



# TMS Engineers, Inc.

## Transportation Management Services

2112 Case Parkway South, #7 • Twinsburg, Ohio 44087

www.TMSEngineers.com

September 15, 2025

Ms. Elizabeth Swearingen  
Peninsula Architects  
1775 Main Street  
Peninsula, Ohio 44264

**Re: Proposed Dental Office Expansion  
Hudson, Ohio  
Trip Generation Analysis**

Dear Ms. Swearingen:

TMS Engineers, Inc. has performed the following trip generation analysis for a proposed expansion to the existing Village Dental building. Village Dental is located at 41 E Main Street in the city of Hudson. (See **Location Map, Figure 1**).

The purpose of the trip generation analyses is to estimate the traffic that will be generated by the Village Dental expansion. The site plan can be seen in **Figure 2**. The following are the results of our trip generation analysis.

### **SITE GENERATED TRAFFIC**

Calculating future total driveway trips requires an estimate of the traffic generated by the proposed development. The most widely accepted method of determining the amount of traffic that the proposed development will generate is to compare the proposed land use with existing facilities of the same use. The Institute of Transportation Engineers (ITE) has prepared a document titled "**Trip Generation Manual**", which is a compilation of similar traffic generation studies to aide in making such a comparison. The most recent update of this manual is the 12<sup>TH</sup> edition and was utilized for this analysis.

The proposed development is expected to consist of the following land use:

- **Medical-Dental Office Building (LU #720)**

## PROPOSED TRIP GENERATION CALCULATIONS

Trip generation calculations were performed utilizing data contained in the **Trip Generation Manual, 12<sup>TH</sup> Edition** and the methods outlined in the (ITE) **Trip Generation Handbook**. Based on the previously discussed trip generation analysis procedures, the table below shows the estimated site generated traffic during the AM and PM peak hours of the adjacent streets for the existing Village Dental building and the Village Dental building with the proposed expansion. The existing site generated traffic volumes were subtracted from the proposed site generated traffic to arrive at the site generated traffic from the expansion. A copy of the trip generation worksheets can be seen in **Appendix A**.

### NEW TRIP GENERATION

| ITE TRIP GENERATION |                                           |                       | TRIP ENDS                                             |    |                                                       |    |
|---------------------|-------------------------------------------|-----------------------|-------------------------------------------------------|----|-------------------------------------------------------|----|
| ITE CODE            | DESCRIPTION                               | Gross Floor Area (SF) | Weekday AM Peak Hour of Adjacent Streets (Enter/Exit) |    | Weekday PM Peak Hour of Adjacent Streets (Enter/Exit) |    |
| 720                 | Medical-Dental Office Building (Proposed) | 4,582                 | 12                                                    | 3  | 3                                                     | 8  |
|                     | Medical-Dental Office Building (Existing) | 3,485                 | -9                                                    | -3 | -2                                                    | -5 |
| TOTAL NEW TRIPS     |                                           |                       | 3                                                     | 0  | 1                                                     | 3  |
|                     |                                           |                       | 3                                                     |    | 4                                                     |    |

## CONCLUSIONS

The previous table shows that the proposed Village Dental expansion is expected to generate a total of 3 trips in the AM peak hour and 4 trips in the PM peak hour. It is our opinion that, when the anticipated changes in traffic volumes are at these levels, the traffic generated the proposed Village Dental expansion should not have an impact on the surrounding street network system.

This opinion is based upon the fact that traffic impact studies are recommended to be performed by the **Institute of Transportation Engineers** whenever an increase in trips in any peak hour is greater than 100 trips per hour. This recommendation is made because this is the point where a change in roadway capacity may be found and mitigation may or may not be needed. The anticipated generated volumes from the proposed Village Dental expansion is less than daily variations in the current volumes on the local roadway network and should not be perceived by the traveling public.

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The Ohio Department of Transportation concedes that traffic studies are only necessary when the resulting trip increase is more than 60 trips in either of the peak hours. This is stated in their **State Highway Access Management Manual**. Since the proposed Village Dental expansion is expected to generate less than 60 trips, it is our professional opinion that the change in the amount of generated traffic will **not** have an impact on the surrounding roadway network nor require a traffic analyses.

If you have any questions or need additional information, please do not hesitate to contact me.

