

UMGC – Spring 2020  
DATA 620  
Final Project

# CVS Health Focus Over the Last Decade

Based on Merlo's Letters to Shareholders

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## **Executive Summary**

CVS Health is a multi-billionaire healthcare company, whose mission is to help people on their path to better health. The company under Larry Merlo's leadership has promoted and developed innovative approach to health, making quality healthcare simple, accessible, and affordable. One way to understand Merlo's leadership philosophy and the company's focus is through his letters to shareholders.

This report examines CVS Health's Letters to shareholders for the last decade (2010-2019). The average number of words in the letters is about 3000 words. The text analysis was performed on the letters using python programming language to decipher each letter into single word, determine their frequencies, perform sentiment analysis of the words, and export the top 30 words in each letter as a csv file for visual analysis in Tableau. The graphs from tableau reveals that the five most used words overtime in those letters are 'health', 'care', 'percent', 'pharmacy', and 'store'. Plus, with all the letters combined, Merlo spent about 55% of total text discussing 'health' and about 45% discussing 'care'. The results indicate CVS not only focused on people's health and care this past decade, but also on growth and profitability.

## **Text Mining of the Letters in Python**

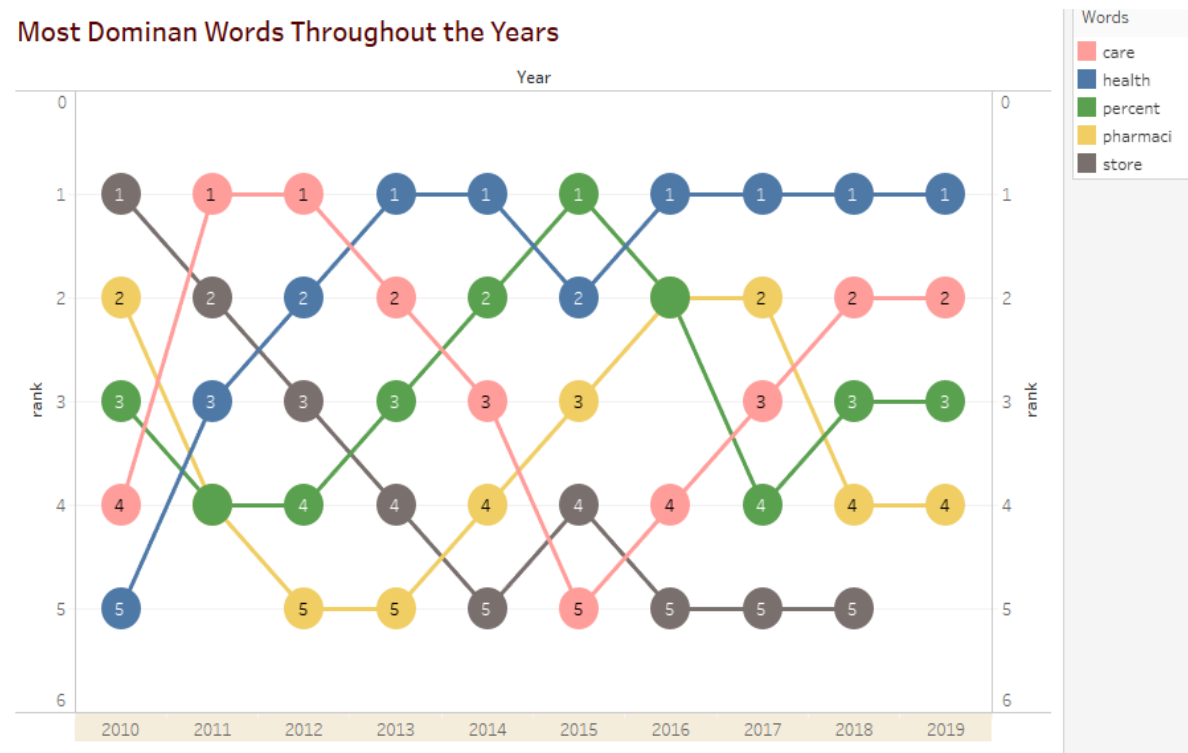
Text analysis is a complex field as the data has no pre-defined data model. For the purpose of this analysis, we used python to break down our letters, which were converted from pdf format to text files. We made a good use of the NLTK library, which is a natural language toolkit for writing python codes that work with human language data, to accomplish our tasks.

We first cleaned our letter by removing all punctuations from the text using the built in 're' package to search and remove punctuation patterns. Next, we performed tokenization, which is the breaking the text into individual word. We accomplished that using the python string split() method on the large chunky text. After breaking down the text, we normalized the words into its root form (stemming) using the NLTK SnowballStemmer package and removed instances of most common words in a language. Last, we found the frequency of each word in the letters and performed a sentiment analysis of the words using the VADER lexicon to analyze the tone of each letter. The VADER lexicon indicates how positive, negative or neutral a word is. Code details can be seen on the attached python file. The results of the text mining were exported as a csv file for analysis in tableau.

