



Adobe Digital Economy Index

Adobe Analytics | Q1 2021



Methodology

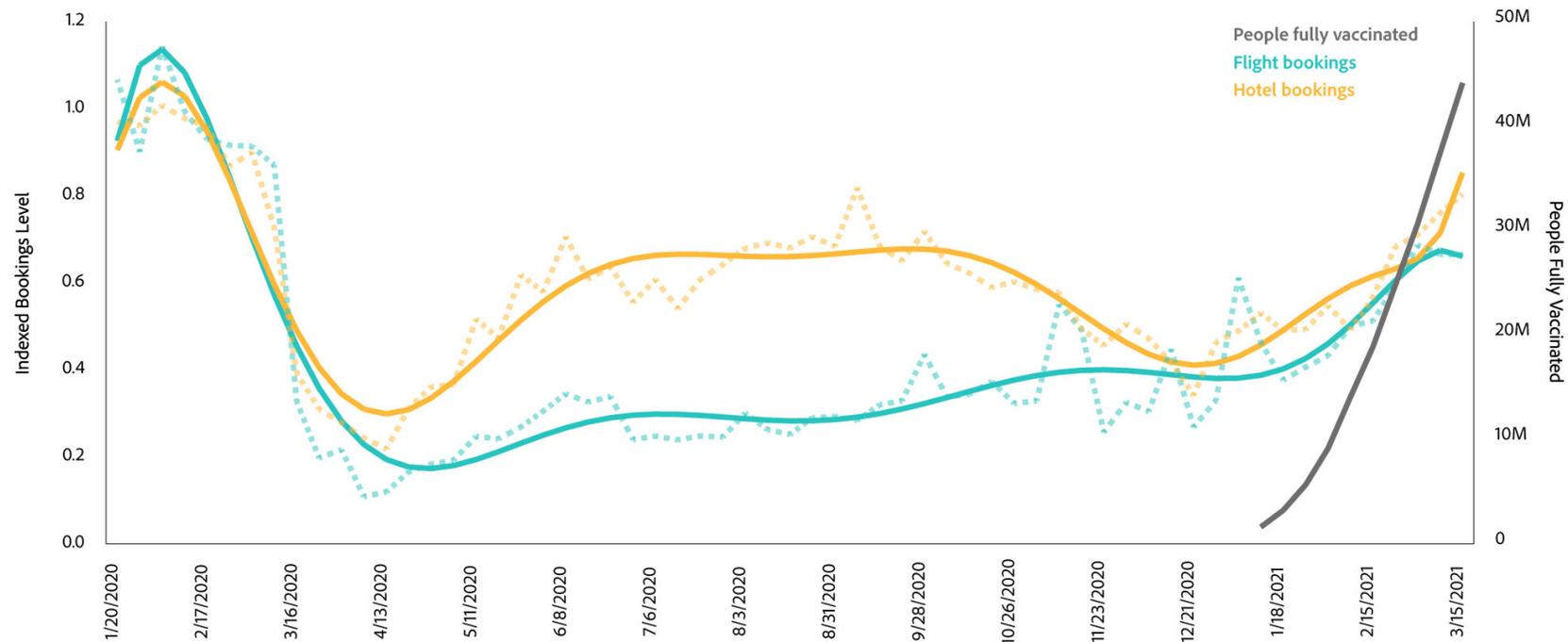
Most comprehensive report of its kind

- The DEI is powered by Adobe Analytics, which analyzes 1 trillion visits to retail sites and over 100 million SKUs.
- Global views based on consumer shopping from over 100 countries across three regions.
- Adobe Analytics measures transactions from 7 out of the top 10 US airlines and 8 out of the top 10 hotels.
- Companion research based on a survey of 1,000 consumers in each US, UK & Japan (18 years or older) fielded between February 26 and March 2, 2021, and March 24 and March 29, 2021.

KEY FINDINGS

- The travel industry is showing signs of recovery. Christmas and Thanksgiving flight bookings are up 17% and 9%, respectively.
- Global e-commerce is seeing a big boom, on pace to hit \$4.2 trillion this year, and showing +39% YoY growth in Q1.
- Online retail spending in the US accelerated in March with 49% YoY growth, propelled by a surge from the government stimulus, which added up to \$8 billion in online spend, almost an entire Black Friday's worth.
- UK is outgrowing the US in the online shopping space by almost 2 to 1, at 75% YoY in Q1.
- Japan hasn't shown the lift from COVID that other markets experienced, growing at a steady +15% YoY.

Airline bookings on their way to recovery



Hotel and Flight Bookings vs. COVID Vaccinations | U.S.
Source: Adobe Analytics

In March 2021, flight bookings grew 111% while hotel bookings grew 50% compared to the weeks* leading up to the vaccine rollout, translating to a 24% growth over March 2020 for flights, and 52% growth over March 2020 for hotels.

* Comparing 3/1/2021 – 3/31/2021 to 11/30/2020 – 12/13/2020



Travelers feel confident in future travel plans

The days before a flight that travelers are booking for is returning to normal as people feel confident in making travel plans.

- In July 2020, this number dropped to 20 days in advance as people were booking for more emergency situations.
- In recent weeks this has normalized to the 2019 average of **26 days**.

Travelers, now confident in future travel plans, are taking advantage of the lower prices right now — in March 2021 **domestic flight prices were still deflated at -16%**.

- Thanksgiving flight bookings for 2021 have seen 9% more bookings than 2019 had seen at this point*.
- Christmas has seen 17% more flight bookings than 2019 had at this point*.
- Future flight bookings hit 2019 levels starting the end of October through the end of 2021.

* Comparing holiday bookings made prior to 4/5/2021 to bookings made prior to 4/5/2019

