

Start Fresh Today!

The Farmer's Dog Marketing Campaign



Team: YYHGC

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Introduction

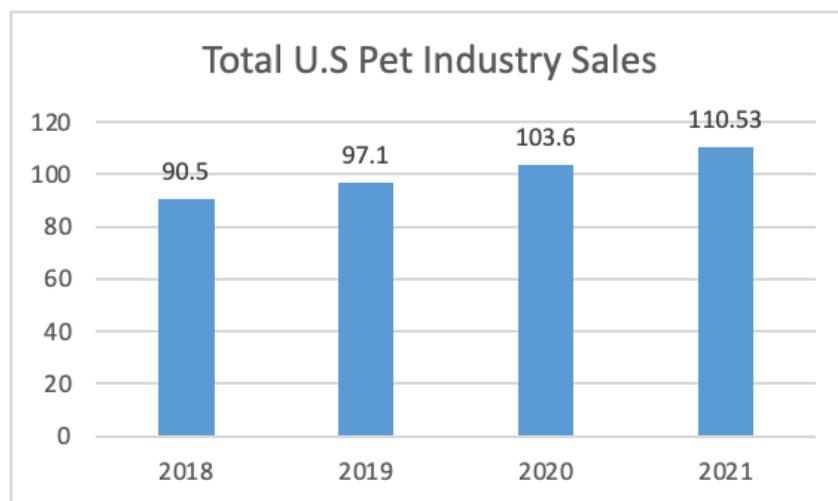
About The Farmer's Dog

The Farmer's Dog, which was founded in 2015, is a dog food company who aims to provide nutritional and great-tasting fresh food for dogs. The company claims that fresh pet food provided by The Farmer's Dog would be safe enough for humans to eat and nutritionally complete and balanced for dogs. Also, Farmer's Dog can make customized fresh food for dogs to meet different health needs, such as dental disease and illnesses. Today, the company has served millions of meals nationwide through its personalized plans and fresh healthy food, and it's believed that the company would keep growing based on the market trend.

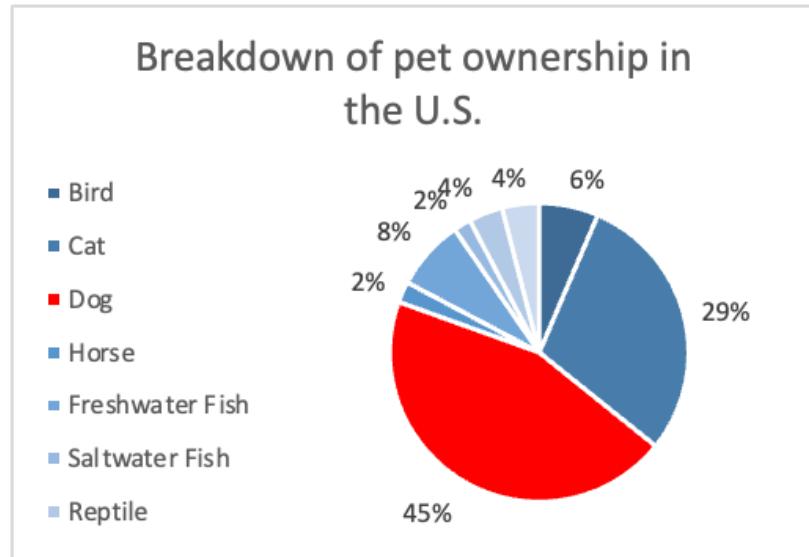
Motivation/Market trends

Continuously Expanding Market

According to the American Pet Products Association (APP), there has been a steady increase in the total sales of the pet industry over the last four years, and the pet food sales was also expected to surge in 2022, which means, although coronavirus hit other industries badly, pet food industries would continuously grow in near future.

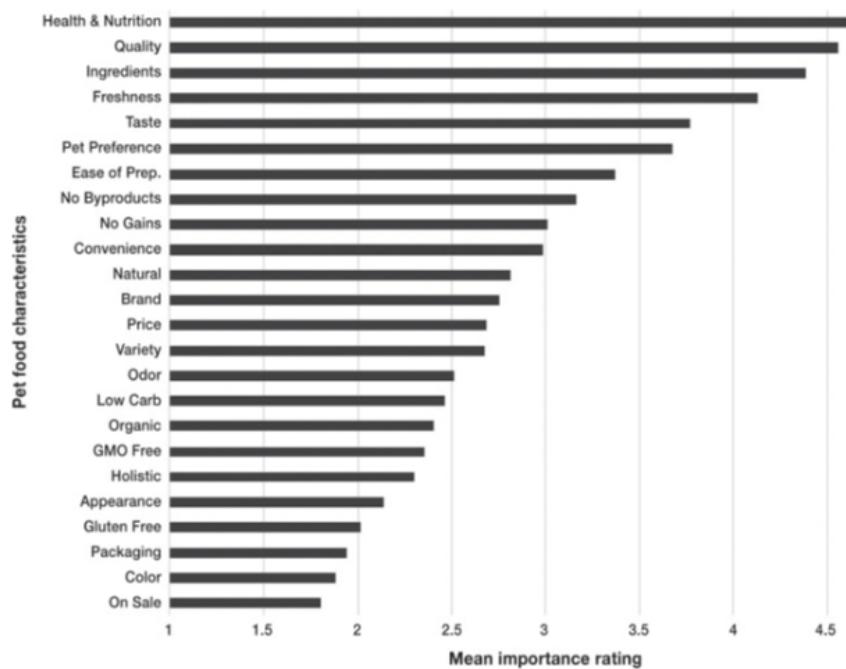


On the basis of animal type, the pet food market is segregated into dogs, cats, and others. As the graph shows, the adoption of dogs as pets is significantly higher, about 45%. So, dogs are the most popular pet in the US, and it comes as no surprise to conclude that dog foods sit at the top of the pet food market. Therefore, the dog food market has great potential.



