Weekly Unemployment Updates

Methodology and File Layout

JANUARY 2021

(April 7, 2020, Revised April 24, 2020, Revised May 22, 2020, June 5,2020)

Purpose

Under normal circumstances, demographic data at the neighborhood level changes very slowly and often predictably. With most public facing businesses closed or severely limited in their activities, unemployment is increasing at an unprecedented pace. In the two-week period ending March 28, ten million newly unemployed people across the country filed unemployment benefit claims. Aside from the obvious expected losses in hospitality and food service, we are also seeing significant unemployment in manufacturing, transportation, and even medical services.

It is our expectation that these massive job losses will continue to mount over the coming weeks and will likely continue even after the quarantines are lifted.

On a weekly basis for the next several months, AGS will be creating and making available an updated, rolling weekly unemployment estimate at the block group, ZIP code, and county levels of geography. While we do not pretend to have "on the ground" information to support these estimates, our initial tests on the data to date suggest that our methodology is a reasonable one – we are focusing on the distribution of employment by occupation and using a series of estimates of vulnerability curves to simulate what is being reported at a national and state level.

Methodology

The primary sources of the dataset are:

- AGS estimates and projections, 19B (July 1, 2019) and 20B (July 1, 2020) releases, including estimates of employment by occupation and industry
- BLS detailed labor force by occupation tables
- Monthly labor force publications which provide detailed unemployment estimates by state, and major metropolitan areas
- Weekly BLS unemployment insurance claim reports, which are released on Friday of each week covering the week ending the previous Saturday. These are both national and by state

Revised: 06/05/2020

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Using the employment by occupation table from the AGS 19B release (for March through June of 2020) and the 20B release (for July 2020 forward) and unemployment estimates as a baseline, we created a series of simple models by occupation of the speed and severity of expected impacts of the shutdown. Clearly, we anticipate that the first sectors impacted are those of public facing businesses such as retail, restaurants, and hospitality. Over time, other sectors will be increasingly affected even as the curve "flattens" for those first affected sectors.

Our models of the changes in occupation at the national level between our 19B release and the detailed February BLS report indicate a very good fit between the block group level occupation equations, state level unemployment totals, and national unemployment changes by occupation.

A series of adjustment factors were used in order to account for differences in the total civilian labor force and the "covered" labor force, as the ratio between the two varies significantly between states and between occupational groups.

From the updated baseline of 29 February, we have collected the weekly unemployment claims by state. The first two weeks were used as a recent control series, with the third and fourth weeks actually showing the first definitive job losses that can be directly attributed to the COVID-19 shutdowns.

These estimates are cumulated week by week and the new unemployment by occupation is distributed to the block groups in accordance with the occupation specific curves and local unique employment conditions.

Revised Methodology: January 2021

After several months of steadily declining unemployment rates in much of the country, rates in December started to increase in several states. The decision was made to release the data monthly, but still continue to include the weekly series. The main methodological changes include:

- Greater harmonization of the monthly BLS estimates with the weekly new unemployment claims and continuing claims. The UI numbers are still taken as the primary source, with changes to the monthly employment structure (primarily population in the labor force) used to adjust the

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unemployment rates locally.

- The map series has been replaced by a monthly series.

Methodology Enhancement: April 18 release

Given the drastic differences at the state level in terms of new unemployment claims as a percentage of the state labor force, we decided to implement a second level of controls on disaggregating to the block group level. A second layer of vulnerability was added to account for losses by industry by developing a "sector vulnerability" score for each industry, then creating an overall score for each block group. In effect, we estimate the cross tabulation of labor force employment by occupation and employment by industry. This has the effect of modulating losses in high risk occupations which are not necessarily tied to high risk sectors and vice-versa. This has significant impacts, for example, on workers of all occupations in areas with concentrations of food service and hospitality industry. This has the effect of broadening the effects in heavy tourist areas (Las Vegas, Orlando, etc.) to occupations which are relatively unaffected in other areas.

Over the coming months, we will no doubt review the model performance as the detailed monthly reports are released. We will alert users to such changes in the underlying models as necessary as this is a rapidly changing environment and as such, demands flexibility in methodology as the data evolves.

At this point, there are some potential significant differences in weekly reporting which may be resulting in some unexpected state level differences. For example, it was to be expected that Nevada especially would be hit hard and early in the cycle, which is definitely true. However, we are unsure as to why both Pennsylvania and Rhode Island have such high levels of claims. It may be due to differences in state reporting, state employment support programs, or the joint effects of the COVID-19 quarantines and ongoing employment issues. Pennsylvania was one of the worst performing states over the past year and had increased unemployment of 1% before the crisis began.

The answers may emerge over time regarding state unemployment claim reports, and as they do, we will alert you to them and any changes to the models which may result.

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Data Volatility: The labor force data released each week is labeled as "preliminary" and is subject to some revision the following week. For example, the March 28 report showed 878,727 new claims for California, and this figure was revised substantially in the April 4 release to 1,058,325! It is vital that users recognize that in most weeks, we anticipate that the data for the previous week will be modified.