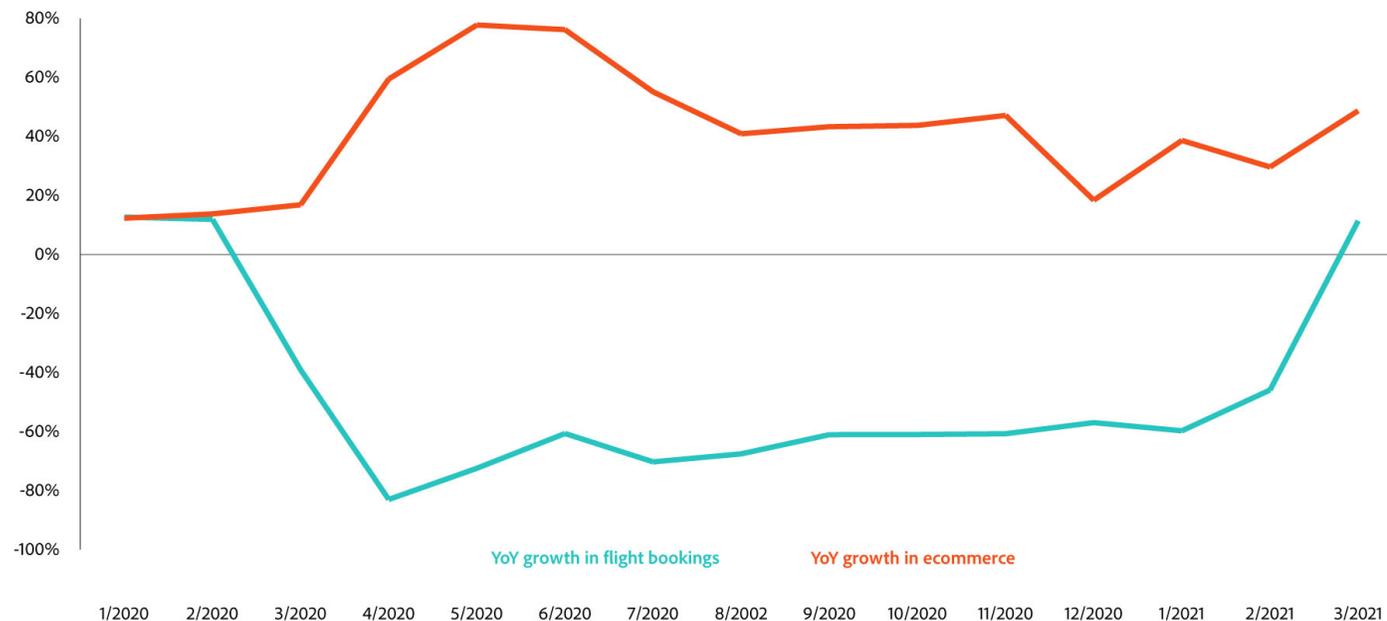
Northeast shows slow return to normal, but with positive outlook

Travelers in the Northeast continue to be more hesitant to travel, with bookings in March 2021 originating there only hitting 56% of January 2020 levels. The West is at 63% of January 2020 levels, Midwest at 75%, South at 70%.

However, the Northeast shows the strongest positive relationship between flight bookings and vaccination rates, with a 1% increase in vaccinated population corresponding to a 3.2% increase in flight bookings.



After falling behind e-commerce, travel is making a comeback to consumer spending

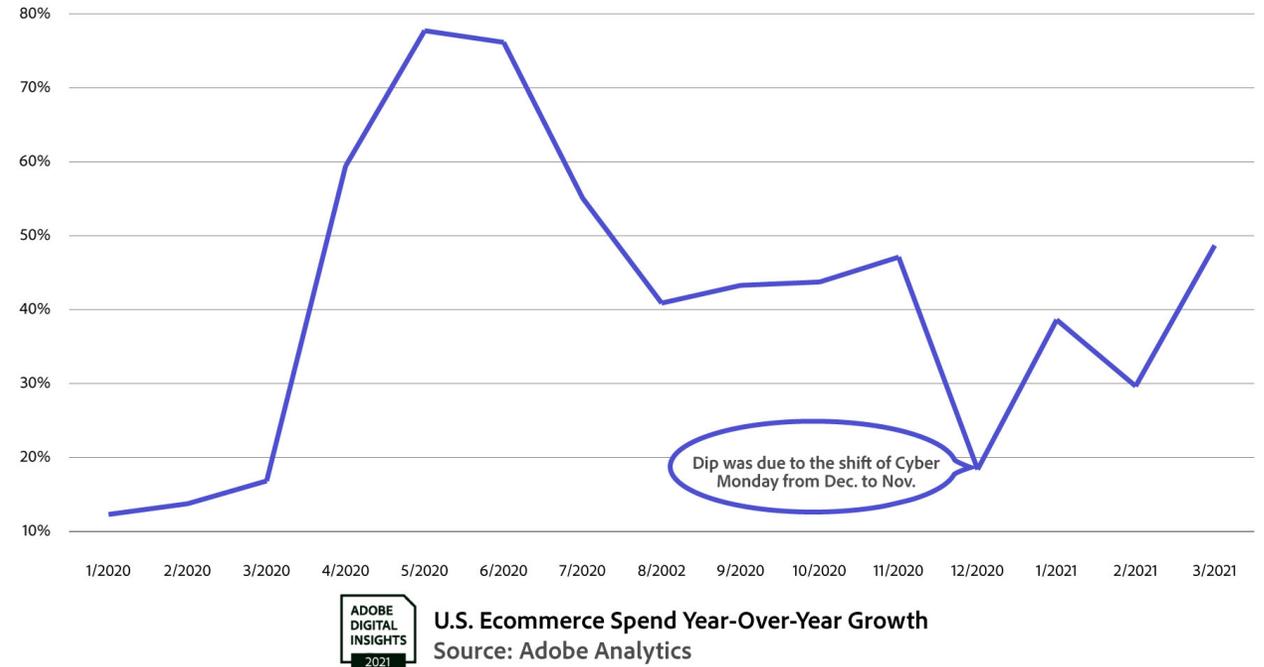


Year-Over-Year Growth In Online Spend for E-commerce and Flights | U.S.
Source: Adobe Analytics

The beginning of the pandemic sent the travel industry and the retail industry into completely different directions. In the last two months flight bookings are showing signs of a comeback.

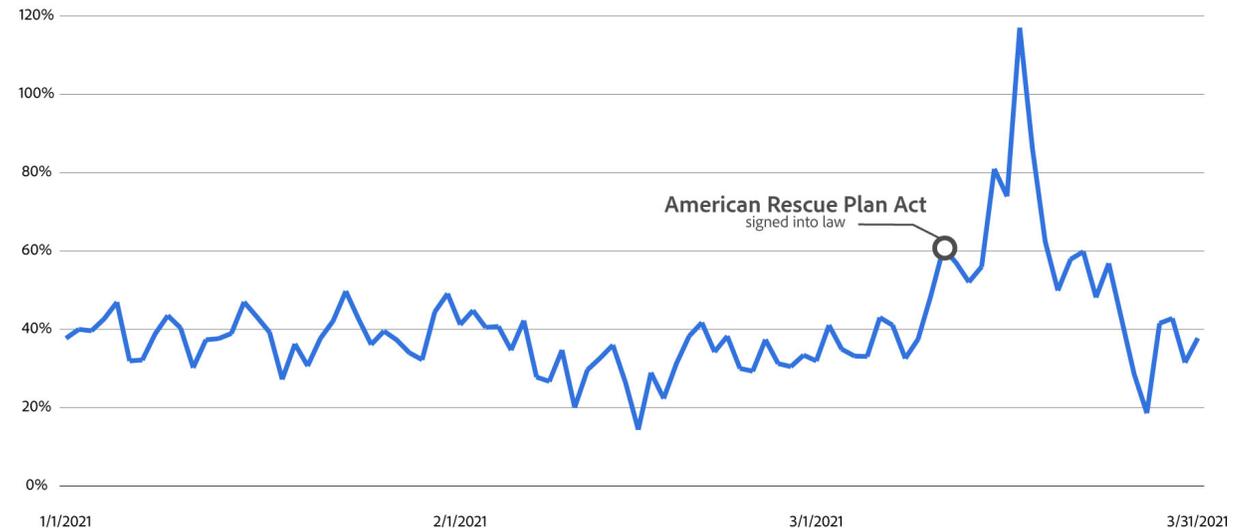
Despite large base, US e-commerce sees impressive growth in March: +49% YoY, at \$78B

