



Memorandum

TO: Mr. Vince Rosanova
Rosanova & Whitaker LTD

FROM: Stephen B. Corcoran, P.E., PTOE
Director of Traffic Engineering

DATE: March 5, 2023 **Revised March 22, 2023**

RE: Trip Generation and Parking Analysis
Proposed Rental Townhomes
Naperville, Illinois

This memorandum provides a trip generation and parking analysis of a proposed 19-unit rental townhome development on the east side of Naperville-Wheaton Road in Naperville, Illinois.

Development Plan

The development site is located on two lots at 5S275 and 5S311 Naperville-Wheaton Road on the east side of the street. They are currently vacant and were occupied by single-family homes in the past. A single access drive is proposed on Naperville-Wheaton Road leading into a parking lot with 40 surface parking spaces. It will have 19 townhomes available for rent.

Naperville-Wheaton Road is a city collector street between Ogden Avenue (US 34) and Plank Road to the south. It has one travel lane in each direction and a 35 mph speed limit. At its signalized intersection with Ogden Avenue, there is a northbound shared left/thru/right-turn lane. It is under the jurisdiction of the City of Naperville. It carries 8,900 vehicles per day (2020) two-way.

Public Transportation

Public transportation is available to this site from PACE Bus Route 722 - Ogden Avenue, that provides weekday and Saturday service between the Metra BNSF Railway Naperville Station and Yorktown Center in Lombard, operating via Ogden Avenue and Warrenville Road.

Residents will be able to walk along the existing sidewalk system on the east side of Naperville-Wheaton Road to Ogden Avenue.

Trip Generation

Trip estimates were made for the proposed townhomes and the neighboring uses to the north. Site trips for each use was based on from data in the Institute of Transportation Engineer's Trip Generation 11th Ed. Manual which contains trip generation surveys of similar uses. The size of the Aldi grocery store and Starbucks were estimated from aerial photographs. Copies of the trip calculations are attached.

The resulting site traffic volumes are shown in **Table 1**. Traffic generated by the 19 townhomes will be low with one new vehicle trip every six minutes and will have a negligible impact of traffic conditions. The two commercial uses to the north of the site generate significantly more traffic than the proposed townhome development. Copies of the trip generation calculations are attached.

Naperville Parking Requirement

The City of Naperville's Zoning Code requires two parking spaces per each dwelling unit plus 0.25 guest parking spaces per unit for any development including five or more units. The proposed project with 19 townhomes is required to have 43 parking spaces or 2.25 spaces per unit. A parking variation of 3 spaces would be required.

Table 1
Site Traffic Comparison

Use	Size	Weekday	Morning Peak			Evening Peak		
			In	Out	Total	In	Out	Total
Starbucks ⁽¹⁾	2,200 sq. ft.	1,174	95	95	190	43	43	86
Aldi's ⁽²⁾	16,200 sq. ft.	1,890	27	19	46	72	73	145
Townhomes ⁽³⁾	19 units	94	2	7	9	6	5	11

(1) ITE Land Use Code 937 – Coffee/Donut Shop with Drive-Thru

(2) ITE Land Use Code 850: Supermarket

(3) ITE Land Use Code 215- Single Family Attached

National Parking Data

National parking data for townhomes was used to estimate the parking demand for the site. The Institute of Transportation of Engineers' publication Parking Generation, 5th Edition provides parking survey data on townhomes (Land Use Code 220 – Multi-Family Low Rise) from around the country on a per bedroom basis. The 19 townhomes have 6 two-bedroom units and 13 three-bedroom units for a total of 51 bedrooms. The development would generate 35 vehicles or 0.69 vehicles per bedroom which would be satisfied by the proposed parking plan. The 35 vehicles include resident vehicles, visitors, and deliveries. Copies of the calculations are attached. Copies of the parking generation calculations are attached.

Vehicle Ownership

Census data was obtained from the American Community Survey (2017 to 2021) on the vehicle ownership at rental units within the City of Naperville by bedroom. Please note that this data set includes all rental units ranging from senior housing, apartment, and rental condominiums to single-family rental homes, so it is conservatively high. **Table 2** summarizes the data and results. For the bedroom counts, studio units were considered as one-bedroom units for the vehicle ownership. On a per bedroom basis, the 19 townhomes would generate 36 vehicles which would be satisfied by the proposed parking plan.

Table 2
Vehicle Ownership at
Rental Units in Naperville

Vehicles Available	Rental Units	Total Vehicles Available	Bedrooms Per Unit	Bedrooms	Total Bedrooms
0	1,617	0	0	726	726
1	6,888	6,888	1	4,125	4,125
2	4,133	8,266	2	6,316	12,632
3	605	1,815	3	1,493	4,479
4	202	808	4	685	2,740
5	88	440	5	188	940
Totals	13,533	18,217		13,533	25,642
Vehicle Ownership					0.71 veh/bedroom

Parking Recommendation

Table 3 shows the parking demand for the development based on the previously mentioned sources. EEA's recommendation is to provide 40 parking spaces which exceeds the parking survey results from several different sources. Please note that the development's parking supply will be regulated through the leases by the owner.

