



FREE TRIAL SCREENER A/B TESTING PROJECT




1. EXPERIMENT OVERVIEW

- The courses have two options on the course overview page:
 - start free trial
 - access course materials


1. EXPERIMENT OVERVIEW

- Test a Change:
 - If the student clicked "start free trial" => asked how much time they want to devote to the course
 - 5 or more hours per week
 - checkout process as usual
 - 5 for less hours per week
 - a message "This courses usually require a greater time commitment"
 - suggesting student access the course materials for free
 - the student would have the option
 - to continue enrolling in the free trial
 - access the course materials for free instead

2.EXPERIMENT DESIGN

- Reducing the number of frustrated students who left the free trial because they didn't have enough time
 - Do not significantly reducing the number of students to continue past the free trial and eventually complete the course.
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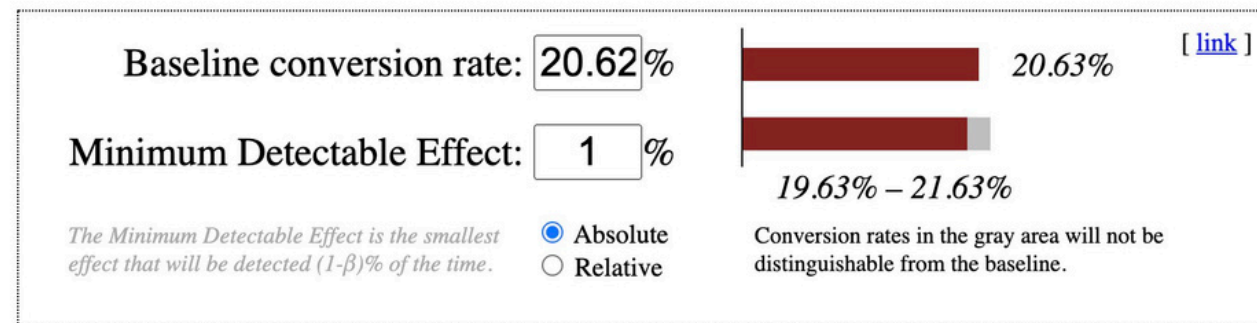
3.HYPOTHESIS

- H0: the change has no effect on the number of students who enroll the free trial.
 - H1: the change reduces the number of students who enroll the free trial.
 - H0: the change has no effect on the number of students who leave the free trial.
 - H1: the change reduces the number of students who leave the free trial.
 - H0: the change has no effect on the probability of students who continue the free trial after 14 days.
 - H1: the change increases the probability of students who continue the free trial after 14 days.
- 

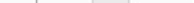
4.METRICS CHOICE

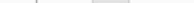
- Invariant Metrics (expected to remain unchanged):
 - Number of cookies
 - Number of clicks
 - Click-through probability
- Evaluation Metrics (to analyze the effect of the change):
 - Gross conversion: The rate of users completing the checkout to enroll in the free trial.
 - Retention: The rate of users remaining enrolled after 14 days.
 - Net conversion: The overall conversion rate from viewing to enrolling.

