



GENERAL ASSEMBLY

Cruise Recommendation Prediction

GA – DAT2

Owen Ho

Final Presentation

The question we set out to answer:
How does customer attribution from digital media impact
the brand recommendation and favorability?

@nd who are they? ...

The hypothesis is that the probability of recommendation will reach 80% when the subjects selected and are in favor of 50% of the attribution questions.



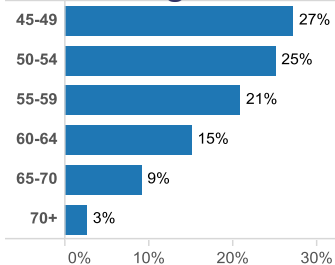
Data Structure

Overview of Respondents – 2,793

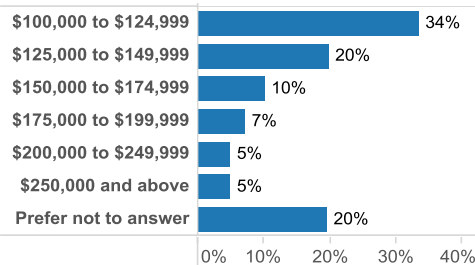
Test Group

- Exposed to the ads
- Sample Size = 1791
- Median Age: 55
- Median HHI: \$125,000 to \$149,999
- 67% Female

Age



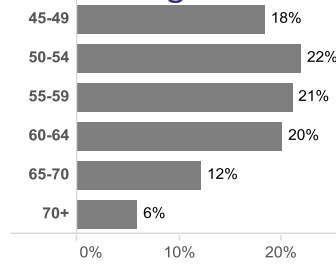
HH Income



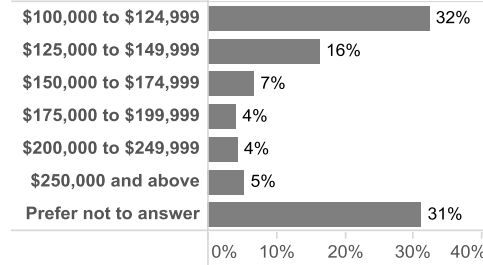
Control Group

- Not exposed to the ads
- Sample Size = 1002
- Median Age: 56
- Median HHI: \$125,000 to \$149,999
- 62% Female