**Table 3
Parking Requirement Summary**

Source	Required Parking
Naperville Zoning Code	43 Spaces
Parking Provided	40 Spaces
Census Data	36 Spaces
ITE Parking Generation	35 Spaces

Appendix Material – Copies of the Institute of Transportation Engineers trip and parking generation calculation sheets used in this study are provided for reference.

Appendix

ITE Trip Generation and Parking Calculation Sheets

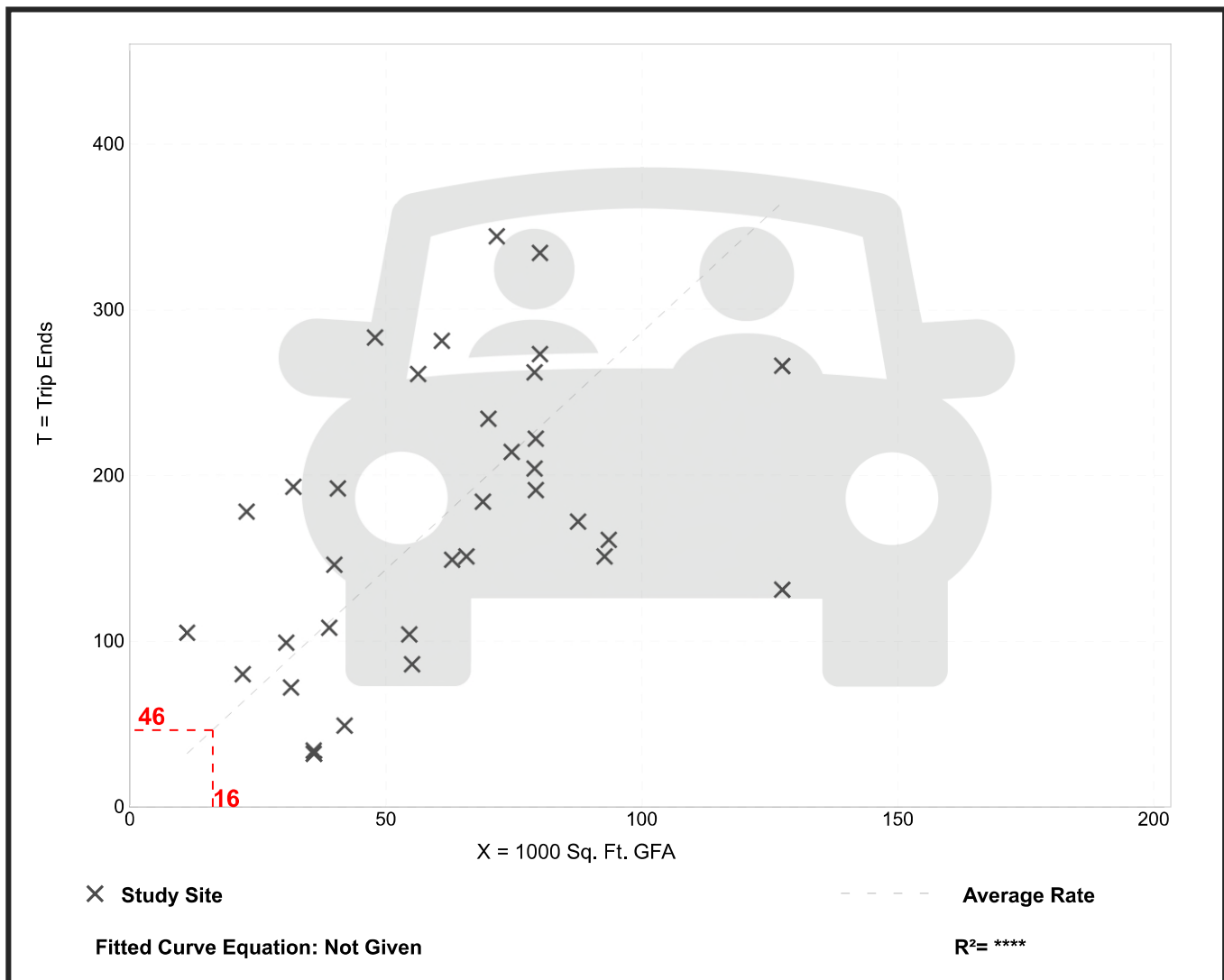
Supermarket (850)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 34
 Avg. 1000 Sq. Ft. GFA: 61
 Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.86	0.89 - 9.35	1.45

Data Plot and Equation



Supermarket (850)

