

# Product Review Analysis of Disney Products

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## Introduction

Disney is one of the world's largest consumer brand for entertainment, fashion, goods, foods and more. Since the impact of Disney's characters on product sales is huge, many consumer companies have strategic licensing agreement to use its characters in their products and services.

In this assignment, I suppose I am a marketing analyst in a certain licensee company of Walt Disney. Although I can analyze sales data within my own company, the data is not sufficient without real feedback from consumers. Eventually after investigation in open data, I turned to Amazon's customer review to gain more insights into consumer's expectation.

## Data Collection

Three data sets were used.

### 1. Amazon Customer Reviews Dataset

Anonymous customer review is provided as large text files in Amazon S3 storage. The data was collected from 1999 to 2015 against overall product categories. I used below datasets.

s3://amazon-reviews-pds/tsv/amazon\_reviews\_us\_Grocery\_v1\_00.tsv.gz

s3://amazon-reviews-pds/tsv/amazon\_reviews\_us\_Baby\_v1\_00.tsv.gz

The description of data set is found in below URL.

<https://s3.amazonaws.com/amazon-reviews-pds/readme.html>

### 2. List of Disney's characters

To extract Disney-related products, I created list of Disney's characters by referring bellow web site.

<https://www.listchallenges.com/the-ultimate-list-of-disney-characters>

List of characters were embedded in filter conditions in HIVE queries.

### 3. List of adjectives in English

To extract characteristics of feedback, I tried to find adjectives in some of review comments. For example, I counted how many review comments contain 'Cute', 'Sweet' and so on. To extract adjectives, I created a list of popular adjectives from 'YourDictionary.com'.

<https://examples.yourdictionary.com/examples-of-adjectives.html>

## Questions to answer

I defined four questions to understand consumer voices on Disney's products.

**(1) Top 10 popular characters**

Question:

Which are the most popular characters in Disney? Extract review comments on Disney's products and aggregate them by character and product category. Print top 10 characters for the two product categories: 'Grocery' and 'Baby'.

Answer:

In 'Baby' category, Minnie is the most popular characters followed by Pooh and Mickey. In 'Grocery', Mickey is the best.

Table1.1 Baby

Character	Rank	Number of reviews
minnie	1	3047
winnie the pooh	2	2844
mickey	3	2713
stitch	4	1551
tinkerbell	5	591
ariel	6	252
cinderella	7	240
belle	8	149
snow white	9	64
nala	10	17

Tabl1.2 Grocery

Character	Rank	Number of reviews
mickey	1	577
belle	2	144
ariel	3	99
minnie	4	75
baymax	5	74
snow white	6	64
winnie the pooh	7	39
cinderella	8	30
goofy	9	25
donald duck	10	20

## (2) Historical trend in popularity of characters

### Question:

For the top 10 characters in Baby goods, visualize the number of reviews for each character over years and describe any difference in trend between characters.

### Answer:

There is a strong change in popularity of characters in recent years.

Until 2013, number of reviews of Pooh doubled the number of reviews of Mickey and Minnie.

In 2014, the number of reviews of Mickey and Minnie reached to the same level as Pooh.

In 2015, each review of Mickey and Minnie outweighed the reviews of Pooh, indicating the reviews of Pooh has begun to decrease.

This change might be due to the effect of criticism on the Winnie the Pooh in some countries. From some religious perspectives, the characters have been banned from public book shelves.