Age



HH Income



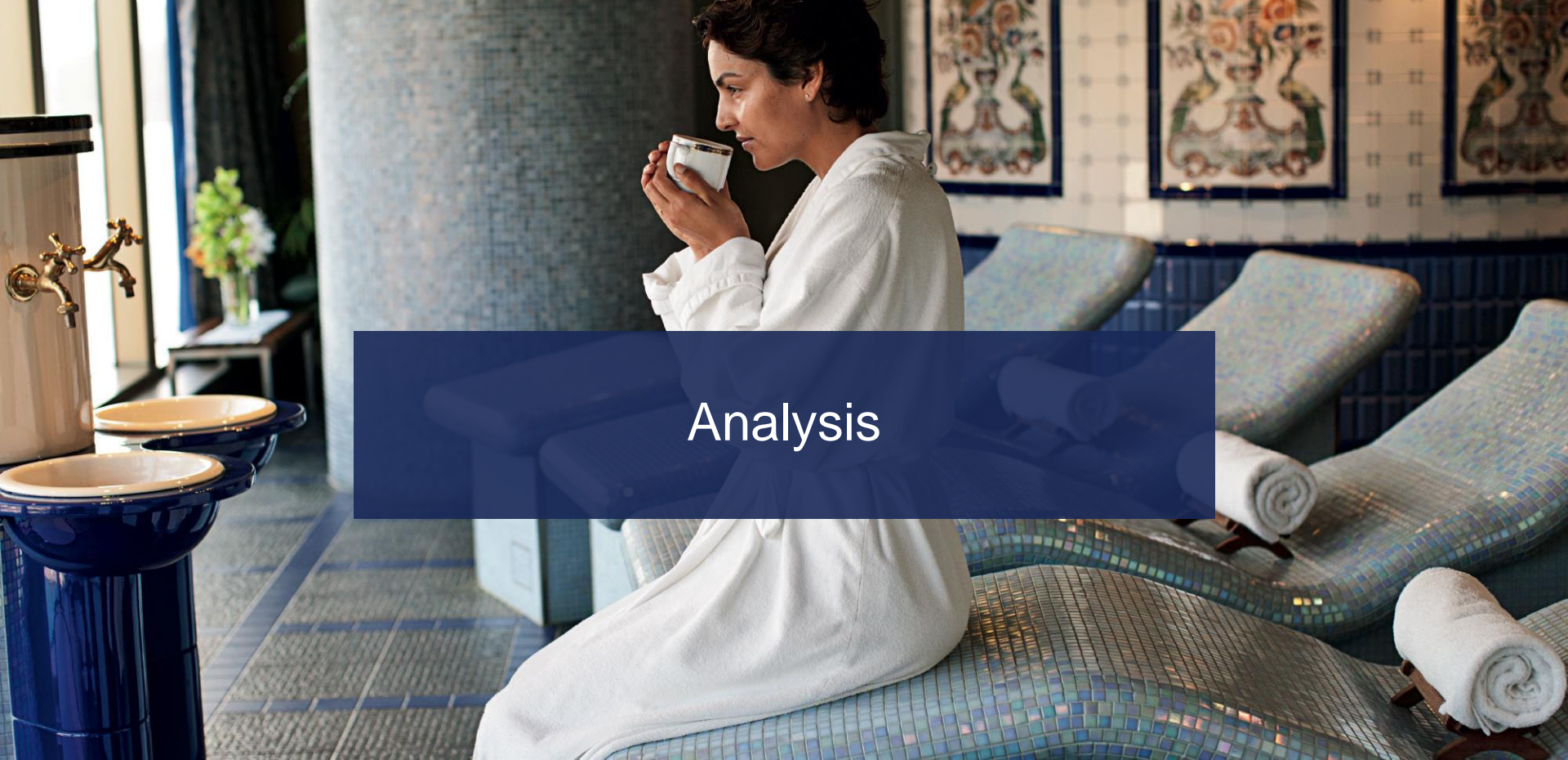


Data Structure

- Demographic Information (Age, Income, Career, etc)

The data is mostly on a scale either 0-5 or 0-10

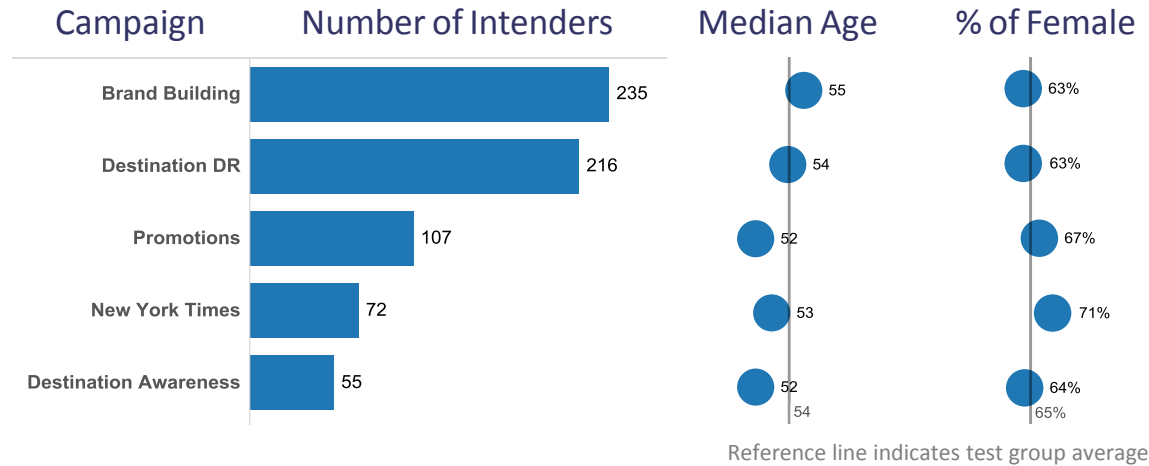
- Demand Generation Question (1 question)
- Attribution Questions (10 Questions)
- Overall Consideration and Recommendation Questions (5 questions)
- Competitor Benchmarking Questions
- Current Data Structure: (2454,93)



Analysis

Overview of Respondents – by Campaign

- New York Times campaign had more female respondents than the other campaigns.
- Respondents exposed to Promotions and Destination Awareness campaigns were slightly younger than the whole test group.



