

# Pandemic 101: A Roadmap to Help Students Grasp an Economic Shock

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This article focuses on the major national economic indicators and how they changed over the course of the COVID-19 pandemic. The indicators that we discuss include Gross Domestic Product (GDP), the unemployment rate, interest rates, inflation, and other variations of these measures. We will also present data that sheds light on the monetary and fiscal policy responses to the pandemic. Graphs of these statistics are sure to grab teachers' and students' attention due to the dramatic shock fueled by the pandemic. We will explain these economic indicators with additional attention to what they measure and the limitations they may present. Teachers will be introduced to the Federal Reserve Economic Database (FRED), which is a rich source of graphs and information for teacher instruction and student research. Further classroom-based resources related to understanding the economic effects of the COVID-19 pandemic are also presented.

## The Pandemic and the Economy

The COVID-19-induced pandemic has had an impact on nearly every area of life. Beginning with lockdowns mandated in most states in March 2020, the way Americans work, socialize, travel, spend money, attend school, and nearly everything else has been affected. Of course, this has been widely reported in the media and has dominated the public conversation for months. However, it is also interesting to look at this pandemic from an economic perspective. Economic data reveals the impact of many of these changes. For teachers and students, a review of this data can be an intriguing way to engage with the sometimes-drab subject of macroeconomic data analysis. The Federal Reserve Economic Data (FRED) website provides a convenient tool for gathering, graphing, and discussing economic data (<https://fred.stlouisfed.org/>).

Students may be familiar with economic shocks of the past like the Great Depression and World War II; however, this article addresses a present-minded study of the shock they are currently living through.

## The Economic Statistics

### *GDP, Production, and Spending*

The most widely used measure of the total economy is real GDP. Real GDP measures the total of all final goods and services produced within the United States over a time period and is adjusted for inflation. To avoid double counting only final goods and services are counted. (You would not want to count the car's radio and the car since the car's overall price already reflects the value of all of its components.) Ownership does not matter in GDP, only location. The output from a Toyota plant in Kentucky is included

within the United States real GDP; the output from a Ford plant in Canada is not. Economists typically measure real GDP as a growth rate per quarter: Is GDP getting bigger or smaller compared to a prior quarter? In fact, a common definition of a recession is two quarters in a row of declining real GDP. Incidentally, it also measures total U.S. income (and spending) and that explains why real GDP per capita is a well-established measure used to compare how affluent one nation is compared to another. (U.S. real GDP per capita is about \$56,000; it is closer to \$3,000 in Nigeria.)

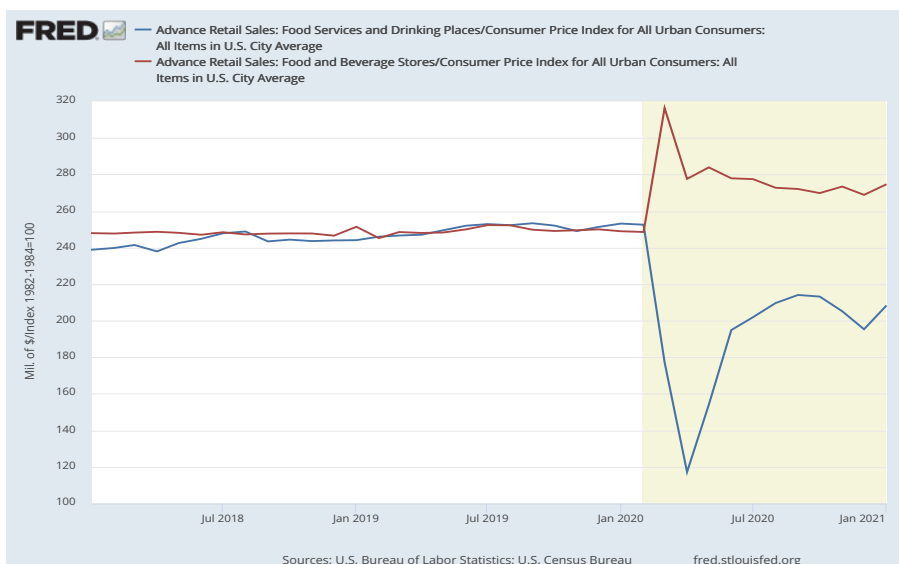
An examination of Figure 1 reveals the percentage change in growth in real GDP since 2007 by quarter. Over most of that period the U.S. economy was in an expansion. The shaded area on the left side of the chart shows the recession induced by the financial crisis in 2008 and 2009. And the dramatic data on the right side of the graph shows the present situation. There was a huge decline in real GDP in the second quarter of 2020 as states imposed lockdowns on their residents and economies. However, real GDP snapped back at the fastest rate in U.S. history in the third quarter, growing at an annual rate of more than 33 percent, as efforts to reopen businesses and resume postponed activities previously restricted due to COVID-19 grew over the summer.