Very truly yours,

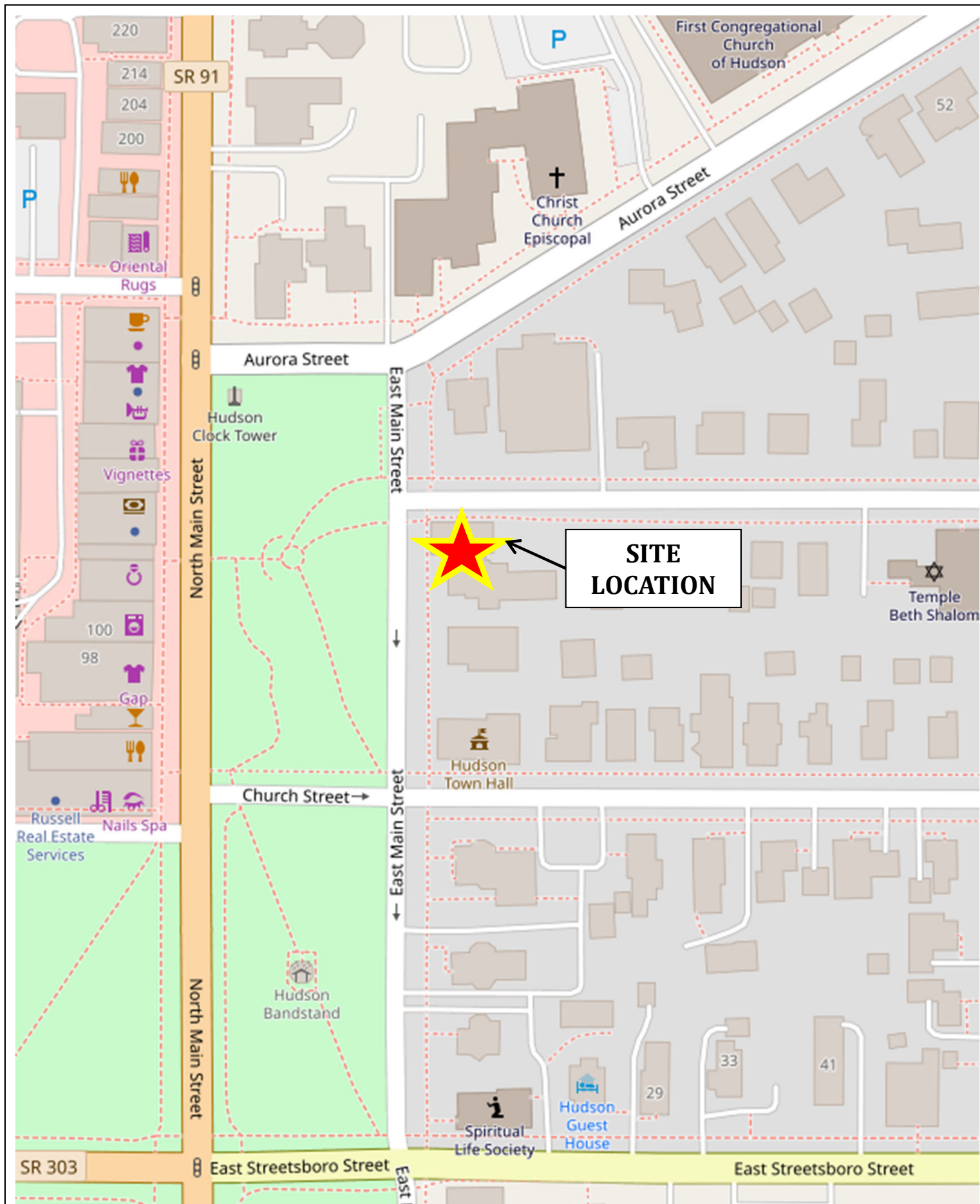
**TMS Engineers, Inc.**



Michael W. Schweickart, P.E., PTOE  
President

  
9/15/25

**Appendix A**  
**Trip Generation Worksheets**



**TMS Engineers, Inc.**

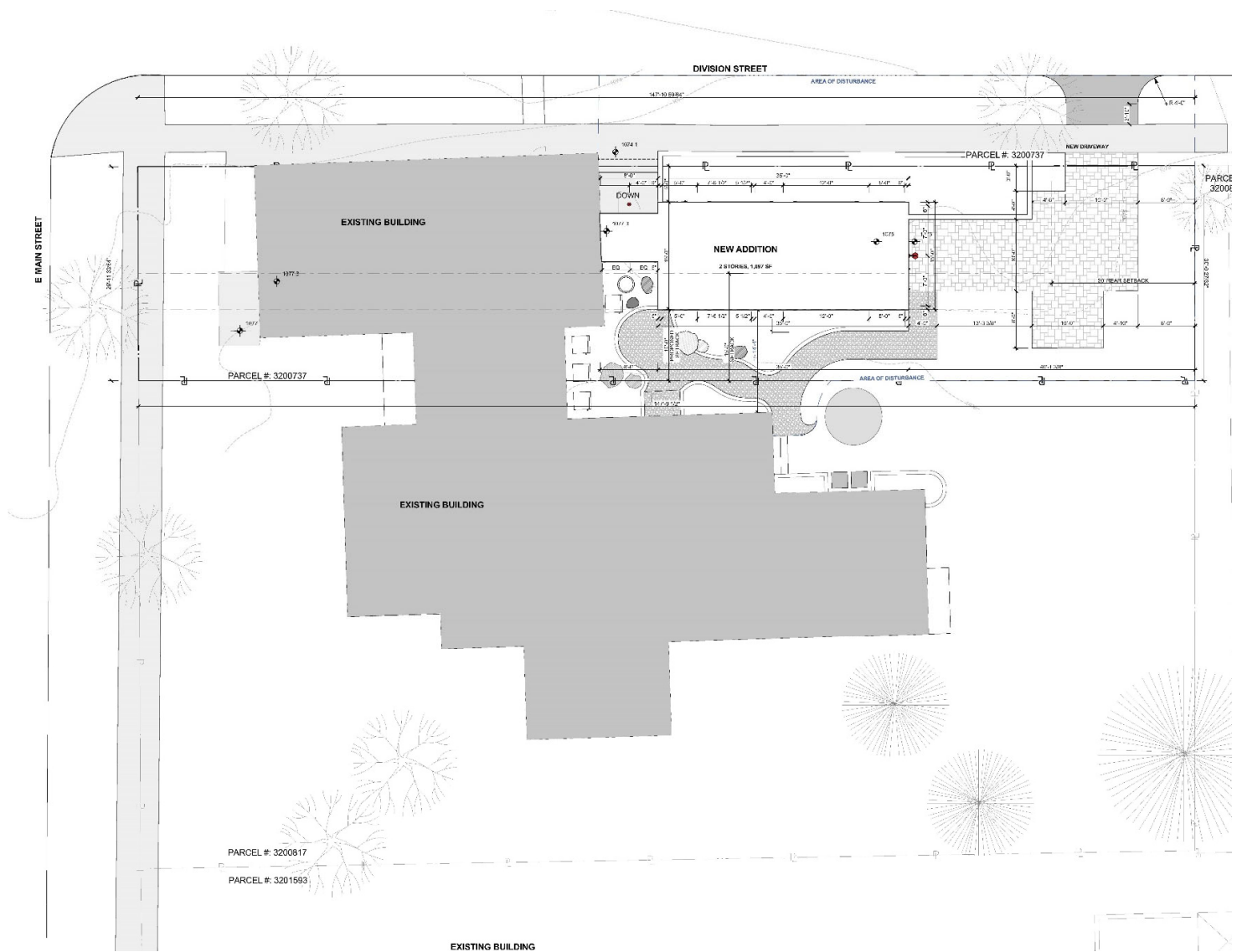
2112 Case Parkway S., Unit 7,  
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**Village Dental  
Hudson, Ohio  
Trip Generation Analysis**