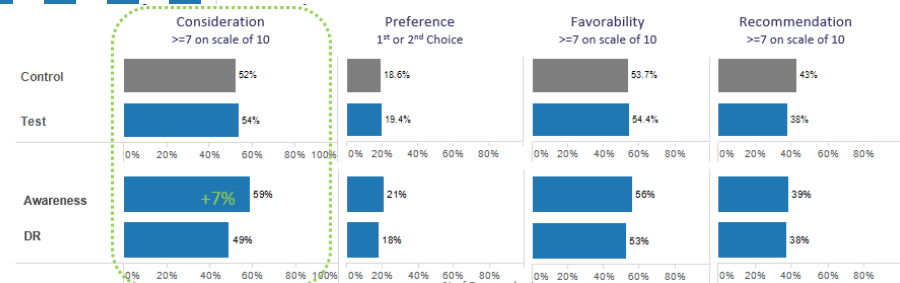
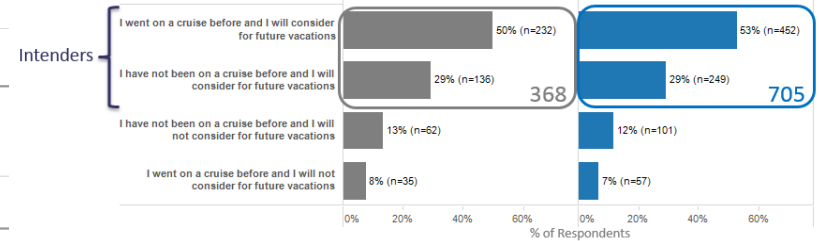
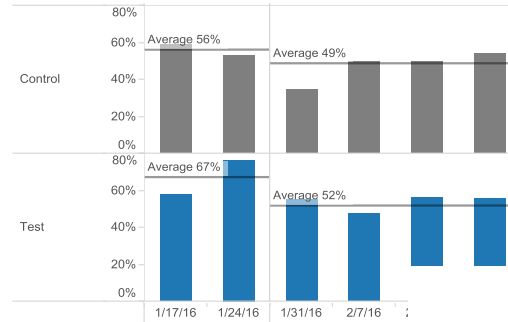
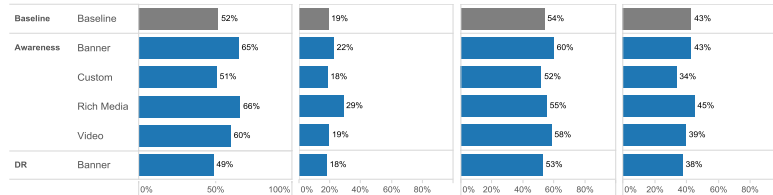
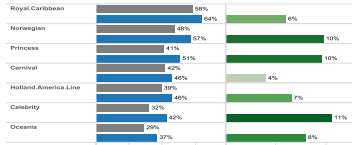
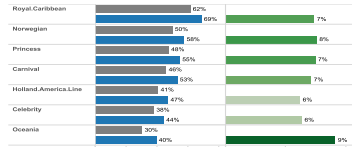
How did I start the analysis

- I started off by looking at the multiple regressions and the data fitness was **55%** when I started.
- As the sample size increases and test train split, it improves through out the time.
- But, I have to drop variables such as browsing behaviors.
- Next, I moved to logistics regression to predict the outcome of recommending the brand.

