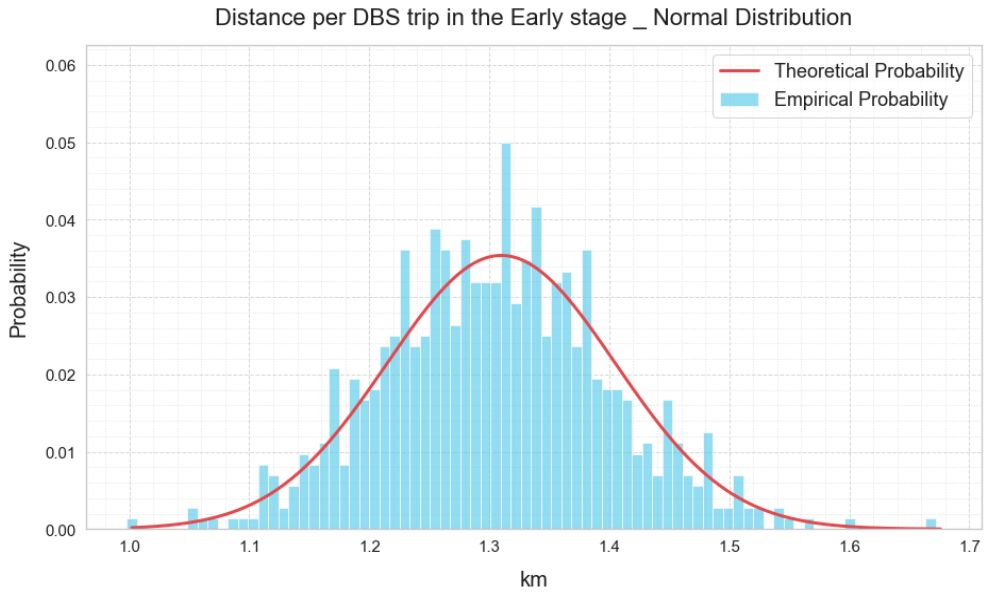
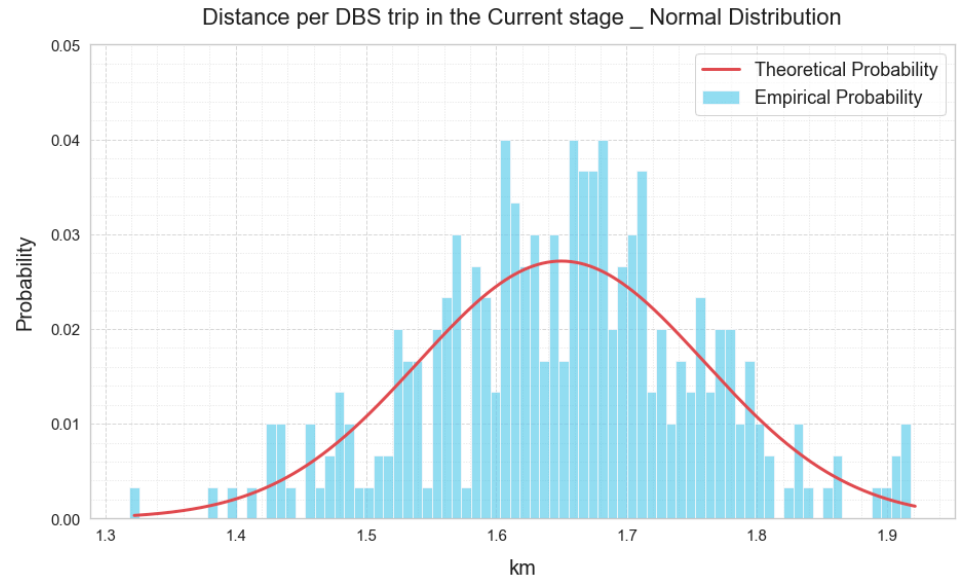
Operating data of DBS market in Beijing

