



Adobe Digital Economy Index

Adobe Analytics | U.S. Feb 2021



Methodology

Most comprehensive report of its kind

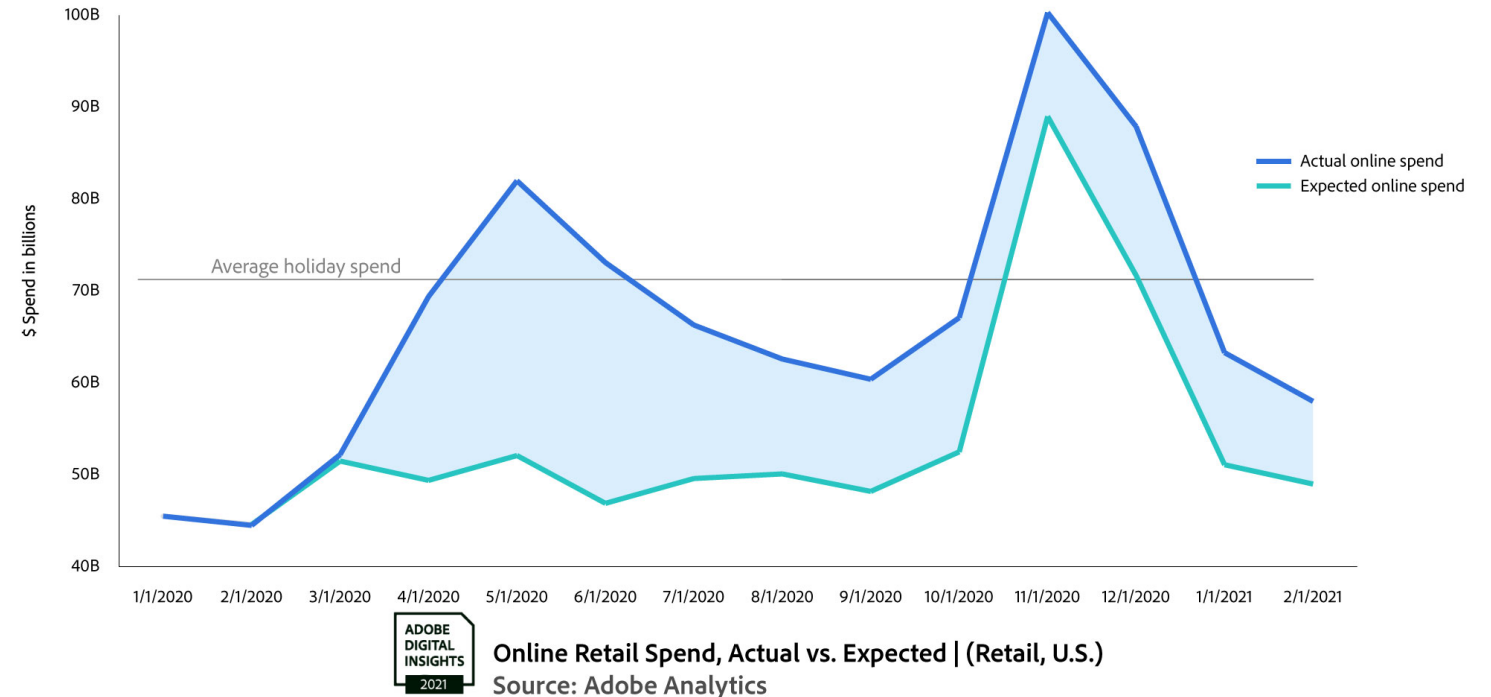
- The DEI is powered by Adobe Analytics, which analyzes 1 trillion visits to retail sites and over 100 million SKUs.
- Adobe Analytics measures transactions from seven out of the top 10 U.S. airlines.
- Companion research based on a survey of 1,018 U.S. consumers (18 years or older) fielded between Feb 26 and March 2, 2021.

KEY FINDINGS

- While we might never again see the 42% year-over-year (YoY) growth, we saw for 2020, 2021 is showing no signs of slowing down; Jan – Feb 2021 grew 34% YoY.
- The elevated growth online spending experienced in 2020 has persisted in 2021, as consumer shopping online across electronics, home improvement goods, and groceries remains high, while apparel and home office sales have seen growth become far weaker.
- With a year distance from the height of the online stock-piling surges, stock-out levels for online goods are still quite high as online retailers appear to still be facing logistical supply challenges in managing more optimal stocking levels.
- Low-profile sales days like Presidents Day and Labor Day see weaker growth in a heavy online retail environment.
- Curbside pick-up draws down from seasonal highs but remains a dominant mode of order acquisition.
- Online inflation remains elevated for electronics, home goods, and groceries, digital purchase power is weaker, and prices are ticking up in the first few months of 2021 as they seasonally adjust from their holiday lows.

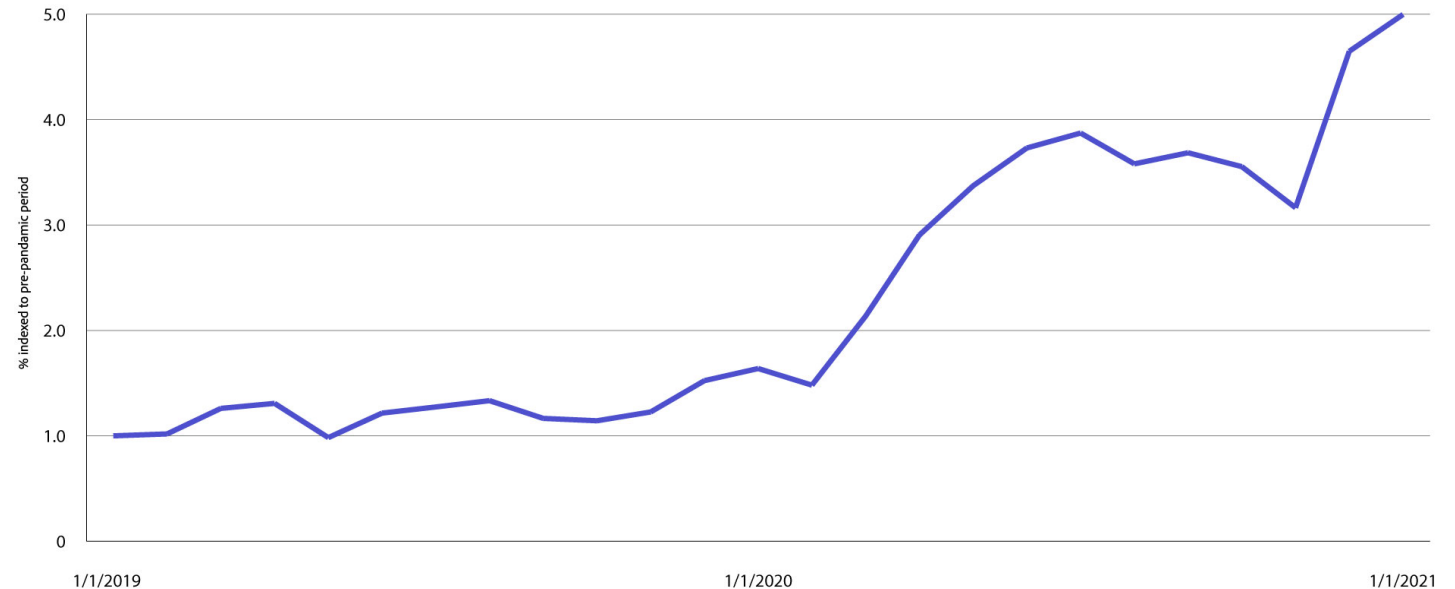
E-commerce got a permanent boost due to the pandemic

- An extra \$183 billion has been spent online since March 2020, up to a total of \$844B.
- We predict a full Q1 to grow at about +29% YoY.
- 2020 grew at 42% YoY, totaling \$813 billion.
- E-commerce spend was bound to drop from the +80% YoY growth we saw in May, but it's now evident that **+20% of that boost is here to stay.**
- While this year in total might not grow at the +42% that 2020 saw, online shopping is not slowing down — January and February grew at 34% YoY, amassing a total of \$121 billion in online spend so far.