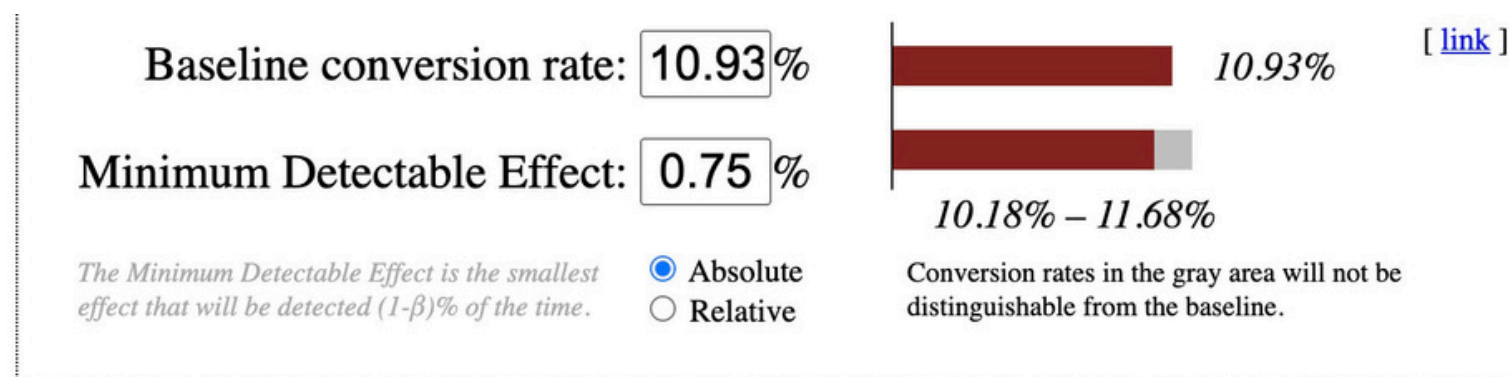
5.SAMPLE SIZE CALCULATION



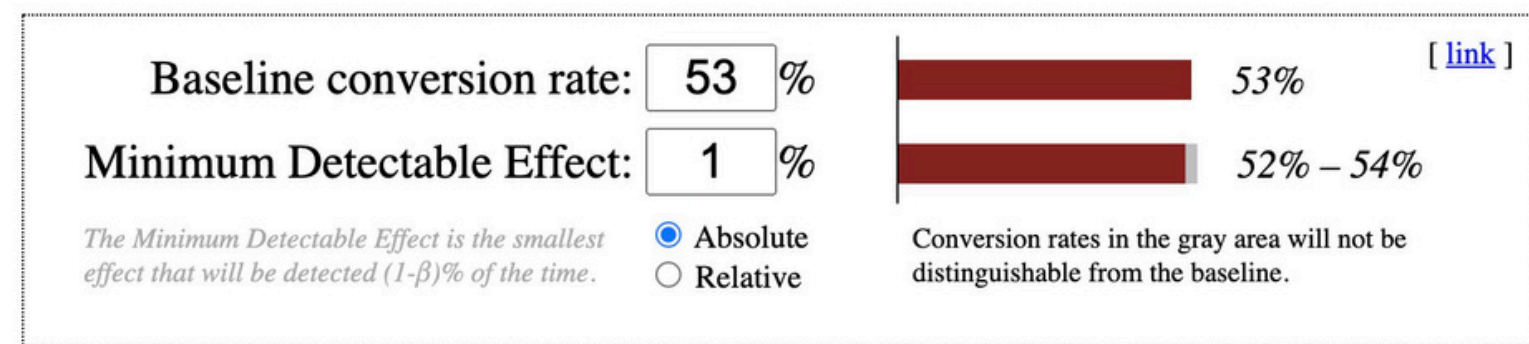
Sample size:
25,835
per variation

Statistical power $1-\beta$:  80% *Percent of the time the minimum effect size will be detected, assuming it exists*

Significance level α :  5% *Percent of the time a difference will be detected, assuming one does NOT exist*



Sample size:
27,413
per variation



Sample size:
39,115
per variation

	Metrics	Estimator	Scaled Estimator	Standard Deviation	dmin	samplesize
0	cookies	40000.000000	5000.0	NaN	3000.0000	NaN
1	cliks	3200.000000	400.0	NaN	240.0000	NaN
2	user-id	660.000000	82.5	NaN	-50.0000	NaN
3	click-through-probability	0.080000	NaN	NaN	0.0100	NaN
4	gross conversion	0.206250	NaN	0.020231	-0.0100	645875.0
5	retention	0.530000	NaN	0.054949	0.0100	4741212.0
6	net conversion	0.109313	NaN	0.015602	0.0075	685325.0

6.SANITY CHECK

```
# import dataset
control = pd.read_csv('control.csv')
experiment = pd.read_csv('experiment.csv')
control.head()
```

	Date	Pageviews	Clicks	Enrollments	Payments
0	Sat, Oct 11	7723	687	134.0	70.0
1	Sun, Oct 12	9102	779	147.0	70.0
2	Mon, Oct 13	10511	909	167.0	95.0
3	Tue, Oct 14	9871	836	156.0	105.0
4	Wed, Oct 15	10014	837	163.0	64.0

```
experiment.head()
```

	Date	Pageviews	Clicks	Enrollments	Payments
0	Sat, Oct 11	7716	686	105.0	34.0
1	Sun, Oct 12	9288	785	116.0	91.0
2	Mon, Oct 13	10480	884	145.0	79.0
3	Tue, Oct 14	9867	827	138.0	92.0
4	Wed, Oct 15	9793	832	140.0	94.0

