Adobe Digital Economy Index

Adobe Analytics | April 2020

Summary

- Adobe's Digital Economy Index (DEI) is a global economic measure for the 21st century, more quickly, comprehensively, and internationally measuring the increasing buying power of digital consumers—and doing it with greater detail than any other data source available.

- As online absorbs the off-line retail economy, inflation is being observed for the first time in years, especially in categories that have consistently experienced online deflation, like electronics.

- April Prices for Online Apparel dropped significantly and at a rate that is 4x higher than what is typically expected, for this time of the year.

- Online categories are continuing to see spikes, in sales, across certain categories. This is fueling an overall ecommerce boost that is showcasing that consumers are still spending and are willing to spend on products that will help them best manage the crisis.

Apparel sees the largest April price decrease in years

- The average price growth for April has been -2.9%; this year that growth is -12%, which is the largest April monthly drop that's been observed, for the category, in over 5 years.
- Prices in Apparel fell earlier than expected in April, as apparel retailers looked to rally sales momentum and clear inventory, early.
- The June-July time period usually brings about strongest apparel decreases(approximately 6%) as off-season clothing is put on clearance. It remains to be seen if this drop will be amplified deeper into the summer, or if more normative pricing patterns will return.

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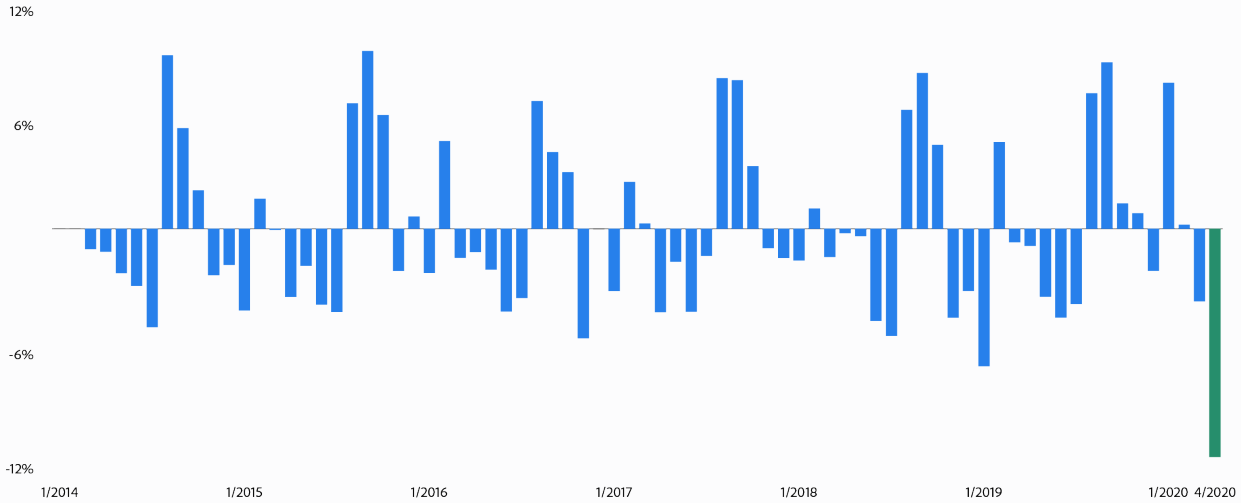
Online Apparel Price Trend | Digital Economy Index (U.S.)
Source: Adobe Analytics