Figure 1. Quarterly Percentage Change in Real GDP for United States, 2007 to Present



While real GDP provides a macro-level look at the state of the economy, it is possible to drill down deeper to investigate sectors of the economy strongly affected by the pandemic. Figure 2 shows sales of food and beverages in the U.S. between 2018 and today after adjusting for inflation. The red line represents sales in stores (grocery and liquor stores) while the blue line represents sales in restaurants and bars. The first interesting thing to note is that there are some stretches of time (September and October 2019, January 2020) where Americans purchased more food and beverages in restaurants than at grocery stores. More interesting for our purposes, however, is the major inflection point beginning in February of 2020. As the pandemic struck and lockdowns were instituted, a dramatic increase in food and beverage purchases in stores occurred while an even larger drop in restaurant and bar sales transpired. The difference between these two series of data narrowed beginning in the spring and into the summer; however, neither has yet returned to their more normal trend.

Figure 2. Food and Beverage Sales in Restaurants and Stores, 2018 to Present



A final meaningful chart related to U.S. production and spending habits as influenced by COVID-19 is shown in Figure 3 (on p. 67). The chart shows rail, air, and vehicle miles traveled by Americans. All dropped off suddenly as the pandemic struck—with obvious implications for airlines, Amtrak, and oil and gas producers. The only sector to partly recover was vehicle miles as Americans began to drive more as lockdowns were lifted. While many chose summer driving trips over flying, the number of miles driven continues to be well below trend as so many people continue to work from home.

