

# Problem A

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# Problem Description

Problem A involves simulating the way a trend will move through a closed group, how the members of the group will interact, and how the interactions will affect the other members decision on adopting the trend. One of the major questions this problem is interested in is how people will decide to confirm to match a majority group.

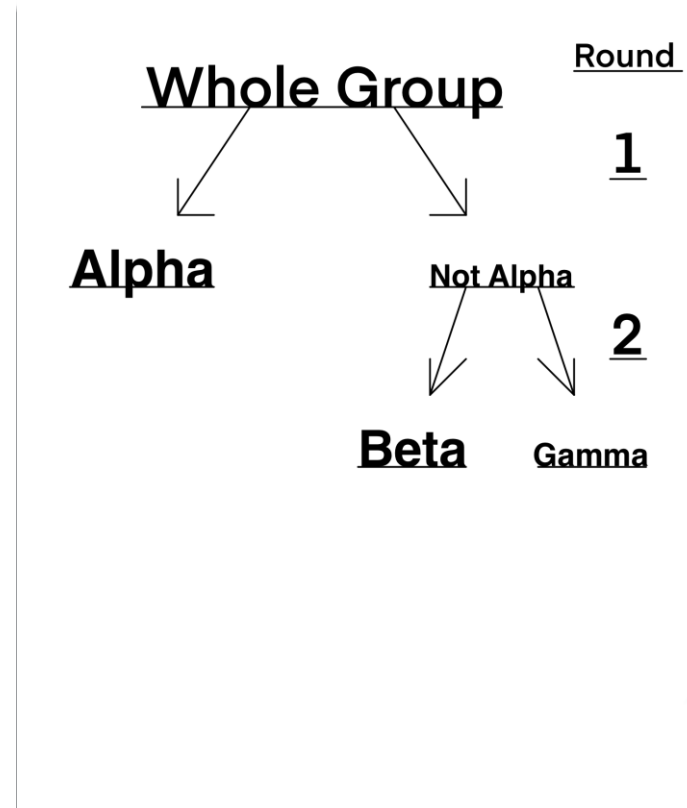
# Model Assumptions

- 1. All the members can be divided into 3 social groups: Alpha, Beta, and Gamma.
- 2. All group members can also be divided into 3 groups based on when they adopt the trend. They can be an Early Adopter, Non-Adopter, or Late Adopters.
- 3. All group members will be equally exposed to the trend(Beanies).

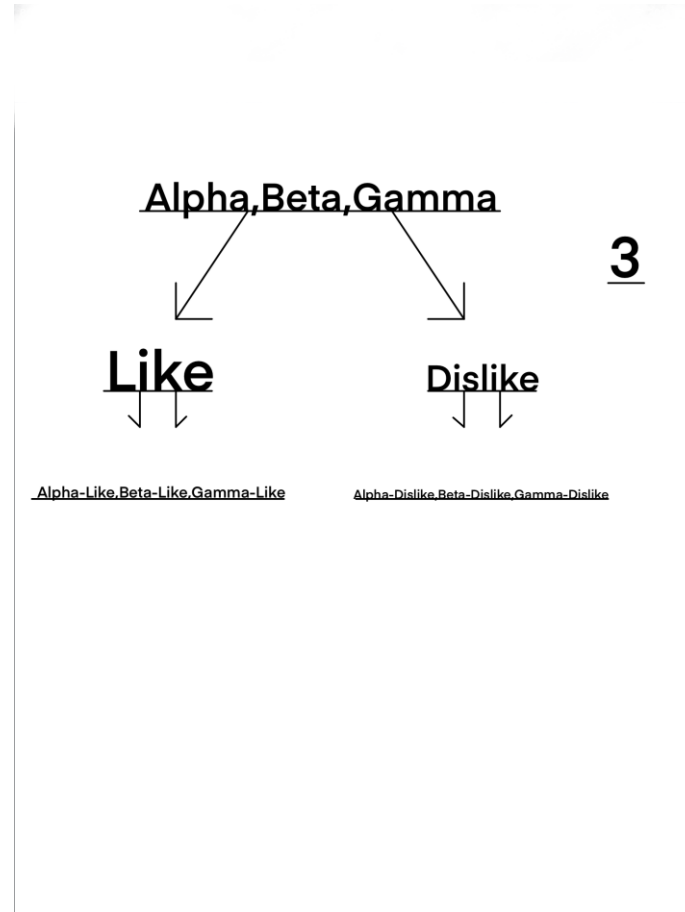
# Model Procedure

- The model uses a series of simulated coin flips to randomly determine social standings, group member's preferences, and whether or not the member has made a decision or will wait to see what the majority group decides.
- The model then use different sets of rules to determine what the undecided members will decide based on their predetermined preference, the majority group, and who makes up most of the majority group.
- The model then finally determines how many members ultimately adopt and don't adopt the trend.

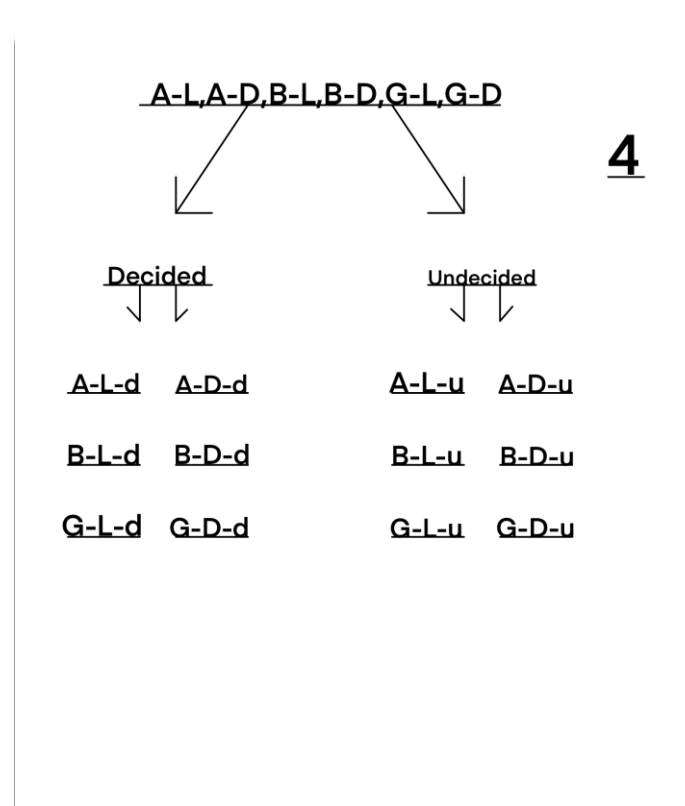
# Model Part 1: Determining Social Standing



