Notes for reviewer

Make sure to read through this in presentation mode

The column headers do not match those specified by the code exactly, some inferencing will need to be done

The second section code snippets rely on a funnel that is defined in section 2.1, remember to reference it if there is any confusion with regard to the second section's code.

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1. Style Quiz/Survey Response Analysis and Funnel
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1. Survey

1.1 Taking Attendance

The option to skip a question adds a whole new complexity to the data that is not explored in the suggested tasks..

The query's on the left produce columns 1, 2, and 3 of the table below. The fourth column is a calculation based on the previous two.

Question #	Unique IDs	Response either "skip" or "no pref"	Aggregate col 2 – col 3 = ?
1	500	49	451
2	475	47	428
3	380	29	351
4	361	0	361
5	270	36	234

```
-- Survey Funnel --
SELECT DISTINCT response, question
FROM survey
ORDER BY 2;

-- There are no null responses in the survey table -
SELECT question, COUNT(DISTINCT user_id) AS
'response_count'
FROM survey
Group by 1;

-- But there is an option to skip a question or
declare no preference -

SELECT question, COUNT(response) as
skip_response_count
FROM survey
WHERE response LIKE "I'm not sure. Let's skip it."
OR response LIKE "Not Sure. Let's Skip It"
GROUP BY 1;

SELECT question, COUNT(response) as
no_preference_response_count
FROM survey
WHERE response LIKE "No Preference"
GROUP BY 1;
```
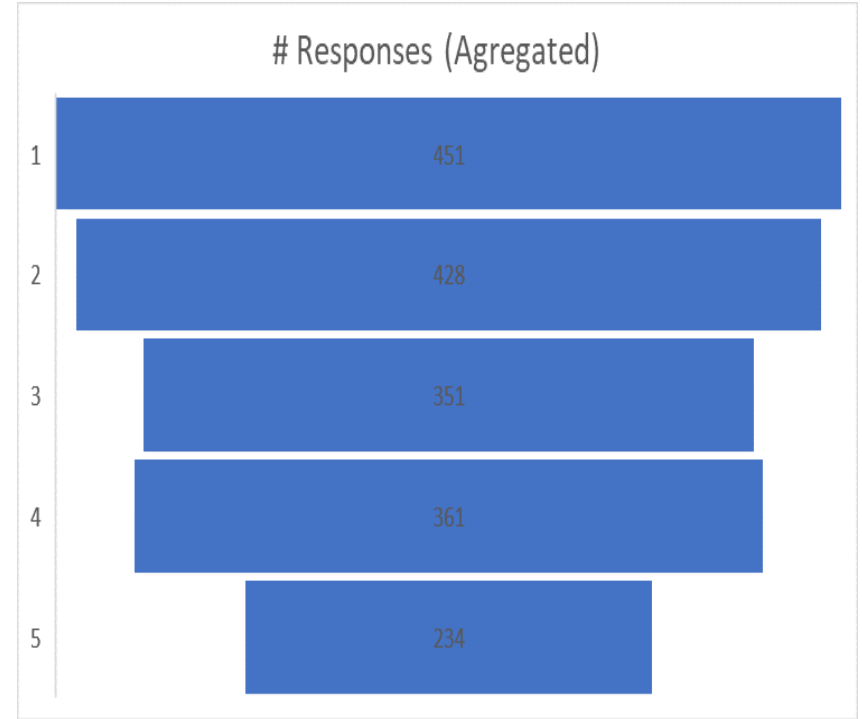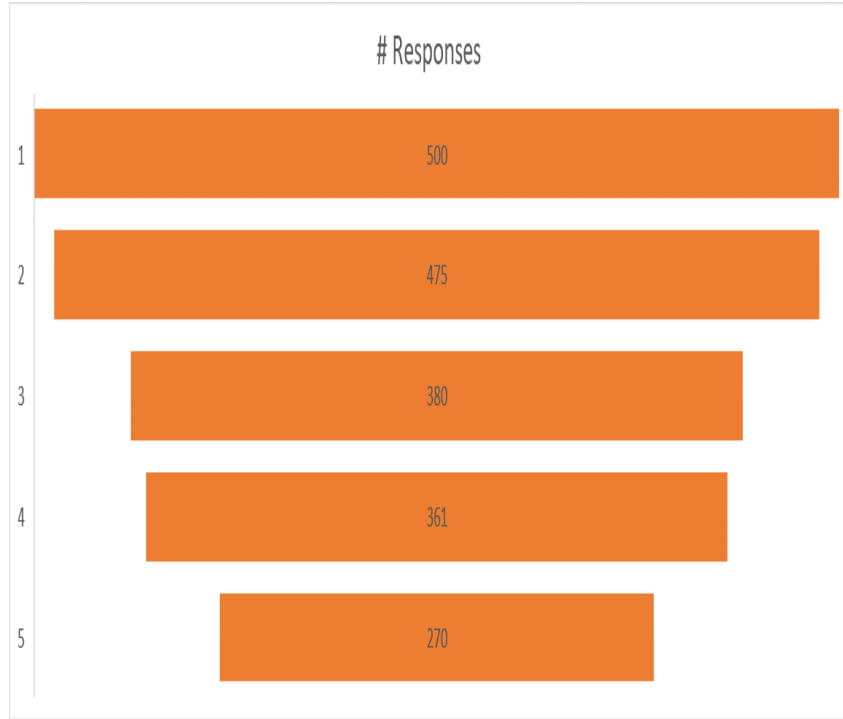
1.2 Taking Attendance (graphs)