Strong awareness of health pet food

In 2019, a survey was conducted among about 2000 pet owners to identify determinants of pet food purchasing decisions. When respondents were asked to rate the importance of pet food characteristics, health and nutrition was ranked as the most important characteristics of pet food.



Also, another survey aiming to investigate dog owners' opinions and assessment of their dog's dental health illustrates that 80.2% of pet owners consider dogs' dental health is very important. And they also believe the general health of dogs contributes to good dental health.

Results from the survey.

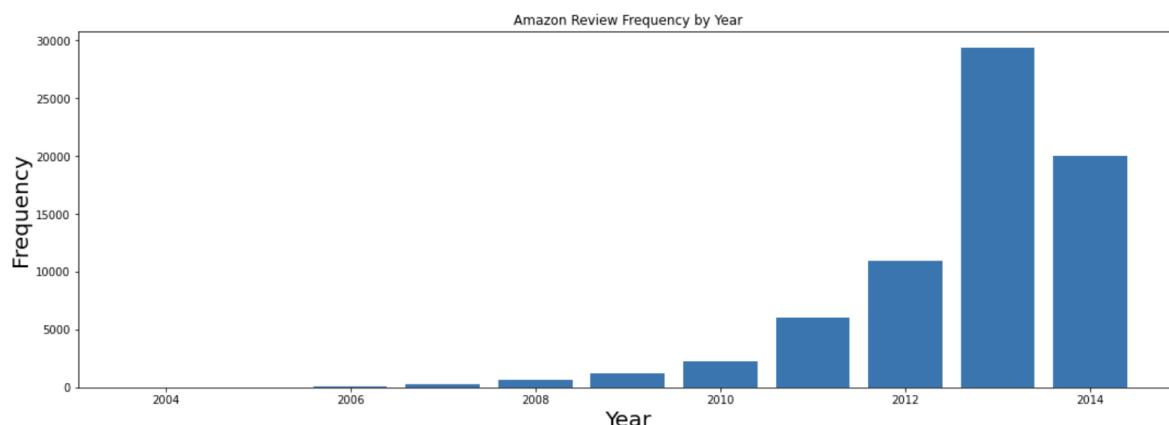
		Not at all important	Of minor importance	Fairly important	Very important	Don't know
How important is it for you that your dog has good dental health? (Q6)		18 (0.0%)	267 (0.4%)	11,354 (18.9%)	48,089 (80.2%)	250 (0.4%)
What do you consider to be important for good dental health in dogs? (Q7)	Good general health	43 (0.1%)	197 (0.3%)	8,319 (14.5%)	48,327 (84.4%)	342 (0.6%)
	The dog's breed/heredity	1,230 (2.2%)	5,337 (9.3%)	23,400 (41.0%)	18,033 (31.6%)	9,093 (15.9%)

Therefore, based on the overall market trend, it's safe to conclude that there would be a huge potential market for the Farmer's Dog. To reach the potential market and consumers, we conduct some analysis based on Amazon's review for the dog food, trying to connect what consumers care about with our brand.

Methodology and Background

Dataset Introduction

The dataset used in this project includes Amazon reviews for the pet supplies category from 2006 to 2014. As the graph shows below, most reviews are from 2012 to 2014. There are 6,542,483 reviews and 206,141 products in the dataset. Here we conduct sentiment based on review text analysis to figure out what consumer attitudes towards dog food.



This project mainly focuses on the analysis of dog food. So, we subset the whole dataset to a dog related dataset using "dog", "dogs", "doggy", "puppy", "puppies", "doggy", "doggies" as key words.

Topic Models

We use the topic model to find main topics that customers are interested in. The fourth model shows that one topic they focus on is about food and ingredients. Chicken seems to be a popular flavor.

```
dogdata['review_processed']=dogdata['review_processed'].apply(lambda x:dictionary.doc2bow(x))  
(0, '0.010*"leash" + 0.009*"collar" + 0.008*"small" + 0.007*"little" + 0.006*"training" + 0.006*"really"')  
(1, '0.011*"product" + 0.009*"cat" + 0.008*"water" + 0.008*"cats" + 0.006*"bags" + 0.006*"bowl"')  
(2, '0.019*"toy" + 0.013*"loves" + 0.012*"chew" + 0.010*"puppy" + 0.010*"toys" + 0.010*"love"')  
(3, '0.031*"food" + 0.017*"treats" + 0.009*"eat" + 0.008*"treat" + 0.008*"ingredients" + 0.007*"chicken"')
```

Sentiment Analysis & Contextual information representation

Based on the new dog dataset, we conduct sentiment analysis and contextual information representation to get business insights.

1. Health

While using “health” and “issues” as keywords to find the most similar words, we found that people seem to care a lot about dogs’ digestion issues. “Digestive” and “Digestion” appear to be top concerns.

