

CU Denver Presidential Initiative on Urban and Place-based Research

In Support of Child-Friendly Cities: Identifying and Applying Geospatial Technologies to Represent Children's Sense of Place

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Community Partner: Nature Kids, Lafayette CO

Project Summary:

In an era of rapid urbanization, designing child-friendly cities involves more than just providing places where young people can play and go to school. We were interested in the everyday relationships between young people and places, that is, how children's realities shaped their interactions with/in urban spaces. Our project sought to spatially represent the ways by which young people inhabit cities by identifying and testing two geospatial apps within an exploratory, small-scale pilot study with Nature Kids in Lafayette, CO. Nature Kids is a non-profit organization that provides outdoor programs to improve children's physical, social, emotional health, and wellbeing. Nature Kids works primarily with low-income, Latino/a families in what is largely an immigrant and working-class community.

We compared the utility of two apps for place-based research with children; each app was different in terms of use and access. *Collector* is proprietary software from ArcGIS for which the university holds a license. *Input*, on the other hand, is open-source software that is free for users. Both apps are Android and iOS friendly. Participants, and their families, were provided printed instructions as well as on-site training on how to use the apps. Each participant also received a gift card for completing the study.

We discovered that the utility of these tools was influenced by accessibility. Collector presented more technical and administrative obstacles; for example, we had to create 'fake' CU accounts with usernames and passwords for participants. Additionally, Nature Kids did not have the ability to continue utilizing Collector after the project. Input, while free, did not provide as much flexibility with data transfer (e.g., file types) and applications. Children in our study were largely ambivalent about Collector and Input ('an app is an app'), however, younger children experienced difficulty navigating the apps, frequently asking older siblings and parents for help. Children were also disappointed that they could not see real-time data from their friends or siblings. We did this to ensure confidentiality as part of IRB protocols, but it ended up limiting the fun factor for participants, who (understandably) treated this as a game. Future research should consider the use of age-appropriate apps with diverse, interactive components that not only have geospatial capabilities, but are also engaging to children. This is likely to incentivize participation and improve data collection, especially for longitudinal studies. If such an app does not exist, it may be worth seeking funding to develop one for research of this nature.

We intentionally avoided recruiting participants from K-12 schools due to strict curricula that would limit access to classrooms, and extensive gatekeeping from school districts that was simply not feasible within our project timeline. Given our population sample (low-income minorities who are underrepresented in this body of literature), we sought to work with organizations focused on this subset of children in a city. Fortunately, a graduate student on the project had previously collaborated with Nature Kids and that became our initial point of connection. Over numerous site visits and zoom calls, we built a partnership that was mutually beneficial. In particular, **Nature Kids was keen to partner with CU Denver to find out if children would continue using outdoor spaces after their programs had concluded.** For our part, **we wanted to know where children went in their 'spare time' on a regular basis, when they were not in school or at home.**

A total of one high school, four middle school and two elementary students participated in our study. All participants identified as Latino/a. We observed that relatively few children entered geolocations (locations that children marked as 'places they visit on a regular basis'). Only 7 (out of 19 recruited) children participated in our study, and collectively, they produced a total of 18 geolocations. That is, on average, just over 2 geolocations per person, which indicated a relatively low level of participation considering participants had 2 weeks to use the apps. Very few of these geolocations were in green spaces (16.7%), and almost all (83.3%) were in the city of Lafayette. While this pilot-study had a very small sample size, it provided a window into children's preferences for places. Specifically, children in this study tended to stay in the city, close to their home (average distance from home was just over 4 miles), and the places they visited on a regular basis included fast food restaurants (e.g., MacDonaldds) and playgrounds, not parks or other green spaces. Future studies would benefit from more engaging apps (see above), a larger sample size, and where possible, ensuring that each participant has their own smartphone (see project challenges below).

Project Challenges:

The COVID-19 pandemic kept us out of the field for the first few months of our project. Health safety protocols prevented us from meeting in person with staff, parents, and children at Nature Kids, and as a result, limited our ability to connect with community members. This was especially challenging since we had planned to work with low-income families, and many did not have regular or reliable internet access to communicate online. Working with children required gaining the permission and trust of their parents, and this took time, especially since we were university researchers and 'outsiders.' All documents, conversations, and presentations had to be carefully translated to Spanish, then back translated in English to ensure accuracy. Furthermore, our visits had to correspond with families' schedules, so field trips to Lafayette typically took place on late evenings during parent-meetings, or on weekends when their children were engaged in Nature Kids' programs. There were times when weeks would go by between site visits due to the unpredictability of scheduling, which affected data collection and limited our communication with study participants.

One solution was to rely on community liaisons, specific individuals who met regularly with the families and who could help us share information about the project, redirect questions from parents, gather demographic information about children, review translated documents, etc. These individuals were instrumental in getting our project off the ground, and indispensable throughout. We were also given permission to start and end our project later-than-usual due to these constraints. A no-cost extension enabled us to complete our project.

Not all the children in our project had access to their own smartphone. Some of them shared a smartphone (and hence project passwords) with their siblings, others had their phones 'managed' by their parents who wanted to make sure their children were protected from cyber-bullies, etc. In short, the data in our study were invariably 'confounded' by these issues.

We addressed this by doing member checks – asking each participant to verify their entries, and also providing them with opportunities to add to their data even after the collection deadline had passed.

Project Outcomes:

Using geospatial technologies in research reveals important places in children's everyday lives, especially for underrepresented groups. In doing so, we are better able to advocate for children's well-being in urban spaces. In this case, Nature Kids could consider shifting their focus to outdoor *activities* rather than locations to better align their programs with the daily realities of young people's lives e.g., practicing plant identification at a playground instead of a forested area. Identifying and using one or more equitable apps is key, as is establishing and maintaining partnerships to engage in community-based work. Our project findings were shared with CU Denver and Nature Kids using a *story map* hosted on an ArcGIS website (see link below), and we are presently preparing a manuscript for submission to *Geographical Review*.

<https://storymaps.arcgis.com/stories/of1eb96b022042519666b2015acd3321>

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