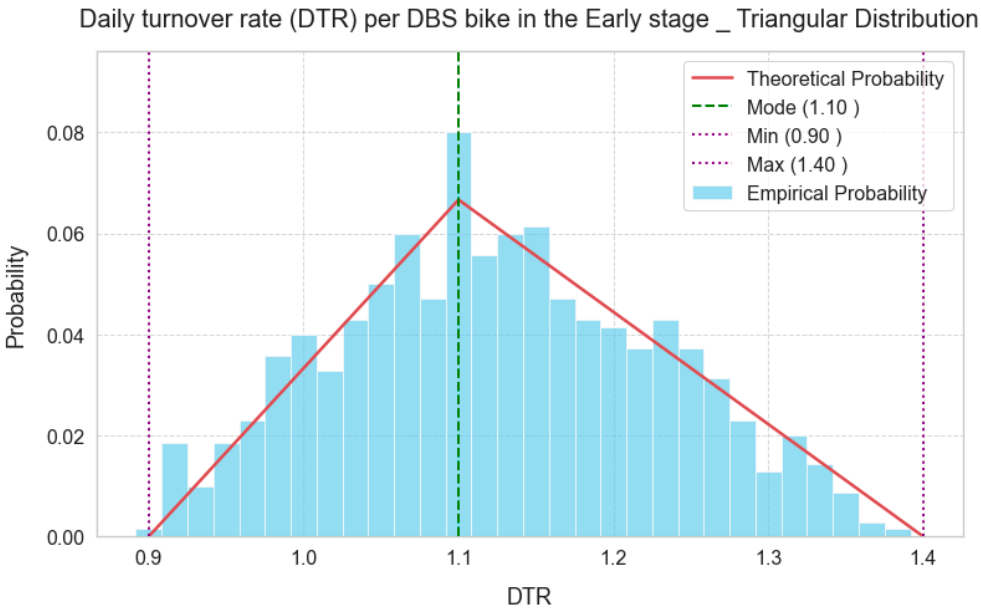
Parameters such as the average distance of each DBS trip, the daily turnover rate (DTR) of each DBS bike, and the average rebalancing distance required per kilometer of DBS travel were obtained by fitting the actual daily operational data from the Beijing DBS system in 2018 (early stage) and from May to December 2023 (current stage). These data mainly came from the official data interface (i.e., API) of the DBS operators (Meituan, Hellobike, Mobike).

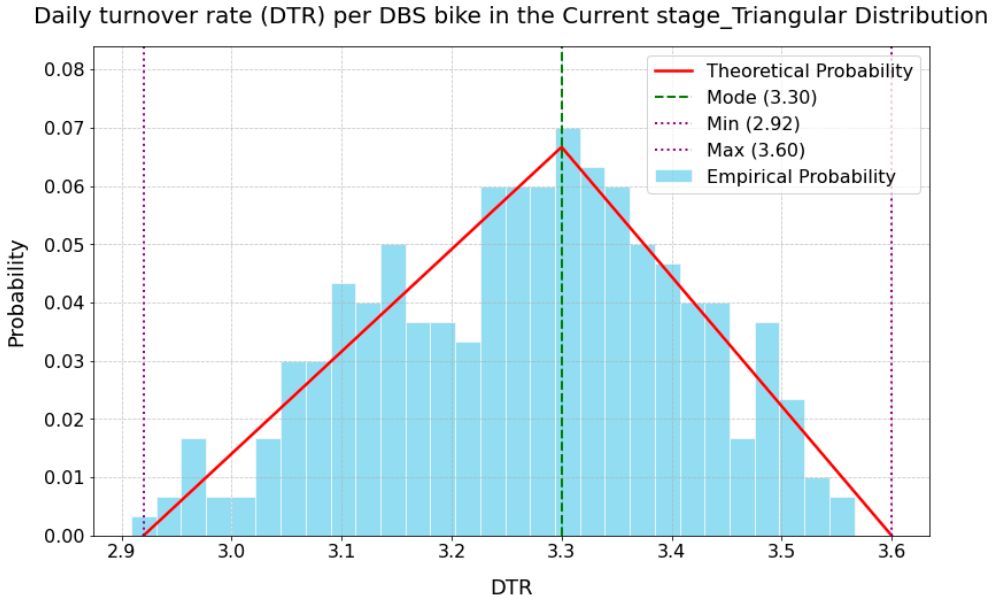
The parameter distribution of the weights of DBS bike at different periods was determined based on statistics from 300 DBS bikes of various brands randomly selected from the market and manufactures in both the early and current stages.

The detailed dataset is not publicly available due to the commercially sensitive information contained and the non-disclosure agreement with the bike sharing operators, but the data needed to reproduce this work is available from the corresponding author on reasonable requests.