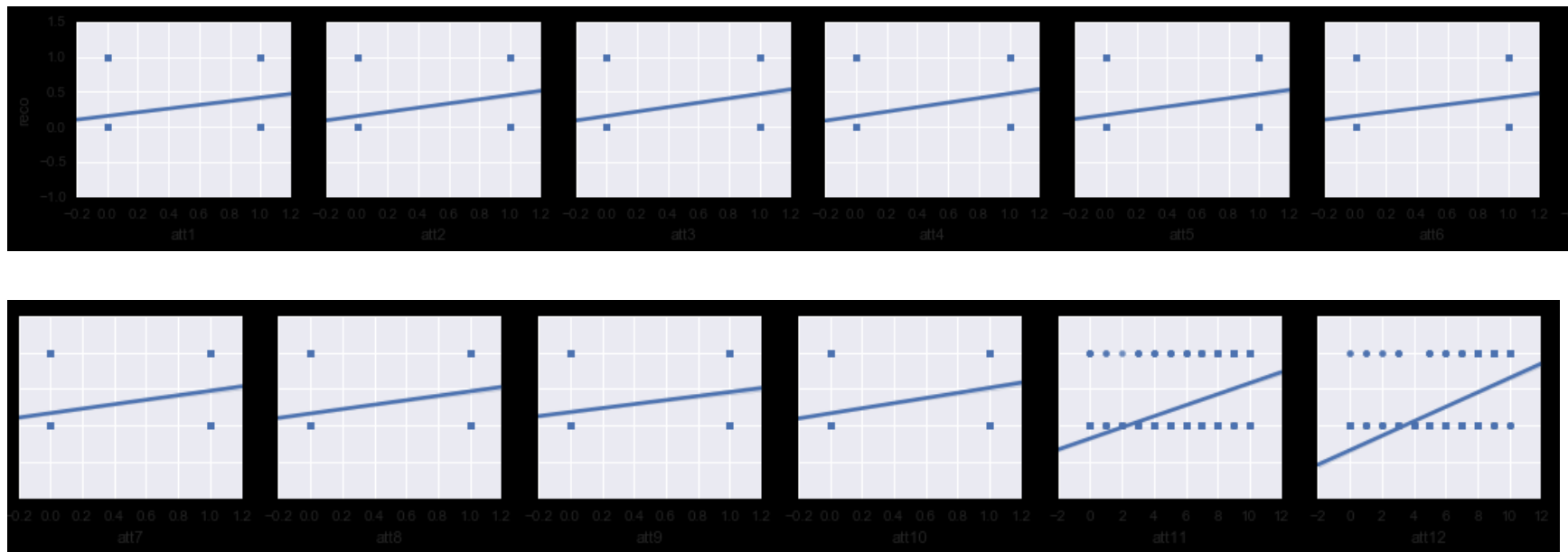
% of Respondents

Visual Exploration

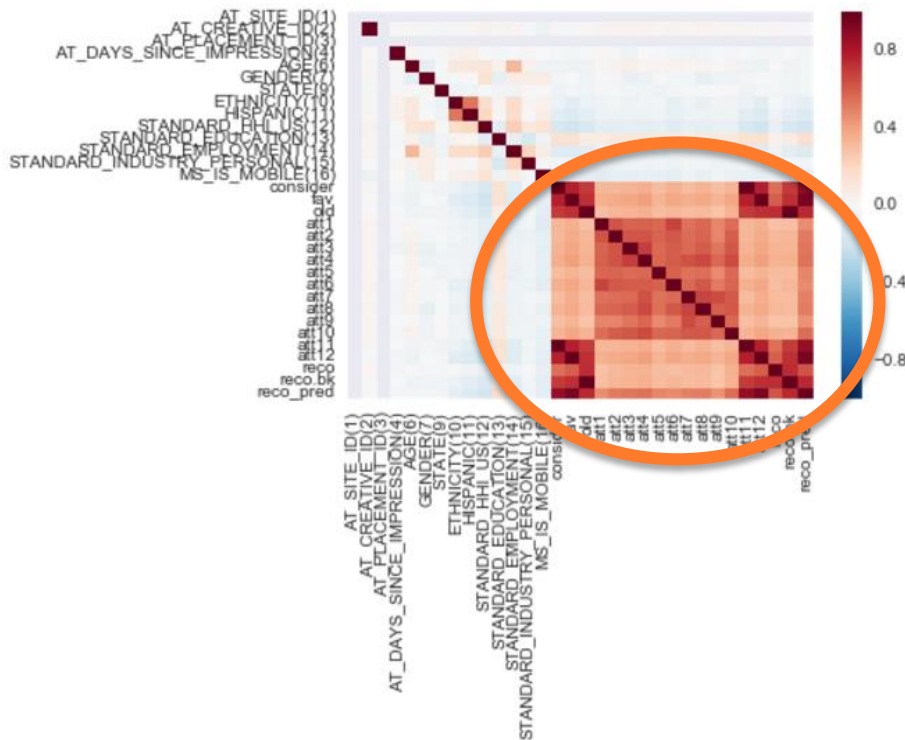
The data was reviewed in many different ways.