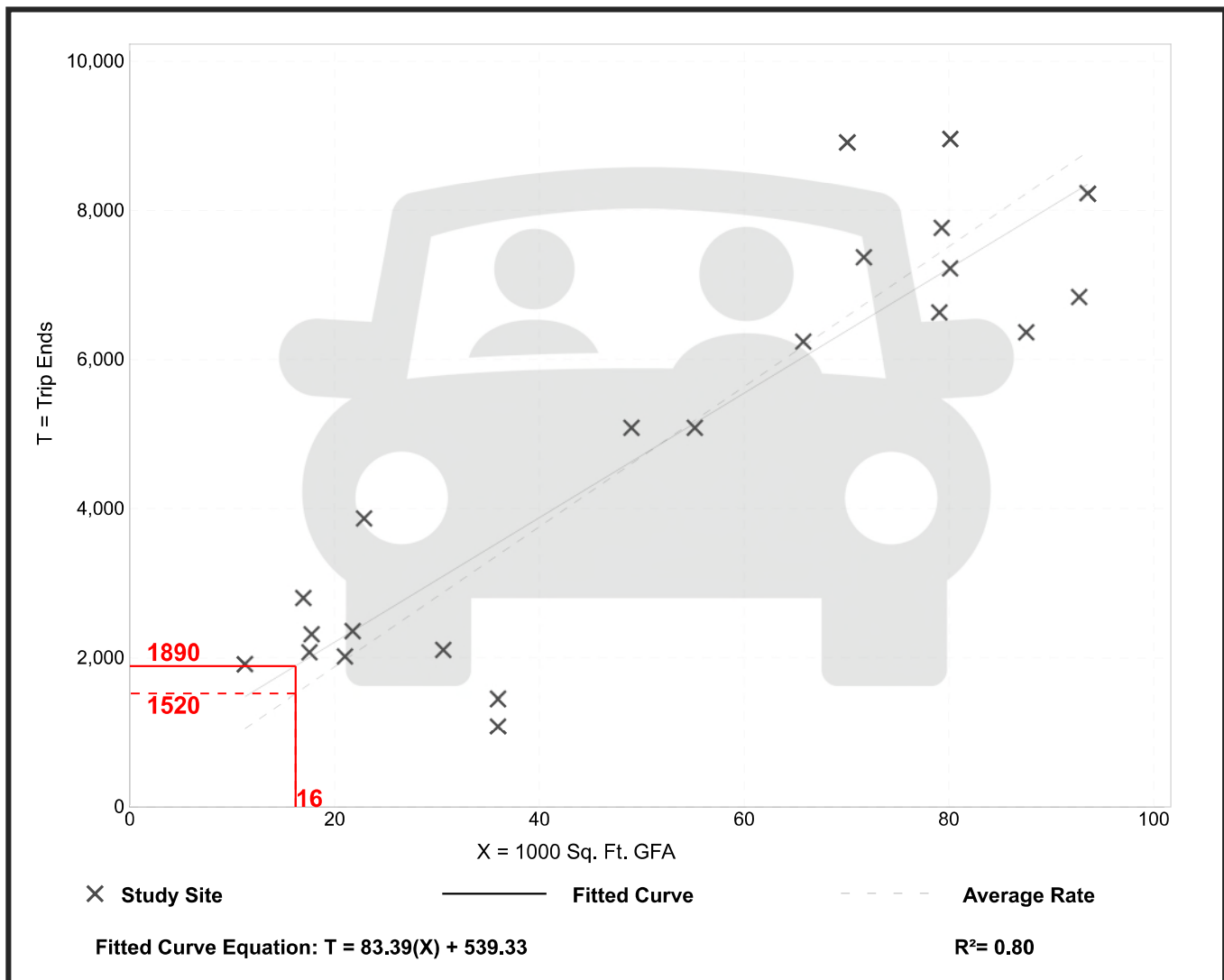
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 52
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
93.84	30.09 - 170.24	27.05

Data Plot and Equation



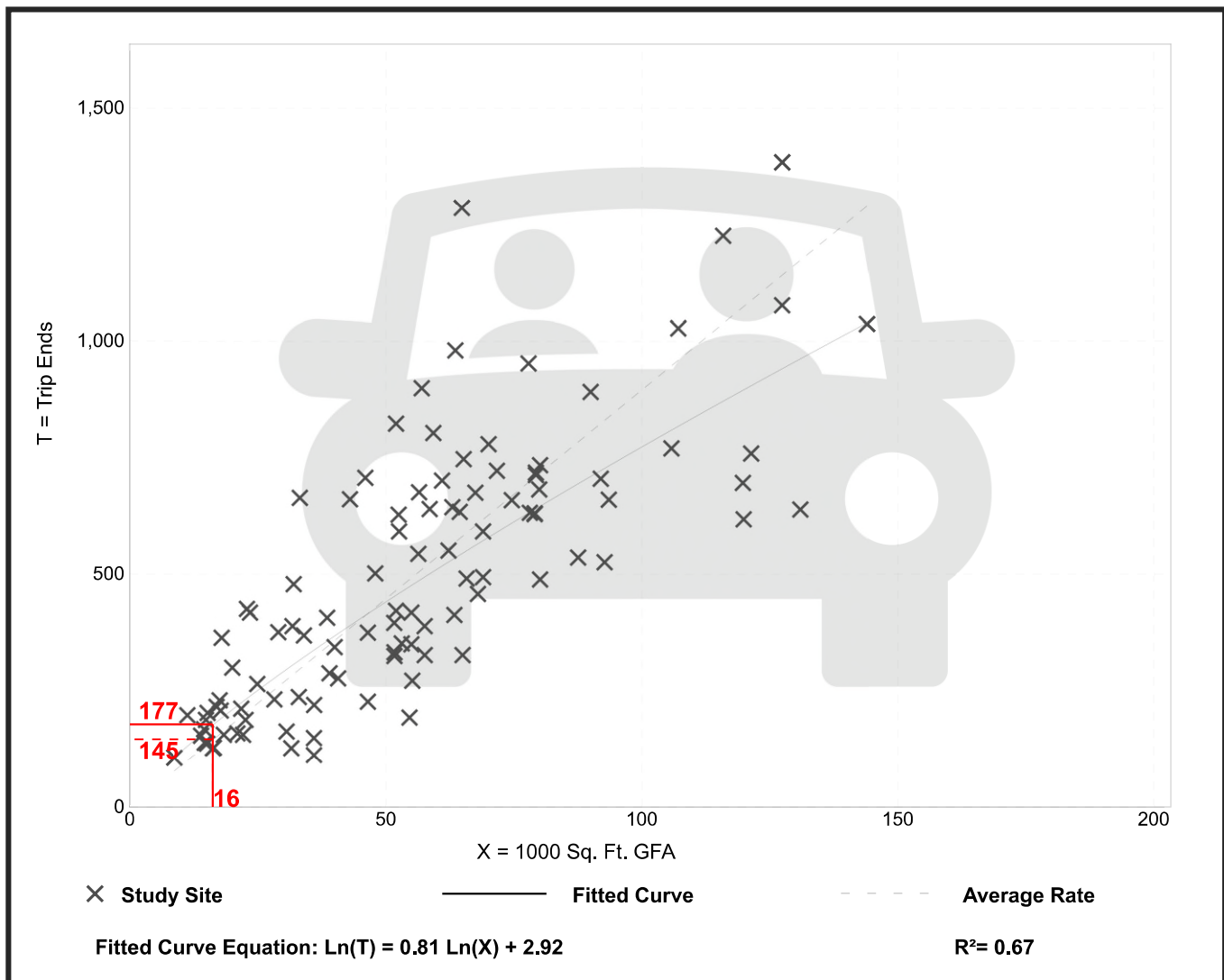
Supermarket (850)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 104
 Avg. 1000 Sq. Ft. GFA: 55
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
8.95	3.11 - 20.30	3.32

