

Inflation Outlook and Statistical Analysis Software Resources

About This Column

Resource Center is about all types of information resources that may be helpful for real estate market analysts and valuers—from print and online publications to data sources and websites. In this edition of Resource Center, we take a look at the latest resources on the economic outlook, inflation, and the consumer price index. The column also points researchers to the latest statistical software available online—both free and fee-based.

Economic Outlook

Many observers of the economy were surprised at the health of the real estate sector of the economy during the COVID-19 pandemic.¹ But as we look forward, concerns proliferate about issues such as

- possible interest rate increases;²
- shifting retail trends;³
- property re-use alternatives;⁴
- likelihood of higher or new taxes;
- changes in work location (office versus remote);⁵
- population shifts and changing attitudes about high-density urban living;⁶
- changing warehouse, logistical, and industrial real estate needs;
- polarization of economic and public policy positions;
- use of blockchain and cryptocurrencies; and
- inflation outlook.

For easy, direct access to the URL addresses noted throughout this article, read this column online. Go to https://bit.ly/TAJ_Articles and click on "Latest Issue."

1. In the first half of 2020, common wisdom was that the pandemic would mean deferral of major spending decisions. However, reports during the 2021 first quarter noted the opposite; see Soma Biswas and Harriett Torry, "Coronavirus Was Supposed to Drive Bankruptcies Higher. The Opposite Happened," *Wall Street Journal*, March 29, 2021, <https://on.wsj.com/3wff9ewP>; Nicole Friedman, "US Home Prices Rise at Fastest Pace in 15 Years," *Wall Street Journal*, March 30, 2021, <https://on.wsj.com/3m515WO>; Nicole Friedman, "The Pandemic Ignited a Housing Boom—but It's Different from the Last One," *Wall Street Journal*, March 15, 2021, <https://on.wsj.com/3rwW1w>; and Peter Lan Taylor, "COVID-19 Set America's Housing Market on Fire," *Forbes*, March 11, 2021, <https://bit.ly/2QRQWkZ>.
2. For reference, the 15-year first mortgage interest rate has been under 4.5% for the past decade, which has stimulated commercial and residential real estate markets. During the prior decade, the rate declined from 8.25% to 4.25% (stated rates vary a little depending on source).
3. For discussion of e-commerce trends, see "A Decade in Review: Ecommerce Sales vs. Retail Sales 2007–2020," *Digital Commerce 360*, January 29, 2021, <https://bit.ly/3cwff09>; Michelle Evans, "Five E-Commerce Trends That Will Change Retail in 2021," *Forbes*, January 12, 2021, <https://bit.ly/39I1U8S>; and Maryam Mohsin, "10 Ecommerce Trends," *Oberlo* (blog), April 3, 2021, <https://bit.ly/3fed1CW>.
4. For example, see Beth Mattson-Teig, "Adapting CRE to Covid-19," *CIRE* (Spring 2021), available at <https://bit.ly/3fzO8Dx>; and Byron Smith, "Surviving Retail in Troubled Times," *CIRE* (Spring 2021), at <https://bit.ly/3dbVKsV>.
5. "Remote Work Trends and Stats for 2021: The Present and Future of Remote Work after COVID," *Remoters* (blog), <https://bit.ly/3csoLBw>; Caroline Castrillon, "This Is the Future of Remote Work in 2021," *Forbes*, December 27, 2020, <https://bit.ly/2QMqzH>; and Brian Kropp, "9 Trends That Will Shape Work in 2021 and Beyond," *Harvard Business Review*, January 14, 2021, <https://bit.ly/3dcrw96>.
6. For example, see Amanda Barroso, "About Half of Americans Say Their Lives Will Remain Changed in Major Ways When the Pandemic Is Over," *Pew Research Center*, September 17, 2020, <https://pewrsr.ch/3fmcckB>.

Inflation Rates

Concern about the economy's outlook for inflation arises largely from the widespread thought that the COVID-related federal stimulus packages⁷ will be inflationary because of the massive amounts of money⁸ put into the economy. Others disagree, however, and believe the Federal Reserve's long-term 2% inflation target can and will be achieved using Federal Reserve (Fed) and US Treasury tools. The Fed has developed informational documents "in plain English" on how monetary policy tools influence the economy and inflation:

- "How Monetary Policy Works" (<https://bit.ly/3m3sUPA>)
- "What Is the Fed: Monetary Policy" (<https://bit.ly/2PDplDz>)
- "Monetary Policy Basics" (<https://bit.ly/3w7WJm1>).⁹