Visual Exploration



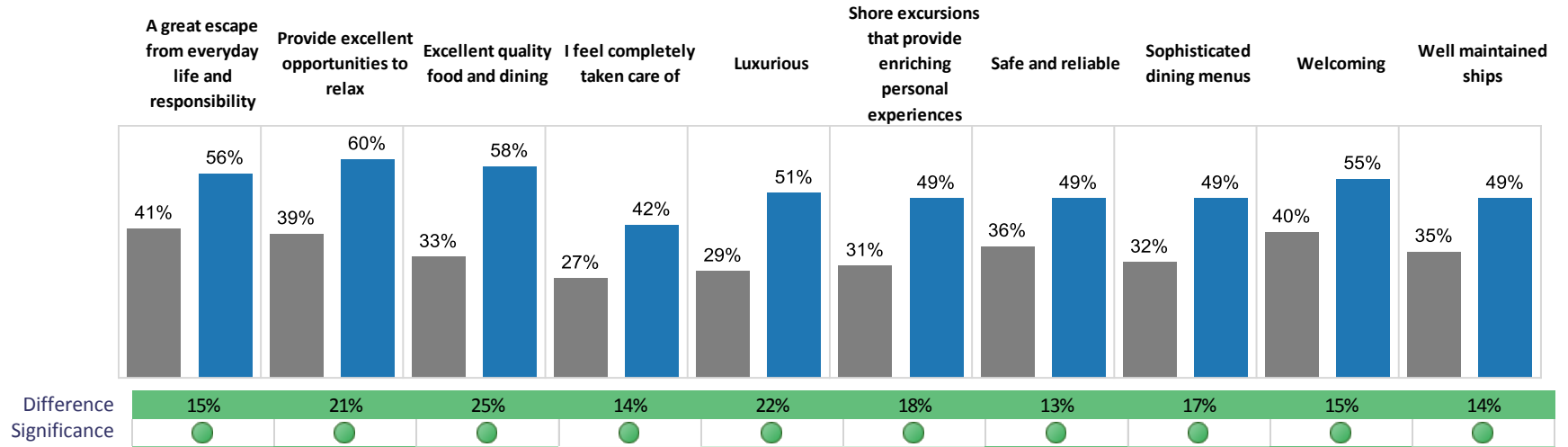
Analysis - Correlation



- Focus on these key attributions

- Welcoming
- Favorability Attribution
 - Who has taken a cruise before
- Destination Attributions

