# Memorandum

**TO:** Elan Walshe
Vice President of Construction and Real Estate Development
Higher Ground Education

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

**DATE:** October 21, 2020

**RE**: Proposed Daycare and School
305-401 North Washington Street
Naperville, Illinois

Eriksson Engineering Associates (EEA) reviewed the traffic and parking needs for a proposed childcare and school facility at 305-401 North Washington Street in downtown Naperville, Illinois. The childcare/school facility will serve a total of 183 children. Entry only drives into the site are located on Franklin Avenue and Center Street and two exit drives onto Center Street and onto Benton Avenue via a cross-easement thru the adjacent church property. Fifty parking spaces are proposed.

**Site Location**

The project site is located at 305-401 North Washington Street in downtown Naperville within the block bordered by Franklin Avenue to the north, Center Street to the east, Benton Avenue to the south, and Washington Street to the west. It occupies the northern portion of the block with the United Church of Christ in the southeast portion of the block and an office building to the southwest.

The site has a 13,171 square foot drive-thru bank building with four drive-thru lanes. Access is provided by two access drives on Center Street, two access drives on Franklin Avenue including the four-lane wide drive-thru exit , and one drive to Benton Avenue via a cross-easement thru the adjacent church property.

**Proposed Development Plan**

Higher Ground Education seeks to repurpose the existing bank building with a combination childcare facility and a Montessori school. It will serve a total of 183 children with 133 children in childcare and 50 students in school. The bank drive-thru lanes, canopy, and drive-thru exit onto Franklin Avenue will be removed. Play facilities for all age groups will be constructed along the east side of the building along with the main entrance into the building. The parking lot will be partially reconfigured. The three remaining access drives and the cross-easement connection will not be modified.

**Hours of Operation**

The proposed hours of operation are 7:00 AM to 6:30 PM on weekdays. Drop-off and pick up times are not specific for the childcare operation which typically range from 7:00 AM to 8:40 AM for drop-off and 3:00 PM to 6:00 PM for pick-up based on the parent's schedule. The school age students also have a range of drop-off times between 7:00 AM to 8:00 AM with a similar pick-up time from 3:00 PM to 6:00 PM. The flexible range of drop-off and pick-up times eliminates the rush of cars that cause stacking often seen at regular schools with specific start and end times.

**Site Trip Generation**

The traffic generated by the previous drive-thru bank use and the proposed childcare/school uses were estimated from data in the Institute of Transportation Engineer's Trip Generation 10th Ed. manual which contains trip generation surveys of similar uses. The resulting site traffic volumes are shown in **Table 1.** Copies of the calculations can be found in the **Appendix**. The ITE Trip Generation 10th Ed. manual also notes that many of the trips to banks are drawn from vehicles already traveling past the site today. Pass-by trips are existing vehicles that would stop and then continue on with their original trip to work or home which minimizes the overall increase of traffic on the road system.

**Table 1**
**Site Traffic Volume Estimates and Comparison**

| Scenario | Use | Size | Trip Type | Morning Peak | | | Afternoon Peak | | | Average Daily Trips |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | In | Out | Total | In | Out | Total | |
| **Previous Use** | **Drive-in Bank (1)** | 13,171 sq. ft. | New | **55** | **36** | **91** | **89** | **90** | **179** | **1,317** |
| | | | Pass-By | 17 | 17 | 34 | 45 | 45 | 90 | |
| | | | Total | 72 | 53 | 125 | 134 | 135 | 269 | |
| **Proposed Use** | **Childcare (2)** | 133 children | New | 55 | 49 | 104 | 51 | 57 | 108 | 544 |
| | **School(3)** | 50 students | New | 36 | 29 | 65 | 14 | 16 | 30 | 206 |
| | | | Total New Trips | **91** | **78** | **169** | **65** | **73** | **138** | **750** |
| | | | **Change in New Trips** | **+36** | **+42** | **+78** | **-24** | **-17** | **-41** | **-567** |

(1) ITE Land Use Code 912 – Drive-in Bank
(2) ITE Land Use Code 656 – Daycare
(3) ITE Land Use Code 534 – Private School (K-8)

During the morning commuter rush hour, the new facility would generate 78 additional new trips into or out of the site than the bank. In the evening peak-hour, there would be 41 less trips. On a daily basis, the new use will generate half the volume of the bank on a weekday. On weekends, the facility is closed and would not generate traffic unlike a bank that has Saturday morning hours and ATM drive-up activity.

The addition of 78 new trips in the morning (1.3 trips a minute) will have a nominal impact on the adjacent roadway system due to the low volume. Conversely, there will be a nominal benefit to traffic conditions in the evening with less traffic. In either case, the change in traffic operations will not be perceivable by the drivers going past the site.

**On-site Circulation**

Parents and staff can enter the site from either Franklin Avenue or Center Street, find a parking space, walk to and from the building, return to their vehicle, and then exit onto Center Street or Benton Avenue. The majority of the parking is located in a one-way 60-degree angled parking lot. Several spaces are 90-degrees at the south end of the site along a one-way drive aisle.

**Naperville Parking Requirement**

The City of Naperville's Zoning Code requires four parking spaces per one thousand square feet of floor area for childcare, daycare, nursery, or preschools. Primary schools require one parking space per employee. **Table 2** below summarizes the parking calculations showing a total of 47 required parking spaces. The site plan shows 50 spaces including two accessible spaces which exceeds the zoning requirement.

**Table 2**
**City of Naperville Parking Requirements**

| Use | Size | Population | Staff | Naperville Zoning Requirement | Parking Required |
|---|---|---|---|---|---|
| Childcare | 10,750 sq. ft. | 133 children | 25 staff | 4 parking spaces per each 1,000 square feet of gross floor area | **43** |
| School | 2,421 sq. ft. | 50 students | 4 staff | 1 parking space per each employee | **4** |
| **Total** | **13,171 sq. ft.** | **183 children** | **29 persons** | | **47 spaces** |

**National Parking Data**

National parking data was reviewed to estimate the parking demand for the site. The Institute of Transportation of Engineers' publication Parking Generation, 5th Edition provides parking survey data on daycare and private school facilities. **Table 3** summarizes the results with a total of 53 parked vehicles. Copies of the calculations are attached in the **Appendix**. The proposed plan is short 3 spaces of the national parking estimates. However, the parking data is based on a private school (K-12 – LUC 536) instead of K-8 (no data available) so the parking estimate from ITE is slightly higher than expected due to the inclusion of the upper grades. There are only four staff members serving the students and assuming a few visitors during the day, the number of parked vehicles is ten or less. There is adequate parking on-site.

