

CMSE 201 Final Project Template

CMSE 201 Final Project

☒ Student

☒ Section XXX

Shark Tank Successes

Background and Motivation

For this research project, I decided to explore a dataset that examined a variety of deals made on Shark Tank US. The variables I focused on were 'deal' which had a boolean value of true or false indicating whether a deal was made or not, and 'category' indicating the category of the product proposed, hoping to find a correlation between the two. More specifically, I wanted to delve into the following question: **what is the chance that a product has made a successful deal according to its category, and what is the rough proportionality of success for each category in relation to other categories?**

Methodology

First, I imported the needed modules and loaded and filtered out the dataset for only successful deals since that is what I am focusing on.

```
In [2]: import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
pitches = pd.read_csv("Shark Tank.csv", delimiter=',')
```

```
Out[2]:
```

	deal	description	episode	category	entrepreneurs	location	website	askedFor	exchangeFor	Stake	val
0	False	Bluetooth device implant for your ear	1	Novelties	Darrin Johnson	St. Paul, MN		NaN	100000	15	66
1	True	Retail and wholesale pie factory with two ret...	1	Specialty Food	Tod Wilson	Somerset, NJ	http://whybake.com/	460000		10	46
2	True	The Elephant as a godsend for frazzled par...	1	Baby and Child Care	Tiffany Krumins	Atlanta, GA	http://www.avatheelephant.com/	50000		15	3333
3	False	Organizing, packing and moving services deliv...	1	Consumer Services	Nick Friedman, Omar Soliman	Tampa, FL	http://collegehunkhaulingjunk.com/	250000		25	10
4	False	Interactive media centers for healthcare waiti...	1	Consumer Services	Kevin Flannery	Cary, NC	http://www.wispots.com/	1200000		10	120
490	True	Zoom Interiors is a virtual service for interi...	28	Online Services	Beatrice Fischel-Bock, Madeline Fraser & Lizzie...	Philadelphia, PA	https://zoominteriors.com	100000		20	5000
491	True	Spikeball started out as a casual outdoor gam...	29	Toys and Games	Chris Ruder	Chicago, IL	http://spikeball.com	500000		10	50000
492	True	Shark Wheel is out to literally reinvent W...	29	Outdoor Recreation	David Patrick and Zack Fleishman	Lake Forest, CA	http://www.sharkwheel.com	100000		5	20000
493	False	Adriana Montano wants to open the first cat c...	29	Entertainment	Adriana Montano	Boca Raton, FL	http://catcafeoflorida.com	100000		20	5000
494	True	Sway Motorsports makes a three-wheeled, all-el...	29	Automotive	Joe Wilcox	Palo Alto, CA	http://www.swaymotorsports.com	300000		10	30000

495 rows × 19 columns

```
In [2]: masks=pitches.iloc[:,0]
vals=pitches['True']
allsuccess=pitches[mask]
allsuccess
```

```
Out[2]:
```

	deal	description	episode	category	entrepreneurs	location	website	askedFor	exchangeFor	Stake	valuati
1	True	Retail and wholesale pie factory with two ret...	1	Specialty Food	Tod Wilson	Somerset, NJ	http://whybake.com/	460000		10	46000
2	True	Ava the Elephant as a godsend for frazzled par...	1	Baby and Child Care	Tiffany Krumins	Atlanta, GA	http://www.avatheelephant.com/	50000		15	3333
5	True	One of the first entrepreneurs to pitch on Sha...	2	Specialty Food	Snapp Knapp	Napa Valley, CA	http://www.aperfectpear.com	50000		15	33333
9	True	An educational recordi... and publishing ho...	2	Education	Mark Furigay	Chicago, IL		NaN	25000	10	25000
10	True	A battery-operated cooking device that siphons...	3	Kitchen Tools	Marian Cruz	San Francisco, CA		NaN	35000	35	1000
489	True	SynDaver Labs makes synthetic body parts for u...	28	Education	Dr. Christopher Seakles	Tampa, FL	http://syndaver.com	3000000		10	300000
490	True	Zoom Interiors is a virtual service for interi...	28	Online Services	Beatrice Fischel-Bock, Madeline Fraser & Lizzie...	Philadelphia, PA	https://zoominteriors.com	100000		20	5000
491	True	Spikeball started out as a casual outdoor gam...	29	Toys and Games	Chris Ruder	Chicago, IL	http://spikeball.com	500000		10	50000
492	True	Shark Wheel is out to literally reinvent the whe...	29	Outdoor Recreation	David Patrick and Zack Fleishman	Lake Forest, CA	http://www.sharkwheel.com	100000		5	20000
494	True	Sway Motorsports makes a three-wheeled, all-el...	29	Automotive	Joe Wilcox	Palo Alto, CA	http://www.swaymotorsports.com	300000		10	30000

