1. Make a graph or table of the percentage of variation explained by the principal components.  Based on the goal of explaining a large amount of variation with a reduced number of variables, how many principal components would you recommend that your clients use?
2. Do one of the following:
   * Make a graph of the data in the space of two of the principal components.  (This could be part of the biplot.)  Give meaningful labels to the clusters, summarizing what the points in those clusters have in common.
     + It may be helpful to color the points according to the value of some variable, to check whether the points in a cluster share similar values of that variable.
   * Make a graph or table of the loadings of each variable on two of the principal components.  (This could be part of the biplot.)  Give meaningful labels to the principal components, summarizing which variables contribute the most to them.  
       
     The following resources may be helpful:
   * [Interpreting PCA](https://youtu.be/PNicbNc-4dg)
   * Articles with examples of giving meaningful labels to the principal components:
     + <https://www.tandfonline.com/doi/pdf/10.1080/08838150902908270>
     + <http://strata.uga.edu/8370/lecturenotes/principalComponents.html>
3. Choose at least one of the following questions to answer:
   * Do the clusters or meanings of the principal components make sense, based on your prior knowledge about this subject, or do they surprise you?  Explain.
   * Discuss what insights the PCA gives about the data.  What action steps do you recommend to your target audience based on the results of the PCA?
   * Consider the potential tradeoff between parsimony (having few variables) and interpretability.  In your opinion, is using PCA worthwhile for your target audience?  Explain.
   * Consider a response variable that your target audience might be interested in predicting (not one that you included in the PCA).  Based on your prior knowledge about this subject, do you anticipate that the response variable would be effectively predicted based on one or more of the principal components you selected in part 5?  Or would your target audience be throwing away important information about the response variable by omitting the last few principal components?   In your opinion, is using PCA worthwhile for your target audience?  Explain.