

## Teradata 2019 Data Challenge

### Author(s)

Jason Ta  
Virginia Commonwealth University  
taj@mymail.vcu.edu  
Information Systems  
Undergraduate

Terence Hardy  
Virginia Commonwealth University  
hardytj@vcu.edu  
Information Systems  
Undergraduate

Kwasi Darkwah  
Virginia Commonwealth University  
darkwahks@vcu.edu  
Information Systems  
Undergraduate

Ernest Ampofo  
Virginia Commonwealth University  
ampofoe@vcu.edu  
Information Systems  
Undergraduate

Massa Sitta  
Virginia Commonwealth University  
sittams@vcu.edu  
Information Systems  
Undergraduate

### Faculty Advisor

Joseph Cipolla, jcipolla@vcu.edu

## Summary

The following write up aims to answer the question of which mode of communication is most effective, where success is measured by client job placement. Through the use of analytic tools, we were able to clean the data and provide insight into the amount of hired clients and the mode of communication they engaged with during their job search. The information used in our analysis led us to find which mode of communication was most effective for clients who were hired and the best way to contact clients who were not hired.

## Problem and Motivation

**Business Question:** Is there a way to tell what communication method (call, texting, or email) is more successful with clients, either based on their success in job placement or some other outcome?

Hire Hero's mission is to help empower veterans and those affiliated with the United States Military by helping them re-enter the civilian workforce. They also hope to provide resources to help sustain the jobs of those placed in the workforce. Job placement is the biggest success factor/metric that allows Hire Heroes USA to show the results of the work they do. Hire Heroes USA is a non-profit organization that relies heavily on donations, so it is vital that they figure out which kinds of communication best leads to successful job placement. The higher the level of performance the organization can boast, the more funding and donations the organization can secure and reinvest into helping veterans. There is a link between the success of a non-profit and how much people are willing to donate. By looking at the success of the communication methods, it allows Hire Heroes to do more to boost job placement. In an article posted on the Nonprofit Quarterly, author Harrington J. Bryce states, "Nonprofits need the public's trust for legitimacy, for effectiveness, and for non-financial as well as financial support" (Bryce). If Hire Heroes can identify the most effective method of communication that correlates with job placement, they can focus their resources towards this method of communication in order to not waste resources. This way, the donations that are provided are not going to waste and the increased success should increase the public's trust in Hire Heroes which can increase the amount of financial support from the public.

## Approach

The initial steps we took towards solving our business problem revolved around understanding the data at hand and thinking of a way to use it to provide findings of value. The process began by analyzing the data dictionary and looking only for attributes of value. Our ideology was to not overwhelm ourselves with too many data fields and rather focus in on very specific instances that could lead to a clear finding. We selected the Salesforce\_2018Activities and Salesforce\_Contact data sets primarily because they gave a clear look on communication methods with fields such as Correspondance\_Type\_C which could be split into multiple files and

provide insight on calls, text, and emails. Another field we heavily leaned on was Active\_Color\_c, which led to insight on whether or not people got hired and which mode was used to contact them. The Active\_Color\_c field allowed us to determine those hired and not hired by filtering the column manually and sorting through responses. Lastly, we needed a variable to tie the different data sets together and ID fields in both sets served as that bridge. The data cleaning process will be explained in more detail in the Tools and Analytics portion.

## **Datasets**

Only data that was provided for the challenge in the Data Challenge Datasets tab was used to find an answer for the business problem. As mentioned above, the specific datasets used include the Salesforce\_2018Activities and Salesforce\_Contact.

## **Tools and Analytics**

In order to clean and analyze the data provided in the datasets, our team used Microsoft Excel, Tableau prep, and Tableau Desktop. The first step of our process was matching the ID column in Salesforce\_Contact dataset to the WhoID column in the Salesforce\_2018Activities using Tableau Prep. We did this by joining the two tables. This also allowed us to fix and eliminate any repeating IDs. This helped us create a conclusive list of 132,738 clients that we would be able to examine. We were able to check the method of communication by referring to the Correspondance\_Type\_C column. There were different variations of communication in this column so we decided to group the communications into three categories, email, calling, and texting. By aggregating the sales activity by communication method for each ID, we could see what communication method was used to contact each client. We initially ran into issues with the ID due to the fact that there were multiples of the same ID holding only one Correspondance\_Type\_C each. In order to fix this, we used Tableau Prep to group by similar values and this fixed the issue. Next, we combined WHOIDs with the Active\_Color\_c column to indicate if the clients were hired by focusing on the fields in blue. Although there was a lot of other color variables, they were not used in this study because we only wanted to focus on those that were hired or not. Using tableau prep, we were able to create a file that consisted of a list of clients, the three methods of communication, and hired/not hired. This gave us a collective file that we could use to see clients and what method of communication worked best in regard to their job search. Lastly, we used Tableau Desktop to create visualizations of the relationship between the method of communication used and if clients were hired or not and the frequency of the communication methods.