Brand Attributions – quick view

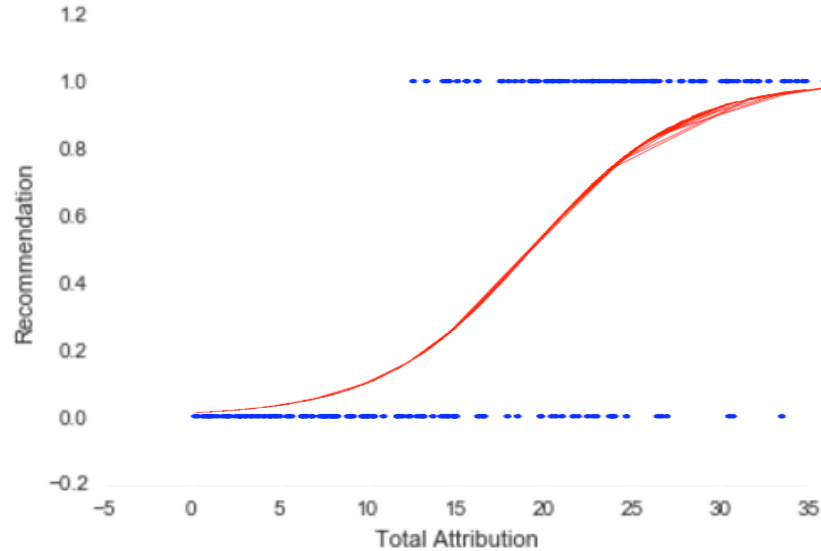


% of Respondents

Sample Size
 Test=55
 Control=368

● ≥95%
 ● ≥90%
 ● <90%

Multiple Logistics Regression

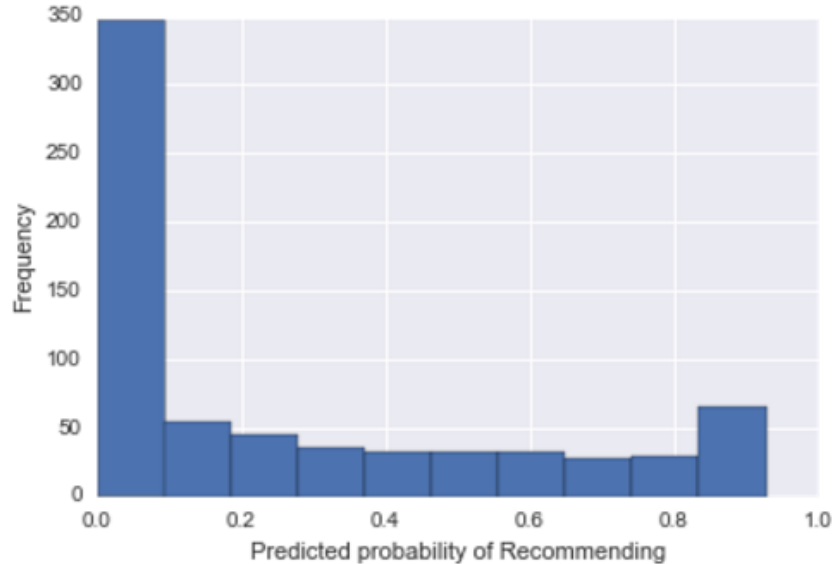


After training the data, the logistic regression score is 88% or data fitness.

The accuracy score is 86% of the time.

Hypothesis Testing – Confusion Matrix

True Positives: 134 True Negatives: 469 False Positives: 41 False Negatives: 55



False Positive – 14% of the time for all positives

False Negative – 29% of the time for all negatives

Original question: The hypothesis is that the probability of recommendation will reach 80% when the subjects selected and are in favor of 50% of the attribution questions (H_0)

So, I **failed** the original hypothesis. Instead, the probability of recommendation will reach 80% when the subjects selected and are in favor of **68%** of the attribution questions. **36% more effort!**

Next Step -

- Narrow and deep – A/B Testing:
Use this model to identify similar customers and the strategy will be serving them ads to initiate the travel sign ups.
- Take these cookie pools to build look a like models





Further Analysis & Next Step

Next Analysis

- Find out more cookies that's behaving similarly and optimizing between # of conversions and the cost per sign up.
- Use demographic information to classify customers by traveling destination.

Update on survey data will be needed to further break out the destination. I can use the new data to “classify” the potential customers.



