**BUAN 6390.01, Spring 2019**

**“Data for Good” Project**

**Background**

Among major cities, Dallas has the third highest rate of child poverty in the US, with one out of every three children growing up in poverty. This impairs cognitive and physical development, incites risky behaviors and creates lasting health challenges. This also reduces chances for upward economic mobility, with high odds that today’s children in poverty will grow up to be parents of children in poverty.

Dallas Mayor Michael Rawlings created the Child Poverty Action Lab (CPAL) in 2018 to tackle the child poverty issue, with a goal of reducing child poverty in Dallas County by 50% in a single generation. CPAL acts as a data backbone committed to breaking intergenerational poverty and improving economic mobility across our region. CPAL has strong support from the CEOs of the major government agencies in Dallas, such as Dallas Independent School District (DISD), Dallas County, Dallas Police Department, DART, Parkland Hospital and Children’s Health. Financial support of CPAL comes from organizations including the Rees-Jones Foundation, Harold Simmons Foundation, Meadows Foundation, AT&T, Lincoln Property Company and many others.

CPAL is led by Alan Cohen, who was handpicked for this role by Mayor Rawlings. Cohen is known locally and nationally for his role in designing the early childhood education strategy at DISD. Technical support and insights in the areas of mapping and data visualization is provided to CPAL by Robert Mundinger.

The UTD team will work with Alan Cohen and Robert Mundinger to use US Census data to address:

1. The percentage of jobs that pay a living wage that are accessible within 30 and 60 minutes by car and within 30 and 60 minutes by public transit.

The methodology recommended for this study follows the “Access Across America” report produced by the University of Minnesota’s Accessibility Observatory.  Data is obtained from the U.S. Census Bureau’s Longitudinal-Employer Household Dynamics Program 2015.

 The suggested calculations are based on the travel times observed between every US Census Block Group (CBG) in the City of Dallas. To calculate the trip origin and destination for a particular CBG, a population- and job-weighted centroid can be used.

 Travel time can be calculated using OpenTripPlanner based on graphs composed of data from OpenStreetMap and published transit timetables. Driving times can assume that the vehicles do not encounter any congestion and travel at the speed limit. The transit travel times operate on an assumption of perfect schedule adherence. The observed travel times can further can make the assumption that portions of a trip that are not on-board a transit vehicle take place by walking at a speed of 3 miles per hour along designated pedestrian facilities such as sidewalks, trails, etc.

To reflect the influence of transit service frequency on accessibility, travel times can be calculated repeatedly for each origin-destination pair every ten minutes between 7:00 and 8:59 AM as the departure time.

 Accessibility can be averaged across the City of Dallas, with the number of jobs accessible from each CBG weighted by the percentage of workers residing in that CBG. The result is a single metric that represents the accessibility value experienced by an average worker.

The following formula describes how the weighted average is calculated: Weighted Average = (w1/a)j1 + (w2/a)j2 ... wn/a)jn w = workers residing in CBG a = all workers residing in City of Dallas j = jobs accessible from CBG (even if outside city limits) n = Each CBG in City of Dallas

(2)  Segment by wage of jobs – i.e. $3333 / month or higher jobs vs lower wage jobs

(3)  Optimization analysis:  At CBG level, where would transportation solutions have the greatest jobs access impact for families with children in poverty.

(4)  Repeat #1 & #3 for access to fresh food groceries.  Optimize for families with children in poverty

(5)  Repeat #1 & #3 for access to women’s clinics.  Optimize for single mother homes.

(6)  Repeat #1 & #3 for access to basic medical clinics

(7)  Repeat #1 & #3 for access to the 15 WIC centers in Dallas

**References:**

<https://childpovertyactionlab.org/>

<http://ao.umn.edu/research/america/index.html>

<http://ao.umn.edu/research/america/transit/2017/index.html>

<http://ao.umn.edu/research/america/auto/2017/index.html>

<https://lehd.ces.census.gov/data/>

<https://www.census.gov/programs-surveys/acs/>

<http://www.opentripplanner.org/>