**Location Map**

**↑**  
**NORTH**  
NOT TO  
SCALE

**Figure: 1**  
**Attachment**



# Medical-Dental Office Building – ITE CODE #720

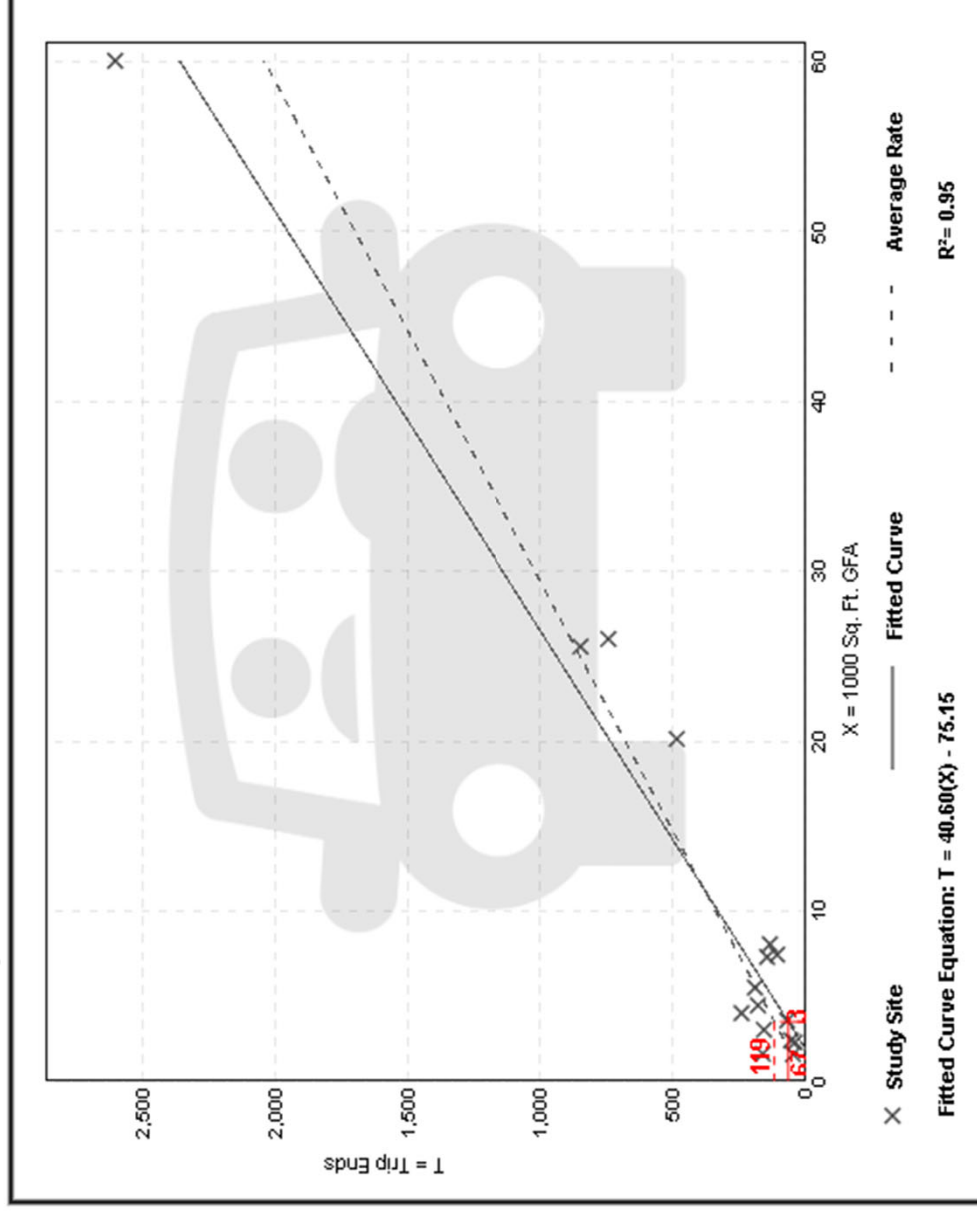
Size: **3,485 SF**

**WEEKDAY**

**Weekday**

| DATA STATISTICS                                      |                                                                                                     |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Land Use:</b>                                     | Medical-Dental Office Building - Stand-Alone (720)                                                  |
| <a href="#">Click for Description and Data Plots</a> |                                                                                                     |
| <b>Independent Variable:</b>                         | 1000 Sq. Ft. GFA                                                                                    |
| <b>Time Period:</b>                                  | Weekday                                                                                             |
| <b>Setting/Location:</b>                             | General Urban/Suburban                                                                              |
| <b>Trip Type:</b>                                    | Vehicle                                                                                             |
| <b>Number of Studies:</b>                            | 16                                                                                                  |
| <b>Avg. 1000 Sq. Ft. GFA:</b>                        | 11                                                                                                  |
| <b>Average Rate:</b>                                 | 34.03                                                                                               |