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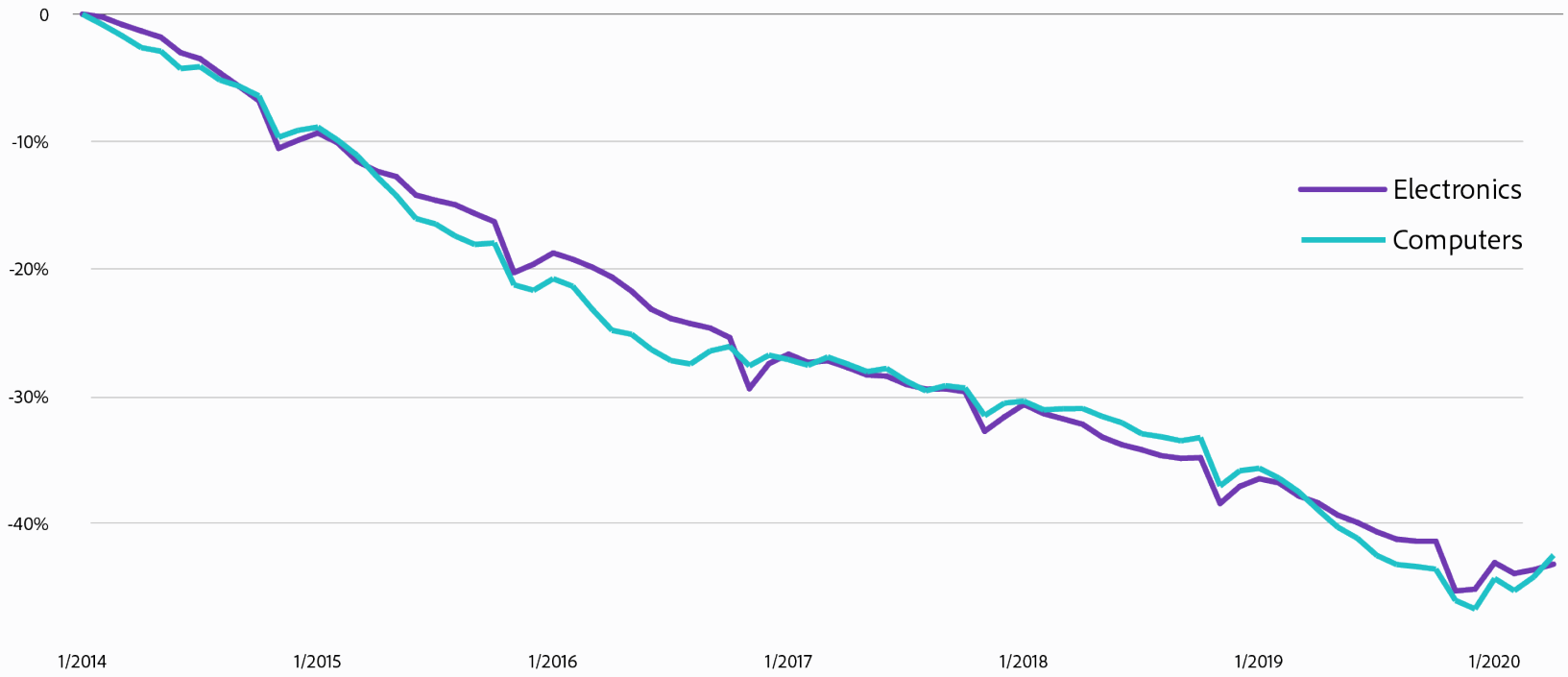
Month over Month Apparel Price Changes | Digital Economy Index (U.S.)
Source: Adobe Analytics

Electronics deflation halts and ticks up

- Online Electronics prices have been experiencing deflation at steady rate since 2014. However as COVID converges both offline and online economies; electronics prices are flattening out for first time in years.
- Computer prices crept up in April, as demand increased, and electronics prices, as an overall category, appear to be on an upward trajectory. It's unlikely that consumers will be able to continue to experience favorable pricing online, for electronics, as it has for many years. Supply chain impact may exacerbate these price changes in the coming months.



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Online Computer & Electronic Price Changes | Digital Economy Index (U.S.)

Source: Adobe Analytics

Online grocery prices in April

- Online grocery prices increased in April but stayed in-line with Q1 levels in 2019
- The aggregate grocery prices consumers pay tend to draw down in Q2 & Q3, before spiking back-up in Q4. It remains to be seen if this pattern will hold in a COVID landscape where suppliers are hiking up costs, on certain goods for grocers, and if those costs will be passed on to the consumer.

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Online Grocery Price Changes | Digital Economy Index (U.S.)
Source: Adobe Analytics

U.S. dollar purchase power continues to grow in April

U.S. DPP grew 4.1% percent in April 2020 YoY:

- Consumers can now purchase goods for $1.00 that were worth $1.04 in April 2019.
- Years of consistent online deflation has helped cushion the blow of increasing prices, emerging because of COVID.
- Aggregate digital purchasing power continued to increase in April, due to pronounced deflation in Apparel.