# Model Part 2: Determining Preference



# Model Part 3: Determining Decision



# Calculating Ratio of EA and NA

$$\underline{A-L-d + B-L-d + G-L-d = EA}$$

$$\underline{A-D-d + B-D-d + G-D-d = NA}$$

**EA:NA**



# Calculating Undecided Members

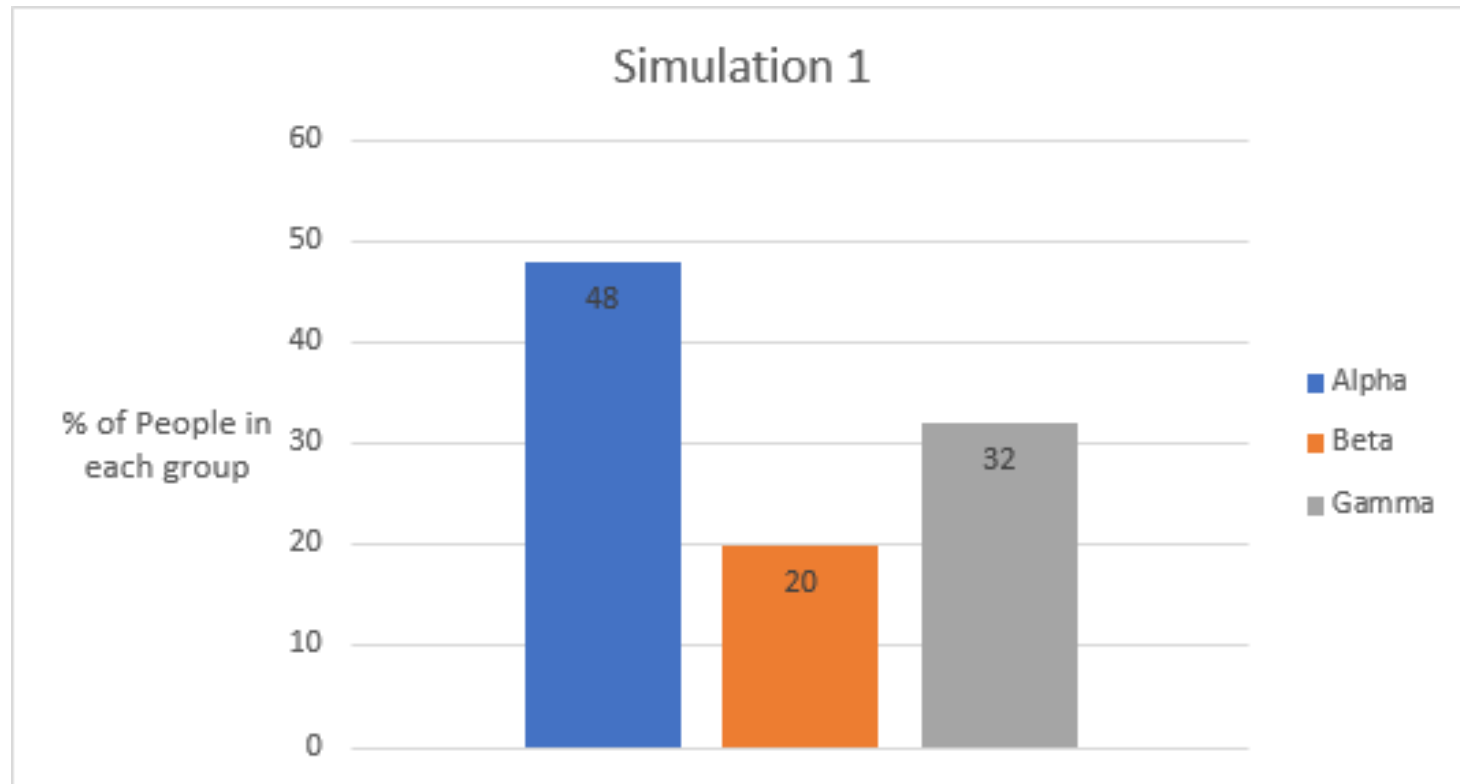
$$\underline{A-L-u + B-L-u + G-L-u = UL}$$

$$\underline{A-D-u + B-D-u + G-D-u = UD}$$

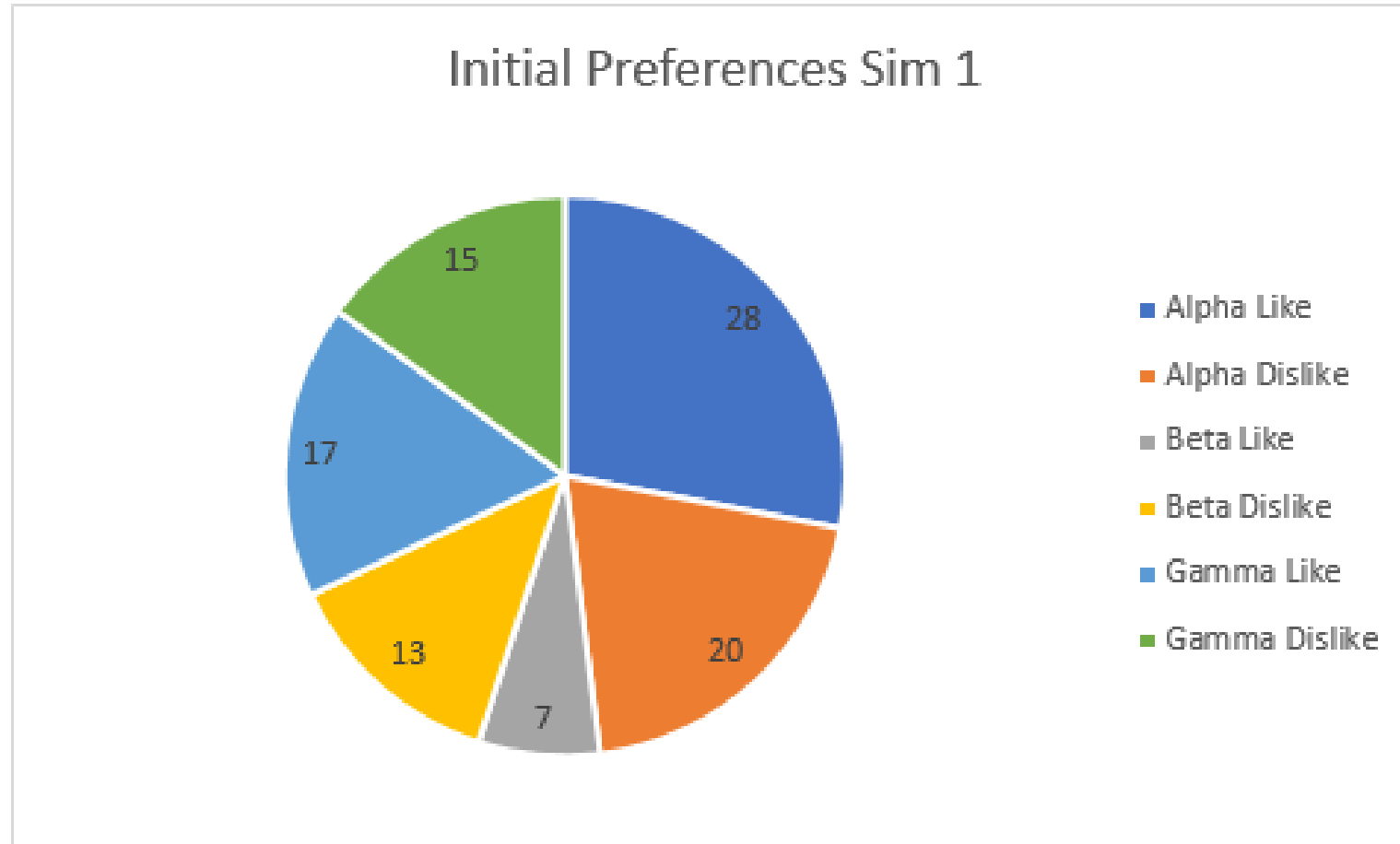
# Rule Set for Using Social Standing, Preference, and the Majority Group to Determine Late Decisions