**Table 3**
**National Parking Requirements**

| Use | Population | ITE Land Use Code | Parked Vehicles |
|---|---|---|---|
| Childcare | 133 children | 565 | **35** |
| Private School | 50 students | 536 | **18** |
| **Total** | **183 children** | | **53 spaces** |

**Site Parking Plan**

The proposed facility will have a total of 29 staff on-site. Assuming one vehicle per staff member, 29 out of the 50 parking spaces will be used by staff. This is a worst-case scenario. In reality, some of the staff will be dropped off at work or use the nearby public transportation. The remaining 21 parking spaces will be available for visitors.

For reference, the existing Naperville Guidepost Montessori campus has 22 parking spaces with no drop-off lane. It has a capacity of 126 children with 18 infants, 28 toddlers, and 80 children (3-6 years old). Appling this parking supply ratio to 183 children would be the equivalent of 32 parking spaces. Existing parking surveys were not conducted at this location due to the changes in its operations from the on-going pandemic.

**Daycare Drop-off Stacking**

The City of Naperville Zoning Code states that daycare/nursery/preschool facilities need 10 stacking spaces for facilities greater than 5,000 square feet. No drop-off lane is proposed due to the age of the children and the policies of the operator. Parents are required to park their vehicles, walk their children to or from the building, sign in or out, and then leave. A variation from this requirement would be needed.

Based on the trip generation data from Table 1, the peak morning arrival period will have 78 parent vehicles stopping at the site and 65 vehicles during the evening dismissal period over the course of 60 minutes. A minimum of 21 visitor parking spaces would be available for parent vehicles. Assuming that the average unloading/loading time is 10 minutes per vehicle, each parking space could be turned over or used 6 times in one hour. For all 21 visitor spaces, the resulting total loading capacity is 126 vehicles in one hour which exceeds the expected demand of 65 to 78 vehicles.

**Conclusions**

The preceding traffic and parking study analyzed the proposed childcare/school at 24 North Washington Avenue and developed the following conclusions:

- The proposed development will not adversely impact the level-of-service of study area intersections due to the small change in traffic volumes.
- The closure of the 4-lane drive-thru exit drive on Franklin Avenue will improve traffic and pedestrian safety by the site.
- The remaining three access drives do not require any additional improvements.
- The site has 50 parking spaces which exceeds the zoning code (47 spaces) parking requirements for the development.
- Two accessible spaces are provided per the ADA code.
- City zoning code requires that a daycare/nursery/preschool facility provide 10 stacking spaces for facilities greater than 5,000 square feet for the loading of children. No stacking lane is proposed because the operator dictates that the parents park and walk their children into the building. A variation is requested.

# APPENDIX

- **ITE Trip Generation Calculations**
- **ITE Parking Demand Calculations**

# Private School (K-8)
(534)

**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday**

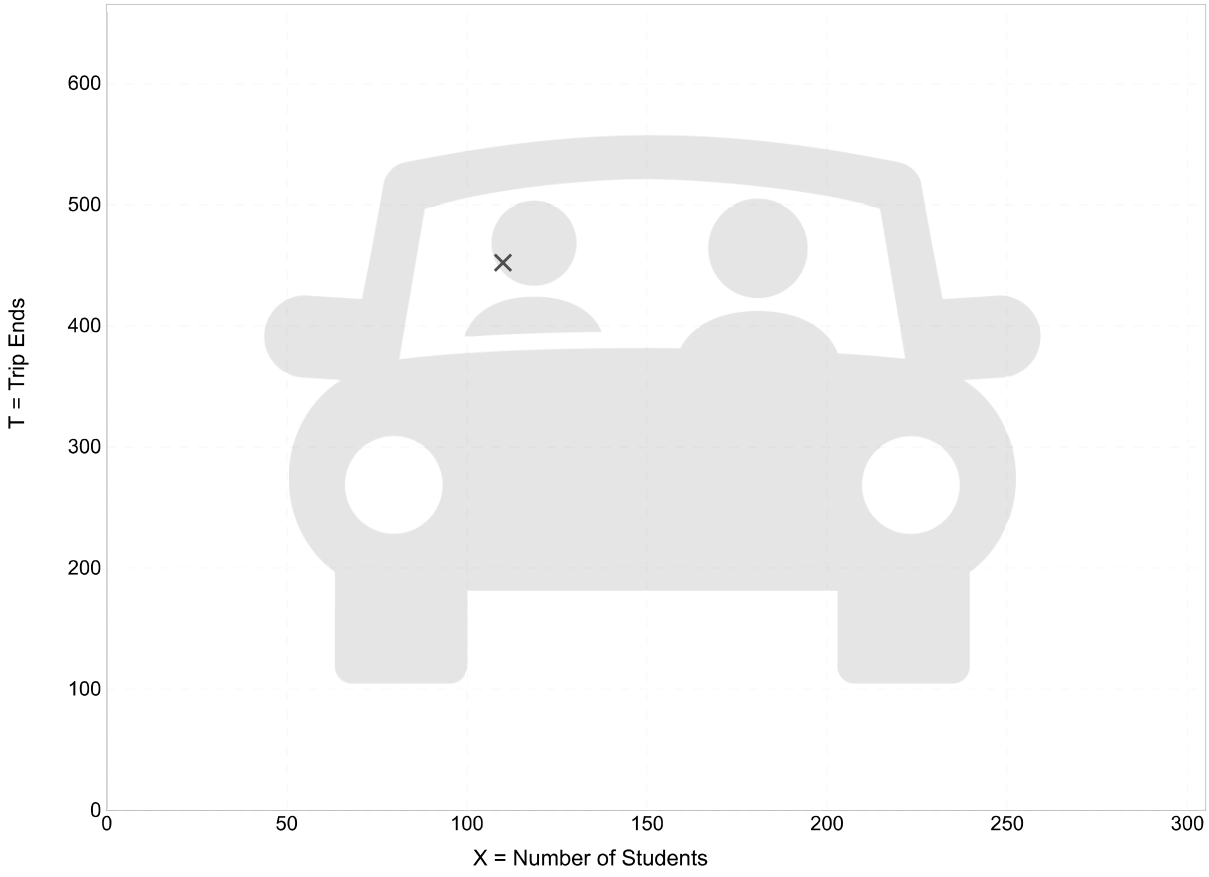
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Students: 110
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 4.11 | 4.11 - 4.11 | * |