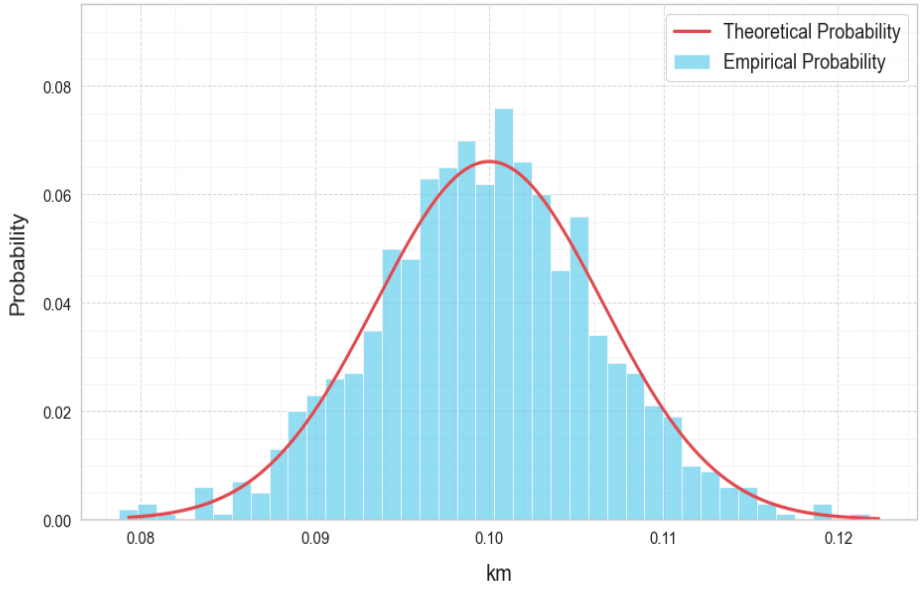




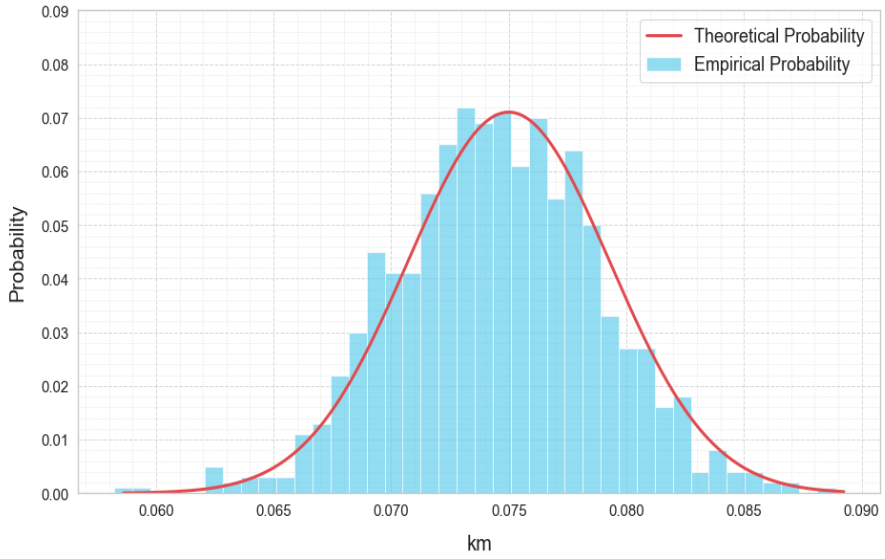

Daily turnover rate (DTR) per DBS bike in the Early stage _ Triangular Distribution
Theoretical Probability
Mode (1.10)
Min (0.90)
Max (1.40)
Empirical Probability
Probability
0.00
0.02
0.04
0.06
0.08
0.9
1.0
1.1
1.2
1.3
1.4
DTR