<u>EA &gt; NA, UL</u>	<u>NA &gt; EA, UL</u>
<u>G% A B G</u>	<u>G% A B G</u>
<u>Adopt 1h 1h 2h</u>	<u>Adopt 2h 2h 1h</u>
<u>Else Does not adopt</u>	<u>Else Does not adopt</u>
<u>EA &gt; NA, UD</u>	<u>NA &gt; EA, UD</u>
<u>G% A B G</u>	<u>G% A B G</u>
<u>Adopt 1h 2h 2h</u>	<u>Adopt 2h 2h 2h</u>
<u>Else Does not adopt</u>	<u>Else Does not adopt</u>

# Result of Simulation 1 Social Standing

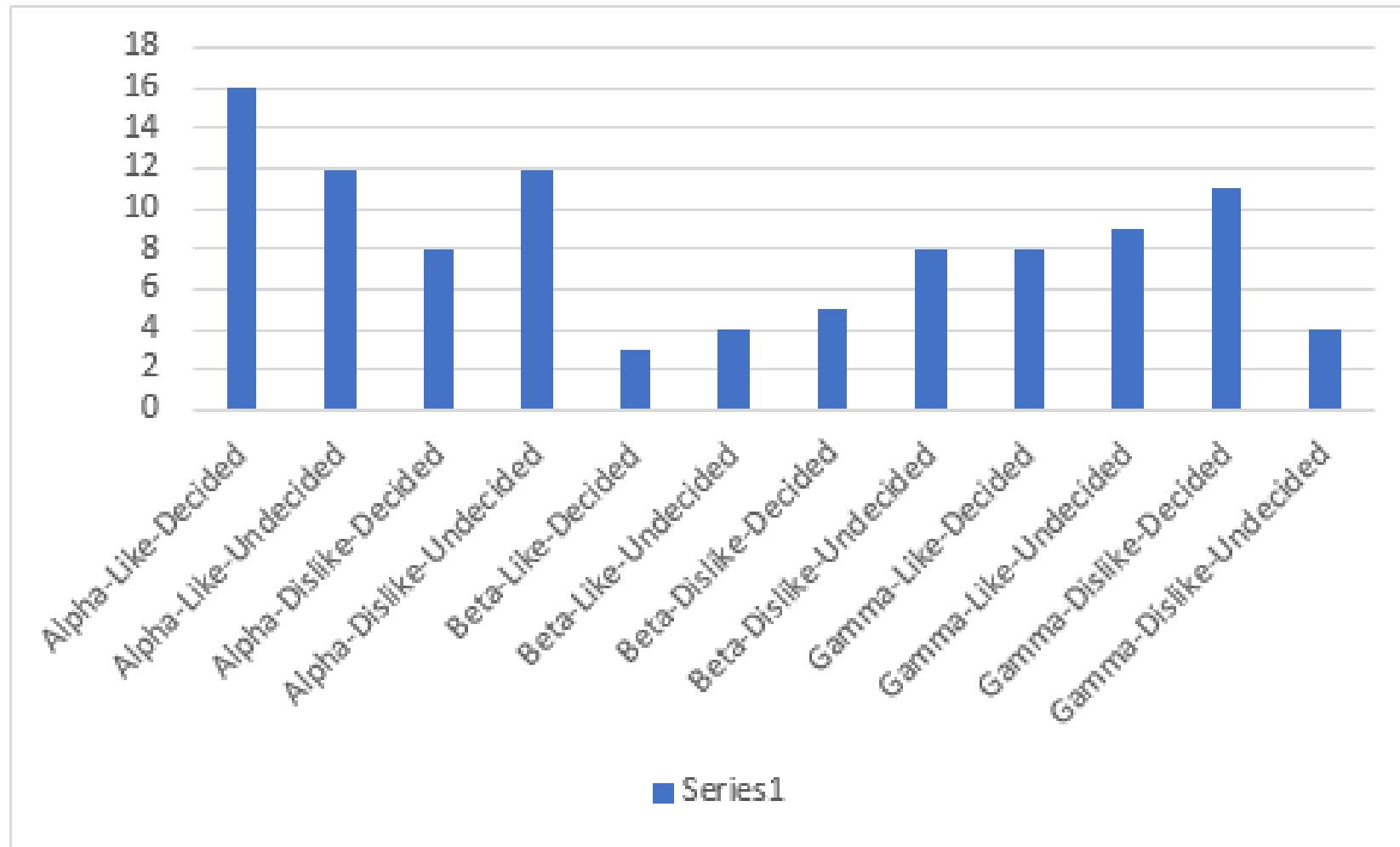


# Result of Simulation 1 Preference

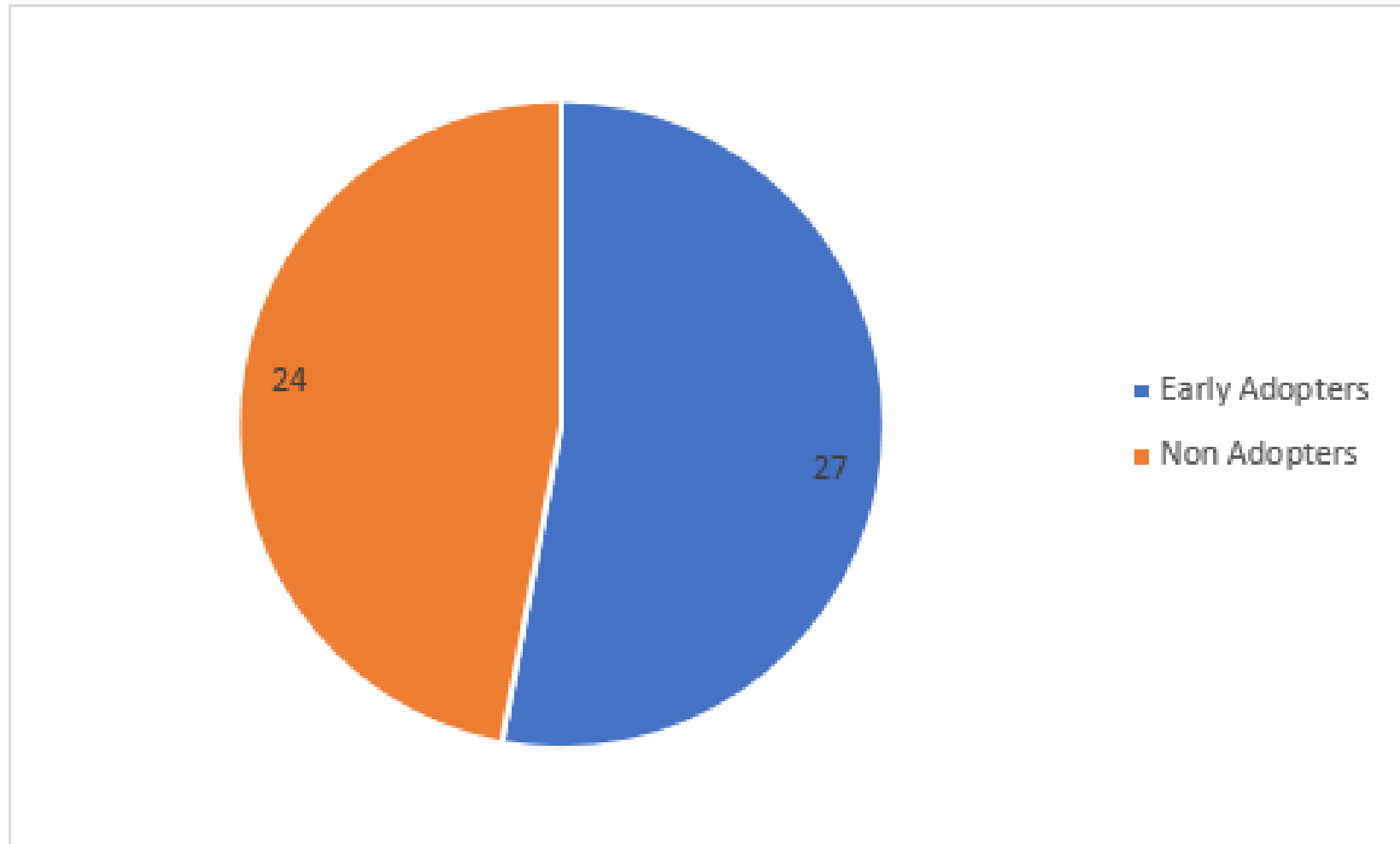


# Result of Simulation 1

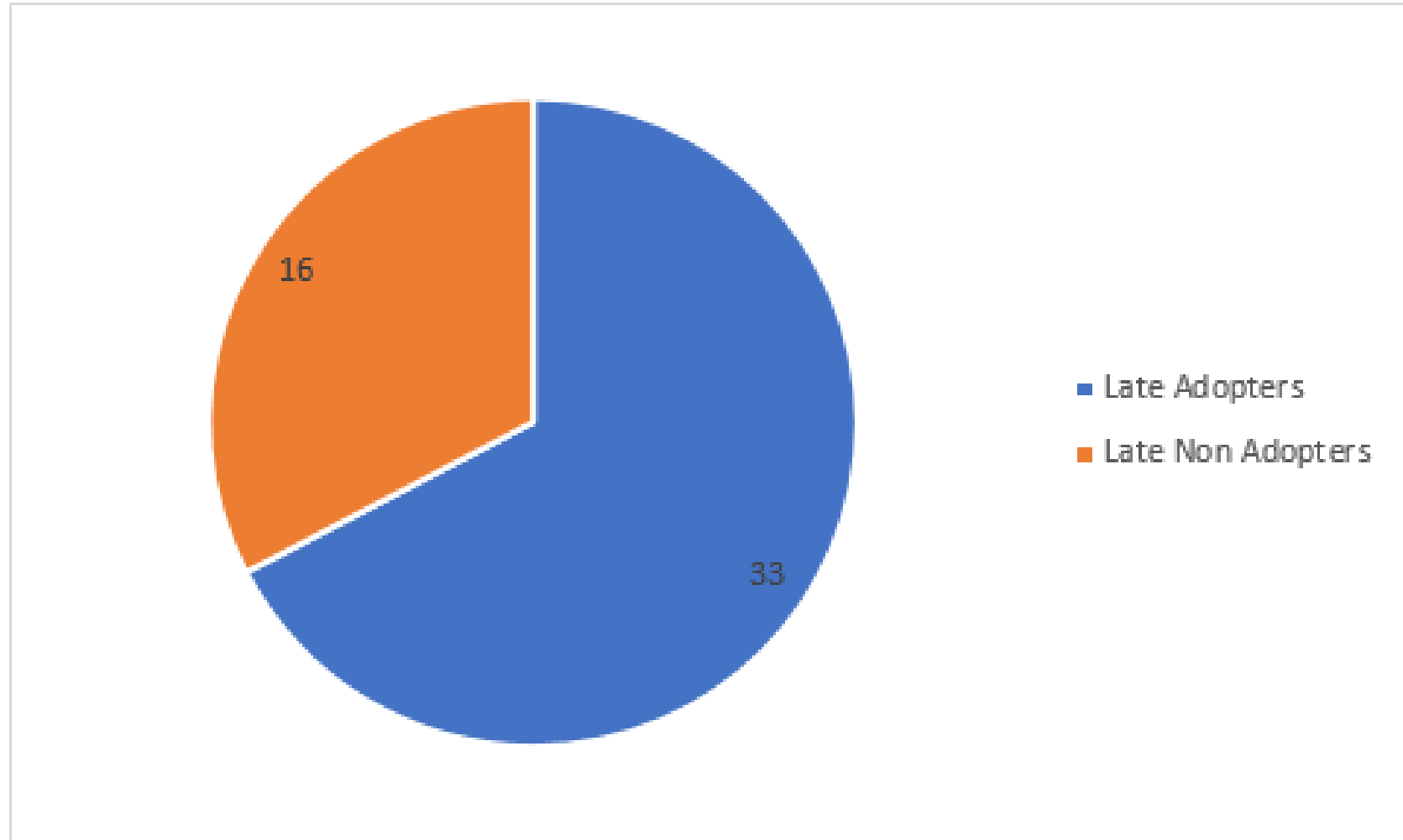
## Social Standing-Preference-Decision



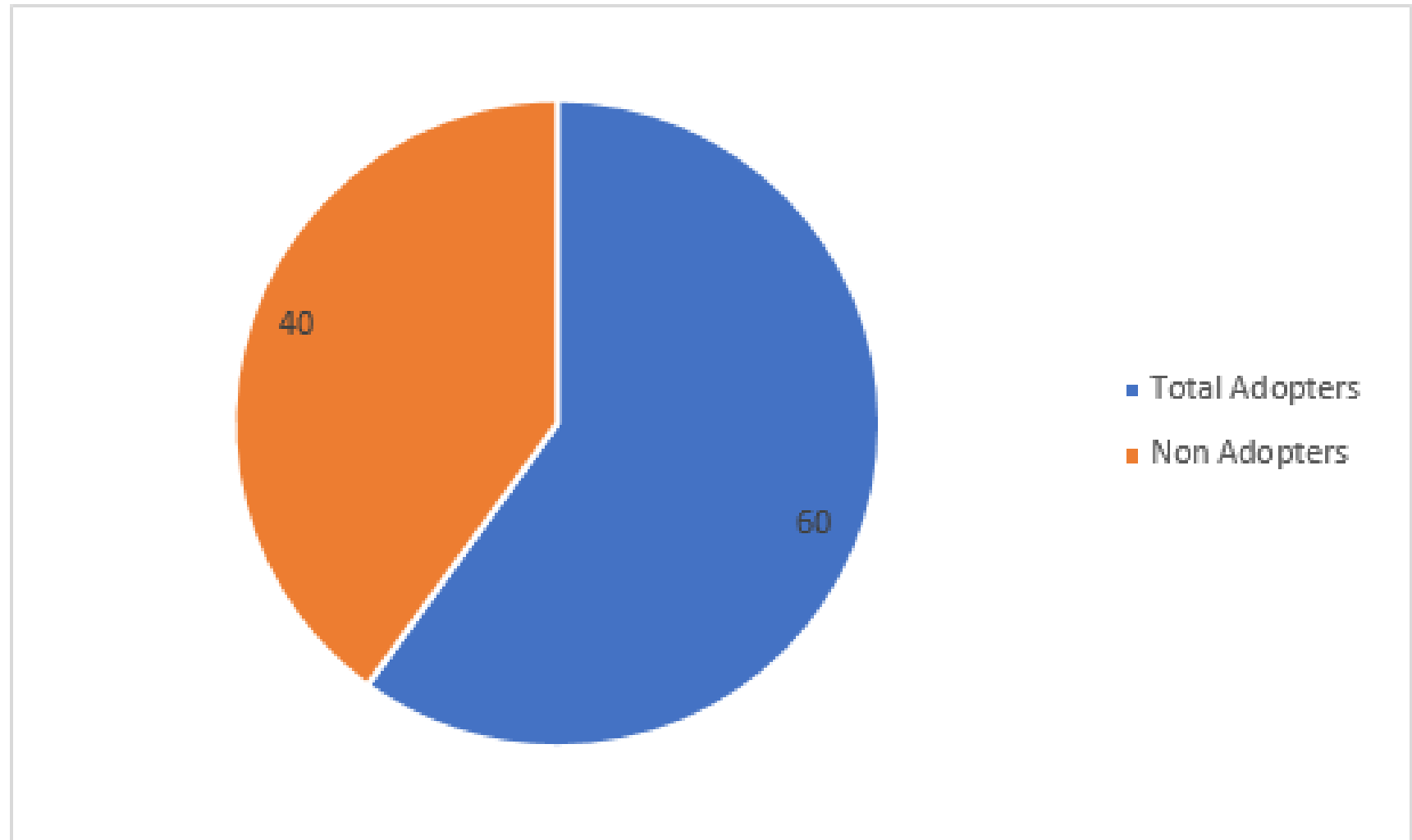
# Ratio of Early and Non Adopters (Members who have already made a decision)