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Digital Purchasing Power | Digital Economy Index (U.S.)
Source: Adobe Analytics

April online sales take-off with boosts from grocery, and electronics

- U.S. ecommerce saw a 49% increase in daily sales*
- Electronics sales are up 58%.
- Daily online book sales doubled in April.

Online grocery in the U.S. has seen a **110%** boost in daily online sales in April*

*Growth compared to baseline period of March 1 to March 11 to measurement period of April 1 to April 23

Consumers focus on comfort

- Consumers shifted their apparel purchases toward more comfortable, home clothes. Pajamas sales increased +143%. Pants sales dropped -13%, jackets –33%, and bras -12%. Consumers turned to summer clothes as shorts and t-shirts gained +67% and +47% respectively.

- Consumers also turned online to shop for apparel, with a 34% increase in sales as prices dropped significantly.

*Growth in March compared to April

Creative audio recording equipment sales pick-up

Living with the COVID impact is pushing consumers to connect with their creative side and create. We're seeing a renewed boom in purchasing creative audio-recording equipment:

Sales of audio mixers, microphones and microphone cables, pop filters, windscreen, etc have seen an 459% increase

**Growth from March 11 to April 21 compared to baseline period of March 1 to March 10*

Wine and spirit sales surge

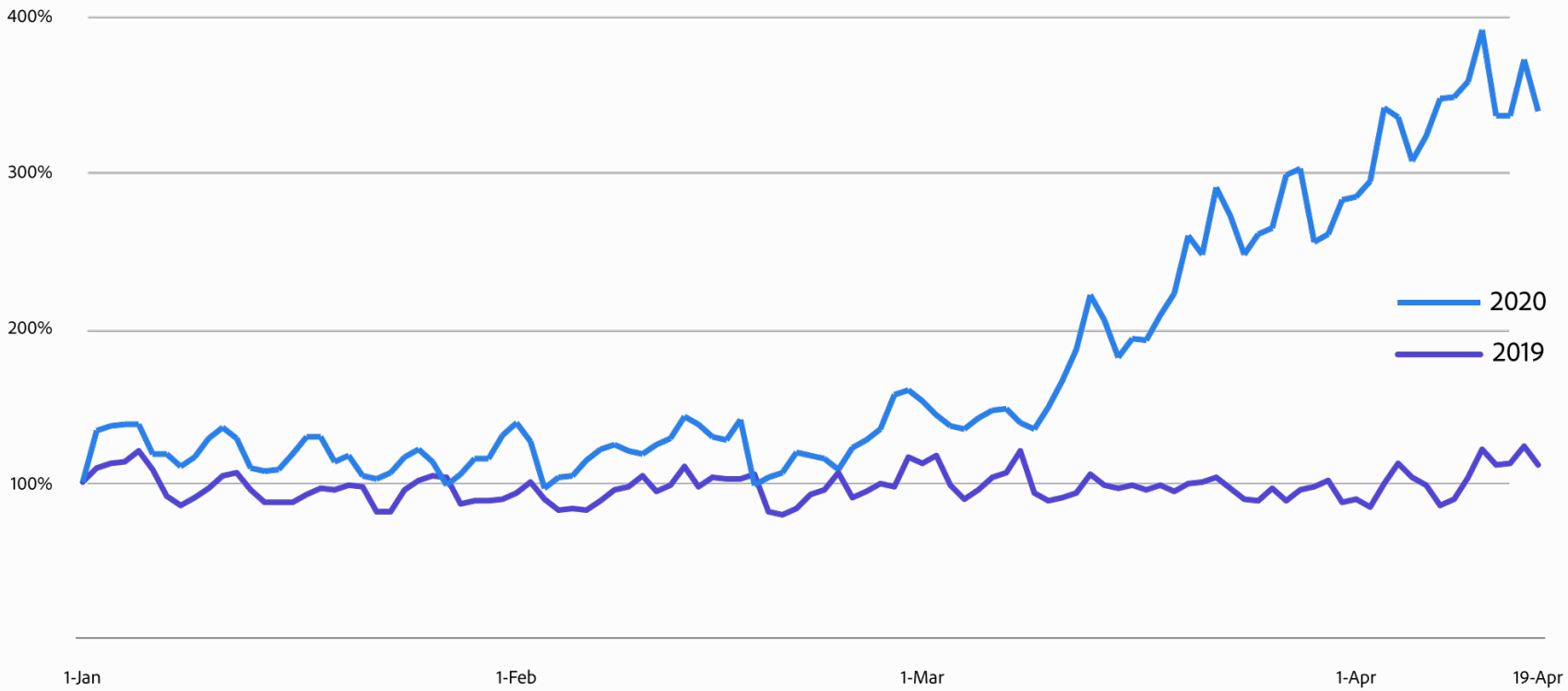
In the U.S., online wine, beer, spirits, and accessory sales saw an increase of **74%** between March 11 – April 21*