## Data Plot and Equation

***Caution – Small Sample Size***

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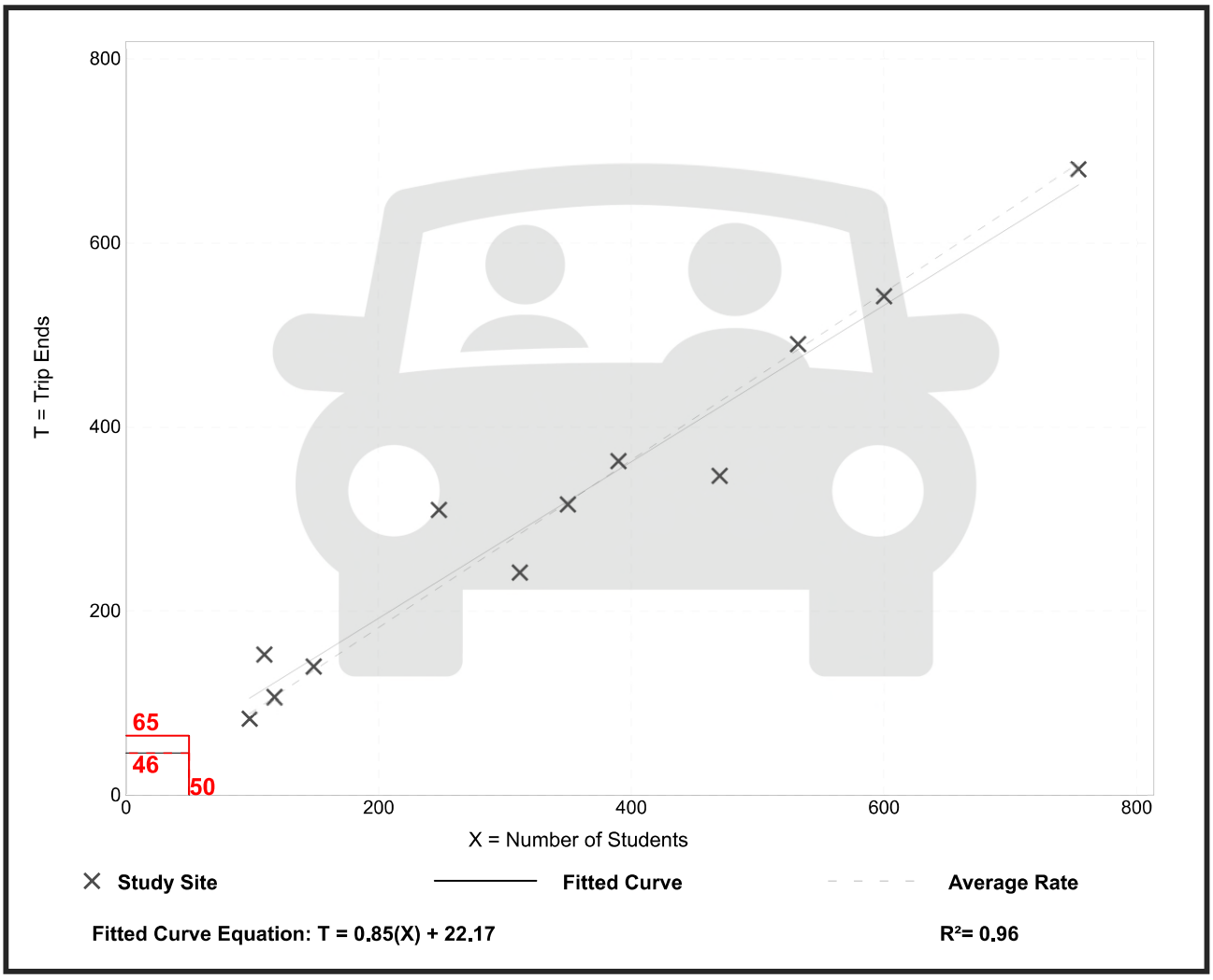
# Private School (K-8)
(534)

**Vehicle Trip Ends vs:** **Students**
**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: 12
Avg. Num. of Students: 344
Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.91 | 0.74 - 1.39 | 0.14 |

## Data Plot and Equation

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# Private School (K-8)
(534)

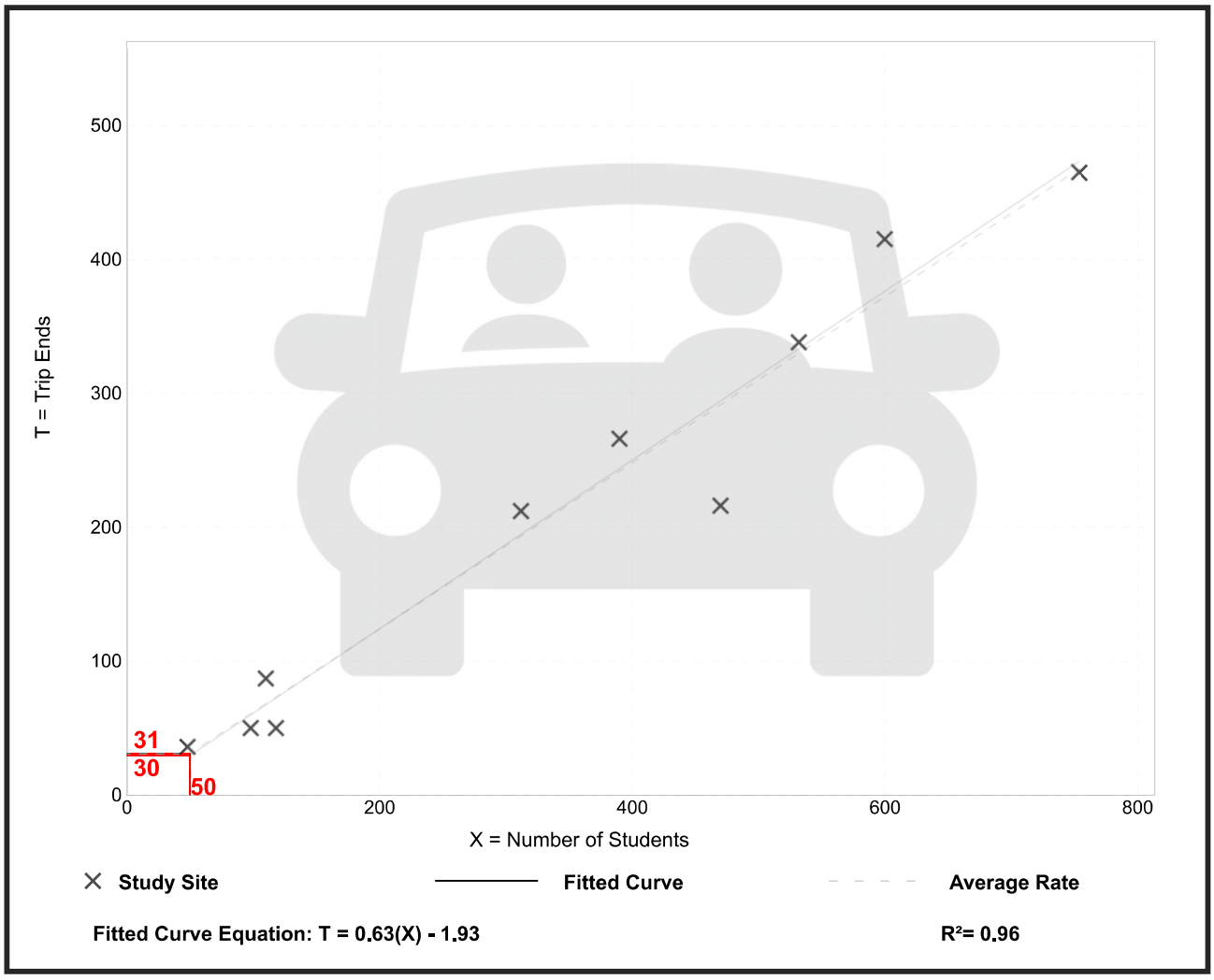
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday,**
**PM Peak Hour of Generator**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 10
Avg. Num. of Students: 343
Directional Distribution: 47% entering, 53% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.62 | 0.42 - 0.79 | 0.09 |