251 rows × 19 columns

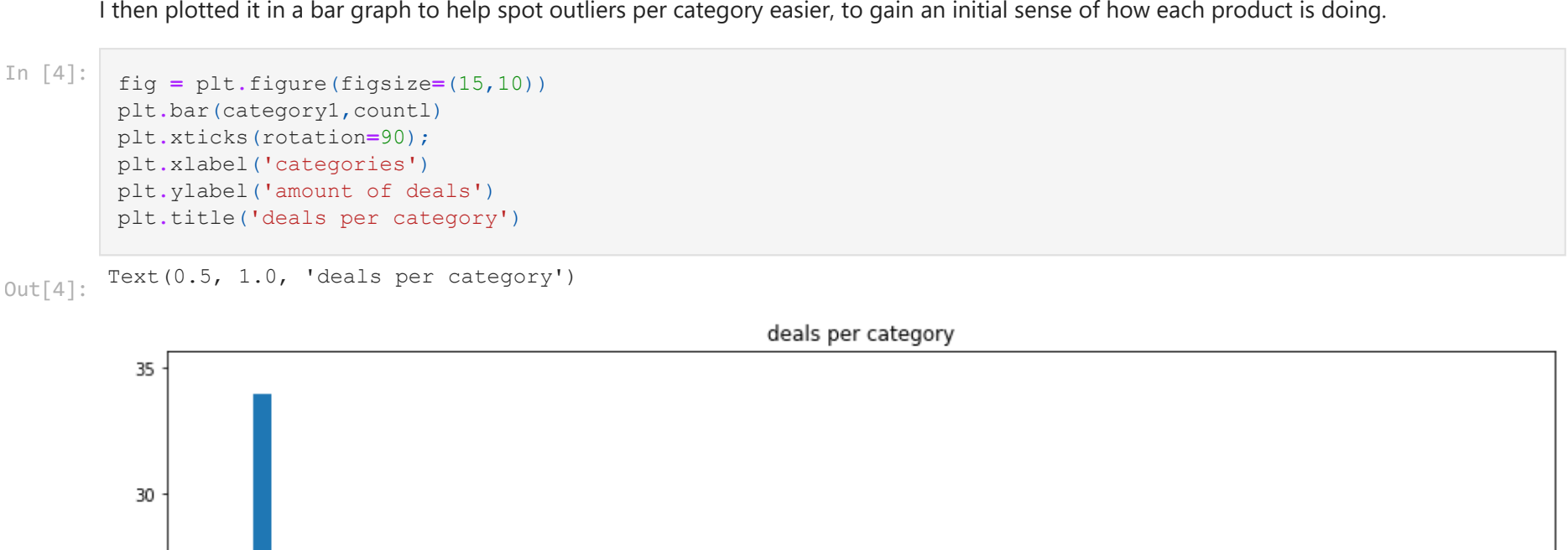
For each unique category, I then counted the amount of successful deals versus the total number of deals to allow me to solve for the percentage of successful deals. I also printed out the values for me to see the data easier before any representations.

```
In [3]: categoryfull=pitches.iloc[:,0]
category=categoryfull.unique()
countall=[]

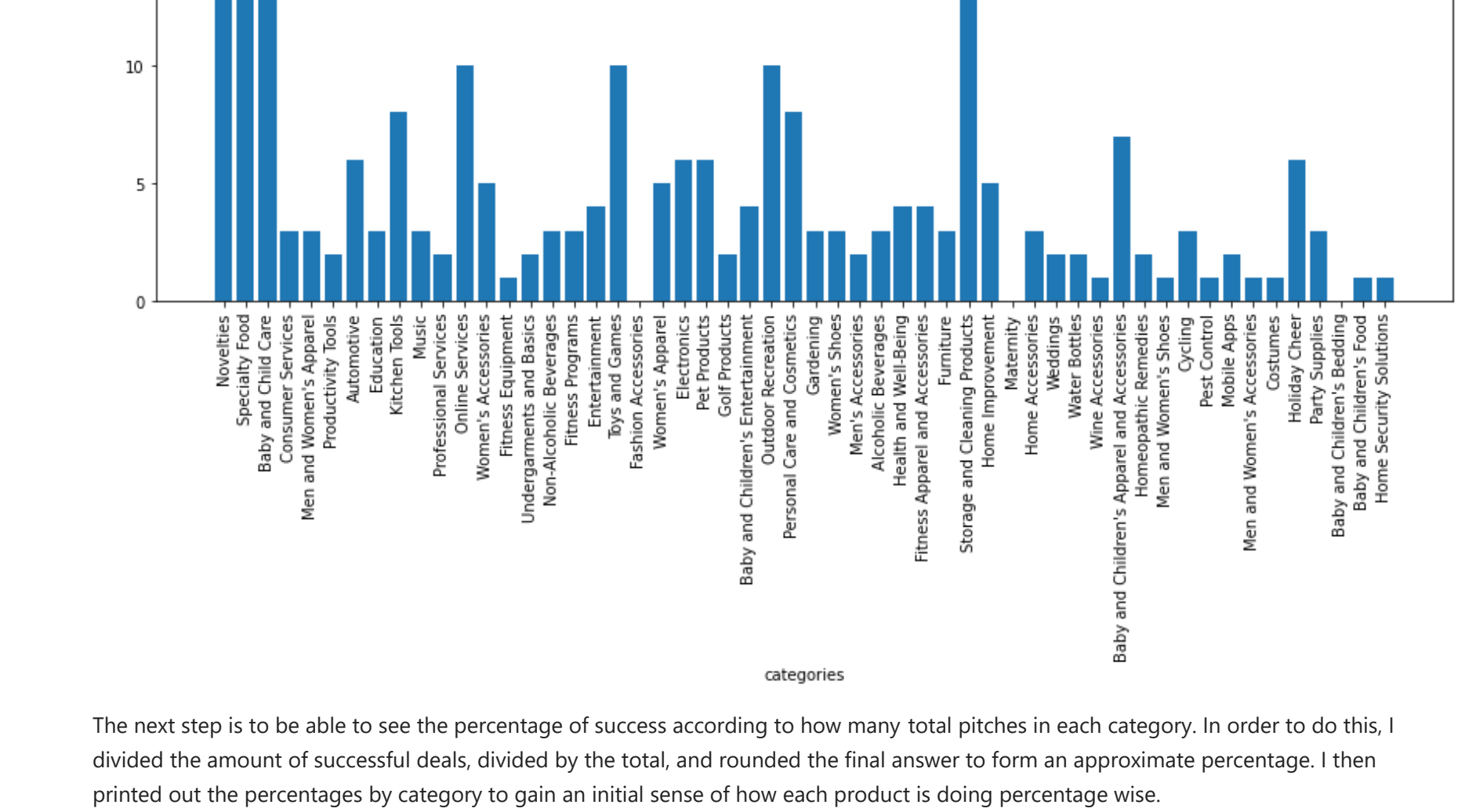
for i in category:
    countlen(allsuccess.loc[allsuccess['category'] == i])
    counttotal=len(pitches.loc[pitches['category'] == i])
    countl.append(count)
    counttotal+=count
    print(i+" has "+str(count)+" successful deals out of "+str(counttotal)+" deals.")
```