- Consumers are at a stage where they want to wind down and kick-back with a glass of wine, in order get comfortable with shelter-in-place for an extended period of time

**Growth from March 11 to April 21 compared to baseline period of March 1 to March 10*

BOPIS online share growth catches on in April

BOPIS orders surged to 208% YoY growth in between April 1 - 20 as people continued applying social distancing to shopping to limit their exposure.



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Online B.O.P.I.S Orders | 2019 vs 2020 (U.S.)
Source: Adobe Analytics

Scope and outlook

March announcement

April monthly refreshes begin

Additional countries and "H1 Outlook Report"

Holiday pricing 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, and the benefits of it to consumers, companies, and policy makers.

Why we're introducing DEI in an evolving landscape

Before the COVID-19 situation:

- 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 policymakers need insights fast turn-around insights to manage a global health and economic crisis.
- Online shopping has become the primary means of commerce populations around the world as purchases previously made 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 the 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

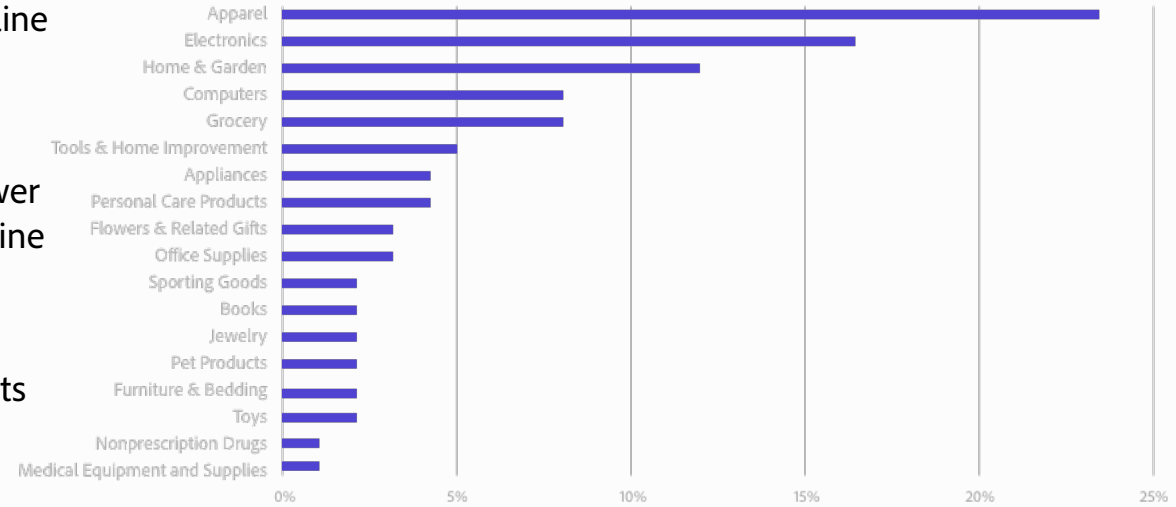
- Only we have the data from trillions of transactions, tens of millions of products, and thousands of retailers needed to assess the global digital economy.
- Our Adobe Sensei AI capability can take all this data and process it in near real-time to give high-speed insights.
- We're is trusted by so 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 Does 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.
- Digital purchasing power 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 U.S. is up by 2 percent, 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.