Stockouts plagued e-commerce in April/May, and are still a common sight

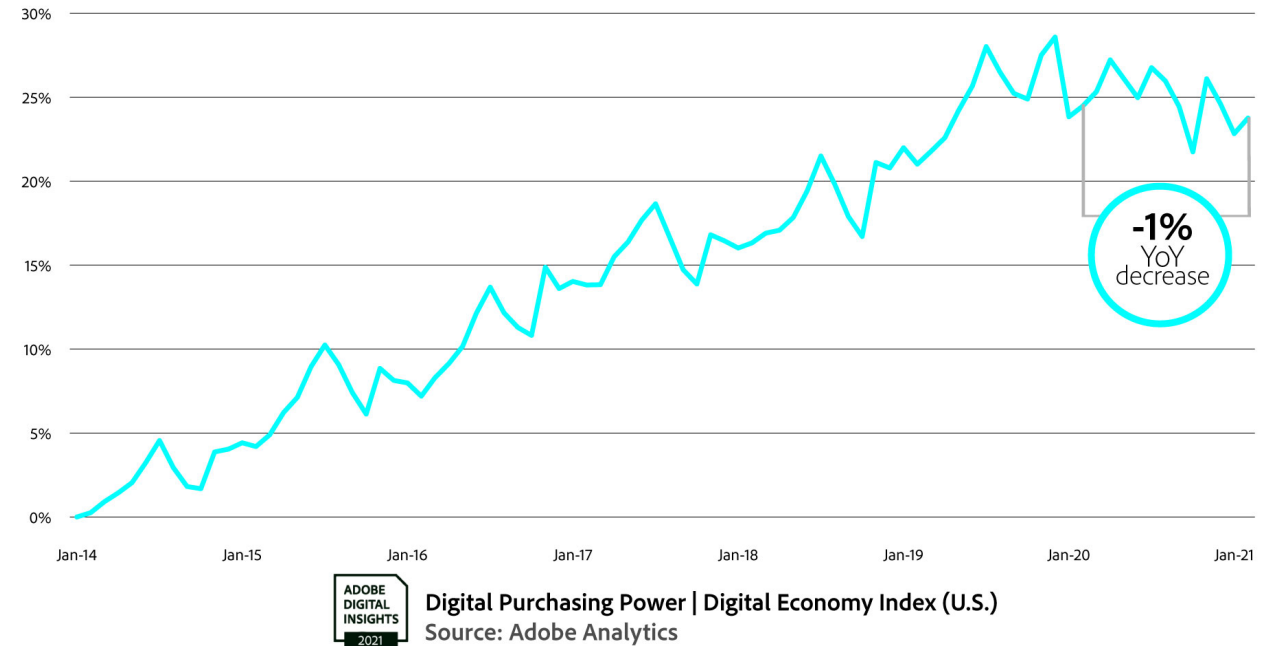
- The percentage of out-of-stock products began surging in March as retailers struggled to keep up with the influx of new customers.
- The initial peak came in July, with consumers seeing **3 times as many out-of-stock products** as they did pre-pandemic.
- Holiday shopping brought a second wave in out-of-stock products, and in **January 2021 out-of-stock levels were elevated to 4 times** pre-pandemic.
- Consumers advised that in January 2021 products within groceries, medical equipment and supplies, and pet product categories were out of stock online more often.



Percentage of Out-Of-Stock Pageviews Trend (Retail, U.S.)
Source: Adobe Analytics

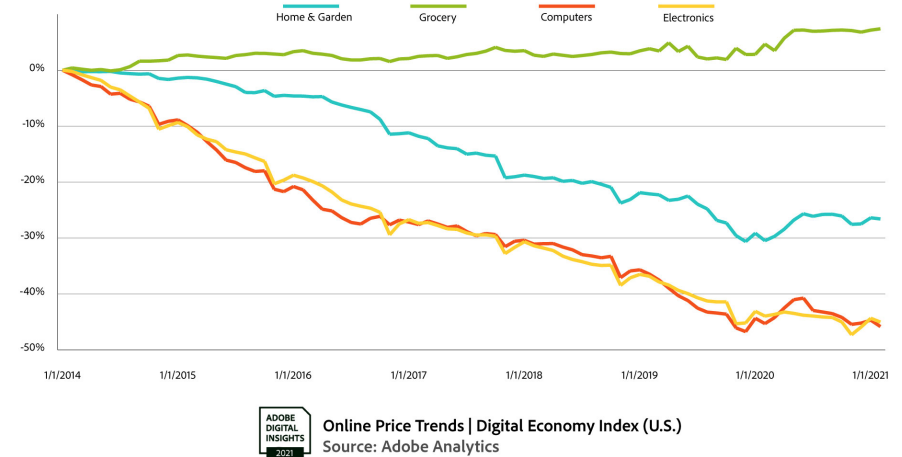
The sudden shift to e-commerce caused a price uptick, and it's yet to recover

- Historically, e-commerce has benefited the consumer by giving them the power of **easy price comparison**.
- That competition drove prices down and continuously increased consumers' purchasing power. **Every year a consumer's dollar gained 4 cents** in value when spent online.
- However, due to COVID and the strain on e-commerce from increased demand and resulting stockouts and shipping costs, **consumers' purchasing power has slumped**.
- **Consumers feel price increases online:** The top 4 categories that consumers say* prices have gone up in the past month are groceries (51%), medical equipment and supplies (39%), media and entertainment (35%), and sporting goods (35%).



How digital purchasing power was weakened in 2020

- Uncommon inflation was observed across online categories, for the first time in years due to the pandemic.
- Typically, consumers see approximately a 4% increase in digital purchase power (DPP) each year — however, consumers saw a **DPP decrease of -1% YoY in 2020**.
- As COVID-informed demand spiked across products, logistical challenges produced limited supply. Consumers found themselves facing higher prices, across a host of goods, online (instead of an online buying environment where they normally enjoy value in terms of discounting on products).
- Key categories that saw strong online price shifts, over the course of 2020, compared to previous years included:
 - Electronics: -2.2% YoY (Jan 2020-2021) / -10.4% YoY (Jan 2019-2020)
 - Groceries: +4.2% YoY (Jan 2020-2021) / -.6% YoY (Jan 2019-2020)
 - Computers: -.6% YoY (Jan 2020-2021) / -13.5% YoY (Jan 2019-2020)
 - Home & garden: +3.9% YoY (Jan 2020-2021) / -9.3% YoY (Jan 2019-2020)

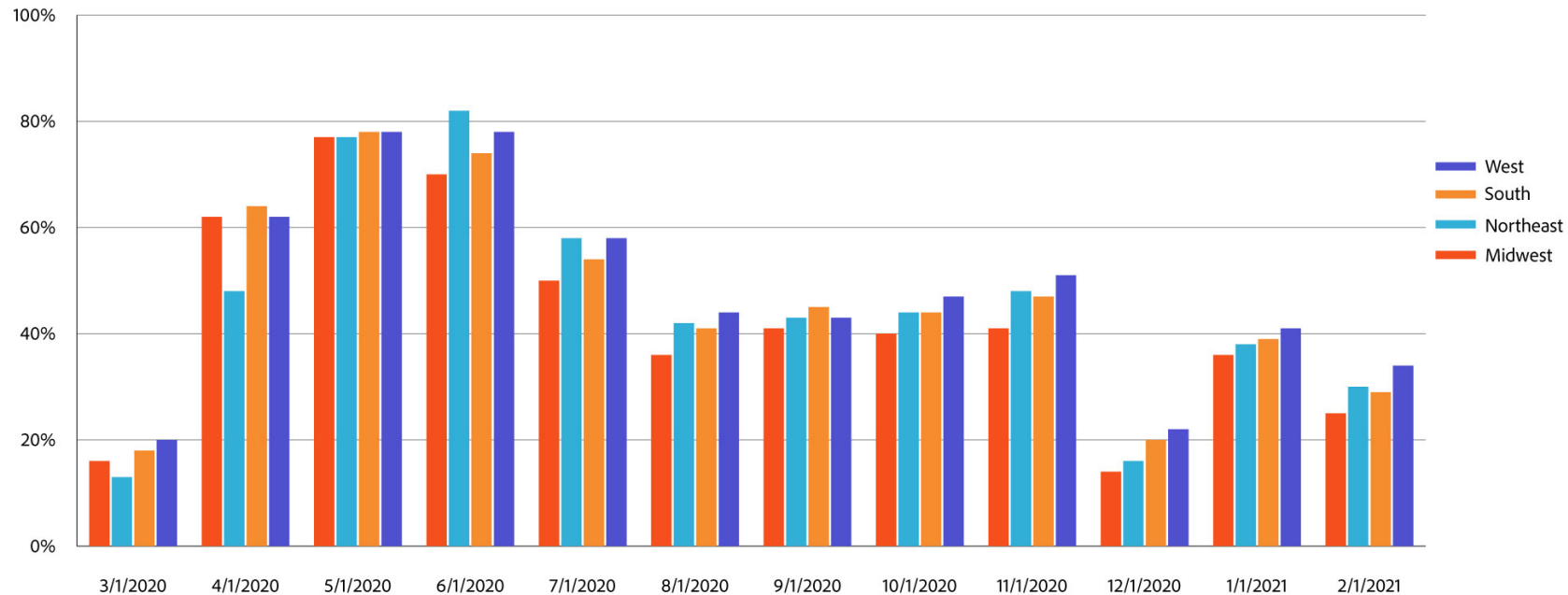


Buy now, pay later reigns supreme

- A combination of new retailers offering buy now, pay later (BNPL) options and consumer financial stress has led to increased usage in this payment method — the first two months of 2021 have already seen 215% YoY growth in usage.
- Consumers using this payment method place orders that are 18% larger than orders placed with other payment methods.