<pre>model_all.wv.most_similar('health', topn=20)</pre>	<pre>model_all.wv.most_similar('issues', topn=20)</pre>
<pre>[('digestion', 0.665314257144928), ('healthy', 0.6612787842750549), ('digestive', 0.6511366963386536), ('nutrition', 0.6478831171989441), ('benefits', 0.6052705645561218), ('dental', 0.593263566493988), ('diet', 0.5861451625823975), ('kidney', 0.5815950036048889), ('issues', 0.5689786672592163), ('ingredients', 0.562216579914093), ('supplement', 0.5602615475654602), ('benefit', 0.5554601550102234), ('wellbeing', 0.5517570972442627), ('supplements', 0.5499425530433655), ('joint', 0.5437322854995728), ('nutritional', 0.5418124794960022), ('beneficial', 0.5411757826805115), ('healthier', 0.5339625477790833), ('wholesome', 0.5278456807136536), ('diets', 0.5242086052894592)]</pre>	<pre>[('problems', 0.8925145864486694), ('issue', 0.6712034940719604), ('digestive', 0.6530629396438599), ('problem', 0.6398019194602966), ('digestion', 0.618532121181488), ('upset', 0.6182904839515686), ('cause', 0.6045339703559875), ('caused', 0.5916934609413147), ('stomach', 0.5840751528739929), ('health', 0.5689787268638611), ('prone', 0.5500711798667908), ('experienced', 0.5479677319526672), ('upsets', 0.5473055839538574), ('bowel', 0.5459401607513428), ('constipation', 0.5367522239685059), ('allergies', 0.5280531644821167), ('gi', 0.5257072448730469), ('diarrhea', 0.5209863185882568), ('sensitive', 0.5146740674972534), ('gastrointestinal', 0.5144245624542236)]</pre>

2. Food

We use “food” and “foods” as keywords to find the most similar words through the Word2Vec model. We find some interesting words, including diet, nutrition, nutritious, fillers, and we decide to dig in these words for deeper insights.

```

n [176]: model.wv.most_similar('food', topn=20)
#canned
ut[176]: [('foods', 0.8607029318809509),
('canned', 0.823520302772522),
('feed', 0.7764318585395813),
('kibble', 0.774937629699707),
('beneful', 0.7684417963027954),
('foodi', 0.7581843137741089),
('iams', 0.7314141988754272),
('nutrience', 0.7290564179420471),
('grainfree', 0.7245274782180786),
('wellness', 0.718381404876709),
('feeding', 0.7177774310112),
('kibbles', 0.6995685696601868),
('grain', 0.689814567565918),
('merrick', 0.6772351264953613),
('fed', 0.6719245314598083),
('science', 0.6700250506401062),
('diet', 0.6657546758651733),
('eat', 0.6642017364501953),
('orijen', 0.6616511940956116),
('dry', 0.65117347240448)]

```

```

3]: model.wv.most_similar('foods', topn=20)
#nutrition #meat
3]: [('food', 0.8607029914855957),
('grainfree', 0.7718530893325806),
('canned', 0.7538586854934692),
('grains', 0.7461742758750916),
('grain', 0.7428746819496155),
('iams', 0.7360897660255432),
('beneful', 0.7292384505271912),
('wellness', 0.7248213291168213),
('ingredients', 0.7212700247764587),
('diet', 0.7194106578826904),
('fillers', 0.7178388237953186),
('merrick', 0.7091771960258484),
('nutrience', 0.7026435136795044),
('foodi', 0.6976250410079956),
('feed', 0.6911323666572571),
('nutrition', 0.6829206347465515),
('science', 0.6794840693473816),
('protein', 0.6692298650741577),
('nutritious', 0.6556248068809509),
('meat', 0.6538680791854858)]

```

In the negative model, we found that dogs don't like **fillers** in their foods, such as grain, potato, rice, corn, and wheat.

```

model_neg.wv.most_similar('foods', topn=20)
[('food', 0.7950260639190674),
('ingredients', 0.6932952404022217),
('fillers', 0.6680512428283691),
('meat', 0.6465786695480347),
('diet', 0.6390565037727356),
('eat', 0.6363977193832397),
('feed', 0.6363009810447693),
('protein', 0.6230639219284058),
('grain', 0.6072638630867004),
('corn', 0.5837203860282898),
('feeding', 0.5826225876808167),
('canned', 0.5789669752120972),
('iams', 0.5738239288330078),
('ingredient', 0.5696454644203186),
('chicken', 0.5547526478767395),
('purina', 0.5523708462715149),
('wellness', 0.5520946979522705),
('nutritional', 0.5510549545288086),
('rice', 0.5471959710121155),
('nutritious', 0.5393341779708862)]

```

2.1 Picky / Natural

Regarding “Picky, Fussy, and Finicky”, we discover that picky dogs prefer chicken flavor with grain free. We inferred that chicken flavor is most acceptable because its flavor is plainer. Also, dogs like pure meat food without fillers. In terms of “Natural, Organic, and Diet”, chicken is indicated as a healthy flavor that helps dogs to lose weight. Furthermore, rosemary is linked to “Natural”, which can be a unique flavor.