- US consumers spent \$78 billion in March, showing a strong YoY growth of 49%, the highest growth since July last year.
- While the YoY e-commerce growth started to trend down as stores reopened and consumers became more comfortable visiting them, **March saw a significant rebound.**
- This growth presented itself despite the large base in 2020, marked by the sharp increase in e-commerce activity at the start of the pandemic.



The US stimulus payment resulted in almost a Black Friday worth of extra online spend at \$8B

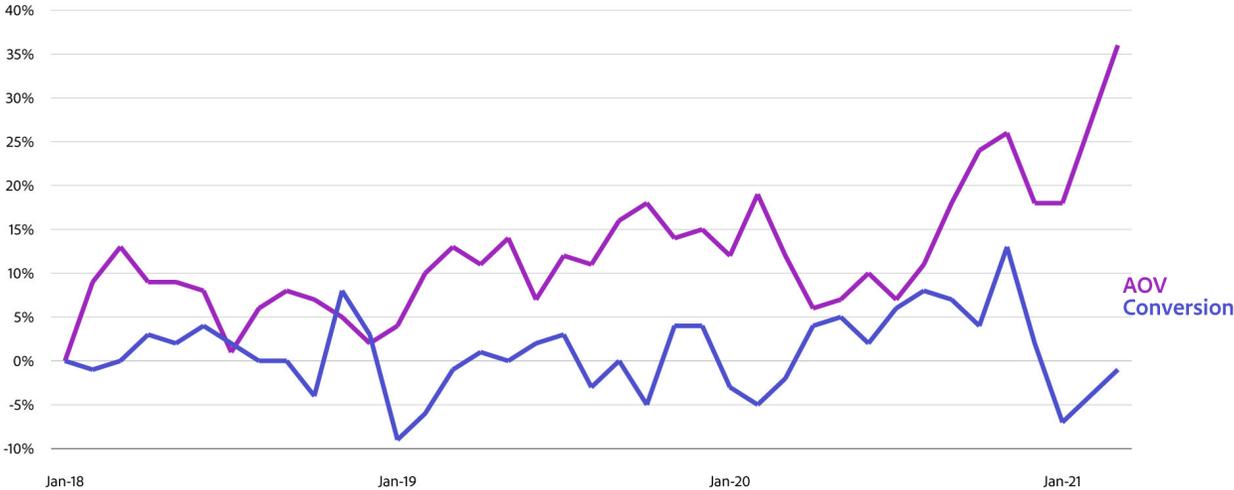
- Starting on March 11, when the American Rescue Plan Act became law, e-commerce activity saw a big spike.
- An **extra \$8B was spent online** from March 11 through the end of the month.
- This spending amount corresponds to **roughly 2% of the overall direct stimulus** that went to consumers, \$410 billion.



Year-Over-Year Online Spend Growth | US
Source: Adobe Analytics

Global e-commerce inching toward \$1T, reaching \$876B in Q1 2021 — up 38% YoY

- If the current trend persists, the year will end at \$4.2 trillion spent online globally, equivalent to a top-5 country based on GDP, ahead of Germany.
- Increased web traffic accounts for nearly two-thirds (64%) of the revenue growth, with average order value leading conversion for the remaining gains (+7% and +3% year over year).
- Over the past three years, the average order value has been increasing worldwide, at the rate of \$0.65 per month, while conversion of visits remains flat.

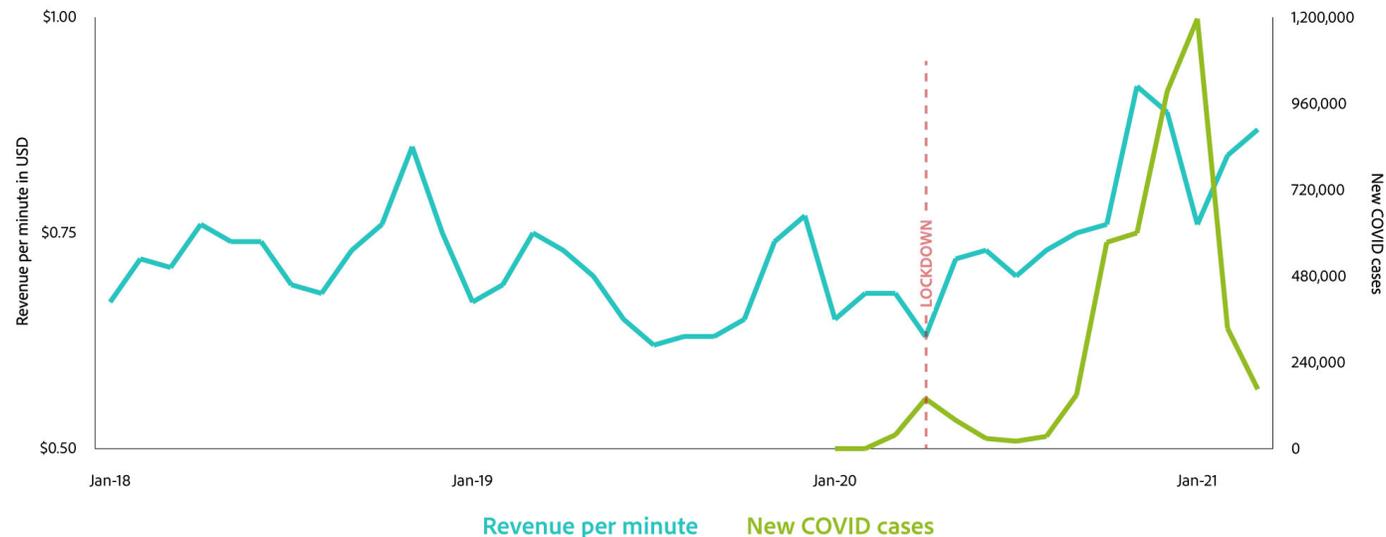


Global Conversion and Average Order Value Trend | Digital Economy Index
Source: Adobe Analytics