| <b>Range of Rates:</b>                               | 14.52 - 100.75                                                                                      |
| <b>Standard Deviation:</b>                           | 12.64                                                                                               |
| <b>Fitted Curve Equation:</b>                        | $T = 40.60(X) - 75.15$                                                                              |
| <b>R<sup>2</sup>:</b>                                | 0.95                                                                                                |
| <b>Directional Distribution:</b>                     | 50% entering, 50% exiting                                                                           |
| <b>Calculated Trip Ends:</b>                         | Average Rate: 119 (Total), 59 (Entry), 60 (Exit)<br>Fitted Curve: 67 (Total), 33 (Entry), 34 (Exit) |

Data Plot and Equation



## Medical-Dental Office Building – ITE CODE #720

Size: **3,485 SF**

**WEEKDAY**

**Peak Hour of Adjacent Street Traffic: 7-9 AM**

### DATA STATISTICS

#### Land Use:

Medical-Dental Office Building - Stand-Alone (720)

[Click for Description and Data Plots](#)

#### Independent Variable:

1000 Sq. Ft. GFA

#### Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 7 and 9 a.m.

#### Setting/Location:

General Urban/Suburban

#### Trip Type:

Vehicle

#### Number of Studies:

20

#### Avg. 1000 Sq. Ft. GFA:

23

#### Average Rate:

3.21

#### Range of Rates:

0.87 - 14.30

#### Standard Deviation:

1.61

#### Fitted Curve Equation:

$\ln(T) = 0.90 \ln(X) + 1.33$

$R^2$

0.80

#### Directional Distribution:

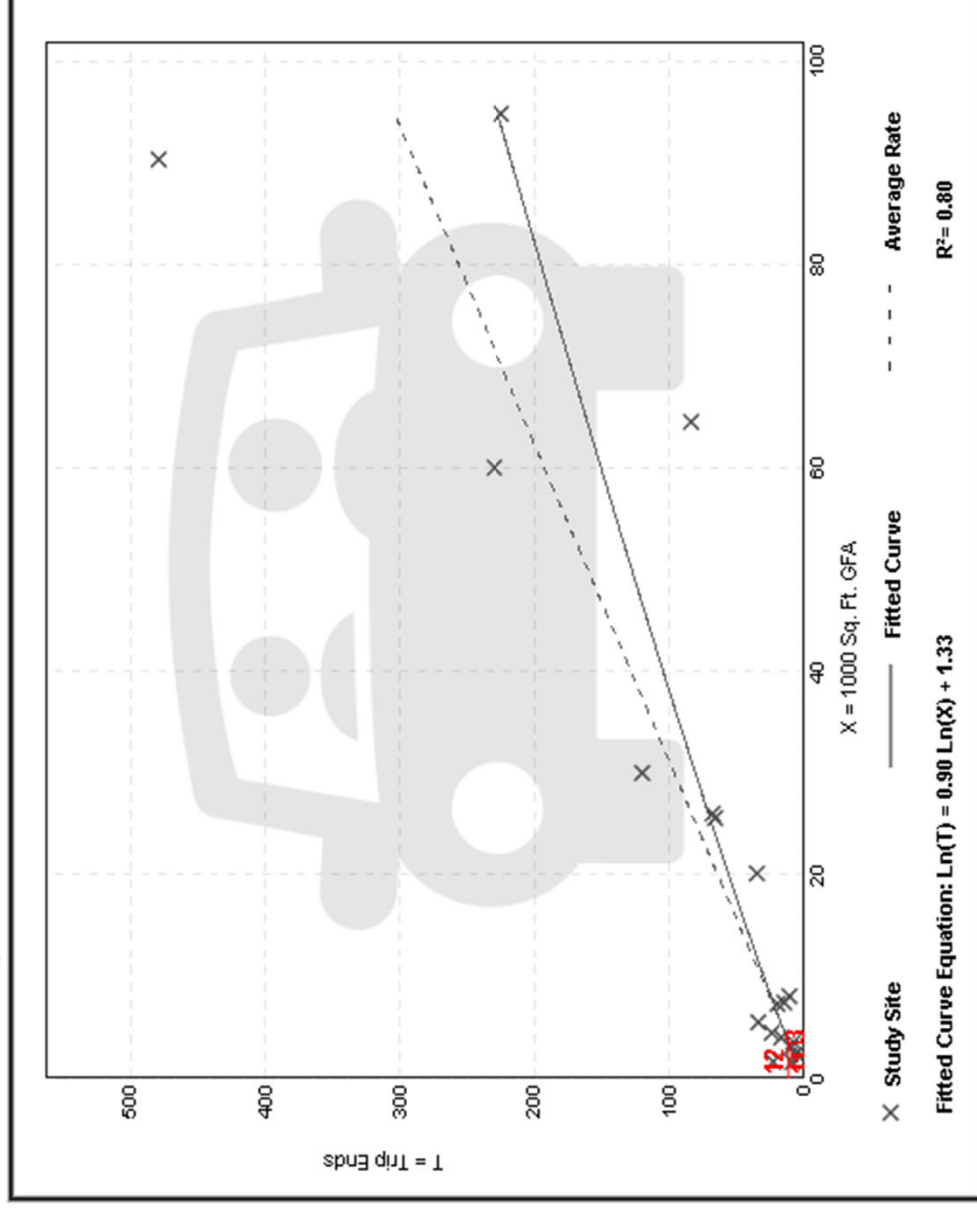
78% entering, 22% exiting

#### Calculated Trip Ends:

Average Rate: 11 (Total), 9 (Entry), 2 (Exit)

