# Instruction for result reproduction in Table 1

In the first place, we describe the data needed for the result reproduction in Table 1 as follows.

1. The CSV file named “CustomerDataForTable1” gives the information of the 125 customers under each instance.

2. The CSV file named “DataForRelocationtime” gives the information of the relocation time between any two stations.

3. The CSV file named “DataForTangentPoint” gives the information of tangent points under each value of .

Next, we take as an example to illustrate how to obtain the corresponding results in Table 1.

1. Given the value of , i.e., , we obtain the corresponding information of tangent points from the file named “DataForTangentPoint”.

2. Based on the obtained information of tangent points, the information of relocation time in the file named “DataForRelocationtime”, and the information of the 125 customers under instance 1 in the file named “CustomerDataForTable1”, we solve the model [FS-II]. We obtain the corresponding objective value (i.e., UB), the elapsed time (i.e., Elapsed Time), and the solutions for decision variables.

3. With the solutions for decision variables achieved from the model [FS-II], we obtain the objective value of the model [FS] (i.e., LB). Then we can acquire the value of Gap, i.e., UB-LB, and the value of Relative Gap, i.e., (UB-LB)/UB.

4. In a similar way, we solve the other four instances.

5. After solving the five instances, the averaged UB, LB, Gap, Relative Gap, and Elapsed Time will be the final results in Table 1.

# Instruction for result reproduction in Figure 4

In the first place, we describe the data needed for the result reproduction in Figure 4 as follows.

1. The CSV file named “CustomerDataForFigure4” gives the information of a specific number of customers under each instance.

2. The CSV file named “DataForRelocationtime” gives the information of the relocation time between any two stations.

3. The CSV file named “DataForTangentPoint” gives the information of tangent points under each value of .

Next, we take the number of customers being 25 as an example to illustrate how to obtain the corresponding results in Figure 4.

1. We obtain the corresponding information of tangent points when from the file named “DataForTangentPoint”.

2. Based on the obtained information of tangent points, the information of relocation time in the file named “DataForRelocationtime”, and the information of the 25 customers under instance 1 in the file named “CustomerDataForTable1”, we solve the model [FS-II]. We obtain the relative optimality gap (i.e., RelativeGap\_Gurobi) and the elapsed time (i.e., ElapsedTime).

3. In a similar way, we solve the other four instances.

4. After solving the five instances, the averaged RelativeGap\_Gurobi and ElapsedTime will be the final results in Figure 4.

# Instruction for result reproduction in Table 2 and Figure 5

In the first place, we describe the data needed for the result reproduction in Table 2 and Figure 5 as follows.

1. The CSV file named “CustomerDataForTable2&Figure5” gives the information of a specific number of customers under each instance.

2. The CSV file named “DataForRelocationtime” gives the information of the relocation time between any two stations.

3. The CSV file named “DataForTangentPoint” gives the information of tangent points under each value of .

Next, we take the number of customers being 25 as an example to illustrate how to obtain the corresponding results in Table 2 and Figure 5.

1. We obtain the corresponding information of tangent points when from the file named “DataForTangentPoint”.

2. Based on the obtained information of tangent points, the information of relocation time in the file named “DataForRelocationtime”, and the information of the 25 customers under instance 1 in the file named “CustomerDataForTable2&Figure5”, we solve the model [FSw], the model [FSw/o\_t], and the model [FSw/o\_s] separately. For the three models, we obtain the fleet size (i.e., FS), the objective value, the number of satisfied customers (i.e., #Satis), and solutions for decision variables.

3. For the model [FSw/o\_t], we calculate the profit loss caused by waiting stress of unserved customers and obtain Profit by subtracting it from the objective value. For the model [FSw/o\_s], we calculate the profit loss caused by waiting stress of all customers and obtain Profit by subtracting it from the objective value. Particularly, for the model [FSw], Profit equals to the objective value. We calculate the difference in fleet size (i.e., DiffFS), the ratio of profit (i.e., RatioProfit), and the difference in the number of satisfied customers (i.e., Diff#Satis) of the models [FSw/o\_t] and [FSw/o\_s] with respect to the model [FSw].

4. We calculate the number of waiting customers (i.e., #WaitingCustomer) and total waiting duration of all customers (i.e., TotalWaitingDuration) for the model [FSw] and the model [FSw/o\_s] respectively.

5. In a similar way, we solve the other four instances.

6. After solving the five instances, the averaged FS, Profit, #Satis, DiffFS, RatioProfit, and Diff#Satis will be the results in Table 2; the averaged #WaitingCustomer and TotalWaitingDuration will be the results in Figure 5.

# Instruction for result reproduction of sensitivity analysis

In the first place, we describe the data needed for the result reproduction of sensitivity analysis.

1. The CSV file named “CustomerDataForSensitivityAnalysis” gives the information of the 125 customers under each instance.

2. The CSV file named “DataForRelocationtime” gives the information of the relocation time between any two stations.

3. The CSV file named “DataForTangentPoint” gives the information of tangent points under each value of .

Next, we take waiting tolerance being 5 min as an example to illustrate how to obtain the corresponding results in Figure 6.

1. We obtain the corresponding information of tangent points when from the file named “DataForTangentPoint”.

2. Based on the obtained information of tangent points, the information of relocation time in the file named “DataForRelocationtime”, and the information of the 125 customers under instance 1 in the file named “CustomerDataForSensitivityAnalysis”, we solve the model [FS] and obtain fleet size (i.e., FS), the system profit (i.e., Profit), the number of waiting customers (i.e., #WaitingCustomer), and the total waiting duration of all customers (i.e., TotalWaitingDuration).

3. In a similar way, we solve the other four instances.

4. After solving the five instances, the averaged FS, Profit, #WaitingCustomer, and TotalWaitingDuration will be the results in Figure 6.

# Instruction for result reproduction in Figure 9

In the first place, we describe the data needed for the result reproduction in Figure 9 as follows.

1. The CSV file named “CustomerDataForFigure9” gives the information of the 125 customers under each instance.

2. The CSV file named “DataForRelocationtime” gives the information of the relocation time between any two stations.

3. The CSV file named “DataForTangentPoint” gives the information of tangent points under each value of .

Next, we take charging rate being 0.2 as an example to illustrate how to obtain the corresponding results in Figure 9.

1. We obtain the corresponding information of tangent points when from the file named “DataForTangentPoint”.

2. Based on the obtained information of tangent points, the information of relocation time in the file named “DataForRelocationtime”, and the information of the 125 customers under instance 1 in the file named “CustomerDataForFigure9”, we solve the model [FS-II]. We obtain the relative optimality gap (i.e., RelativeGap\_Gurobi) and the elapsed time (i.e., ElapsedTime).

3. In a similar way, we solve the other four instances.

4. After solving the five instances, the averaged RelativeGap\_Gurobi and ElapsedTime will be the final results in Figure 9.