# Ten Useful Teaching Resources on the Economics of COVID

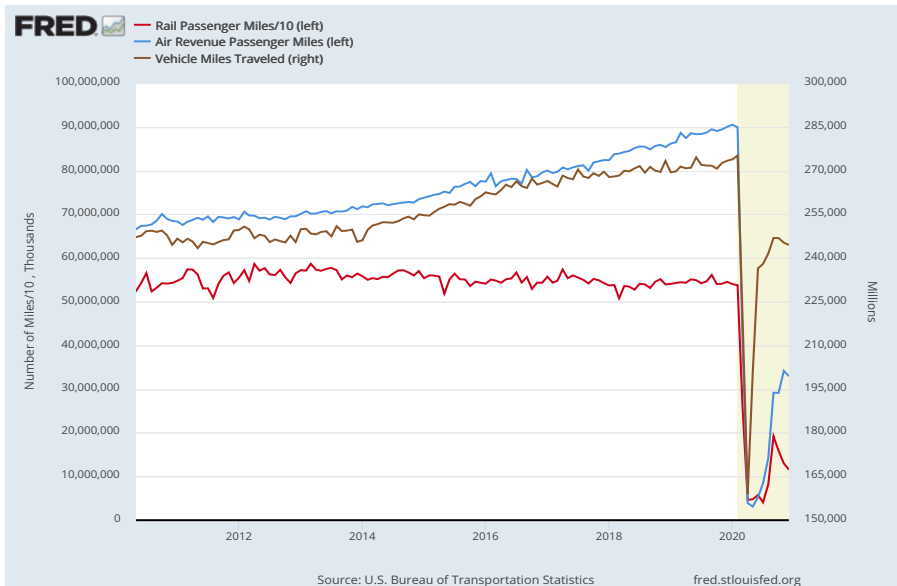
1. *The COVID-19 Article Archive* (<https://fee.org/archive/topics/COVID-19>) from the Foundation for Economic Education is a rich set of collected articles that take a closer look at the pandemic from an economic perspective beginning in February 2020 up to present day. Of particular interest is an article that explores the economics behind why toilet paper shortages occurred around the world (<https://fee.org/articles/why-are-there-toilet-paper-shortages-around-the-world/>).
2. Northeastern University's *Pandemic Initiative* is a two-part module on economic efficiency and market failure, applying both concepts to the policy responses experienced during the COVID-19 pandemic. This website includes lectures, slides, and activities along with links to recommended readings (<https://cssh.northeastern.edu/pandemic-teaching-initiative/why-markets-fail-the-economics-of-covid-19/>).
3. Marginal Revolution University's *Externalities and Incentives: The Economics of COVID* is a short video that focuses on the positive externality of the COVID-19 vaccine and includes a set of practice questions (<https://mru.org/courses/principles-economics-microeconomics/externalities-and-incentives-economics-covid>). As an extra bonus, it is embedded within their overall lesson on positive and negative externalities, and serves as a relatable, real-world example for your students.
4. For an interactive overview of *How COVID has Affected the US Economy*, turn to this Kahoot activity by PBS NewsHour EXTRA. Have students read an article about workers seeking unemployment benefits along with a short summary on the relevant jobs report, unemployment rate, and worker shortages, then engage in a learning checkpoint with the included interactive quiz. ([www.pbs.org/newshour/extra/2020/06/kahoot-activity-how-covid-has-affected-u-s-economy/](http://www.pbs.org/newshour/extra/2020/06/kahoot-activity-how-covid-has-affected-u-s-economy/))
5. *The Economist* has built a YouTube playlist *Coronavirus: COVID-19 and its Consequences* which houses both short and long video clips appropriate for assigning to your students (<https://youtube.com/playlist?list=PL0KWoY2XZKw6TDr76U8mPNr9ioxfqOm51>). For macroeconomics students, the video "Inflation: Could COVID-19 Cause Prices to Rise" explains how unexpected or volatile inflation can be particularly disruptive and includes a historical perspective on the relationship with inflation experienced by the United States (<https://youtu.be/8Enam9uNqb4>).
6. Econ Films has a new, dedicated YouTube channel, *CoronaNomics* with a series of videos that begin in April 2020. They address the closing of the U.S. economy, highlight the unexpected growth that countries may experience due to the pandemic shakeup, and even dive into how behavioral science can help us understand actions by individuals and governments. ([www.youtube.com/CoronaNomics](http://www.youtube.com/CoronaNomics))
7. *COVID-19 and the National Debt* is a lesson for 9<sup>th</sup>-12<sup>th</sup> grade students made available by the Council for Economic Education where students will learn about the potential costs and benefits associated with increasing the nation's debt. This lesson includes an on-demand webinar, presentation slides, and assessment questions for registered users of the free EconEdLink portal ([www.econedlink.org/resources/covid-19-and-the-national-debt/](http://www.econedlink.org/resources/covid-19-and-the-national-debt/)).
8. The Federal Reserve Bank of St. Louis' lesson, *Retail Sales, Employment, and the COVID-19 Pandemic* ([www.stlouisfed.org/education/retail-sales-employment-pandemic](http://www.stlouisfed.org/education/retail-sales-employment-pandemic)), includes a short video with key data visualized using Federal Reserve Economic Data (FRED) charts. More importantly, it acts as an introduction to charts on spending, job losses, the unemployment rate, the federal funds rate, and more along with detailed notes on each topic, which allow students to dig deeper into each chart series. Charts specific to keeping an eye on topics related to the pandemic can be found on the *COVID-19 Economic Data Tracking* dashboard produced by the economic research team at the St. Louis Fed (<https://research.stlouisfed.org/dashboard/49765>).
9. Wohl Publishing published a timely "Then and Now" article comparing the economic impact of the COVID-19 pandemic with the Spanish flu pandemic of 1918. This new resource is part of their popular *Economic Episodes in American History* textbook designed for high school U.S. History teachers (<http://wohlpublishing.com/economicepisodes/contact.html>).
10. The Federal Reserve Bank of New York has developed two pandemic lessons ([www.newyorkfed.org/outreach-and-education/ny-fed-content-for-educators](http://www.newyorkfed.org/outreach-and-education/ny-fed-content-for-educators)), one on *GDP and the Circular Flow Model During COVID-19* for middle school students ([www.newyorkfed.org/medialibrary/media/outreach-and-education/ny-fed-content-for-educators/COVID19-and-the-Economy-Middle-School-Lesson-Plan.pdf](http://www.newyorkfed.org/medialibrary/media/outreach-and-education/ny-fed-content-for-educators/COVID19-and-the-Economy-Middle-School-Lesson-Plan.pdf)), and one on *The Flow of Money: Monetary Policy During COVID-19* geared for high schoolers ([www.newyorkfed.org/medialibrary/media/outreach-and-education/ny-fed-content-for-educators/COVID-Monetary-Policy\\_High-School-Lesson-Plan.pdf](http://www.newyorkfed.org/medialibrary/media/outreach-and-education/ny-fed-content-for-educators/COVID-Monetary-Policy_High-School-Lesson-Plan.pdf)). Each lesson plan includes all handouts, readings, and remote learning options for teachers.