Novelties has 16 successful deals out of 35 deals.
Specialty Food has 34 successful deals out of 62 deals.
Baby and Child Care has 15 successful deals out of 24 deals.
Consumer Services has 3 successful deals out of 13 deals.
Men and Women's Apparel has 3 successful deals out of 9 deals.
Productivity Tools has 2 successful deals out of 5 deals.
Automotive has 6 successful deals out of 10 deals.
Education has 3 successful deals out of 4 deals.
Kitchen Tools has 8 successful deals out of 12 deals.
Music has 3 successful deals out of 5 deals.
Professional Services has 2 successful deals out of 10 deals.
Online Services has 10 successful deals out of 22 deals.
Fitness Equipment has 1 successful deals out of 8 deals.
Undergarments and Basics has 2 successful deals out of 7 deals.
Non-Alcoholic Beverages has 3 successful deals out of 5 deals.
Fitness Program has 3 successful deals out of 7 deals.
Entertainment has 4 successful deals out of 13 deals.
Toys and Games has 10 successful deals out of 19 deals.
Fashion Accessories has 0 successful deals out of 2 deals.
Women's Apparel has 5 successful deals out of 10 deals.
Electronics has 6 successful deals out of 14 deals.
Pet Products has 6 successful deals out of 13 deals.
Golf Products has 2 successful deals out of 4 deals.
Baby and Children's Entertainment has 4 successful deals out of 9 deals.
Outdoor Recreation has 10 successful deals out of 16 deals.
Personal Care and Cosmetics has 8 successful deals out of 20 deals.
Gardening has 3 successful deals out of 5 deals.
Women's Shoes has 3 successful deals out of 4 deals.
Music has 3 successful deals out of 5 deals.
Alcoholic Beverages has 3 successful deals out of 7 deals.
Health and Well-Being has 4 successful deals out of 5 deals.
Fitness Apparel and Accessories has 4 successful deals out of 6 deals.
Furniture has 3 successful deals out of 5 deals.
Storage and Cleaning Products has 13 successful deals out of 17 deals.
Home Improvement has 5 successful deals out of 5 deals.
Maternity has 0 successful deals out of 2 deals.
Wine Accessories has 3 successful deals out of 7 deals.
Weddings has 2 successful deals out of 6 deals.
Water Bottles has 2 successful deals out of 3 deals.
Wine Accessories has 1 successful deals out of 3 deals.
Baby and Children's Apparel and Accessories has 7 successful deals out of 8 deals.
Homeopathic Remedies has 2 successful deals out of 6 deals.
Men and Women's Shoes has 1 successful deals out of 5 deals.
Cycling has 3 successful deals out of 3 deals.
Pest Control has 1 successful deals out of 3 deals.
Mobile Apps has 2 successful deals out of 4 deals.
Men and Women's Accessories has 1 successful deals out of 4 deals.
Costumes has 1 successful deals out of 2 deals.
Holiday Cheer has 6 successful deals out of 8 deals.
Party Supplies has 3 successful deals out of 5 deals.
Baby and Children's Bedding has 0 successful deals out of 2 deals.
Baby and Children's Food has 1 successful deals out of 3 deals.