## Data Plot and Equation

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# Private School (K-12)
(536)

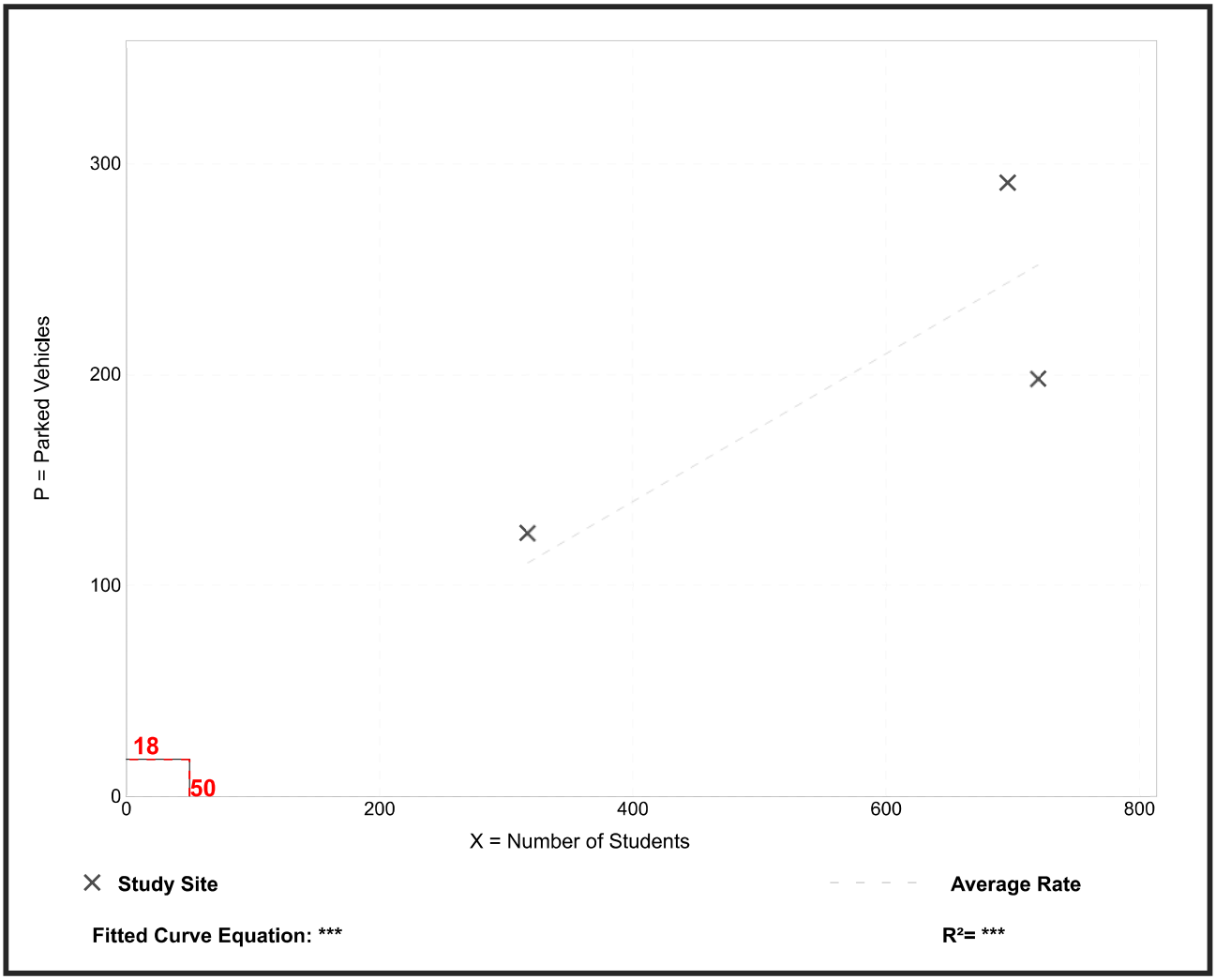
**Peak Period Parking Demand vs:** **Students**
**On a:** **Weekday (Monday - Friday)**
**Setting/Location:** **General Urban/Suburban**
**Peak Period of Parking Demand:** **9:00 a.m. - 3:00 p.m.**
Number of Studies: 3
Avg. Num. of Students: 578

## Peak Period Parking Demand per Student

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 0.35 | 0.28 - 0.42 | 0.31 / 0.42 | *** | 0.08 (23%) |

## Data Plot and Equation

***Caution – Small Sample Size***

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# Day Care Center
(565)