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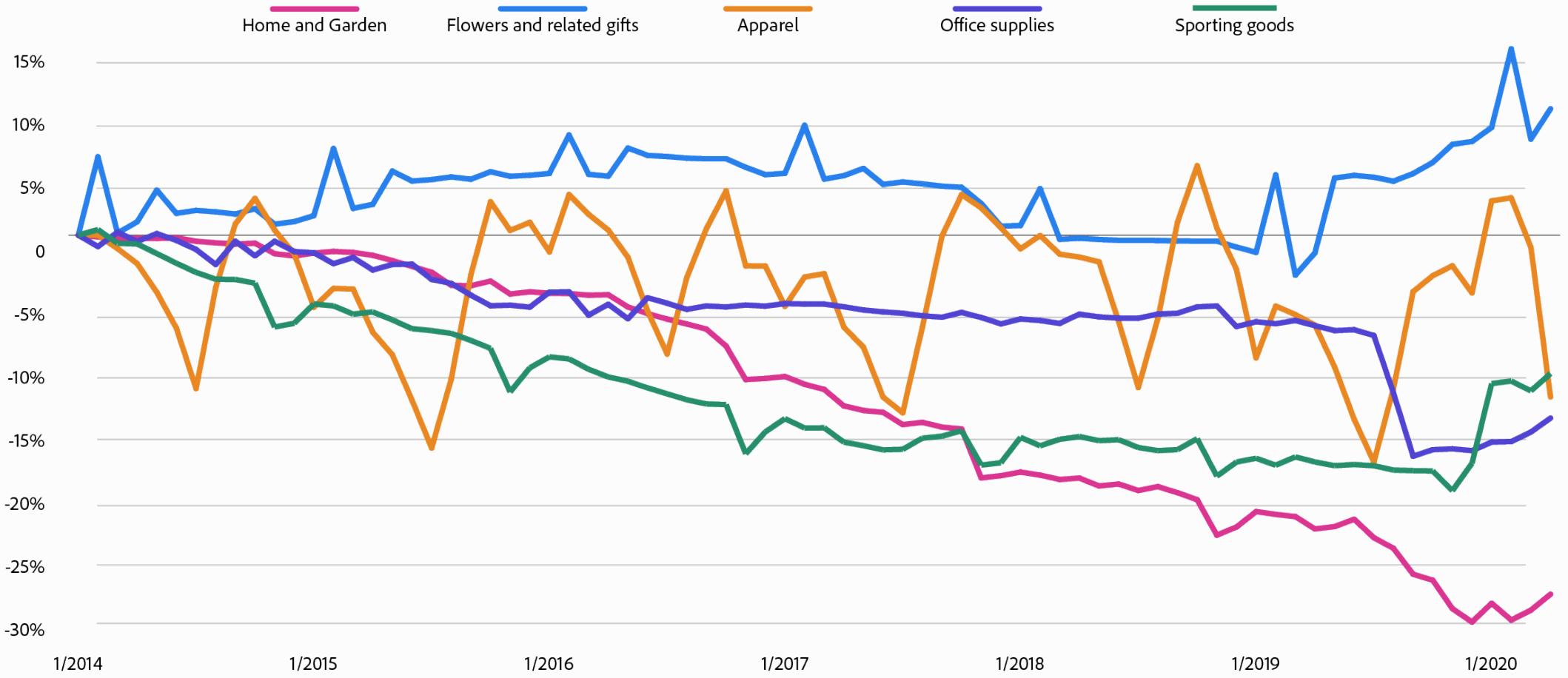
Online Contribution to Digital Basket (U.S., Jan 2020)