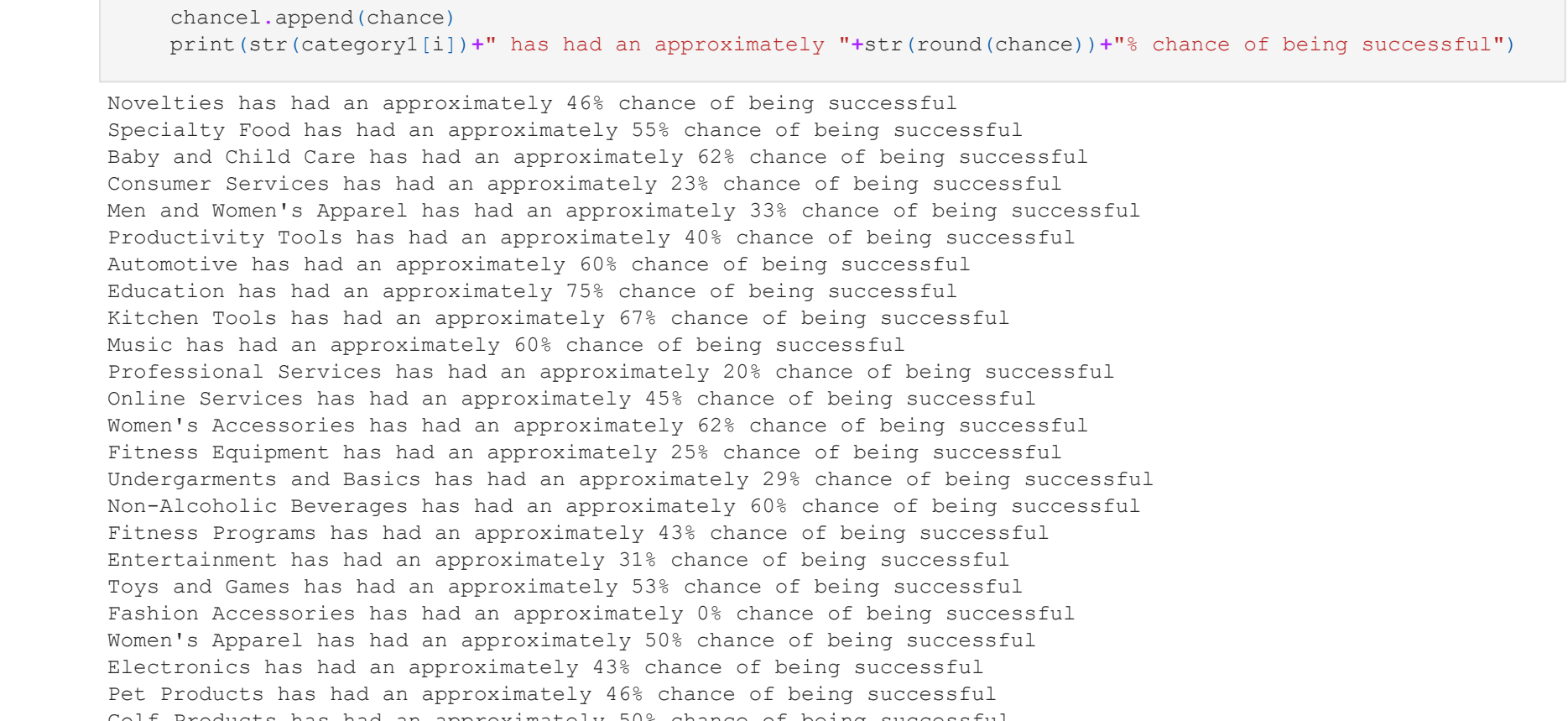
I then plotted it in a bar graph to help spot outliers per category easier, to gain an initial sense of how each product is doing.



