AAA Northeast Member Analysis

**Background**

AAA Northeast is one of the regional clubs comprising the American Automobile Association.  AAA Northeast covers Rhode Island, Connecticut, Massachusetts and portions of New York and New Jersey.  The American Automobile Association has 58 million members in the US and Canada.  They offer services such as roadside assistance, maps and various discounts as part of their services.  Roadside assistance is a costly benefit, particularly towing.  Members who frequently use roadside assistance are less desirable.

AAA also offers other paid services at highly competitive prices.  They also offer insurance, travel and banking/loan products.  AAA would like to increase the penetration of these services.

A member may have a standard membership or a premium membership covering themselves and optionally additional household members.  Many of AAA members typically have a long tenure with the club.

**Objectives**

Provide a market segmentation of AAA members (or member households) that allows AAA Northeast to better serve their members.  They would use this analysis to:

* Better anticipate the needs of members
* Customize communications and offering to various segments
* Expend more effort driving acquisition and renewal of desirable members

We'll work with the members at the household level.

**Methodology**

There are several dimensions of revenue as well as cost.

Revenue:

* Products Purchased
* Tenure
* Number of members in the household
* Level of membership

Cost:

* Use of roadside service
* Frequency of use
* Cost to service

Summarize data to the household level.

Divide your data into training and validation sets.

Develop a series of “look-alike” models to determine the probability of purchasing each product.  Validate your models.

Develop models to predict the likelihood of using roadside service as well as the total cost of roadside usage.

Join your training and validation sets. Score all the members that do not have the purchase of a product with the probability of purchase.  If they have purchased the product, score them a 1.  Score them on the likelihood of roadside usage and the expected cost (in the next 12 months).

Use your model results to cluster/segment the members.  Use a small number of clusters (4-6).

You *may* include tenure (length of membership), number of members in the household and the sum of your product probabilities in your clustering as well as each model score.  Be creative.  Any numeric variable can potentially be used.

If you have performance issues you may subsample the data.

**Deliverables**

A slide deck describing your findings and the methodology that you used.

You should describe your segments (clusters) in non-technical terms.  You should attempt to make recommendations as to how they might provide value to AAA Northeast.

**Data Dictionary:**[**AAA Sample Data - Data Dictionary.xlsx**](https://student.emeritus.org/courses/740/files/569449/download?wrap=1)**[Preview the document](https://student.emeritus.org/courses/740/files/569449/download?wrap=1)**

**Data Set:**[**member\_sample.csv**](https://student.emeritus.org/courses/740/files/571816/download?wrap=1)

**Sample decks**

Here are few sample decks on similar topics. These are provided only for your reference. (*Feel free to structure your presentation based on your findings and analysis. You are discouraged to copy from the samples and use them as is*).

[Sample deck 1Preview the document](https://student.emeritus.org/courses/740/files/569446/download?wrap=1)

[Sample deck 2Preview the document](https://student.emeritus.org/courses/740/files/569450/download?wrap=1)

[Sample deck 3Preview the document](https://student.emeritus.org/courses/740/files/569447/download?wrap=1)

**Submission instructions:**

* Upload your presentation to the platform here.
* Your presentations will be graded using a rubric. Refer to the rubric attached [**here** Preview the document](https://student.emeritus.org/courses/740/files/569445/download?wrap=1)and also on the platform.
* Reach out to your course leaders across the seven weeks anytime for any support in completing the deck.

Rubric

**Capstone Rubric**

| Capstone Rubric | |
| --- | --- |
| **Criteria** | **Ratings** |
| Background  State the current situation that the company is facing. Why do they need data science assistance? Don’t be too wordy. The company knows their situation. You just need to convince them that you understand their situation. | |  |  | | --- | --- | | **Exceeds Expectations**  Clear and concise presentation that shows an understanding of the situation, effectively uses bullet points | **Meets Expectations**  Too much information, not clear or direct enough | |
| Objectives  Be specific with respect to the objectives of your analysis. What can the client expect? What are the benefits? | |  |  | | --- | --- | | **Exceeds Expectations**  Clear and concise presentation that shows an understanding of the expectations, effectively uses bullet points, states the objectives in a way that appeals to a non-technical audience | **Meets Expectations**  Presented in a way that does not communicate or show the objectives as a business goal | |
| Approach  Describe the process that you will go through: How you determined a solution, where you will get data, what the data includes, any processing/cleaning of the data, what the solution will include, how it will be implemented. | |  |  | | --- | --- | | **Exceeds Expectations**  Clear and concise presentation that shows the appropriate detail | **Meets Expectations**  Presents too much or too little detail for the business audience | |
| Analysis Results  Present the results of your analysis. Be clear and concise. Remember that your audience consists of business managers, not data scientists. | |  |  | | --- | --- | | **Exceeds Expectations**  Clear and concise presentation that shows your results from a business perspective. Give them the information necessary to display and implement your results without too much technical detail. (Technical details can go into Appendix.) | **Meets Expectations**  Presented in a way that is too technical or not understandable by a business audience | |
| Analysis Results  Profile what your target audience looks like. Use graphics. Display important variables and possibly combinations of variables. | |  |  | | --- | --- | | **Exceeds Expectations**  Inclusion of clear graphics that show non-technical audience members the type of clients that would be targeted. Graphics should be clearly labeled and easily understood. | **Meets Expectations**  Presented in a way that is too technical or not understandable by a business audience | |
| Analysis Results  Select the correct analytical technique. Briefly describe why this is the correct technique. | |  |  | | --- | --- | | **Exceeds Expectations**  Selects the best technique and implements it with a rationale | **Meets Expectations**  Selects a technique, which may work but might not provide the best results | |
| Analysis Results  Describe the variables used for your analysis and their importance. Show the results of your validation in a way that can be monetized or quantified by the client, include a Gains Chart. | |  |  | | --- | --- | | **Exceeds Expectations**  Shows the results of the analysis/models in a way that the sponsor can easily see how the models can be monetized | **Meets Expectations**  Display lacks clarity or key pieces of information | |
| Analysis Results  Use appropriate graphics. Clearly label all the axes. Be consistent with your use of color. Use bullet points to highlight the findings. | |  |  | | --- | --- | | **Exceeds Expectations**  Inclusion of clear graphics that show non-technical audience members the results of your analysis. Graphics should be clearly labeled and easily understood | **Meets Expectations**  Graphics are not easily understood or not clearly labeled; Axes have not been labeled consistently | |
| Recommendations  Provide clear recommendations as to how to utilize your analysis. Are there any concerns or anything that requires special attention? | |  |  | | --- | --- | | **Exceeds Expectations**  Inclusion of clear and insightful recommendations that are easily understood by the sponsor | **Meets Expectations**  Recommendations are not clear or relevant | |