The Northeast had the highest e-commerce peak, but the west is persisting



Region	YoY Growth
West	34%
Northeast	30%
South	29%
Midwest	25%

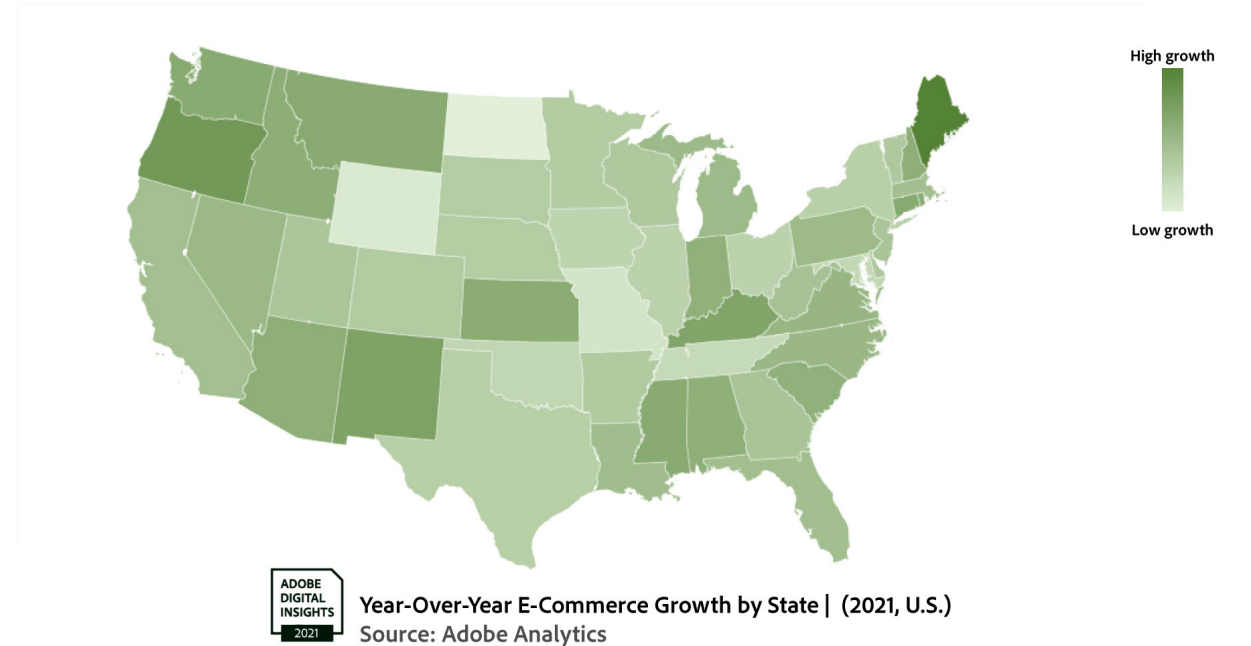


Year-Over-Year E-Commerce Growth by U.S. Region
Source: Adobe Analytics

- The **Northeast U.S. showed the strongest reaction** to the pandemic at its height in June 2020.
- The Western states are showing the highest persistence in online shopping.
- The Midwest e-commerce spend grew the least in 2020 and is only showing 31% so far this year.

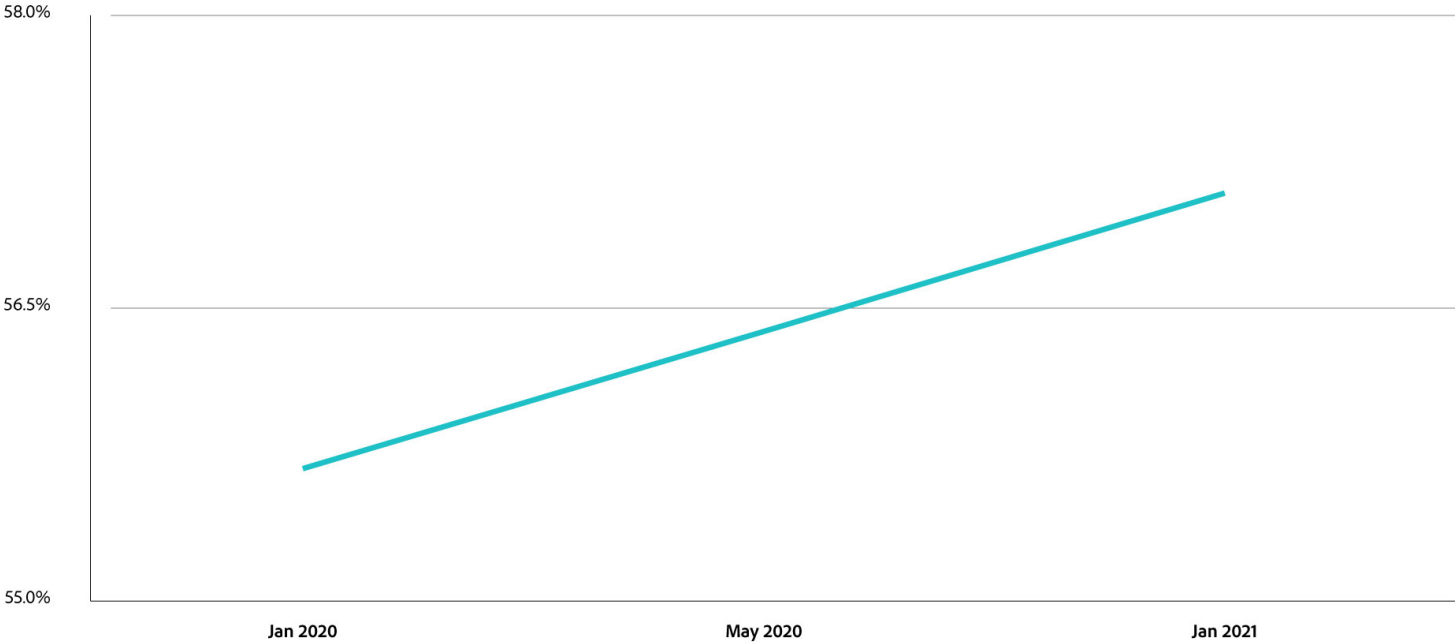
Maine is the highest-growing e-commerce state in 2021

- The state* with the highest YoY (Jan – Feb) growth this year is **Maine at +60% YoY**.
- Their online spend peaked in May, and **never came back down** fully like the other states.
- **North Dakota saw only +16% YoY** e-commerce growth and market the bottom of the state's list, almost at the levels one would expect without the 2020 e-commerce acceleration.