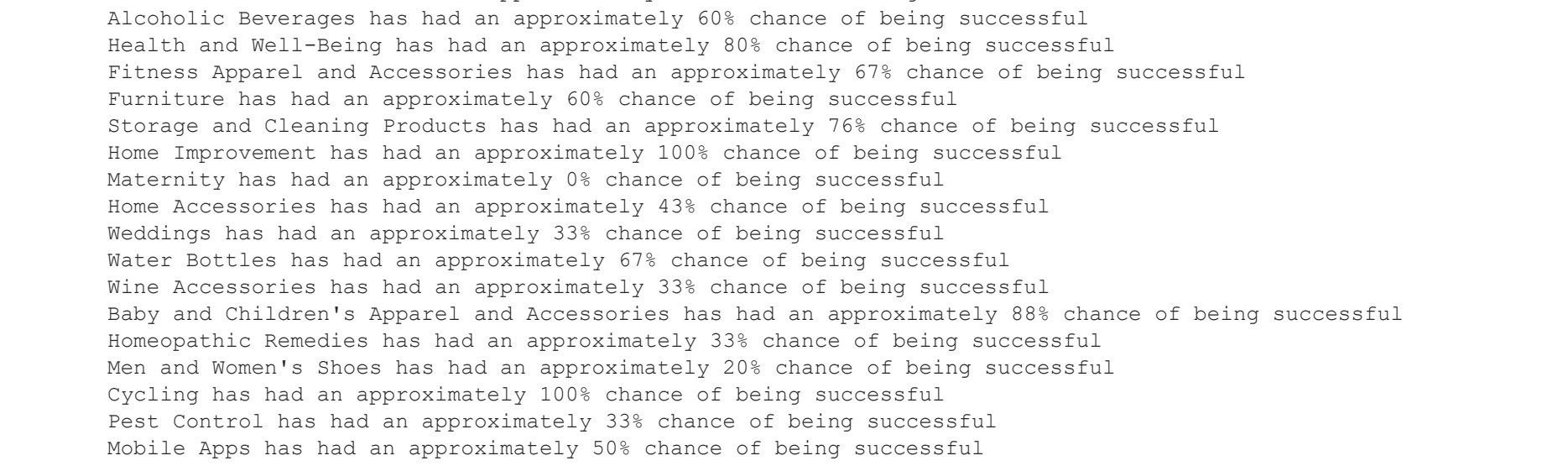
The next step is to be able to see the percentage of success according to how many total pitches in each category. In order to do this, I divided the amount of successful deals, divided by the total, and rounded the final answer to form an approximate percentage. I then printed out the percentages by category to gain an initial sense of how each product is doing percentage wise.



Now that I have success percentages by category, I can work on trying to plot the data in a pie chart so we can see the success rates in relation to each other.



The categories with the highest percentages are exploded. However, since this graph is cluttered and we are looking for a more qualitative overview, we can clean this up by removing the percentages and not including the categories with a 0% success rate. We still want them to be accounted for, so we can print that information out.



Fashion Accessories has a 0% proportionality of success, and therefore is not represented.
Maternity has a 0% proportionality of success, and therefore is not represented.
Baby and Children's Bedding has a 0% proportionality of success, and therefore is not represented.

Categories plotted by amount of total past successful deals

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