Data Plot and Equation



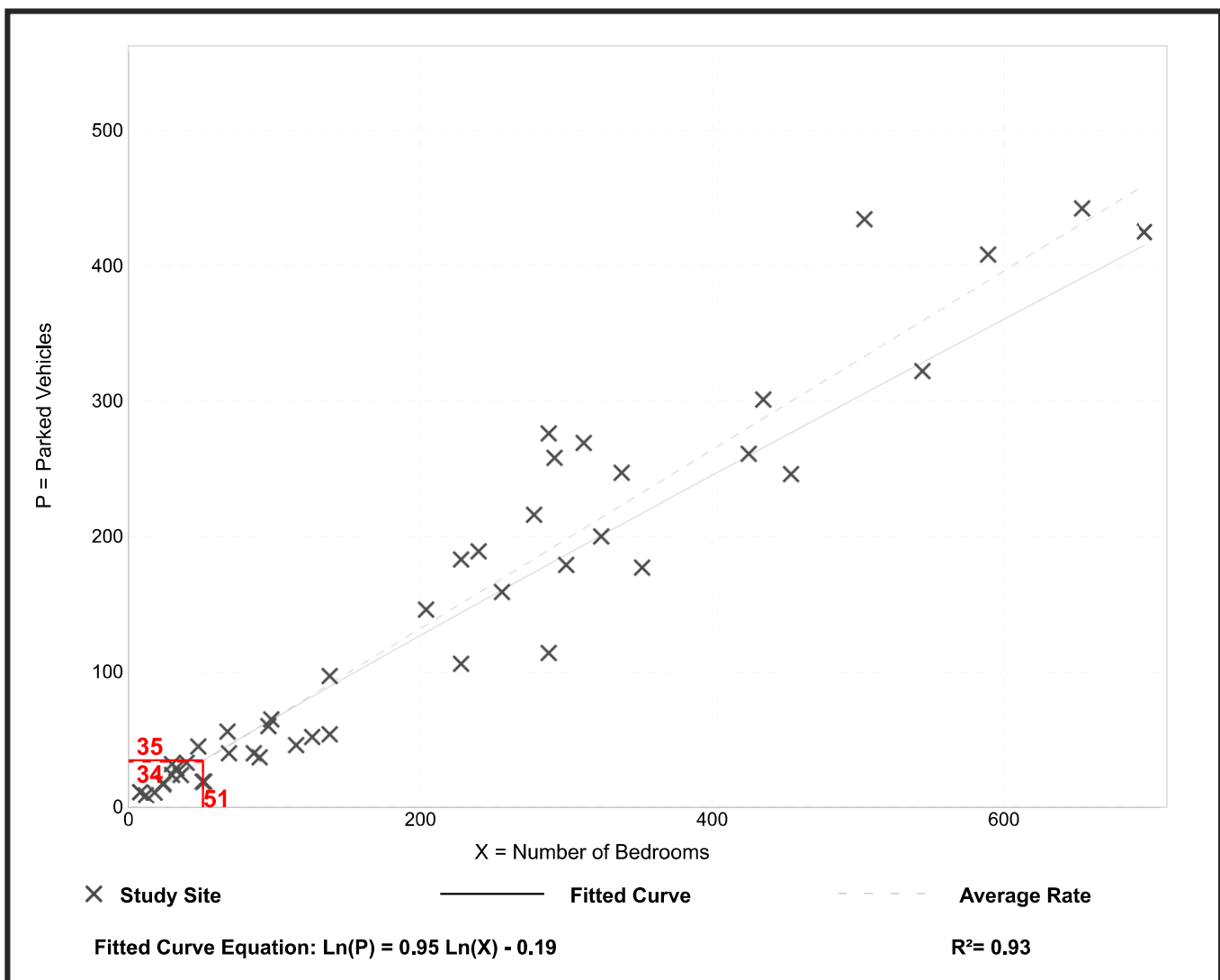
Multifamily Housing (Low-Rise) (220)

