Urban Opportunity Agenda

Methodology

Contents

Introduction

The *Urban Opportunity Agenda* is designed to help civic leaders, advocates, and community members identify and quantify solutions for poverty reduction that also promote sustainability. Users can customize a scenario of poverty reduction through the application of a suite of strategies most relevant for their city.

The *Urban Opportunity Agenda* estimates the scale of the poverty reduction potential of strategies in 116 cities around the country.

Cities

The top 100 U.S. cities by the population below the poverty line were selected, and then in order to have at least 1 city per state, the top city from the 16 states without a city in the top 100 was added. Cities were chosen by the population below poverty rather than the poverty rate in order to identify cities where the Urban Opportunity Agenda strategies will have the greatest impact. 2018 American Community Survey (ACS) 1 Year Estimates were used to identify cities, except for cities with populations under 65,000, in which case 2017 ACS 5-year estimates were used.

Poverty Rate, Population Living Below Poverty, and the Poverty Gap

The **Poverty Rate** is the percent of the population living below poverty. The **Population Living Below Poverty** is the number of people in households where the household income is below the national threshold set by U.S. Census for their household size.

The purpose of the Urban Opportunity Agenda is to present strategies to reduce poverty by increasing income and reducing expenses for those living below poverty. In order to determine the dollar value required to do this we need to know the size of the income deficit. To do that, we calculate the income deficit for both unrelated individuals below poverty and those living in families below poverty using ACS data. The **Poverty Gap** then is the **Poverty Reduction Goal** multiplied by population living below poverty, multiplied by the appropriate income deficit plus a cushion. By default, the **Poverty Reduction Goal** is set to 25% of the total **Population Living Below Poverty** but may be changed by the user. We build into the Poverty Gap a cushion of 20%, because living $1 over the poverty line is not a very secure place to be.

a= Population Living Below Poverty (ACS c17002_002+c17002_003)
b= Population of Unrelated Individuals Living Below Poverty (ACS b17007_002)
c= Aggregate Income Deficit for Unrelated Individuals (ACS b17008_001)
d= Aggregate Income Deficit for Families (ACS b17011_001)
e= Individuals in Families Living Below Poverty (a-b)
f= Income Cushion of 20%
g= Poverty Reduction Goal (default of 25%)

Poverty Gap = (b * (c/b) * g * (1+f)) + (e * (d/e) * g * (1+g))

Poverty Reduction Strategies and Initialization Algorithm

The Urban Opportunity Agenda includes ten innovative strategies that reduce the poverty gap through sustainable interventions. The strategies were first vetted in 2015, when CNT brainstormed innovative methods to create economic opportunities and decrease cost of living through targeted public investments, by engaging with ten cities. The following describes how each strategy's poverty reduction is calculated and includes if the value is fixed or the range that the user can select.

Job Access + Transportation

The number of jobs requiring an associate degree or less that are accessible within a 30-minute transit ride comes from CNT's AllTransit™. This number represents the jobs that are accessible by transit on average for households living in the

selected city. Using this number as the baseline, a scenario to increase employment access through transit improvements and last mile solutions such as rideshare, employer shuttles, etc. can be tested, in order to expand the employment opportunities in a way that would benefit those living below poverty.

a= Jobs Requiring an Associate Degree or Less Accessible in 30-Minute Transit Trip – fixed at AllTransit Place Value
b= Percent of increase access to jobs requiring an associate degree or less – between *1 and 200%*
c= Share of newly accessible jobs going to people below poverty – between 0 – 100%
d= Assumed hourly wage – between $8 and $25
e= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefits = a * (1+b) * (1+c) * d * e

Attract + Create Jobs

Using the Census 2015 LEHD Origin-Destination Employment Statistics (LODES) data, the number of jobs requiring an associate degree or less in the selected city and its region in 2015 were calculated, along with the percent of regional jobs in the selected city. Annual rate of change in jobs is estimated by using the 2011 through 2015 LODES data and averaging the change in jobs for both the selected city and its region. Using these values, strategically shifting a portion of regional job growth from the region to the selected city where jobs will be more accessible to people living below poverty is recommended.

a= Timespan in years for attracting and creating new jobs – fixed at 10 years
b= Average annual change in jobs requiring an associate degree or less for the region between 2011 and 2015 – fixed at LODES Region Value
c= Average annual change in jobs requiring an associate degree or less for the selected city – fixed at 2011 and 2015 LODES Place Value
*d= Projected job growth for the region – initialized to a * b*
*e= Projected job growth for the selected city – initialized to a * c*
f= Projected percent of those jobs going to the selected city – between 0 and 100%
g= Share of newly created jobs going to people below poverty – between 0 and 100%
h= Assumed hourly wage – between $8 and $25
i= Hours per Year – *fixed at* 52 weeks * 40 hours