The Dictionary of Real Estate Appraisal, sixth edition, defines *inflation* as "an erosion of the purchasing power of currency characterized by price escalation and an increase in the volume of money, i.e., the proliferation of monetary units and consequent decline in the value of each unit."¹⁰ Many people remember the inflation of the 1970s, when the US inflation rate was into the teens. Mortgage interest rates between 1970 and 1981 increased from about 7.5% to 18% and did not return to about 7.5% until after 2000. Since 2000, mortgage interest rates have contin-

ued the decline and been under 5% for a decade. That is why the mortgage rates of the last decade have looked so attractive. Exhibit 1 illustrates the inflation rate over a sixty-year period. As the exhibit shows, the US inflation rate has been under 5% for over three decades. By way of comparison, Exhibit 2 illustrates the mortgage rates during periods of high and low inflation.

Inflation Impacts

Inflation is of importance to the real estate analyst and appraiser because inflation (price changes over time) and expectations about inflation affect the actions and decisions of real estate sector participants. Inflation impacts

- buyer and seller confidence, thinking process, and motivations;
- pricing (listings and offers);
- strategies in planning and development;
- investing motivations, calculation, analysis;
- leasing and lease terms;
- relocation decisions;
- buy-hold-lease-sell judgments;
- discounted cash flow forecasting incomes, expense, and value change anticipations;
- borrowing and lending decisions; and
- considerations of investment risk.

In the aftermath of government measures designed to offset economic damage during the pandemic, many analysts, economists, and others are concerned about the likelihood of rising

7. The stimulus packages as of press time include the following: (1) the \$2.2 trillion CARES Act (March 2020)—for details on the CARES Act, see <https://www.jpmorgan.com/insights/research/cares-act>; (2) the \$2.3 trillion Consolidated Appropriations Act (December 2020)—for detail on this act, see <https://bit.ly/3rCqgl2>; (3) the \$1.9 trillion American Rescue Plan (March 2021)—for detail on the Rescue Plan, see <https://bit.ly/2QDtkAi>.

8. For readers interested in additional information on the cost of the COVID-19 packages, see "How Are We Paying for the Federal Response to the Coronavirus?" Peter G. Peterson Foundation, February 5, 2021, <https://bit.ly/201XqwB>.

9. For additional information on the topic, see Kimberly Amadeo, "Monetary Policy Tools and How They Work," *The Balance* (April 30, 2021), <https://bit.ly/3syqElw>; and Eric Petroff, "The Fed's Tools for Influencing the Economy," *Investopedia*, December 7, 2020, <https://bit.ly/3w7xgK1>.

10. Appraisal Institute, *The Dictionary of Real Estate Appraisal*, 6th ed. (Chicago: Appraisal Institute, 2015), s.v. "inflation."

inflation. During an inflationary period, consumers will see a broad rise in price levels and a fall in their purchasing power, i.e., a dollar effectively buys less than it did in prior periods.

The Consumer Price Index (CPI) is an important economic indicator, and the principal measure of inflation (and deflation).¹¹ Inflation as measured by the consumer price index is the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.¹² It examines the prices of consumer goods and services, such as transportation, food, and medical care, associated with the cost of living. A decline in purchasing power measured using the average price level of the basket of selected goods and services indicates inflation.¹³

The CPI is computed by the US Bureau of Labor Statistics (BLS). The BLS's CPI homepage, <https://www.bls.gov/cpi/>, offers an overview of the index, myriad CPI publications, online data, explanations of the measurement methodology, and interactive tools for computing inflation over time.¹⁴ Some key CPI resources available from the BLS include the following:

- **Factsheets about CPI components**
(<https://www.bls.gov/cpi/factsheets/>)
- **CPI databases**
(<https://www.bls.gov/cpi/data.htm>)
- **Monthly CPI information**
(<https://www.bls.gov/news.release/pdf/cpi.pdf>)
- **Producer Price Index information**
(<https://www.bls.gov/ppi/>)

- **CPI Handbook of Methods**
(<https://www.bls.gov/opub/hom/cpi/home.htm>)
- **Core inflation modeling**
(<https://bit.ly/2Q84qJd>)
- **BLS publications**
(<https://www.bls.gov/opub/>)

There are a number of BLS price indexes—and thus databases—each made up of different items. Therefore, it is important to specify *which* index is being used in any analysis or benchmark. For real estate, the specific price index is critical in contracts, leases, and other references. The types of CPIs available include the CPI-U (for all urban consumers), CPI-W (for urban wage earners and clerical workers), CPI-E (for the elderly), and C-CPI-U (chained CPI for all urban consumers). Sometimes the core inflation rate is the item of interest.

