

Traffic Study Memorandum of Understanding

RE: Cosgray Commons Traffic Impact Study

To: City of Dublin, Union County, Franklin County, ODOT District 6

From: Carpenter Marty Transportation

Date: January 6, 2026

Carpenter Marty Transportation (CM) was retained to complete a traffic impact study (TIS) for a proposed mixed-use development located on the south side of Post Road (SR-161) between Cosgray Road and University Boulevard in Dublin, OH. The development is proposed to include a mix of multifamily housing, townhomes, office/research, a conference center, two hotels, and commercial retail. The development is proposed to be constructed in four phases. However, the TIS will analyze the traffic impacts of the full development only. The proposed site concept plan is provided in the **Attachment**.

The overall development is proposed to include the following uses and sizes:

- Hotel – 345,800 SF (two buildings: one with 200 rooms and one with 150 rooms)
- Office/Research – 570,800 SF (square footage split 50% office, 50% research)
- Conference Center – 51,000 SF
- Retail – 159,600 SF
- Multifamily Residential – 1,411 dwelling units
- Townhomes – 57 dwelling units

Trips for the proposed site were generated using Institute of Transportation Engineers (ITE) practices and the Trip Generation Manual, 12th edition. Land use codes (LUC) 310 – *Hotel*, 221 – *Multifamily Housing (Mid-Rise)-Not Close to Rail Transit*, 710 – *General Office Building*, 760 – *Research and Development Center*, 820 – *Shopping Center (>150k)*, and 215 – *Single-Family Attached Housing* were utilized to generate trips for the proposed development. ITE recommended internal capture and pass-by rates were applied. **Table 1** summarizes the trip generation analysis for the full site development. Note, trips were not generated for the square footage attributed to the conference center use as the ITE description and trip generation for LUC 310 – *Hotel* includes supporting facilities such as banquet rooms, meeting rooms, and convention facilities. The ITE trip generation outputs can be found in the **Attachment**.

Table 1 – Trip Generation Summary

Land Use	Size	Trip Type	AM Peak		PM Peak	
			Entry	Exit	Entry	Exit
310 - Hotel	200 Rooms	Total	41	38	59	56
		<i>Non-Pass-By</i>	41	32	53	52
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	0	6	6	4
310 - Hotel	150 Rooms	Total	29	26	37	35
		<i>Non-Pass-By</i>	29	21	33	32
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	0	5	4	3
221 - Multifamily Housing (Mid-Rise) – Not Close to Rail Transit	1,411 Dwelling Units	Total	135	450	327	184
		<i>Non-Pass-By</i>	134	445	278	160
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	1	5	49	24
710 - General Office Building	285,400 SF	Total	299	41	50	263
		<i>Non-Pass-By</i>	286	35	44	248
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	13	6	6	15
760 - Research and Development Center	285,400 SF	Total	107	30	32	96
		<i>Non-Pass-By</i>	102	26	26	86
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	5	4	6	10
820 - Shopping Center (>150k)	159,600 SF	Total	143	87	352	367
		<i>Non-Pass-By</i>	126	77	214	213
		<i>Pass-By</i>	0	0	87	87
		<i>Internal</i>	17	10	51	67
215 - Single-Family Attached Housing	57 Dwelling Units	Total	5	14	14	11
		<i>Non-Pass-By</i>	5	14	11	9
		<i>Pass-By</i>	0	0	0	0
		<i>Internal</i>	0	0	3	2
Total (All Trips)			759	686	871	1,012
<i>Total Non-Pass-By</i>			723	650	659	800
<i>Total Pass-By</i>			0	0	87	87
<i>Total Internal</i>			36	36	125	125

The project team met with the City of Dublin, Union County, Franklin County, and ODOT District 6 in November 2025 to discuss the development and requirements for the TIS. Meeting minutes are provided in the **Attachment**. **Figure 1** shows the proposed development area, access points, and study intersections. **Table 2** describes the TIS scope per correspondence with review agencies.

The list of study intersections is as follows (numbers and letters correspond with **Figure 1**):

- 1) SR-161 & Houchard Road
 - 2) SR-161 & Weldon Road
 - 3) SR-161 & Cosgray Road
 - 4) SR-161 & Industrial Parkway/University Boulevard
 - 5) Industrial Parkway & Old Industrial Parkway/Costco Access
 - 6) SR-161 & US-33 SB Ramps/Heritage Boulevard
 - 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road
 - 8) Cosgray Road & Fishel Drive S./Heritage Boulevard (conceptual)
 - 9) University Boulevard & Heritage Boulevard (conceptual)
 - 10) Heritage Boulevard & Eiterman Road
 - 11) Cosgray Road & Shier Rings Road
 - 12) Eiterman Road & Shier Rings Road
 - 13) Eiterman Road & University Boulevard
-
- A) Cosgray Road & Site Access A (right-in, right-out)
 - B) Cosgray Road & Fishel Drive N./Site Access B
 - C) Cosgray Road & Site Access C (right-in, right-out)
 - D) SR-161 & Site Access D (right-in, right-out)
 - E) University Boulevard & Site Access E

Table 2 summarizes CM's understanding of the scope for the TIS.