Fitted Curve: 12 (Total), 9 (Entry), 3 (Exit)

Data Plot and Equation



*Trip Gen. Manual*, 12th Edition

• Institute of Transportation Engineers

Date: **09/15/2025**

# Medical-Dental Office Building – ITE CODE #720

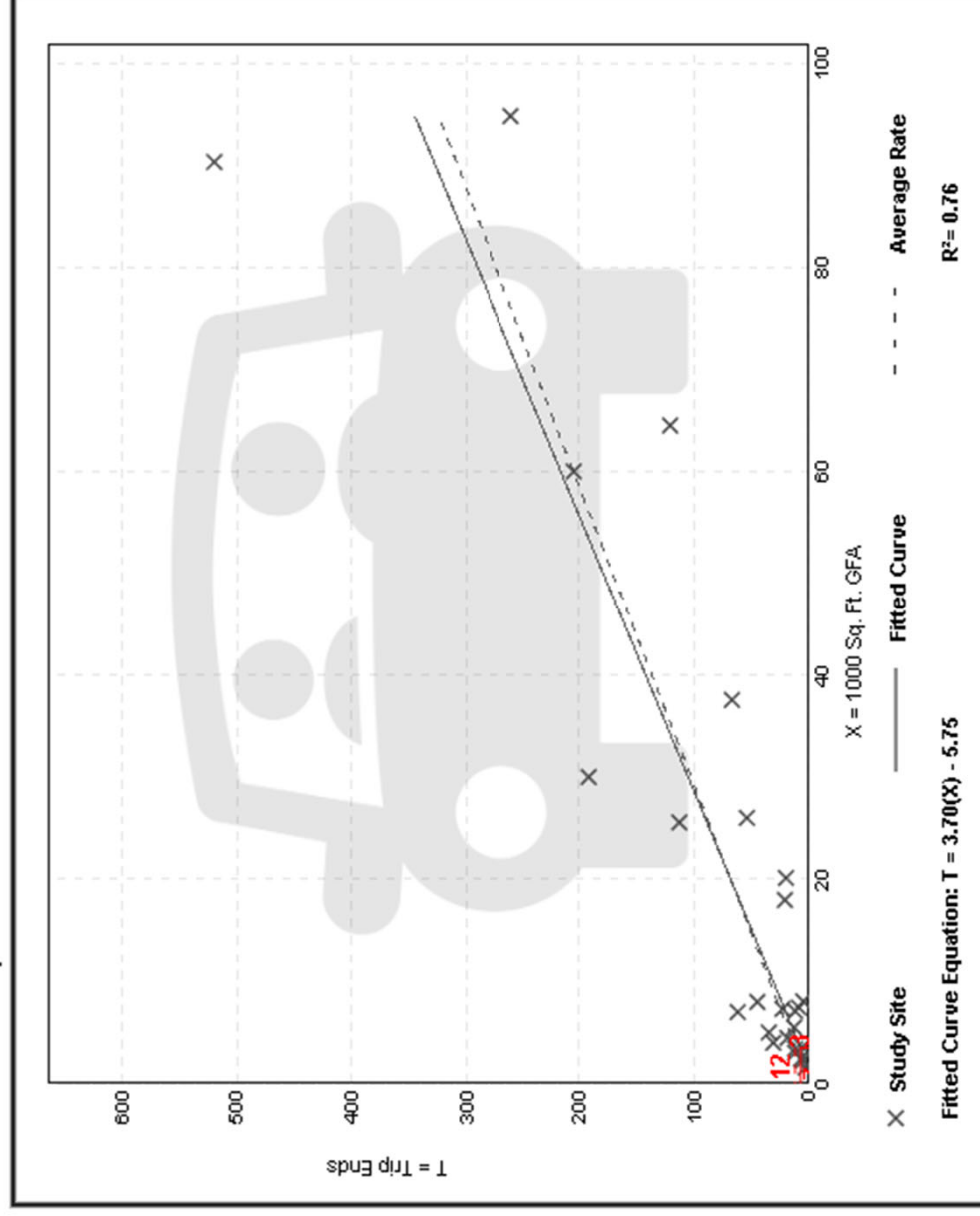
Size: 3,485 SF

WEEKDAY

Peak Hour of Adjacent Street Traffic: 4-6 PM

| DATA STATISTICS                                      |                                                                                               |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Land Use:                                            | Medical-Dental Office Building - Stand-Alone (720)                                            |
| <a href="#">Click for Description and Data Plots</a> |                                                                                               |
| Independent Variable:                                | 1000 Sq. Ft. GFA                                                                              |
| Time Period:                                         | Weekday                                                                                       |
| Peak Hour of Adjacent Street Traffic                 |                                                                                               |
| One Hour Between 4 and 6 p.m.                        |                                                                                               |
| Setting/Location:                                    | General Urban/Suburban                                                                        |
| Trip Type:                                           | Vehicle                                                                                       |
| Number of Studies:                                   | 26                                                                                            |
| Avg. 1000 Sq. Ft. GFA:                               | 21                                                                                            |
| Average Rate:                                        | 3.42                                                                                          |
| Range of Rates:                                      | 0.62 - 8.86                                                                                   |
| Standard Deviation:                                  | 1.89                                                                                          |
| Fitted Curve Equation:                               | $T = 3.70(X) - 5.75$                                                                          |
| $R^2$ :                                              | 0.76                                                                                          |
| Directional Distribution:                            | 30% entering, 70% exiting                                                                     |
| Calculated Trip Ends:                                | Average Rate: 12 (Total), 4 (Entry), 8 (Exit)<br>Fitted Curve: 7 (Total), 2 (Entry), 5 (Exit) |