# Ratio of Late Adopters and Late Non-Adopters

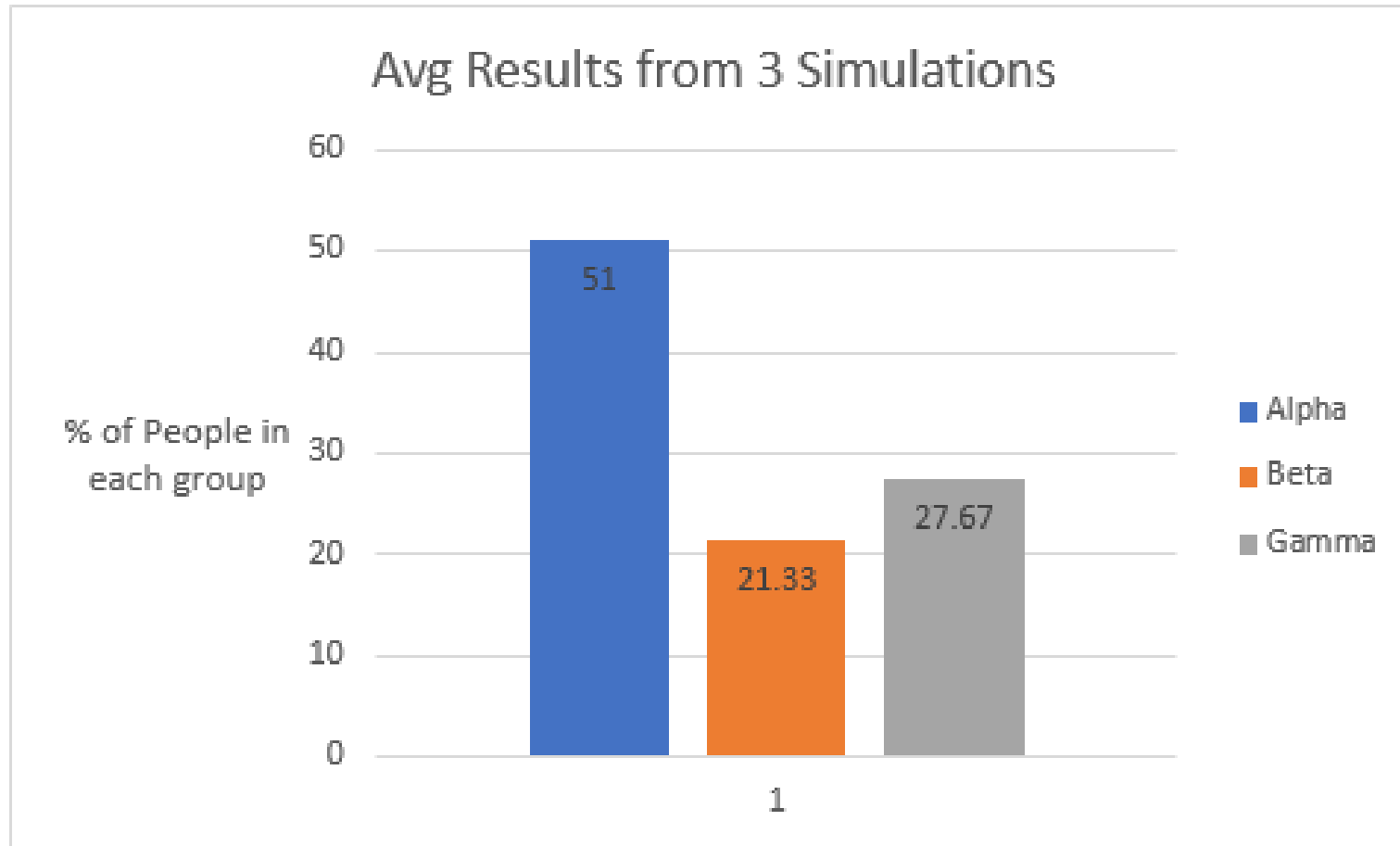


# Ratio of Total Adopters and Non-Adopters