Consumers are shopping more and more during work hours

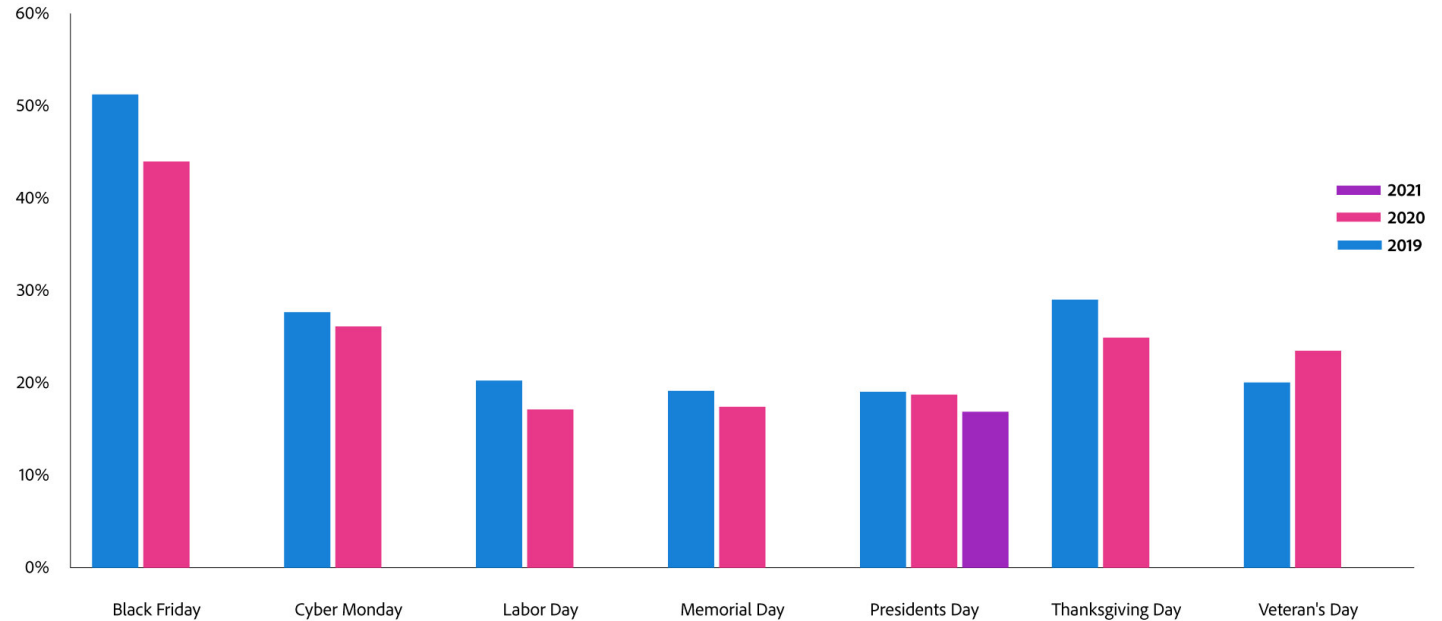
- While the pandemic has blended work life and home life for many people, more shopping has started during work hours.
- In 2021 this change in behavior resulted in consumers spending an extra \$1.2 billion during work hours.
- BOPIS (buy online, pick up in store) might be playing a role in this as well, as some people might be ordering items to acquire their goods, on short jaunts, away from home.



Share of Spend 9 a.m. - 5 p.m. PT on Weekdays | (Retail, U.S.)
Source: Adobe Analytics

Holiday days lose importance in e-commerce

- In 2020, Memorial Day was 9% less important than it was in 2019, Labor Day 16% less, and Presidents Day 2021 was 10% less important compared to the year prior.
- The decreased holiday spikes in revenue resulted in \$32 million less online revenue on Memorial Day, \$40 million on Labor Day, and \$22 million on Presidents Day.
- Cyber 5 contributed 9% less to the holiday season this past year than the year prior.
- As e-commerce becomes ubiquitous, online shopping moves from being an “event” to a daily activity.

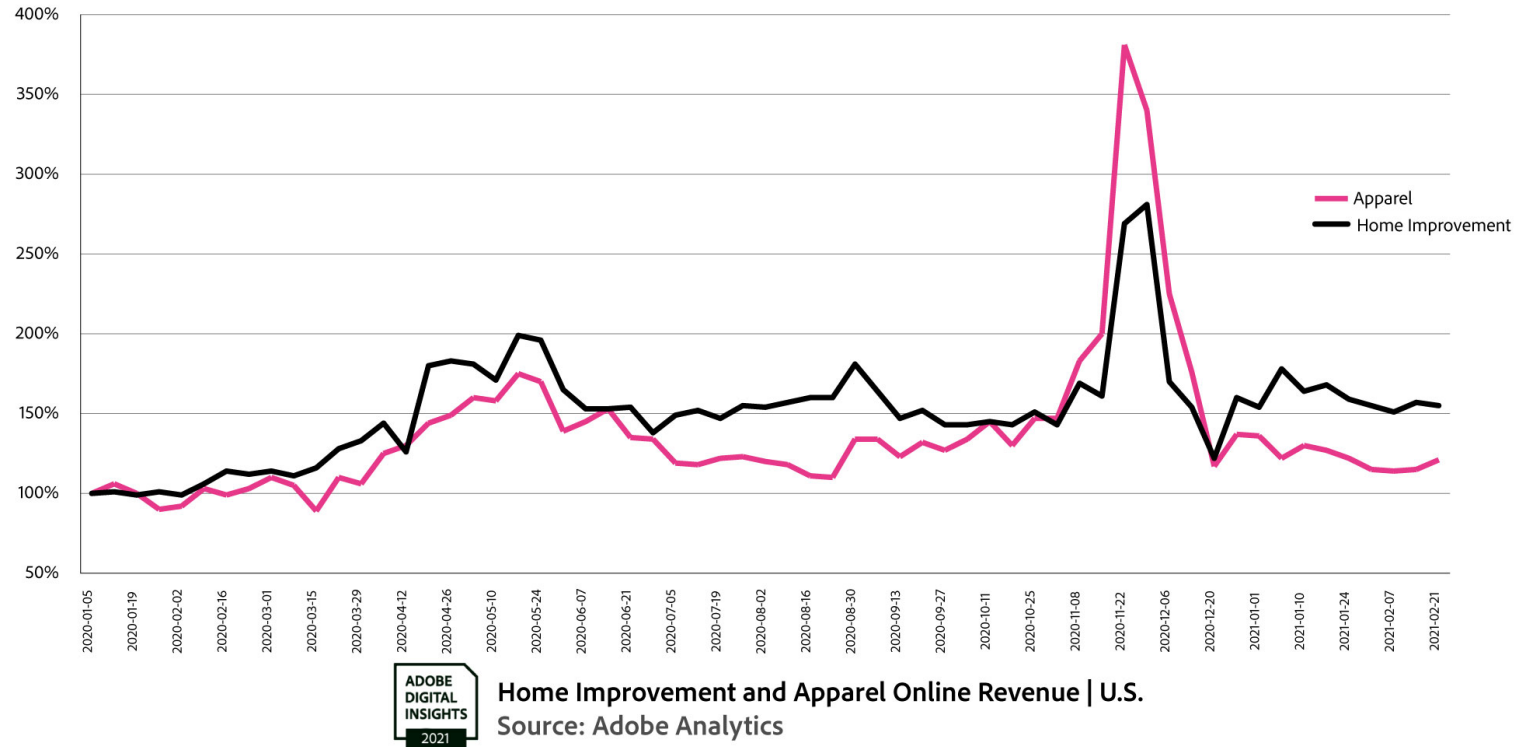


Holiday Ecommerce Spend as Share of its Week | (Jan '19 - Jan '21, U.S.)

Source: Adobe Analytics

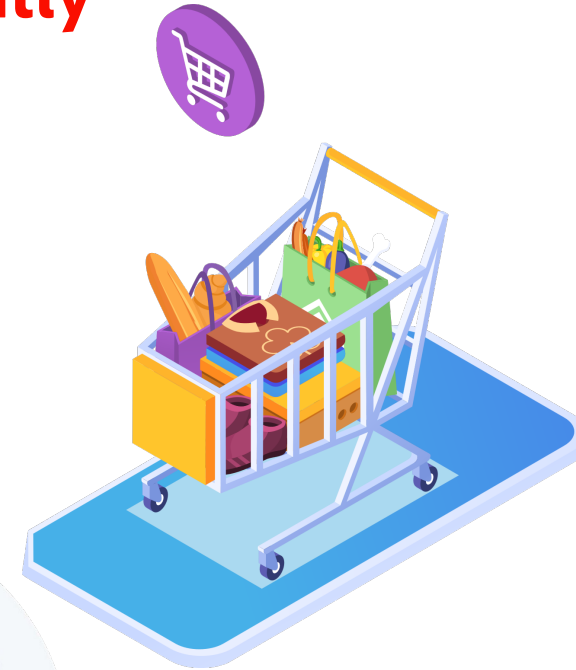
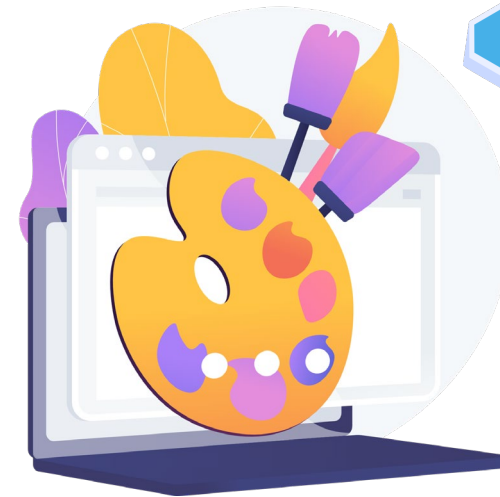
Home improvement boomed online in 2020, apparel lagged

- 2020 was a big fork in the e-commerce road, with some categories seeing big wins, while others lagged.
- From April – October 2020, home improvement received a 60% boost over January levels, while apparel lagged at 36%.
- This trend has continued in 2021, with home improvement seeing 60% YoY growth in January – February, and apparel at 22% YoY.
- Only 21% of survey respondents report* buying more clothing in the past four weeks compared to pre-pandemic, with 34% reporting they buy more home improvement products.