Methodology

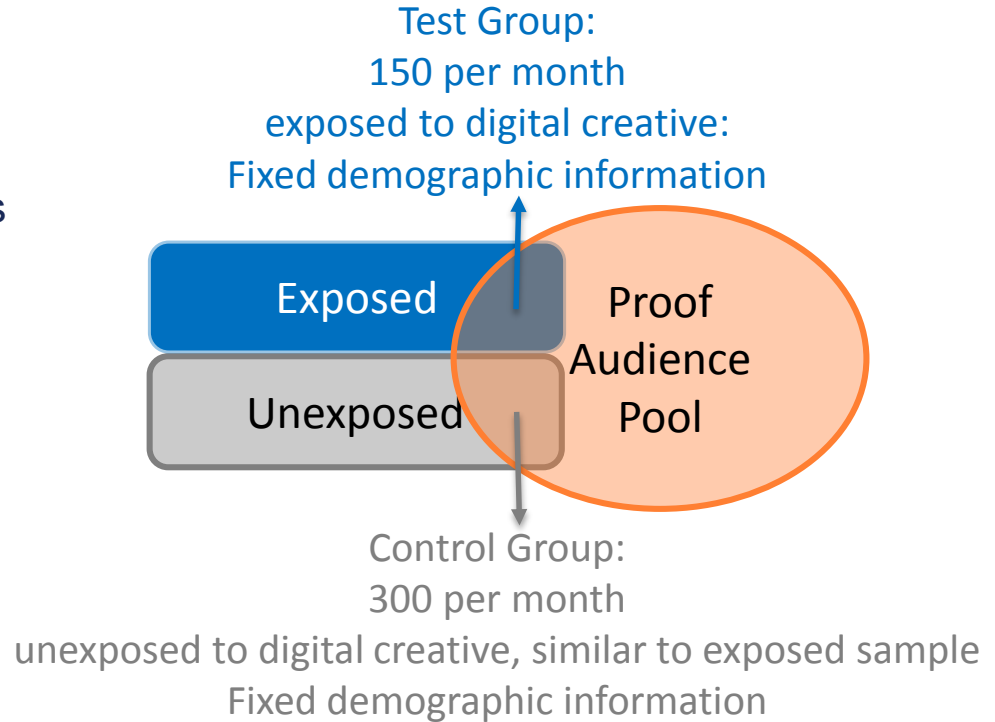


Data Collection Journey

- How did I set it up?
- Who did I partner with?
- What did I provide to our partner and our prospects?
- What is the current data?

Test/Control Setup

- We tracked digital ad exposure and delivered exposed respondents to their online survey instrument.
- A quota of the exposed respondents that are matched to proof audience pool were then provided with the known demographic information
- A control group of matched, unexposed respondents was also collected.



Strategy, Sites, & Tech Stack

Awareness

- Brand Building
- Destination Awareness
- New York Times
- Food & Wine

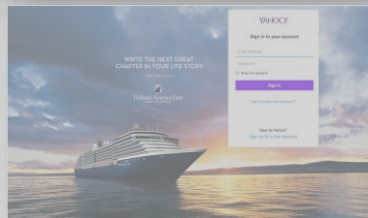
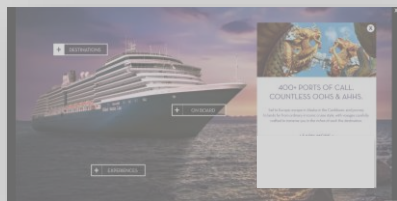
Direct Response

- Destination Direct Response
- Promotions

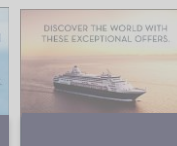
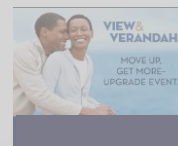
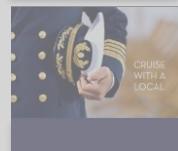
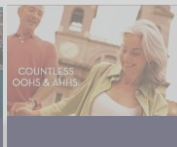


Exposed Ad Creatives

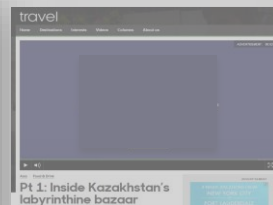
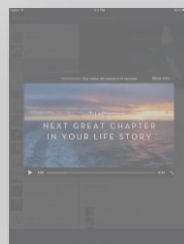
Custom



