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A Place-Based Story of Recession & Recovery in Illinois

IDES
ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY

A Place-Based Story of Recession & Recovery in Illinois[1]

Prepared by:
Illinois Department of Employment Security
Economic Information & Analysis Division

George Putnam, Ph. D. – Acting Division Manager, Economic Information and Analysis

Authors:
Allan Ross, Data Innovations Manager, Economic Information and Analysis Division
Evelina Tainer Loescher, Ph.D., Consulting Economist

Design:
Charles Carey

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[1] 2019 Local Employment Dynamics Partnership Annual Workshop, September 4-5, 2019.

This article demonstrates how we can utilize administrative data to assess place-based economic conditions as well as develop local workforce policy that better reflects the diverse labor market experience of demographic groups in Illinois.

The Illinois Department of Employment Security (IDES) is mandated to promote economic growth and stability in Illinois by providing vital employment services to employers and residents, analyzing and disseminating actionable Labor Market Information (LMI), and administering the Unemployment Insurance (UI) program. Employment Services include providing services to all job seekers while focusing on disadvantaged groups. IDES is the official administrator of the state's labor exchange system through Illinois Job Link (IJL). UI programs vary over the business cycle with increased demand during recessions and diminished demand during expansions. In a dynamic economy, some firms are expanding while others are contracting, resulting in layoffs even during economic expansions; therefore UI programs are beneficial throughout the business cycle. Prior to the current pandemic crisis, IDES, on average, distributed $2 billion to unemployment insurance claimants each year, while collecting $2 billion in employer taxes in the course of administering the Unemployment Insurance Trust Fund. During harsh economic times, unemployment insurance payments increase exponentially. Finally, IDES supports sound public workforce policy by producing timely and relevant labor market information including unemployment, employment and wage data. The U.S. Department of Labor (DOL) funds these programs through its Employment and Training Administration (ETA) Division and U.S. Bureau of Labor Statistics (BLS), as the federal agencies work in partnership with states to administer these important programs and facilitate labor market transitions through short term stabilizers and labor market information.

Data and Methods

Typically, new unemployment claims are an indicator of economic change in labor demand, and therefore a change in economic activity. When we look at rising or falling unemployment claims over time in a state, or in the nation, we can assess whether labor market conditions are improving or worsening. But unless we disaggregate the claims by geographic location, industry, occupation, gender, or other demographic characteristics, we can't know who or what is hurting, or how to formulate workforce policies to alleviate unemployment conditions in the state.

This study adds a new dimension to data on Unemployment Insurance (UI) claimants. The Economic Information and Analysis Division (EI&A) is experimenting with innovative methodologies to improve the analysis and reporting of data on UI claimants. One objective is to develop the capability to report on UI claimants based on where they live, in terms of residence areas of virtually any shape, such as "places" (cities, towns, villages) and neighborhoods. This is an innovative approach using Census Bureau data, which the Bureau assembles from a variety of sources--administrative data as well as survey data. For an overview of the data sources, see the graphic "LEHD Data Infrastructure" (page 8). A second objective is to enhance the claimant data with profile data on where claimants live.

The main focus of this article is the methodology of how we developed quarterly Illinois UI datasets from weekly administrative data. That conversion enables linkage of two critical datasets, unemployment and employment, that taken together present a comprehensive depiction of local labor market conditions. It enhances the richness of claimant data by linking employment information to the places where claimants live. In this article, we use workforce data from "OnTheMap" (OTM), a U.S. Census Bureau product, to normalize the data. For example, two towns might each have identical quarterly unemployment of 100, but if one place has 1,000 employed workers while the other has 5,000 employed workers, the displacement is not identical. Both towns have the same number of claimants, but clearly the unemployment situation is more severe in the first town.