The core inflation rate is the price change of goods and services minus food and energy, because food and energy are relatively volatile and might tend to distort the inflation rate. The core inflation rate is also called the core “CPI for All Urban Consumers Less Food and Energy,” or the core “Personal Consumption Expenditures (PCE) excluding Food and Energy.”¹⁵

The most commonly used CPI is the “All Urban Consumers (Current Series)”; this index as well as others may be seen and accessed at <https://www.bls.gov/data/>. Exhibit 3 shows the CPI-U for all urban consumers, using 1982 as

11. See “Consumer Price Index (CPI),” Investopedia, <https://bit.ly/2PGlyVK>. For a very thorough explanation of the CPI see “The Consumer Price Index,” chapter 17 in *Handbook of Methods*, Bureau of Labor Statistics, available at <https://bit.ly/3wmf53x>.

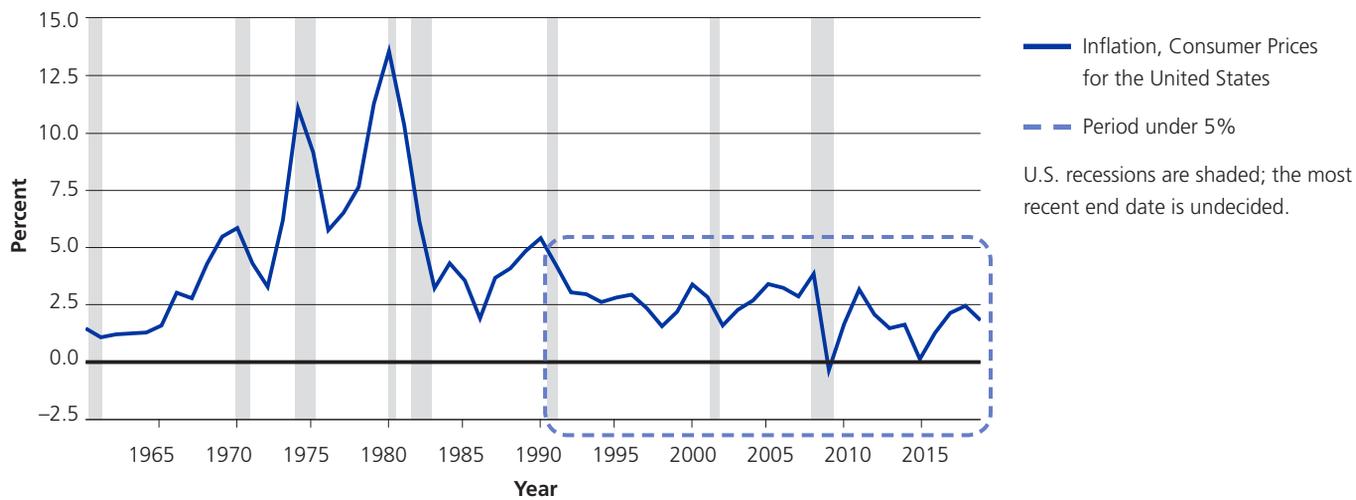
12. <https://fred.stlouisfed.org/series/FPCPITOTLZGUSA>.

13. See “What Is Inflation?” Investopedia, <https://bit.ly/3IZUbCg>.

14. Background information and a complete discussion of the index is also available from the BLS in its *Handbook of Methods*, at <https://bit.ly/3ue972r>.