<code>model_all.wv.most_similar('natural', topn=20)</code>	<code>model_all.wv.most_similar('picky', topn=20)</code>
<pre>[('balance', 0.6889117360115051), ('organic', 0.6628136038780212), ('ingredients', 0.6325050592422485), ('chicken', 0.623913586139679), ('potato', 0.6183066368103027), ('healthy', 0.614600658416748), ('flavor', 0.608206570148468), ('wholesome', 0.5990267992019653), ('flavors', 0.5888931155204773), ('grain', 0.5830900073051453), ('usa', 0.5816531181335449), ('buffalo', 0.5807489156723022), ('sweet', 0.572650671005249), ('preservatives', 0.5655688047409058), ('additives', 0.5617082118988037), ('ingredient', 0.561089813709259), ('glycerin', 0.5583880543708801), ('grainfree', 0.554515540599823), ('salmon', 0.5540083050727844), ('beef', 0.5533477663993835)]</pre>	<pre>[('eater', 0.9080840349197388), ('finicky', 0.849820613861084), ('fussy', 0.7442322373390198), ('eaters', 0.7365965247154236), ('eat', 0.6976345181465149), ('spoiled', 0.6562061309814453), ('eats', 0.6275798678398132), ('taste', 0.6261095404624939), ('pickiest', 0.6056305170059204), ('choosy', 0.6029781103134155), ('tasty', 0.5857393145561218), ('gobbles', 0.5840632915496826), ('gobbled', 0.5733367800712585), ('fuzziest', 0.5502135753631592), ('hungry', 0.5496268272399902), ('gobble', 0.5480718612670898), ('food', 0.5473541617393494), ('grainfree', 0.5395007133483887), ('flavors', 0.5388109087944031), ('enthusiastic', 0.5307303667068481)]</pre>

2.2 Fillers

“Fillers” is also one of the most similar words to “foods”. The customers prefer to choose the food in very high quality without grain fillers or artificial ingredients, coloring, and flavorings as treats. Corn and grain are mentioned here because they are the common fillers.

<code>model_all.wv.most_similar('fillers', topn=20)</code>
<pre>[('grains', 0.8142902255058289), ('ingredients', 0.808929443359375), ('corn', 0.7744516134262085), ('preservatives', 0.744913637638092), ('byproducts', 0.7310333251953125), ('soy', 0.7239614129066467), ('wholesome', 0.721039891242981), ('foods', 0.7178388833999634), ('grain', 0.7127841711044312), ('meat', 0.7036253213882446), ('filler', 0.702812671661377), ('wheat', 0.6976709961891174), ('protein', 0.6928551197052002), ('additives', 0.6905094981193542), ('ingredient', 0.6824844479560852), ('nutrition', 0.6706351637840271), ('nutritious', 0.6663877367973328), ('meats', 0.6632387638092041), ('artificial', 0.649552047252655), ('list', 0.649077832698822)]</pre>

3. Treat / Snacks Categories

In terms of “food”, “foods”, “treat”, “treats”, we found that consumers mainly focus on four kinds of products, including “Jerky”, “Biscuits or Cookies”, “Kibble”, “Bones”. Then, we conducted four analyses separately for those four kinds of dog food.

```

9]: model.wv.most_similar('treat', topn=20)
#'biscuit' #'kibble'

9]: [('treats', 0.8329103589057922),
 ('snack', 0.7196111679077148),
 ('biscuit', 0.6842326521873474),
 ('yummy', 0.6677627563476562),
 ('reward', 0.6553356051445007),
 ('tasty', 0.6551364660263062),
 ('cookie', 0.6444391012191772),
 ('biscuits', 0.6210341453552246),
 ('snacks', 0.6173635125160217),
 ('cookies', 0.6005010008811951),
 ('kibble', 0.5789110064506531),
 ('cheese', 0.5772646069526672),
 ('meals', 0.5757756233215332),
 ('chewy', 0.5605968832969666),
 ('crunchy', 0.5415927767753601),
 ('everlasting', 0.5374857783317566),
 ('eagerly', 0.5351067781448364),
 ('food', 0.5285131931304932),
 ('meal', 0.5129504203796387),
 ('breakfast', 0.5128747820854187)]

```

```

]: model.wv.most_similar('treats', topn=20)
#jerky

]: [('treat', 0.832910418510437),
 ('biscuits', 0.7474940419197083),
 ('snacks', 0.7366456389427185),
 ('jerky', 0.710914134979248),
 ('cookies', 0.6912108063697815),
 ('chewy', 0.6711422801017761),
 ('biscuit', 0.6706137657165527),
 ('yummy', 0.6378841996192932),
 ('zukes', 0.6375686526298523),
 ('snack', 0.6371181607246399),
 ('crunchy', 0.6219091415405273),
 ('tasty', 0.6188508868217468),
 ('cookie', 0.61589598655570068),
 ('rewards', 0.6093142032623291),
 ('reward', 0.6056082844734192),
 ('kibble', 0.6048826575279236),
 ('food', 0.6002792716026306),
 ('crumblly', 0.5932048559188843),
 ('rawhide', 0.5922307372093201),
 ('bakery', 0.5909695625305176)]

```

3.1 Jerky

In terms of “Jerky”, we found that popular flavors include chicken, beef, and duck. Tender and breast are popular forms of jerkies. Dogs prefer smokey and chewy jerkies. Comparing the negative and positive sentiment analysis, we found that smokey and chewy chicken tender will be loved by dogs.

```

model_all.wv.most_similar('jerky', topn=20) #tender, chicken, smokey, chewy
model_pos.wv.most_similar('jerky', topn=20)

[('chicken', 0.7186856865882874),
 ('treats', 0.710914134979248),
 ('tenders', 0.6927472352981567),
 ('waggin', 0.6671656370162964),
 ('smoky', 0.656883955001831),
 ('strips', 0.6406774520874023),
 ('beef', 0.6259176731109619),
 ('cadet', 0.6183832287788391),
 ('snacks', 0.6071378588676453),
 ('duos', 0.5981952548027039),
 ('breasts', 0.592742383480072),
 ('rawhide', 0.5904959440231323),
 ('china', 0.5873726606369019),
 ('chewy', 0.5749291777610779),
 ('jerkey', 0.574255645275116),
 ('duck', 0.5380277037620544),
 ('usa', 0.5331942439079285),
 ('potato', 0.5323811173439026),
 ('smokehouse', 0.5307361483573914),
 ('meat', 0.5291889309883118)]
```

```

[('tenders', 0.7495152950286865),
 ('waggin', 0.7488663196563721),
 ('treats', 0.7474915385246277),
 ('chicken', 0.7139768600463867),
 ('smoky', 0.7043585777282715),
 ('snacks', 0.6704889535903931),
 ('strips', 0.6692102551460266),
 ('china', 0.6396634578704834),
 ('duos', 0.6276096105575562),
 ('jerkey', 0.6222936511039734),
 ('breast', 0.6202914714813232),
 ('treat', 0.5968142747879028),
 ('dogswell', 0.5962856411933899),
 ('chewy', 0.596245527267456),
 ('fillets', 0.5774305462837219),
 ('milos', 0.5768712162971497),
 ('rawhide', 0.5762647390365601),
 ('smokehouse', 0.573754072189331),
 ('grillers', 0.5728753805160522),
 ('usa', 0.5698317289352417)]

