

PROJECT MOBIL GAME A/B TESTING

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PURPOSE

To compare users' retention rate after 7 days of game installing between two gate versions.



DATA

- From Kaggle

<https://www.kaggle.com/datasets/mursideyarkin/mobile-games-ab-testing-cookie-cats>

- Columns: userid, version, sumgamerounds, retention1, retention_7
- Rows: 90,189

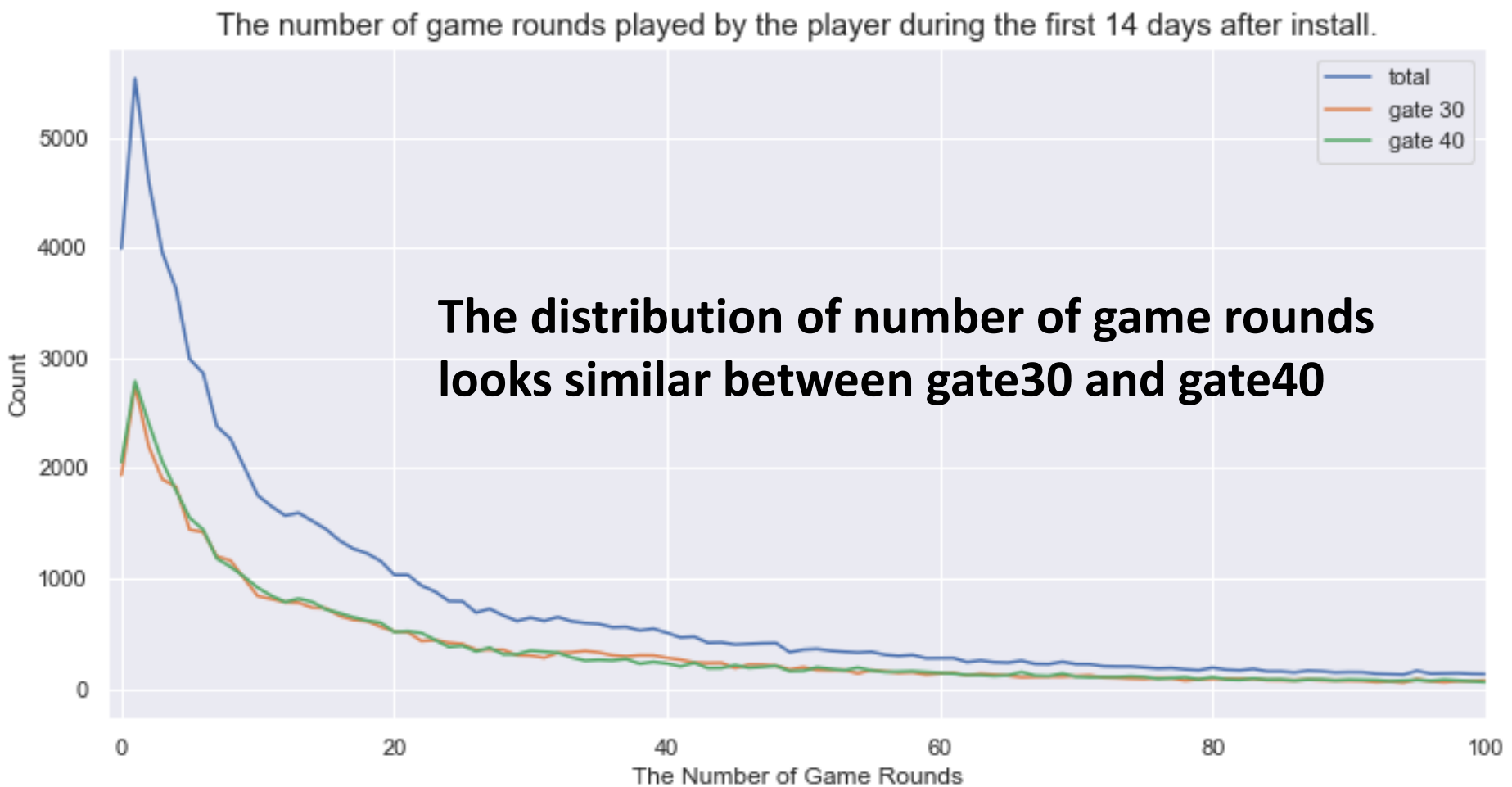
Columns	Description
userid	A unique number that identifies each player.
version	Whether the player was put in the control group (<i>gate30 - a gate at level 30</i>) or the group with the moved gate (<i>gate40 - a gate at level 40</i>)
sumgamerounds	the number of game rounds played by the player during the first 14 days after install.
retention1	Did the player come back and play 1 day after installing?
retention_7	Did the player come back and play 7 days after installing?