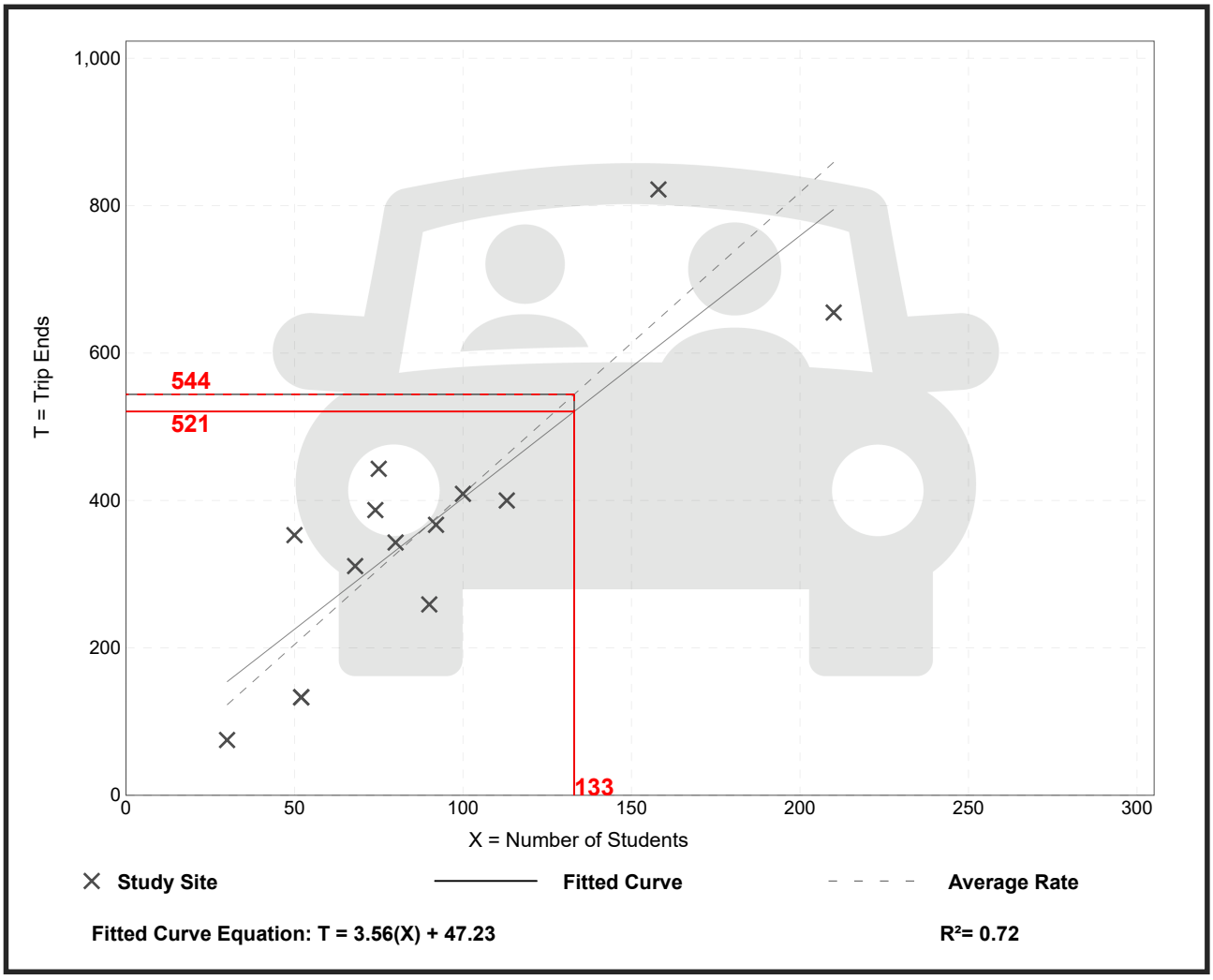
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 14
Avg. Num. of Students: 89
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 4.09 | 2.50 - 7.06 | 1.21 |

## Data Plot and Equation

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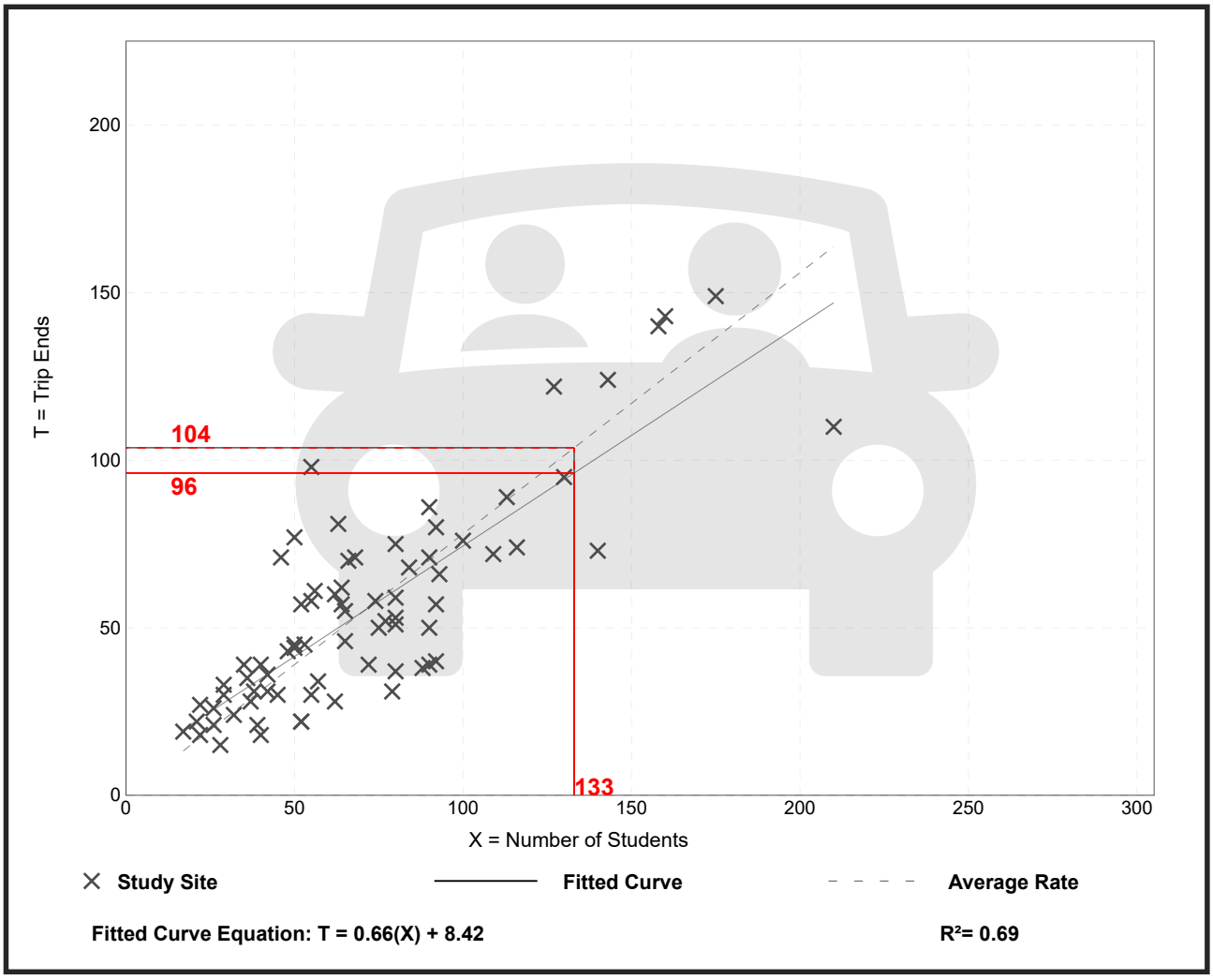
# Day Care Center
(565)

**Vehicle Trip Ends vs:** **Students**
**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: 75
Avg. Num. of Students: 71
Directional Distribution: 53% entering, 47% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.78 | 0.39 - 1.78 | 0.25 |

## Data Plot and Equation

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# Day Care Center
(565)

