

Digital Products Price Worldwide

Data description

Source

We got our data set on Kaggle, This [dataset](#) is about Technology Price Index in 2016 with the cost of 14 popular electronic devices and brands across 72 countries. It is initially provided by LINIO, and the prices are the average prices collected from their research. It contains the cost of 14 different devices including smartphones (Iphone and Android), laptops(Apple and Microsoft), game consoles(PS4 and Xbox), tablets(iPad mini and Samsung), and other gadgets Variables. All prices are in the U.S. dollars.

Besides, GeoJSON used is from [johan's world.geo.json](#).

Data Reformat

The original data was in a csv file. We directly modified the data in the csv. The data clean-up including eliminating dollar signs before each number and deleting delimiters (commas) in the data. We also parsed the data in our html file to convert strings to numbers. Since Venezuela is an outlier (the price is abnormally high comparing to other countries), we created a modified copy of the dataset called priceIndex2 which excludes Venezuela. Besides, as for the map visualization, some countries' names are not matched in the GeoJSON and csv, therefore we manually modify some of the country names in GEOJSON in javascript.

Data Selection

Our dataset contains prices of 14 different devices. We select smartphones(Iphone and Android), laptops(Apple and Microsoft), game consoles(PS4 and Xbox) for visualization, because we are much familiar with these products and there is comparison between brands for these items.

Besides, this project is divided in three major parts which will be elaborated below. Each part uses a different subset of data. We will talk about the data selection in separate below.

Elaboration on data visualizations

Iphone vs. Android (Yang Qin)

The first chart is about the prices of iphone and android phones. I took the most expensive 7 prices and the cheapest 7 prices. I represented the prices using scaled height and color shades. Log scale mapping from price to height was used to make small changes can be observed. And Linear scale mapping from price to color was used to give users clear overview of the prices at the first glance.

It's worth to point that I set Venezuela aside (on the top) because the price is just too high (with iPhone \$97814 and android \$78054), so the value is not included in the log scale transformation.

The height stands for the prices, the taller, the more expensive.

There are two color scales used. One is the warm color, to show the most expensive 7 countries. Another is the cold color, to show the cheapest 7 countries.

For the warm color, the warmer you feel, the more expensive of the phone.

For the cold color, the colder you feel, the cheaper of the phone.



Figure 1 warm color countries



Figure 2 Cold color countries

And also I specified the iphone and android price of the US, the prices are lying between the cheapest ones and most expensive ones. So I displayed the prices on the color legend.

The Bald eagle and Statue of Liberty are the symbols of America, we made eagle with iphone and statue with android to show the price comparison and also for fun.



Figure 3 the US iphone and android prices

Mac vs. Windows (Yuning Yang)

The second plot shows worldwide (72 countries) price of mac and windows-powered laptops in 2016. All countries have data were used. For those countries without data, gray fill without border were used. Countries with data have gray borders.

Colors were used to represent different prices. First Venezuela is set aside because its extreme price. Red was used to represent its ridiculous high price. Then as for the price of other countries, quantile scale mapping from price to color was used. Following the similar color schema in iPhone vs. Android, cold colors represent low prices whereas warm colors represent high prices.

A quantile scale mapping would map the data within certain quantile to the same color, so that the readers only have to deal with certain colors instead of a wide range of gradient colors. Besides, the quantile scale will calculate the threshold for each quantile based on the dataset, therefore each quantile would have similar size of data and the colors would distribute much evenly. Countries with similar prices are put in the same quantile and readers are much easier to get the sense of the relative rank of prices.

Multiple Product - Histograms (Qianyan Yao)

The third plot is about distribution of prices for different prices across countries. The subset of the data I selected includes iPhone, Android, MacBook, Windows Powered, PS4 and Xbox one, because my teammate and I believed these are some of the most popular devices that kind of dominate the market.

I intend to produce a general idea of how prices of different devices were distributed across the world in a non-country-specific way (meaning which country in which price range does not matter). I want to see how the prices centered, the price variation, and the difference in prices for the six product.

All countries except the outlier Venezuela were used. The x axis at the bottom marks the price range. The histogram uses position in x axis to visualize the the price and the height in y axis is the number of countries in a specific range.

The story

Digital products can be purchased worldwide but their prices across countries differ a lot. By visualizing the technology prices in 2016, we found some interesting and surprising facts about worldwide digital product purchases.

Overall, what surprised us most was the ridiculous high prices in Venezuela. Perhaps we can see which country has the lowest price and plan for a shopping trip there. And never consider shopping in Venezuela!

For similar products (mobile, laptops, ...), the price of different brands within one country also vary greatly.

For the mobiles, we only focused on the least and most expensive ones. We noticed that android prices are more expensive than iphones.

For the laptops, we worked on the worldwide price differences. Mac's prices are more evenly distributed (and much higher) than Windows'. Overall US is a good place to purchase laptops. But if you're planning to buy a Mac, probably you may consider buying from Canada. And for Windows-powered ones? Just buy it here in US!