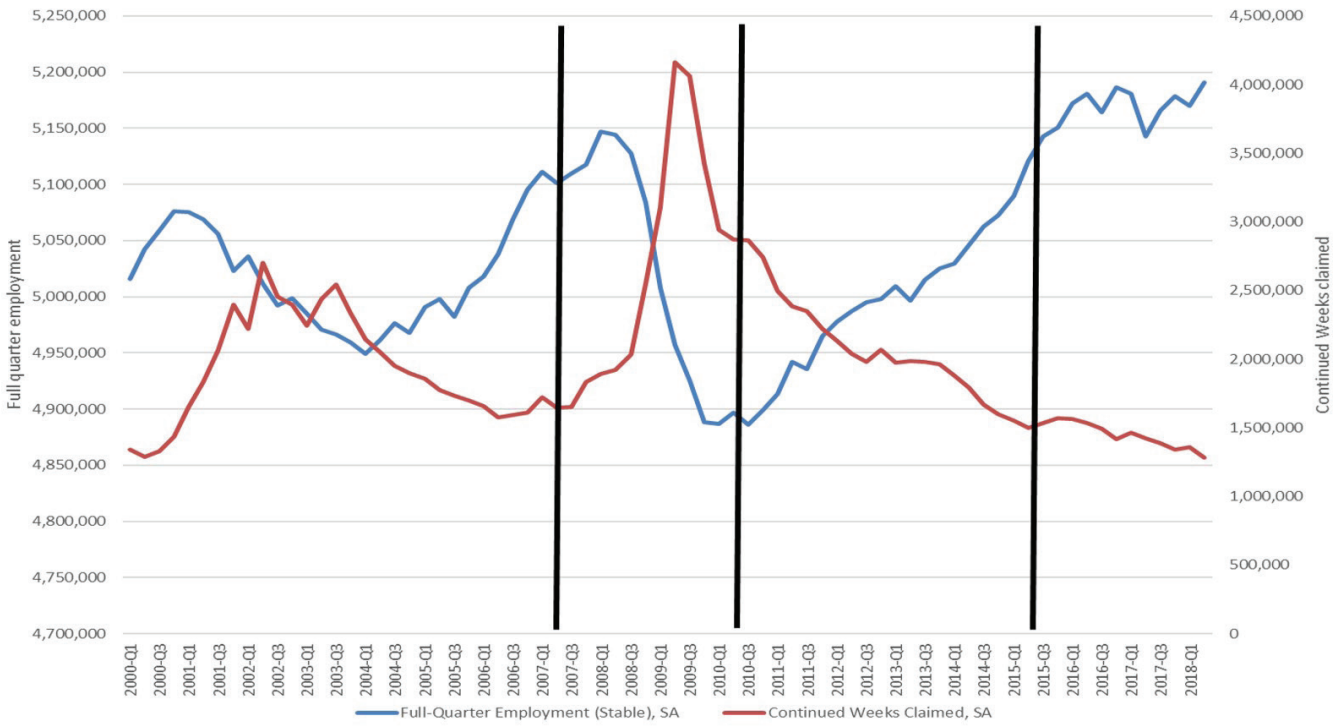
Microdata on UI claimants are weekly files of payments and other transactions collected by the agency as it administers the Unemployment Insurance system. Personally Identifiable Information (PII) is required for each claimant in order to administer the program. PII data elements include Social Security number (SSN), residence location and demographic characteristics such as age, sex, race, and ethnicity.

For this project, we aggregate weekly claimant data into quarterly data, which is appropriate for longitudinal study. An additional benefit of constructing quarterly claimant data: they are compatible with quarterly Census data, enabling enhancement of reporting with Census data on where workers live.

Quarterly UI Wage files contain minimal personally identifiable information (PII); specifically, workers' names, SSNs, and the wages paid. Those data elements are insufficient to profile the geographies where workers live. Their home addresses and demographics are excluded from Wage files because those data are not required for administrative purposes. OTM utilizes data sources unavailable to states to aggregate data by where workers live.

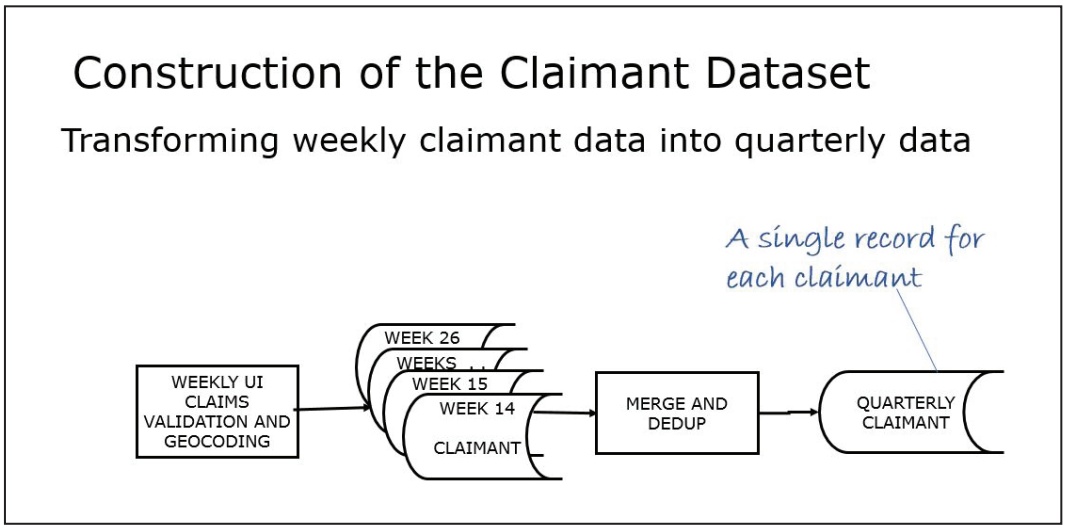
The linkage between the claimant and worker datasets is through the Census Block, which is the smallest level of geography for which the Census Bureau tabulates data. Census blocks are basic units from which larger geographies can be built. This articulation of data to place enables studies at more granular levels than states, regions, and counties. Census blocks are used to aggregate micro-individual data to polygons of virtually any shape. We aggregate the blocks to places (cities, towns, villages, etc.), though we could also aggregate the same base data to neighborhoods, tracts, or American Indian reservations.

