TEXAS
POLICY LAB

Update: Estimating Child Care Supply and Demand in Texas

June 9, 2020

RICE | SOCIAL SCIENCES

Purpose

The Texas Workforce Commission (TWC) seeks to understand the need for child care among workers during the COVID-19 pandemic. This will help TWC support the work of the Governor's Frontline Child Care Task Force and Strike Force to Open Texas in understanding the underserved areas of the state that might need a greater child care supply. We have summarized our results in a dashboard available here: https://tplapps.rice.edu/shiny/childcare-supply-demand/.

Approach and key assumptions

Our estimates build on our previous analysis by integrating new child care supply and enrollment information from the Frontline Child Care database as of June 4, 2020. We have also adjusted demand estimates to reflect businesses that are open in the third phase of reopening (as of June 3, 2020 announcement). We relied on the following data sources and assumptions:

Supply of child care seats during the COVID-19 pandemic

- We utilize data provided by TWC from the Frontline Operation list as of June 4, 2020, which indicates the location of child care providers that are currently open, average daily attendance (ADA) for providers choosing to report this information, whether or not they accept the subsidy and additional available seats for providers choosing to report this information.
- We merged the Frontline Operation list with publicly available data from Child Care Licensing to gather total licensed capacity of each child care program currently open in Texas. This dataset also includes additional variables such as ages of children served, available hours.
- This update is the first opportunity we have had to examine average daily attendance, as reported by a subset of child care providers (nearly 4,745 providers of 9,541 open child care providers reported average daily attendance). Given missing data for nearly half of open child care programs, we estimated ADA for those not reporting by:
  - Categorizing providers according to the following dimensions, which are variables that, according to our model, predict ADA:
    - Type of care (center vs homes)

- - Subsidy acceptance status
  - Age groups served
  - Licensed capacity
  - County's total population
  - Two providers that are in the same group have exactly the same values for the first four variables and they are in counties that have similar (but not exactly the same) population.
  - For each group, we compute the average and standard deviation of ADA. In this step, we only used the providers – within each group – that reported ADA.
  - We use the mean ADA for the group as our estimate for the ADA for the providers in the same group that are open but do not report ADA. This extrapolation results in complete data for all counties.
- We created three supply scenarios specific to each county based on current enrollment for each county:
  - Low scenario: Current enrollment as a ratio of licensed capacity (ADA/licensed capacity).
  - Medium scenario: the mid point between low and high scenarios.
  - High scenario: ADA + 1 standard deviation divided by licensed capacity.
- At this time, we are unable to integrate the data on additional available slots to estimate supply. We are finding that nearly a third of providers are providing neither ADA nor availability data, which would require two extrapolations that would greatly increase the uncertainty of our estimates. In addition, a significant portion of providers are reporting available slots that would put them well above licensed capacity and we need to further understand why this would be the case. Nevertheless, we were able to utilize data on available slots to validate our "high" scenario. As a result, both our medium and high scenarios account for available slots above current enrollment.

Demand for child care among current workforce

- We utilized population data by county from the Census and American Community Survey 1-year estimates (2018), including estimates for the total number of people in the workforce by industry and occupation. We applied the following assumptions:
  - Given publicly available data, demand can be estimated by either using relevant industries or relevant occupations. We selected industries and occupations deemed essential and added those recently reopened at a reduced capacity. Please note that workforce estimates by industry are higher than estimates by occupation, so we consider estimates by industry the upper bound of potential demand estimates. See the appendix for industries and occupations included.
  - We take a county's population and total number of households to estimate the average number of people per household. We assume that households from our industries of interest follow these typical figures and estimate the total number of households with workers in our industries of interest.
  - Census provides the proportion of the population younger than 18 years old in each county. Assuming uniform distribution across ages younger than 18, we estimate the percent of the population 12 years old or younger. We use this to estimate the number of children under age 12 per 100 households.
  - We estimate the number of children under age 12 per 100 households in need of child care by adjusting for whether or not households contain other non-working adults or older sibling that can provide care for some children in the household. To do this we use Current Population Survey (Census and Bureau of Labor Statistics) data on the proportion of workers who do not have other adults/ older children in the home or who are single parents.
  - We estimate the number of children who may need child care in our industries of interest by utilizing the number of households with workers in these industries and the rate of children under age 12 who need of child care per 100 households.

- Given the third phase of reopening businesses in Texas, we adjusted workforce estimates in an attempt to account for these changes. The most significant update for demand estimates relates to all business operating at 50% capacity.

- The foot traffic data indicated that foot activity – overall across the state – was already around 72%. In some locations, it was even higher (i.e., Harris County, 77%). This higher level of foot activity is possible, for example, if there is little monitoring of activity. Thus, we considered scenarios in which capacity was at 65% and 85%.