* Projection based on current trend

The United Kingdom showing unprecedented surge, reaching \$39B in Q1 2021, +66% YoY

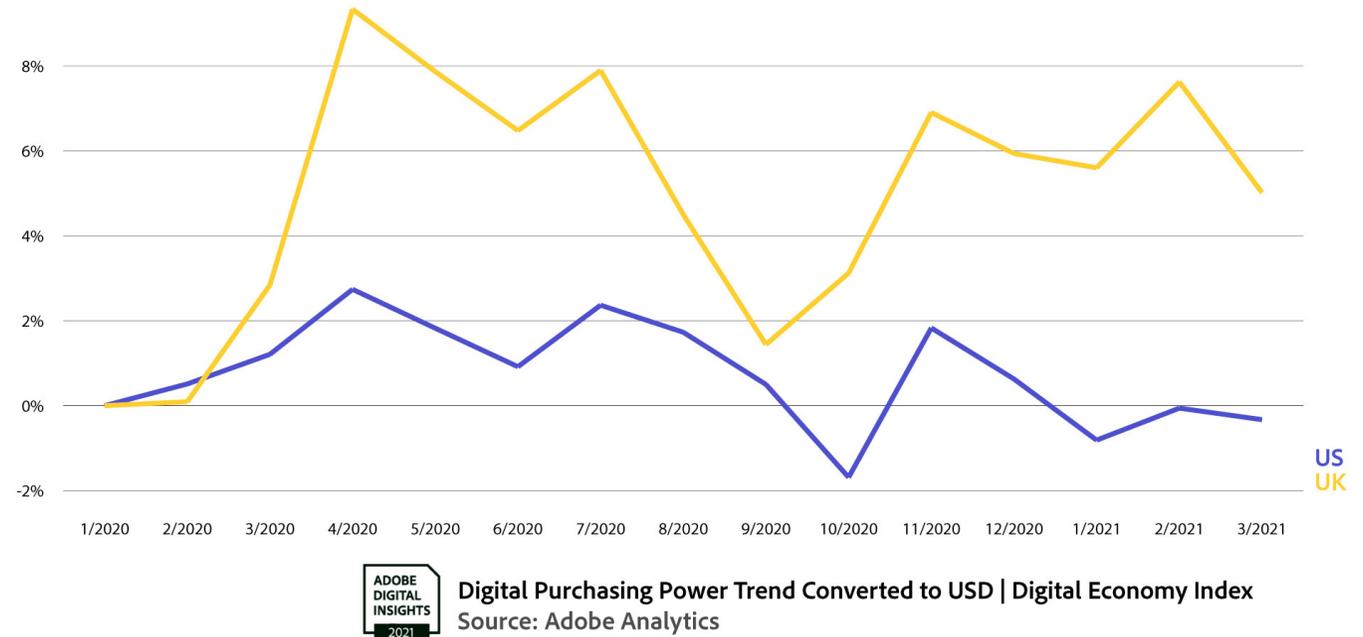
- Growth of online retail sales in the UK outpaced the US— 66% vs. 39%.
- Half of the revenue (50%) came from smartphones, representing 6% growth YoY.
- The continued threat of the pandemic has kept UK consumers shopping online — visit growth was +29% and accounted for most of the posted revenue gains with the remaining coming from bigger orders (+9%) and better conversion (+18%).
- Consumers are “shopping faster,” with revenue per minute trending up. While it is normal to see spikes during the holidays, there has been an increase in revenue per minute since the first lockdown went into effect in late March 2020.



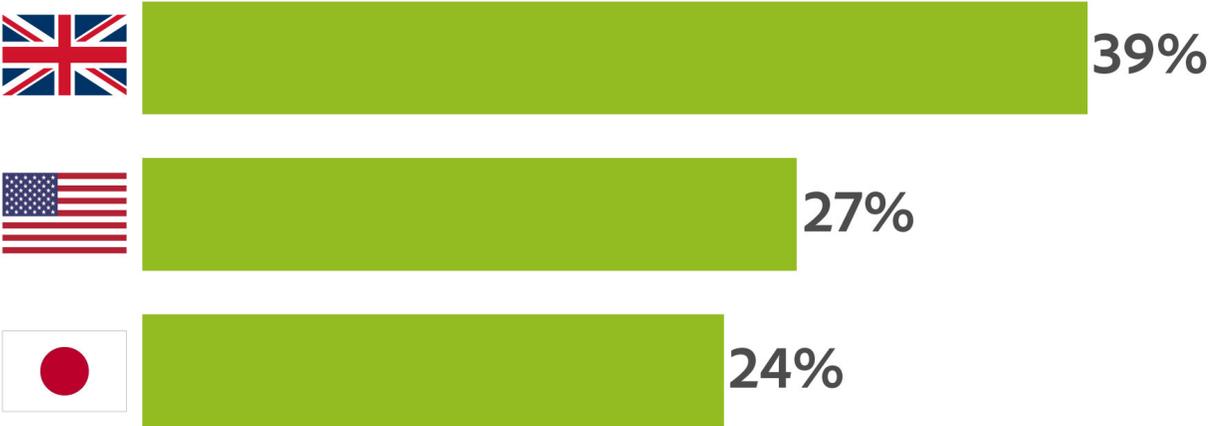
Revenue per Minute and COVID Cases | Digital Economy Index (UK)
Source: Adobe Analytics

US consumers fell behind the UK in the value of their digital dollar in April 2020

- The purchasing power of the US dollar when used online was on a continuous upward track prior to the pandemic.
- In 2020 that trend stopped, and the digital purchasing power (DPP) remained flat for the year.
- The DPP in the United Kingdom shot ahead of the United States in April 2020, as a result of both the decrease in DPP for the US and an increase in purchasing power in the UK.