## Unemployment

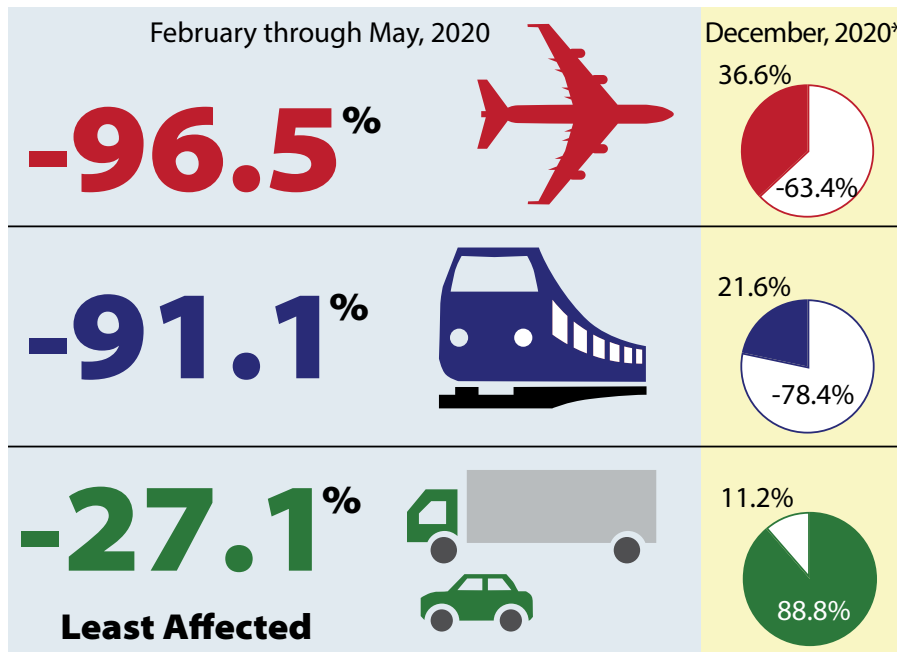
Other closely watched statistics by economists are related to unemployment. Of course, unemployment is closely related to GDP. If less goods and services are being produced in a given time period, fewer employees are needed to produce it. That relationship is quite clear in Figure 4 (on p. 68), which shows the U.S. unemployment rate from 2007 to today.

Not surprisingly, as the pandemic began, lockdowns were implemented and real GDP declined, while the unemployment rate soared. The rate rose abruptly from 3.5 percent in February of 2020 to 14.7 percent by April of that year— an unprecedented increase. As Figure 4 shows, the unemployment rate took almost two years to rise from

Figure 3. **Passenger Miles by Rail, Air and Vehicle in U.S., 2010 to Present**



## Decline in Passenger Miles by Air, Rail, and Vehicle During the Pandemic



\* The area in white in the pie-charts is the percentage decline since February 2020.

5 percent to just over 10 percent during the prior recession.

