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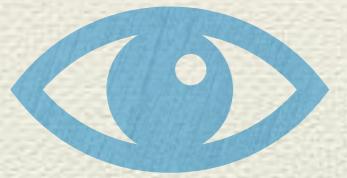
[Learn SQL from Scratch]

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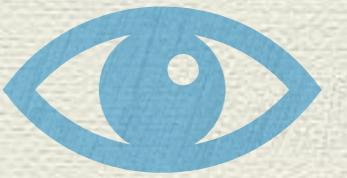


**Life style choice and conscious good
Reflecting on what matters for customers
based on detailed website usage insights.**



WARBY PARKER Capstone Presentation

Order of Contents



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initial online interface



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how customers respond



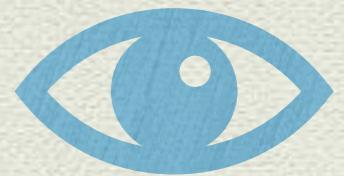
Design Portal Possibilities



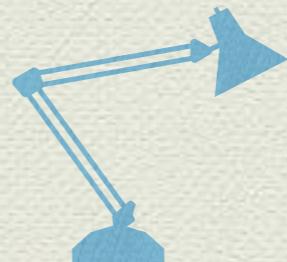
First Impressions



initial online interface



WARBY PARKER craftsmanship



Customers smart / young at heart

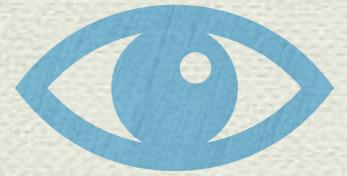


Designs for men / women

Data and Science



How customers respond?



WARBY PARKER's Marketing Funnels



Quiz Funnel
Completion rates?
Preferences voiced?

Home Try-On
A good conversion zone?
3 or 5: gets a sale alive?

Data and Science



The Quiz Funnel - Structure & Content

The **Quiz Funnel** consists of a single table (**survey**) with 3 columns, to capture how (**response**) a quiz question (**question**) is answered by each user (**user_id**). The online quiz is there to help users choose frames online to try on at home and encourage subsequent purchases. Each question has a set of responses the user can choose from. Users can drop out of the 5-question quiz sequence, as well as re-take the quiz. The sample size is 1986 entries.

Database Schema

survey
1986 rows
question
TEXT
user_id
TEXT
response
TEXT

-- Quiz Funnel Query

-- Task 1: first 10 rows all columns
SELECT *
FROM survey
LIMIT 10;
-- cols: question, user_id, response

question	user_id	response
1. What are you looking for?	005e7f99-d48c-4fce-b605-10506c85aaf7	Women's Styles
2. What's your fit?	005e7f99-d48c-4fce-b605-10506c85aaf7	Medium
3. Which shapes do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Round
4. Which colors do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Two-Tone
1. What are you looking for?	00a556ed-f13e-4c67-8704-27e3573684cd	I'm not sure. Let's skip it.
2. What's your fit?	00a556ed-f13e-4c67-8704-27e3573684cd	Narrow
5. When was your last eye exam?	00a556ed-f13e-4c67-8704-27e3573684cd	<1 Year
3. Which shapes do you like?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Square
5. When was your last eye exam?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	<1 Year
2. What's your fit?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Medium

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The Quiz Funnel: user completion

Quiz completion by users appears heartening: nearly 3/4 make it to the end. The two 'stumpers' i.e. difficult questions to answer relate to 'shapes' (Q.3) and 'eye exams' (Q.5) where drop-out is drastic (1/5 and over 1/4, respectively). Interestingly, SQL picks out 500 separate users out of a data sample size of 1986; this can suggest many re-takers (500 is ca. 1/4 of original sample size).

-- Task 2: Quiz Funnel: how many answered which q.?

```
SELECT question,  
       COUNT(DISTINCT user_id)  
  FROM survey  
 GROUP BY question;
```



question	COUNT(DISTINCT user_id)
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

Question	Distinct User	% Retention	Drop-out%
1. What are you looking for?	500	100	
2. What's your fit?	475	95	5
3. Which shapes do you like?	380	80	20
4. Which colors do you like?	361	95	5
5. When was your last eye exam?	270	74.792243767313	25.207756232687

Data and Science



The Quiz Funnel: response patterns

'Noteworthies':

- men's / women's style split is not so simple (96 responses/547 = 'not sure');
- narrow's top choice, whilst narrow + medium fit form clearest majority;
- quadrant shapes (rectangular to square) win, (round = 'bijou' choice?);
- popular colours (for survey!) fall into classic and subtle (why?);
- more than 1/2 of eye exams = less than a year ago (141/270) but complex!

N.B. This SQL query looks at overall popularity of responses.