Data Plot and Equation



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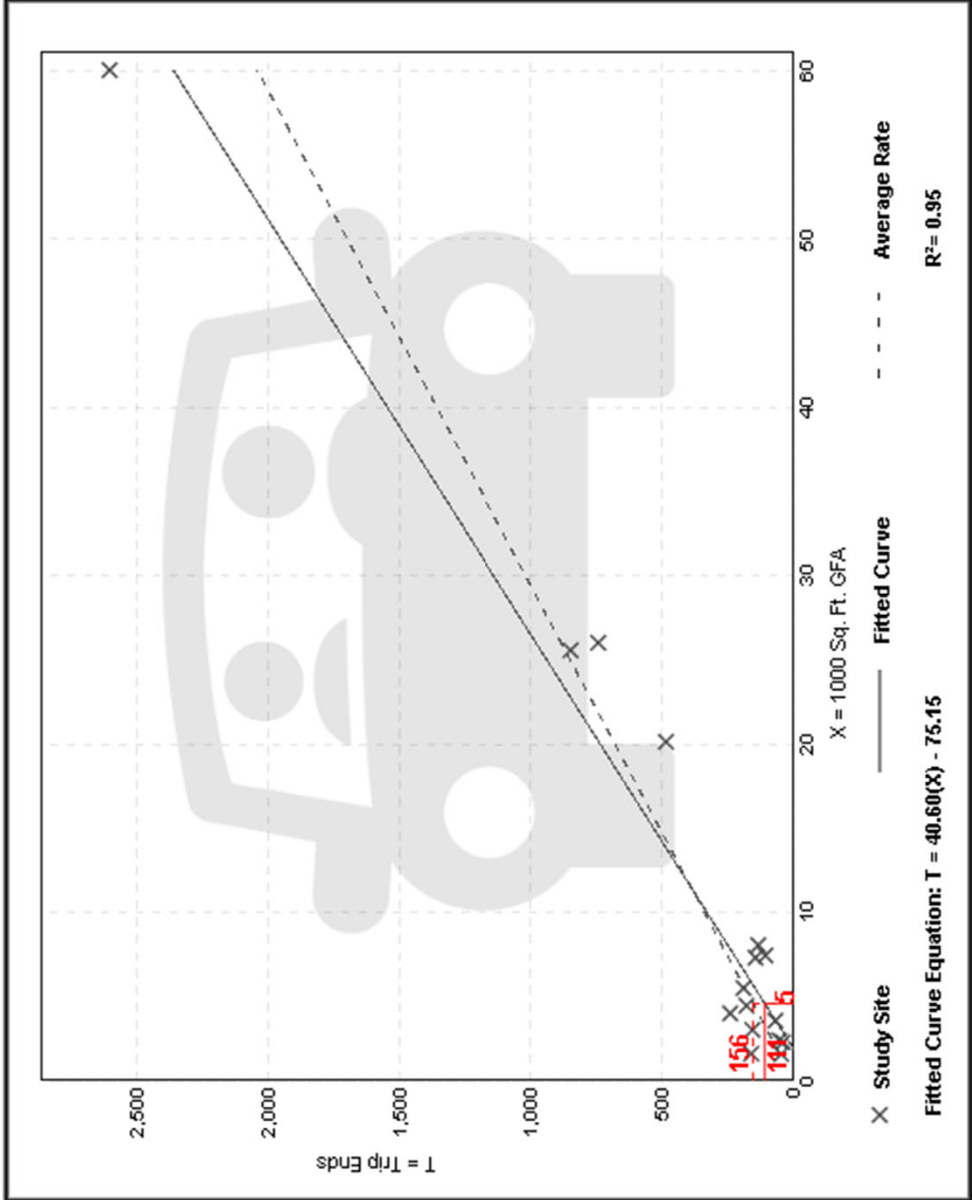
# Medical-Dental Office Building – ITE CODE #720

WEEKDAY  
Weekday

Size: 4,582 SF

| DATA STATISTICS                                      |                                                                                                      |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Land Use:</b>                                     | Medical-Dental Office Building - Stand-Alone (720)                                                   |
| <a href="#">Click for Description and Data Plots</a> |                                                                                                      |
| <b>Independent Variable:</b>                         | 1000 Sq. Ft. GFA                                                                                     |
| <b>Time Period:</b>                                  | Weekday                                                                                              |
| <b>Setting/Location:</b>                             | General Urban/Suburban                                                                               |
| <b>Trip Type:</b>                                    | Vehicle                                                                                              |
| <b>Number of Studies:</b>                            | 16                                                                                                   |
| <b>Avg. 1000 Sq. Ft. GFA:</b>                        | 11                                                                                                   |
| <b>Average Rate:</b>                                 | 34.03                                                                                                |
| <b>Range of Rates:</b>                               | 14.52 - 100.75                                                                                       |
| <b>Standard Deviation:</b>                           | 12.64                                                                                                |
| <b>Fitted Curve Equation:</b>                        | $T = 40.60(X) - 75.15$                                                                               |
| <b>R<sup>2</sup>:</b>                                | 0.95                                                                                                 |
| <b>Directional Distribution:</b>                     | 50% entering, 50% exiting                                                                            |
| <b>Calculated Trip Ends:</b>                         | Average Rate: 156 (Total), 78 (Entry), 78 (Exit)<br>Fitted Curve: 111 (Total), 55 (Entry), 56 (Exit) |

Data Plot and Equation



# Medical-Dental Office Building – ITE CODE #720

Size: 4,582 SF

WEEKDAY

Peak Hour of Adjacent Street Traffic: 7-9 AM

## DATA STATISTICS

**Land Use:**  
Medical-Dental Office Building - Stand-Alone (720)

[Click for Description and Data Plots](#)

### Independent Variable:

1000 Sq. Ft. GFA

### Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 7 and 9 a.m.