## **Data Analysis Results**

### **1. Dominant Words Throughout the Years**

CVS Health is most known as an innovative healthcare company whose priority is on patients' health and care. So, we analyzed the letters to see how centric CVS has been on that topic over the last decade by checking the frequency of the words 'Health' and 'Care' in each shareholder letter. Figure 1. Shows that 'Health', 'Care', 'Percent', 'Pharmacy', and 'Store' are the top five commonly used words across all letters.



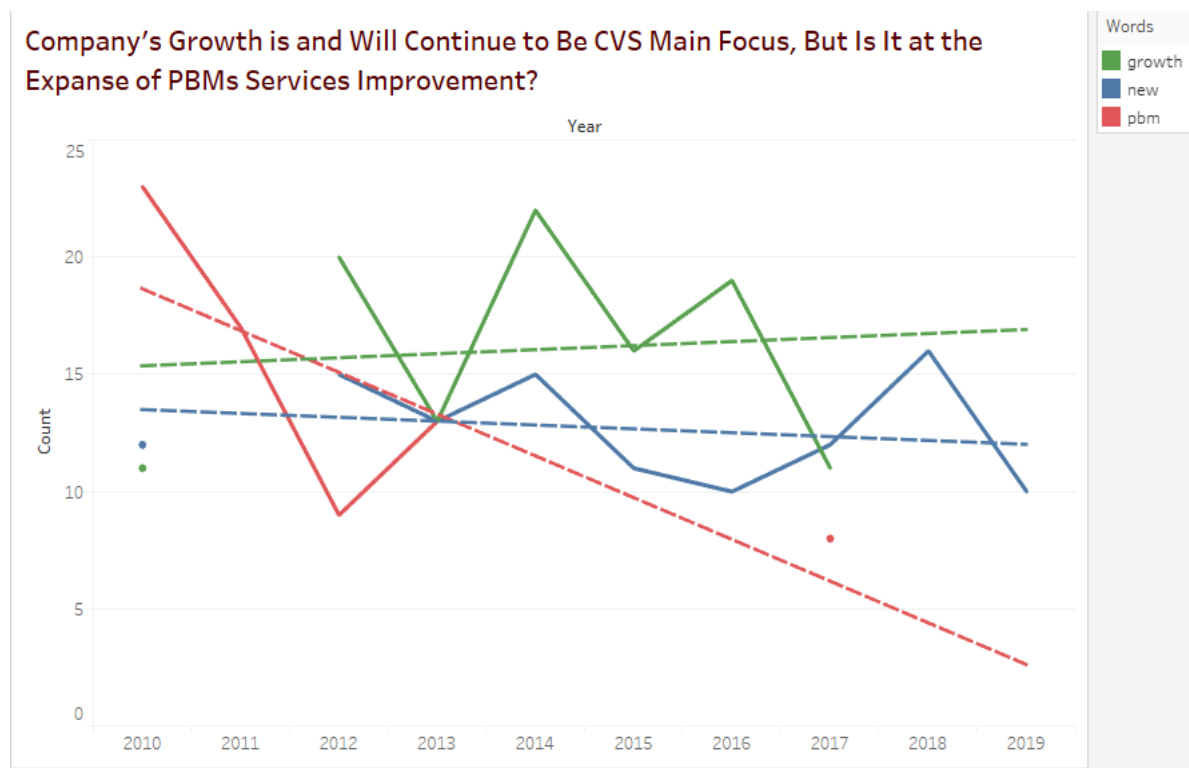
**Figure 1: As Stated in its Mission, CVS Health Focus Remained on People's Care, as well as Growth and Profitability.**

As we go deeper in the analysis, looking at the pattern on a year-by-year basis, the consistency of the word 'Health' and 'Care' decreases. 'Health' is the most mentioned word in six out of ten letters (2013, 2014, 2016, 2017, 2018, and 2019) while 'Care' is the most used in two out of ten letters (2011 and 2012). Other years were dominated by a different topic like 'Store' or 'Percent' indicating profitability

or percent increased. We can also notice the similarity in the word frequencies in the letters from the middle of the decade (2013 – 2016). These letters emphasized ‘Health’, ‘Care’ and ‘Percent’ and well as CVS ‘Pharmacy’ and ‘Store’. This could suggest a focus on the company’s assets (its retail stores and pharmacy) and their growth to better improve care.

