Google and Yelp Reviews as a Window into Public Perceptions of Early Care and Education in Georgia

Diane M. Early and Weilin Li

Introduction

In recent years, federal programs and policies such as the 2014 reauthorization of the Child Care Development Block Grant (CCDBG) Act[1] and the Race to the Top–Early Learning Challenge[2] have brought increased attention to improving families' access to high-quality early care and education (ECE). In response to this increased focus, Child Trends worked with the Office of Planning, Research, and Evaluation, an office of the Administration for Children and Families in the U.S. Department of Health and Human Services, to create a guidebook defining ECE access for policymakers and researchers. This resource's definition of ECE access includes four primary dimensions: (1) requiring *reasonable effort* to locate and enroll a child in a care arrangement that is (2) *affordable*, (3) supports the *child's development*, and *(4) meets parents' needs*.[3] Despite this progress in defining ECE access, researchers and policymakers know relatively little about how families and the general public view ECE access or the extent to which the public's values match professional definitions.

This Child Trends study, funded by Georgia's Department of Early Care and Learning (DECAL), is a first step toward filling that gap. Using publicly available Google and Yelp reviews of ECE programs in Georgia, we aimed to better understand how the public views ECE access. Additionally, we analyzed associations between star ratings provided by the public on these rating platforms and star ratings assigned by Georgia's Quality Rated system. Georgia's Quality Rated is a voluntary system by which ECE programs are assigned a star rating based on a portfolio they submit, and observations conducted by DECAL. Programs that choose to participate receive a variety of supports to maintain and increase quality.[4]

Methodology and Data

We extracted 8,714 publicly available ratings and reviews of ECE programs in Georgia from two online rating platforms, Google and Yelp. These two sources yielded the following:

- 7,263 ratings and reviews from Google regarding 2,769 ECE programs
- 1,451 ratings and reviews from Yelp regarding 461 ECE programs

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After extracting the reviews, we cleaned the text using the natural language processing approach, which applies artificial intelligence techniques to process and analyze large amounts of natural language data. Using this approach, we removed program names from reviews, so that words like "Montessori" or "Happy" from the program names would not become topic words (described below); converted contractions to whole words (e.g., converted *don't* to *do not*); removed inflectional endings (e.g., *-ing, -ed*); and removed punctuation and common words that do not add meaning (e.g., *the, a, and, this, then*).

We then analyzed the text of the reviews using topic modeling, a statistical technique for identifying underlying themes in text that has many applications, including archiving of newspaper articles. In this technique, a computer algorithm generates topics—or underlying semantic themes—by finding words that commonly appear in the same reviews. This step is entirely computer-driven: Words are grouped into themes based on how frequently they appear in the same review. The algorithm assigned each review to one or more topics. The study's two authors then discussed the *topic words* that the algorithm had combined into themes (i.e., words that commonly appeared together) and jointly agreed on nine *theme names*.

It is important to note that this method of creating themes and theme names gives us some information about the extent to which a certain topic is important enough to include in a review, but it does not indicate whether the reviewer discussed the topic in a positive or negative way. For example, reviews indicating that teachers were "warm" and reviews describing teachers as "not warm" would both be included in the theme of *Warmth*. The topic modeling suggests which features are important to individuals who review programs, but not whether they felt positively or negatively about that feature in their program. Although we cannot entirely address this limitation with these data, we partially address it by analyzing the percentage of positive reviews (those with 4 or 5 stars in the online rating) and the percentage of unfavorable/negative reviews (those with 1, 2, and 3[5] stars) for each theme. We assume that words used in reviews with positive rating were likely positive in tone, and words used in negative reviewers were likely negative in tone.

Next, we merged Google and Yelp star ratings (ranging from 1 to 5) with Georgia's Quality Rated star ratings (ranging from 0 to 3) using program name, phone number, and geographic location in order to gauge the extent to which public (Google/Yelp) views of quality match professional (Quality Rated) views of quality. We found 979 providers that had both online and Georgia's Quality Rated data.

The main driver of Georgia's Quality Rated star rating is the program's average score on its classroom observation(s), using the Environmental Rating Scales (ERS),[6] which can range from 1 to 7. For that reason, as a final step, we also looked at the association between online star rating and the ERS score.