May 22, 2020 Revisions

In order to maintain relative comparability with monthly state unemployment estimates produced by the BLS, we have adjusted model to attempt to account for both exits from the labor force and re-entrants. These have been adjusted as of mid-April using the 05/22/2020 state level release of the monthly unemployment statistics.

June 5, 2020 Revisions

The monthly unemployment situation report was released and shows the unemployment rate declining from 14.7% mid-April to 13.3% mid-May. During that four week period, a total of 10,824,051 individuals entered the UI system with an initial claim. The decrease in unemployment can be attributed to:

- The reopening of several states, which resulted in people being rehired or reinstated
- The removal of individuals from the unemployed count because they are no longer seeking employment or have permanently left the labor force
- Those who have accepted part-time work, and may in fact still be collecting some benefits, but are no longer considered unemployed

What is particularly difficult from a methodology viewpoint is that the state level monthly estimates lag nearly a full month behind the state level UI claims and total covered unemployed, and that those weekly numbers are subject to considerable inter-state variation. For example, Georgia has a labor force of about 5 million people, of which nearly 2.5 million have requested UI benefits. Despite that, the monthly unemployment figure for Georgia for mid-April did not show the massive increase in unemployment that would have been expected. At the time, the "covered unemployment" figure for the state indicated higher unemployment, but not the level suggested by the weekly new claims. The

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running tally of "insured unemployed" for several states seems to have only marginal attachment to the new claims. In California, for example, the total count reached a high of well over 3.4 million, and over a two week period dropped to 2.1 million then rose to 2.7 million. This, in conjunction with the UI new claims, does not seem mathematically likely.

At this point in the exercise we have two months of national unemployment estimates (Feb, Mar, April), and thirteen weeks of new UI claims and the insured unemployment count, but only one month of comparison to the monthly estimates. In advance of the release of the state level figures for May, we have made adjustments using a simple relationship at the state level by using a multiplier that relates the change in the "insured unemployed" state figure over time to the total number of new claims. Nationwide, about 60% of the new UI claimants over the last three months remain on the "insured unemployed" count. At a state level, this ranges from nearly 100% in Florida to a low of 31% in Oklahoma. This eliminates some of the discrepancies which we have previously noted, such as in Georgia, where unemployment rates approaching 50% were indicated by the UI filings, but not supportable from the other counts. The results bring our estimates in line with the national level unemployment rates for April and May, but still reflect some of the oddities in state level reporting we have noted. The results are especially striking in lowering the rates in Oklahoma, Georgia, and Kentucky, all three of which were showing unemployment rates that we well above expectations.

File Layouts

There are three files uploaded every Monday morning, in comma delimited format, with the following initial fields:

BG_UNEMP.CSV

- BG
- LBF (Total Civilian Labor Force)
- U19B (Unemployed, AGS 2019B release, July 1, 2019)
- PU19B (Percent unemployed, AGS 2019B release)
- UE07MAR (Unemployment, as of 7 Mar)
- PU07MAR (Percent)
- UE14MAR (Unemployment, as of 14 Mar)

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PU14MAR (Percent)
UE21MAR (Unemployment as of 21 Mar)
PU21MAR (Percent)
UE28MAR (Unemployment as of 28 Mar)
PU28MAR (Percent)

In addition, we have added, as of January 29, the file BG_MONTHLY.CSV, which includes only the fields nearest the middle of each month (e.g. 14 MAR) and includes only the percentage unemployed figure.

The county level file differs only in that the first two fields are:

CO_UNEMP.CSV
COUNTY (County FIPS Code)
NAME

The employment fields are the same as in the block group file.

ZI_UNEMP.CSV
ZIP (ZIP Code)
NAME (Post office primary name)

The remaining fields are the same as in the block group file.
Each week, two additional fields will be added to each file, starting with UE07APR and PU07APR.

Files for state (ST_UNEMP.CSV) and national (US_UNEMP.CSV) have also been added to the weekly file set.

In addition, for each level of geography, we have added files that have the entire field structure to the end of August (e.g. BG_FULLSET.CSV). This can be useful for some users in that the field structure is consistent week to week. The contents are initially set to zero if yet future.

Note For Excel Users: Excel will import the file and convert the leading character field to a number. County 01001 appears as 1001 and is formatted as a number and not as a character string. There are two ways you can correct this easily. Within Excel, select the first column, and format it as a "Custom" format on the

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dropdown menu. Enter the format string as a string of zeroes with the length of the code. For ZIP codes, you enter the format as ooooo and it will display correctly. Alternatively, you can rename the file to a .txt extension, which will cause Excel to use its "Import Wizard". Select comma delimited, but make sure that you set the ID field (e.g. ZIP) to string rather than number.

Most GIS systems will import the field correctly as a string rather than as a number, as the field in the dataset is double quoted.

Further Information

For further information, please contact AGS at info@appliedgeographic.com. Published works utilizing this dataset should identify the source as: Applied Geographic Solutions, Inc., Thousand Oaks, California and reference the weekly release as indicated by the last date field in the file.

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