Peak Period Parking Demand vs: Bedrooms
 On a: Weekday (Monday - Friday)
 Setting/Location: General Urban/Suburban (no nearby rail transit)
 Peak Period of Parking Demand: 11:00 p.m. - 6:00 a.m.
 Number of Studies: 45
 Avg. Num. of Bedrooms: 215

Peak Period Parking Demand per Bedroom

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.66	0.37 - 1.38	0.61 / 0.86	0.62 - 0.70	0.15 (23%)

Data Plot and Equation



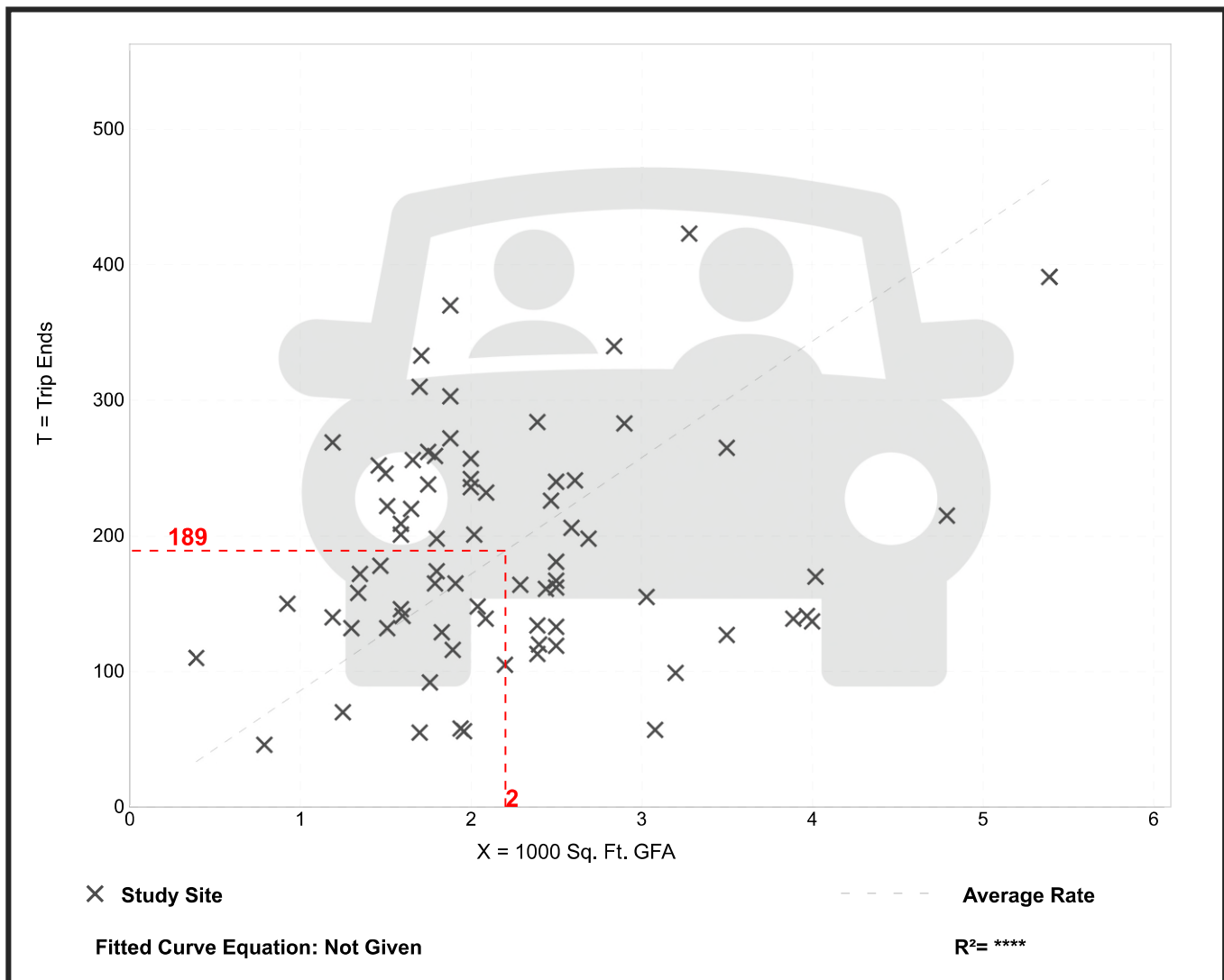
Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 78
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
85.88	18.51 - 282.05	44.92