### Reference:

<http://world.edu/banned-books-awareness-winniethepooh/>

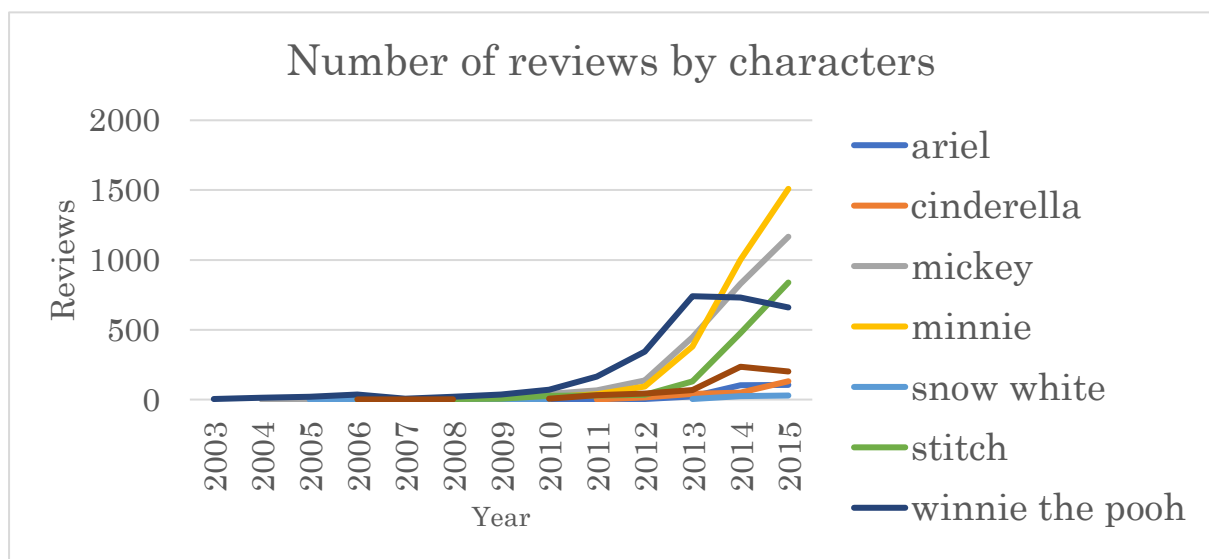


Figure2. Number of reviews by characters

## (3) Top5 products with higher rating

### Question:

Which Disney products have higher rating during 2010 to 2015 for each product category? Choose the top 5 products which have higher average rating. Exclude any product which has less than 6 reviews.

### Answer:

Table3.1. Top 5 products with higher rating(Category: Baby)

product_id	product_title	rank	rating
B00EOWLXOW	Disney Fashion Diaper Tote - Minnie - One Size	1	5
B00IEJG0JE	Delta Children Figural Upholstered Chair with Ottoman, Disney Minnie Mouse	1	5
B0029DO606	Child to Cherish Large Stitched Elephant Bank	1	5
B0040ROG1S	Kenneth Brown Sweet Stitches 5-Piece Crib Bedding Set	1	5
B0040ZS5Z8	Winnie the Pooh Flannel Baby Receiving Blankets Set of 4	1	5
B00516GADO	Disney Winnie the Pooh First 5 Years Keepsake Baby Memory Book, H for Hunny (Discontinued by Manufacturer)	1	5
B005ZX45RQ	Disney First Christmas Minnie Mouse Ornament Baby	1	5
B001OPB5LI	Winnie the Pooh Soft and Fuzzy Hi-Pile Blanket	1	5
B006J03EMG	Disney 4 Piece Vintage Mickey Crib Bedding Set (Discontinued by Manufacturer)	1	5
B008O9JX70	WallStickersUSA Winnie the Pooh Tiger Playing with Ball Wall Sticker and Decal	1	5
B00J2L4N3I	Disney Minnie Mouse 4-Piece Secure-Me Bumper	1	5
B009BYG24O	Hot Seller Baby's Flying Winnie the Pooh Crib Bedding 6 Pc Set (Yellow)	1	5
B00J0VD552	Disney Baby Mini Jinglers, Pluto	1	5
B00CO72LHC	Fisher-Price Ayden 4-in-1 Convertible Crib, Snow White	1	5
B00CXVP7CK	Disney Baby Minnie Mouse Dreamy Stars Soother	1	5
B00DWJNQZM	Disney Babies - Minnie Mouse	1	5
B00MRZIUIA	Graco Pack 'n Play On The Go Travel Playard, Ariel (Discontinued by Manufacturer)	2	4.941176
B00NZ4ZAA8	Disney Minnie Wearable Blanket	3	4.916667
B00CO5OGQS	Disney Winnie the Pooh Diaper Bag (Pink)	3	4.916667
B008UGLVYU	Disney - Minnie Sitting Pretty 3 piece Crib Bedding Set	4	4.909091
B005PUDCOQ	I think we dream so we don't have to be apart so long. If we're in each other's dreams, we can be together all the time. Winnie the Pooh wall art wall quote wall saying	5	4.9
B00IY0GT0I	Dancing Owls Chevron Purple and Pink 4 Piece Crib Bedding Set by Belle	5	4.9