-- Frequency of individual responses?
SELECT question, response,
COUNT(response)
FROM survey
GROUP BY response
ORDER BY question;

question	response	COUNT(response)
1. What are you looking for?	I'm not sure. Let's skip it.	96
1. What are you looking for?	Men's Styles	242
1. What are you looking for?	Women's Styles	209
2. What's your fit?	Medium	132
2. What's your fit?	Narrow	208
2. What's your fit?	Wide	88
3. Which shapes do you like?	No Preference	29
3. Which shapes do you like?	Rectangular	141
3. Which shapes do you like?	Round	91
3. Which shapes do you like?	Square	119
4. Which colors do you like?	Black	112
4. Which colors do you like?	Crystal	69
4. Which colors do you like?	Neutral	36
4. Which colors do you like?	Tortoise	117
4. Which colors do you like?	Two-Tone	27
5. When was your last eye exam?	1-3 Years	56
5. When was your last eye exam?	3+ Years	37
5. When was your last eye exam?	<1 Year	141
5. When was your last eye exam?	Not Sure. Let's Skip It	36



Data and Science



The Quiz Funnel: response types

2 Ways to help raise online Quiz Completion Levels:

- > make quiz shorter (3 key questions instead of 5);
- > simplify key questions

-- How many response types per question?
 SELECT question,
 COUNT(DISTINCT response)
 FROM survey
 GROUP BY question;

question	COUNT(DISTINCT response)
1. What are you looking for?	3
2. What's your fit?	4
3. Which shapes do you like?	4
4. Which colors do you like?	5
5. When was your last eye exam?	4

- Drop Q1: 17.5% 'not sure' (overall 96/547) - why 'genderise'?
- Drop Q5: > 13% 'not sure' (36/270) - why complicate quiz on choice?
- ✓ Take Q4 first: colours catch the eye; Warby Parker can emphasize great versatility in acetate palette and craftsmanship expertise !
- ✓ Take Q3 next and simplify to 'a round to more square' slider and avoid customers caught up in square vs. rectangle complexity !
- ✓ Take Q2 as final question and simplify: choose an average size range and let customers decide if > or < or = than average range (maybe easier choice than specifics of medium, narrow or wide ?)
- * Take Q5 out of quiz process; have an eye exam button to press
- * Have a simple skip button (Q1 & Q5 'not sure' wording differs)

-- How many different users are not sure Q1?
 SELECT response,
 COUNT(DISTINCT user_id)
 FROM survey
 WHERE response = "I'm not sure. Let's skip it.";
 -- NB 96 'not sures' from 92 different users

response	COUNT(DISTINCT user_id)
I'm not sure. Let's skip it.	92

-- How many different users are not sure Q5?
 SELECT response,
 COUNT(DISTINCT user_id)
 FROM survey
 WHERE response = "Not Sure. Let's Skip It";
 -- 36 'not sures' from 36 different users

response	COUNT(DISTINCT user_id)
Not Sure. Let's Skip It	36

Data and Science



The Home Try-On Funnel

In short, the Home Try-On Funnel joins each unique user journey along their route from online Quiz to Home-Try-On to Purchase. The quiz user id is the distinct driver (primary key in the home try-on funnel) with the home try on and purchase user ids matching to it (home try on and purchase user ids are the primary keys in their tables and the secondary / foreign keys for the Home Try-On Funnel to ensure seamless joins).

The first 10 rows of the Home-Try-On Funnel reveal that not everyone who does the quiz tries on at home; those that do, try on 3 or 5 pairs of glasses, and; not every try-on-at-home leads to a purchase (either for 3 or 5 pairs of glasses home trials).

```
-- Task 5: From Quiz to Home Try-On to Purchase
SELECT DISTINCT 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 q
LEFT JOIN home_try_on h
    ON q.user_id = h.user_id
LEFT JOIN purchase p
    ON p.user_id = q.user_id
LIMIT 10;
```

Home-Try-On Funnel -1st 10 rows (quiz + home_try_on + purchase)

user_id	is_home_try_on	number_of_pairs	is_purchase
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	1	3 pairs	0
291f1cca-e507-48be-b063-002b14906468	1	3 pairs	1
75122300-0736-4087-b6d8-c0c5373a1a04	0		0
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	1	5 pairs	0
ce965c4d-7a2b-4db6-9847-601747fa7812	1	3 pairs	1
28867d12-27a6-4e6a-a5fb-8bb5440117ae	1	5 pairs	1
5a7a7e13-fbcf-46e4-9093-79799649d6c5	0		0
0143cb8b-bb81-4916-9750-ce956c9f9bd9	0		0
a4ccc1b3-cbb6-449c-b7a5-03af42c97433	1	5 pairs	0
b1dded76-cd60-4222-82cb-f6d464104298	1	3 pairs	0



Data and Science



The Home Try-On Funnel: Structure & Content I

The **Home Try-On Funnel** consists of 3 tables: 2 below (quiz & home_try_on), 3rd next slide (purchase).