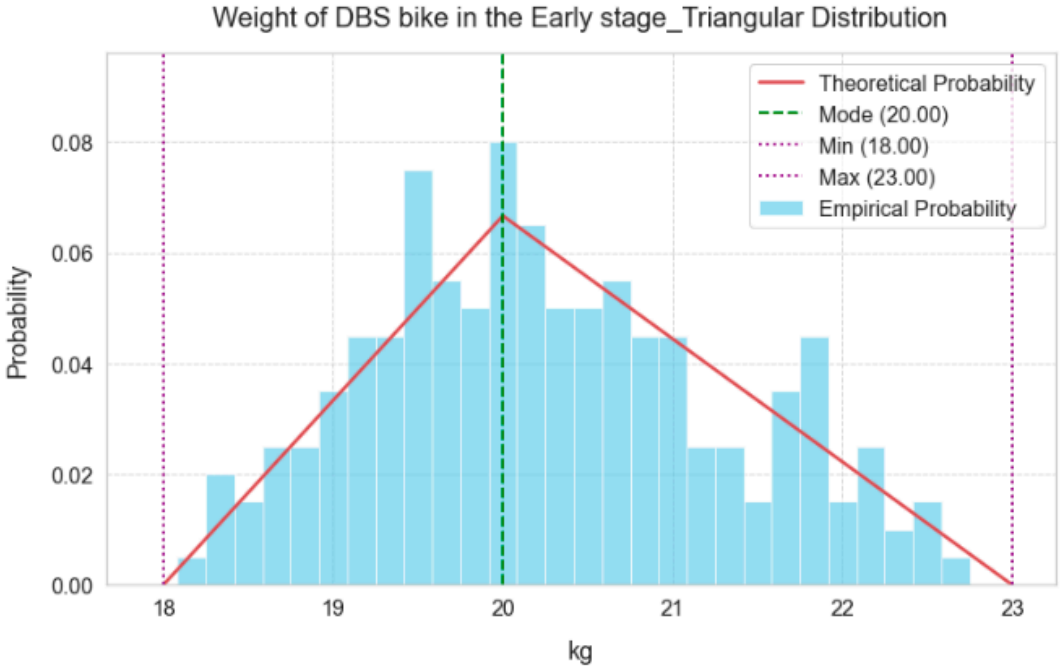

Daily turnover rate (DTR) per DBS bike in the Current stage_Triangular Distribution
Theoretical Probability
Mode (3.30)
Min (2.92)
Max (3.60)
Empirical Probability
Probability
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
2.9
3.0
3.1
3.2
3.3
3.4
3.5
3.6
DTR

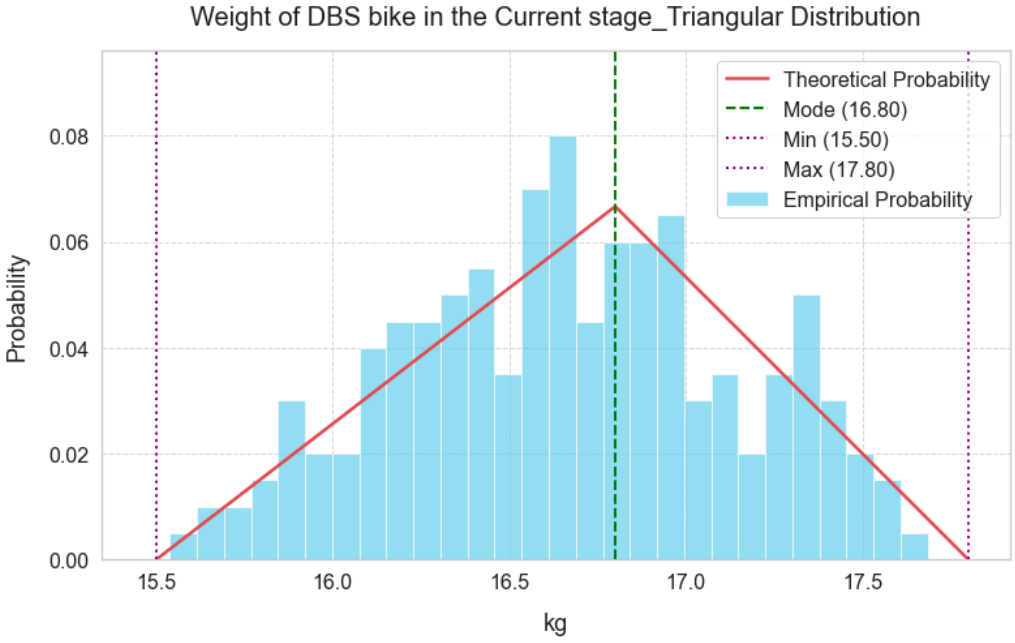
The average rebalancing distance required for one kilometer of DBS travel in the Early stage _ Normal Distribution



The average rebalancing distance required for one kilometer of DBS travel in the Current stage _ Normal Distribution




Weight of DBS bike in the Early stage_Triangular Distribution
Theoretical Probability
Mode (20.00)
Min (18.00)
Max (23.00)
Empirical Probability
Probability
0.00
0.02
0.04
0.06
0.08
18
19
20
21
22
23
kg


Weight of DBS bike in the Current stage_Triangular Distribution
Theoretical Probability
Mode (16.80)
Min (15.50)
Max (17.80)
Empirical Probability
Probability
0.00
0.02
0.04
0.06
0.08
15.5
16.0
16.5
17.0
17.5
kg