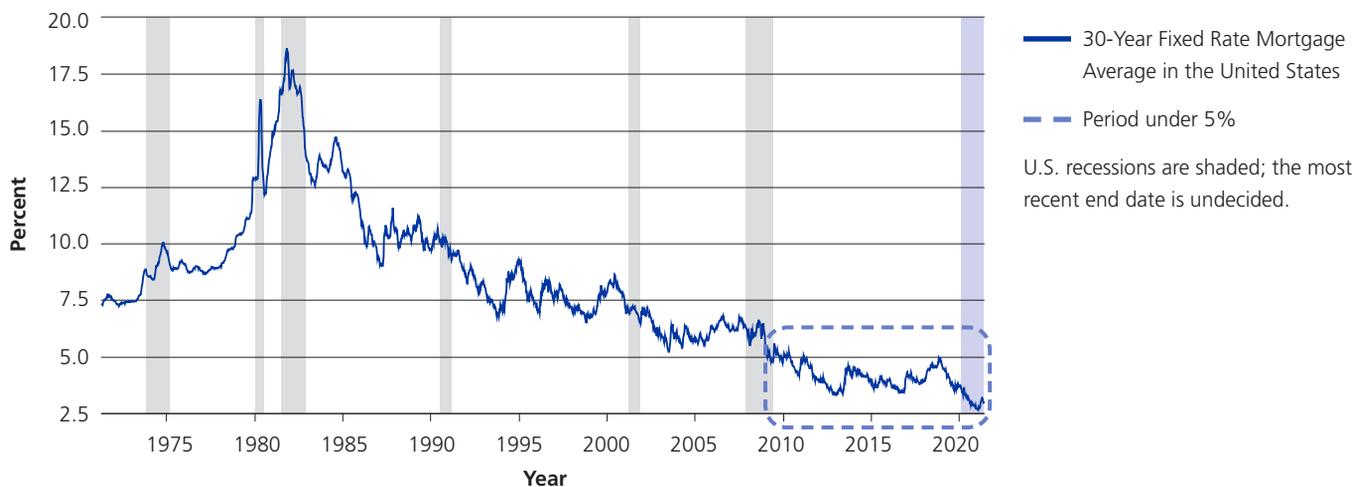
15. Kimberly Amadeo, “What Is the Core Inflation Rate?” The Balance, <https://bit.ly/3dmPHlg>. For a discussion of the effect of COVID-19 on price inflation, see Matteo Luciani, “Quantifying the COVID-19 Effects on Core PCE Price Inflation,” February 25, 2021, <https://bit.ly/3bpjIRs>.

Exhibit 1 US Inflation Rate, 1960–2019



Source: <https://fred.stlouisfed.org/series/FPCPITOTLZGUSA>

Exhibit 2 30-Year Fixed Rate Mortgage Average



Source: Freddie Mac, 30-Year Fixed Rate Mortgage Average in the United States [MORTGAGE30US], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/MORTGAGE30US>, May 14, 2021.

Exhibit 3 US CPI-U for All Urban Consumers 1920–2020 (1982 base year)

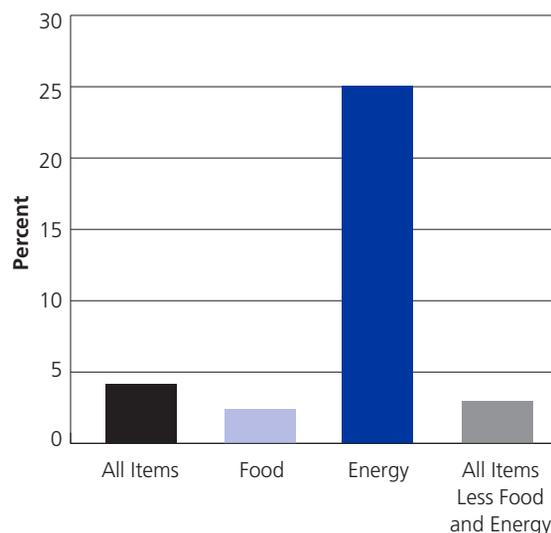
Year	CPI
1920	20.0
1930	16.7
1940	14.0
1950	24.1
1960	29.6
1970	38.8
1980	82.4
1982	100.0
1990	130.7
2000	172.2
2010	219.2
2018	251.1
2020	260.5

Source: Bureau of Labor Statistics, Consumer Price Index December 2020 (January 13, 2021), https://www.bls.gov/news.release/archives/cpi_01132021.pdf

the base year. The inflation rate is the change in CPI from one time period to the next. For example, the average annual inflation rate from 2000 to 2010 would be 2.73%, computed as $(219.2 - 172.2)/172.2 = 0.2729 = 27.3\%$.

The concept of CPI is rather simple and straightforward, but making calculations and the effort to be consistent over time are more complex. An outline and timeline of the BLS’s efforts to adjust the CPI is available at <https://bit.ly/3eAwI8C>. For example, the CPI has some complications related to the “basket of goods” data. The products’ features and attributes can change from one survey period to another as well as change in quality and functionality. Pricing also is subject to variables.

Exhibit 4 US Bureau of Labor Statistics, Consumer Price Index Selected Categories, April 2021