```

```
model_neg.wv.most_similar('jerky', topn=20)

[('chicken', 0.6872095465660095),
 ('treats', 0.6593706011772156),
 ('fda', 0.6569322943687439),
 ('china', 0.5486233830451965),
 ('consumers', 0.5330882668495178),
 ('waggin', 0.4940285086631775),
 ('strips', 0.4940144419670105),
 ('beef', 0.48675626516342163),
 ('chinese', 0.4844045042991638),
 ('illness', 0.478437215089798),
 ('treat', 0.46187517046928406),
 ('meat', 0.4566107988357544),
 ('illnesses', 0.45042943954467773),
 ('squares', 0.4490586221218109),
 ('reported', 0.4469397962093353),
 ('products', 0.43614301085472107),
 ('veterinarians', 0.42774030566215515),
 ('sick', 0.4213514029979706),
 ('usa', 0.4195269048213959),
 ('purina', 0.41896453499794006)]
```

3.2 Biscuits / Cookies

In terms of “Biscuits and Cookies”, three specific forms are milkbones, nuggets, and morsels. Dogs prefer crunchy, freeze dried, hardened, crumbly texture. Comparing the negative and positive sentiment analysis, we found that molasses (a kind of sugar) and banana are possible popular flavors.

```
#crunchy, freezedried
#milkbones
#brand: hubbard
model_all.wv.most_similar('biscuits', topn=20)

[('cookies', 0.7902782559394836),
 ('biscuit', 0.7629588842391968),
 ('treats', 0.747494101524353),
 ('crunchy', 0.6858725547790527),
 ('snacks', 0.6726858615875244),
 ('chewy', 0.636195182800293),
 ('milkbones', 0.6329897046089172),
 ('treat', 0.6210342049598694),
 ('cookie', 0.6162014603614807),
 ('milk', 0.5860077142715454),
 ('snack', 0.5760372281074524),
 ('bones', 0.5758284330368042),
 ('bakery', 0.5716187357902527),
 ('baked', 0.5426074862480164),
 ('yummy', 0.5394496917724609),
 ('hubbard', 0.5389708280563354),
 ('milkbone', 0.5366328358650208),
 ('kibble', 0.53483647108078),
 ('rawhide', 0.521557629108429),
 ('morsels', 0.5086171627044678)]
```

```
#molasses
model_pos.wv.most_similar('biscuits', topn=20)

[('biscuit', 0.8034099340438843),
 ('cookies', 0.7723483443260193),
 ('treats', 0.7255537509918213),
 ('crunchy', 0.6879461407661438),
 ('cookie', 0.6864542961120605),
 ('treat', 0.6642906665802002),
 ('snacks', 0.6447066068649292),
 ('chewy', 0.6361777186393738),
 ('milkbones', 0.6289840936660767),
 ('bakery', 0.6140360832214355),
 ('crunch', 0.5929328799247742),
 ('snack', 0.584019124507904),
 ('bones', 0.5790981650352478),
 ('milk', 0.5784792304039001),
 ('milkbone', 0.5567546486854553),
 ('scored', 0.5547945499420166),
 ('meaty', 0.5448763370513916),
 ('flavor', 0.5384538769721985),
 ('molasses', 0.5306219458580017),
 ('break', 0.5281450152397156)]
```