Total Benefit = (d * f - e) * g * h * i

Energy + Water Efficiency Jobs

The calculator identifies the number or homes and establishments in the selected city that could be retrofitted for energy and water efficiency. For the number of homes, the count of housing units from the 2018 ACS is used. For number of establishments, count of business establishments in the region from the 2016 U.S. Census County Business Patterns (CBP) is used and scaled down to the place using the percent of regional jobs in the city from 2015 LODES data. Creating a program to retrofit a portion of these homes and establishments has the potential to create jobs for some individuals living below poverty.

a= Number of housing units – fixed at ACS Place Value
b= Percent of housing units to be retrofitted – between 0 and 100%
c= Efficiency investments per home – between $0 and $6,000
d= Number of establishments in the region – fixed at CBP Region Value
e= Percent of establishments in the region – initialized to LODES Place Value / LODES Region Value (using the percent of jobs as a surrogate)
f= Percent of establishments to be retrofitted – between 0 and 100%
g= Efficiency investments per establishment – between $0 and $300,000

h= Jobs multiplier for efficiency jobs – *fixed at* 11 jobs per $1M
i= *Share of newly created jobs going to people below poverty – between 0 and 100%*
j= *Assumed hourly wage – between $8 and $25*
k= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = ((a * b * c + d * e * f * g) / h) * i * j * k

Household Expense Reduction

Household expenses values for utilities, transportation and food from the 2017 Consumer Expenditure Survey data, and the number of families below poverty from the 2018 ACS is used. Creating programs to help families living below poverty lower their household expenses has potential to reduce the poverty gap.

a= Household utility expense – fixed at CEX Region Value
b= *Utility expense reduction – between 0 and 100%*
c= Household transportation expense – fixed at CEX Region Value
d= *Transportation expense reduction – between 0 and 100%*
e= Household food expense – fixed at CEX Region Value
f= *Food expense reduction – between 0 and 100%*
g= Families living below poverty – fixed at ACS Place Value
h= *Participation rate – between 0 and 100%*

Total Benefit = (a * b + c * d + e * f) * g * h

Infrastructure Investments

Utilizing the 2015 capital outlay for the state of the selected city from the U.S. Census Annual Survey of State and Local Government Finances and the state population from the 2018 ACS a capital outlay per capita is calculated, and then scaled up to the selected city using the population from 2018 ACS. Recommendations include programs that require local infrastructure projects to contract with local businesses in order create jobs for people living below poverty.

a= Capital outlay for the state – fixed at Annual Survey of State and Local Government Finances State Value
b= Population of the state – fixed at ACS State Value
c= Per capita capital outlay for the state – fixed at a/b
d= Population of the place – fixed at ACS Place Value
e= Capital outlay for the place – initialized to c * d
f= Government spending per infrastructure job – fixed at The American Recovery and Reinvestment Act of 2009 Value of $92,000 adjusted to $108,002 in 2018
g= *Percent of infrastructure expenditures directed to local businesses – between 0 and 100%*
h= *Share of newly created jobs going to people below poverty – between 0 and 100%*
i= *Assumed hourly wage – between $8 and $25*
j= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = (e / f * g) * h * i * j

Childcare Jobs

Using the number of children under age 6 living below poverty from the 2018 ACS, the number of child care jobs that may be required for a growing workforce is estimated.

a= Number of children under 6 living below poverty – fixed at ACS Place Value
b= Percent of those children requiring childcare – between 0 and 100%
c= Child to caregiver ratio – between 1 and 15
d= Share of newly created jobs going to people below poverty – between 0 and 100%
e= Assumed hourly wage – between $8 and $25
f= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = (a * b / c) * d * e * f

Food Security Jobs

Using annual household expenditure for food in the region from the 2017 Consumer Expenditure Survey and multiplying it by the number of households in the selected city from the 2018 ACS, the total food expenditures for the city is calculated. The UOA calculator recommends shifting a portion of these expenditures to local disadvantaged businesses in order to incent job creation. Using a jobs multiplier of 10 jobs per $1 million spent on food and food services, the benefit of this spending shift for people living below poverty is calculated.