## 2. The Company’s Tone Last Decade and its Emphasis on Growth.

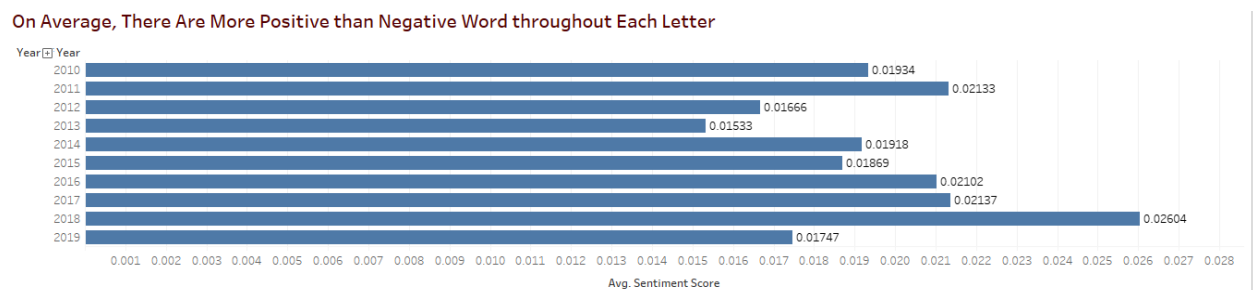
One of CVS Health main priority last decade was the growth and expansion of the company. The major expansion of the decade was the \$69 billion merger with Aetna. Additionally, the company focused on making health care affordable by helping to minimize insurance and drugs cost. Thus, we tested our data to see how it emphasizes growth overtime and focuses on Pharmacy Benefits Management (PBM). For that, we chose three words in our data (‘growth’, ‘new’, and ‘PBM’) and analyzed their trajectory. The results are shown in figure 2 below.



## Figure 2: It looks like Merlo Will Continue Working on Strategies to Accelerate Growth, but Does it Waver His Focus on PBMs Improvement?

Figure 2 shows an upward trend for ‘Growth’ and steady up trend for the word ‘New’. This indicates Growth has been one of Merlo’s priorities this past decade and will continue to be prioritized in future years. This is consistent with real world as according to Merlo’s latest letter, the company plan to expand their Health HUB stores and open new locations to have 1,500 operating stores by 2021. However, the focus on the pharmacy benefit management seems to have decreased over time which may raise some concerns for their insurance plan members. Yet, further analysis is needed to build on that conclusion.

The sentiment Analysis of Merlo’s letters to shareholders shows that overall, his letters have been consistently positive this past decade, with average sentiment score ranging between 0.15 and 0.26 (Figure 3). This can be related to the company’s net worth rise over the last decade, notably its increased in total assets and revenue.



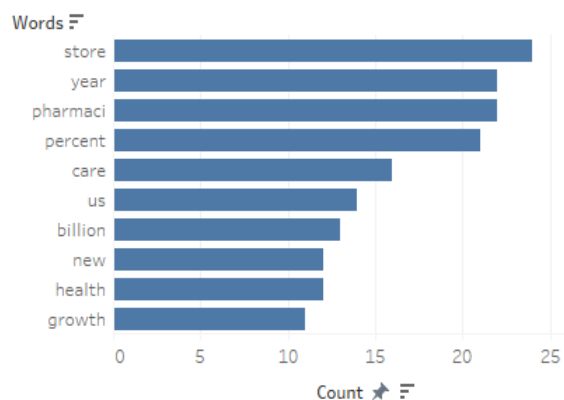
**Figure 3: Positivity in Each Letter May Indicate the Company Has Constantly Been in Good Shape**

### 3. Last Decade in Perspective

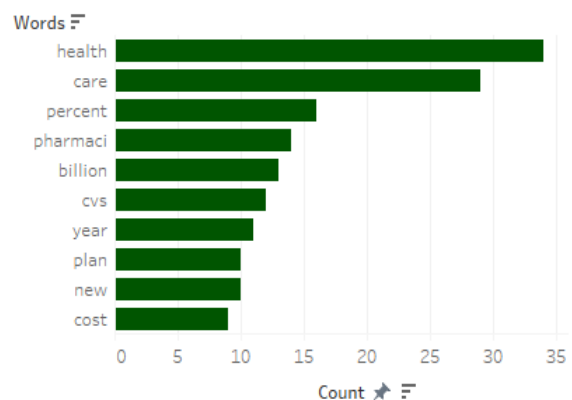
Although CVS Health has stayed on its mission to lead people on their way to better health, Merlo's priorities on how accomplish this mission have changed between 2010 and 2019. Figure 4 below compares the top ten words usage in Merlo's 2010 and 2019 letters.

### Corporate's Focus in 2010 vs 2019

Top Ten Words in 2010



Top Ten Words in 2019



**Figure 4: Merlo's Priorities Seems to Have Shift from Improving Health through Improvement of the Company's Retail Store and Pharmacy to Probably Focusing on Pharmacy Growth, Expanding Services and Reducing Cost.**

The top five mostly used words the 2010's letter was 'Store', 'Year', 'Pharmacy', 'Percent' and 'Care'. This probably suggest that the focus was on improving patient's health through the amelioration of its pharmacies and stores services. On the other hand, the top five words in 2019 was 'Health', 'Care', 'Percent', 'Pharmacy' and 'Billion', which may suggest a focus on pharmacies growth, and the company's profitability.





## References

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