Data Schema

quiz
1000 rows
user_id
TEXT
style
TEXT
fit
TEXT
shape
TEXT
color
TEXT

```
-- Home Try-On Funnel Queries start:  
-----  
-- Task 4: Home Try-On tables 1st 5 rows  
SELECT *  
FROM quiz  
LIMIT 5;  
--cols: user_id, style, fit, shape, color
```

user_id	style	fit	shape	color
4e8118dc-bb3d-49bf-85fc-cca8d83232ac	Women's Styles	Medium	Rectangular	Tortoise
291f1cca-e507-48be-b063-002b14906468	Women's Styles	Narrow	Round	Black
75122300-0736-4087-b6d8-c0c5373a1a04	Women's Styles	Wide	Rectangular	Two-Tone
75bc6ebd-40cd-4e1d-a301-27ddd93b12e2	Women's Styles	Narrow	Square	Two-Tone
ce965c4d-7a2b-4db6-9847-601747fa7812	Women's Styles	Wide	Rectangular	Black

N.B. Sample size for **quiz** = 1000; sample size for **survey** (used in Quiz Funnel) = 1986

Data Schema

home_try_on
750 rows
user_id
TEXT
number_of_pairs
TEXT
address
TEXT

```
SELECT *  
FROM home_try_on  
LIMIT 5;  
--cols: user_id, number_of_pairs, address
```

user_id	number_of_pairs	address
d8add87-3217-4429-9a01-d56d68111da7	5 pairs	145 New York 9a
f52b07c8-abe4-4f4a-9d39-ba9fc9a184cc	5 pairs	383 Madison Ave
8ba0d2d5-1a31-403e-9fa5-79540f8477f9	5 pairs	287 Pell St
4e71850e-8bbf-4e6b-accc-49a7bb46c586	3 pairs	347 Madison Square N
3bc8f97f-2336-4dab-bd86-e391609dab97	5 pairs	182 Cornelia St

N.B. sample size drop from **quiz** (1000) to **home_try_on** (750) :
conversion from quiz to home_try_on is $3/4 = 1/4$ lost from quiz to home trials.

Data and Science



The Home Try-On Funnel: Structure & Content II

Data Schema

purchase

495 rows

user_id
TEXT

product_id
INTEGER

style
TEXT

model_name
TEXT

color
TEXT

price
INTEGER

```
SELECT *
FROM purchase
LIMIT 5;
--cols: user_id, product_id,
style, model_name, color, price
```

purchase table - 1st 5 rows

user_id	product_id	style	model_na me	color	price
00a9dd17-36c8-430c-9d76-df49d4197dcf	8	Women's Styles	Lucy	Jet Black	150
00e15fe0-c86f-4818-9c63-3422211baa97	7	Women's Styles	Lucy	Elderflower Crystal	150
017506f7-aba1-4b9d-8b7b-f4426e71b8ca	4	Men's Styles	Dawes	Jet Black	150
0176bfb3-9c51-4b1c-b593-87edab3c54cb	10	Women's Styles	Eugene Narrow	Rosewood Tortoise	95
01fdf106-f73c-4d3f-a036-2f3e2ab1ce06	8	Women's Styles	Lucy	Jet Black	150

The 3rd table (purchase) above completes the Home Try-On Funnel with a sample size of 495. Conversion from home_try_on (750) to purchase drops to ca. 2/3 or 66% compared to the previously mentioned quiz to home_try_on conversion of 3/4 (75%). In other words, a conversion drop/loss of 9% from home_try_on to purchase. When relating quiz participant size (1000) to final purchase sample size (495), the conversion rate is just under 1/2 at 49.5%, meaning just over 50% are lost along the 3 stage process from quiz via home-try-on to purchase possibility.

Data and Science



The Home Try-On Funnel

The conversion rates below from `converts` (the table that joins up / creates the Home Try-On Funnel) matches those previously deduced from the data schema sample sizes, i.e.: Quiz-to-Home Conversion 75% (750 out of 1000); Home-to-Purchase Conversion 66% (495 out of 750).

```
-- Task 6: Conversion Rates Insights
WITH converts AS(
  SELECT DISTINCT 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 q
  LEFT JOIN home_try_on h
    ON q.user_id = h.user_id
  LEFT JOIN purchase p
    ON p.user_id = q.user_id)
  SELECT SUM(is_home_try_on) AS 'try_on Converts',
    SUM(is_purchase) AS 'purchase Converts',
    1.0 * SUM(is_home_try_on) / COUNT(user_id) AS 'Quiz to Home Conversion',
    1.0 * SUM(is_purchase) / SUM(is_home_try_on) AS 'Home to Purchase Conversion'
  FROM converts;
```

Conversion rates (converts temporary table)

try_on Converts	purchase Converts	Quiz to Home Conversion	Home to Purchase Conversion
750	495	0.75	0.66

Data and Science



The Home Try-On Funnel

The Curiousness of A/B Testing Home Trials of 3 vs. 5 pairs of glasses

```
-- A/B Test : 3 or 5 pair try-ons more likely to purchase?  
WITH converts AS(  
    SELECT DISTINCT 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 q  
    LEFT JOIN home_try_on h  
        ON q.user_id = h.user_id  
    LEFT JOIN purchase p  
        ON p.user_id = q.user_id)  
    SELECT CASE  
        WHEN number_of_pairs LIKE '%3 pairs%' THEN '3_pair_control'  
        WHEN number_of_pairs LIKE '%5 pairs%' THEN '5_pair_test'  
        ELSE NULL  
    END AS 'ab_test',  
    COUNT(is_purchase) AS 'Purchase Made'  
    FROM converts  
    WHERE ab_test IS NOT NULL  
    GROUP BY 1  
    ORDER BY 2 DESC;  
-- NB 50% of try-ons were 3 pairs & 50% were 5 pairs  
-- 3 pairs a bit more likely to lead to purchase (379 vs 371)???
```

A/B Test

ab_test	Purchase Made
3_pair_control	379
5_pair_test	371

The A/B Test query as put together here, clearly does not work. The problem is that it identifies 379 purchases made with 3-pair home trials vs. 371 purchases made with 5-pair home trials. That suggests a total of 750 purchases, when, in fact, there were 750 'try-on-converts' and only 495 'purchase-converts'. COUNT(is_purchase) misleads.

We know 50% of 750 home trials were each for 3 pairs and 5 pairs of glasses, so each will use 375 as 100 % reference basis for conversion rates (= 750 / 2).

The next slide shows A/B Testing Mark 2 using SUM and calculates these specific conversion rates.

Data and Science



The Home Try-On Funnel

A/B Testing Mark 2 : Home Trials of 3 vs. 5 pairs of glasses using SUM

```
-- A/B Test Mark 2
WITH converts AS(
  SELECT DISTINCT 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 q
  LEFT JOIN home_try_on h
    ON q.user_id = h.user_id
  LEFT JOIN purchase p
    ON p.user_id = q.user_id)
  SELECT number_of_pairs,
    SUM(is_purchase) AS '3 vs 5 pair Trials'
  FROM converts
  GROUP BY number_of_pairs;
```

A/B Test Mark 2

number_of_pairs	3 vs 5 pair Trials
	0
3 pairs	201
5 pairs	294

The outcome of A/B Test Mark 2 is much more reassuring: the 3 to 5 pair comparison adds up to 495 - the overall actual number of purchases, so 5-pair home trials clearly have the edge for gaining purchases: more choice seems to give greater reassurance! In terms of actual conversion rates from home-try-on to purchase: 3-pair trials give a 53.6% (201/375) likelihood of purchase, whilst 5-pair trials give a 78.4% (294/375) likelihood of purchase.

Data and Science



The Home Try-On Funnel

Bizarrely, it's all 'Brady' !

All 495 final purchases are the same style (Men's), model (Brady), colour (Sea Glass Gray) and priced... the same at \$95. Given the wider diversity of preferences voiced during the quiz, there is a real disjoint to address amongst different customer interest groups.

```
-- For purchase table
SELECT color,
       COUNT(DISTINCT user_id)
FROM purchase;
-- different colors in quiz to sea glass grey purchases

SELECT style,
       COUNT(DISTINCT user_id)
FROM purchase;
-- only men's styles purchased?

SELECT model_name,
       COUNT(DISTINCT user_id)
FROM purchase;
-- just model Brady purchased?

SELECT price,
       COUNT(DISTINCT user_id)
FROM purchase;
-- all glasses same price = standard issue / no extras?
```

style	COUNT(DISTINCT user_id)
Men's Styles	495

model_name	COUNT(DISTINCT user_id)
Brady	495

color	COUNT(DISTINCT user_id)
Sea Glass Gray	495

price	COUNT(DISTINCT user_id)
95	495

WARBY PARKER

Design Portal Possibilities



Make it a 1-2-3
(questions) quiz!



Open online
chat-lines?
Investigate
customer hang-
ups more fully

Encourage home trial parties
Make it fun & social for family and
friends: designer glasses event hosting
club programme? Group discounts?



Easy online
eye exam
appointments
- at the press
of a button?

Open Doors :
let customers see their
glasses being made;
greater precision on
product delivery times;
'customer design'
competitions - template
most popular colours;
recycling old glasses
materials for new designs?
new material (like
bamboo) from outreach
work - a new trade
community?