OUTLINE

1. EDA
2. Chi Square Test
3. Bayesian A/B Test
4. Conclusion

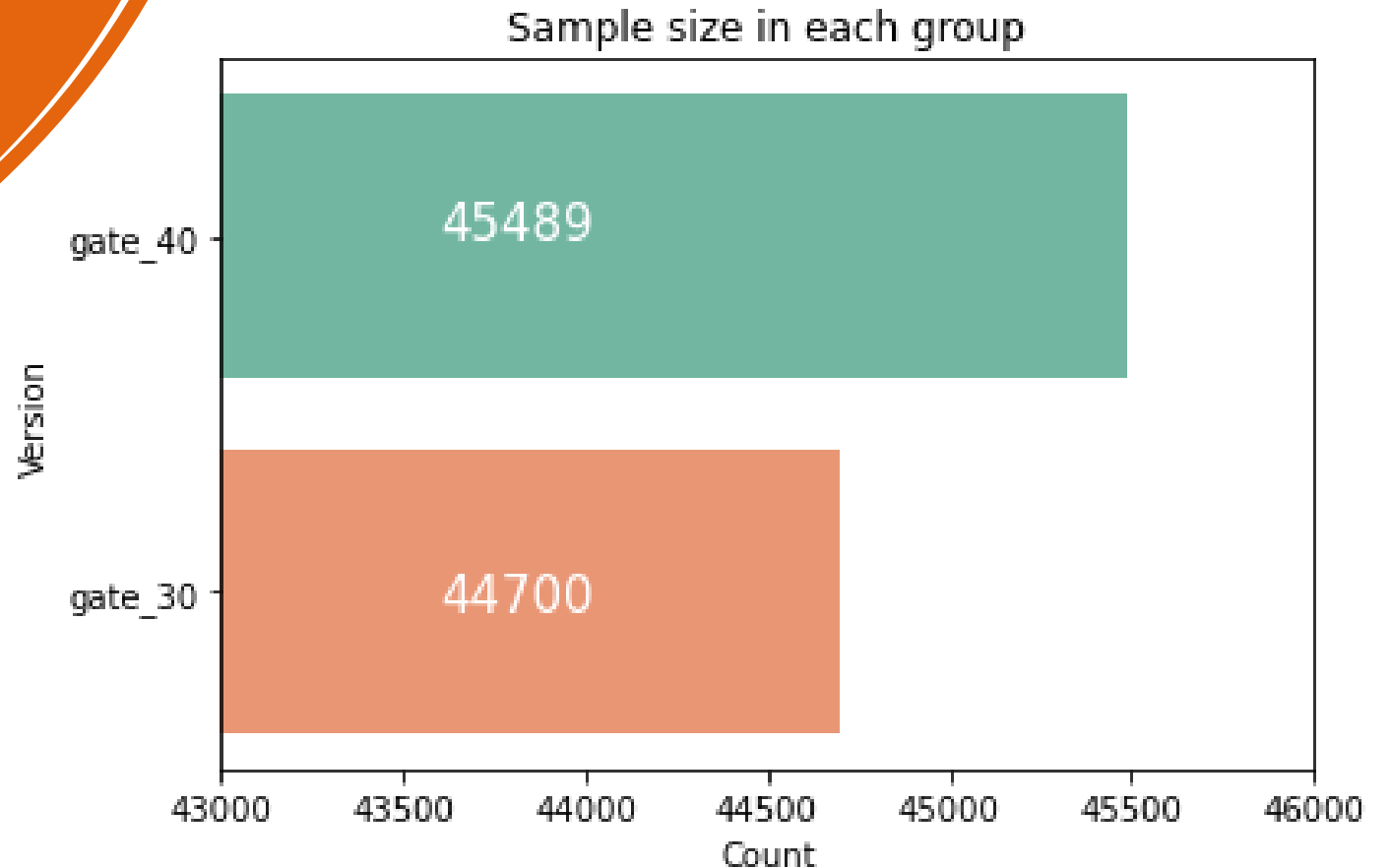
EDA



EDA

SAMPLE SIZE IN ECH GROUP

- All values in "userid" is unique



CHI SQUARE TEST

		Version		
		gate_30	gate_40	Total
Retention on day 7	False	36198	37210	73408
	True	8502	8279	16781
total		44700	45489	90189

Using Chi-square to compare which version has a better performance in retention rate