<pre>model_neg.wv.most_similar('biscuits', topn=20)</pre>	<pre>#crunchy, chewy, hardened, crumbs model_all.wv.most_similar('milkbones', topn=20)</pre>
<pre>[('biscuit', 0.4234789311885834), ('bone', 0.4217185080051422), ('treats', 0.4198595881462097), ('crunchy', 0.41218098998069763), ('oven', 0.376028448343277), ('requested', 0.3713882267475128), ('pieces', 0.37027353048324585), ('crumbs', 0.36924314498901367), ('stale', 0.3664633631706238), ('eat', 0.360312819480896), ('starving', 0.3580175042152405), ('love', 0.35796764492988586), ('swallowing', 0.3559623062610626), ('squares', 0.3543468713760376), ('guys', 0.3539619445800781), ('treat', 0.3535550832748413), ('producti', 0.34738293290138245), ('kibbles', 0.34603556990623474), ('bones', 0.3438662588596344), ('potato', 0.34229353070259094)]</pre>	<pre>[('biscuits', 0.6329896450042725), ('snacks', 0.5928197503089905), ('biscuit', 0.5637331008911133), ('milk', 0.5576505661010742), ('cookies', 0.5101789832115173), ('treats', 0.5100104212760925), ('charlee', 0.4947792887687683), ('chewy', 0.4942937195301056), ('crunchy', 0.48718947172164917), ('bones', 0.4748634397983551), ('jims', 0.4723586440086365), ('milkbone', 0.4591394066810608), ('breasts', 0.45291033387184143), ('rawhide', 0.44437891244888306), ('meaty', 0.4363846480846405), ('hardened', 0.43049517273902893), ('crumbs', 0.4300857186317444), ('chops', 0.42814570665359497), ('rewards', 0.4281453788280487), ('plato', 0.42650678753852844)]</pre>
<pre>#nuggets #crunchy, crumbly, moist model_all.wv.most_similar('morsels', topn=20)</pre>	<pre>#crunchy, chewy, baked, banana #brand: fruitable model_all.wv.most_similar('cookies', topn=20)</pre>
<pre>[('nuggets', 0.6043952703475952), ('bits', 0.5677723288536072), ('kibbles', 0.5638396143913269), ('chunks', 0.5504471659660339), ('kibble', 0.5440806746482849), ('pieces', 0.5394648909568787), ('crunchy', 0.5260812640190125), ('treats', 0.521003246307373), ('snack', 0.5148374438285828), ('enthusiasm', 0.5123828053474426), ('biscuit', 0.5098402500152588), ('biscuits', 0.508617103099823), ('wolfed', 0.5082128643989563), ('crunch', 0.49253565073013306), ('moist', 0.4899935722351074), ('chewy', 0.48734062910079956), ('peas', 0.48698917031288147), ('cookies', 0.4844934046268463), ('crumbly', 0.48416459560394287), ('treat', 0.48392167687416077)]</pre>	<pre>[('biscuits', 0.7902781367301941), ('treats', 0.6912108063697815), ('cookie', 0.6845843195915222), ('biscuit', 0.6505856513977051), ('chewy', 0.631899893283844), ('crunchy', 0.6161506772041321), ('treat', 0.6005009412765503), ('snacks', 0.5860210061073303), ('fruitables', 0.563111424446106), ('snack', 0.5609734058380127), ('bones', 0.5414084792137146), ('bakery', 0.5299862623214722), ('baked', 0.5277833938598633), ('banana', 0.52531898021698), ('milkbones', 0.5101791024208069), ('milkbone', 0.506131112575531), ('rewards', 0.5012664794921875), ('tidbits', 0.4944799542427063), ('yummy', 0.4942704141139984), ('treatsthey', 0.4942314922809601)]</pre>
<pre>#bakery, bake #banana, molasses model_pos.wv.most_similar('cookies', topn=20)</pre>	<pre>#wheat, fruit, flour model_neg.wv.most_similar('cookies', topn=20)</pre>
<pre>[('biscuits', 0.7723482847213745), ('cookie', 0.7530904412269592), ('treats', 0.6785171031951904), ('snacks', 0.6246927976608276), ('chewy', 0.6200154423713684), ('crunchy', 0.617546558380127), ('biscuit', 0.6128039360046387), ('snack', 0.6115261912345886), ('treat', 0.5890049338340759), ('bones', 0.5847373604774475), ('bakery', 0.5838213562965393), ('banana', 0.5657821297645569), ('molasses', 0.5554957985877991), ('bakes', 0.5500888824462891), ('milkbones', 0.540580153465271), ('treatsthey', 0.535377025604248), ('recipes', 0.5185942053794861), ('bake', 0.5155441761016846), ('recipe', 0.5138152837753296), ('fruitables', 0.5137414336204529)]</pre>	<pre>[('cookie', 0.48813825845718384), ('snack', 0.3736644983291626), ('gunk', 0.37293171882629395), ('blah', 0.36469560861587524), ('weights', 0.36110299825668335), ('crunchy', 0.35907211899757385), ('willingly', 0.3586788475513458), ('recipe', 0.3492352068424225), ('wheat', 0.3488375246524811), ('oven', 0.34448155760765076), ('panic', 0.3443426191806793), ('fruit', 0.3417638838291168), ('upright', 0.340862900018692), ('crap', 0.34026554226875305), ('arrival', 0.33916544914245605), ('organic', 0.33846041560173035), ('guilty', 0.3361200988292694), ('flour', 0.33194202184677124), ('gobbled', 0.32702744007110596), ('comfort', 0.32685109972953796)]</pre>

3.3 Kibbles

As for kibble, nuggets are preferred. Also, dogs prefer crunchy kibbles. Core, soy and potato are mentioned in the negative similar words. When choosing kibbles, customers prefer to choose the food without fillers and canned packages.

```
model_pos.wv.most_similar('kibbles', topn=20)
```

```
[('kibble', 0.8559626340866089),  
 ('food', 0.7466189861297607),  
 ('meals', 0.6490556597709656),  
 ('eats', 0.6050646901130676),  
 ('foods', 0.6011647582054138),  
 ('eating', 0.5994512438774109),  
 ('eat', 0.596914529800415),  
 ('bits', 0.5936623811721802),  
 ('canned', 0.5917766094207764),  
 ('feed', 0.5912400484085083),  
 ('beneful', 0.5905821919441223),  
 ('gobble', 0.5840956568717957),  
 ('orijen', 0.5838569402694702),  
 ('nutrience', 0.5826142430305481),  
 ('morsels', 0.5800125598907471),  
 ('treats', 0.5710983276367188),  
 ('meal', 0.5693061947822571),  
 ('gobbles', 0.5688374042510986),  
 ('peas', 0.56569904088974),  
 ('mixing', 0.5597241520881653)]
```

```
model_neg.wv.most_similar('kibbles', topn=20)
```

```
[('food', 0.5174222588539124),  
 ('kibble', 0.5000157952308655),  
 ('eat', 0.4970720708370209),  
 ('foods', 0.4522262513637543),  
 ('beneful', 0.44502219557762146),  
 ('michaels', 0.4424961507320404),  
 ('iams', 0.43909767270088196),  
 ('chef', 0.4360651671886444),  
 ('nutrition', 0.42769837379455566),  
 ('meat', 0.4257485270500183),  
 ('dogfood', 0.4227214753627777),  
 ('ate', 0.4217192232608795),  
 ('corn', 0.4198887050151825),  
 ('canned', 0.41979607939720154),  
 ('treats', 0.41553354263305664),  
 ('mediumlarge', 0.40396690368652344),  
 ('ingredients', 0.4027928411960602),  
 ('bag', 0.40153518319129944),  
 ('soy', 0.39949169754981995),  
 ('potato', 0.39543038606643677)]
```