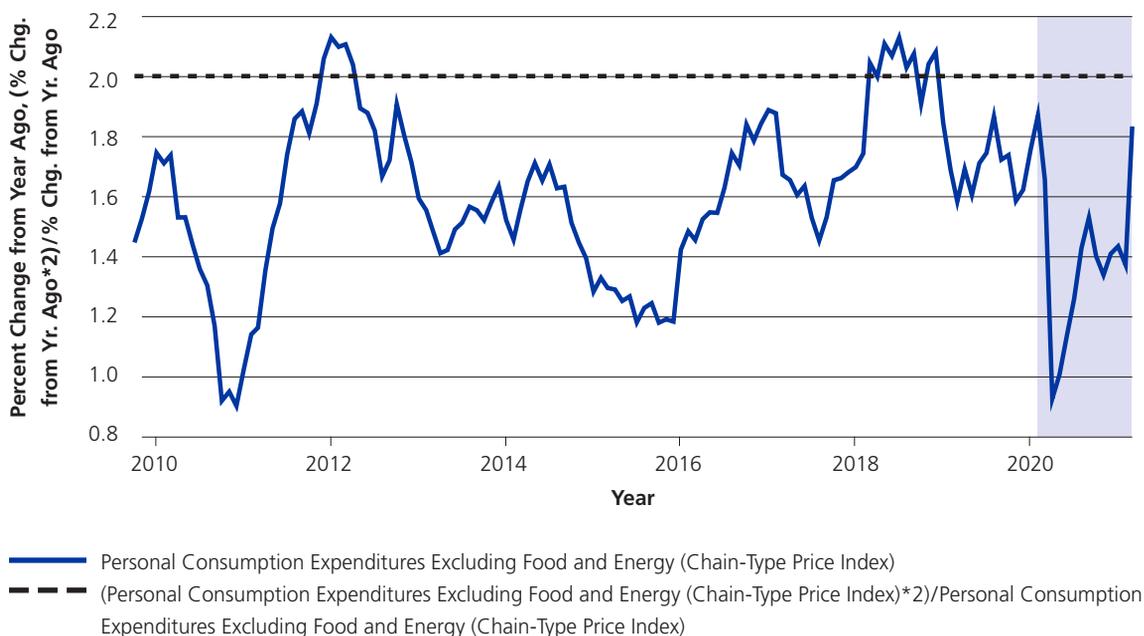


Source: US Bureau of Labor Statistics, Consumer Price Index, April 2021, <https://www.bls.gov/cpi/>

For example, “suggested retail prices” differ from the actual sale price or discounted price, which change over time. Also, price inflation may be different for different categories of goods and services. Exhibit 4 shows an example of such price change variation in early 2021.

In addition to differences in inflation rates for categories of goods and services, the inflation rate may differ in different sectors of the economy; for example, over the past decade prices and costs in the health care, education, construction, and housing sectors of the economy have risen at a higher rate (i.e., had more inflation) than most other sectors. Similarly, as of early 2021, sectors with prices outpacing general inflation were housing, construction, food, and

Exhibit 5 Comparison Actual and 2% Target Inflation, 2010–2020



Graph Source: FRED Economic Data, Federal Reserve Bank of St. Louis (November 9, 2020), <https://fredblog.stlouisfed.org/?s=inflation>

energy.¹⁶ As a result, it is important to consider what each of the different price indices includes or excludes from its economic components.¹⁷

The Federal Reserve has a 2% inflation rate objective, as measured by the Personal Consumption Expenditures price index (<https://bit.ly/3bnZ2ZT>). Its rationale for the 2% number is that this target maximizes employ-

ment and price stability.¹⁸ However, in the past decade the inflation rate has rarely achieved the target rate (Exhibit 5).

There are many excellent resources available online for better understanding of inflation—the measures of inflation, the various inflation indexes, the pros and cons of inflation, target inflation rates, causes of inflation, levels of infla-

16. For an interactive chart and data on inflation without energy costs, see <https://bit.ly/3rzKiML>. Similarly, states and regions may have inflation rates that are different from the nation rate, particularly in the short term.

17. For example, from February 2020 to February 2021, consumer prices for services less energy increased 1.3% with different rates of increase for shelter, utilities, household, medical care, transportation, recreation, education and communication, and other professional services.

18. The target inflation rate is covered in the Federal Reserve document “Why Does the Federal Reserve Aim for Inflation of 2 Percent over the Longer Run?” available at <https://bit.ly/2PnkSFd>.

tion, policies aimed at controlling inflation, deflation, and more.¹⁹ In the Appendix to this Resource Center column, you will find links to materials with information and insights on inflation and its role in the economy.

Inflation Outlook Post-Pandemic

Of course, no one knows what inflation will be in the future, but some forecasting and assumptions about the future are necessary for practically all economic decision making. Real estate market participants forecast in their decision making, and so too must market analysts and valuers.²⁰ This is perhaps most obvious in the income approach when preparing operating statements, discounted cash flows, and such, but consideration of the future, whether by projection or forecasting,²¹ permeates the valuation process.

The COVID-19 pandemic caused both wide-ranging economic and societal change. This makes the job of forecasting more challenging, both in the short term and longer term. Forecasts currently posit that behavior changes will remain long after the pandemic health crisis has passed and impact future economic outcomes.²² There are a number of wild cards in the post-COVID economy. As previously mentioned, the final total is unknown on how much the 2020–2021 stimulus programs will add to the national debt. Also unknown is any impact the national debt will have on real estate markets. For a fascinating look at the changing national debt (total, per citizen, per taxpayer, ratio to GDP, etc.), see

www.USdebtclock.org/. This dynamic website shows federal spending, revenues, money creation, population, workforce, personal and household income, and a lot more. At the bottom of the presentation are tabs for a mortgage loan calculator and home sales data.

Recommendation. Although the economic outlook is uncertain, significant information is available on trends expected to impact the real estate sector. Analysts and valuers should take advantage of the many resources that are available to help them address issues on the horizon.

Statistical Tools

Statistical analysis is a key element in the work of market analysts and valuers. The following discusses some useful and popular software to enhance the analysis.

Excel Analysis ToolPak Add-in

Most real estate market analysts and valuers use Excel software, the popular Microsoft spreadsheet program. The Excel add-in Analysis ToolPak has a variety of helpful statistical tools including the following:

- ANOVA (single and two-factor)
- Correlation
- Covariance
- Descriptive statistics
- Exponential smoothing

19. For example, "Inflation," by Jason Fernando, in Investopedia at <https://bit.ly/30U0duH>, has a good overview of causes of inflation, demand-pull and cost-push, the idea of built-in inflation, types of price indexes, the formula for measuring inflation yourself, methods of controlling inflation, negative interest rates, quantitative easing, hedging against inflation, and several other topics.

20. Forecasting requires valuers and others to estimate, calculate, or indicate in advance. Forecasts made by appraisers are based on past trends and the perceptions of market participants concerning the trends' continuation or alteration. For decision makers, market participants, and analysts/valuers it makes no sense to ignore the anticipated future, i.e., expected consequences, costs, benefits, and such.

21. Generally, a *projection* is a mechanical extension of the past trends into the future; *forecasting* considers the past trends and adjusts for current and likely future influences.

22. See J. Kozlowaki, L. Veldkamp, V. Venkateswaran, "Scarring Body and Mind: The Long-Term Belief-Scarring Effects of COVID-19," Working Paper, Federal Reserve Bank of St. Louis, April 2020, available at <https://bit.ly/3loW37r>.

- *F*-test two-sample for variances
- Fourier analysis
- Histograms
- Moving average
- Random number generation
- Rank and percentile
- Regression (simple and multiple)
- *t*-tests (various)
- *Z*-test

To load Analysis ToolPak, visit Microsoft Support at <https://bit.ly/3ro5rJO>. However, Analysis ToolPak is likely already part of your Excel program. An Analysis ToolPak guide is available on the Microsoft website (<https://bit.ly/31qE2ws>).²³ Guides are also available from third parties.²⁴

Other Free Statistical Software Available Online

There are a number of online resources to help you identify free downloadable statistical software. An internet search of “free software” results in listings of relevant statistical software.²⁵ These sites have brief descriptions of SAS, Excel, SPSS, GraphPad Prism, Minitab, MATLAB, as well as others.

One of the more comprehensive sites is GoodFirm’s blog, “10 Best Free and Open Source Statistical Analysis Software” (<https://bit.ly/3qYNMYX>). This site provides a brief overview of the four essential types of analyses performed by statistical software: co-relational tests, regression tests, non-parametric tests, and comparison-

of-means tests. The site has brief descriptions of these free statistical software packages, including the types of statistical measures and tools provided. Here are the ten that are listed:²⁶

1. **JASP** (<https://jasp-stats.org/>)
2. **SOFA** (<https://bit.ly/3tzuyei>; uses Python language)
3. **GNU PSPP** (<https://bit.ly/2Q7FFwU>)
4. **SCI Labs** (<https://www.scilab.org/>)
5. **Jamovi** (<https://www.jamovi.org/>; built on R language)
6. **MacAnova** (<http://www.stat.umn.edu/macanova/>)
7. **PAST** (<https://bit.ly/2Qkbu5n>)
8. **Develve** (<https://develve.net/>)
9. **InVivoStat** (<https://invivostat.co.uk/>; combines complex and powerful statistical tools within R with a user interface that is both easy to use and intuitive to the non-statistician)
10. **IBM SPSS** (<https://www.ibm.com/analytics/spss-trials>)

These free statistical programs are some of the most popular, but others may be available, particularly for certain corporate employees or students and faculty. In addition, there are other statistics programs available that are not free but have a free trial period or online demo.