The framework for analysis was UI Claimant activity at three time periods—pre-recession 2007 (second quarter), recession year 2010 (second quarter), and rebound year 2015 (second quarter)—in context of the places wherein the claimants lived. The three year-quarters we selected are indicated by three vertical bars. Quarterly Workforce Indicator full-quarter employment—the blue line—was at its deepest decline in 2010. Weekly claims volume—the red line—peaked and began its decline that year. The objective is to use the new data to discover Illinois places that suffered the worst decline in primary jobs from 2007:Q2 by composition of earnings, gender, and race, and subsequently differentiate those places on the basis of a robust vs. weak rebound by 2015:Q2.



How Claimant Datasets were Constructed

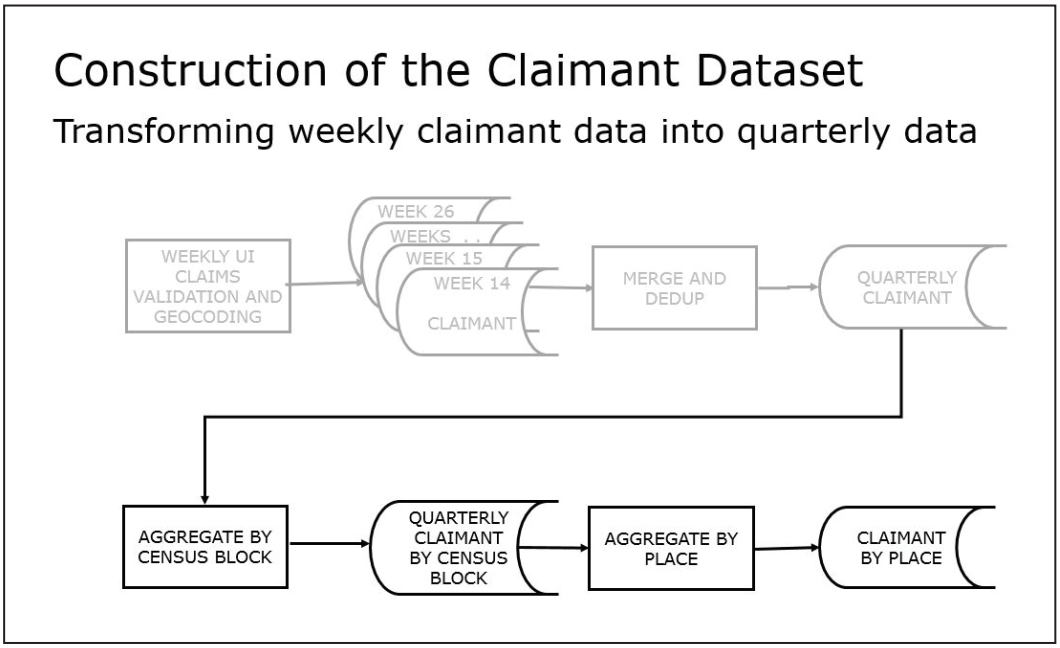
In the previous section, we described the technical process that enabled linkage of weekly administrative data on Unemployment Insurance claimants through the census block to quarterly OTM data. The requirement was to construct quarterly datasets of claimant activity containing a single record for each individual claimant who had a certified claim in any one or more weeks in the quarter. Typically, individuals certify claims in more than one week, and of course some addresses change during the quarter. The aggregated quarterly record needed to contain the claimant's home address in order to facilitate calculation of the addresses' census blocks in the event geocoding was required. Geocoding was in fact required for the 2007 and 2010 data because the Census Blocks in those files were incomplete (containing only the first 5 digits which localize to the state and county, but no further). The 2015 data contained complete blocks, and did not need to be geocoded. In order to resolve the dilemma of which address to choose, we decided to use the address in the most current record.



