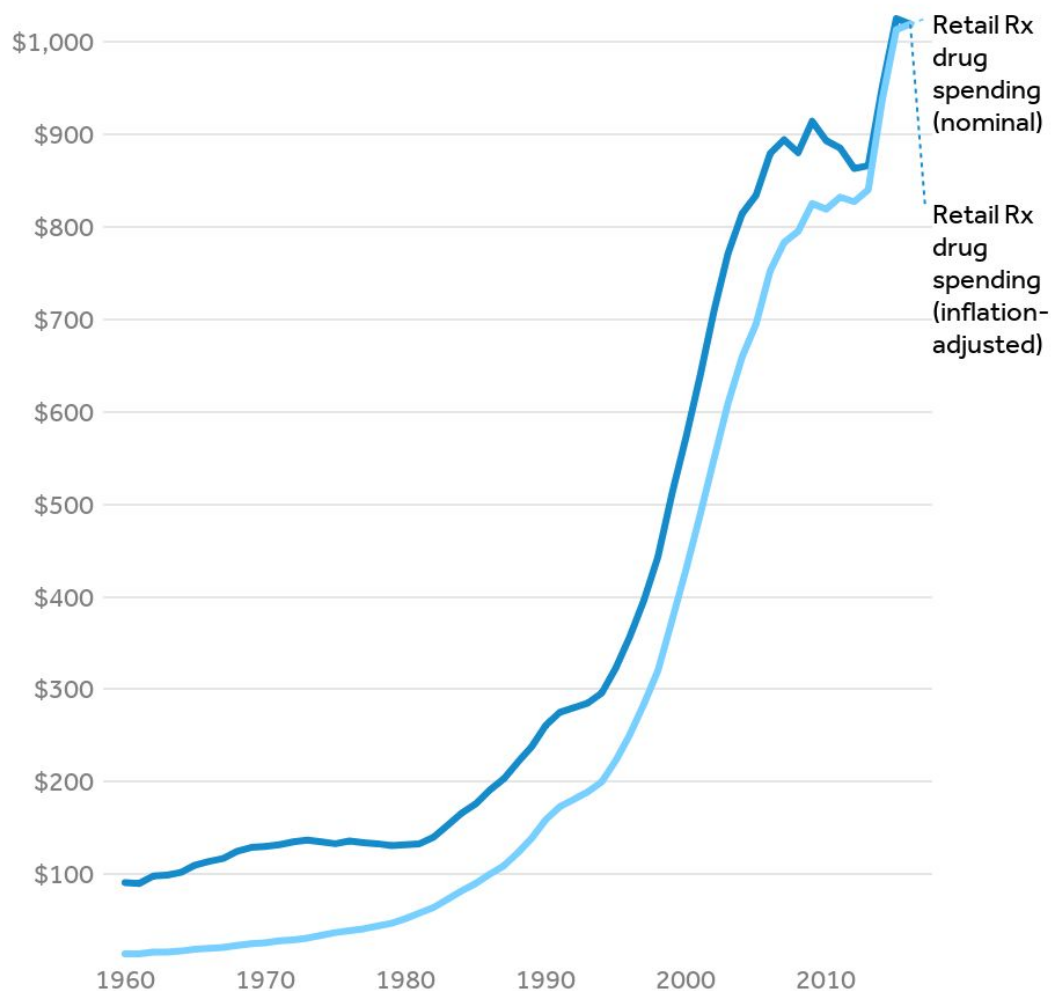


The background of the slide features four stage lights arranged horizontally. From left to right, they are blue, yellow, green, and red. Each light is shining downwards, creating a pool of colored light on the floor. The air is filled with thick, white smoke or fog, which is most concentrated under the yellow light and spreads outwards, partially obscuring the other lights. The silhouettes of the light fixtures are visible against the dark background.

Shedding light on the darknet

Jonathan Dawson

Nominal and inflation-adjusted per capita spending on retail prescription drugs, 1960-2016



Source: [Kaiser Family Foundation Analysis of National Health Expenditures Account](#) • [Get the data](#) • [PNG](#)

Peterson-Kaiser
Health System Tracker



Image: Jackie Clarkson

MODERN MEDICINE | By Ross Whitaker | Jul 14 2015, 7:30am

Why I Had to Buy My Wife's Inhaler on the Dark Web

You can buy a range of prescription medicines online for a fraction of the cost.

Jackie has to use a maintenance inhaler twice per day, every single day, and will continue to use it for the rest of her life. Even with that maintenance inhaler, she sometimes still needs to use a different *rescue* inhaler to make it through the night when her asthma symptoms can be more pronounced. Without using these two types of medicine every day she could have an asthma attack, be hospitalized, or die.

Questions

Can we classify item titles into categories?

Can we predict the price of unregulated prescription drugs?

