Dev Nation
Intro To DS lab 05

1. Bitcoin. Cryptocurrencies. So hot right now.

Since the launch of Bitcoin in 2008, hundreds of similar projects based on the blockchain technology have emerged. We call these cryptocurrencies (also coins or cryptos in the Internet slang). Some are extremely valuable nowadays, and others may have the potential to become extremely valuable in the future[1]. In fact, on the 6th of December of 2017, Bitcoin has a market capitalization above $200 billion.

[1] **WARNING**: The cryptocurrency market is exceptionally volatile and any money you put in might disappear into thin air. Cryptocurrencies mentioned here **might be scams** similar to Ponzi Schemes or have many other issues (overvaluation, technical, etc.). **Please do not mistake this for investment advice.** *

That said, let's get to business. As a first task, we will load the current data from the coinmarketcap API and display it in the output.

2. Full dataset, filtering, and reproducibility

The previous API call returns only the first 100 coins, and we want to explore as many coins as possible. Moreover, we can't produce reproducible analysis with live online data. To solve these problems, we will load a CSV we conveniently saved on the 6th of December of 2017 using the API call `https://api.coinmarketcap.com/v1/ticker/?limit=0` named `datasets/coinmarketcap_06122017.csv`.

2. Do Count on id and market_cap_usd

3. Discard the cryptocurrencies without a market capitalization

Why do the `count()` for `id` and `market_cap_usd` differ above? It is because some cryptocurrencies listed in coinmarketcap.com have no known market capitalization, this is represented by `NaN` in the data, and `NaNs` are not counted by `count()`. These cryptocurrencies are of little interest to us in this analysis, so they are safe to remove.

4. How big is Bitcoin compared with the rest of the cryptocurrencies?

At the time of writing, Bitcoin is under serious competition from other projects, but it is still dominant in market capitalization. Let's plot the market capitalization for the top 10 coins as a barplot to better visualize this.

5. Making the plot easier to read and more informative

While the plot above is informative enough, it can be improved. Bitcoin is too big, and the other coins are hard to distinguish because of this. Instead of the percentage, let's use a $\log^{10}$ scale of the "raw" capitalization. Plus, let's use color to group similar coins and make the plot more informative[1].

For the colors rationale: bitcoin-cash and bitcoin-gold are forks of the bitcoin blockchain[2]. Ethereum and Cardano both offer Turing Complete smart contracts. Iota and Ripple are not minable. Dash, Litecoin, and Monero get their own color.

[1] This coloring is a simplification. There are more differences and similarities that are not being represented here.

[2] The bitcoin forks are actually **very** different, but it is out of scope to talk about them here. Please see the warning above and do your own research.

6. What is going on?! Volatility in cryptocurrencies

The cryptocurrencies market has been spectacularly volatile since the first exchange opened. This notebook didn't start with a big, bold warning for nothing. Let's explore this volatility a bit more! We will begin by selecting and plotting the 24 hours and 7 days percentage change, which we already have available.

7. Well, we can already see that things are *a bit* crazy

It seems you can lose a lot of money quickly on cryptocurrencies. Let's plot the top 10 biggest gainers and top 10 losers in market capitalization.

8. Ok, those are... interesting. Let's check the weekly Series too.

800% daily increase?! Why are we doing this tutorial and not buying random coins?[1]

After calming down, let's reuse the function defined above to see what is going weekly instead of daily.

[1] Please take a moment to understand the implications of the red plots on how much value some cryptocurrencies lose in such short periods of time

9. How small is small?

The names of the cryptocurrencies above are quite unknown, and there is a considerable fluctuation between the 1 and 7 days percentage changes. As with stocks, and many other financial products, the smaller the capitalization, the bigger the risk and reward. Smaller cryptocurrencies are less stable projects in general, and therefore even riskier investments than the bigger ones[1]. Let's classify our dataset based on Investopedia's capitalization definitions for company stocks.

[1] Cryptocurrencies are a new asset class, so they are not directly comparable to stocks. Furthermore, there are no limits set in stone for what a "small" or "large" stock is. Finally, some investors argue that bitcoin is similar to gold, this would make them more comparable to a commodity instead.