> ***"Here's a take-away opportunity for additional analytics. Our choice was to aggregate to places, but we could have chosen virtually any substate area, perhaps Chicago neighborhoods, flooded areas, police districts, or such conventional geographies as counties, legislative districts, or Workforce Investment Areas."***

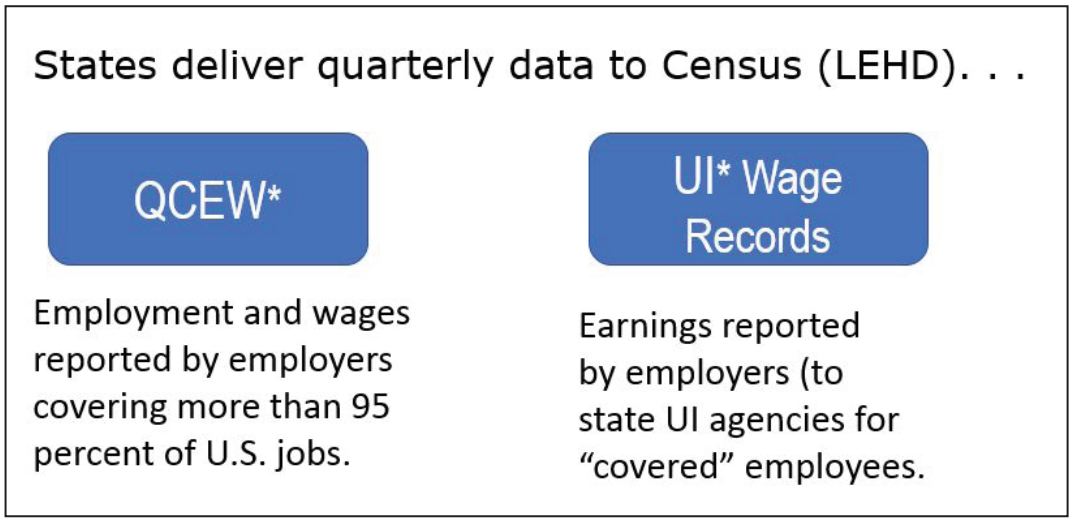
Another dilemma concerned the claimants' previous earnings. Several categories of wages are recorded in the UI system, namely highest wage, wage at last employer, and /or the "benefit chargeable" employer. A single employer could hold all three designations; or, a different employer could be listed in each category. For the purpose of this project, we selected the highest wage.

The Quarterly Claimant files contained as many as 160,000 claimant records, which subsequently were aggregated into block level records. The State of Illinois contains nearly ½ million blocks, but the 160,000 or so claimant records aggregated into only 112,000 distinct blocks. Then those 112,000 records were aggregated into almost 1,200 distinct places (cities, towns, etc.) to create three Claimant by Place files, one for each of the three snapshot quarters.