Figure 1 – Proposed Site (yellow outline) and Study Intersections

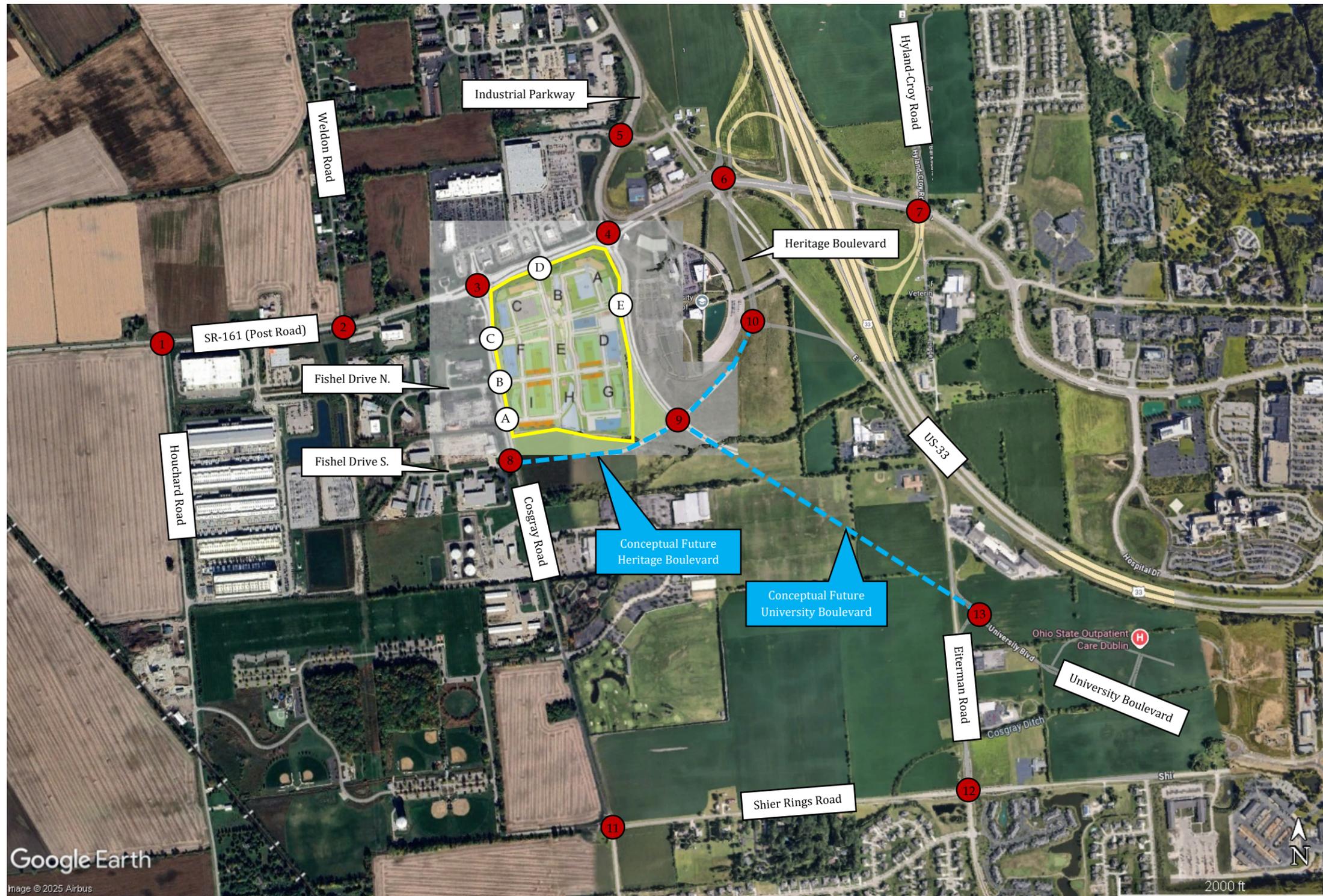


Table 2 – TIS Scope

<p>Data Collection</p>	<p>Obtain 24 hours of vehicular turning movement count data at the following intersections on a typical weekday (Tues-Thurs) while school is in session (numbers correspond with Figure 1):</p> <ol style="list-style-type: none"> 1) SR-161 & Houchard Road (2025 data provided by ODOT) 2) SR-161 & Weldon Road (2025 data provided by ODOT) 3) SR-161 & Cosgray Road (2025 data provided by ODOT) 4) SR-161 & Industrial Parkway/University Boulevard (CM to collect) 5) Industrial Parkway & Old Industrial Parkway/Costco Access (CM to collect) 6) SR-161 & US-33 SB Ramps/Heritage Boulevard (CM to collect) 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road (CM to collect) 8) Cosgray Road & Fishel Drive S./Heritage Boulevard (CM to collect) 10) Heritage Boulevard & Eiterman Road (CM to collect) 11) Cosgray Road & Shier Rings Road (CM to collect) 12) Eiterman Road & Shier Rings Road (CM to collect) 13) Eiterman Road & University Boulevard (CM to collect) <p>B) Cosgray Road & Fishel Drive N./Site Access B (CM to collect)</p> <p>Calculate network peak hours. The same AM Peak hour and PM Peak hour will be utilized for all study intersections.</p>
<p>Trip Generation</p>	<p>Generate trips for the proposed development using ITE LUCs and the Trip Generation Manual, 12th Edition. Assign traffic to the proposed site access points using a distribution determined from count data, area knowledge/travel patterns, and engineering judgment. Trip generation outputs from ITE can be found in the Attachment.</p> <p>Trips generated by known and approved background developments in the corridor will be added to traffic volumes as Background traffic. CM will review ODOT’s SR-161 Corridor Study, when provided, to determine which developments to include, and to what scale said developments should be included. For example, the Jerome Innovation District development is substantial in size. However, only one multifamily development is currently approved, per ODOT. CM is requesting review agencies determine and confirm which background developments, and scale of developments, to include in the traffic volumes as part of this MOU review.</p>
<p>Volume Development</p>	<p>Develop Opening Day (2028), Interim Year (2038), and Horizon Year (2048) traffic plates for Build and No Build traffic in the AM and PM Peaks based on growth rates from ODOT’s SR-161 Corridor Study and the City of Dublin’s travel demand model. Not all intersections will be analyzed for each analysis year. For a development of this size, ODOT will require a 20-year horizon while the remaining jurisdictions will require a 10-year horizon. In general, the SR-161 intersections will have a 20-year horizon and all remaining intersections will have a 10-year horizon. Below is a summary of which intersections will be analyzed for each analysis year.</p> <p>Opening Day (2028):</p> <ol style="list-style-type: none"> 1) SR-161 & Houchard Road 2) SR-161 & Weldon Road 3) SR-161 & Cosgray Road 4) SR-161 & Industrial Parkway/University Boulevard 5) Industrial Parkway & Old Industrial Parkway/Costco Access 6) SR-161 & US-33 SB Ramps/Heritage Boulevard 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road