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

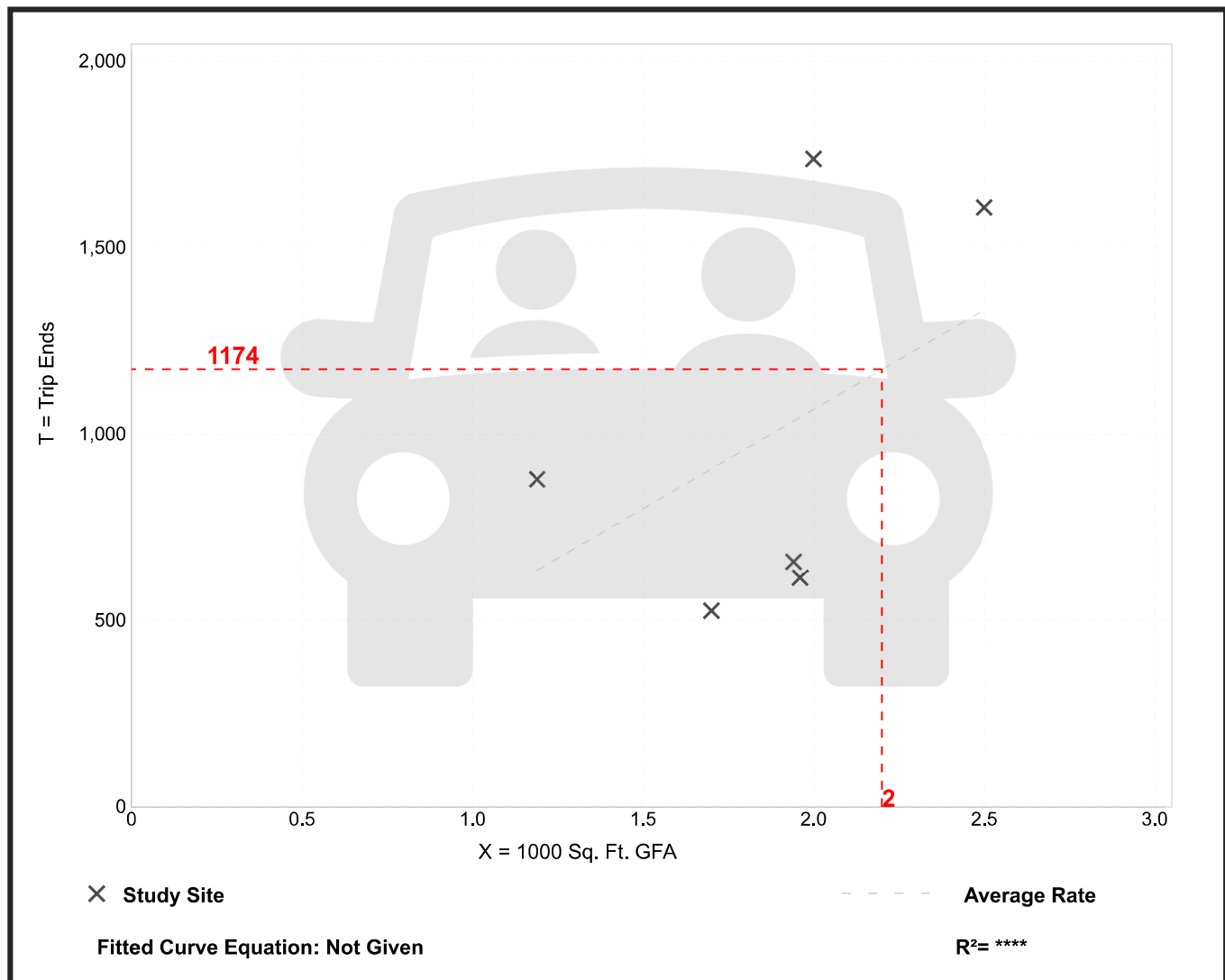
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
533.57	309.41 - 869.00	243.65

