Please complete this exercise by yourself and return a writeup within 72 hours. Include an explanation of your reasoning and any code you used with your responses to the questions below. For code, please use Python (preferred) or R and provide the code in the form of a single notebook or a markdown document (e.g. PDF or html).

Feel free to separate out your core findings into slides, or embed them in your notebook. We will be evaluating the accuracy and insightfulness of your findings, as well as the structure and quality of your code.

If you need clarification on any part of the exercise (whether that’s the exercise itself, or the included data), don’t be shy! Please reach out to your recruiter, and they’ll forward it along to someone who can help you.

**Introduction**

Our research into the small business financing industry found that many small businesses, particularly very small ones, have a hard time accessing capital because banks require lots of paperwork and personal guarantees, and that the process can often take weeks or months. This may not align with the merchant’s short term needs for payroll, investment, or just getting their business off the ground. Surveyed businesses said they typically seek funding for operating capital, payroll, or rent, and typically look for advances somewhere between 0.5 to 1.5 month’s worth of revenue.

We would like you to generate insights about conversion on our cash advance product. At a high level, Parafin has access to data about a population of businesses on a partner platform. We evaluate those businesses, and periodically present cash advance offers for the ones that we think we can safely finance. Those new offers are presented to merchants, via email, an embedded widget in the platform we’re partnering with, or both.

Our offers include an amount range, a choice of durations, along with an associated fee. We initially present the merchant with the maximum offer amount they are approved for. If merchants click through to view the offer, we will show them fuller details about fees, durations, etc. From the offer view page, merchants can then accept.

We will provide you with 3 tables (via Google Drive link) about merchants on one of the platforms we work with. This dataset includes every cash advance offer we generated from launch with a single platform partner, along with some details about the merchants we were able to make offers to.

The column names in each should be pretty self-explanatory, but again - please feel free to seek clarification if needed.

* merchant\_offers ([Google Drive](https://drive.google.com/file/d/1Y6OKxcZvogSs3w5PWX9ikoVS82w_bfkD/view?usp=drive_link) - 500MB) which shows all capital offers that were generated for a merchant (business\_id), and which (if any) offers were accepted and funded
* offer\_views ([Google Drive](https://drive.google.com/file/d/1YvE3HDEqwHGtJt4ITmYY9ozUSvsTZcPh/view?usp=drive_link) - 2.9 MB) which lists the times that merchants view their open offer
* merchants ([Google Drive](https://drive.google.com/file/d/1BkKhj9r0cMVa9VImCCp5dC50KE_6NnZ5/view?usp=drive_link) - 27.1 MB) which lists some key attributes about all merchants

**Questions**

You can envision your audience for the questions below as a stakeholder in our product org. They’re seeking to understand our business, our customer base, and where our areas of opportunity may be.

1. What proportion of merchants have had a successfully funded offer? Where in the customer journey do we see the most drop-off? What would you hypothesize is responsible?
2. How successful have we been at acquiring new customers over time? How long does a merchant typically take to accept their first offer? How would you explain these trends?
3. What attributes of a business, or of an offer, are more likely to result in an acceptance? How would you predict what merchants are most likely to convert? What other information about these merchants would you like to have, to make your prediction more accurate?
4. What kinds of merchants accept more than one offer? How common are these merchants, and how long do they typically wait before taking another advance?
5. Based on your analysis of the data, what experiments and/or product initiatives would you suggest to improve our ability to convert small businesses into customers of ours?