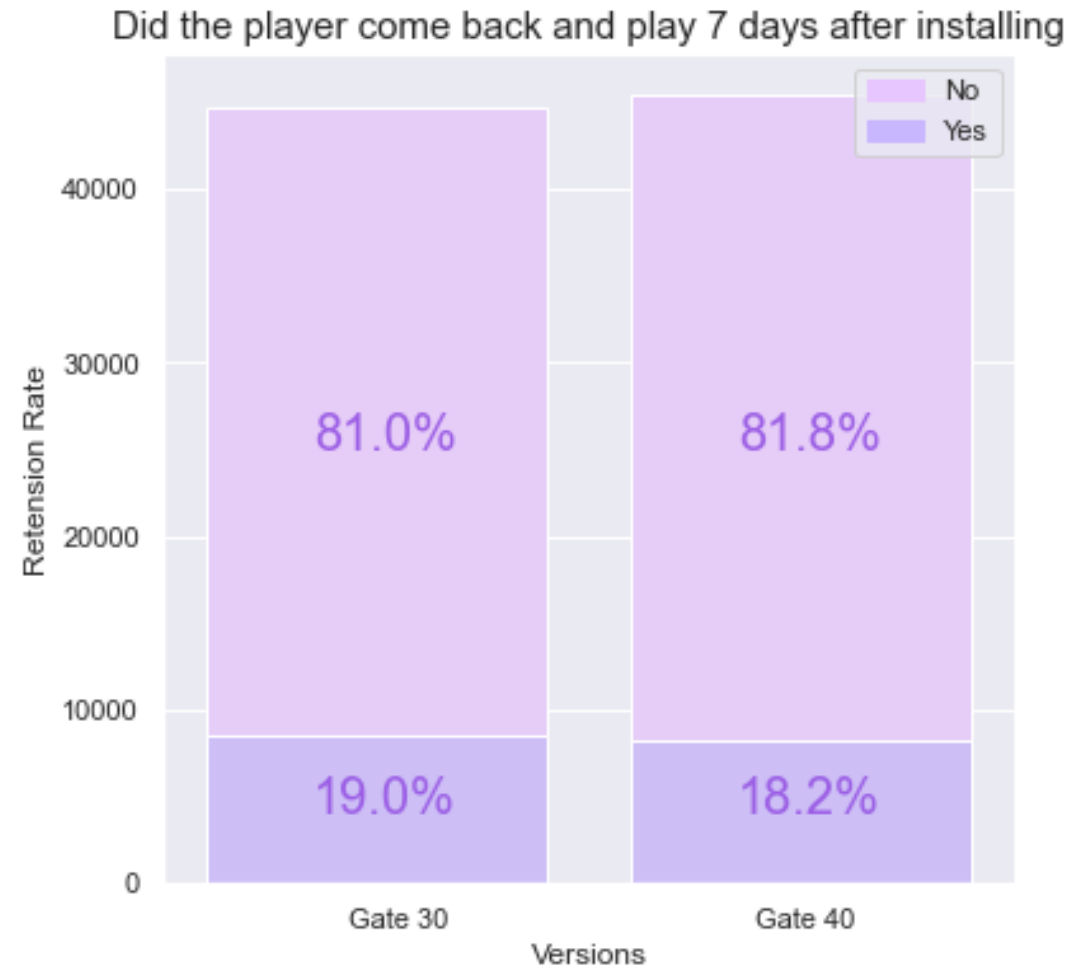
Hypothesis

H0: There is no difference of retention_7 between version gate_30 and gate_40

H1: There is a difference of retention_7 between version gate_30 and gate_40

alpha = 0.05

RESULTS AND CONCLUSION



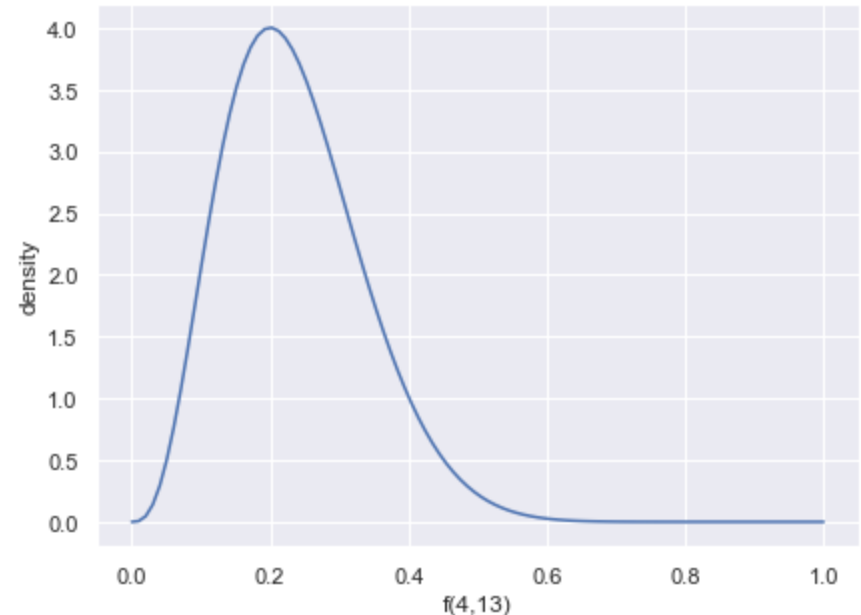
- There was a significant association between Gate30 and Gate40 in retention rate ($\chi^2(1) = 10.0$, $p < 0.001$).
- The odds of retention rate after 7 days is 1.1 times higher in gate30 than gate40.
- Gate30 has a better retention rate than gate40

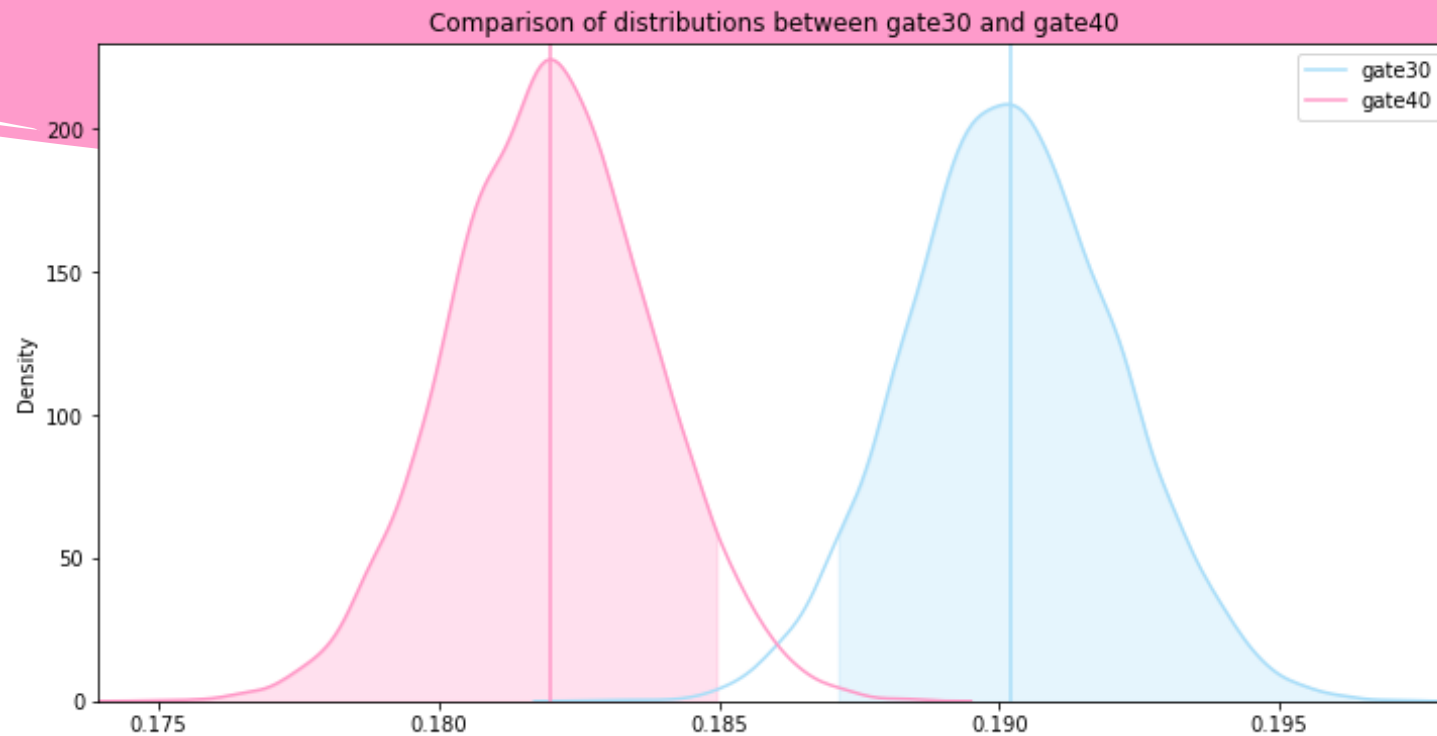
BAYESIAN A/B TEST

Hypothesis

- H_0 : There is no difference of retention_7 between version gate_30 and gate_40
- H_1 : There is a difference of retention_7 between version gate_30 and gate_40