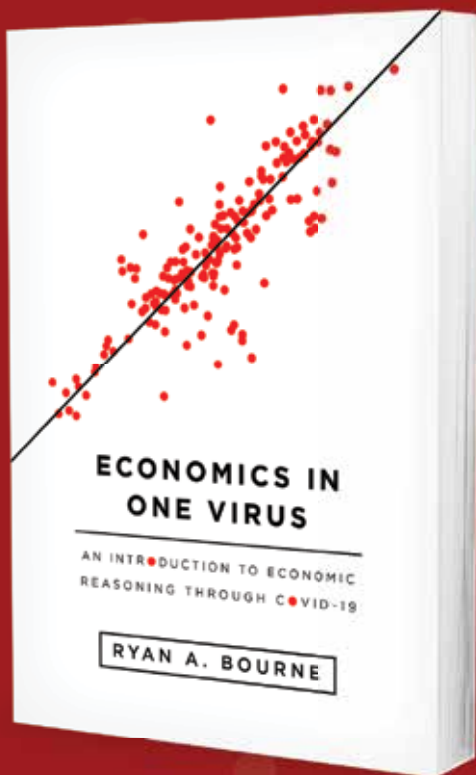
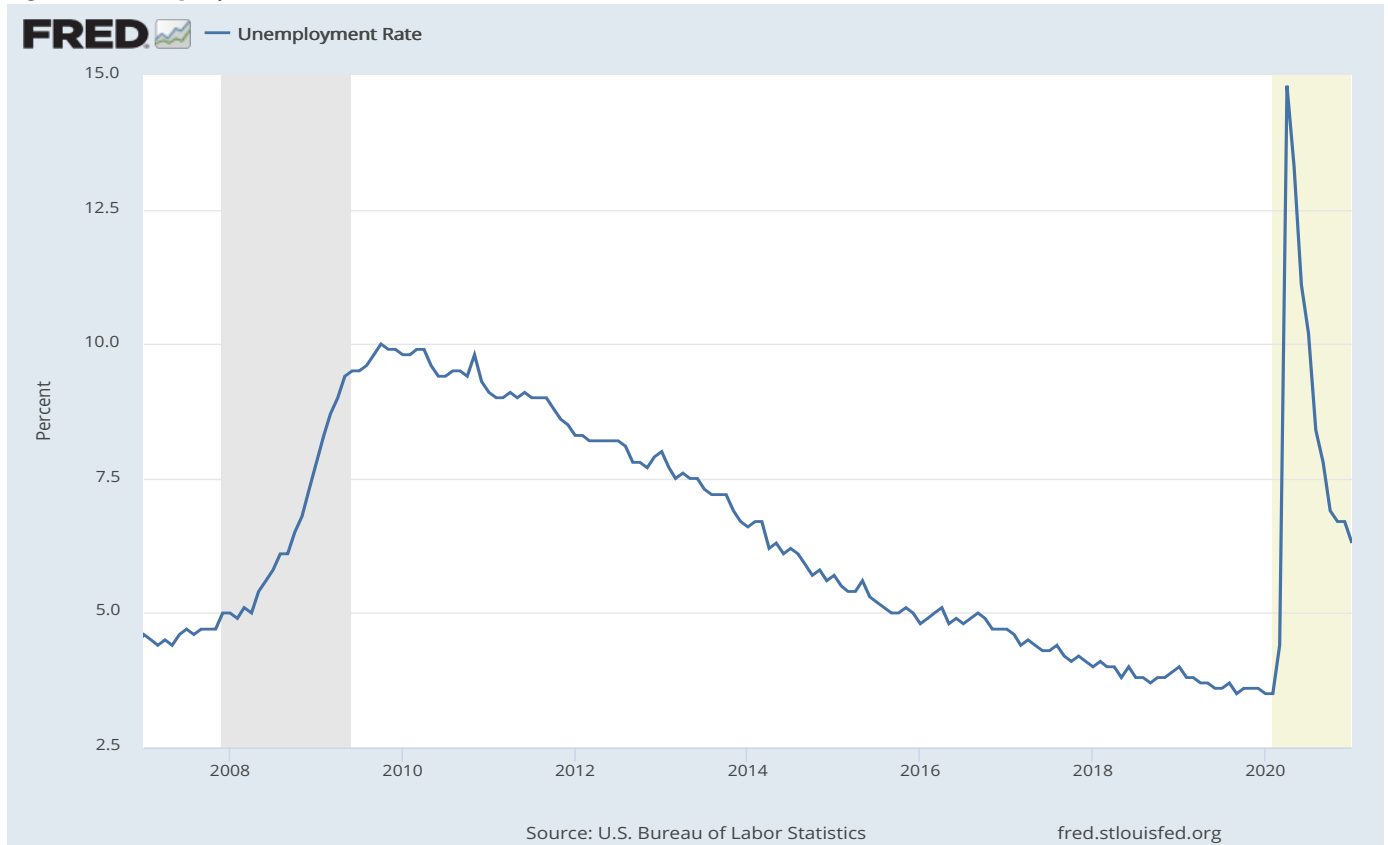
Of course the increase in unemployment did not affect everyone equally. Those who could continue to work via virtual platforms like Zoom were less impacted. Those, however, who work in customer facing service occupations were dramatically impacted as restaurants, bars, and hotels closed in an effort to control the spread of the coronavirus. Figure 5 (on p. 69) makes this point as the job losses are significantly more acute among those without a high school diploma when compared to those with more education, in particular a bachelor's degree.

**“Those, however, who work in customer facing service occupations were dramatically impacted as restaurants, bars, and hotels closed in an effort to control the spread of the coronavirus.”**

## Prices and Inflation

The consumer price index measures the level of price inflation based upon a basket of goods and services the typical American family consumes each month. This statistic reveals that the United States experienced some deflation (overall price level falling) in March and April of 2020. This is not surprising as the economy contracted significantly, and businesses chose to lower prices in an effort to increase sales. As an example, the price of gasoline declined substantially as demand waned while Americans cut back on their normal travel, including commuting to work. As the lockdowns were relaxed, very low levels of price inflation, as illustrated in Figure 6 (on p. 70) occurred in the fall. This headline measure of inflation masks some of the price impacts of the pandemic in particular industries or sectors.

Figure 4. Unemployment Rate in United States, 2007 to Present



# New from the Cato Institute

**D**rawing on the dramatic events of 2020, *Economics in One Virus* brings to life some of the most important principles of economic thought. Packed with supporting data and the best new academic evidence, those uninitiated in economics will be given a crash course in the subject through the applied case study of the COVID-19 pandemic to help explain such things as the role of the price mechanism, trade and specialization, and how economists go about valuing the lives saved from lockdowns.

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As an example, prices increased substantially for meat like steak, pork, and chicken in May and June as people cooked more and ate at home and, in some cases, stockpiled food and other necessities out of concern about potential shortages. This pattern is shown in Figure 7 (on p. 70). In contrast, Figure 8 shows large price declines for hotels as demand plummeted. Interestingly,

casino prices appeared to be much less affected.

#### Fiscal and Monetary Response

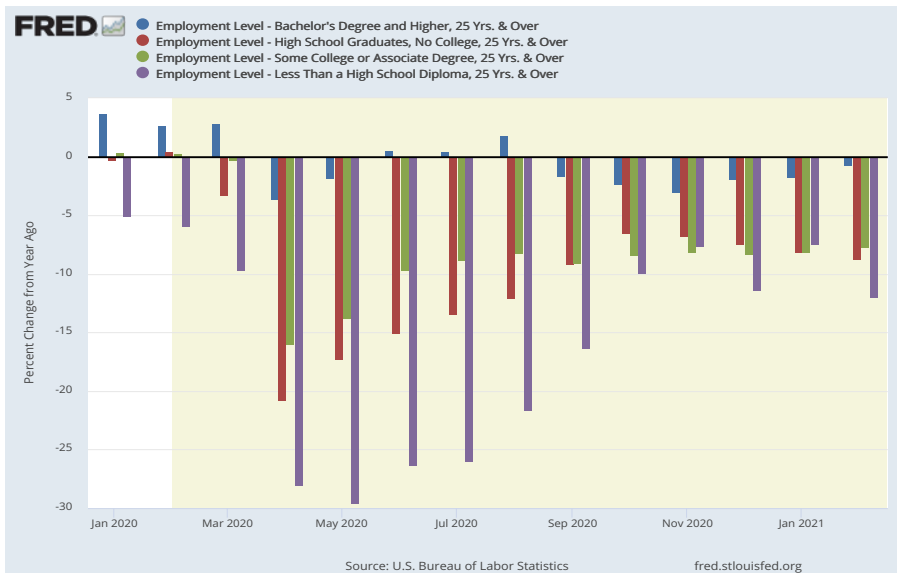
As the pandemic struck, and the impact on the economy became apparent, both the Federal Reserve (monetary policy) and Congress (fiscal policy) took dramatic actions. As can be seen in Figure 9 (on p. 71), the Fed cut its key interest

rate—the Federal Funds Rate—quickly to a level near zero percent. This was done in an attempt to spur economic activity including business expansion and home building, among other sectors. This low level of interest rates was last experienced as the Fed cut rates during the 2008–2009 financial crisis.

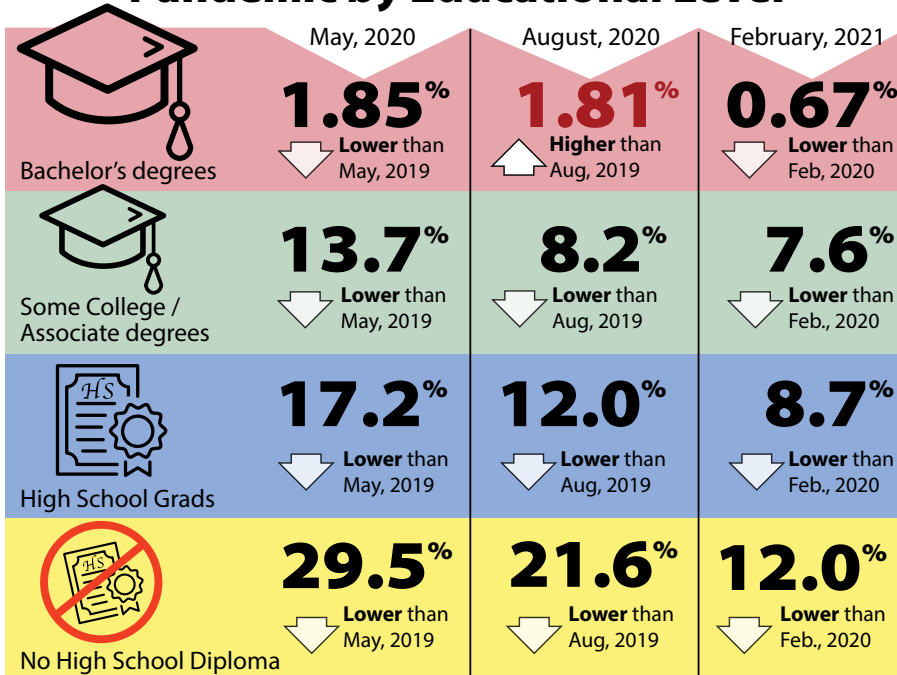
In addition to the monetary response by the Fed, fiscal policy was enacted in a large way. The Coronavirus Aid, Relief, and Economic Security (CARES) Act was passed by Congress with bipartisan support and signed into law by President Trump on March 27, 2020. This more than \$2 trillion economic relief package included assistance to workers and families, small businesses, and state and local governments. Figure 10 (on p. 71) documents this huge increase in federal government spending.

Of course, when the government initiates such an enormous new spending plan without equivalent new revenues to pay for it, the result is an increase in the national debt. Figure 11 (on p. 71) shows that impact as a share of GDP. The federal debt now stands at a level equal to more than 135 percent of Gross Domestic Product. One way to think about this huge debt level is that even if all the income earned by Americans through producing a year's worth of goods and services were spent on debt reduction, we would still not cover the bill. The actual size of this debt is approximately \$27 trillion or more than \$82,000 per citizen.

Figure 5. Job Losses by Level of Education in United States



## Decline in Employment During the Pandemic by Educational Level



### Conclusion

The economic impact of the COVID-19 pandemic will be felt long after it is over. It has changed our lives at an unprecedented rate. It has even changed our classrooms, how we teach, and how we interact. When we, and our students, emerge into the new world around us we will likely recall this time as a pivotal historical moment in our own lives and will be looking for ways to understand what we have lived through.



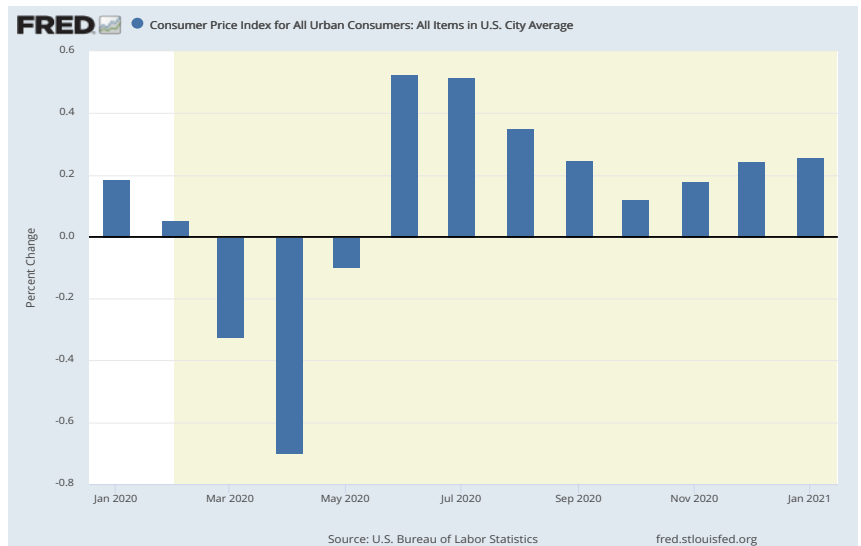
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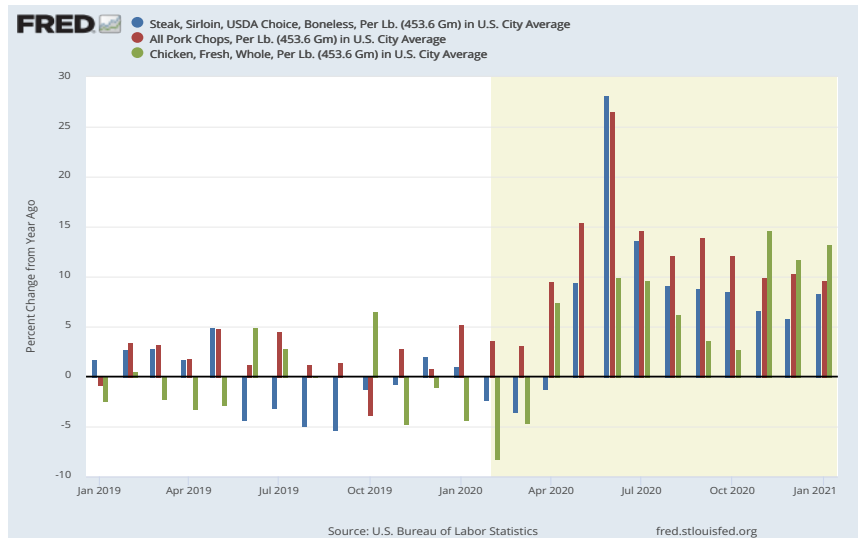
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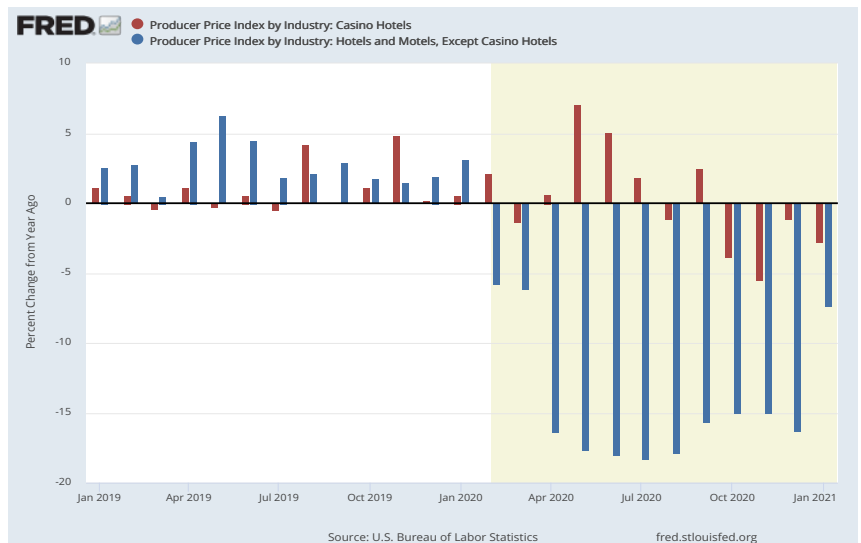
**Figure 6. Monthly Percentage Change in Consumer Price Index for United States, 2020**



**Figure 7. Change in Prices for Steak, Pork and Chicken**



**Figure 8. Change in Prices for Hotels and Casinos**



Exploring the wide breadth of macroeconomic data that is at our fingertips can help our students better grasp how the economy works and give context to life in a pandemic. Concepts that are predominantly framed in historical events, such as World War II, that our students no longer remember often fade quickly into the background. By making economics relevant to the tumultuous period they are living in, we give macroeconomic statistics like GDP, unemployment, and the Consumer Price Index new life. These economic statistics are still the same as they have always been; they simply have a new story to tell. 🌍



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Figure 9. **Federal Funds Rate**

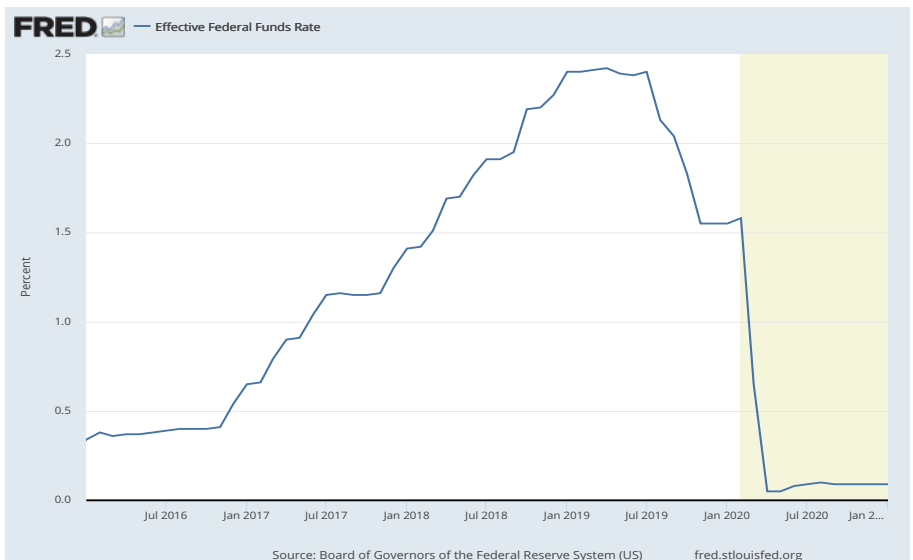


Figure 10. **Government Spending**



Figure 11. **Federal Debt as a Percentage of Gross Domestic Product**