- To estimate the number of workers in scenarios for client capacity, we use SafeGraph[1] cell phone data that provides information about the number of visits to all businesses and the number of workers based on cell phone activity. Specifically, we combine data for two periods. The first period extends from January 1, 2019 to April 30, 2019. The second period extends from January 1, 2020 to April 30, 2020. We estimate the number of clients according to the number of "short" visits to the locations. We define short visits are visits that last at most three hours. We estimate the number of workers according to the number of "long" visits to the locations. Long visits are visits that last at least three hours.

- We compute these figures for the two periods described above. Then, we take the ratio of (1) for 2020 to 2019. In the 2019 period, there was no pandemic, so we assume that the businesses were operating at full capacity. In the 2020 period, there was no pandemic in the first two months of the year, but the situation starts to change in early March 2020. Therefore, after the pandemic started, we observe weeks in which the number of clients were at 65% and 85% of full capacity relative to the same week in 2019. We use these data to estimate the fraction of workers that corresponds to different levels of operating capacity.

- If we base capacity at 65% and 85% capacity, then we project that we will have 76% and 88% work activity (relative to the same week in 2019). The middle point is 82%, which we take as our preferred estimate for the portion of the workforce in non-essential industries that would be active given phase three reopening.

- Estimating demand in this third phase of reopening is most challenging for industries in which employees may/ may not now be returning to work in an office building (e.g., finance & insurance, management of companies & enterprises). It is not clear what

---

[1]Professor Flavio Cunha, one of the Lab's Faculty Affiliates, has secured access to de-identified cell phone data owned by SafeGraph. This data allows researchers to observe the amount of mobility in each Public Use Microdata Area. This mobility data is highly correlated with economic activity.

corporate office environments will do given that the recent announcement is more clearly directed at businesses that serve clients directly and in-person (e.g., restaurants, retail, etc.).

- As the economy continues to reopen, access to unemployment data would greatly improve these estimates. Without this data, we are not able to adjust worker demand for child care based on accurate employment information.

Current estimates

For simplicity, the below summary utilizes the upper range for demand estimates, focusing on workforce estimates by industries rather than occupations. When looking at the size of the workforce by industry rather than occupation, the total population is larger for nearly all counties. The attached spreadsheet and customizable dashboard[2] we created allows for adjusting both supply and demand scenarios to consider various possibilities, including estimates by occupation instead of industry.

Low child care supply scenario

Consistent with other approaches to estimate availability of child care,[3] we have defined limited availability as fewer than 35 seats per 100 children. When considering children of workers in the third phase of reopening, in the "low" supply scenario, 165 counties (65%) have fewer than 15 seats per 100 children, while 69 counties (27%) have 15-35 seats per 100 children.[4] Only four counties (all very small) have at least 35 child care seats per 100 children:

- Hartley County
- Shackelford County
- Stonewall County
- Washington County

---

[2] https://tplapps.rice.edu/shiny/childcare-supply-demand/
[3] https://catriskprod.wpengine.com/texas-child-care-desert-methodology/
[4] Note that estimates were not made for 11 very small Texas counties for which data on child care supply is not available from state sources.

Medium child care supply scenario

In the "medium" supply scenario, 109 counties (43%) have 15-35 child care seats per 100 children and 123 (48%) of counties have fewer than 15 seats per 100 children. While the majority of these 123 counties with particularly constrained supply in this scenario are very small, nine counties are home to at least 3,000 children of workers who likely need child care

- Dallas County
- Ector County
- Hays County
- Liberty County
- Maverick County
- Starr County
- Travis County
- Webb County
- Wise County

In the "medium" supply scenario, only six counties have at least 35 seats per 100 children. These are all very small counties and have fewer than 2,000 children who may need child care.

High child care supply scenario

When considering children of workers in this third phase of reopening, in the "high" supply scenario, 135 counties (53%) have 15-35 seats per 100 children and only 10 counties have at least 35 seats per 100 children. With the exception of Wichita County, all of these are very small counties. Even in the "high" supply scenario, 93 counties (37%) have particularly constrained supply, with fewer than 15 seats per 100 children. Again, while the majority of these 93 counties are very small, four of these are home to at least 2,000 children of workers who likely need child care:

- Jim Wells
- Matagorda
- Starr
- Titus

COVID-19 observations

As requested, we have included publicly available COVID-19 data by county from the Texas Department of State Health Services[5] in this analysis (see spreadsheet and dashboard). This data is current as of June 9, 2020. We looked for geographies that appear to be both strained in terms of child care capacity and COVID-19 cases. Only two counties, Moore and Titus, have:

- At least 300 COVID-19 cases;
- Fewer than 15 seats per 100 children of workers who likely need child care (in any child care supply scenarios) and
- At least 1,000 children of workers who likely need child care

Moore County has 864 COVID-19 cases, 3 seats per 100 children (even in the high supply scenario), and ~1,700 children of workers who likely need child care. Titus County has 558 cases, 14 seats per 100 children (even in the high supply scenario), and ~2,000 children of workers who likely need child care.