The pandemic has shifted what is bought online, permanently

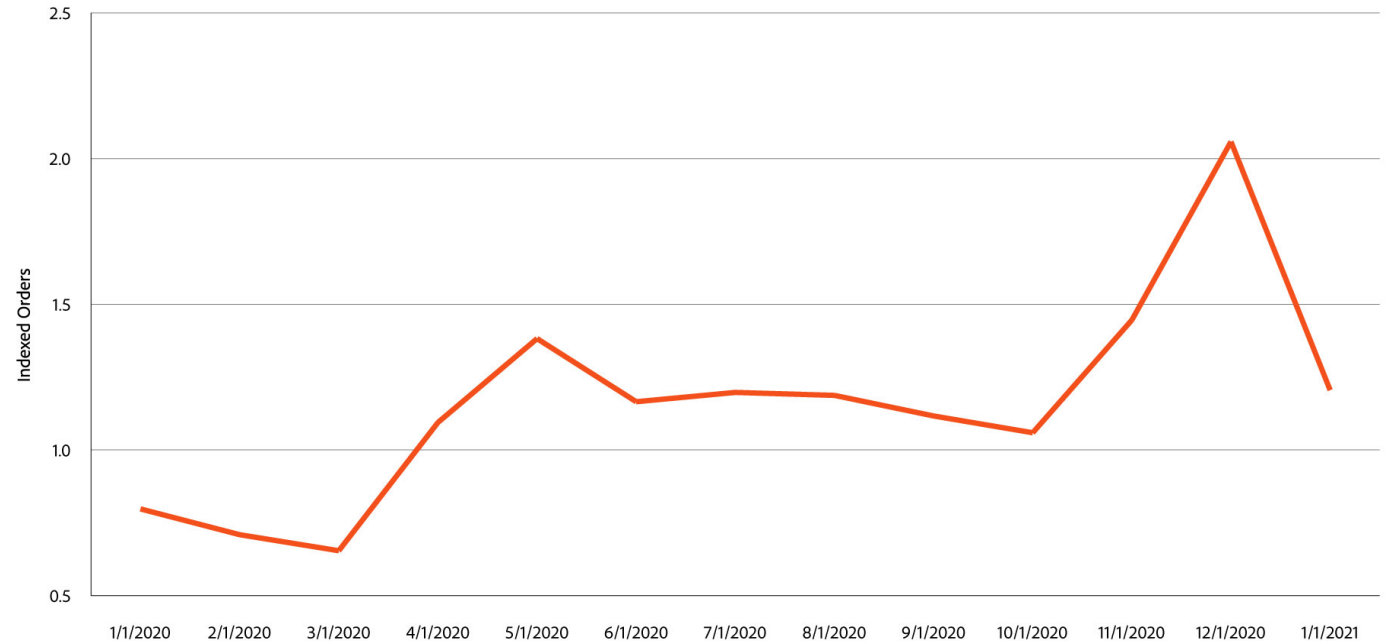
- How people shop for groceries has changed forever
 - In late March 2020* online grocery surged in the shift online, hitting +350% compared to pre-pandemic* levels
 - Online grocery shopping has since recently* normalized and steadied out to levels +230% what was seen pre-pandemic
 - 42% of survey respondents report shopping more online for groceries in the past four weeks than pre-pandemic
- Consumers adjust to spending time and money outdoors
 - Sporting goods got a 230% boost over pre-pandemic levels in late March as people flocked outside
 - As summer* hit and consumers began to recreate outdoors more, sporting goods surged again to levels 120% higher than what was seen in March 2020
- New hobbies have been formed
 - In late March 2020, consumers showed interest in craft supplies and puzzles or games, which saw 370% and 250% pre-pandemic levels, respectively
 - With people staying indoors more as winter settles in, books have seen a resurgence and recently hit levels 170% higher than late March



* Late March: March 23, 2020 – April 12, 2020
Pre-pandemic: January 6, 2020 – January 26, 2020
Summer: June 1, 2020 – June 21, 2020
Recent: February 1, 2021 – February 21, 2021

Curbside pickup shined last year, but has it peaked?

- Buy online, pick up in store (BOPIS) surged early in the pandemic as many shoppers tried to avoid shipping delays with the heavy shift to shopping online, **peaking in May 2020 at 40% YoY growth.**
- A second surge occurred during holiday shopping as shoppers tried once again to get their packages in time, with **December 2020 hitting the highest BOPIS usage levels yet.**
- These levels have dropped in the post-holiday shopping craze, but remain elevated YoY — **February 2021 grew at 67%.**
- According to our survey, **30% of online consumers prefer using BOPIS or curbside over delivery.***



Online BOPIS Orders (U.S.)
Source: Adobe Analytics

Influx of new consumers is reshaping online shopping

- 9% of consumers report* never purchasing an item online prior to the U.S. pandemic emergence in March 2020.
- 47% of consumers agree* that the pandemic drove them to buy certain types of goods online, for the first time.
- Bing's traffic driven to e-commerce sites increased **4 times faster** than Google's.
- They don't have an established online footprint, so the **search engines are driving 7% more revenue share** for online stores now, while **emails drive 8% less**.



Scope and outlook

U.S. March DEI

April monthly refreshes begin

Holiday Season trends

Stay tuned for updates and data refreshes here:

<https://www.adobe.com/experience-cloud/digital-insights/digital-economy-index.html>

Appendix

The appendix contains a closer look at U.S. DEI categories, formula, and methodology, along with the benefits to consumers, companies, and policy-makers.

Why we're introducing DEI in an evolving landscape

Before the COVID-19 pandemic:

- The digital economy has been growing faster than the economy as a whole.
- Inflation has been historically low—influenced by falling prices online.
- Online shopping has been converging with offline as click-and-collect, one-day shipping, and other services let people transact online for a wider variety of goods and services.
- Mobile shopping has allowed people to shop and buy from anywhere at any time.
- Online shoppers have become accustomed to being able to compare and buy products around the world and have them shipped to their door.
- Similarly, e-commerce companies have come to expect competition from around the world.
- In this growing global digital economy, we need a metric that can track online prices across nations and enables consumers, companies, and policy-makers to understand the trends, similarities, and differences across industries and countries.

In today's reality:

- Economic policy-makers need fast turnaround insights to manage a global health and economic crisis.
- Online shopping has become the primary means of commerce populations around the world as purchases made previously in person are shifted online.
- Shoppers' baskets have shifted toward items related to health, working from home, and social distancing.
- Companies are adjusting to daily changes in demand, supply, and labor availability.
- With the global economy rapidly evolving, we need a metric and supporting insights that can help consumers, citizens, companies, and policy-makers assess their economic world and make intelligent, informed choices about how to help themselves and others.

Measuring the 21st-century economy

A snapshot of the DEI

- It's a measure of increasing consumer buying in the digital world, starting with the U.S. and growing to cover the world's major economies.
- It uses this metric to explore our global digital lives, from when to buy a new TV to which countries pay most for organic produce.
- Through it we're able to establish the digital purchasing power (DPP) that informs consumers' buying power online for various goods.

Why the DEI is important

- The world economy is interconnected, especially the digital economy, and it needs metrics that reflect that relationship.
- Consumers, companies, and policy-makers need a high-speed, detailed, reliable, global source of insight to inform their choices.

What sets the DEI apart

- Its insights are fast and accurate.
- Its insights are based on what consumers actually purchase, rather than surveying respondents about products they've purchased without controlling for quantity (how BLS calculates CPI).
- Its data spans the globe.