Data Plot and Equation



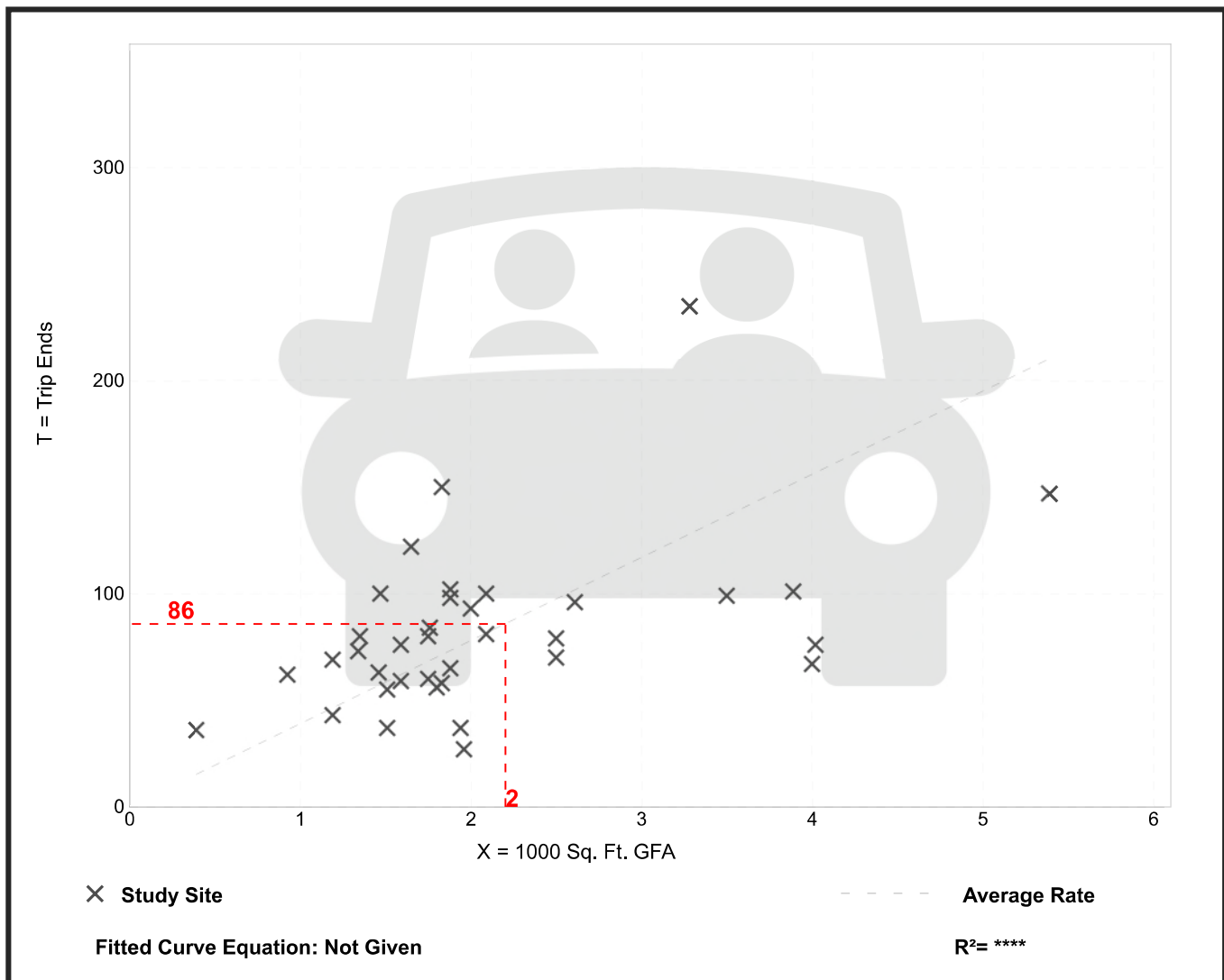
Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 36
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
38.99	13.78 - 92.31	17.79