Valuers interested in for-purchase statistical software may want to visit the Captterra website (<https://bit.ly/3tEDAqr>). This website includes a

23. To activate this Excel add-in, open Excel, go to File > Options > Add-ins > Analysis ToolPak. Analysis Toolpak is then available under the Data tab and has an icon labeled “Data Analysis” in the Analysis portion of the ribbon. Note this “Analysis ToolPak” icon is *not* the same as the “Analyze Data” icon in the Analysis section of the ribbon under the Home tab. The Analyze Data icon under the Home tab presents ideas for graphs of a dataset you have highlighted.

24. For example, see Add-Ins.com, https://www.add-ins.com/Analysis_ToolPak.htm; Better Solutions, <https://bit.ly/3rzxlmn>; Excel Easy, <https://bit.ly/2PbWhmF>; SpreadSheeto, <https://spreadsheeto.com/analysis-toolpak/>; and Universal Class, <https://bit.ly/31nulyv>.

25. For example, see “Top 8 Free Statistics Software of 2020,” <https://bit.ly/3vXzQ4y>; “Top 20 Free Statistical Software (Statistics and Data Analysis),” <https://bit.ly/2Q6AgWX>; and “Free Statistical Analysis Software,” <https://bit.ly/3vUUeTQ>.

26. As noted, some of these programs use the R language in their software. For overview information about R as well as manuals, see “The R Project for Statistical Computing,” <https://www.r-project.org/>.

helpful Buyer's Guide addressing key considerations in purchases of statistical software and lets you customize the product search based on your business size and needs. There is also a descriptive comparison and checklist of business statistical programs available for purchase or licensing. Among the programs described are the following:

- **Tableau** (<https://tabsoft.co/2Qjnggm>)
- **OriginPro** (<https://bit.ly/2P7EjS1>)
- **SPC for Excel** (<https://bit.ly/3c1D0wE>)
- **Statgraphics Centurion** (<https://bit.ly/2QnLwhv>)
- **SigmaXL** (<https://bit.ly/3lrZKJB>)
- **Intellectus Statistics** (<https://bit.ly/3cOGstJ>)
- **Neuton AutoML** (<https://bit.ly/3cKI1Jf>)
- **Minitab** (<https://bit.ly/310cihC>)
- **MPP BI** (<https://bit.ly/3vHI2ra>)
- **SAS/STAT** (<https://bit.ly/2NuZLjg>)

The Capterra website also includes a helpful comparison table, noting key features and ratings of each statistical program (<https://bit.ly/3cKCSRE>).

Recommendation. If you use extensive statistical analysis in your work or plan to, a first step is to become familiar with the Excel Analysis ToolPak add-in. Then, if you need more extensive statistical capabilities, investigate the statistical software options noted, taking into consideration their ease of use and features.

About the Author

Dan L. Swango, PhD, MAI, SRA, is president of Swango Real Estate Counseling and Valuation International in Tucson, Arizona. He is experienced in valuation and consulting involving equity investment, debt security, risk reduction, profit optimization, estate planning and settlement, buy/sell opportunities, and eminent domain. Swango is an instructor and communicator with domestic and international experience. He is namesake of *The Appraisal Journal's* Swango Award, past Editorial Board chair and editor-in-chief of *The Appraisal Journal*, and a current member of the *Journal's* Review Panel. **Contact: danswango@yahoo.com**

If you know of additional resources of interest to real estate analysts and valuers—or would like to suggest topics for this column—please contact the author.

SEE NEXT PAGE FOR APPENDIX >

Appendix Additional Reading on Inflation and Economy

Inflation, Prices, and the Economy

- “Data: Prices and Inflation,” Bureau of Economic Analysis, <https://www.bea.gov/data/prices-inflation>, customizable time series data, tables, and calculators by subject.
- “Indicators,” <https://tradingeconomics.com/indicators>, and “Inflation,” <https://bit.ly/3srmnjX>, Trading Economics, current economic indicators in the United States and international.
- “Prices and Inflation,” Bureau of Economic Analysis, <https://bit.ly/3fhmZTM>, explains different types of price indices. The Bureau’s website also has a variety of other economic information.

Inflation Targeting/Target Rates

- “Does the National Debt Matter?” David Andolfatto,” Federal Reserve Bank of St. Louis, <https://bit.ly/3ftY15p>; see section on inflation targeting.
- “The Fed’s Inflation Target: Why 2 Percent?” Kristie Engemann, *Open Vault* (Federal Reserve blog), January 16, 2019, <https://bit.ly/FEDtarget>.
- “How Inflation Targeting Works,” Kimberly Amadeo, *The Balance*, November 30, 2020, <https://bit.ly/3xwCPSj>, explains targeting and its mechanics.
- “What Is Inflation and How Does the Federal Reserve Evaluate Changes in the Rate of Inflation?” <https://bit.ly/3ho9AfA>, Board of Governors of the Federal Reserve, September 9, 2016.

