**About the Data**

For every tenant, whenever their lease is about to expire, a renewal notice is sent 6 ̃0-90 days before the expiration date. The notice also indicates whether their rent is going to increase or not in their next term. The resident can then decide to either renew the lease or move-out (i.e., not renew).

The underlying dataset in this assessment shows whether an existing lease on a home was renewed or not. Each row in the data represents a lease on a home, its characteristics, and whether the resident renewed the lease for the next term. Below is the description of each column in the dataset. The data in all columns is binary 0 or 1 (except the lease ID).

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Column  
lease id  
no rent change rent change 10 rent change 20 lease length 1 lease length 2 lease length 3  
age range NoFinesViolations PositiveSurvey LatePayments HOA mandatory Renewed

Description  
Unique ID for each lease  
The lease rent was not changed for the next term  
The lease rent was increased by 10% for the next term  
The lease rent was increased by 20% for the next term  
This is resident’s first term on the lease  
This is resident’s second term (they’ve renewed once before)  
This is resident’s third term (they’ve renewed twice before)  
Set of columns indicating average age of residents in the household Indicates the resident had no fines or violation on the lease Indicates the resident provided a positive feedback on the survey Indicates the resident has never been late on making payments Indicates whether there’s a mandatory HOA fee on the lease Indicates whether the resident renewed the lease or not

**Instructions**

• Please answer the questions in the section below 1

* Pleaseincludeyourcodeandthoughtprocessusedtonavigatethequestionsbelow. Code is required for this exercise, and Python scripting language (or Jupyter Notebook) is preferable for solutions. Please include your detailed thought process and analysis either as a part of the Jupyter Notebook, or as a separate document which duly references the code
* Clear,concise,andthoroughanswersareappreciated.Whileyoucanincludetechnical jargon in your analysis, please include plain text conclusions and insights as well.
* Feel free to include charts or tables, but please provide context around all analysis

**Questions  
Important Note:** Please do not build any kind of regression or classification model to address the questions below

**Question 1:** What are the key drivers that explain whether a resident will renew the lease or not? In other words, what are the renewal promoters and detractors?

**Question 2:** Are these promoters and detractors statistically significant or not? How do you prove that?

**Question 3:** When you present this analysis to the leasing business, what are the key conclusion and action items you’ll propose to the team?

**Question 4:** What additional data would you ask the business for in order to help you further refine analysis for questions 1 and 2?