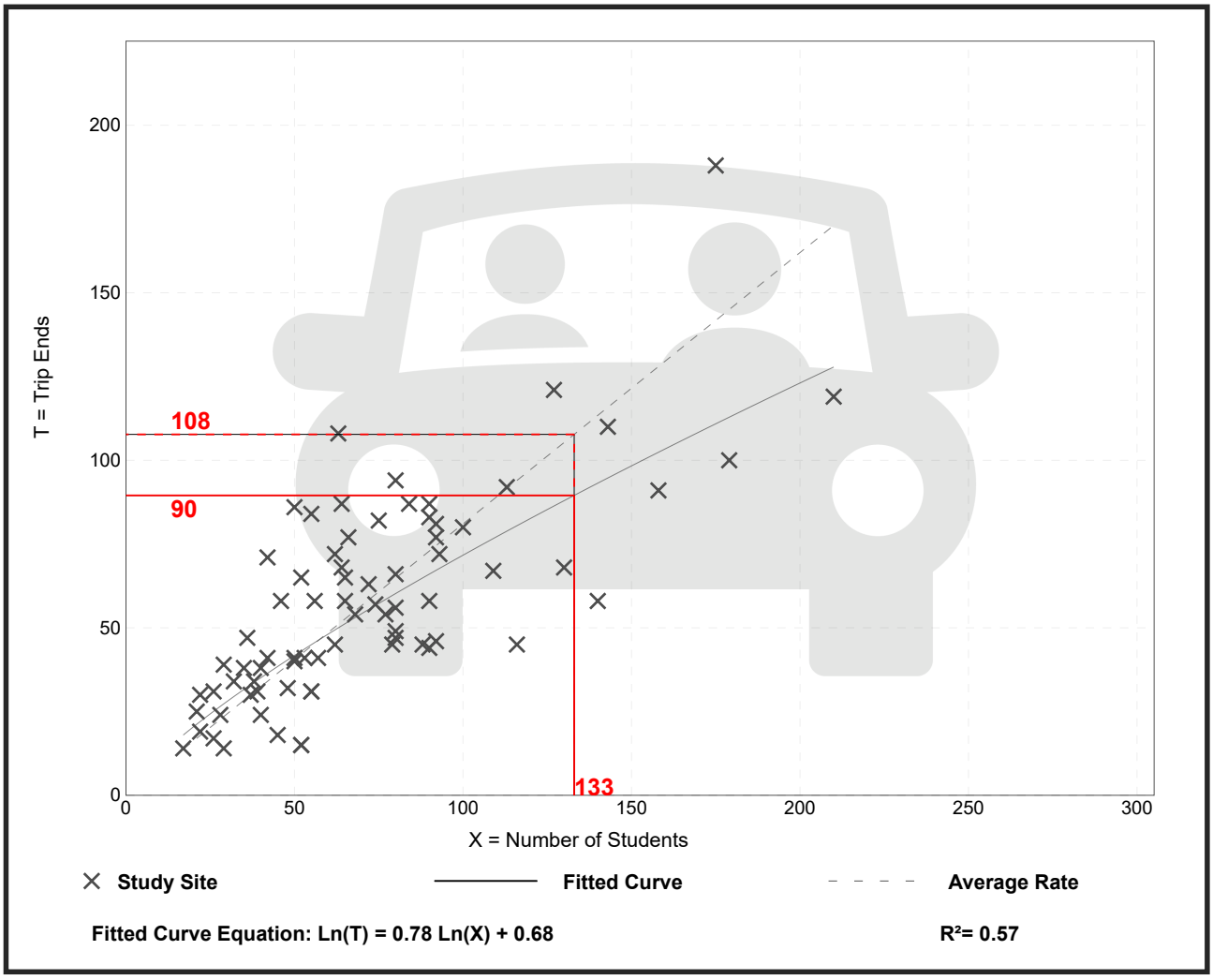
**Vehicle Trip Ends vs:** **Students**
**On a:** **Weekday,**
**PM Peak Hour of Generator**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 75
Avg. Num. of Students: 71
Directional Distribution: 47% entering, 53% exiting

## Vehicle Trip Generation per Student

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.81 | 0.29 - 1.72 | 0.30 |

## Data Plot and Equation

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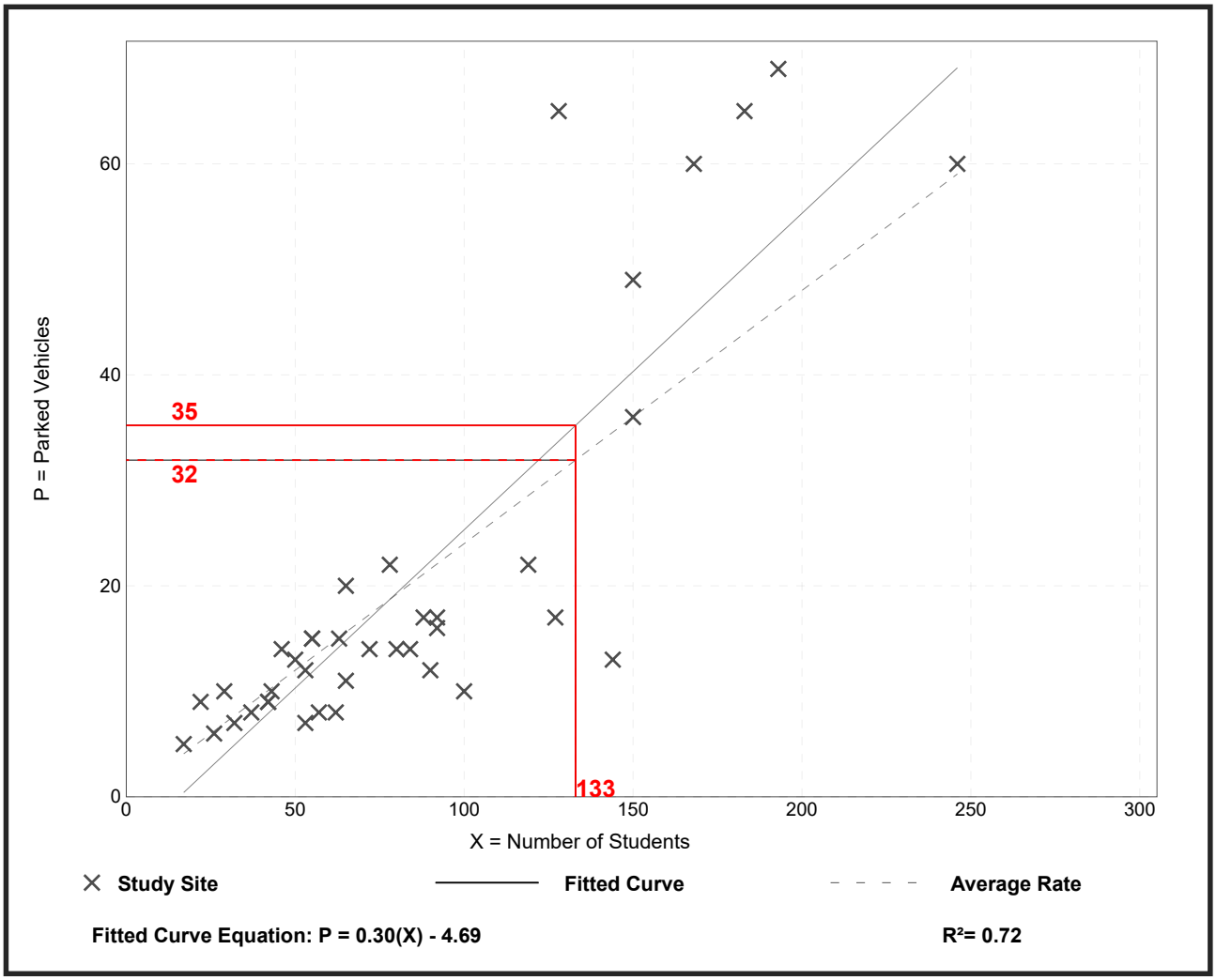
# Day Care Center
(565)

