Latino)
- Universe: Total population and White alone, not Hispanic or Latino population
  - Columns: (B01001) Summation of “Male” – Under 5 years; “Female” – Under 5 years;
  (B01001H) Summation of “Male” – Under 5 years; “Female” – Under 5 years;
  - Subtract B01001H summation from B01001 summation

*Children under age 5 (denominator)*
- Table used: B01001: Sex by Age
- Universe: Total population
- Column: Summation of “Male” – Under 5 years; “Female” – Under 5 years
Appendix B

Map 1: Percent of Young Children with Access to a Regulated Child Care Slot
Map 2: Rurality and Urbanicity of Oregon Communities
Map 3: Percent of Young Children in Low-Income Households across Oregon Communities
Map 4: Comparison of Desert Status among Communities with High Percentages of Low-Income Children
Map 5: Percent of Young Children who are Children of Color across Oregon Communities
Map 6: Comparison of Desert Status among Communities with High Percentages of Children of Color
Map 7: Shift in Desert Status without Publicly Funded Slots
Map 1: Percent of Young Children with Access to a Regulated Child Care Slot

Data Information: Access to child care is calculated by taking the number of regulated child care slots for young children age 0-5 as of January 2018 (Estimated Supply of Child Care in Oregon, Oregon Child Care Research Partnership, Oregon State University) and dividing it by the population of children in the community who fall in the age group (2014-2108 ACS 5-year estimate, Table B09001).
Map 2: Rurality and Urbanicity of Oregon Communities

Data Information: Rural-Urban Commuting Area (RUCA) codes take into account measures of population density, urbanization, and commuting behaviors of the residents (Economic Research Service of the Department of Agriculture, 2019). RUCA codes 1-3 are considered urban (blue) and codes 4-10 are considered rural (green).
Map 3: Percent of Young Children in Low-Income Households across Oregon Communities

Percent of Young Children in Low Income Households

0 Very Low
25 Low
40 High
50
100 Very High

Data Information: The percentage of young children in households with income below 185% of the Federal Poverty Limit (FPL) was calculated by taking the number of children age 0-5 who live in households with an annual income below 185% FPL (2014-18 ACS, Table B17024) and dividing it by the number of children ages 0-5 in the community (census tract) (2014-18 ACS, Table B17024). Numerator and denominator are from the universe of persons for whom poverty status can be determined.
Map 4: Comparison of Desert Status among Communities with High Percentages of Low-Income Children

Data Information: Communities are a child care desert if regulated child care slots are only available for less than a third (or 33%) of children living in the community (Estimated Supply of Child Care in Oregon, Oregon State University, 2014-18 ACS). Communities are considered to have a high percentage of low-income children if at least 40% of the children in the community lived in a household with an annual income below 185% of the Federal Poverty Limit (2014-18 ACS, Table B17024).
Map 5: Percent of Young Children who are Children of Color across Oregon Communities

Data Information: The percentage of young children who are children of color was calculated by taking the total number of children ages 0-4 (2014-18 ACS, Table B01001), subtracting the White (non-Hispanic/Latinx) children ages 0-4 (2014-18 ACS, Table B01001H) and dividing this by the number of children ages 0-4 in the community (census tract) (2014-18 ACS, Table B01001). Excluding the White (non-Hispanic/Latinx) children provides an estimate of the number of children who are Hispanic/Latinx, Black, Native American or Alaska Native, Asian, Native Hawaiian or Pacific Islander, some other race, or two or more races.
Map 6: Comparison of Desert Status among Communities with High Percentages of Children of Color

Data Information: Communities are a child care desert if regulated child care slots are only available for less than a third (or 33%) of children living in the community (Estimated Supply of Child Care in Oregon, Oregon State University; 2014-18 ACS). Communities are considered to have a high percentage of children of color if at least 36% of the children in the community identify as Hispanic/Latinx, Black, Native American or Alaska Native, Asian, Native Hawaiian or Pacific Islander, some other race, or two or more races.
Map 7: Shift in Desert Status without Publicly Funded Slots

Data Information: Communities are a child care desert if regulated child care slots are only available for less than a third (or 33%) of children living in the community (Estimated Supply of Child Care in Oregon, Oregon State University; 2014-18 ACS). Public investment is defined as slots funded by Oregon Head Start Prekindergarten, Early Head Start, Preschool Promise, Federal and Tribal Head Start, and Federal Migrant and Seasonal Head Start managed by the Oregon Child Development Coalition.