a= Annual household food expenditure the selected city – fixed at 2017 CEX Region Value
b= Total households in the place – fixed at ACS Place Value
c= Percent of food expense shifted to local disadvantaged businesses – between 0 and 100%
d= Jobs multiplier for food jobs – fixed at 10 jobs per $1M
e= Share of newly created jobs going to people below poverty – between 0 and 100%
f= Assumed hourly wage – between $8 and $25
g= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = (a * b * c / d) * e * f * g

Workforce Development

Using the Census 2015 LEHD Origin-Destination Employment Statistics (LODES) data, the number of jobs requiring an associate degree or less in the selected city in 2015 are calculated. Number of jobs in 2018 are estimated by using the 2011 through 2015 LODES data and averaging the annual change in jobs and scaling the 2015 number up or down accordingly. LODES data, however, represents jobs that are held, so to determine the number of jobs openings in 2018, the U.S. Bureau of Labor Statistics (BLS) time series data was used to find an average job openings rate of 4% between 2016 and 2018. Workforce development is critical in order to fill a portion of these jobs with people living below poverty.

a= Average U.S. job openings rate – fixed at BLS National Average
b= Number of jobs requiring an associate degree or less – fixed at LODES Place Value
c= Average change jobs requiring an associate degree or less between 2011 and 2015 – fixed at LODES Place Value
d= Multiplier to estimate jobs in 2018 – fixed at 3
*e= Number of open jobs in the place requiring an associate degree or less – initialized to ((b + c * d) / (1 – a)) – (b + c * d)*
f= Share of open jobs going to people below poverty – between 0 and 100%
g= Assumed hourly wage – between $8 and $25

h= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = e * f * g * h

Mining the Waste Stream

Using an estimate of 1.41 tons of waste per capita and population from the 2018 ACS, total waste for a city is estimated. Assuming some amount of that waste is recyclable and not currently captured in municipal or private recycling programs, additional efforts to divert waste from landfills is recommended. These efforts could create jobs for those living below poverty.

a= Waste per capita – fixed at 1.41tons
b= Population – fixed at ACS Place Value
c= *Total waste – initialized to a * b * 1.5 tons*
d= *Percent of waste currently diverted from landfill – between 0 and 100%*
e= *Additional percent of waste diverted from landfill – between 0 and (100-d)%*
f= Jobs multiplier for waste management jobs – fixed at .0021 per ton
g= *Share of newly created jobs going to people below poverty – between 0 and 100%*
h= *Assumed hourly wage – between $8 and $25*
i= Hours per Year – fixed at 52 weeks * 40 hours

Total Benefit = c * e * f * g * h * i

Affordable Infill Rental

The weighted average poverty threshold of $25,094 for a four-person household from the 2017 U.S. Census Poverty Thresholds is used in order to calculate an affordable rent value of $627 per month (30% of household income). The number of low-income renting households who are paying more than 30% on rent is gathered from the 2018 ACS. Next, the approximate number of 2-bedroom apartments at or below $627 per month and the average rent and income of renters earning less than $25,094 is derived from the 2018 ACS by aggregating income and rent cohort bins proportionally. These numbers are used to estimate the supply and demand for affordable rental units and then estimate reduction in expenses through the availability of additional affordable rental units to benefit a portion of households living below poverty.

a= Poverty threshold income for 4-person household – fixed at $25,094 from 2017 U.S. Census Poverty Thresholds
b= Ideal percent of income spent on rent – fixed at 30%
c= Monthly rent threshold – *fixed at* (a * b)/12 or $627
d= Number of low-income renting households paying more than 30% of their income on rent – fixed at ACS Place Value
e= Number or 2-bedroom apartments at or below the rent threshold – fixed at Derived from 2018 ACS Place Values
f= Average rent paid by households earning at or below the poverty threshold – fixed at Derived from 2018 ACS Place Values
g= Average income paid by households earning at or below the poverty threshold – fixed at Derived from 2018 ACS Place Values
h= *Additional affordable rental units – initialized to (d-e)*1.5*
i= *Percent of additional rental units going to those living below poverty – between 0 and 100%*

Total Benefit = (f – b) * g * h * i

The Initialization Algorithm

The Initialization Algorithm applies place-based data to each strategy in order to maximize the local effect of each strategy and achieve an initial goal of reducing the poverty gap by 25%. The algorithm starts with all optional values at their minimum and then increments each until the poverty reduction goal is reached. The user can modify the goal and each of the strategies to develop a scenario that fits their agenda.

Additional Statistics

The choropleth maps showing poverty rate at the block group use 2013-2017 American Community Survey 5-year Estimates, and the historic poverty rate at the tract for years 1970, 1980, 1990, 2000, and 2012 use U.S. Census data provided by IPUMS NHGIS, University of Minnesota.