**Peak Period Parking Demand vs:** **Students**
**On a:** **Weekday (Monday - Friday)**
**Setting/Location:** **General Urban/Suburban**
**Peak Period of Parking Demand:** **8:00 a.m. - 6:00 p.m.**
Number of Studies: 39
Avg. Num. of Students: 85

## Peak Period Parking Demand per Student

| Average Rate | Range of Rates | 33rd / 85th Percentile | 95% Confidence Interval | Standard Deviation (Coeff. of Variation) |
|---|---|---|---|---|
| 0.24 | 0.09 - 0.51 | 0.19 / 0.34 | 0.21 - 0.27 | 0.10 (42%) |

## Data Plot and Equation

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# Drive-in Bank
(912)

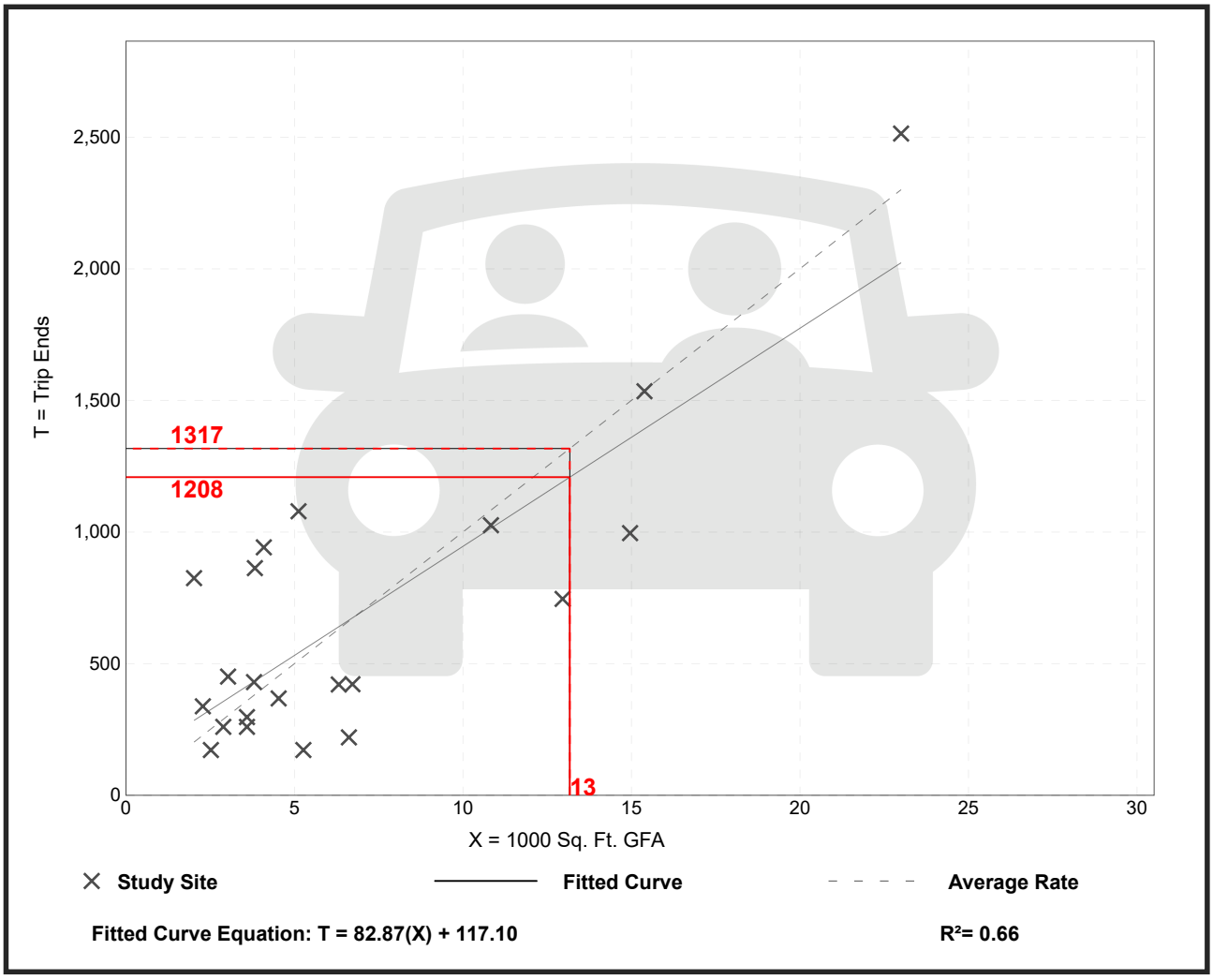
**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday**

**Setting/Location:** **General Urban/Suburban**
Number of Studies: 21
Avg. 1000 Sq. Ft. GFA: 7
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 100.03 | 32.67 - 408.42 | 61.61 |