US consumers catching up with UK in online grocery shopping

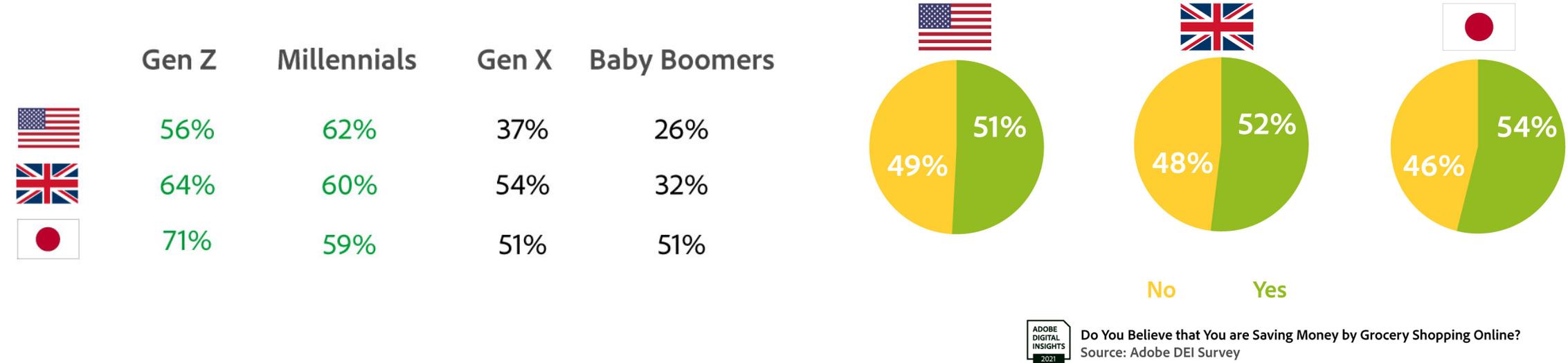


Percent of Consumers that Prefer to Shop Online for Groceries
Source: Adobe DEI Survey

- Two-thirds of UK consumers report shopping online for groceries monthly.
- Pre-pandemic, 38% of UK consumers were shopping for groceries twice per week.
- 51% of US and Japan consumers, and 45% of UK consumers, believe they have spent more on items like groceries, medicine, and health equipment over the past four weeks.

The shift online for grocery and sporting goods is here to stay

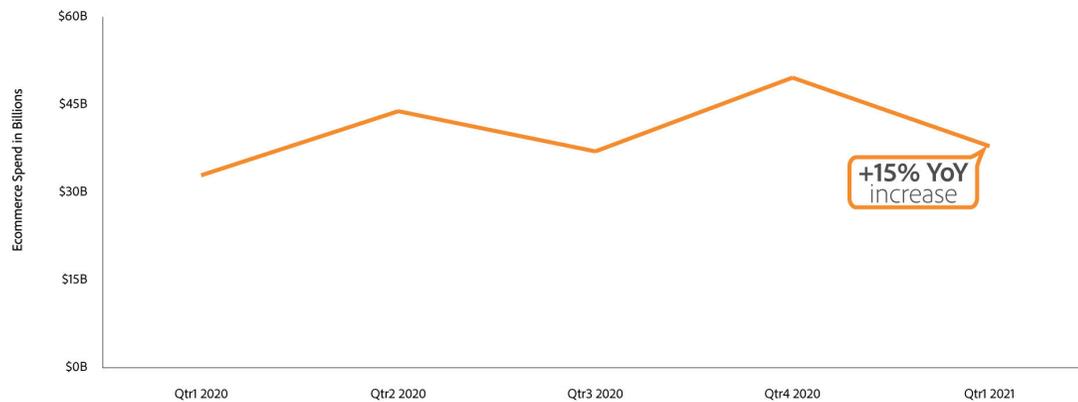
- In the US, grocery and sporting goods continue to see growth over mid pandemic levels*, while other categories like books and craft supplies lag.
 - Grocery saw a 17% boost in March, and sporting goods saw 15% boost.
 - Books saw a 14% decline over the same time period, and craft supplies declined 23%.
- While a little over half of consumers believe that they are saving money by grocery shopping online, the younger generations, especially in the UK and Japan, propagate it more.



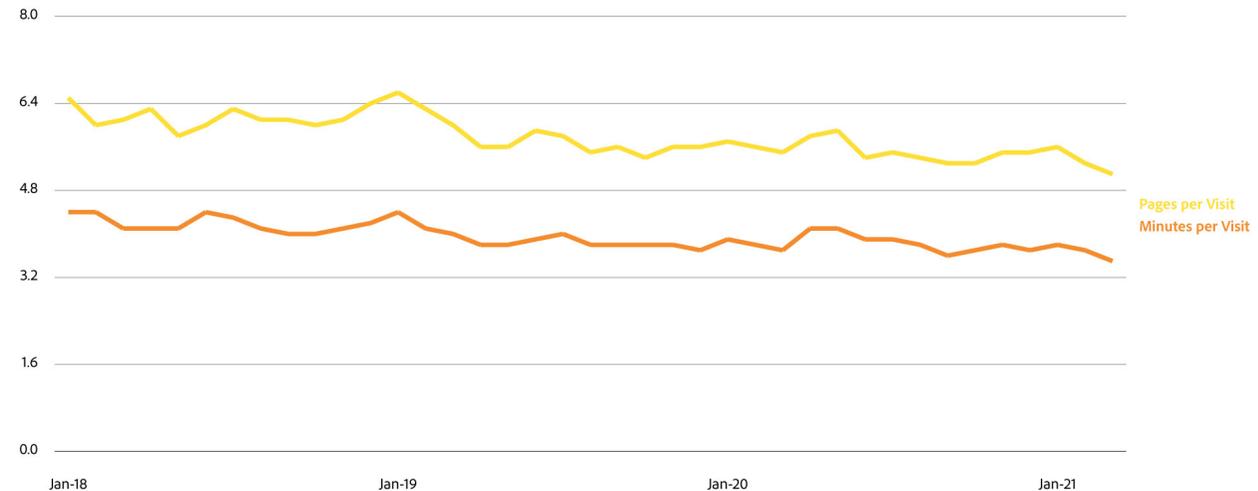
* Comparing average revenue over March 7 – March 21 to August 15 – August 31

Japan's shopping is going digital at its own pace, with online retail sales at \$38B, up 15% YoY in Q1

- Japan's Q1 retail sales were up 15% YoY in Q1 2021, with \$5 billion more spent online this year.
- While more Japanese visited retailers more often (+19% YoY) and placed larger orders (+15% YoY), that gain was partially offset by lower conversion of visits into orders (-16%).
- 64% of the revenue in Q1 came from smartphones, virtually unchanged (+2%) over last year.
- Over the past three years Japanese consumers have spent less time on site, directly impacting the number of pages viewed in a visit.