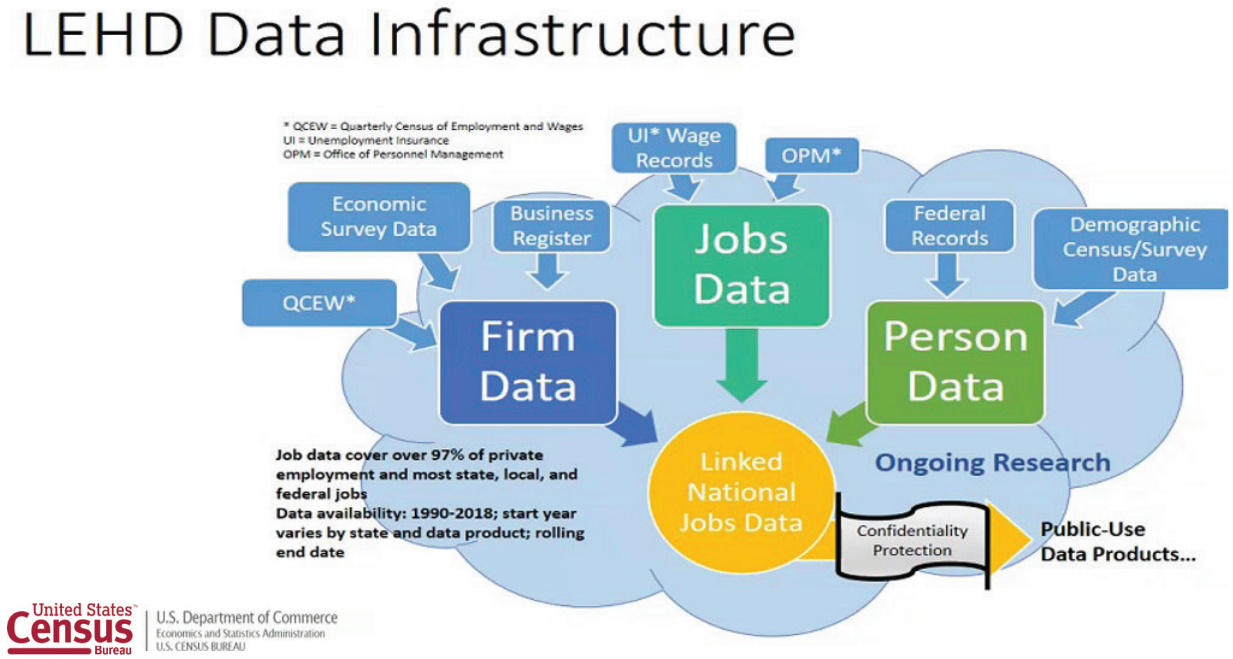


Construction of "Where Claimants Live" Data

The U.S. Census Bureau compiles and processes state administrative data and multiple federal data sources to create rich datasets, and it uses statistical techniques to ensure that data published through such products as OnTheMap comply with legal requirements to protect the identities of individuals and business enterprises. States deliver to Census, Quarterly Census of Employment and Wages (QCEW) files and quarterly UI Wage files. The OTM data are published for the second quarter of each year beginning with 2002. To facilitate comparability with OntheMap, claimant data were aggregated for the second quarter of the corresponding years 2007, 2010 and 2015.

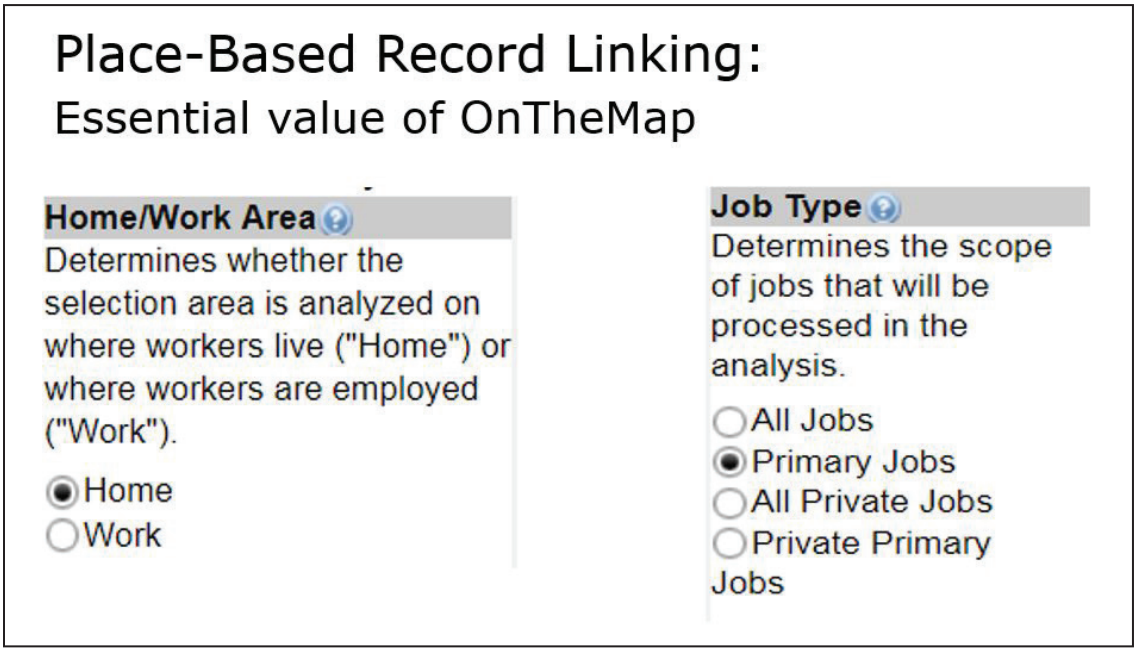


The U.S. Census Bureau creates linked national jobs data with data using those state files, plus other data from federal agencies which are a combination of administrative and survey data. The following graphic, "LEHD Data Infrastructure," shows the sources from which OTM data are constructed.