1.3 Quiz Funnel

What data are we looking at?
● Each survey question in order as appears on the site, represented by numerical progression (1 – 5).
● The count of all "unique" user ids that responded to a question grouped with their respected survey question.
● A calculated percentage of users from the previous question.
● A calculated percentage of all the users that entered the survey that followed through to each question.

Only about 54% of users that enter the quiz complete the survey, and the most obvious drop in number of responders between questions is from question 4 to question 5. What can be done to improve this?

Question #	Count of unique user ids that completed a question	Percent from previous	Percent from overall
1. What are you looking for?	500	100%	100%
2. What's your fit?	475	95%	95%
3. Which shapes do you like?	380	80%	76%
4. Which colors do you like?	361	95%	72%
5. When was your last eye exam?	270	75%	54%

1.4 Quiz Funnel (graph)
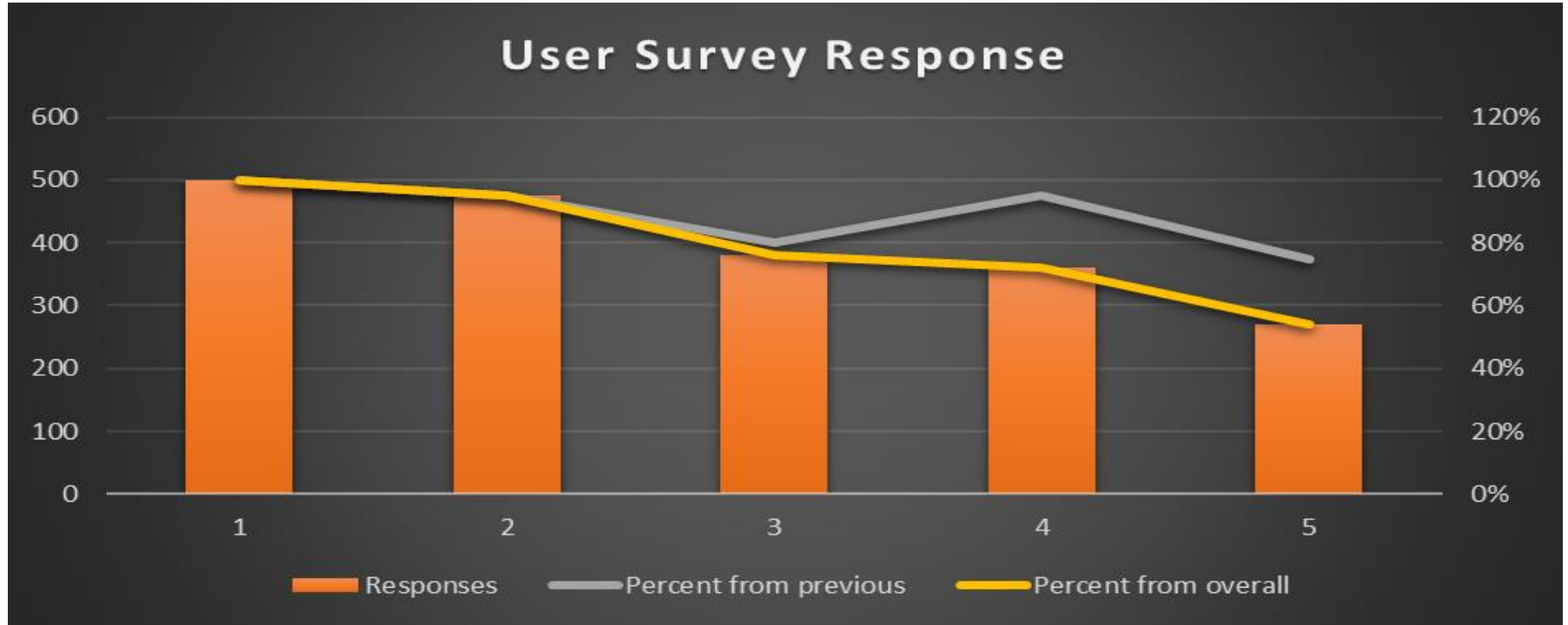
1.5 A Peek at the Average Rate of User Disengagement

- Averages often tell us more about the data we are looking at. For example, this best fit line graph of the averages of the percent from previous and percent from overall calculations suggest that with each question approximately 8.5% of users fails to move on to the following question. Does this mean that fewer questions might allow more users to "complete" the survey?