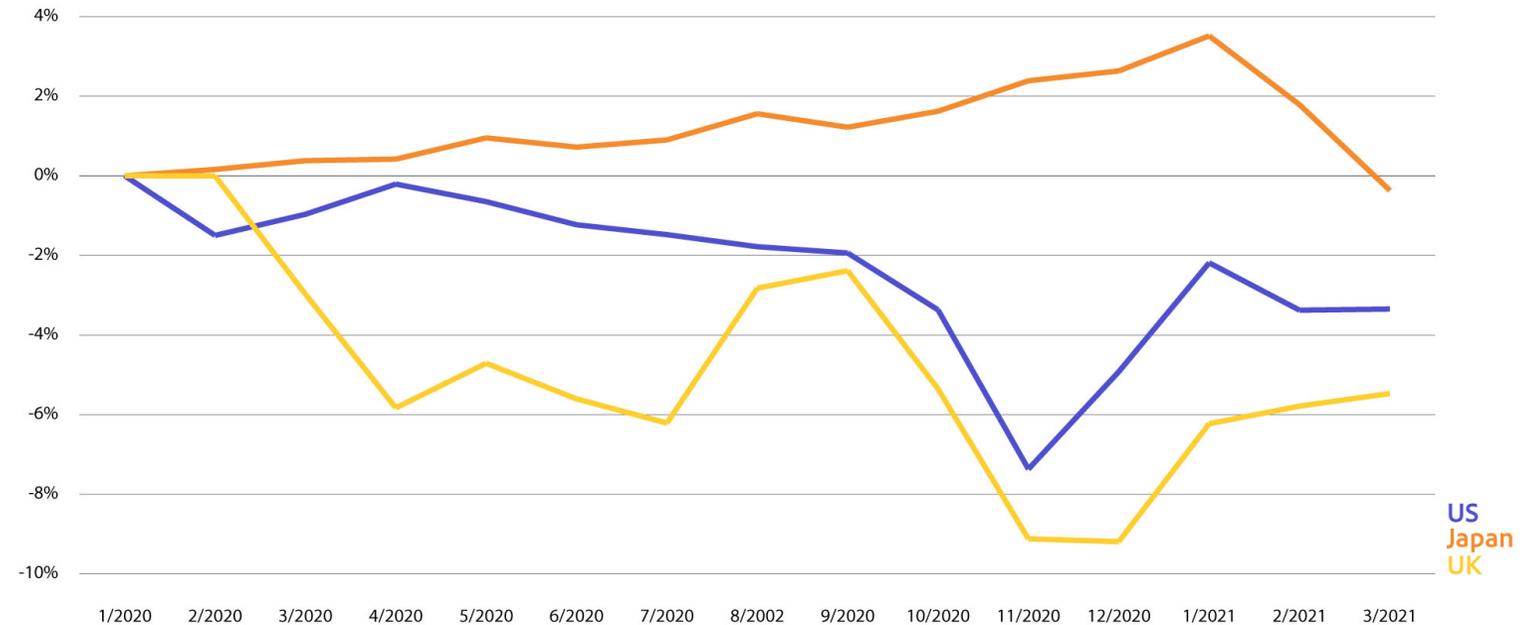
ADOBE DIGITAL INSIGHTS 2021
Japan Quarterly E-commerce Spend
Source: Adobe Analytics



ADOBE DIGITAL INSIGHTS 2021
Page and Minutes per Visit | Digital Economy Index (Japan)
Source: Adobe Analytics

Japan stands out with electronics prices' rise over the past year

- The US suffered from an increase in electronics prices in April 2020. Since then, electronics prices have gone back to their normal pattern of continuous decrease.
- Meanwhile, Japan has seen a continuous increase in electronics prices.



Electronics Price Trend to USD | Digital Economy Index
Source: Adobe Analytics

Apparel prices move in unison across the globe

- Prices in the apparel industry across the globe followed a similar trend over the past year.
- In Japan, the United Kingdom and in the United States apparel prices saw a sharp drop in April 2020, following a drop in demand.
- The sharp drop was then followed by a steep increase in October 2020, when the supply and demand restabilized.



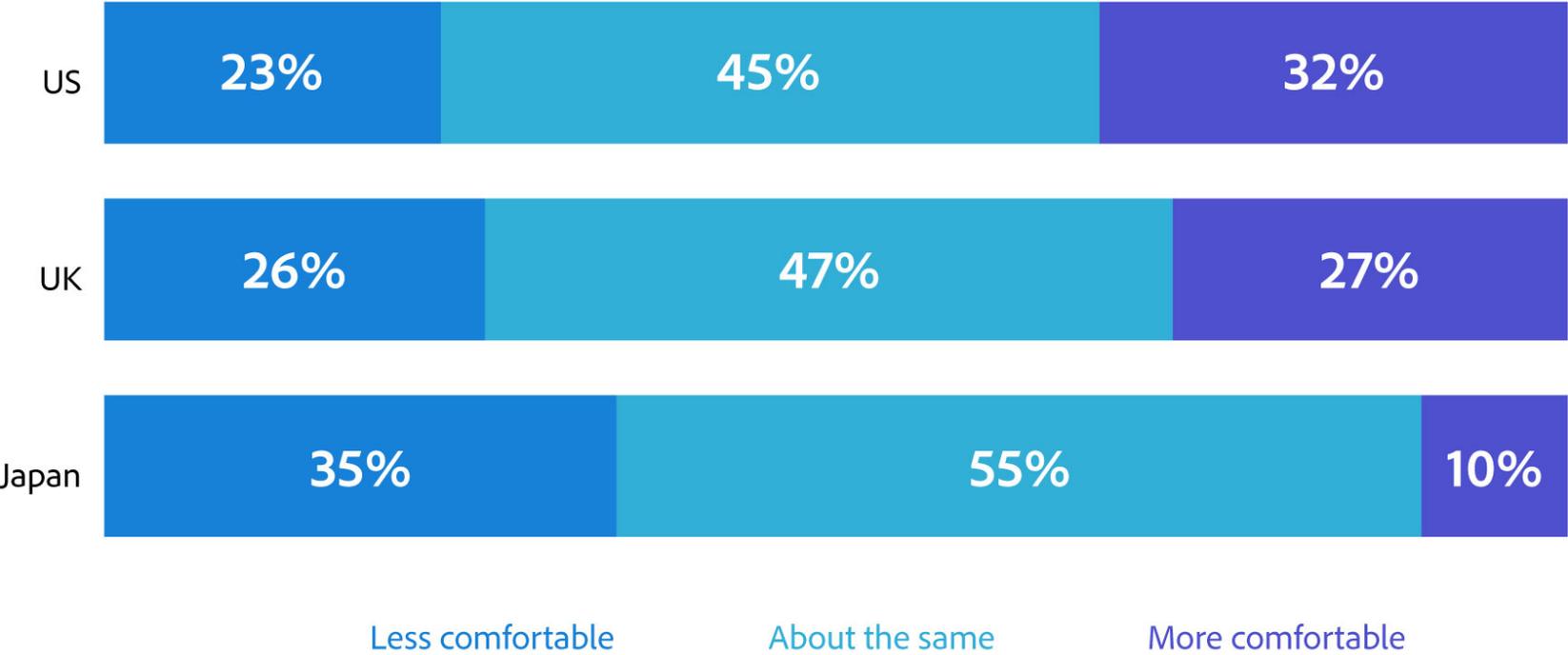
Apparel Price Trend to USD | Digital Economy Index
Source: Adobe Analytics