> ***The essential value of OntheMap is place-based record linking. It is a mapping and reporting application on where workers are employed and where they live. It is the only source for data on workers' residences constructed primarily from state administrative data.***

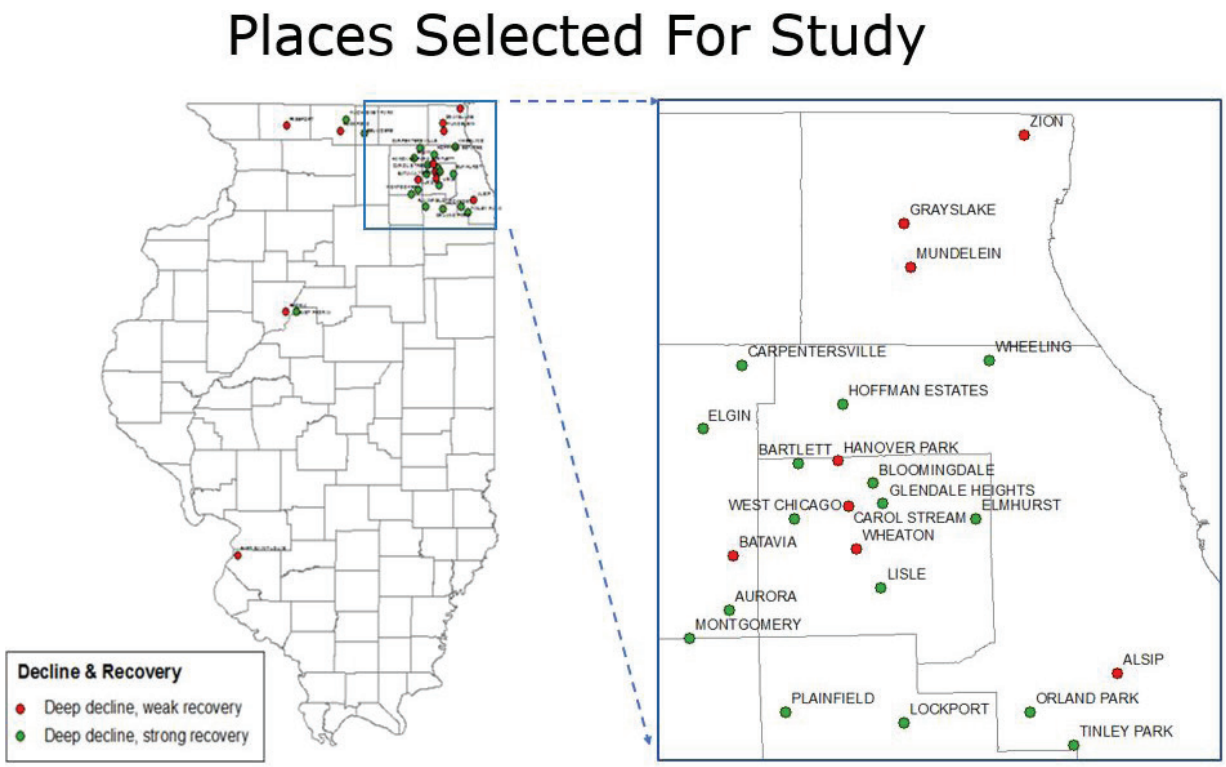
OTM publishes longitudinal workforce data oriented to areas either where workers work or where they live. Following are two of the selection criteria that appear on its selection criteria screen. Our study focused on the places where workers live, which compelled use of the home area option rather than work area. Unemployment rates are typically associated with locations of where people live rather than where they work. Most often people live and work in the same county so we are reflecting conditions in the community. If we were to focus on where people worked, the underlying analysis would reflect greater information about the work establishment than the people who work there. The OTM selection screen also enables selection from any of the four job types shown. A worker can have multiple jobs, but only a single primary job; this was a study of workers, not jobs, so we worked with primary jobs—which are defined as the worker's highest paying job.



More robust data including PII are legally available to us on claimants because those data are required to administer the UI program. Historically we have been unable to drill into the robust claimant data in context of where the claimants live, except for large geographies such as states and counties, where the statistical characteristics are generalized.

The research was designed to demonstrate various uses for place-based data. For this demonstration we identified Illinois places (cities, towns, villages, etc.) that had at least 7,500 primary jobs in pre-recession 2007:Q2, a total of 94 places. Subsequently, we identified those places where the decline in primary jobs between 2007:Q2 and recession 2010:Q2 was in the lowest two quintiles; i.e., the decline was the worst. We found 31 such places. Then we created a group of 19 of those places that enjoyed robust recoveries after the recession, and a group of the remaining 12 places that did not rebound well by 2015.

