Unemployment by Subgroups

The headline unemployment rate number (with FRED *Series ID* UNRATE) is widely reported and discussed. Every month, the Current Population Survey (CPS) asks about 60,000 households a series of questions and their answers are used to take the pulse of the economy.

We are pleased when we hear the unemployment rate is around 4% or that it has fallen from the previous month if it is above 4%.

We know, however, that a single number cannot possibly tell us everything about something as complicated as an entire economy. The overall unemployment rate is an aggregate, high-level view of the economy. By zooming in and breaking it into its constituent parts, we can learn more about how the economy is really doing.

Male and Female

As of this writing, the CPS gives people the option of answering that they are either male or female. We can download unemployment rates for these two groups and compare them to the overall unemployment rate.

There is a better way to get the needed *Series IDs* than searching for them, but you need the older, more stable version of the FRED Excel add-in available at tiny.cc/addin. If you installed it in the previous section, it should be available, but use the Add-in Manager (*alt t, i*) to access it, if needed.

STEP Insert a sheet in your *Unemployment.xlsx* workbook and click the *FRED* tab on the *Ribbon*. Click | Browse Popular Data Releases | and select *Household Survey*. Move your cursor over *Unemployment Rate (16yrs +)* and select it, as shown in Figure 5.5.
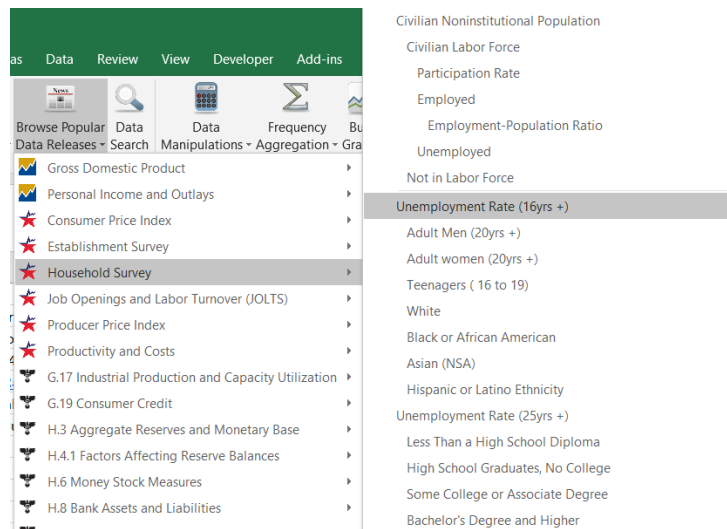
Figure 5.5: FRED Popular Data Releases options.

FRED puts *UNRATE* in cell A1. This is certainly a fast and easy way to get a *Series ID*! Of course, it only works for variables that are popular and often downloaded.

We repeat this process to get male and female unemployment rates. As you do it, be sure to look at the other variables available in the household survey (which is the CPS). Notice how some of them are indented, capturing the logic of the survey.

$STEP$ Click | Browse Popular Data Releases | and select *Household Survey* again, but this time select *Adult Men (20yrs +)*. Repeat one more time, but select *Adult Women (20yrs +)*.

FRED places the *Series IDs* for male and female unemployment rates in cells C1 and E1. With this information, we are ready to download the data.

$STEP$ Click | Get FRED Data |.

With the data downloaded, we can proceed to create a chart that compares male and female unemployment.

$STEP$ Click | Build Graph | and select *Create Multiple Series Graph*. Select both LNS series.

FRED creates the chart, but it is not ready for prime time. The legend needs work and it has no title.

STEP Copy and paste the chart. In the pasted chart, make the legend display *Male (20yrs +)* and *Female (20yrs +)* by directly editing the SERIES formula. Move the legend text box so that it does not obscure the plotted data. Add a title. See the appendix if you need help.

Your finished chart should look like Figure 5.6. Notice that the female unemployment rate used to be higher than male from the 1950s to the mid 1980s. Since then, they are roughly similar except for the Great Recession of 2008. Surprisingly, the male unemployment rate was much higher than female during that time period.
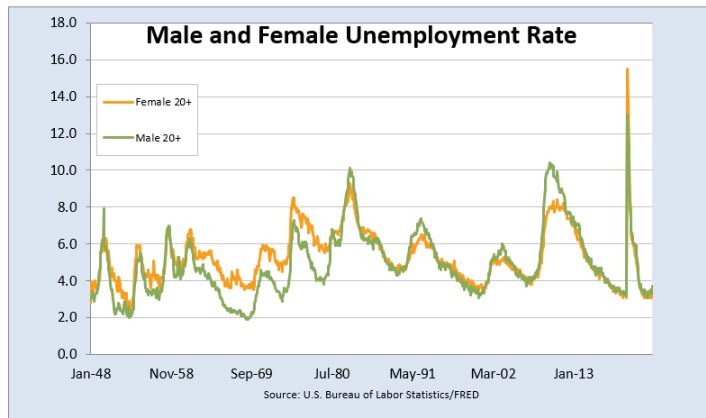

Figure 5.6: A FRED chart of historical male and female unemployment rate.