prior alpha = 4
Prior beta = 13

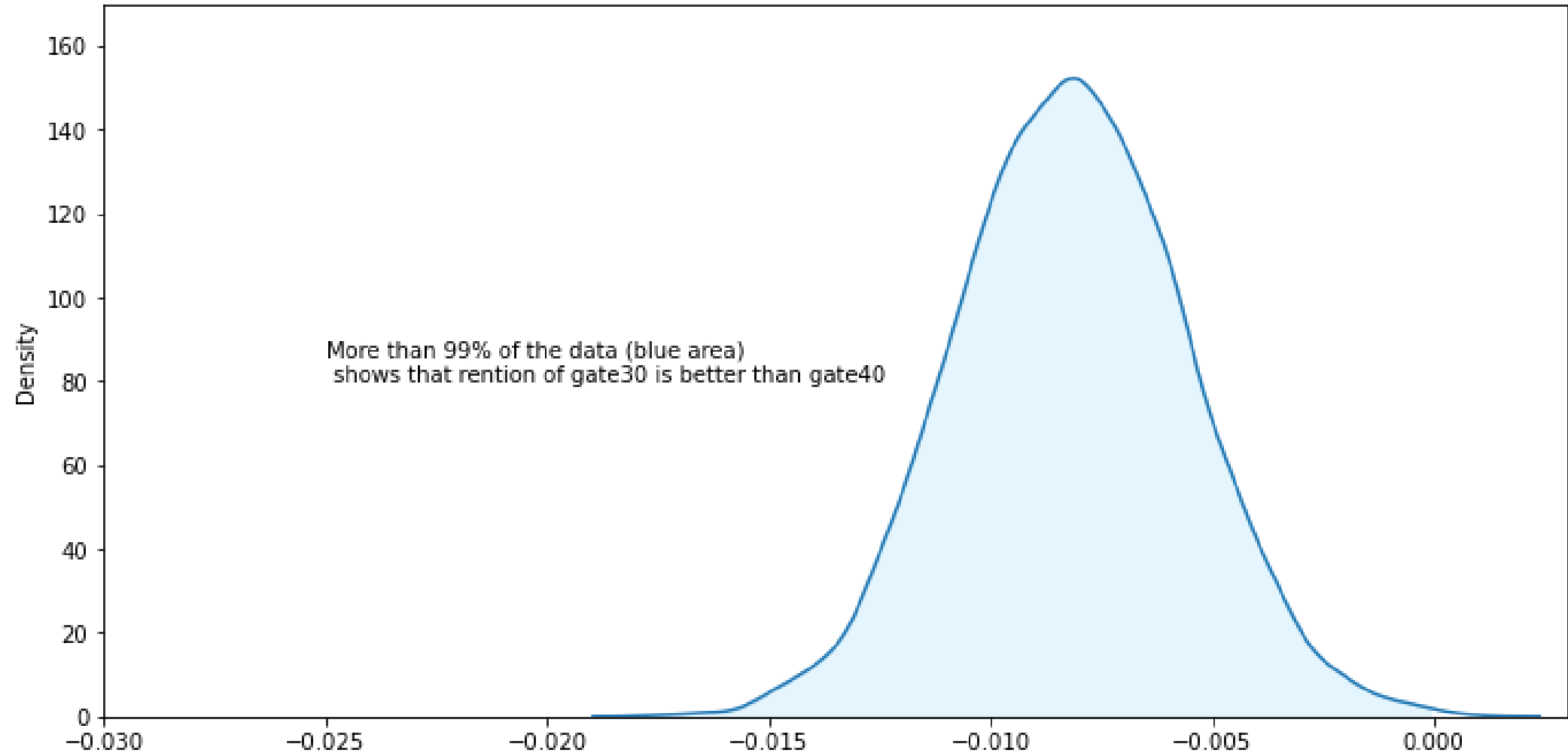




0.95% of probability shows that retention in gate30 is greater than gate40
We are almost 100% sure that the retention rate of gate30 is 0.96 times better than gate40.
Therefore, gate30 will have a better retention rate compared to gate40

THE DIFFERENCE BETWEEN GATE30 AND 40

~~Comparison between gate30 and gate40~~





CONCLUSION

The results from Chi-square and Bayesian tests show that gate30 has a better retention rate than gate40 after 7 days.