- Another area of interest is the largest "difference"; appearing between question 4 and 5. What improvements could be made to decrease this difference?
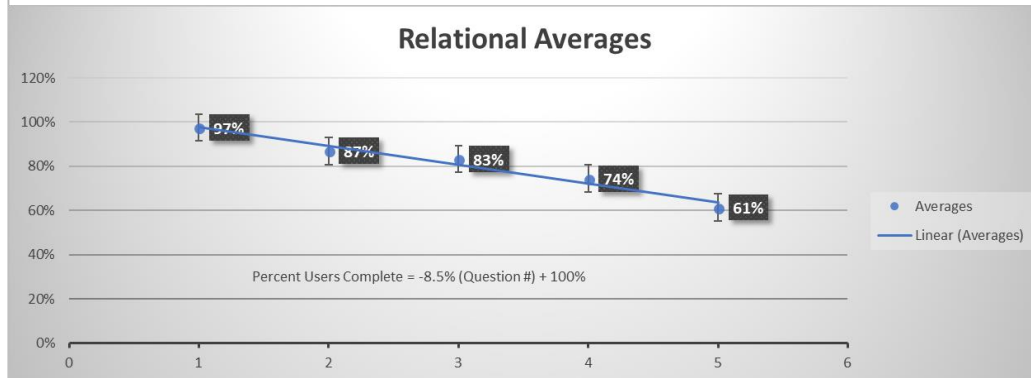
Question #	Average Users Completed
1. What are you looking for?	97%
2. What's your fit?	87%
3. Which shapes do you like?	83%
4. Which colors do you like?	74%
5. When was your last eye exam?	61%
6. (unknown)	52.5% (estimate)
7. (unknown)	44% (estimate)

Relational Averages

Percent Users Complete = -8.5% (Question #) + 100%

- Averages
- Linear (Averages)

97% · 87% · 83% · 74% · 61%

2. Home Try-On

2.1 Constructing a Funnel

The following code was used to perform funnel evaluations using the code of the next few slides. I constructed the funnel with a left join of all the available tables. I included four columns using the Select statement, an example of the table that this funnel creates is below.

```
WITH funnel AS (
SELECT q.user_id,
h.user_id IS NOT NULL AS is_home_try_on,
h.number_of_pairs,
p.user_id IS NOT NULL AS is_purchase
FROM quiz AS q
LEFT JOIN home_try_on AS h
ON q.user_id = h.user_id
LEFT JOIN purchase AS p
ON h.user_id = p.user_id)
```

User_Id	Is_Home_Try_On	Number_Of_Pairs	Is_Purchase
4e8118dc-bb3d…	1	3 Pairs	0
291f1cca-e507…	1	3 Pairs	1
75122300-0736…	0	NULL	0
75bc6ebd-40cd…	1	5 Pairs	0

2.2 A/B Testing

I then select from the funnel I created to build a table that demonstrates the results of Warby Parker's A/B testing for 3 pairs to try on at home versus 5 pairs to try on at home. The results are represented in the table below, and the code I used is to the right.

```
Recall … this is from the funnel constructed in
a previous slide

SELECT number_of_pairs,
SUM(is_home_try_on) AS num_try_on,
SUM(is_purchase) AS num_purchase,
ROUND(100.0 * (SUM(is_purchase)) /
(SUM(is_home_try_on)), 2) AS
ratio_from_try_on_to_purchase
FROM funnel
GROUP BY 1;
```

Number of Pairs	Number of Customers to Receive Number of Pairs	Number of Purchases from Customers to Receive Number of Pairs	Try on to Purchase Ratio
3 Pairs	379	201	%53.03
5 Pairs	371	294	%79.25

The difference here is %26.22 !!!

2.3 Browse → Try-On → Purchase

Then, using the same funnel I prepared in one of the previous slides. I drew up a representation of the overall statistics of the site's success. The results are represented in the table below, and the code is available to the right.

```
Recall … this is from the funnel constructed in
a previous slide

SELECT COUNT(*) as num_browse,
ROUND(100.0 * (SUM(is_home_try_on)) /
(COUNT(*)), 2) AS ratio_from_browse_to_try_on,
SUM(is_home_try_on) AS num_try_on,
SUM(is_purchase) AS num_purchase,
ROUND(100.0 * (SUM(is_purchase)) /
(SUM(is_home_try_on)), 2) AS
ratio_from_try_on_to_purchase
FROM funnel;
```

Number of Browsers	Number of Customers to Try-On	Number of Customers to Purchase	Browse to Try-On Ratio	Try-On to Purchase Ratio
1000	750	495	%75.0	%66.0

3. Conclusions

3.1 Possible Tweaks for Increased Site Traffic

- Switch question 4. "Which colors do you like?" and 3. "Which shapes do you like?" of the site's entry survey. Perhaps do a bit of A/B testing showing some users the original order and some an updated order where question 4. "Which colors do you like?" before question 3. "Which shapes do you like?". This may prove negligible, it turns out there is an increase in the ratio of people from question two to three to question three to four. It also worth noting that nobody that answered question four answered without a preference or by skipping the question. Perhaps people just feel more comfortable talking about colors than shapes???
- Remove question 5. "When was your last eye exam?". The largest difference in ratios for those who answered the previous question and the second largest difference from the those who entered the into the survey; this question clearly has the effect of turning away users. If this question is impertinent perhaps it is worth scrapping to increase the number of people who enter into the browsing section of the website.

Possible Tweak	Forecast
Switch Question 4 and 3	Possibly Negligible
Remove Question 5	Slightly Increase Site Traffic (+18%)

3.2 Possible Tweaks, Continued

- 3 question survey. In the same spirit as removing question five to increase site traffic, the question count could be reduced to three, raising the average percentage of people to begin the survey to make it to the browsing portion of the website. The quiz could be revamped to include questions three and four as a single page. The quiz then, of a shorter duration would not act as a barrier to the browsing section of the website, which by the average percentage of people to make it through accounts that it may be.

- 5 pairs to try on at home. Perhaps the most glaringly obvious improvements that could be made (made that way by A/B testing), is the 26.22% difference between the number of people to try on 3 pairs at home to purchase and the number of people to try 5 pairs on at home to purchase. At this point the results of these tests clearly show that to send out 3 pairs for try on is losing the company money.

Possible Tweak	Forceast
3 Question Quiz	Greatly Increase Site Traffic (+29%)
5 Pairs to try on at home	Increase # of purchases made (+13.25%)

That is all.

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