Findings

Table 1 presents the theme names that the authors selected (first column) with examples of topic words that were grouped by the algorithm (second column). The third and fourth columns show the number and percentage of reviews that included each theme. *Warmth* was the most common theme. Of the 8,714 reviews on Google and Yelp, 3,761 (43%) were related to warmth. The next two most common themes were *Academics* and *Convenience*. (Because a review could include multiple themes, the total of the percentage column is greater than 100%.) The last two columns of Table 1 show the percentage of positive and negative

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[5] We labeled 3 stars as unfavorable or negative because reviews with fewer than 4 stars are rare.
[6] Early, D. M., Maxwell, K. L., Orfali, N. S., & Li, W. (2017). *Quality Rated validation study report #1: What makes up a Quality Rated star rating? An in-depth look at the criteria, standards, and components*. Chapel Hill, NC: Child Trends.

reviews that included the theme. Over half of the positive reviews included *Warmth* as a theme; whereas only 11% of negative reviews included *Warmth*. Among reviewers who gave negative reviews, the most common theme was *Convenience.*

For the 979 providers who had both online and Georgia's Quality Rated star ratings, we looked at the correlation between the two types of ratings and found that Yelp and Google star ratings were significantly related to the star ratings assigned by Quality Rated (r = 0.10, p < 0.01). With every increase in star rating (e.g., from 2 to 3) on Yelp or Google, there was a 0.07 increase in Quality Rated star rating. Finally, results indicated that each one-star increase in Yelp or Google was associated with a 0.06 point increase in ERS score (r = 0.08, p < 0.01).

Example review: Academics

"My daughter loved this place, great environment, teachers and also the curriculum was well planned. Teachers are friendly and constantly provide feedback on the child's learning progress. Don't forget to ask the workbook at the end of the month, you will actually get to see your child's classroom activities. I would recommend this facility to anyone."

See page 5 for examples of quotes from reviews for each theme.

Table 1. Analysis of Google/Yelp Reviews of Georgia ECE Providers, by Theme

Theme names (selected by researchers)	Examples of topic words (grouped by computer algorithm into themes)	Number of reviews	% of reviews	% of positive reviews (4-5 star) that include theme	% of negative reviews (1-3 star) that include theme
Warmth	love, friend, happy, awesome, thank	3761	43%	54%	11%
Academics	learn, activity, curriculum, progress, milestone	1902	22%	26%	10%
Convenience	job, need, location, schedule, transition	1159	13%	10%	22%
Safety	outside, hit, run, safe, kick	994	11%	10%	14%
Negative Impressions	concern, bad, racist, lack, unprofessional	660	8%	7%	10%
Communication	concern, talk, contact, mention, suggestion, trust, attention	647	7%	5%	14%
Hygiene	diaper, sick, smell, stomach, virus	527	6%	6%	7%
Staffing	owner, turnover, professional, leave, management	235	3%	1%	8%
Cost	payment, money, cheap, rate, charge	137	2%	1%	4%

Limitations

Although this is a preliminary investigation into public perceptions of ECE access, it has significant limitations. First and foremost, the data are not representative. Parents and others with strong impressions (either positive or negative) are probably more likely to review a facility online than those with more moderate impressions. Likewise, only individuals with internet access and some comfort with computers and social media are likely to provide reviews.

Second, topic modeling is a robust way to analyze large quantities of text, but it misses the subtleties of the reviews. For example, a word like *attention* could be used in reference to parents, children, or facilities; however, from this analysis, we only know that *attention* tended to appear in reviews that also included the words *suggestion* and *trust*. Similarly, the authors assigned the theme names, and it is not possible to know whether the reviewers themselves would agree that those were the main themes of their reviews.

Third, there was limited variability in the Google/Yelp star ratings, with 70 percent giving a 5-star rating, 5 percent giving a 4-star rating, and only 25 percent giving a 3-, 2-, or 1-star rating. This limited variability makes finding strong associations with other information (e.g., Quality Rated star rating) unlikely.

Finally, it would be valuable to incorporate online star ratings into the topic modeling to better understand the positive or negative tone of the comments.[7] From the study data, we cannot determine whether someone who talked about safety, for example, was saying that the setting was very safe or not at all safe. Incorporating the public's star rating into the topic modeling would be equivalent to conducting topic modeling for reviews associated with each of the five star rating levels and obtaining themes for each rating level. We did attempt this, but we did not succeed due to the small number of reviews with low ratings. Only 2,611 reviews were associated with online star ratings from 1 to 4, whereas twice that number of reviews would be needed to incorporate ratings in the topic modeling. In addition, we tried to create a "positivity score" for each review, which rated the tone of the review independent of the theme. However, those positive scores did not align well with the actual ratings given by the public, partly due to the lack of variation in actual ratings. These types of additional analyses could be pursued in the future, using national data, which would include a much larger number of online star ratings.

Discussion

- The themes identified in the these Google and Yelp reviews included three of the four dimensions of ECE access—affordability (*Cost*), supports children's development (*Warmth, Academics, Safety*), and meets parents' needs (*Convenience*)—providing preliminary evidence that the public agrees that these are critical components of ECE access. Additional research is needed to better understand families' perceptions and values related to each of the four dimensions of ECE access.