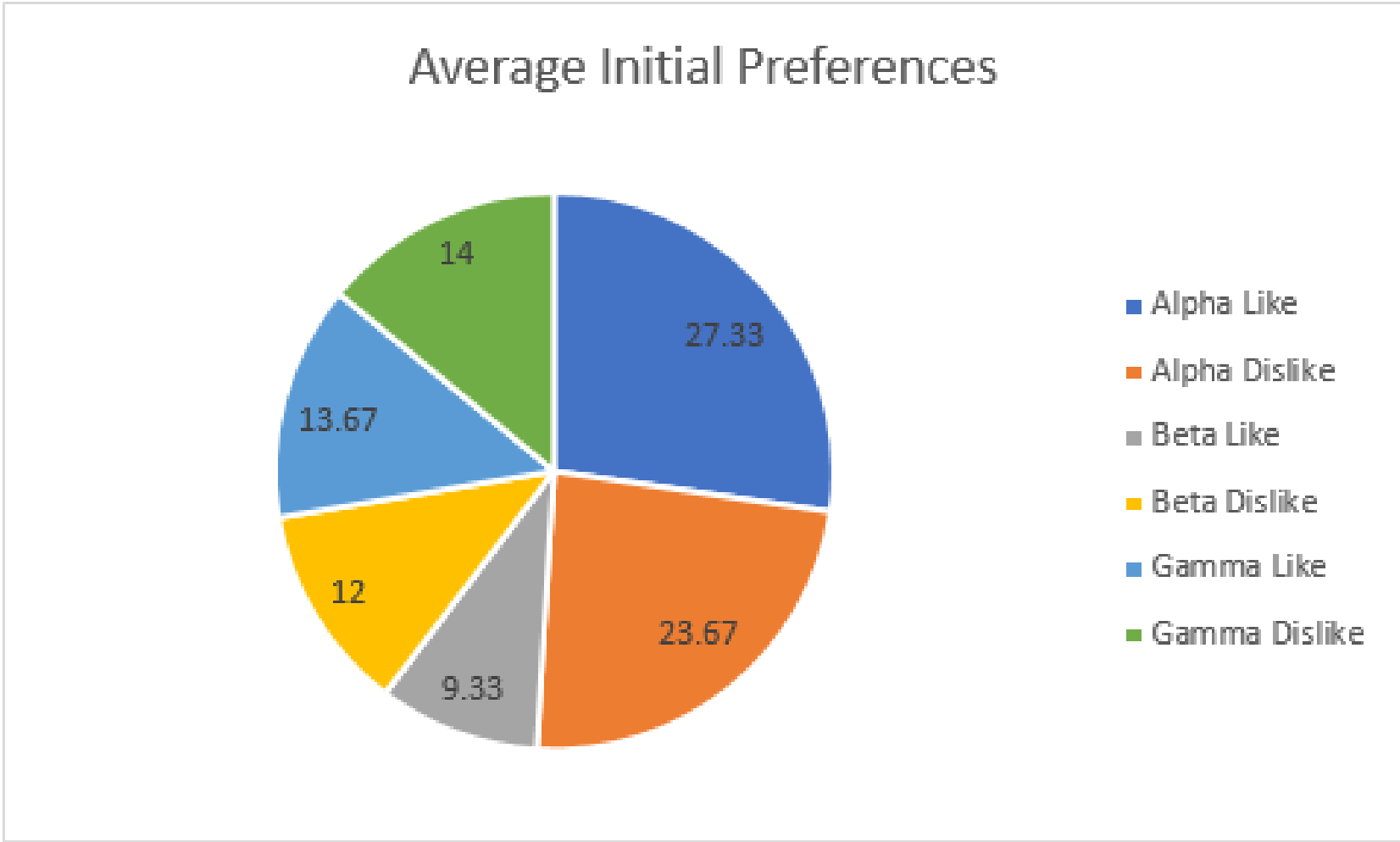




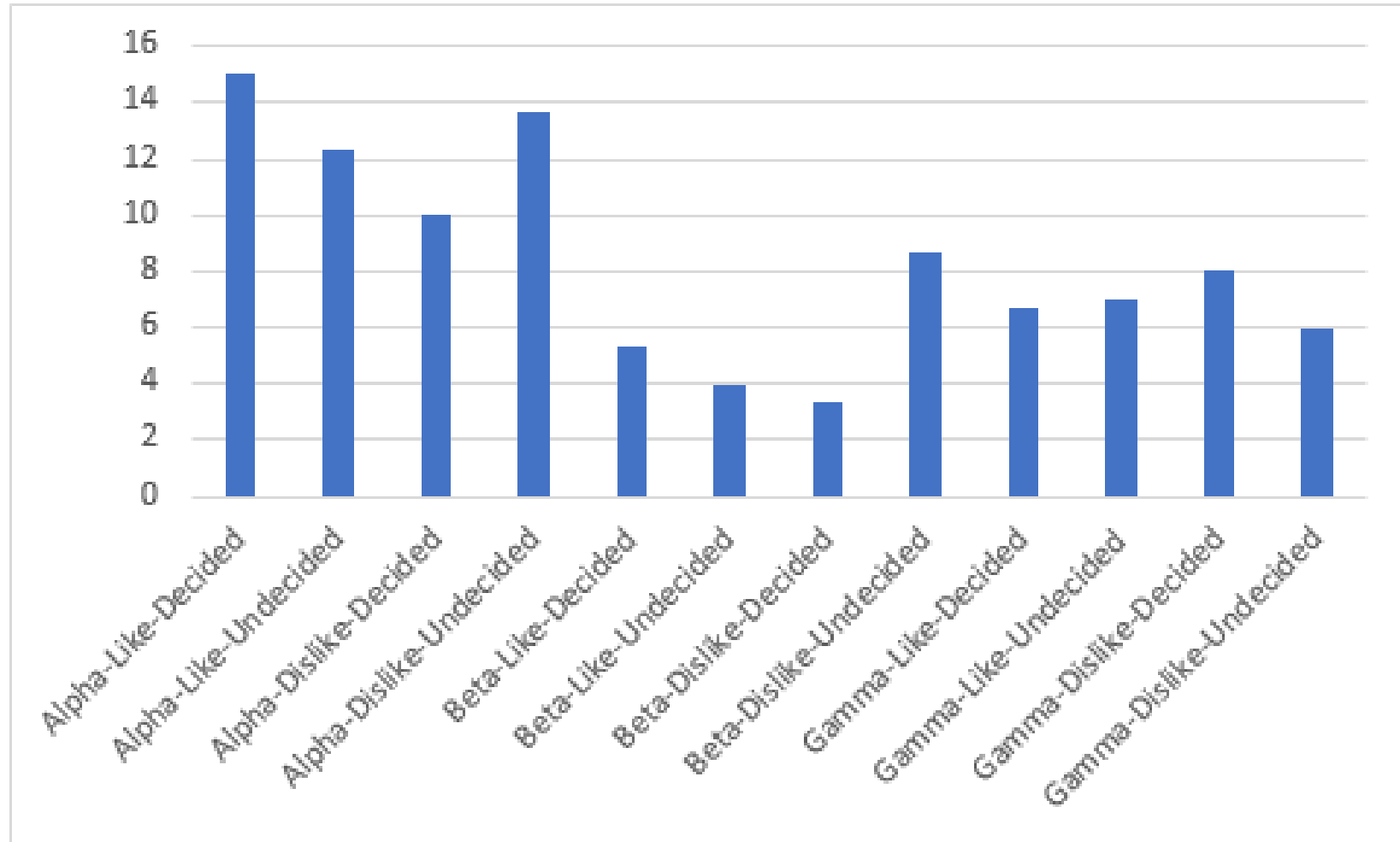
# Average Results of 3 Simulations: Social Standings