B00KA0K72G	McPolo's Lovely Tinkerbelle iBib - the "iPhone" in Silicone Baby Bib World from U-Essae - Fitting MORE Growing Babies 3 Months to 6 Year-Old Toddlers & PreSchoolers	5	4.9
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Table3.2. Top 5 products with higher rating (Category: Grocery)

product_id	product_title	rank	rating
B000YSVLP6	Disney Honey, Winnie the Pooh, 12-Ounce Pooh Bear Bottles (Pack of 6)	1	5
B003UAL808	French Goose Fat La belle Chaurienne-Graisse D'Oie La Belle Chaurienn, 300 grams	2	4.928571
B003SW5TBM	Brothers-All-Natural Princess Apple Crisps, (Snow White) 0.35-Ounce Pouches (Pack of 24)	3	4.777778
B005D2L1YO	Chef Mickeys Shaped Pasta 14oz /397g	4	4.75
B000RMMMPW	Snow White Valenciano Pumpkin 15 Seeds - Show or Eat!	4	4.75
B00C1XCIRM	Jelly Belly Jelly Beans, Mickey Mouse Special Edition, 7.5 Ounce	5	4.727273

#### (4) Frequent adjectives used in review for top 5 products

##### Question:

To understand what kind of values consumer are looking for in products, it is reasonable to take into account for subjective expressions about products. As a last question, list top 10 frequent adjectives in the review comments within top 5 products identified in question (3).

##### Answer:

Five adjectives : 'cute', 'little', 'soft', 'perfect' and 'pretty' were found as most valuable attributes in products after excluding general adjectives such as 'very', 'great', 'all', 'good', 'one' from the top adjectives.

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+-----+---+-----+
| word|cnt| Category|
+-----+---+-----+
| very| 65| Amount|
| great| 47| Size|
| all| 29| Amount|
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|    cute| 23|Appearance|
|    good| 22|   Emotion|
|     one| 21|   Amount|
|  little| 20|   Amount|
|    soft| 20|   Touch|
|    soft| 20|   Sound|
|  little| 20|    Size|
| perfect| 16|   Emotion|
|     old| 12|Appearance|
|     old| 12|    Time|
|  pretty| 10|Appearance|
|beautiful| 10|Appearance|
|     some| 10|   Amount|
|    clean|  8|Appearance|
| adorable|  8|Appearance|
|   happy|  7|   Emotion|
|   small|  7|    Size|

+-----+---+-----+
only showing top 20 rows

```

Figure 4.1. Frequent adjectives in review comments

## Codes

Below scripts were used to prepare data and answer to the questions.

Table5.1. Codes

Question No	Script file name	Description
Data preparation	Q0-1_Retrieve_AmazonReview.sh	Download review data file from Amazon S3 storage
	Q0-2_Extract_Disney_Characters.py	Scrape character names from the internet
1	Q1.q	Hive query
2	Q2.q	Hive query
3	Q3.q	Hive query

4	Q4-1.q	Hive query to export review texts to HDFS file
	Q4-2_data_preparation.sh	Combine part-xx files into one text file
	Q4-3.py	PySpark script