

# AB Testing

## Question 01

We are running an experiment at an item-level, which means all users who visit will see the same page, but the layout of different item pages may differ. Compare this table to the assignment events we captured for user\_level\_testing. Does this table have everything you need to compute metrics like 30-day view-binary?

```
SELECT * FROM dsv1069.final_assignments_qa
```

**ANSWER:** No, the record creation date is required.

## Question 02

Reformat the final\_assignments\_qa to look like the final\_assignments table, filling in any missing values with a placeholder of the appropriate data type.

SQL CODE
<pre>SELECT item_id,        test_a AS test_assignment,        'test_a' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa UNION ALL SELECT item_id,        test_b AS test_assignment,        'test_b' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa UNION ALL SELECT item_id,        test_c AS test_assignment,        'test_c' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa UNION ALL SELECT item_id,        test_d AS test_assignment,        'test_d' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa UNION ALL SELECT item_id,        test_e AS test_assignment,        'test_e' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa UNION ALL SELECT item_id,        test_f AS test_assignment,        'test_f' AS test_number,        CAST('2022-11-15 00:00:00' AS timestamp) AS dummy_test_start_date FROM dsv1069.final_assignments_qa;</pre>

### Question 03

Use the final\_assignments table to calculate the order binary for the 30 day window after the test assignment for item\_test\_2 (You may include the day the test started)

SQL CODE
<pre>SELECT order_binary.test_assignment,        COUNT(DISTINCT order_binary.item_id) AS num_orders,        SUM(order_binary.ob30d) AS sum_orders_bin_30d FROM (   SELECT assignments.item_id,          assignments.test_assignment,          MAX(CASE             WHEN (DATE(orders.created_at)-DATE(assignments.test_start_date)) BETWEEN 1 AND 30             THEN 1             ELSE 0             END) AS ob30d   FROM dsv1069.final_assignments AS assignments   LEFT JOIN dsv1069.orders AS orders     ON assignments.item_id=orders.item_id   WHERE assignments.test_number='item_test_2'   GROUP BY assignments.item_id,          assignments.test_assignment) AS order_binary GROUP BY order_binary.test_assignment</pre>

RESULT		
test_assignment	num_orders	sum_orders_bin_30d
0	1130	331
1	1068	306

### Question 04

Use the final\_assignments table to calculate the view binary, and average views for the 30 day window after the test assignment for item\_test\_2. (You may include the day the test started).

SQL CODE
<pre>SELECT view_binary.test_assignment,        COUNT(DISTINCT view_binary.item_id) AS num_views,        SUM(view_binary.view_bin_30d) AS sum_view_bin_30d,        AVG(view_binary.view_bin_30d) AS avg_view_bin_30d FROM (   SELECT assignments.item_id,          assignments.test_assignment,          MAX(CASE             WHEN (DATE(views.event_time)-DATE(assignments.test_start_date)) BETWEEN 1 AND 30             THEN 1             ELSE 0             END) AS view_bin_30d   FROM dsv1069.final_assignments AS assignments   LEFT JOIN dsv1069.view_item_events AS views     ON assignments.item_id=views.item_id   WHERE assignments.test_number='item_test_2'   GROUP BY assignments.item_id,</pre>

```

assignments.test_assignment
ORDER BY item_id) AS view_binary
GROUP BY view_binary.test_assignment

```

RESULT			
test_assignment	num_views	sum_view_bin_30d	avg_view_bin_30d
0	1130	915	0.8097
1	1068	881	0.8249

## Question 05

Use the <https://thumbtack.github.io/abba/demo/abba.html> to compute the lifts in metrics and the p-values for the binary metrics ( 30 day order binary and 30 day view binary) using a interval 95% confidence.

Label: order0, Number of successes: 331, Number of trials: 1130, Remove

Label: order1, Number of successes: 306, Number of trials: 1068, Remove

Interval confidence level: 0.95, Use multiple testing correction: ☒

**Compute** [Add another group](#)

	Successes	Total	Success Rate		p-value	Improvement
order0	331	1,130	27% – 32% (29%)	- ----- +	—	—
order1	306	1,068	26% – 31% (29%)	- ----- +	0.74	-15% – 11% (-2.2%)

Label: View0, Number of successes: 915, Number of trials: 1130, Remove

Label: View1, Number of successes: 881, Number of trials: 1068, Remove

Interval confidence level: 0.95, Use multiple testing correction: ☒

**Compute** [Add another group](#)

	Successes	Total	Success Rate		p-value	Improvement
View0	915	1,130	79% – 83% (81%)	- ----- +	—	—
View1	881	1,068	80% – 85% (82%)	- ----- +	0.36	-2.1% – 5.9% (1.9%)

- ANSWER:**
- For orders\_bin: lift is -15% – 11% (-2.2%) and pval is 0.74
  - For views\_bin: lift is and pval is -2.1% – 5.9% (1.9%) and pval is 0.36

- There is no significant difference for the test item\_test\_2 in the binary metrics of orders and views.

## Question 06

Clone of Final Assignme...
Insert chart
T
</>
Theme: Mode Light
Run all queries

Report Builder
New Notebook

DATA
1. Data Quality Check
Display Table
2. Reformat the Data
Display Table
3. Compute Order Binary
Display Table
4. Compute View Item Met...
Display Table
5. Compute lift and p-value
Display Table

### AB Testing

#### 1. Data Quality Check

	Item_id	test_a	test_b	test_c	test_d	test_e	test_f
1	2512	1	0	1	1	0	1
2	482	0	1	1	1	0	0
3	2446	0	1	1	0	1	0
4	1312	0	0	0	0	0	1

This table only shows the first 1,000 rows. View complete results in [Report Details](#).

#### 2. Reformat the Data

	Item_id	test_assignment	test_number	dummy_test_start_date
1	2512	1	test_a	2022-11-15 00:00:00
2	482	0	test_a	2022-11-15 00:00:00
3	2446	0	test_a	2022-11-15 00:00:00
4	1312	0	test_a	2022-11-15 00:00:00

This table only shows the first 1,000 rows. View complete results in [Report Details](#).

#### 3. Compute Order Binary

	test_assignment	num_orders	sum_orders_bin_30d
1	0	1130	331
2	1	1068	306

#### 4. Compute View Item Metrics

	test_assignment	num_views	sum_view_bin_30d	avg_view_bin_30d
1	0	1130	915	0.809734513274
2	1	1068	881	0.824906367041

#### 5. Compute lift and p-value

	tipo	test_assignment	num_orders	sum_orders_bin_30d
1	views	0	1130	915
2	views	1	1068	881
3	orders	0	1130	331
4	orders	1	1068	306