Source: Adobe Analytics



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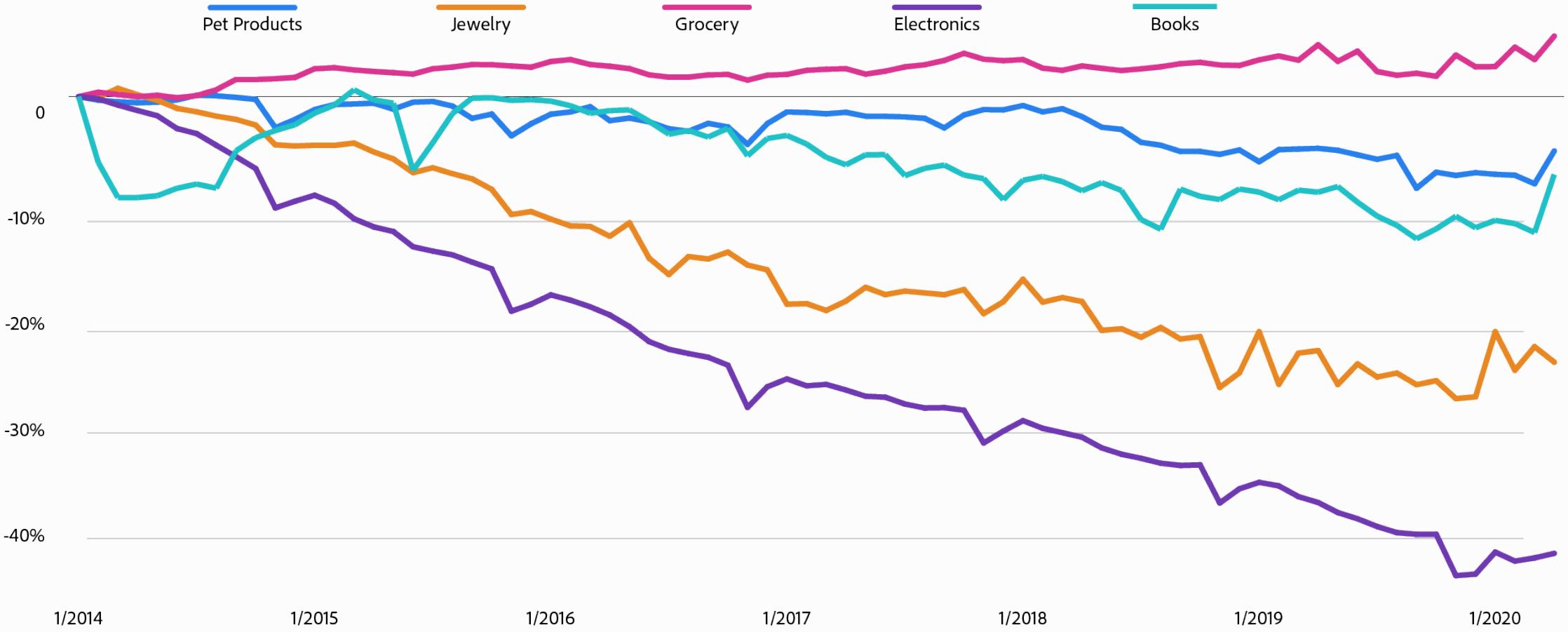
Online Price Changes by Category | Digital Economy Index (U.S.)

Source: Adobe Analytics



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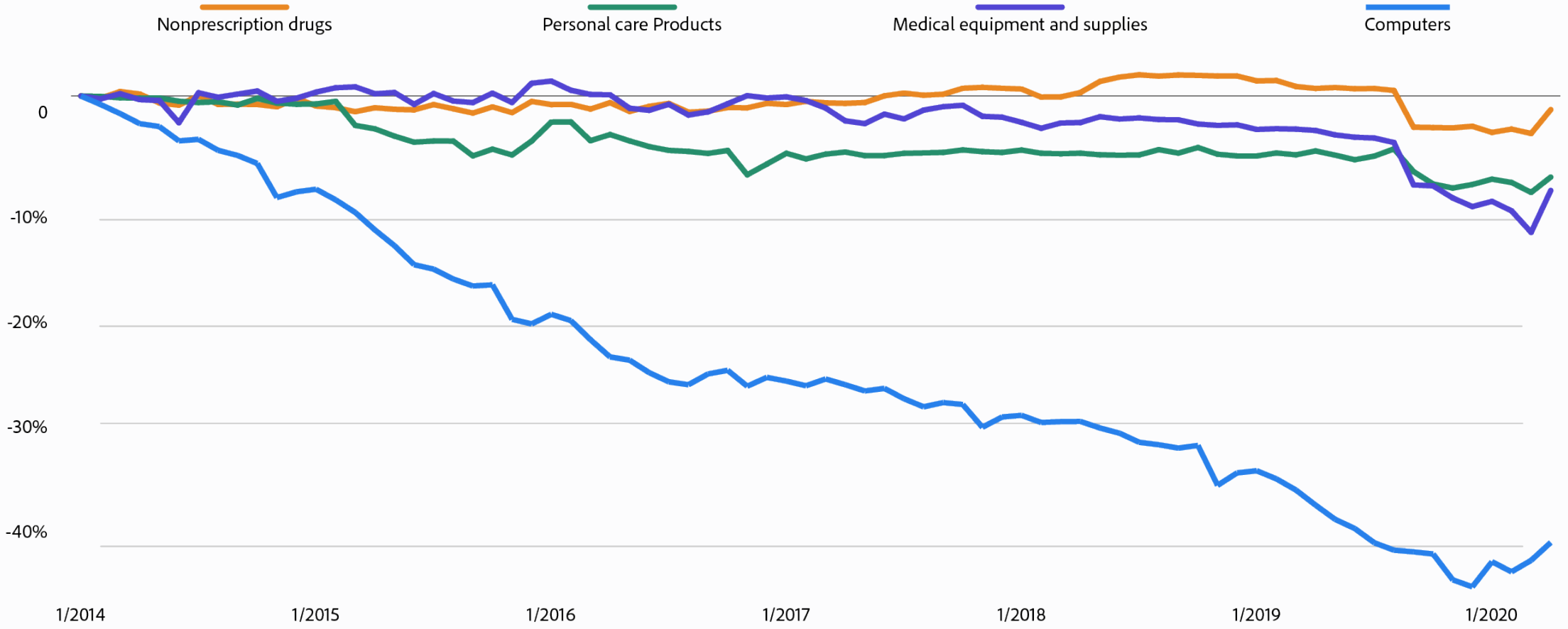