Following are maps showing the 31 places we selected for study. The 19 places that enjoyed a strong rebound from the recession, are represented on these maps by green dots. The other 12 places, represented by red dots, experienced a weak rebound.



We explore three dimensions of UI Claimant attributes:

- Earnings Composition: Medium/high earnings claimants versus Low earnings claimants. Number of Medium/High earnings claimants per 100 Low earnings claimants.
- Gender Composition: Female claimants vs Male claimants. Number of Female claimants per 100 Male claimants.
- Race Composition: Black claimants versus White claimants. Number of Black claimants per 100 White claimants.

Findings

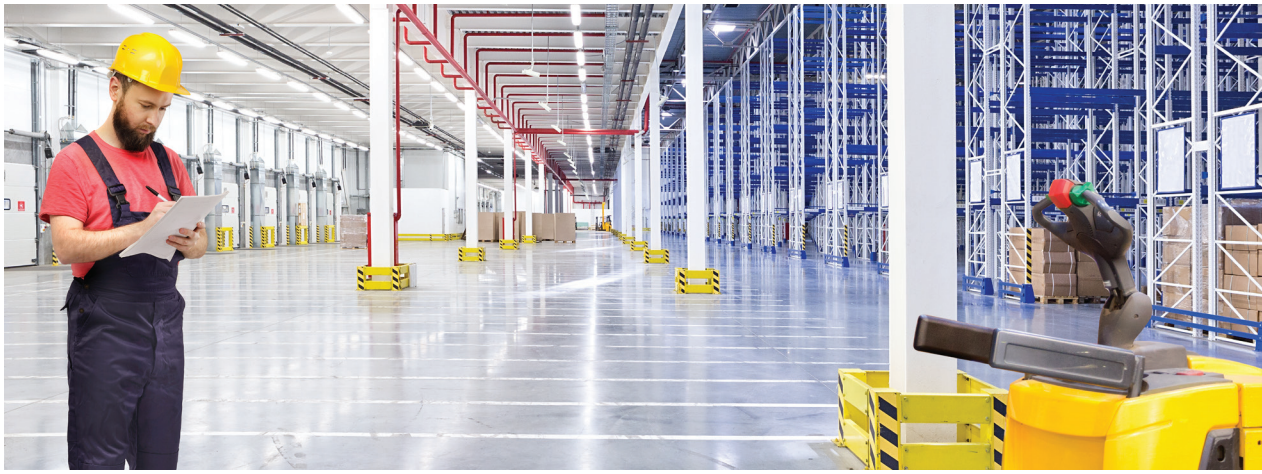
Comparison of Medium-High Earnings Claimants to Low Earnings Claimants

We compare how places fared during and after the recession among medium-high earnings claimants versus low earnings claimants. We calculated the number of claims by earnings and estimated the ratio of Medium-High earnings claimants to Low-Earnings based on Census definitions: "Medium-High" earnings are greater than $3,333 per month and "Low-Earnings" are less than or equal to $3,333 per month. We averaged the values across Robust Rebound and No Rebound places. In 2007:Q2, the ratio 96.05 represents that, on average, 96 medium-high earnings claimants were present for each 100 low earnings claimants in the Robust Rebound places. Similarly, 66 medium-high earnings claimants were present for each 100 low earnings claimants in the No Rebound places. The lowest ratio (66.14) occurred in pre-recession No-Rebound places, indicating that the proportion of Medium-High earnings claimants to others was then at its lowest. The highest ratio (105.38) occurred in the Robust-Rebound period (2015:Q2), indicating that was the period wherein the proportion of claimants in the medium-high earnings to low earnings was at its highest level.

Medium-High Earnings Claimants per 100 Low Earnings Claimants

	2007:Q2	2010:Q2	2015:Q2
Robust Rebound	96.05	90.45	105.38
No Rebound	66.14	66.64	73.30

The ratios in the No-Rebound places were significantly lower than Robust-Rebound places in each corresponding period (pre-recession, recession, and rebound); thus the proportion of medium-high earnings claimants was consistently and significantly lower in No-Rebound places. In geographies where the local economy did not improve in the aftermath of the recession, the relative proportion of layoffs remained similar across the economic cycle and the claimant population was more heavily concentrated among low-earnings workers. Local economies that did rebound displayed a more equal balance among earnings types in the claimant population but, again, remained similar across changing economic conditions.