Why we're uniquely qualified to build the DEI

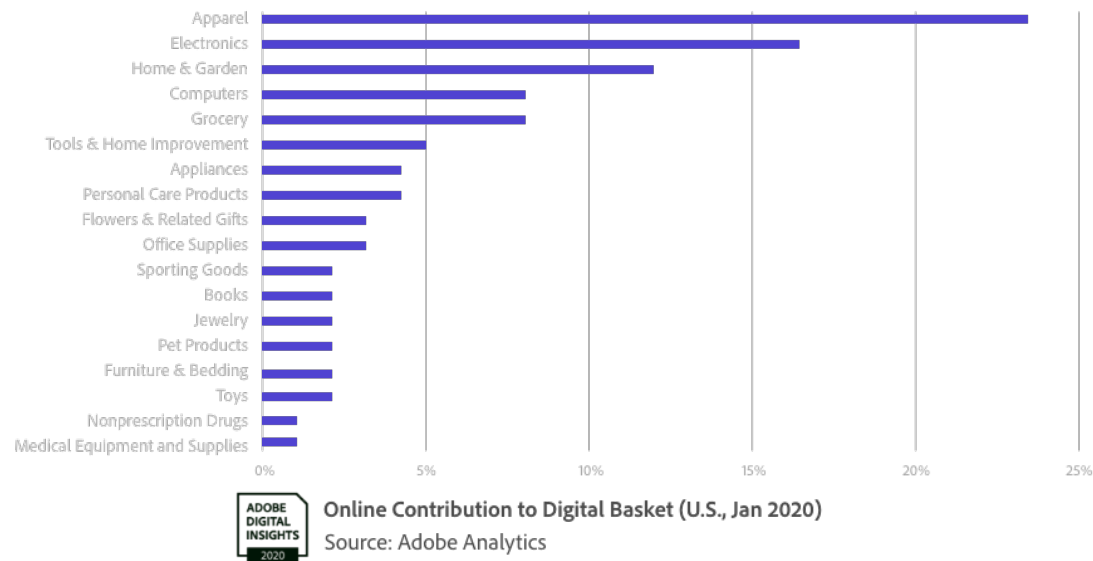
- Only we have the data from trillions of visits, tens of millions of products, and thousands of retailers needed to assess the global digital economy.
- Our Adobe Sensei AI capability can take all this data and process it in near-real time to give high-speed insights.
- We're trusted by multiple companies to create this index.
- Only Adobe is trusted by the economists and academics that can use this data to make a real difference in the world.

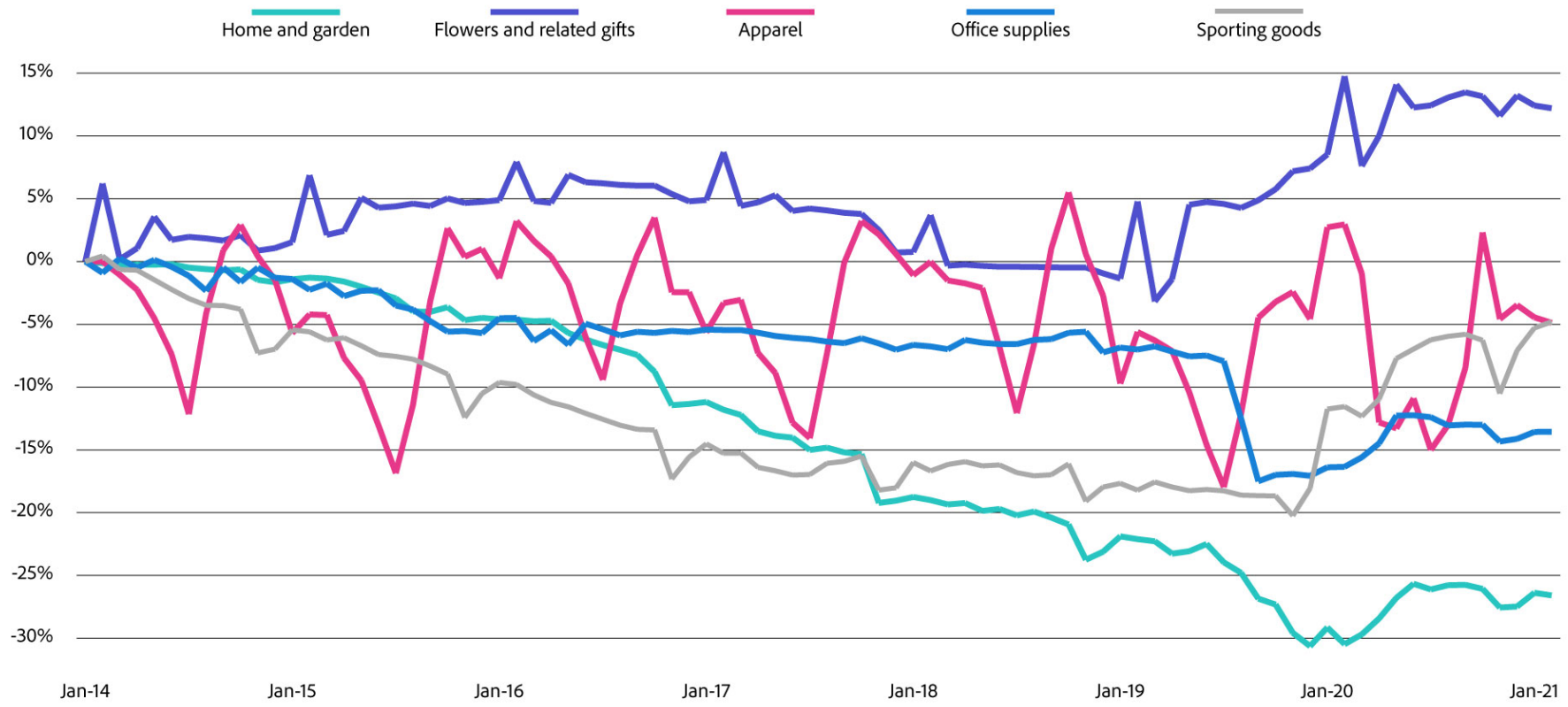
How DEI can help

- Consumers get a better understanding of their digital world—when to buy, what to buy, and how digital commerce is changing their lives.
- Companies get a better understanding of local and global trends, allowing them to anticipate and manage across international businesses.
- policy-makers get a much-needed rapid read on the digital economy and key data that can be used to anticipate broader economic trends.