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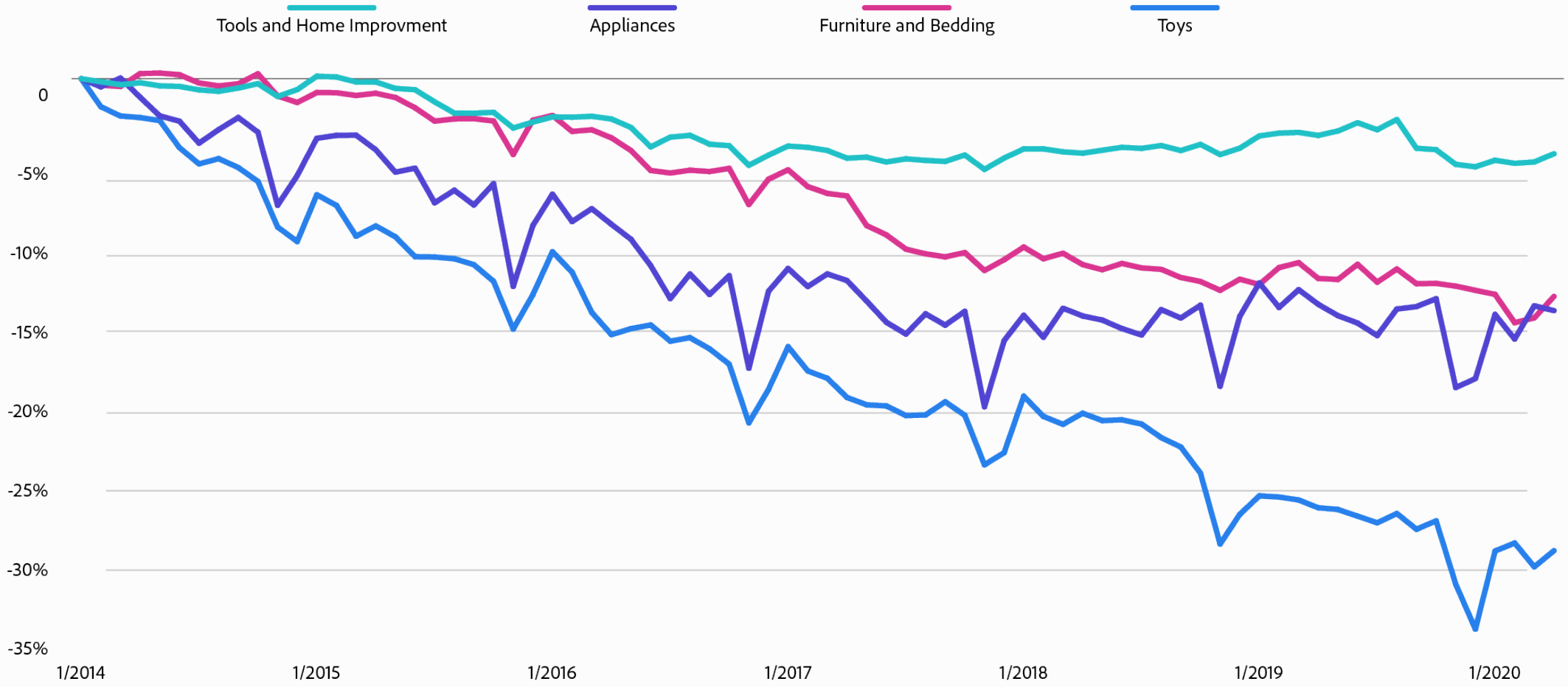

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Online Price Changes by Category | Digital Economy Index (U.S.)