- Three of the nine themes identified—*Warmth, Communication*, and *Staffing*—are related to the workforce, highlighting the importance of having stable staff who develop strong, caring relationships with children and can communicate effectively with parents.

- Among programs with negative ratings, the most common theme was *Convenience*, possibly indicating that failing to meet families' day-to-day needs has detrimental effects on families' perceptions of the ECE setting. Convenience, or meeting parents' needs, is an important aspect of ECE access but is not typically measured when researchers study quality, possibly demonstrating a disconnect between

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[7] https://satwikkottur.github.io/reports/F14-ML-Report.pdf;
https://medium.com/netflix-techblog/netflix-recommendations-beyond-the-5-stars-part-1-55838468f429.

families' priorities and researchers' tools. Additional research is needed to better understand the role of convenience in parents' choice of and satisfaction with ECE.

- The public (Google/Yelp) and professional (Quality Rated and ERS) ratings were significantly, positively correlated indicating some agreement about which programs are providing higher versus lower quality ECE. The association was weak, likely due to high proportion of online ratings that received 5 stars.

Examples of Reviews

We provide some quotes below from the Google and Yelp reviews to illustrate the types of reviews that made up each theme. These quotes come directly from the reviews. They have not been edited and typos have not been corrected.

Warmth

" Leaving you child for someone else to take care of is very hard. I'm so happy to have found (CENTER NAME). They have been incredible and not only teach my child but love my child as is she was their own. From the moment you walk in you get greeted by smiling friendly faces. The teachers are warm and welcoming too!"

Academics

" My daughter loved this place, great environment, teachers and also the curriculum was well planned. Teachers are friendly and constantly provide feedback on the child's learning progress. Don't forget to ask the workbook at the end of the month, you will actually get to see your child's classroom activities. I would recommend this facility to anyone."

Convenience

" When I found out I was pregnant with our first child, i started searching for a daycare facility nearby. I was terrified to send her to daycare but without family living nearby we had limited options. We needed a place that could take her early and have a late pickup since we both work full time jobs. So I started our daughter at (CENTER NAME) at 3 months; when I started back to work. Obviously, I was a mess and it took me a few weeks to adjust to someone else caring for my child. But (TEACHER NAME) made the transition an easy one. We've had a few moments where something was wrong (tummy troubles/eating solids) and I trusted (TEACHER NAME) to keep me posted on how she was doing throughout the day."

Safety

" Not somewhere I would send my child ever again. The children in my child's class- 5 yr olds- are allowed to just run around, scream, hit, punch, scratch, etc. I walked in to pick my child up on his second day and was absolutely astonished at what I saw. I tried to speak to the director about it, to see if this was the way they normally monitor their classrooms, and she hung up on me. My son didn't like it there, and if you are looking for a place that is safe, secure, and well mannered. . . Do not put them here!"

Negative impressions

" I am not happy with the experience I had at (CENTER NAME). The teachers were always on their cellphones when I came to pick up my child. It seemed like the teachers were just babysitting--instead of actually teaching and interacting with my child. Management didn't seem to care about my concerns with the lack of interaction, in fact the director is hardly ever there. There were also times when my child was hurt and no one could tell me how it happened. The rooms look boring and the staff is unprofessional. I would look elsewhere before taking my child here!"

Communications

" They emailed me a full calendar for the whole year the first day my daughter started and it had all of the parent teacher conference weeks and special parent/grandparent breakfast events as well as so many other important dates that are good to know in advance. They give you an opportunity to be apart of your child's learning experience. Did I mention they also provide muffins for working parents on the way out the door? This place is a God send. It should be the model for all day care facilities!"

Hygiene

" If i could give no star i would... I took my 12 month old there she came back with a stomach virus... I gave them a diet because she is not tolerate to whole milk... I asked them to give her 2 percent... They gave her whole milk. When I came to pick her up... the lady made me wait to change her, this is because she had been sitting in a wet diaper... when i changed my baby later on she was red and chaffing."

Staffing

" High turn-over of employees, inaccurate web site information, owned and run by an "accountant" and her husband--who I have never seen there. Definitely a day "baby sitting" service but far from a "pre-school." While most of the all female staff is pleasant and I believe their 2 year-old class to be good, their 3 year-old, pre-k, both Georgia Pre-K and Private Pre-K, are severely deficient in skilled instructors (I.e. I don't believe any are certified teachers with Bachelor degrees in Early Chile Education making them able to teach in public schools. It is a nice facility, thanks to parental contributions, in my opinion."

Cost

" This daycare is just about business. All they are worried about is money. My child has been to the ER 3 times urgent care 2 times for infections and a disease she caught at this center and they have the nerve to charge a $60 sick fee... They are busy worried about my pockets and every which way to get In them. They will be quick to say if your payment is late child can not return."