Process

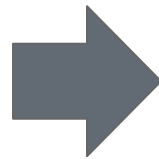
Data Sources



And

kaggle

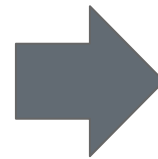
Data Cleaning



Pandas



Classification



Prediction



PROPHET

Data

Darknet Market Archives

Scraped from 2013 to 2015 by Gwern Branwen

12 million items from 21 darknet markets

From Kaggle

Scraped from the Agora Darknet Market in 2014 to 2015

100,000 unique items categorized

Example Classification

'5 gram Baclofen 200 pills'

→ treat muscle symptoms caused by multiple sclerosis

'Singulair Montelukast 10mg x 30 ALLERGY ASTHMA Med US Pharmacy made Trusted Seller Fast Shipping'

→ maintenance treatment of asthma

'Anastrozole Generic Arimidex 1mg tab 28tabs box'

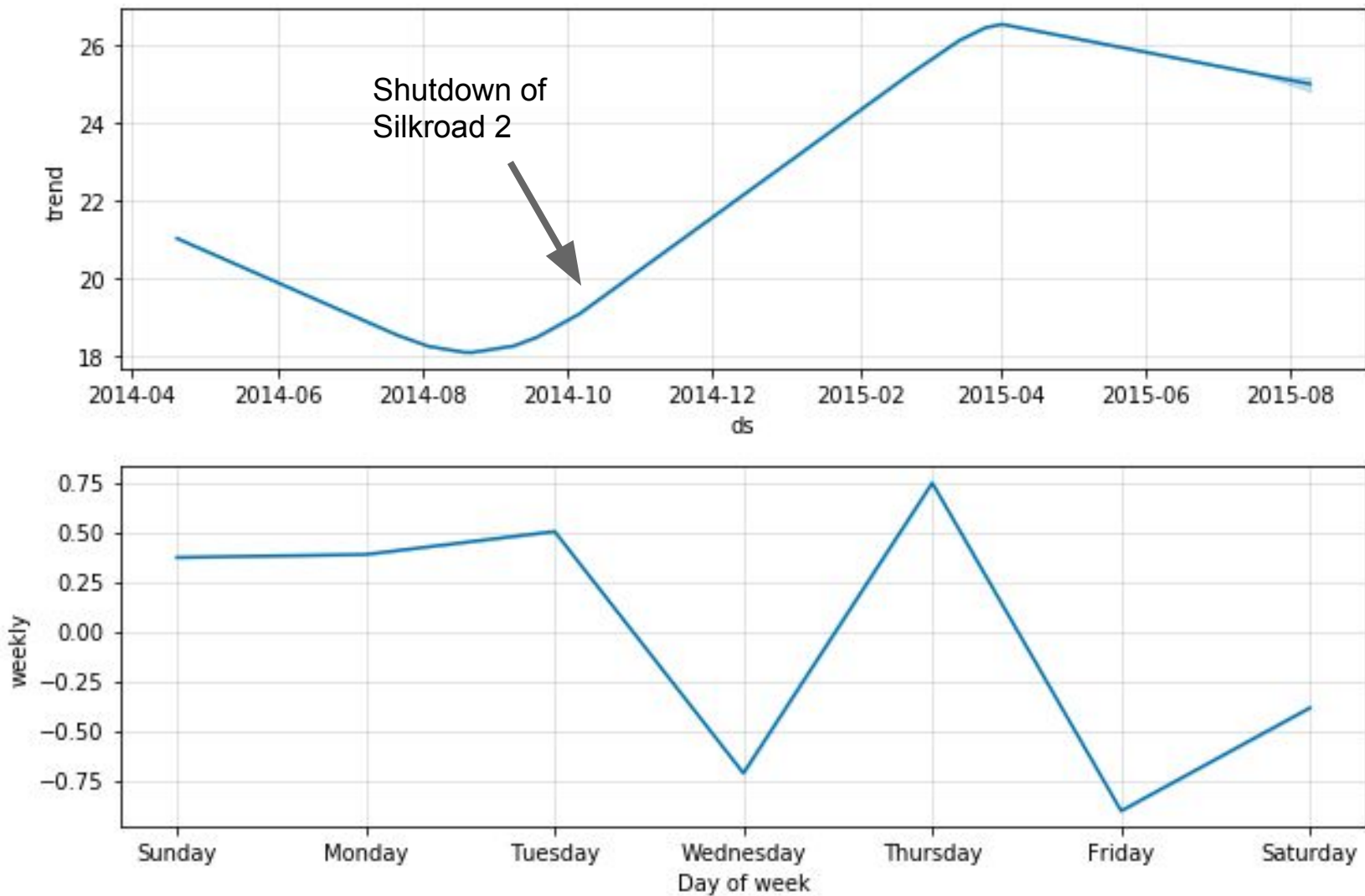
→ prevent breast cancer in those who are at high risk

Classification

Convert titles into word counts with the count vectorizer

Using the word counts, used this trained classifier on darknet market products' titles to find out which were prescription drugs

Time Series



Takeaways

Titles can be used to classify items automatically so that consumers can easily find what they're looking for.

The Silk Road 2 was shut down in November 2014, which caused a price increase.

Although unregulated darknet markets are not ideal for consumers to purchase prescription drugs, overall price can be predicted over time in the future.

Thank You

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