3.4 Bones

There are mainly 5 kinds of bones for dogs, including rawhide, marrow, antler / antlers / elk, knuckle, and hooves. “Splinter” is what our customers are worried about. “Shatter”, “shards”, “brittle”, “choke”, “puncture”, “grinding”, and “sharp” are related to “Splinter”. When producing bone products, dogs’ oral health needs extra attention.

```
In [21]: model.wv.most_similar('bone', topn=20)
```

```
Out[21]: [('bones', 0.8158198595046997),  
 ('nylabone', 0.6984532475471497),  
 ('rawhide', 0.6634682416915894),  
 ('chew', 0.622154176235199),  
 ('durachew', 0.6064759492874146),  
 ('gnaw', 0.600791335105896),  
 ('milk', 0.599940299987793),  
 ('knuckle', 0.5982710123062134),  
 ('souper', 0.5956498980522156),  
 ('nylabones', 0.5921487212181091),  
 ('marrow', 0.5889895558357239),  
 ('dura', 0.5721269249916077),  
 ('chewing', 0.5695868730545044),  
 ('chews', 0.5648237466812134),  
 ('busy', 0.5592329502105713),  
 ('galileo', 0.55804443359375),  
 ('antler', 0.5570104122161865),  
 ('edible', 0.5416890382766724),  
 ('antlers', 0.539863646030426),  
 ('chewed', 0.5383621454238892)]
```

```
In [22]: model.wv.most_similar('bones', topn=20)
```

```
Out[22]: [('bone', 0.8158198595046997),  
 ('rawhide', 0.7717331647872925),  
 ('rawhides', 0.6689131855964661),  
 ('antlers', 0.6632908582687378),  
 ('marrow', 0.6568017601966858),  
 ('milk', 0.6416939496994019),  
 ('nylabone', 0.6264498829841614),  
 ('nylabones', 0.6230976581573486),  
 ('knuckle', 0.619225263595581),  
 ('chews', 0.6005524396896362),  
 ('chew', 0.5933453440666199),  
 ('treats', 0.5869534611701965),  
 ('biscuits', 0.5758283734321594),  
 ('gnaw', 0.5756014585494995),  
 ('elk', 0.5742558240890503),  
 ('hooves', 0.5619530081748962),  
 ('antler', 0.5590327978134155),  
 ('chewy', 0.5590052604675293),  
 ('splinter', 0.5532580018043518),  
 ('snacks', 0.5483910441398621)]
```

<code>model_pos.wv.most_similar('bones', topn=20)</code>	<code>model_neg.wv.most_similar('bones', topn=20)</code>
[('bone', 0.8282856345176697), ('rawhide', 0.7578145861625671), ('marrow', 0.693539559841156), ('nylabones', 0.6879273056983948), ('chew', 0.650944173336029), ('milk', 0.6309886574745178), ('nylabone', 0.6298325657844543), ('rawhides', 0.6295621991157532), ('chews', 0.6195599436759949), ('souper', 0.6031301617622375), ('knuckle', 0.5993147492408752), ('meaty', 0.5978771448135376), ('chewy', 0.5917548537254333), ('edible', 0.5915653109550476), ('snacks', 0.5906257033348083), ('cookies', 0.5847374200820923), ('chewing', 0.5809184908866882), ('antlers', 0.5806839466094971), ('splinter', 0.5800434350967407), ('biscuits', 0.579098105430603)]	[('bone', 0.6172605156898499), ('chew', 0.5329653024673462), ('rawhide', 0.5139861106872559), ('chews', 0.5107232928276062), ('milk', 0.4629739224910736), ('nylabone', 0.46047669649124146), ('chewer', 0.459451287984848), ('antlers', 0.45422396063804626), ('chewing', 0.4515664875507355), ('teeth', 0.44520896673202515), ('loves', 0.4444120228290558), ('toys', 0.440253347158432), ('nylabones', 0.43846839666366577), ('rawhides', 0.43804189562797546), ('tartar', 0.4323522746562958), ('chewers', 0.4231974184513092), ('beef', 0.4211956262588501), ('shards', 0.4184868633747101), ('dental', 0.4151022434234619), ('pieces', 0.40671104192733765)]

Summary for Analysis

After building the Topic model , we first found that people care about food and ingredients. Chicken flavor seems to be popular among dogs. After building the Word2Vec model and conducting sentiment analysis, we discover that digestion is the top concern for dogs. Thus, we could focus on solving this problem in our marketing campaign. Also, we conclude that chicken flavor can be accepted by the majority of dogs, even the pickiest dogs or dieting dogs, because chicken flavor appears to be top keywords in most of the food. Furthermore, dogs prefer foods without fillers and with some textures, such as crunchy, chewy, and smokey. As for unique ingredients for specific treats, we suggested molasses (sugar) and bananas for biscuits and cookies. In terms of special forms, we recommended tender for jerky and nuggets for kibbles and biscuits. Furthermore, when producing bone products, we need to be cautious about "Splinter."