Consumers across the world tried online shopping for the first time in 2020

- UK e-commerce attracted the most new consumers online in 2020, with 15% of consumers that reported having shopped in 2021 never having purchased anything online prior to March 2020.
- In the US, 9% of online shoppers are new to this activity.
- Across the world, the demographics of new shoppers skews young, with the greater share of young shoppers reporting being new to e-commerce.



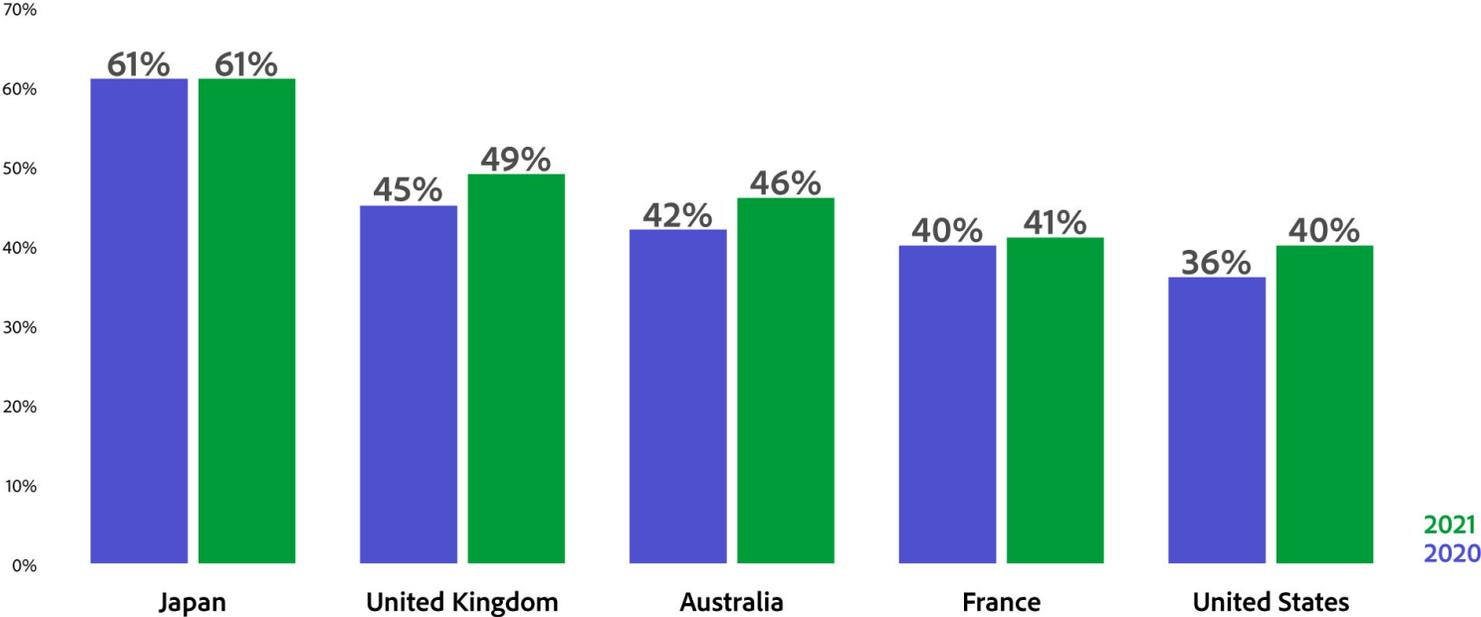
US consumers less concerned with avoiding crowds



How do you feel right now about visiting stores/shops compared to 2020?
Source: Adobe DEI Survey

US trails other developed e-commerce countries in smartphone adoption

- Smartphones have been rapidly taking up share of the US online shopping.
- However, US consumers still trail many other countries around the globe when it comes to using their mobile devices.



Share of E-commerce Sales from Smartphones Q1
Source: Adobe Analytics

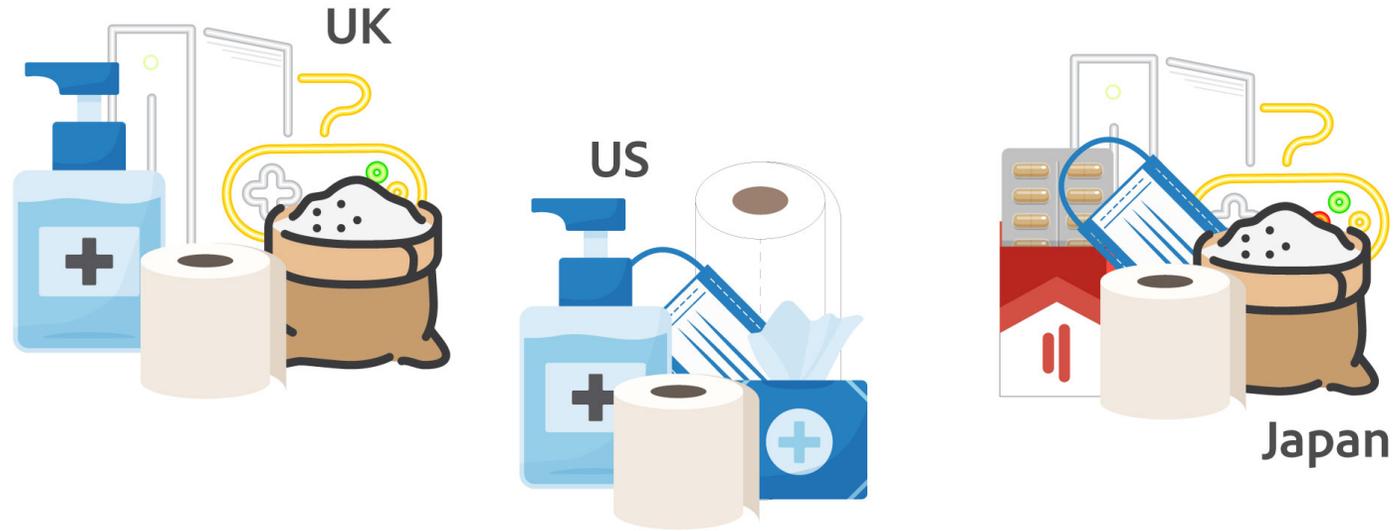
Buy now, pay later sees strong growth in all US states

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 — March 2021 saw 166% YoY growth in usage.