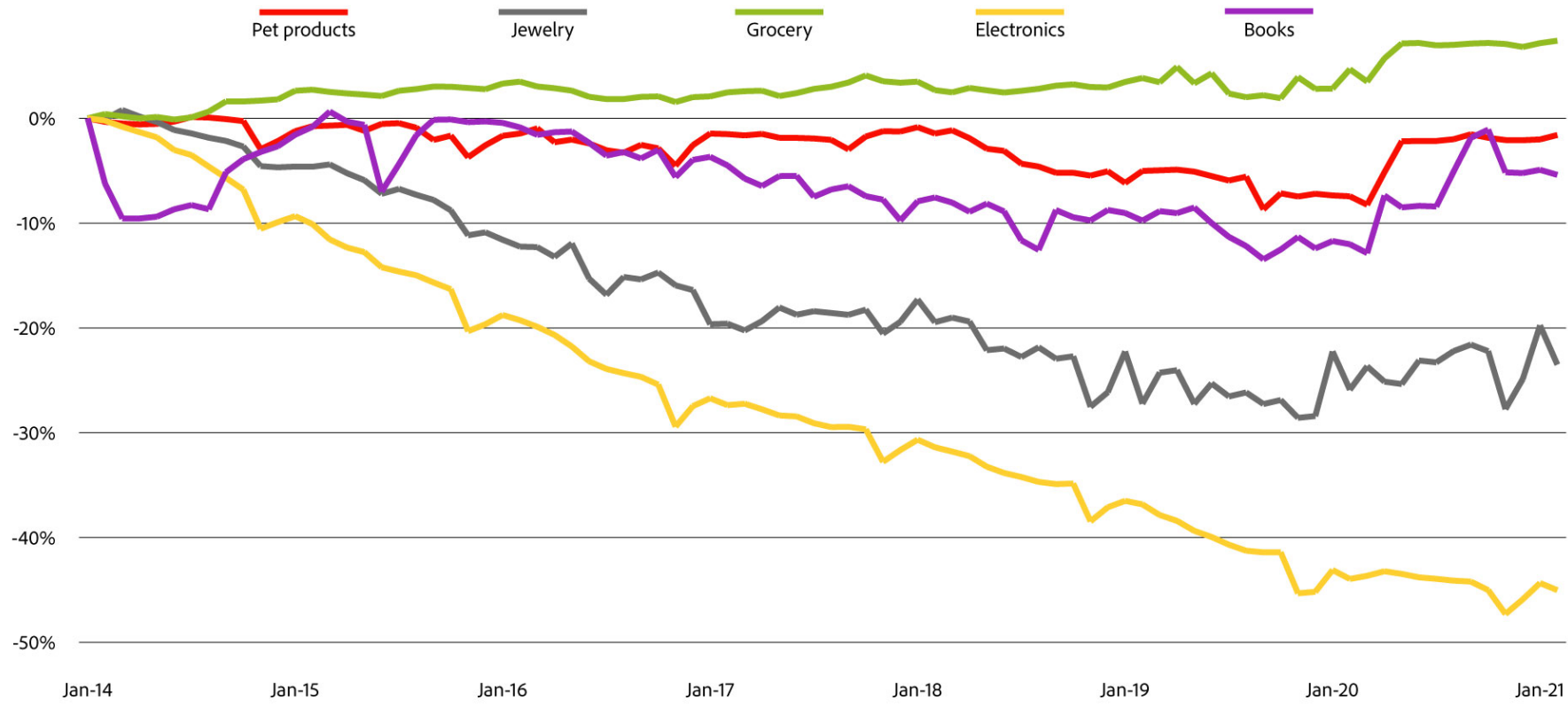
What the Digital Economy Index Measures

- The DEI calculates digital purchasing power (DPP) by country.
- DPP measures how much more people can buy online with a dollar, euro, real, pound, yen, etc. now versus a year ago.
- For example, if DEI for the U.S. is up by 2%, then \$1 spent online now will buy you what \$1.02 would have bought you a year ago.
- The DEI is always weighted by what people **actually spend** online:
 - As computers become less expensive, total online purchasing power will go up quickly because a good portion of what people buy online is computers.
 - But a rise in the price of pet products wouldn't affect purchasing power much because people spend relatively little on pet products online.
- Economies with fast-growing DEIs are making more and better goods available to their online consumers more cheaply.
- Because Adobe's DEI looks at what people actually buy, it allows reasonable comparisons between global economies.

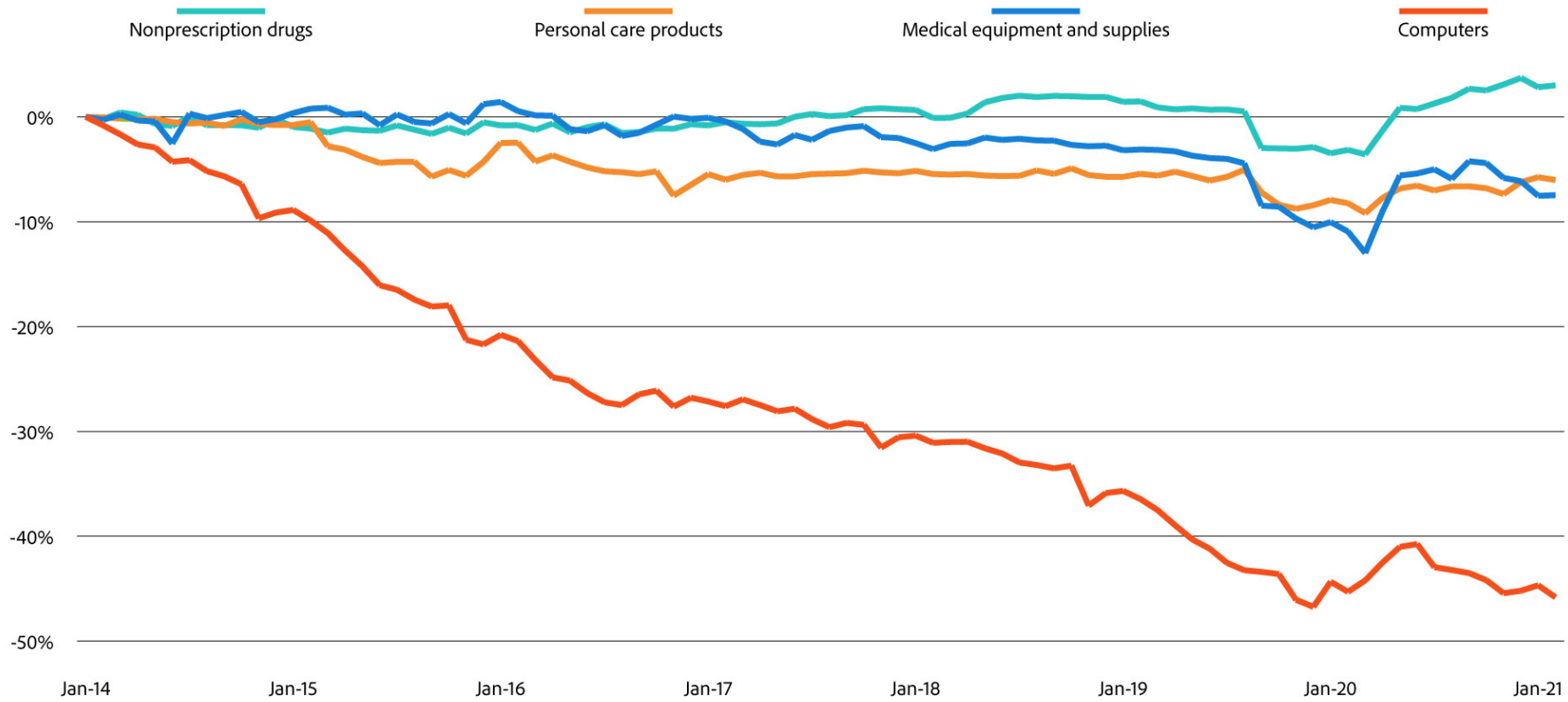




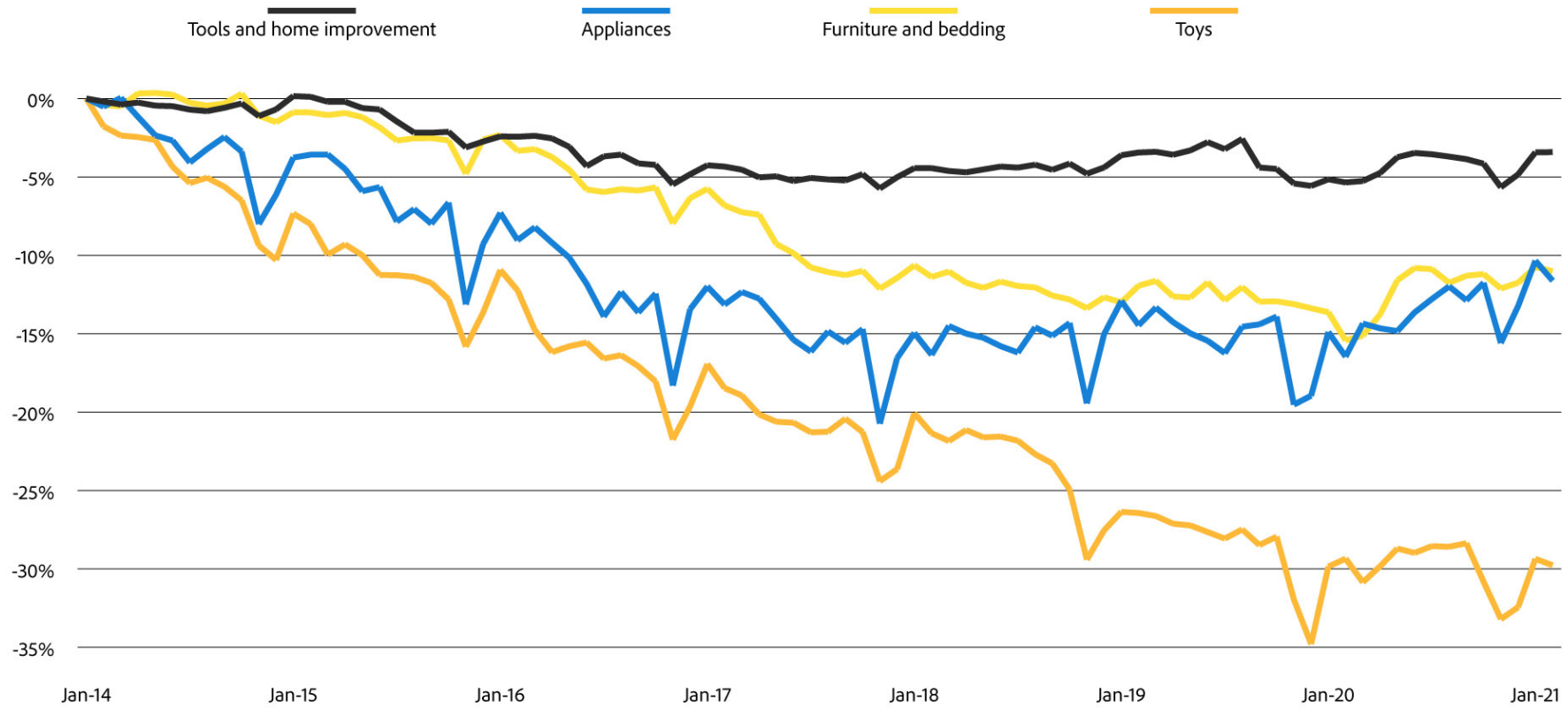
Online Price Trend by Category | Digital Economy Index (U.S.)
 Source: Adobe Analytics