Comparison of Female Claimants to Male Claimants

In order to compare claimants by gender, we compute the ratio of females per 100 males. This ratio did not change much during the economic cycle and was somewhat similar in places of Robust Rebound and No Rebound. In general, the count of female claimants is one-half to two-thirds the number of male claimants. The concentration of female claimants did not change much during the economic cycle. Female claimants are slightly more concentrated among the No Rebound places than the Robust Recovery places. This result is consistent with other economic studies that reveal most historical recessions to hit Goods-Related sectors, where men are predominantly employed, by greater force than Services-Related sectors, where females are predominantly employed.

Number of Female Claimants per 100 Male Claimants

	2007:Q2	2010:Q2	2015:Q2
Robust Rebound	50.29	60.37	54.33
No Rebound	62.59	69.03	66.21

Comparison of Black Claimants to White Claimants

In order to compare claimants by race, we compute the ratio of black claimants to 100 white claimants. A higher ratio indicates a higher concentration of black claimants relative to white claimants. No Rebound places had a significantly higher ratio than the Robust Rebound places in each phase of the economic cycle, 10.55 vs 77.08 (2007:Q2), 10.38 vs 96.18 (2010:Q2), and 11.93 vs 134.95 (2015:Q2). Moreover, the ratio increases in No Rebound places from 77.08 pre-recession to 96.18 during the recession, then to 134.95 post recession; thus the number of black claimants was less than white claimants pre-recession, and in the post-recession period was higher. This finding is even more remarkable given that blacks comprise only 14.6% of Illinois workers. To summarize, places with concentrations of black claimants were less likely to rebound and the labor market attachment of blacks significantly weakened during and after the recession.

Number of Black Claimants per 100 White Claimants

	2007:Q2	2010:Q2	2015:Q2
Robust Rebound	10.55	10.38	11.93
No Rebound	77.08	96.18	134.95

Conclusion & Suggestions for Further Research

In this era when Big Data is prized but federal and state agencies are beset by budget restraints, it is desirable to construct new and innovative datasets from existing data; such datasets can enable workforce policy experts to better understand how they may alleviate unemployment conditions in local areas that experience diversity among industries, occupations and demographic characteristics such as race and gender. Our demonstration cases, which focused on earnings, gender and race, established the following:

- Medium-high earnings claimants are much less represented than low earnings claimants in the No Rebound places than the Robust Recovery places. However, the concentration of medium high earnings did not change much during the economic cycle.
- Female claimants are slightly more concentrated among the No Rebound places than the Robust Recovery places with little change during the economic cycle.
- Black claimants are significantly more represented among the No Rebound places than in the Robust Recovery places, and, in fact, the concentration in the former worsens in the aftermath of the recession.

We encountered some shortcomings with the data from OnTheMap that, if mitigated, would facilitate more robust results in the future. Here are three examples:

- OnTheMap reports on three income range categories--$1,250 per month or less, $1,251 to $3,333 per month, and greater than $3,333. Both of the two lower ranges represent low earnings, so in this study low earnings is defined as the sum of those two ranges; i.e., $3,333 or less per month. Consequently, the third range represents medium plus high earnings; i.e., greater than $3,333 per month. The availability of low, medium, and high income ranges would facilitate more granular analysis.
- When working on this study (in 2019) one of our constraints was that the most recent year of available OnTheMap data was 2015. The U.S. Census Bureau did publish a new release that added data for 2016 and 2017 in the late summer/early fall of 2019. The work surrounding the compilation of data is significant, but the sooner the more recent data becomes available, the more valuable it is to users.
- Downloading OnTheMap profile data was a cumbersome, error-prone process. We would welcome a user-friendly method for downloading segmented database format (dbf) shapefiles for user-selected substate geographies. For example, it would be very useful to be able to download profiles of all the places within a county.

When this study was conducted in 2019, the U.S. economy was experiencing a healthy expansion, and unemployment was at the lowest rate for the past 52 years. The Illinois unemployment rate was at its lowest level since the history of this series began in 1976. As we ready this article for publication, a national pandemic very rapidly shut down economic activity from state to state across the nation. States are experiencing devastating job losses, and new unemployment insurance claims have climbed through the roof to unprecedented levels. When the economy can once again get back on its feet, it will be important to use these types of innovative data tools to understand how to facilitate recovery in local areas. Which industries will rebound first? Will men and women of all races find new jobs in all geographic areas of Illinois? Will the rebound become localized to only some areas? Note: since OnTheMap data are developed for the second quarter of each year, when the 2020 datasets are published, they will provide unique data on the current crisis. Even without immediate mapping capabilities for in-depth granular geographic analysis, investigating claimants by industry, gender, race and county will provide policymakers with actionable information for establishing workforce policies to enable rapidly improving employment conditions.

[2] One of the original design parameters for OnTheMap was that three income ranges would be supported.