Marketing Campaign

Campaign Overview

In this marketing campaign, the main goal is to raise the awareness of feeding fresh dog food and will target **owners who are not conscious of buying dry dog food or kibbles that are not good for dog's health**. To enable our target audience to be more engaged in the overall concept, we make an integrated campaign with 3 image videos and 1 social media campaign.

The first video will interview real life owners whose dogs suffered from Chronic conditions. The second video will focus more on professional experiments and invite our dog

nutritionists to talk more about the importance of fresh dog food. The last video would be a brisk video of teaching dog owners how to make dog food by themselves. These three videos are a setup for the last activity - we will ask participants DIY their dog food and post it on Instagram stories. Overall, we aim that owners not only acknowledge the problem of some dry or cheap dog food, but also put their thoughts into action and pay more attention to dogs' health.

Campaign Details

Video Campaign

Image Video (1) Emotional Appeal – Real Life Story

Image video (1) will express the key message of **Your Dog Has Only You** as an emotional cue to awake dog owners who haven't had enough awareness of feeding their dog with healthier and suitable food. In order to help them understand the importance of the negative influence of eating kibbles or food that is not made fresh, the video will film in the way with **real life stories** - We plan to interview 10 owners whose dogs had experienced chronic kidney disease or overweight due to low-quality pet food and how was their feelings and reflections when accompanying their dogs went through the difficult time.

Image Video (2) Actual Experiment – Why Fresh Food?

After building awareness of how important feeding fresh dog food is, image Video (2) will further focus on the benefits of feeding fresh food for their dogs. From the analysis of Amazon reviews, we found that many owners care about "**fillers**" in dog food. Apart from this, owners often mentioned words like "**indigestible**" or "**constipate**" that indicate the problem of the dry dog food. This video will focus on these problems and bring out the advantages of fresh food. The Farmer's Dog will make an actual live experiment to record the change of dogs before and after they are feeded the fresh food tailored by our dog nutritionists and share the main features of our products.

*Filler is an ingredient that adds bulk to a diet without adding any nutritional value

Image Video (3) Do It Yourself – Making Dog Food Yourself Is So Easy!

The purpose of the last video is to encourage owners to put their thoughts into actual practice since behaviors can make a bigger impact on their perceptions. After highlighting the importance of fresh dog food in previous two videos, we want to invite owners to make easy, healthy dog snacks (cookies, biscuits, or jerky) for their own dogs. Image video (3) will feature our dog nutritionists, Dr. Catriona Love and Dr. Jonathan Block, to guide owners about how to choose healthy fresh food for their dogs and how to make dog snacks based on different sizes, ages, and breeds. We suggest that they focus on snacks with **chicken flavor** since the reviews about "chicken" are far more than other flavors in Amazon Pet

Review. Furthermore, tender and breast forms of jerkies are good example choices based on the results from text analysis.

Social Media Campaign – Share your Cookies/ Biscuits/ Jerky

To increase the engagement of the audience and enhance the awareness of healthy dog food, we plan to launch a **two-week** social media campaign - We encourage owners to participate in DIY their own fresh dog chicken snacks. At the same time, The Farmer's Dog will provide vets and nutritionist consulting sessions for owners who have any concerns throughout the process for FREE. Owners need to post their Fresh Dog Meal or Recipes on their Instagram stories or reels, and tag **@thefarmersdog** to be qualified for the final give-away, which The Farmer's Dog will eventually choose three owners and provide them with the priorly opportunity to customize their fresh dog snacks. Also, we will create a campaign hashtag **#FreshDogFoodChallenge** to further increase the traffic and exposure.

Based on our research, Instagram is the medium with highest engagement and most brisk style, so we decided to launch the campaign mainly on Instagram.

Conclusion

With a continuously expanding market and strengthening awareness of healthy pet food, it's significant for The Farmer's Dog to follow the market trend and reach the potential market.

We analyzed the Pet Supplies' Amazon reviews. According to our analysis of the Topic model, we discover that people care about dog food and ingredients. Chicken flavor seems to be popular among dogs. According to our sentiment analysis, and Word2Vec Model, we found that digestion is the top concern for dogs, and dogs prefer chicken flavor treats without fillers and with some textures. Thus, in the following marketing campaign, we can leverage the important insights to solve the digestion issues for dogs.

As for the marketing campaign, to further raise the awareness of feeding fresh food, we suggest starting from emotional video, informative video, to action video, inviting dog owners to participate in the move of choosing fresh and suitable dog food.

Appendix

APPA website: https://www.americanpetproducts.org/press_industrytrends.asp

The Farmer's Dog: <https://www.thefarmersdog.com>

Schleicher, M., Cash, S. B., & Freeman, L. M. (2019). Determinants of pet food purchasing decisions. *The Canadian veterinary journal = La revue veterinaire canadienne*, 60(6), 644–650.

Enlund, K. B., Brunius, C., Hanson, J., Hagman, R., Höglund, O. V., Gustås, P., & Pettersson, A. (2020). Dog Owners' Perspectives on Canine Dental Health-A Questionnaire Study in Sweden. *Frontiers in veterinary science*, 7, 298.
<https://doi.org/10.3389/fvets.2020.00298>