Online Price Trend by Category | Digital Economy Index (U.S.)
 Source: Adobe Analytics



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 Source: Adobe Analytics



Online Price Trend by Category | Digital Economy Index (U.S.)
 Source: Adobe Analytics

Methodology and partnerships

We've partnered with economists Austan Goolsbee and Pete Klenow to contextualize and analyze the output from the DEI.



Austan Goolsbee, University of Chicago

- Robert P. Gwinn Professor of Economics at the University of Chicago's Booth School of Business
- Formerly served as President Barack Obama's chairman of the Council of Economic Advisers



Pete Klenow, Stanford University

- Professor at Stanford University's Department of Economics
- Currently visiting scholar, Federal Reserve Bank of San Francisco
- Member of editorial boards for *Econometrica*, *American Economic Review*, *Quarterly Journal of Economics*, and more

Formula for the DEI

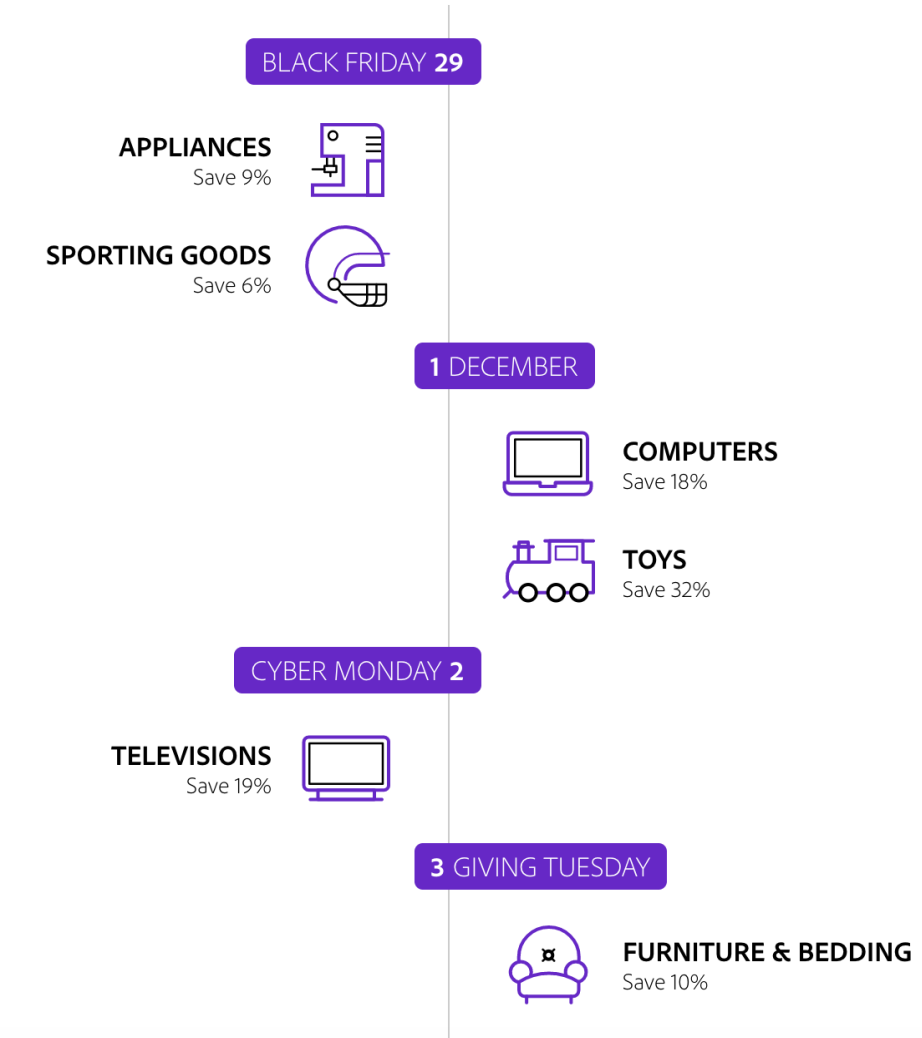
The base formulation for the DEI is informed by the Fisher Price Index:

- The Fisher Ideal Price Index uses quantities purchased on the current period (month) and a previous period (previous month) to determine actual consumers' preferences. Instead of assuming that consumers' preferences for what goods to buy are constant over a certain number of years, it's able to account for the fact that they are constantly changing what they buy.

$$\text{Fisher } \pi_t = \sqrt{\frac{\sum_{i=1}^n P_{it} U_{it-1}}{\sum_{i=1}^n P_{it-1} U_{it-1}}} * \sqrt{\frac{\sum_{i=1}^n P_{it} U_{it}}{\sum_{i=1}^n P_{it-1} U_{it}}}$$

How the DEI benefits consumers

- Consumers can get valuable guidance from the DEI, like the best times to buy appliances, TVs, or cameras. Our holiday report already featured DEI insights during the Q4 shopping season, and it provides guidance on the best days to buy hot-selling items.
- The DEI initiative will expand the product categories and geographic scope of our pricing data, which will allow consumers to tap into the best days to buy a wider assortment of goods – wherever they are in the world.
- Lastly, the DEI will help contextualize the pricing that consumers are observing on certain goods, as well as how these price changes may fluctuate and impact them in the future.



How the DEI benefits companies

- Companies can gain valuable insights from the DEI, like how digital economies are different in the U.S. versus the UK, especially when it comes to apparel, grocery items, and a host of other product categories.
- The DEI shows movement in global prices that require context and comprehensive tracking so that companies can gain visibility into the market forces that are impacting their consumers and clients.
- Companies will be able to see how their pricing strategies will impact and be reflected in global pricing trends, both inside and outside their own product and goods categories.
- Quantitative data that the DEI initiative uncovers will illuminate how product demand is being impacted by price, and how consumers are substituting one type of good for another.
- The speed at which DEI data is populated will allow them to be more reactive to emerging pricing trends. In some cases the data will be predictive, which will be even more valuable to organizations everywhere.

DEI data for leading thinkers and institutions

- We will make our DEI data feeds available to governmental institutions and organizations that develop policy and provide economic guidance.
- Organizations that are looking for ways to more accurately understand the digital economy will be able to use real-time data to analyze the rapid-impact events like COVID-19 that are happening both domestically and globally.
- This data will be a combination of pricing and product-level category data to help economic institutions better determine which parts of the digital economy can best predict inflation, as well as how consumer baskets are shifting.
- These data feeds will be provided on a biweekly cadence to most organizations so that they can be more responsive to shifts happening within different sectors.

How the DEI benefits policy-makers

- Policy-makers can get guidance from the DEI, especially in categories where digital data predict changes in the broader economy.
- The DEI can look at prices mapped across a national census framework. This allows for pricing and product sales insights across urban and rural regions, high- and low-income segments, and diverse and non-diverse populations. Ultimately, this allows policy-makers to understand the pricing effects being experienced by different constituencies.
- policy-makers can develop plans based on the DPP metric we're tracking to determine the buying power consumers are experiencing over time.
- The DEI will be trended against the CPI to help paint a clear picture of whether consumers are experiencing better pricing offline or online. As a result, policy-makers will be able to make the case to expand broadband and bring connectivity to regions in need of favorable pricing on goods that were not accessible online before.