## Data Plot and Equation

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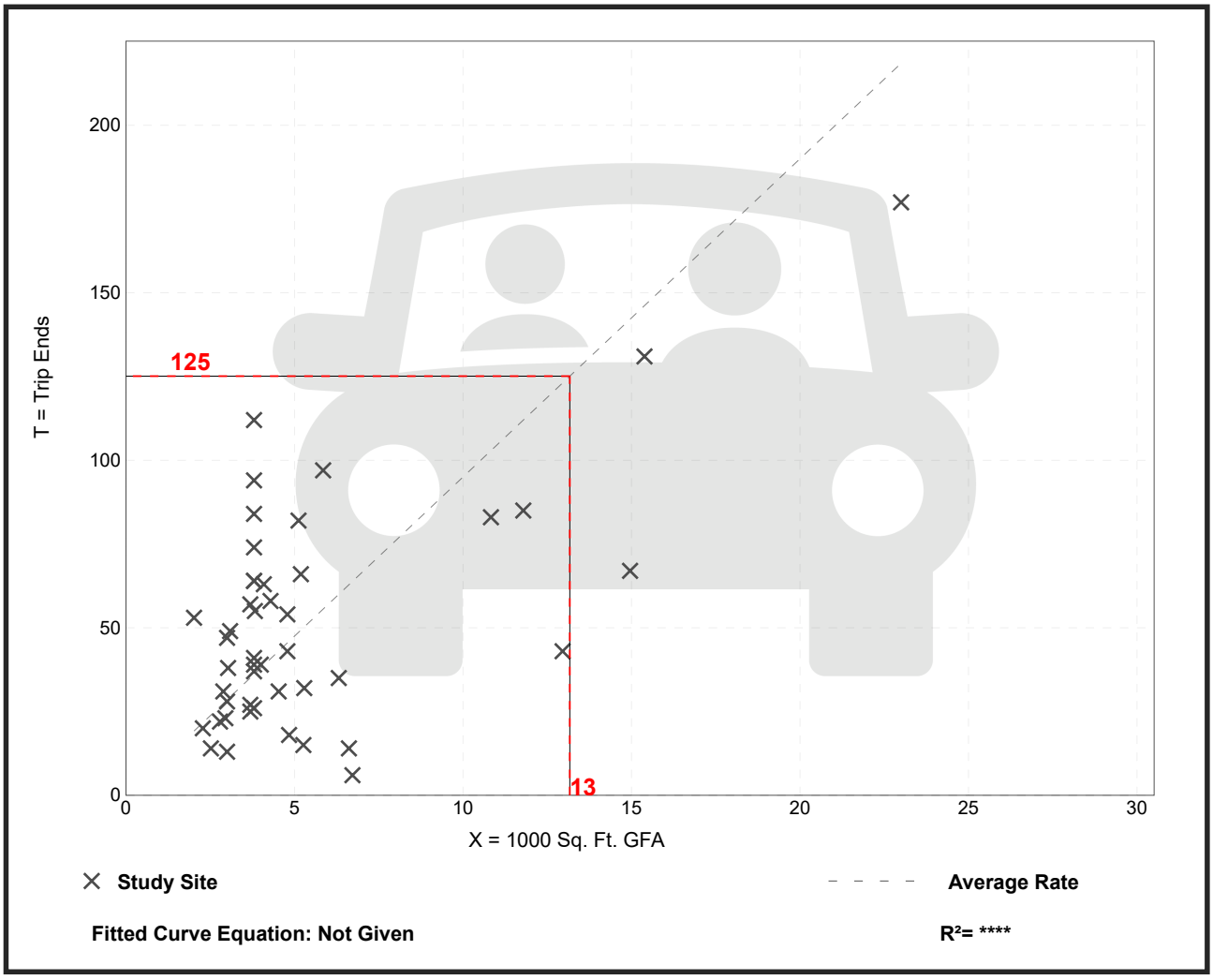
# Drive-in Bank
(912)

**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: 46
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 58% entering, 42% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 9.50 | 0.89 - 29.47 | 5.85 |

## Data Plot and Equation

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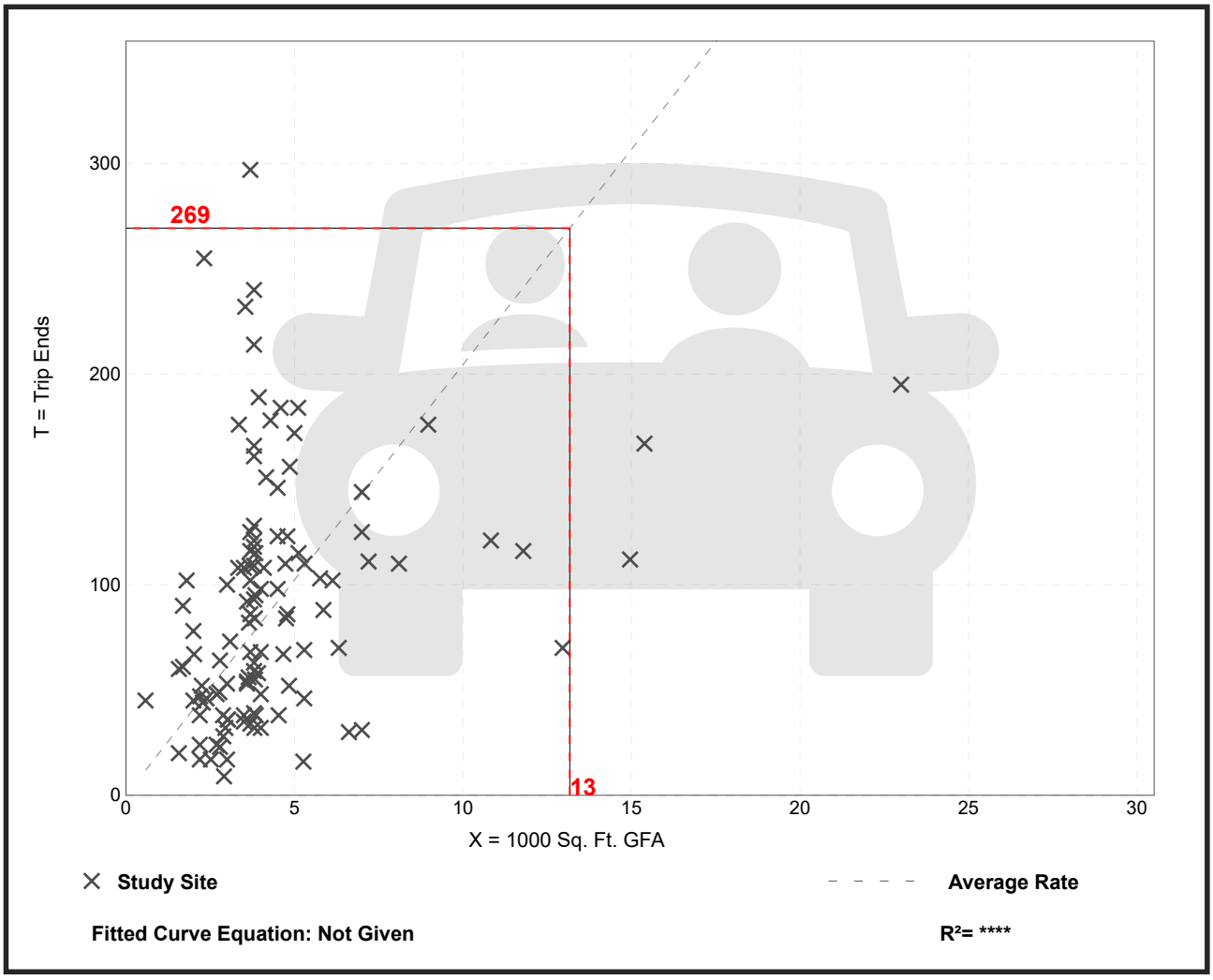
# Drive-in Bank
(912)

**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: 115
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 20.45 | 3.04 - 109.91 | 15.01 |

## Data Plot and Equation

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