The Transit Service routes, stops and level of frequency map layers use transit data from AllTransit.

The Regional Job Centers map layer were derived from LODES 2015 data (detailed methodology is available in the next section).

The Regional Education and Training Centers map layer come from Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics.

The demographic data accompanying the map and in the Summary Report come from 2018 ACS.

The expenditure data in the Summary Report come from the 2017 Consumer Expenditure Survey.

Regional Job Centers

CNT developed the following method to find where employment is clustered. The data source is the 2015 LEHD data, at the census block geography. Using the LEHD "Workplace Area Characteristics" (WAC) data set, which lists the number of employees working within each census block, segmented in several ways including educational requirements. Given that employment tends to locate in clusters within a region CNT developed the following method for finding those clusters where entry level employment (those jobs which require less than an associate degree of less) is located, using the data from census blocks.

- Use the WAC data to find the sum of workers employed in every census block meeting the following criteria:
    - Number of jobs for workers with Educational Attainment: Less than high school
    - Number of jobs for workers with Educational Attainment: High school or equivalent, no college
    - Number of jobs for workers with Educational Attainment: Some college or Associate degree,
- Start with every block in the CBSA that has any entry level employment and count the number of entry level employees in the region
- Then only use candidate blocks meeting the following criteria:
    - where the entry level employment density is greater than 10 jobs/acre or
    - if the density is lower but the land area big and there are more than 15 entry level employees – this happens most often in industrial and need to be included
- The candidate block with the highest number of entry level employees is chosen to begin a cluster
- Candidate blocks that are within 50 meters (approximately the width of a major highway) of the cluster are then added in this cluster, then the process is repeated until there are no blocks that come within this distance

- Then start again with the candidate blocks with the highest number of employees that has not yet been included in a cluster, and repeat until all block have been used
- This will lead to many clusters (mostly small) but clusters whose centroid is within 2 miles of each other are merges so that less dense places are included
- Then the largest clusters are chosen such that the number of employees in these clusters represents 1/3 of all employees in the region.
- Finally, those large clusters are merged where the centroids of the clusters are within five miles and the edges intersect one another.

The entry level employment weighted average center of each block is calculated as the center of the employment cluster, which is shown on the map of the UOA tool, with the area of the circle proportional to the number of entry level employees.

Data Sources

1. 2018 American Community Survey 1-year Estimates (2018 ACS) – an ongoing U.S. Census survey that generates data on housing characteristic, transportation use, community demographics, income, and employment.
2. 2013-2017 American Community Survey 5-year Estimates (2017 ACS) – an ongoing U.S. Census survey that generates data on housing characteristic, transportation use, community demographics, income, and employment.
3. U.S. Census Longitudinal Employment-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) – detailed spatial distributions of workers' employment and characteristic detail on age, earnings, industry distributions, and local workforce indicators. LODES data built on 2015 Census data are used here.
4. AllTransit – a 2018 database of General Transit Feed Specification (GTFS) data developed by the Center for Neighborhood Technology, including bus, rail, and ferry service for both transit agencies that report their GTFS data publicly and those derived by CNT staff for agencies that do not.
5. BLS 2017 Consumer Expenditure Survey (CEX) (https://www.bls.gov/cex/tables.htm#MSA)
6. BLS Job Openings and Labor Turnover – a monthly U.S. Bureau of Labor Statistics (BLS) report on job openings and labor turnover (https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html)
7. BLS 2017 Quarterly Census of Employment and Wages County High-Level Data (https://www.bls.gov/cew/downloadable-data-files.htm)
8. 2017 U.S. Census Poverty Thresholds (https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html)
9. 2016 U.S. Census County Business Patterns (CBP) (https://www.census.gov/programs-surveys/cbp/data.html)
10. 2015 U.S. Census Annual Survey of State and Local Government Finances (https://www.census.gov/programs-surveys/gov-finances.html)
11. U.S. Department of Energy Weatherization Assistance Program
12. Commercial Building Energy Saver (CBES)
13. The American Recovery and Reinvestment Act of 2009 (ARRA)
14. Historical U.S. Census Data from IPUMS NHGIS, University of Minnesota, www.nhgis.org
15. National Poverty Rates from Current Population Survey Annual Social and Economic Supplement (CPS ASEC) https://www.census.gov/content/dam/Census/library/publications/2019/demo/p60-266.pdf
16. Integrated Postsecondary Education Data System (IPEDS), National Center for Education Statistics, https://nces.ed.gov/ipeds/