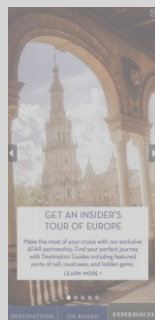
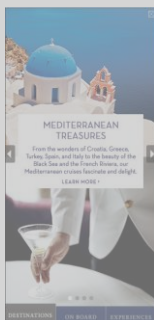
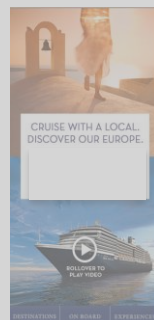
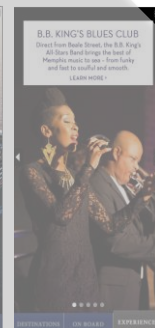
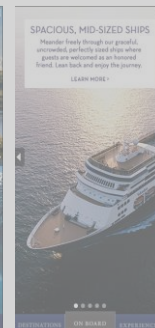
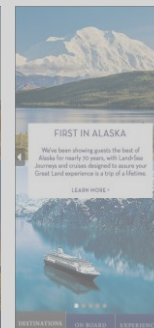
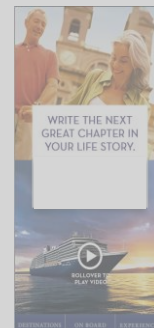
Banners



Video

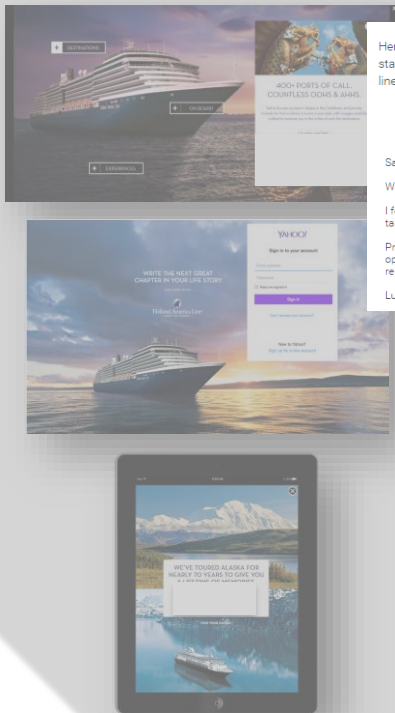


Rich Media



Exposed Ad Creatives

Custom



Banners

Here is a list of statements that may or may not describe these cruise lines. For each statement, please indicate to which cruise line it best applies. You can select as many cruise lines as you like.

Safe and reliable

Welcoming

I feel completely taken care of

Provide excellent opportunities to relax

Luxurious

Here is a list of statements that may or may not describe these cruise lines. For each statement, please indicate to which cruise line it best applies. You can select as many cruise lines as you like.

Safe and reliable

Welcoming

I feel completely taken care of

Provide excellent opportunities to relax

Luxurious

Here is a list of statements that may or may not describe these cruise lines. For each statement, please indicate to which cruise line it best applies. You can select as many cruise lines as you like.

Safe and reliable

Welcoming

I feel completely taken care of

Provide excellent opportunities to relax

Luxurious

Here is a list of statements that may or may not describe these cruise lines. For each statement, please indicate to which cruise line it best applies. You can select as many cruise lines as you like.

Safe and reliable

Welcoming

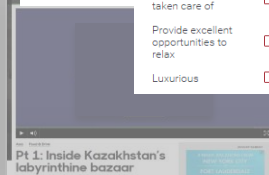
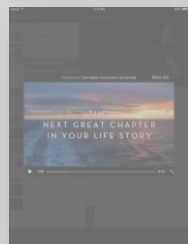
I feel completely taken care of

Provide excellent opportunities to relax

Luxurious

Here is a list of statements that may or may not describe these cruise lines. For each statement, please indicate to which cruise line it best applies. You can select as many cruise lines as you like.

	Holland America Line	Carnival	Princess	Royal Caribbean	Norwegian	Oceania	Celebrity
Safe and reliable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welcoming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel completely taken care of	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide excellent opportunities to relax	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Luxurious	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Rich Media