Housing Markets

- “America’s Housing Market Is Officially Overheating Everywhere. How Long Will It Last?” Peter Lane Taylor, <https://bit.ly/3fi4jUb>.
- “Economists’ Outlook: Home Prices: A Closer Look at Local Trends,” Nadia Evangelou, National Association of Realtors, January 13, 2021, <https://bit.ly/3cxJdkx>.
- “Housing Supply: A Growing Deficit,” Freddie Mac Research Note, May 7, 2021, <https://bit.ly/2RVxZyp>.
- “Investors and Housing Affordability,” Carlos Garriga, Pedro Gete, and Athena Tsouderou, Working Paper, Federal Reserve Bank of St. Louis, July 2020, <https://bit.ly/3loVM4p>. Study of how investors affect rents and prices.
- “US Home Sales Are Surging. When Does the Music Stop?” Stefanos Chen, April 22, 2021, <https://nyti.ms/3booHSs>.
- “Will the US Housing Market Boom Continue in 2021?” J. P. Morgan. December 2, 2020, <https://bit.ly/3wcXtH8>.

National Debt

- “Charting America’s Debt: \$27 Trillion and Counting,” Visual Capitalist, <https://bit.ly/3fqebg4>. A vivid presentation on elements of national debt.
- “Does the National Debt Matter?” Regional Economist series, Federal Reserve Bank of St. Louis, December 2020, <https://bit.ly/2PDnqyK>.
- “Federal Debt: Total Public Debt” (interactive chart), Federal Reserve Bank of St Louis, <https://fred.stlouisfed.org/series/GFDEBTN>.
- “How Much Money Did the Federal Government Collect and Spend in 2020?” Bureau of the Fiscal Service, US Department of Treasury, <https://bit.ly/3bl5aC3>.

CONTINUED >

Appendix (continued)

- “Making Sense of the National Debt,” Scott A. Wolla and Kaitlyn Frerking, Page One Economics, Federal Reserve Bank of St. Louis, <https://bit.ly/38SoAwZ>.
- “National Debt of the United States,” Wikipedia, <https://bit.ly/3bXnOkI>. Consolidates information from variety of sources, summarizes issues on national debt, and presents data in helpful graphs.

Projections/Outlook

- “Creating Valuations Amid Uncertainty,” Michael Polon, *CIRE*, Fall 2020, <https://bit.ly/3sJgCOY>.
- “Instant Reaction: Inflation,” National Association of Realtors, January 13, 2021, <https://bit.ly/39naO5W>.
- “5-Year, 5-Year Forward Inflation Expectation Rate” (daily), Federal Reserve Bank of St. Louis, <https://fred.stlouisfed.org/series/T5Y1FR>.
- “How Well Do Consumers Forecast Inflation?” Federal Reserve Bank of St. Louis, March 23, 2021, <https://bit.ly/3IZNIY0>.
- “Inflation Is Coming for Your Wealth. Here’s What Investors Can Do,” *Forbes*, February 26, 2021, <https://bit.ly/3cvDLOR>.
- “Outlook 2021: Why the Era of Low Inflation Could Last for 50 Years,” Meghnad Desai, Office of Monetary and Financial Institutions Forum, January 14, 2021, <https://bit.ly/2PhZ1Pt>.
- “An Overview of the Economic Outlook: 2021 to 2031,” Congressional Budget Office, February 1, 2021, <https://www.cbo.gov/publication/56965>.
- “Projected Annual Inflation Rate in the United States from 2010 to 2026,” Statista, April 14, 2021, <https://bit.ly/3futvZ0>.
- “Short-Term and Long-Term Inflation Forecasts: Survey of Professional Forecasters” (quarterly), Federal Reserve Bank of Philadelphia, <https://bit.ly/3cvvkDn>.
- “University of Michigan: Inflation Expectation,” survey of consumers (monthly), Federal Reserve Bank of St. Louis, <https://fred.stlouisfed.org/series/MICH>.
- “US Inflation Outlook: Don’t Believe the Hype,” Joseph Brusuelas, *The Real Economy* (blog), March 3, 2021, <https://bit.ly/3sDZ7iD>. Website also includes data by market sector, including “Real Estate,” <https://bit.ly/2RM8kYW>.