While supply is not as constrained as in Moore and Titus, the below nineteen counties have:

- At least 500 COVID-19 cases;
- 15-35 seats per 100 children of workers who likely need child care (in the high child care supply scenarios) and
- At least 10,000 children of workers who likely need child care:
    - Harris
    - Dallas
    - Tarrant
    - Travis
    - El Paso
    - Bexar
    - Fort Bend
    - Collin
    - Denton

---

[5] https://txdshs.maps.arcgis.com/apps/opsdashboard/index.html#/ed483ecd702b4298ab01e8b9cafc8b83

- o Montgomery
- o Galveston
- o Cameron
- o Hidalgo
- o Brazoria
- o Lubbock
- o Williamson
- o Jefferson
- o Brazos
- o Webb

Appendix

Child Care Seats per 100 children: Medium supply scenario, demand estimated by industry (upper bound):[6]

Child care seats per 100 children
- <= 15
- > 15 & <= 35
- > 35
- NA

---
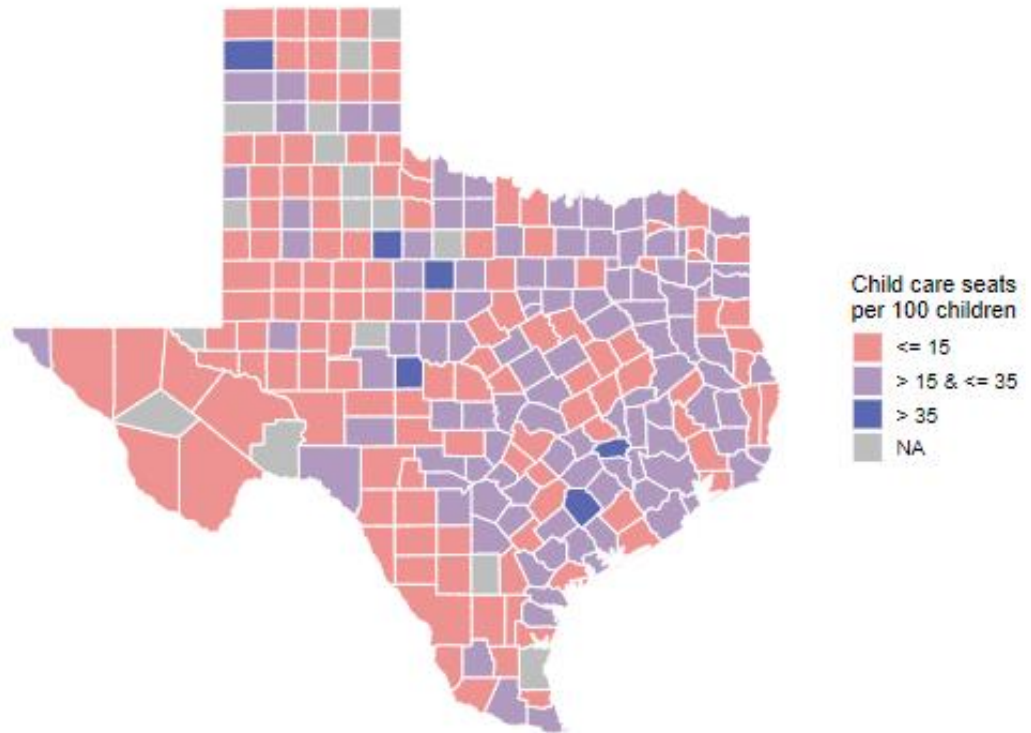
[6] See dashboard for additional customization: https://tplapps.rice.edu/shiny/childcare-supply-demand/