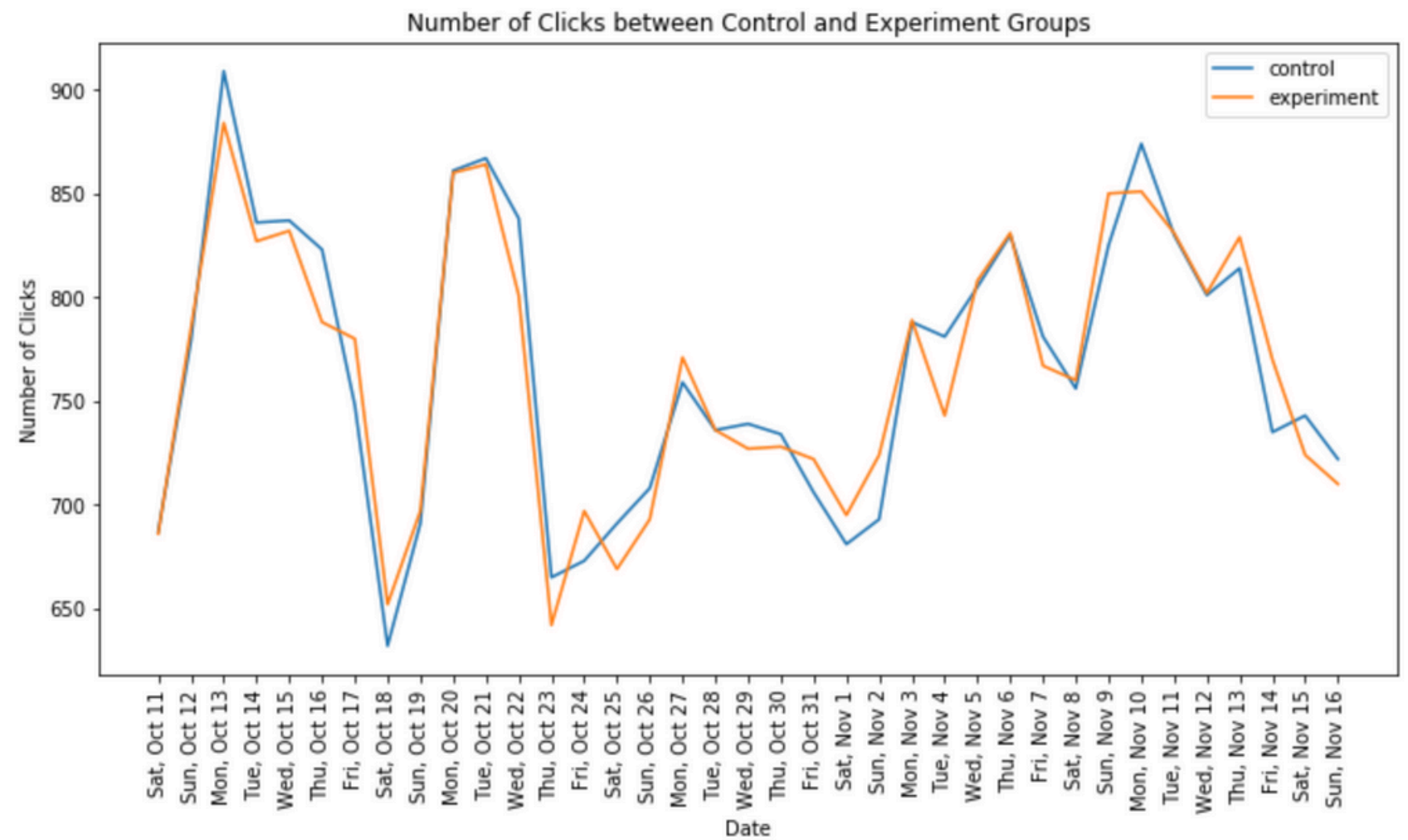
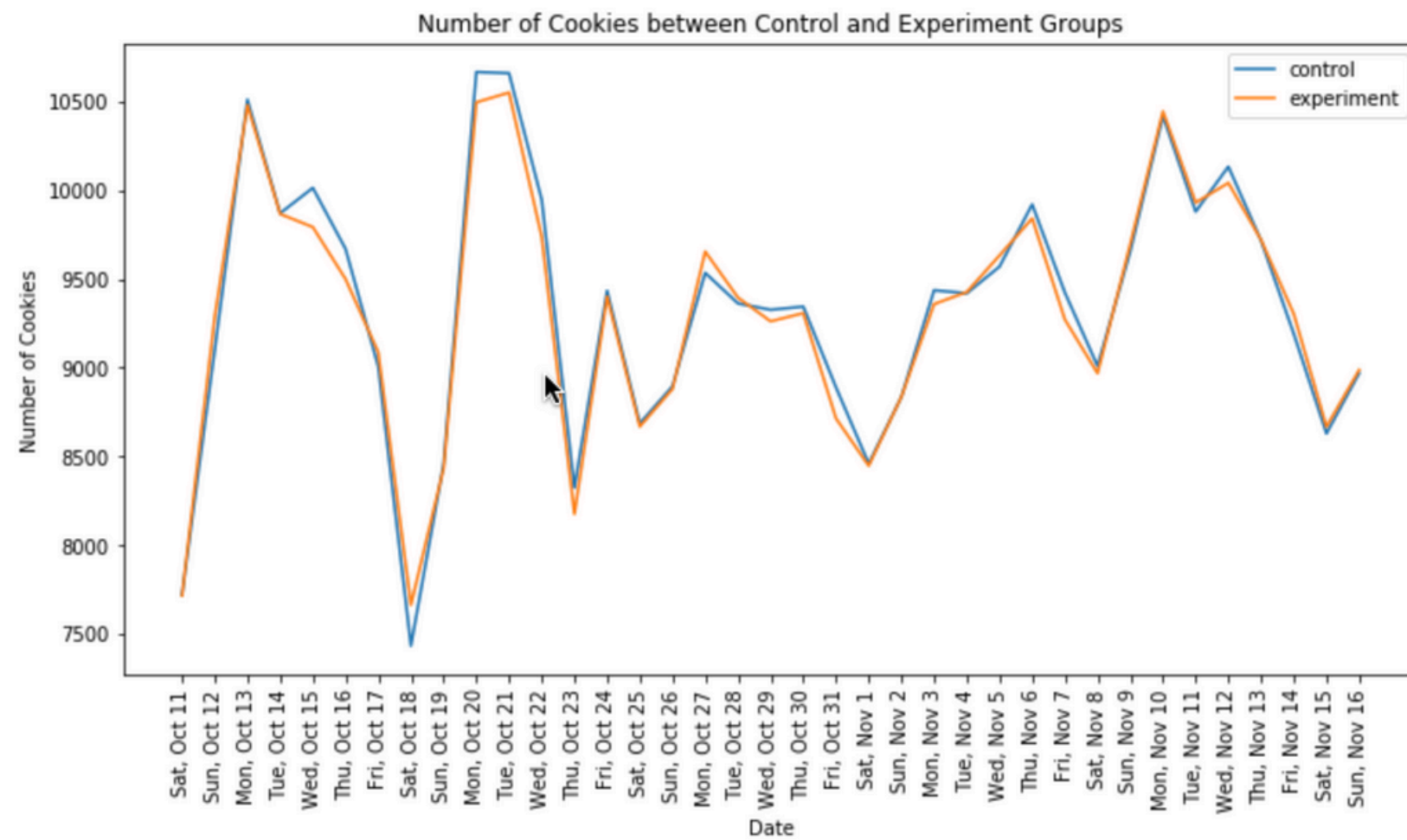
```
# the duration for this experiment
print('control group duration:\n', control.count())
print('experiment group duration:\n', experiment.count())
```

```
control group duration:
Date          37
Pageviews     37
Clicks        37
Enrollments   23
Payments      23
dtype: int64
experiment group duration:
Date          37
Pageviews     37
Clicks        37
Enrollments   23
Payments      23
dtype: int64
```