The states that topped the charts in YoY growth for that time period were Florida, Washington, and Colorado, while New Mexico, Hawaii, and Wyoming were the slowest growing.



Out-of-stock messaging continues to be seen in high-demand categories



Out-of-Stock Products Online
Source: Adobe DEI Survey

- Baby and toddler products topped the charts for most out-of-stock messaging in Feb. 2021, at 3.2 times the average out-of-stock messages seen. Grocery and jewelry weren't far behind, at 3.1 and 2.8 times the average.
- Electronics and toys are securely in stock, with consumers seeing out-of-stock messaging much less frequently, at just 12% and 19%, respectively, of the average.

Scope and outlook

US 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 US 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 and 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 US 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

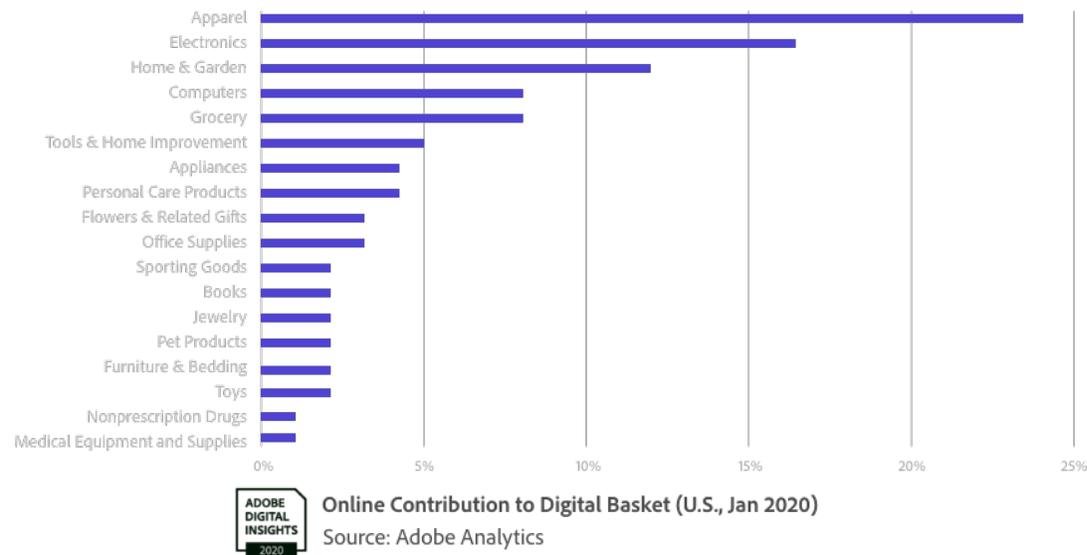
- Only we have the data from trillions of visits, tens of millions of products, and thousands of retailers needed to assess the global digital economy.
- Our Adobe Sensei AI capability can take all this data and process it in near-real time to give high-speed insights.
- We're trusted by multiple companies 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 with a dollar, euro, real, pound, yen, etc. online now versus a year ago.
- For example, if DEI for the US is up by 2 %, then \$1.00 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.



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 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

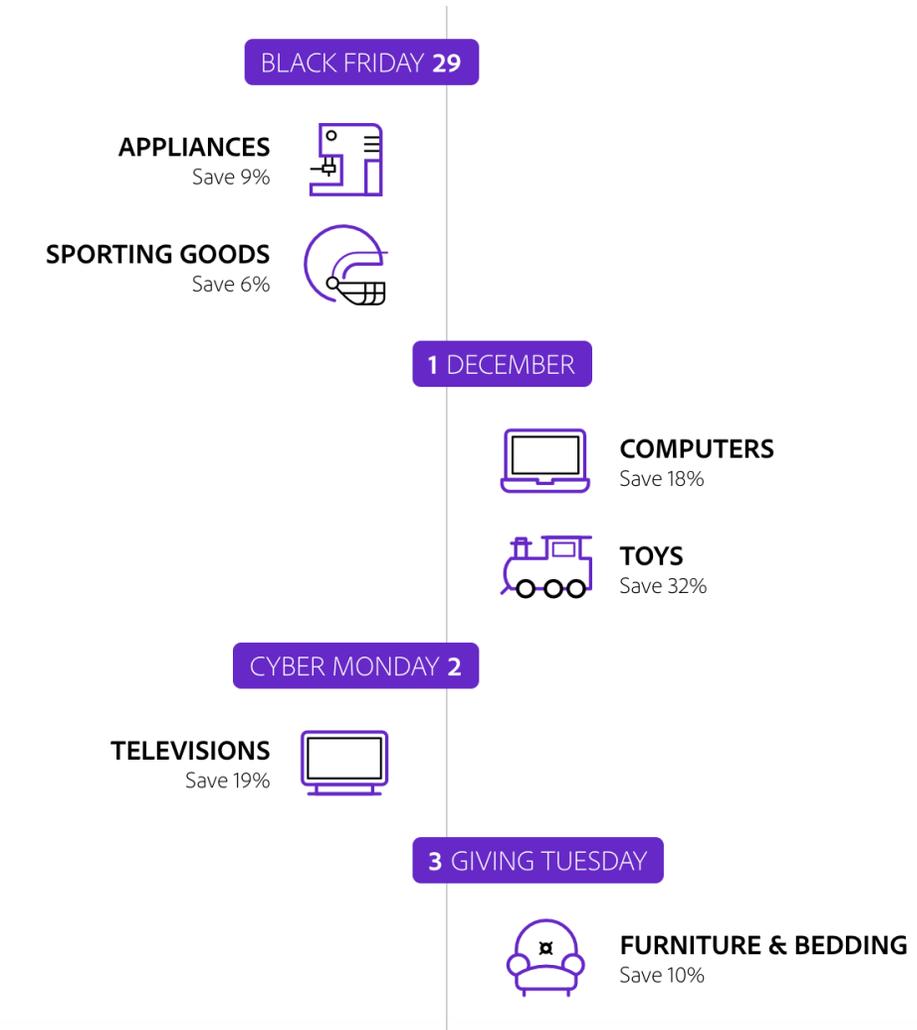
The base formulation for the DEI is informed by the Fisher Price Index:

- 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 US 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.