Teenage Unemployment

STEP Insert a new sheet in your workbook and download the overall unemployment rate and the teenage unemployment rate. Create a chart of these two series with a descriptive legend and title. Follow the same steps as before.

Figure 5.7 shows that the teenage unemployment rate is always much higher than the overall unemployment rate. The reason is not simply because many teenagers do not work. Remember, many teenagers in high school or college will say they are not looking for work so they are not counted as unemployed.
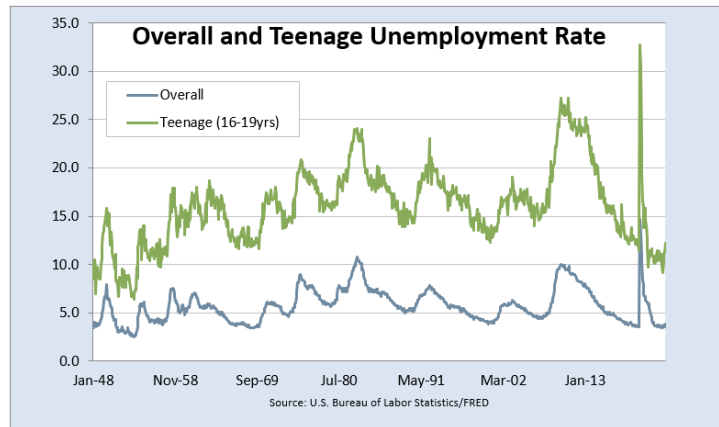
Figure 5.7: Teenage unemployment is always higher than overall.

Teenage unemployment is always so high because teenagers who are looking for work are unskilled and have relatively few potential job opportunities. Thus, teenagers who want to work have a difficult time finding a job.

Teenagers are especially vulnerable during recessions when their already high unemployment rate goes even higher. Figure 5.7 shows that the pandemic was especially hard on teenagers as their unemployment rate was over 30%.

Unemployment by Race and Ethnicity

We can use Browse Popular Data Releases to select the unemployment rate for the available racial and ethnic groups. We download data for the overall, White, Black, Asian, and Hispanic groups, with Series IDs of UNRATE, LNS14000003, LNS14000006, LNS14032183, and LNS14000009, respectively. Then we make a chart using the *Scatter* type as described below. Figure 5.8 shows the result of this work.

Figure 5.8 can lead to confusion and misunderstanding. The differences observed between these groups are not necessarily indicative of their abilities, but rather a consequence of complicated historical and societal forces.

The main message of Figure 5.8 is the tremendous variability across these groups. Black unemployment rates are the highest, with Hispanic unemployment also higher than overall. The Asian unemployment rate is the lowest.

The Asian, White, and overall unemployment rates are pretty tightly clumped together, but the Hispanic rate is often several percentage points higher. The Black unemployment rate is sometimes ten percentage points higher—a truly staggering difference.
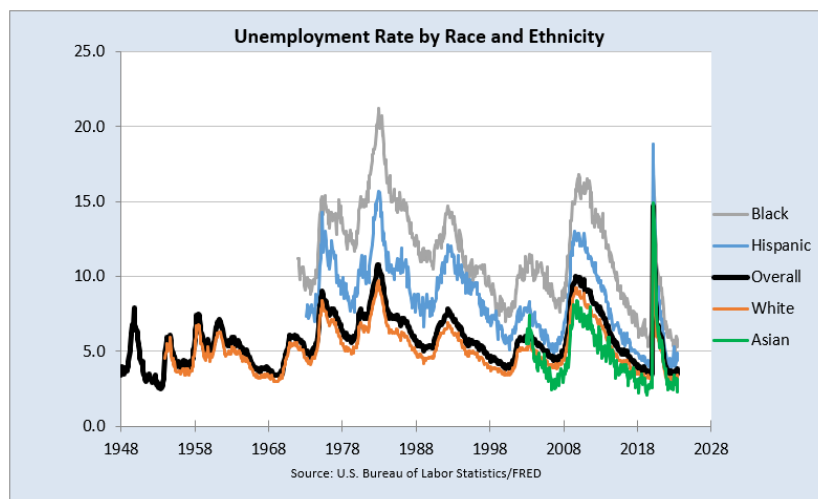

Figure 5.8: High variability in unemployment rate by race and ethnicity.

While FRED's ‖Build Graph‖ tool allows selection of only three series, we created Figure 5.8 by adding more series by copying and pasting the SE-RIES formula and editing it.

We also had to change the chart type from *Line* to *Scatter* to get around the fact that the variables have different start dates.

Excel stores dates as a number, the number of days since January 1, 1900. Confusingly, Mac Excel 2008 and earlier used a date system based on 1/1/1904. Many mistakes were made when a workbook was shared across Windows and Mac Excel, but today's workbooks avoid this complication.