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 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 and methodology

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 consumer's 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.

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

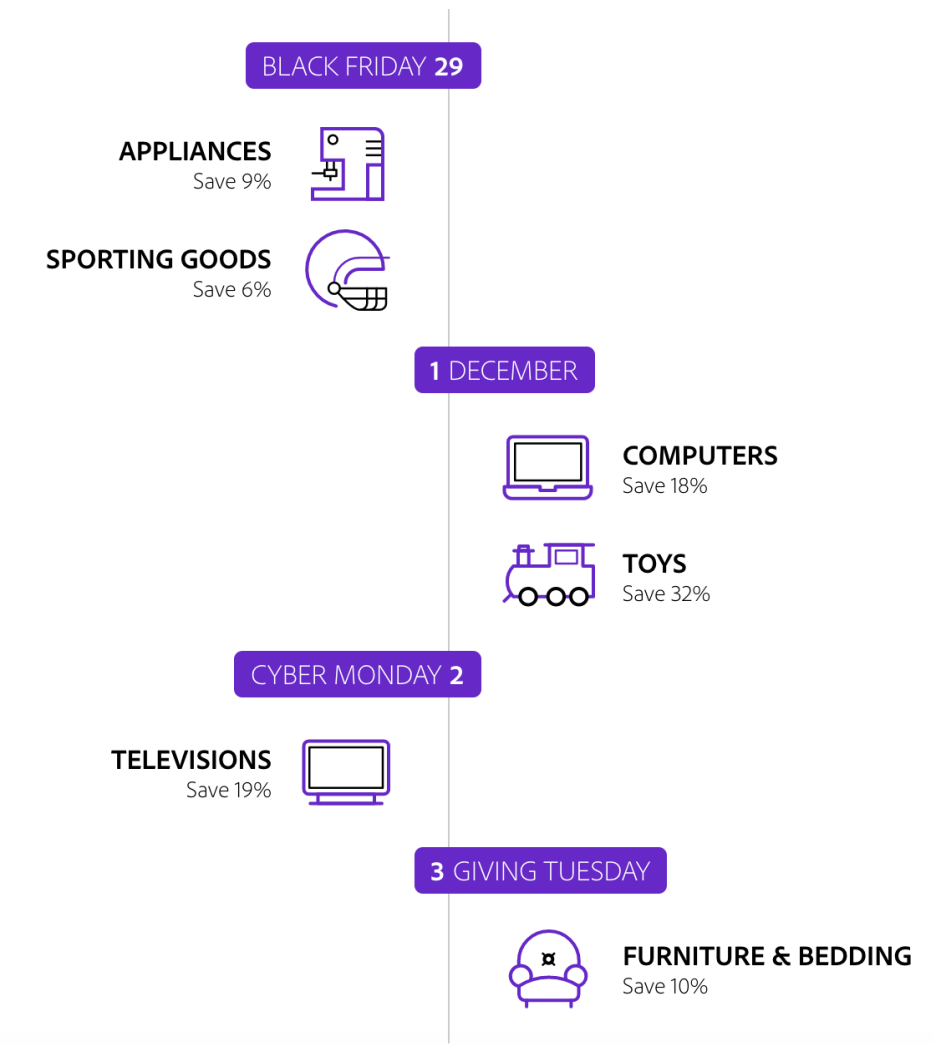
- The DEI is powered by Adobe Analytics, which analyzes 1 trillion visits to retail sites and over 100 million SKUs. Adobe Analytics measures transactions from 80 of the top 100 U.S. online retailers.

How the DEI benefits consumers

- Consumers can get valuable guidance from the DEI, like the best times to buy appliances, TV's 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 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/goods categories.

- Quantity 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 providing 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.

MAKE IT AN EXPERIENCE