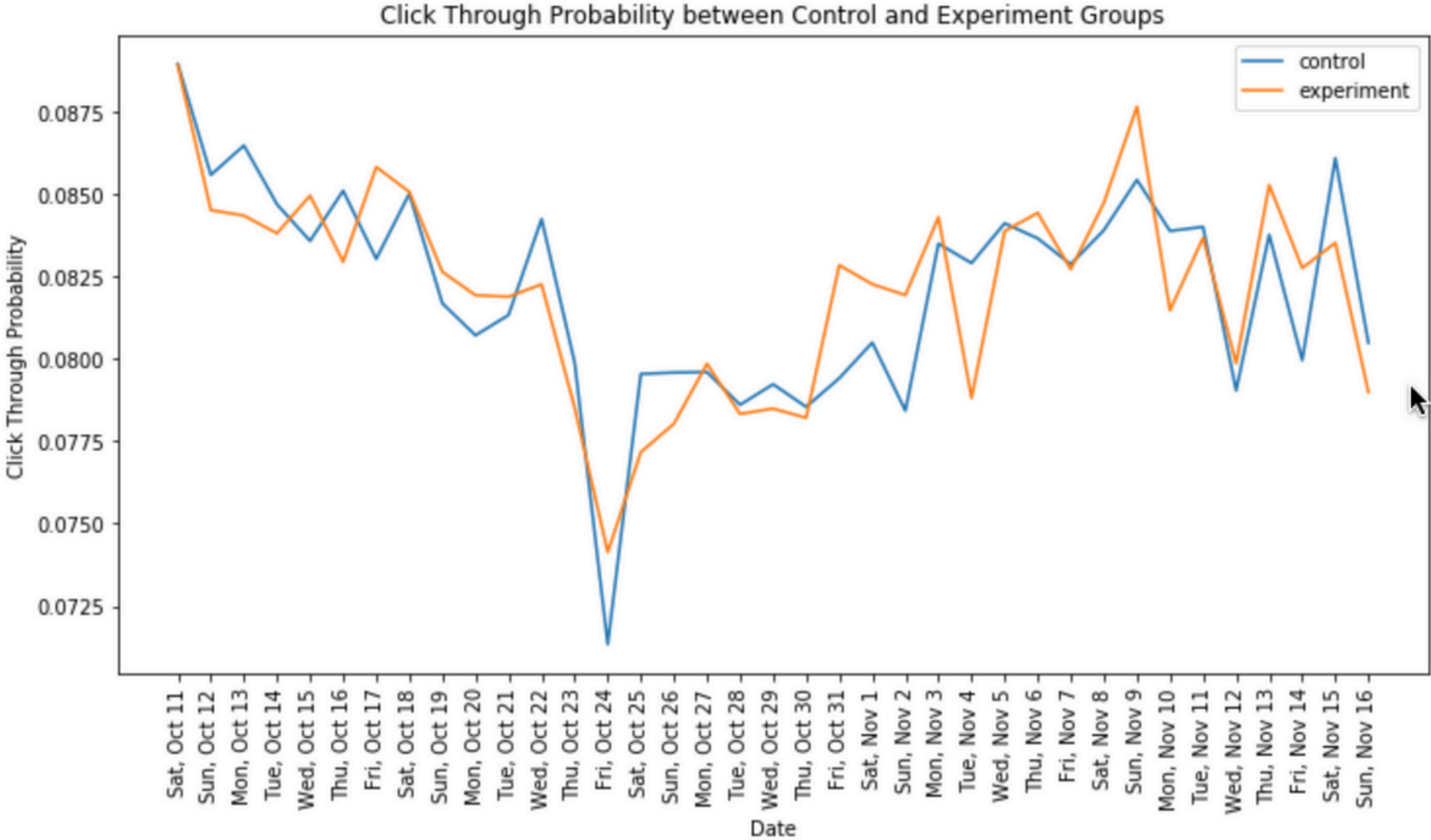
```
# calculate the sample size for this dataset
print('control size: ', control['Pageviews'].sum())
print('experiment size: ', experiment['Pageviews'].sum())
print('sample size: ', control['Pageviews'].sum()+experiment['Pageviews'].sum())
```

```
control size: 345543
experiment size: 344660
sample size: 690203
```