STEP Select cell A8 and click the down arrow on the ‖Format‖ button in the Home tab. Select the *Format Cells* option at the bottom of the list, then select *General* as shown in Figure 5.9 and click OK.
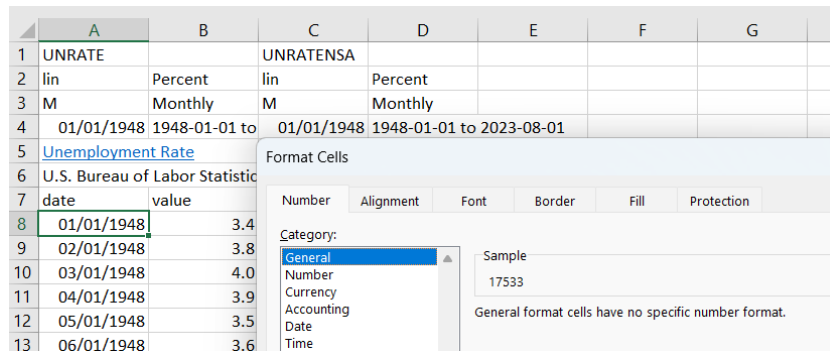
Figure 5.9: Formatting date values.

Excel shows 17533 in cell A8. This is the number Excel has for that cell. If you format it as a date, it can be displayed in a variety of date formats.

> *EXCEL TIP* Dates in Excel are numbers. This means they can be manipulated by mathematical operations like addition and multiplication. The exact same date value can be displayed in many ways, such as 3/14, 14-Mar, and so on.

To make sure you truly understand how dates are handled in Excel, try this quick example.

STEP Enter the dates 1/1/1899, 1/1/1900, and 1/1/1901 in three separate cells. Format the cells as *General*.

Excel displays 1/1/900 as 1 and 1/1/1901 as 367 (1900 was a leap year so it had 366 days). Nothing, however, happens to 1/1/1899 because it is not a number, it is text (notice the left-justification). You can subtract 1/1/1900 from 1/1/1901 and get 366, but you cannot use 1/1/1899 (or any date before 1/1/1900) in an arithmetic operation. This is worth remembering if you ever work with dates older than 1/1/1900.

Now that you really understand that dates are numbers, it is easy to see that we can make a *Scatter* chart using dates as the x axis variable.

STEP Create a chart of the UNRATE series alone using the Build Graph tool. Click on the chart and in the *Design* tab, click the Change Chart Type button and change the type from *Line* to *(X Y) Scatter* and select *Scatter with Straight Lines*. Click *OK*.

The horizontal axis now starts from zero and there are so many labels that it looks like a thick black line under the horizontal axis. We need to fix this.

STEP Double-click the x axis and change the minimum value to 17533 (which is the date 1/1/1948) and change the Major units to 3650 (so every ten years). Enter *yyyy* in the *Type* field in the *Number* options at the bottom.

Although FRED's Build Graph tool allows a maximum of three series on a chart, you can add more variables to an existing chart by copying, pasting, and editing the SERIES formula. Your final goal is a chart like Figure 5.8.

Figure 5.8 also has several enhancements that improve its readability:

1. The series are ordered with Black as 1 and Asian as 5 so that they are listed in the legend in that order. This makes it easier for the reader to understand that Black unemployment is highest and Asian is lowest.

2. The dates on the x axis are formatted in years.

3. The overall series is thicker and colored black to help it stand out.

The legend text order can be difficult to control. Microsoft support says this, "Under Chart Tools, on the Design tab, in the Data group, click Select Data. In the Select Data Source dialog box, in the Legend Entries (Series) box, click the data series that you want to change the order of. Click the Move Up or Move Down arrows to move the data series to the position that you want."

Unemployment by Education

The final set of subgroups available in the Browse Popular Data Releases is education. Like race and ethnic groups, there is great variation in unemployment rates by education level.

STEP Click Browse Popular Data Releases and get the unemployment rate for people aged 25 years and older, along with the four subgroups below it. Create a chart that clearly displays the unemployment rate of these groups.

Takeaways

The Browse Popular Data Releases button is another way to use FRED. While we focused on the household survey (CPS) and unemployment rates, it is easy to see that there are many other popular data series that are a click away.

While UNRATE, the overall unemployment rate for the United States, is undoubtedly the main indicator of economic performance, it is also true that it suppresses a great deal of variability.

Different subgroups experience wildly different levels of unemployment. Especially during recessions, teenagers, Black and Hispanic, and less-educated people suffer disproportionately higher unemployment.

Disaggregating the unemployment rate to reveal differences among subgroups is an example of a general strategy. Like an average hides dispersion in a list of numbers, UNRATE never tells the whole story.

Appendix

Editing the Legend Text

STEP Click the male unemployment series so you see its formula in the formula bar: =SERIES("LNS14000025",MF!$C$8:$C$915,MF!$D$8:$D$915,1). Replace *LNS14000025* with *Male (20yrs +)*. Press enter.

Repeat this procedure for the female unemployment rate.