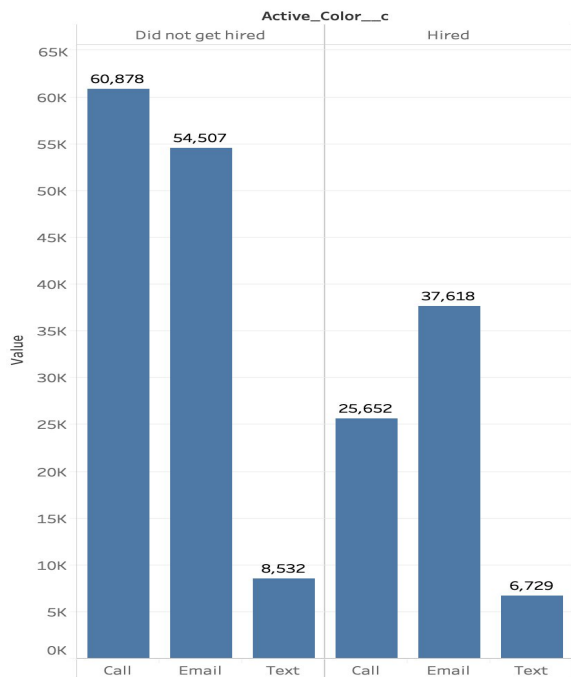
## **Results**

When we came up with our results, our group decided to make visuals that would further help the reader's understanding. In visual A, we created a bar graph to show the number of times each communication method was used for both hired and non-hired members. For hired members email was the most common communication method used. For non-hired members,

telephone calls were the most common method of communication used. This graph shows only a total count of the communication methods used to reach different clients. From this visual, it can be seen that there is a large gap between communications attempted with the individuals that were not hired versus those that were. It makes sense that the unsuccessful hires required more communication, however, with our research and data, our goal is to create a higher success rate by shrinking the gap between successful hire vs unsuccessful hire. Visual B represents a breakdown of how many times each communication method was used. For each method, we show if a member was hired using that method with the color green. For members who were not hired, the number is represented with the color red. This visual provides better insight on each method of communication individually and the success they have whether clients are hired or not. We decided to determine the success rate by dividing the number of hired vs not hired separated by each method of communication. We are able to see that email was the most frequent way of communication with a success rate of 69%. The second most frequent communication method was calling, which held a success rate of 42%. Lastly, the least used method of communication was texting, which provided a success rate of 79%. By looking at these numbers, it shows that the most frequently used communication is not always the most successful. It will have a higher number of hires, but will also retain a high level of non-hires. Although texting was used the least, it provided the highest success rate for hires. The conclusions that we made can help Hire Heroes USA by motivating their users to stay in contact by using the method of texting. This can eliminate wasteful resources and time communicating with users in different methods that may have a lower success rate.

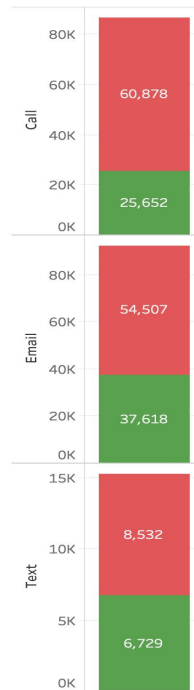
Visual A

Method of Communication vs Hired/Not Hired



Visual B

Method of Communication vs Hired/Not Hired



## References

Bryce, Herrington J. "The Public's Trust in Nonprofit Organizations: The Role of Relationship Marketing and Management." *Non Profit News | Nonprofit Quarterly*, 2 Feb. 2016, [nonprofitquarterly.org/2016/01/11/the-publics-trust-in-nonprofit-organizations-the-role-of-relationship-marketing-and-management/](http://nonprofitquarterly.org/2016/01/11/the-publics-trust-in-nonprofit-organizations-the-role-of-relationship-marketing-and-management/)