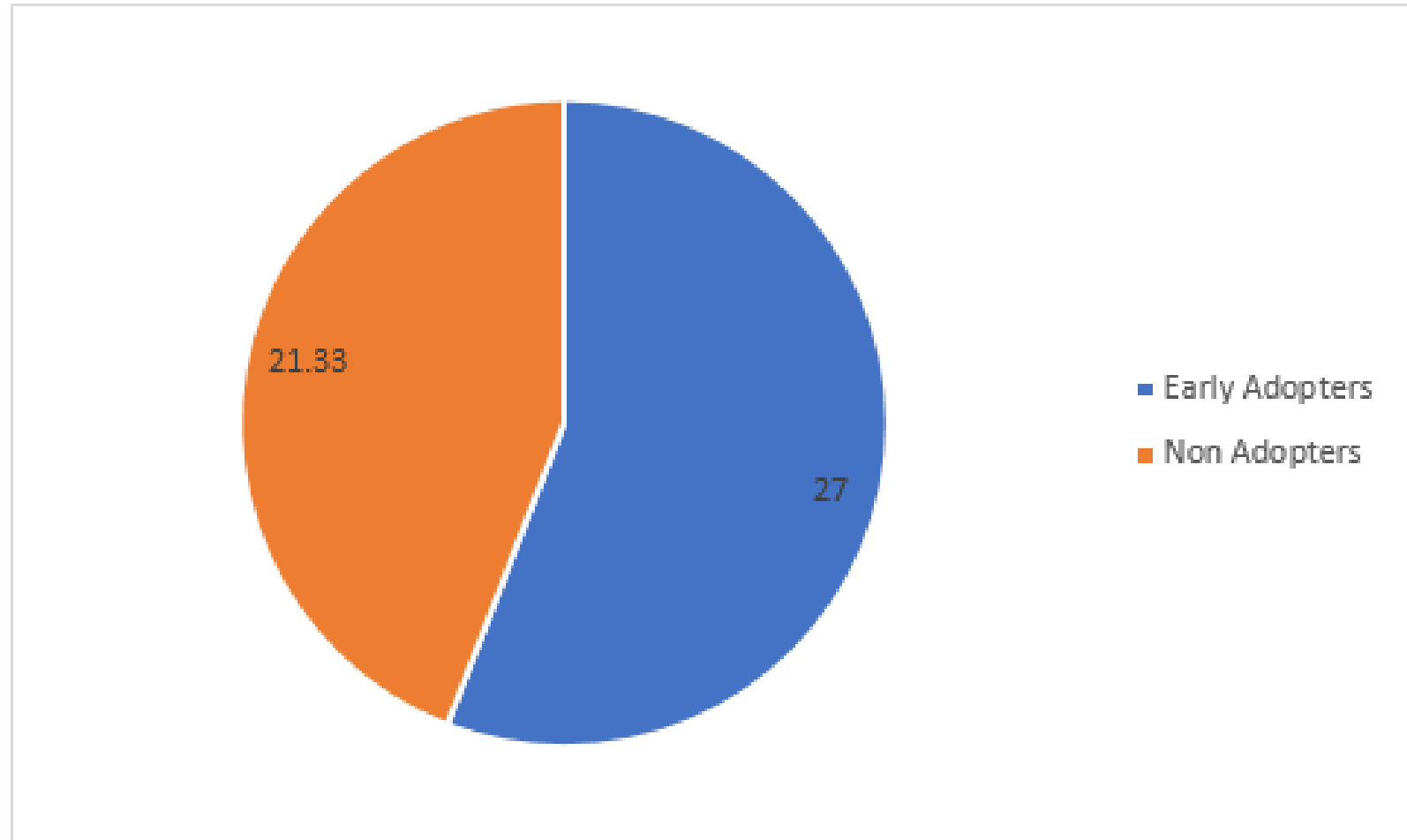
# Average Results: Preference



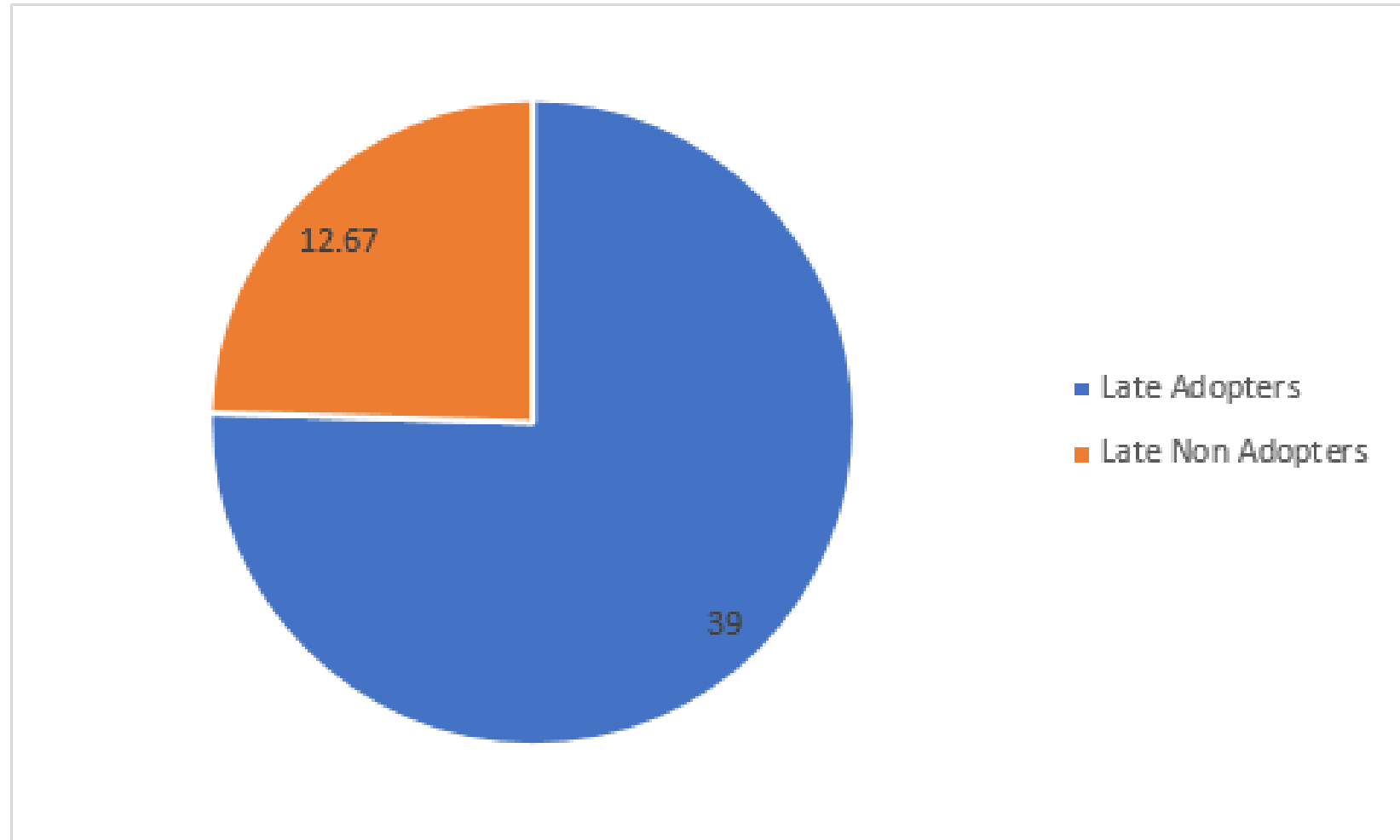
# Average Results: Social Standing-Preference-Decision



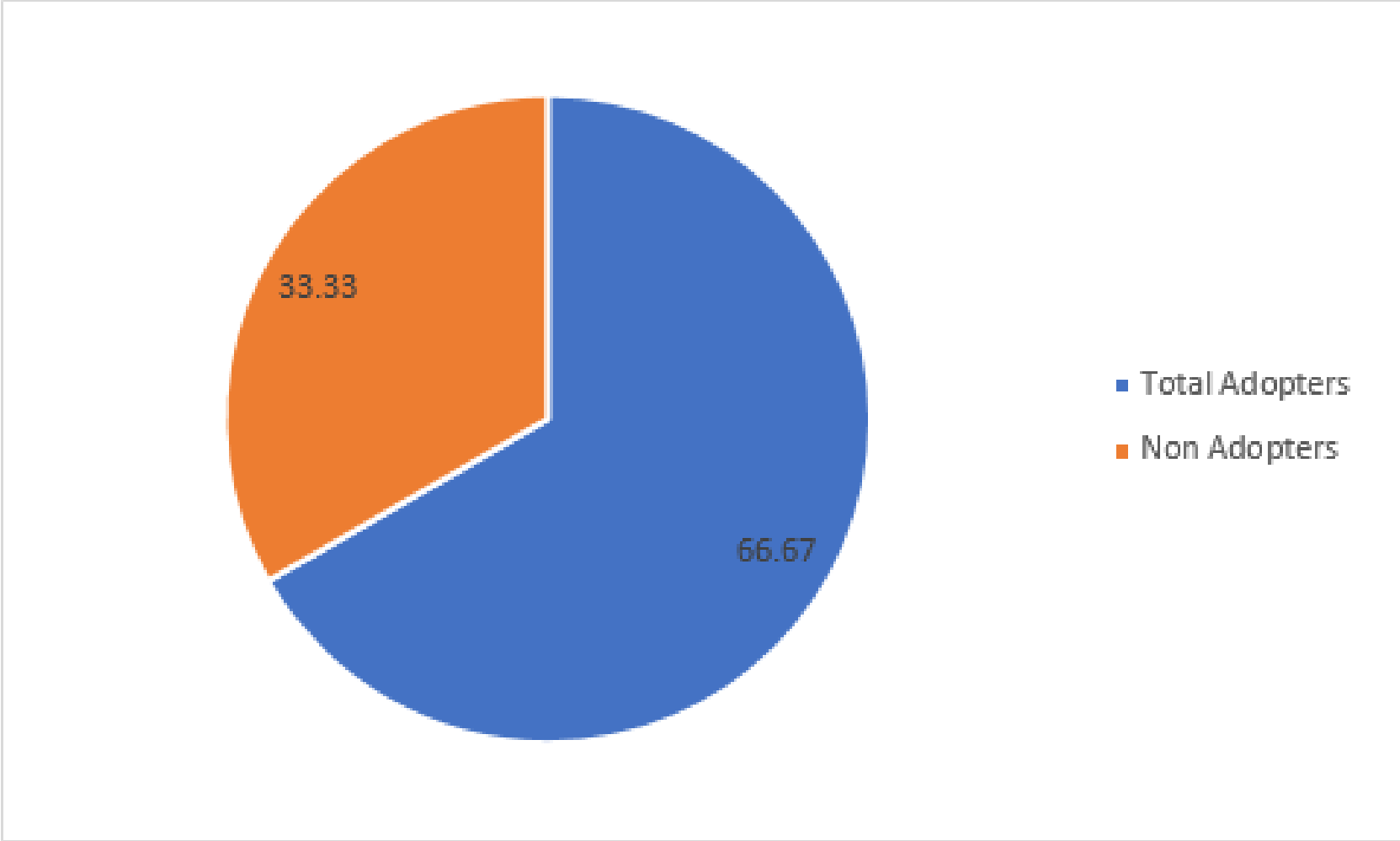
# Average Results: Ratio of Early and Non-Adopters



# Average Results: Ratio of Late Adopters and Non-Adopters



# Average Results: Total Adopters and Non-Adopters



# Conclusion

- We found that the ratio between the average amount of adopters and non-adopters was 2:1. We can then assume that 2 out of 3 people will adopt the trend, which is beanies in our model's case. We also found that there are usually two waves of adoption. The early adopter wave, and the secondary adopter wave.
- We expect the group of adopters to be similar in appearance, with some variance due to personal preferences, such as color preference.