### Setting/Location:

General Urban/Suburban

### Trip Type:

Vehicle

### Number of Studies:

20

### Avg. 1000 Sq. Ft. GFA:

23

### Average Rate:

3.21

### Range of Rates:

0.87 - 14.30

### Standard Deviation:

1.61

### Fitted Curve Equation:

$\ln(T) = 0.90 \ln(X) + 1.33$

### R<sup>2</sup>:

0.80

### Directional Distribution:

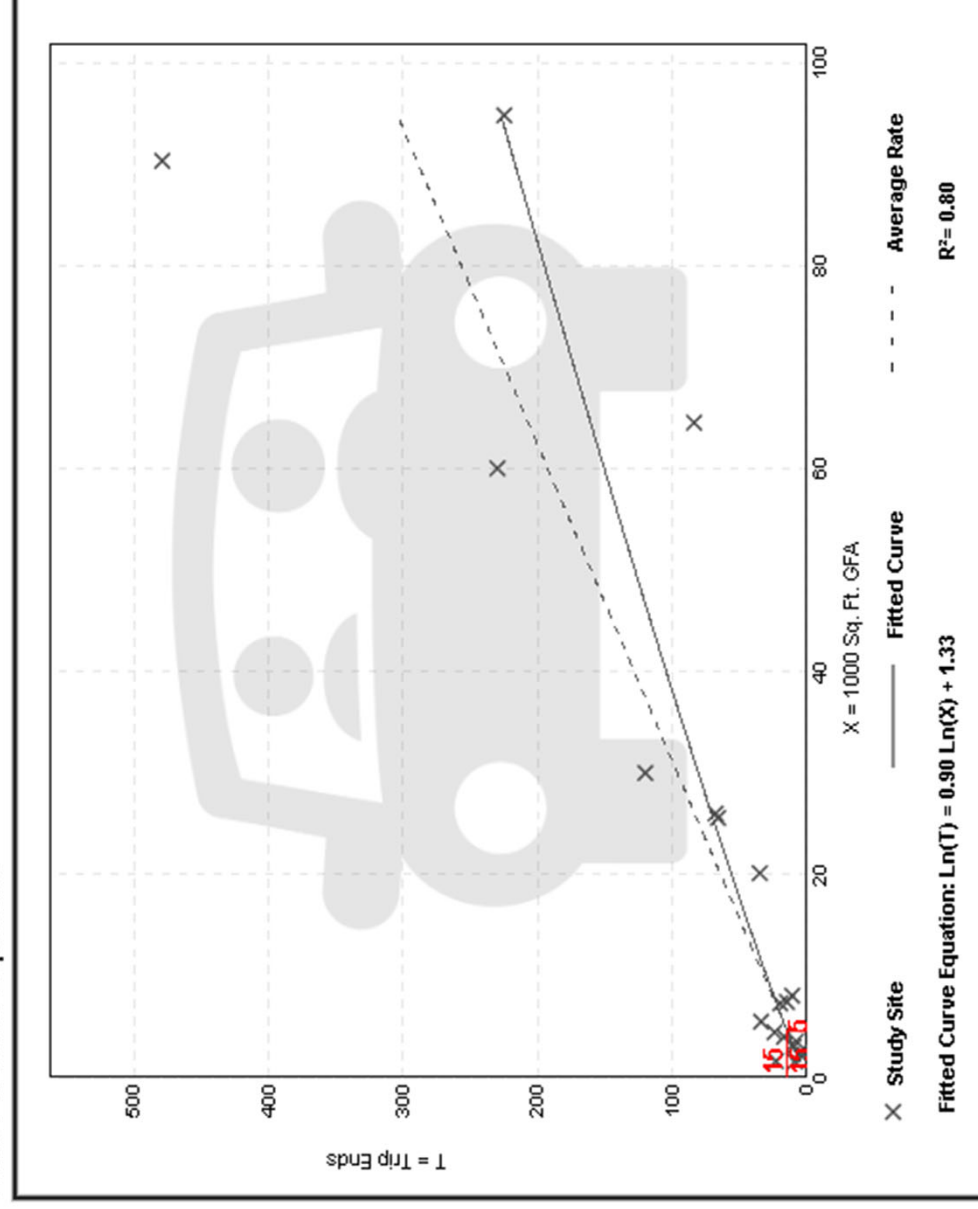
78% entering, 22% exiting

### Calculated Trip Ends:

Average Rate: 15 (Total), 11 (Entry), 4 (Exit)

Fitted Curve: 15 (Total), 12 (Entry), 3 (Exit)

## Data Plot and Equation



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• Institute of Transportation Engineers