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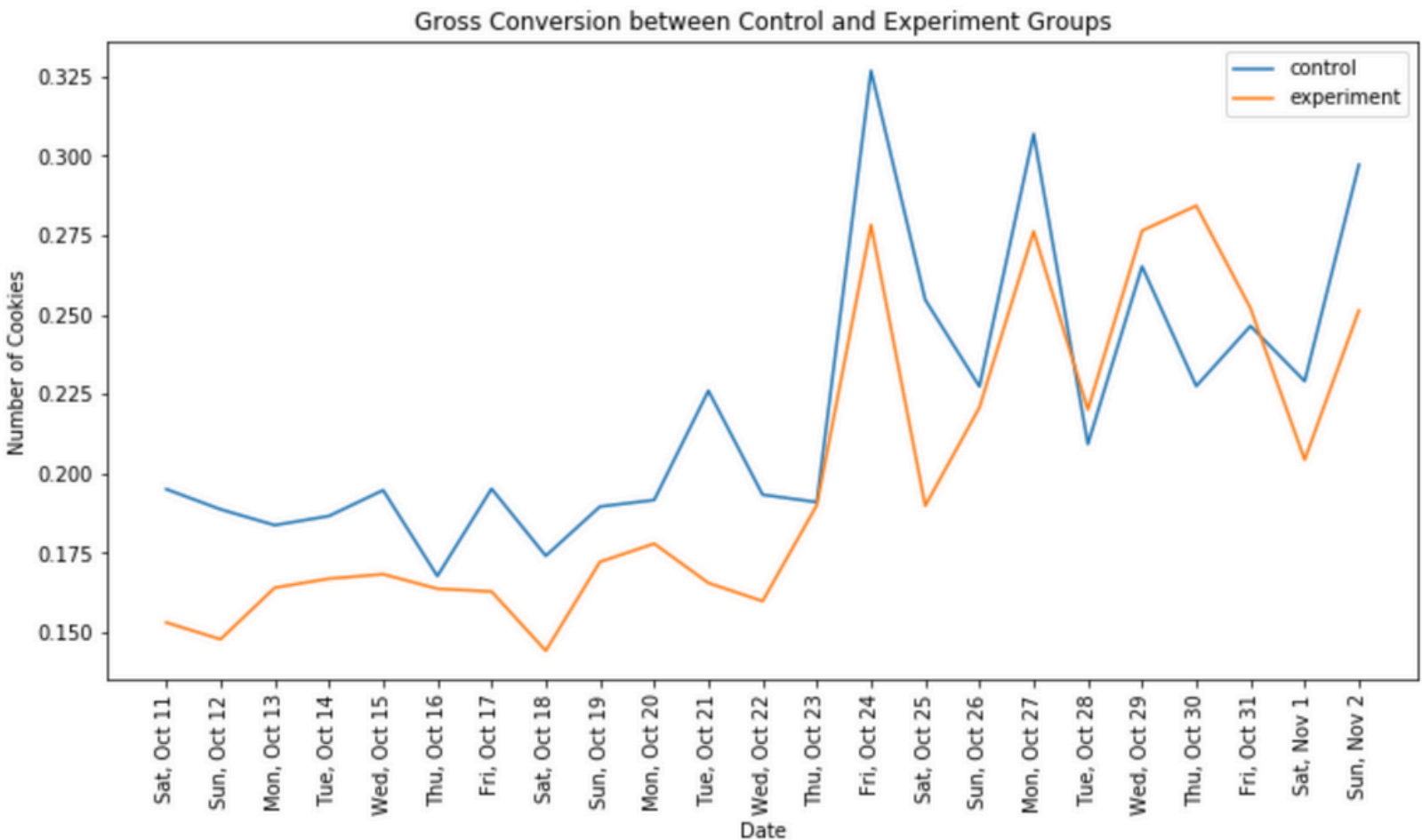
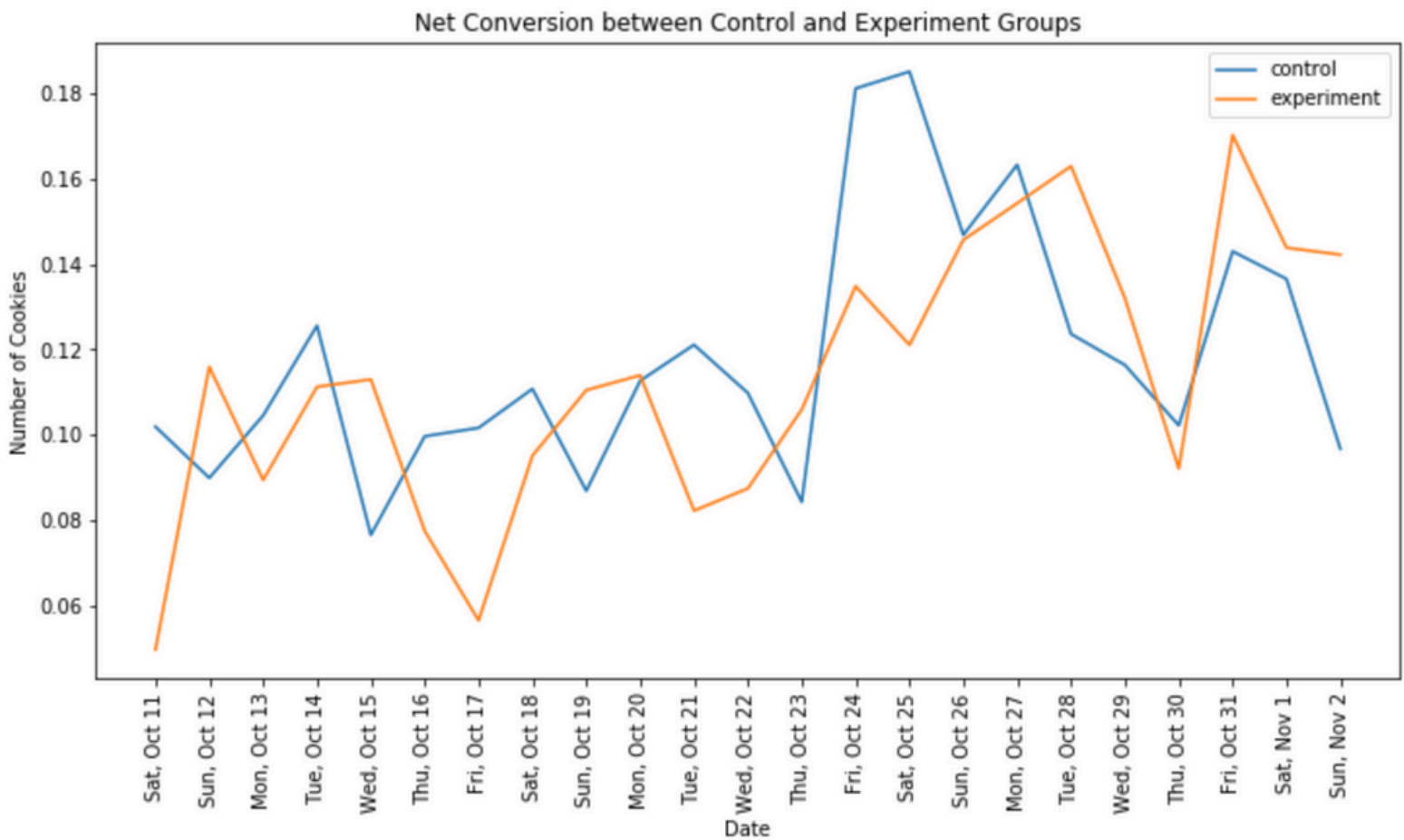
	CI_lower	CI_upper	obs	passes or not
Cookies	NaN	NaN	0.500640	NaN
Clicks	NaN	NaN	0.500467	NaN
CTP	NaN	NaN	NaN	NaN