Child Care Seats per 100 children and COVID-19 cases by county: Medium supply scenario, demand estimated by industry (upper bound)
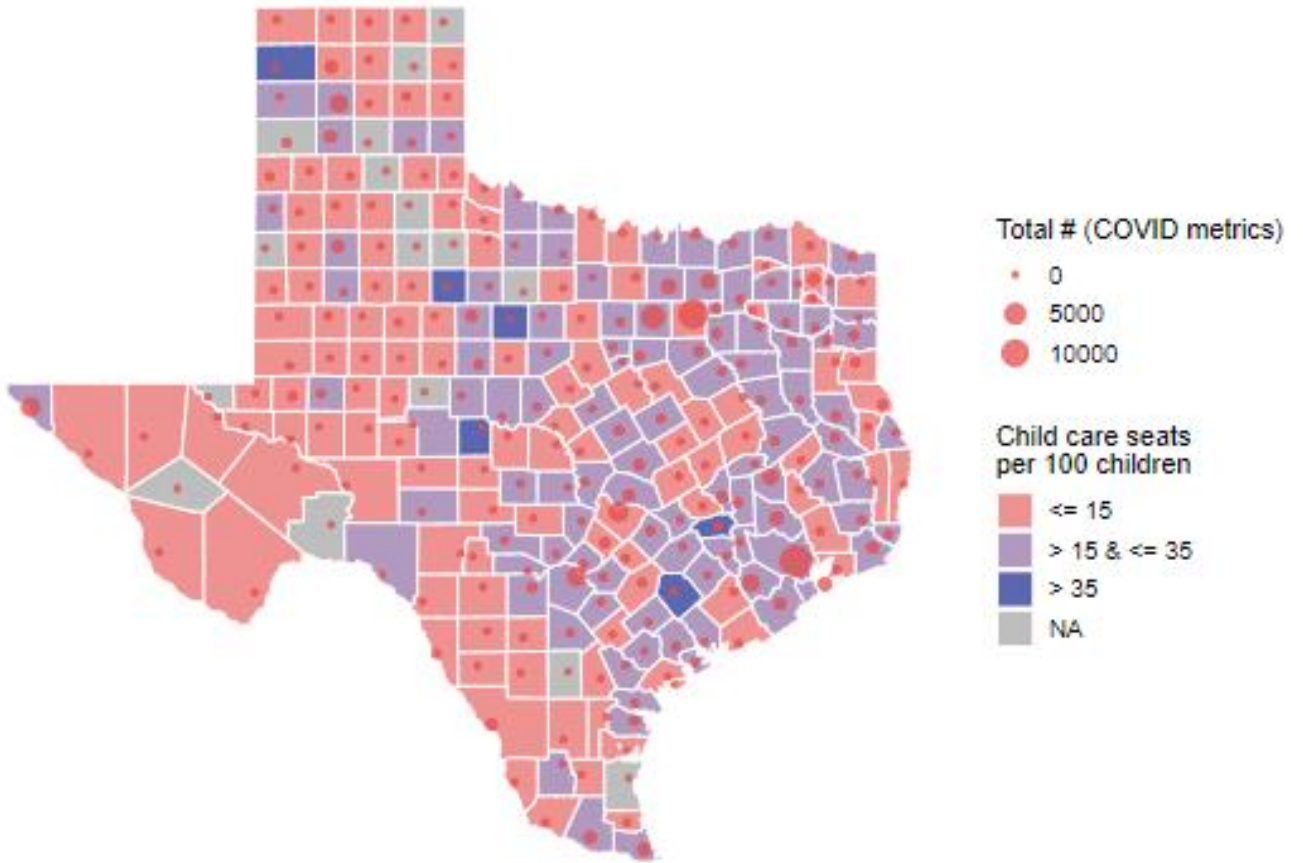
Essential industries included in demand estimates at 100 % of workforce

- Health Care & Social Assistance
- Manufacturing
- Educational Services
- Professional, Scientific, & Technical Services
- Transportation & Warehousing
- Administrative & Support & Waste Management Services
- Wholesale Trade
- Public Administration
- Information
- Utilities

Industries re-opening in phase III included in demand estimates at 82% of workforce:

- Construction
- Retail Trade
- Other Services, Except Public Administration
- Finance & Insurance
- Mining, Quarrying, & Oil & Gas Extraction
- Real Estate & Rental & Leasing
- Arts, Entertainment, & Recreation
- Management of Companies & Enterprises
- Agriculture, Forestry, Fishing & Hunting

Essential occupations included in demand estimates at 100% of workforce

- Transportation Occupations
- Installation, Maintenance, & Repair Occupations
- Farming, Fishing, & Forestry Occupations
- Community & Social Service Occupations
- Education Instruction, & Library Occupations
- Law Enforcement Workers Including Supervisors
- Fire Fighting & Prevention, & Other Protective Service Workers Including Supervisors
- Health Diagnosing & Treating Practitioners & Other Technical Occupations
- Personal Care & Service Occupations
- Health Technologists & Technicians
- Building & Grounds Cleaning & Maintenance Occupations
- Healthcare Support Occupations

Occupations re-opening in phase III included in demand estimates at 82% of workforce:

- Office & Administrative Support Occupations
- Material Moving Occupations
- Business & Financial Operations Occupations
- Production Occupations
- Computer & Mathematical Occupations
- Architecture & Engineering Occupations
- Construction & Extraction Occupations
- Life, Physical, & Social Science Occupations
- Management Occupations
- Legal Occupations
- Sales & Related Occupations
- Arts, Design, Entertainment, Sports, & Media Occupations