Good evening everybody.

We are glad to show out presentation here.
We are team6, I'm Patrick and here are my teammates: Rachel, Runxi and Sammy.

The subject of our presentation is about how to make the banner of Wayfair's website more effective to visitors.

Our presentation has five parts.

Now let's look at the first part– defining problems:

Firstly, we tried to analyze the banner intuitively.
We did some experiments and found wayfair's website presents the banner with the same slides to all visitors. It is not personalized, which, in our opinion, weakens the banner's effectiveness.
The second thing we found is the banner's slides rotate too slowly compared with other e-commerce websites.
Additionally, we did some exploratory data analysis and data visualizations in python and Tableau. If you look at this graph, you will see the sales click rate is 3 times the banner click rate, which indicates the banner is not effective.
Then we got a question: How can we make the banner more attractive and effective?

We solved the problem from 3 perspectives;
First, we identified that the data came from the July 4th sales campaign period.
Then we did some feature engineering and deployed an unsupervised-learning algorithm with Python to do the customer segmentations. We were mainly concerned about the effectiveness of the banner, so we generated a new feature ~~just~~ called banner effectiveness. The ~~logic~~ function behind is that if a visitor clicked the banner and added the item to basket or purchased it, we make the banner effectiveness equals 1, otherwise 0. There are lots of categorical features as well as numerical features in the dataset, the traditional k-means algorithm is not suitable here.

Therefore, we used K-modes, which is designed specifically to handle the mixed type datasets in k-means clustering.

For the banner design, we collected benchmarks from external data to provide some design strategies.

Now I'd like to hand this over to Rachel.

Slide 6,

Let's look at the timeline of the campaign.

The first half of the period, from July 1st to 3rd, is the pre-campaign planning time, and the second half is the campaign launching time. We can see the traffic reached ~~to~~ the top on July 4th, and slowly declined after that, then bounced back on the last day of the campaign.

The graph tells us that most of the website traffic came from Web Search and 3rd party ads, and the primary visitor groups are prior visitors and prior visitors with purchase.

Slide 7

We have three suggestions for the banner strategy during the promotion campaign:
During the pre-campaign period, give out coupons if visitors click the banner. Use the pre-campaign data to analyze the products that people viewed and added to their baskets.

During the campaign period, deliver personalized promotions to the visitors. Remind visitors to use their coupons on the last day of the campaign

After finishing the campaign, it's very important to analyze the campaign outcome, such as the KPIs and metrics. Additionally, it's important to Understand what elements of the campaign worked well/ not so well and Learn how the target audience responded to the campaign. ~~And~~ This will provide valuable learnings for the future.11

Customer segmentation

Slide 9:

I'd love to move on to the normal operation of the banner according to customer segmentation.

Slide 10:

As Patrick said at the beginning, we divided customers into 2 parts. The first part is the prior visitor with or without purchase. After analyzing, we found that there are two clusters of visitors within those prior visitors, the "target" cluster and the "potential" cluster.

Slide 11:

Assume we have two customers from each cluster who want mattresses.
The "Target" customer, her income range is 50 - 100 K. When she receives Wayfair's e-mail on her phone, she will click the e-mail and enter Wayfair's website, click the sales banner and the sales page, search for a queen-sized mattress, add the ideal product to the basket, then purchase.

The “Potential” customer, she has a higher salary and she will enter Wayfair’s website by googling “mattress” on a computer. But she doesn’t really care about the sales, and she might leave without checking any product page.

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For the “Target” customers, we can show them the sales matching with what they have searched, because they are mostly interested in discounted products.
For the “Potential” customers, we can show them the fun and innovatively designed products, instead of showing them general sales on the banner.

Slide 13:

Now let’s switch to the new visitors.

Slide 14:

We made a Sankey chart to track the customer flow. The banner is effective to only 0.3% of the new visitors. That’s why we can only see 3 thin streams coming from the left to the right bottom, and web search attracted 68% of the new visitors. Did new visitors from different sources have the same banner effective rate?

Slide 15:

Surprisingly, even though about 68% of the new visitors came from the web search, the banner effective rate of them is only 0.2%, which is lower than the other sources. We suggest Wayfair show new visitors a personalized banner based on the key word they search on search engine.

Slides 16-17

Now let's look at this case from another angel, the banner design.
The rotation time of the banner slides on Wayfair is about 11 seconds. But other e-commerce sites have a shorter rotation time. The world's most popular e-commerce site Taobao, owned by Alibaba Group, which is the industry benchmark, has its rotation time only to be 3.5 seconds. This may give visitors the opportunity to see more banner slides, and maybe the next slide would attract them. If it rotates too slowly, the visitors may quit the site before they see anything interesting. We suggest Wayfair do some a/b tests and select the best interval time. We also found out that even though more visitors used phones, the banner click rate is lower than those who used computers. One possible reason is that the UX design of the mobile version could be improved. Maybe the size of the banner ~~is not the best~~ could be improved, or it does not show the banner smoothly on some models of phones.

Slides 18-20

Finally, let’s jump to the summary.

Let’s look at what to do and what not to do. The dos of the design, as we just talked about, shorten the rotation time and improve the UX design. From the campaign execution aspect, we suggest Wayfair have activities like “click banner to get coupons” during the pre-campaign period to attract more people and test potential products during the same time. From the visitors' aspect, to prior visitors, make categorical recommendations ~~according to different visitor clusters~~; based on what cluster the visitors belong to. to new visitors, use popularity-based advertising, and take the cookies into the recommendation system. As to the don’ts, we recommend Wayfair to not show the same sales banner to everyone, not overuse the power of sales, and not use the banner only for displaying sales. All in all, the main idea is: more personalized ads, less sales ads.

Thank you for listening to us. Please let us know if you have any questions. Thank you!