Date: 09/15/2025

# Medical-Dental Office Building – ITE CODE #720

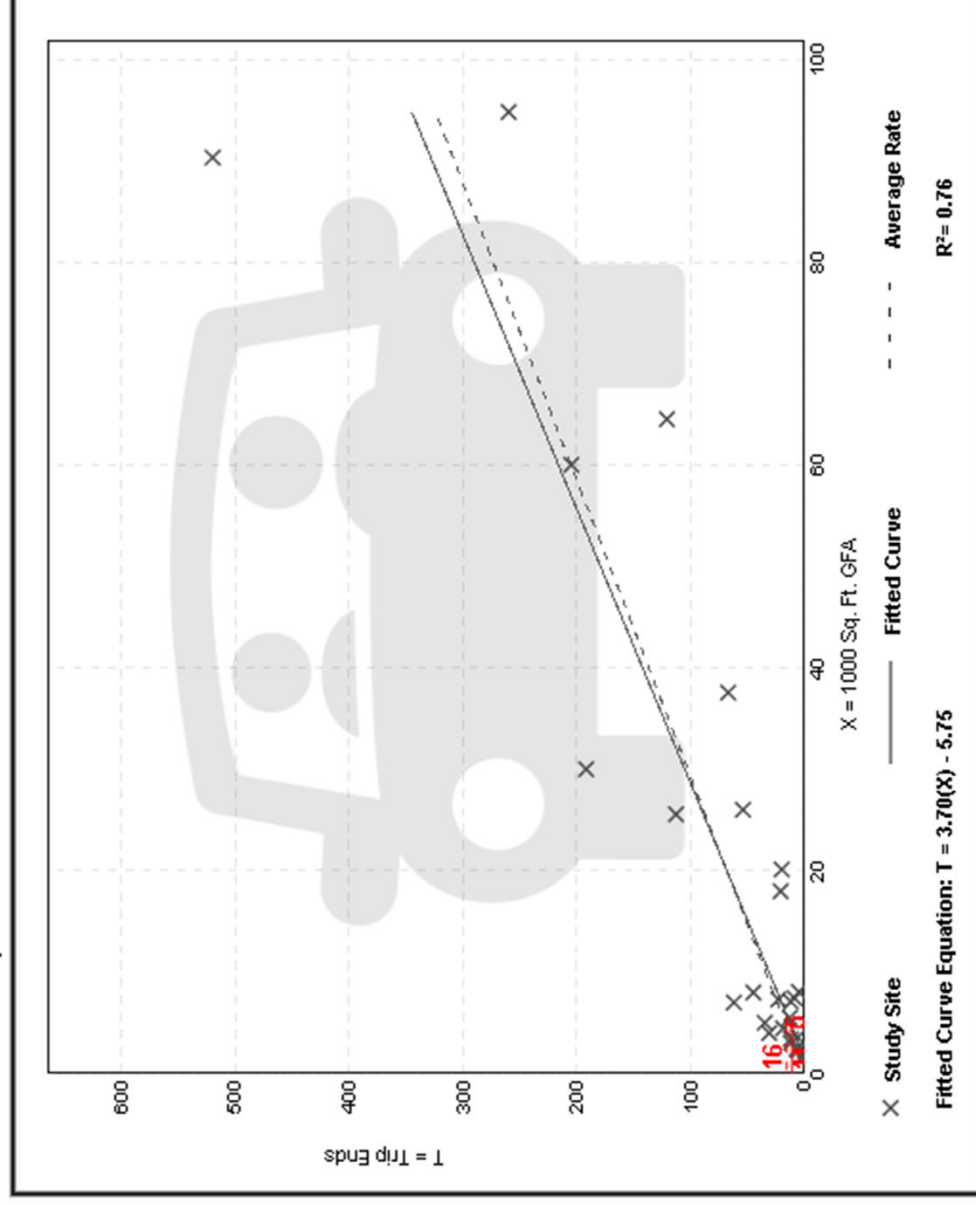
Size: **4,582 SF**

**WEEKDAY**

**Peak Hour of Adjacent Street Traffic: 4-6 PM**

| DATA STATISTICS                                                       |                                                                                                 |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Land Use:</b>                                                      | Medical-Dental Office Building - Stand-Alone (720)                                              |
| <a href="#">Click for Description and Data Plots</a>                  |                                                                                                 |
| <b>Independent Variable:</b>                                          | 1000 Sq. Ft. GFA                                                                                |
| <b>Time Period:</b>                                                   | Weekday                                                                                         |
| Peak Hour of Adjacent Street Traffic<br>One Hour Between 4 and 6 p.m. |                                                                                                 |
| <b>Setting/Location:</b>                                              | General Urban/Suburban                                                                          |
| <b>Trip Type:</b>                                                     | Vehicle                                                                                         |
| <b>Number of Studies:</b>                                             | 26                                                                                              |
| <b>Avg. 1000 Sq. Ft. GFA:</b>                                         | 21                                                                                              |
| <b>Average Rate:</b>                                                  | 3.42                                                                                            |
| <b>Range of Rates:</b>                                                | 0.62 - 8.86                                                                                     |
| <b>Standard Deviation:</b>                                            | 1.89                                                                                            |
| <b>Fitted Curve Equation:</b>                                         | $T = 3.70(X) - 5.75$                                                                            |
| <b>R<sup>2</sup>:</b>                                                 | 0.76                                                                                            |
| <b>Directional Distribution:</b>                                      | 30% entering, 70% exiting                                                                       |
| <b>Calculated Trip Ends:</b>                                          | Average Rate: 16 (Total), 5 (Entry), 11 (Exit)<br>Fitted Curve: 11 (Total), 3 (Entry), 8 (Exit) |

Data Plot and Equation



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Date: **09/15/2025**