	CI_lower	CI_upper	obs	passes or not
Cookies	0.49882	0.50118	0.500640	1
Clicks	NaN	NaN	0.500467	NaN
CTP	NaN	NaN	NaN	NaN

	CI_lower	CI_upper	obs	passes or not
Cookies	0.49882	0.50118	0.500640	1
Clicks	0.495884	0.504116	0.500467	1
CTP	NaN	NaN	NaN	NaN

	CI_lower	CI_upper	obs	passes or not
Cookies	0.49882	0.50118	0.500640	1
Clicks	0.495884	0.504116	0.500467	1
CTP	-0.00129568	0.00129568	-0.000057	1

7.RESULT ANALYSIS



	Date	Pageviews	Clicks	Enrollments	Payments
18	Wed, Oct 29	9262	727	201.0	96.0
19	Thu, Oct 30	9308	728	207.0	67.0
20	Fri, Oct 31	8715	722	182.0	123.0
21	Sat, Nov 1	8448	695	142.0	100.0
22	Sun, Nov 2	8836	724	182.0	103.0

7.RESULT ANALYSIS

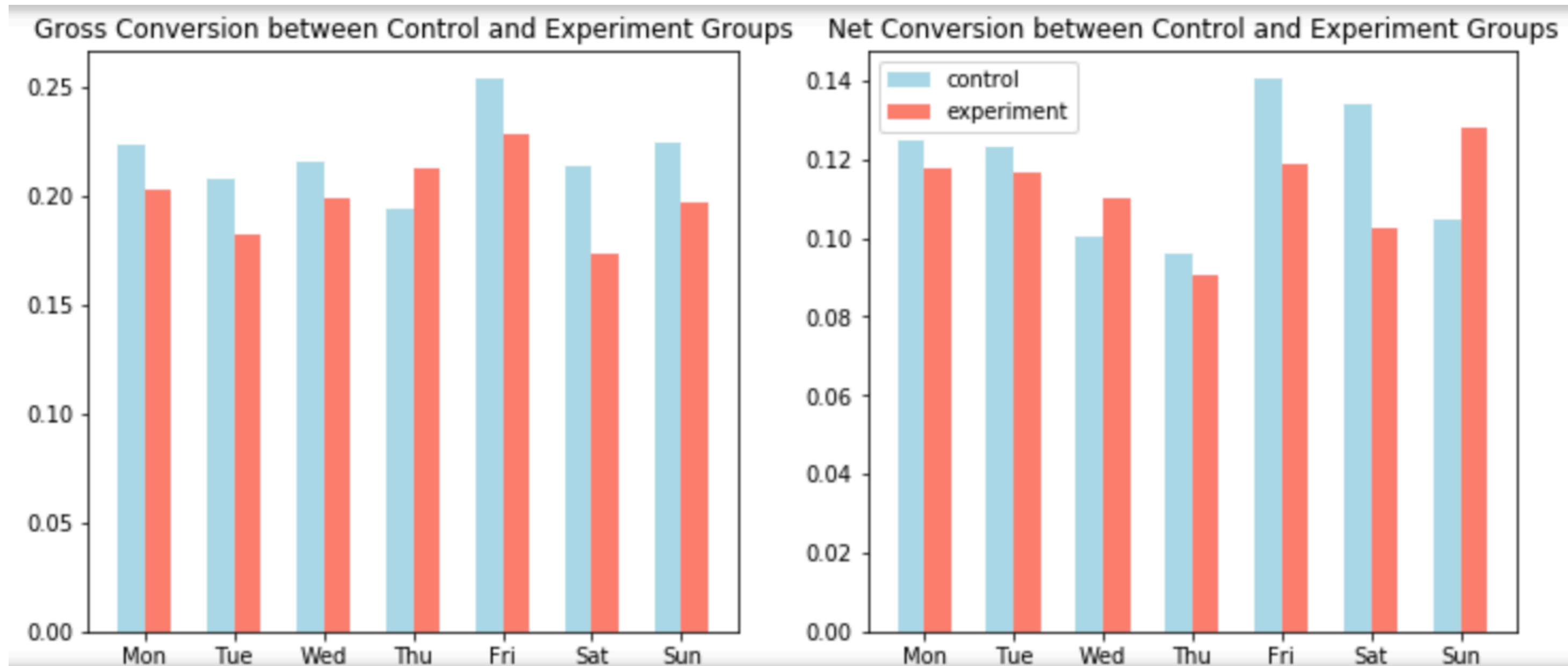
	CI_lower	CI_upper	obs	stats_sig?	dmin	prac_sig?
Gross_Conversion	NaN	NaN	NaN	NaN	-0.0100	NaN
Net_Conversion	NaN	NaN	NaN	NaN	0.0075	NaN

	CI_lower	CI_upper	obs	stats_sig?	dmin	prac_sig?
Gross_Conversion	-0.0291203	-0.0119894	-0.020555	1	-0.0100	1
Net_Conversion	-0.0116043	0.00185686	-0.004874	0	0.0075	0

7.RESULT ANALYSIS

Clicks_x Enrollments_x Payments_x Clicks_y Enrollments_y Payments_y							GC_cont GC_exp diff_GC NC_cont NC_exp diff_NC						
Day							Day						
Mon	2529	565.0	316.0	2515	511.0	296.0	Mon	0.223408	0.203181	-0.020228	0.124951	0.117694	-0.007257
Tue	2439	506.0	301.0	2427	443.0	283.0	Tue	0.207462	0.182530	-0.024932	0.123411	0.116605	-0.006806
Wed	2414	521.0	242.0	2360	469.0	260.0	Wed	0.215824	0.198729	-0.017096	0.100249	0.110169	0.009921
Thu	2222	432.0	213.0	2158	458.0	196.0	Thu	0.194419	0.212234	0.017814	0.095860	0.090825	-0.005035
Fri	2127	540.0	299.0	2199	503.0	261.0	Fri	0.253879	0.228740	-0.025138	0.140574	0.118690	-0.021883
Sat	2691	576.0	361.0	2702	468.0	277.0	Sat	0.214047	0.173205	-0.040842	0.134151	0.102517	-0.031634
Sun	2871	645.0	301.0	2899	571.0	372.0	Sun	0.224660	0.196964	-0.027696	0.104842	0.128320	0.023479

7.RESULT ANALYSIS



8.CONCLUSION AND RECOMMENDATION

- Gross Conversion:
 - Observed Difference: 2.06% lower in the experiment group vs. control group
 - Significance: Statistically and practically significant
 - Notable Trends: Larger impact on Sundays; minimal on Thursdays
- Net Conversion:
 - Observed Difference: 0.49% lower in the experiment group vs. control group
 - Significance: Not statistically or practically significant
- Conclusion
 - The change may clarify student expectations.
 - Only gross conversion shows significance; payments are not converting.
 - Recommendation: Do not launch; conduct further experiments.



THANK YOU

● FOR YOUR NICE ATTENTION