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 46

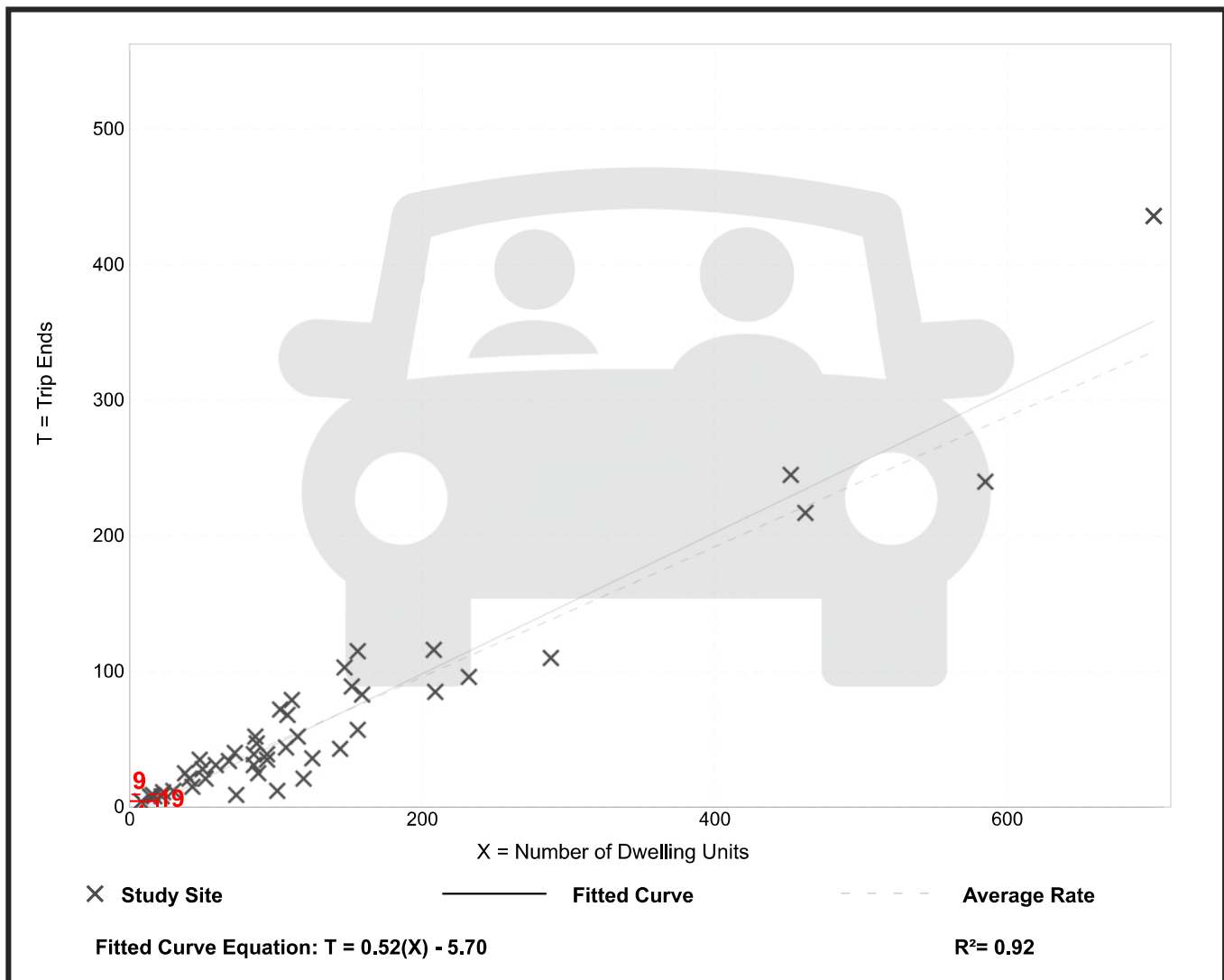
Avg. Num. of Dwelling Units: 135

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



Single-Family Attached Housing (215)

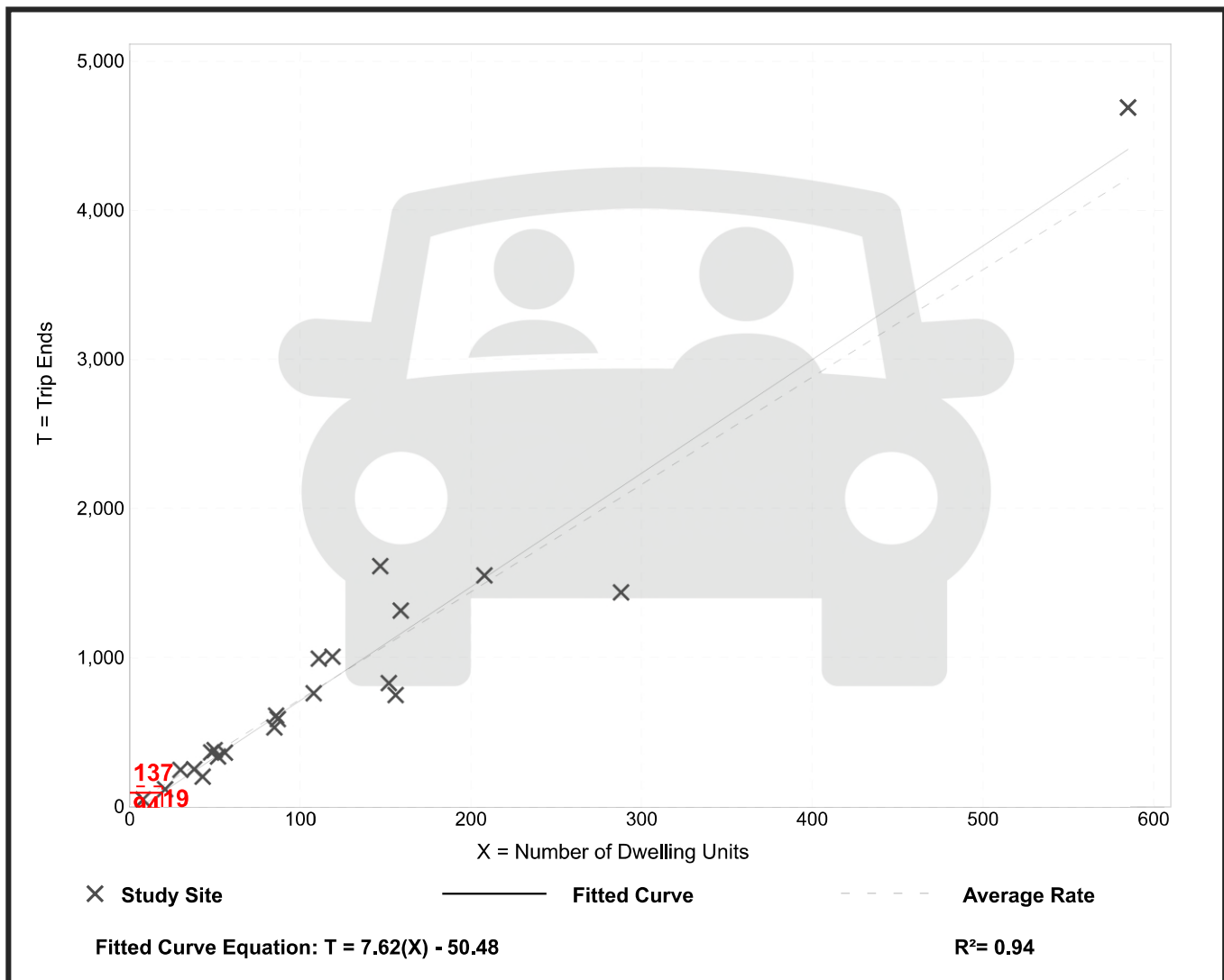
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Dwelling Units: 120
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 51

Avg. Num. of Dwelling Units: 136

Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation