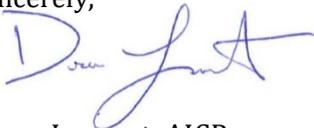
	<p>8) Cosgray Road & Fishel Drive S./Heritage Boulevard 10) Heritage Boulevard & Eiterman Road 11) Cosgray Road & Shier Rings Road 12) Eiterman Road & Shier Rings Road 13) Eiterman Road & University Boulevard A) Cosgray Road & Site Access A B) Cosgray Road & Fishel Drive N./Site Access B C) Cosgray Road & Site Access C D) SR-161 & Site Access D E) University Boulevard & Site Access E</p> <p>Interim Year (2038): 5) Industrial Parkway & Old Industrial Parkway/Costco Access 8) Cosgray Road & Fishel Drive S./Heritage Boulevard 9) University Boulevard & Heritage Boulevard (conceptual) 10) Heritage Boulevard & Eiterman Road 11) Cosgray Road & Shier Rings Road 12) Eiterman Road & Shier Rings Road 13) Eiterman Road & University Boulevard A) Cosgray Road & Site Access A B) Cosgray Road & Fishel Drive N./Site Access B C) Cosgray Road & Site Access C D) SR-161 & Site Access D E) University Boulevard & Site Access E</p> <p>Horizon Year (2048): 1) SR-161 & Houchard Road 2) SR-161 & Weldon Road 3) SR-161 & Cosgray Road 4) SR-161 & Industrial Parkway/University Boulevard 6) SR-161 & US-33 SB Ramps/Heritage Boulevard 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road D) SR-161 & Site Access D</p> <p>For all SR-161 intersections, ODOT peak hour to design hour factors will be applied to the count data prior to the application of background growth rate data. Note that volumes between SR-161 intersections and all other study intersection will not be smooth.</p> <p>For the Interim Year (2038) analysis, conceptual future Heritage Boulevard and University Boulevard (see Figure 1) will be assumed to be in place. CM will coordinate with the City of Dublin to utilize the travel demand model to estimate volume diversions for the added roadway connections. If utilizing the travel demand model is infeasible for this project, CM will develop estimated volume diversions for the new roadway connections based on count data and engineering judgment.</p> <p>CM will develop and submit preliminary traffic volumes for the TIS for review/approval prior to completing the analysis.</p>
<p>Turn Lane Analysis</p>	<p>Perform turn lane warrant analyses at each proposed access point and the free-flow approaches to all study intersections based on standard ODOT turn lane warrant graphs. Calculate lengths for any turn lanes which meet warrants. Calculate turn lane lengths for all existing turn lanes in the study area, if applicable.</p>

Capacity Analysis	<p>Use TransModeler (base model to be provided by ODOT) to perform capacity analysis at the following intersections: 1) SR-161 & Houchard Road 2) SR-161 & Weldon Road 3) SR-161 & Cosgray Road 4) SR-161 & Industrial Parkway/University Boulevard 6) SR-161 & US-33 SB Ramps/Heritage Boulevard 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road D) SR-161 & Site Access D</p> <p>Determine if intersections meet acceptable measures of effectiveness (MOEs) per the OATS Manual. If acceptable MOEs are not obtained in No Build conditions or Build conditions, Build conditions must mitigate intersections to return them to No Build conditions.</p> <p>Use Synchro, HCS, or Sidra (Sidra for City of Dublin roundabouts) to perform capacity analysis at the following intersections: 5) Industrial Parkway & Old Industrial Parkway/Costco Access 8) Cosgray Road & Fishel Drive S./Heritage Boulevard 10) Heritage Boulevard & Eiterman Road 11) Cosgray Road & Shier Rings Road 12) Eiterman Road & Shier Rings Road 13) Eiterman Road & University Boulevard A) Cosgray Road & Site Access A B) Cosgray Road & Fishel Drive N./Site Access B C) Cosgray Road & Site Access C D) SR-161 & Site Access D E) University Boulevard & Site Access E</p> <p>A minimum level-of-service (LOS) D for the overall intersection and intersection approaches, and LOS E for individual movements, will be considered acceptable at each study intersection. If intersections do not meet these criteria in any analysis scenario, determine mitigation strategies to obtain acceptable LOS.</p>
Queuing Analysis	<p>Use TransModeler to estimate average and 95th percentile queue lengths at the following intersections: 1) SR-161 & Houchard Road 2) SR-161 & Weldon Road 3) SR-161 & Cosgray Road 4) SR-161 & Industrial Parkway/University Boulevard 6) SR-161 & US-33 SB Ramps/Heritage Boulevard 7) SR-161 & US-33 NB Ramps/Hyland-Croy Road D) SR-161 & Site Access D</p> <p>Use Synchro, HCS, or Sidra (Sidra for City of Dublin roundabouts) to estimate average and 95th percentile queue lengths at the following intersections: 5) Industrial Parkway & Old Industrial Parkway/Costco Access 8) Cosgray Road & Fishel Drive S./Heritage Boulevard 10) Heritage Boulevard & Eiterman Road 11) Cosgray Road & Shier Rings Road 12) Eiterman Road & Shier Rings Road 13) Eiterman Road & University Boulevard A) Cosgray Road & Site Access A B) Cosgray Road & Fishel Drive N./Site Access B C) Cosgray Road & Site Access C D) SR-161 & Site Access D E) University Boulevard & Site Access E</p>

	If queue lengths significantly exceed available storage space during AM or PM Peak hours, determine mitigation strategies to reduce queue lengths.
Sight Distance Analysis	Develop intersection sight distance exhibits for each proposed access point per City of Dublin sight distance standards. For intersection D, an exhibit using methodologies from the ODOT L&D Manual will also be developed.
Other	A supplemental capacity analysis using TransModeler will be completed to determine the impacts of removing intersection D (Site Access D). Because this access will be restricted to right-in, right-out movements only, it is anticipated that removal of the access point will only impact the two adjacent roundabout intersections (intersections 3 and 4). If improvements are needed at intersections 3 and 4 with Site Access D in place, it will be assumed that the access point is needed, and this task will be omitted.
Report	Develop a report that documents what is necessary to satisfy the City of Dublin, Union County, Franklin County, and ODOT District 6 which generally includes an executive summary, development details, analysis, results, conclusions, and recommendations.

If you have any questions or comments, please contact me at 614-656-2421 or dlaurent@cmtran.com.

Sincerely,



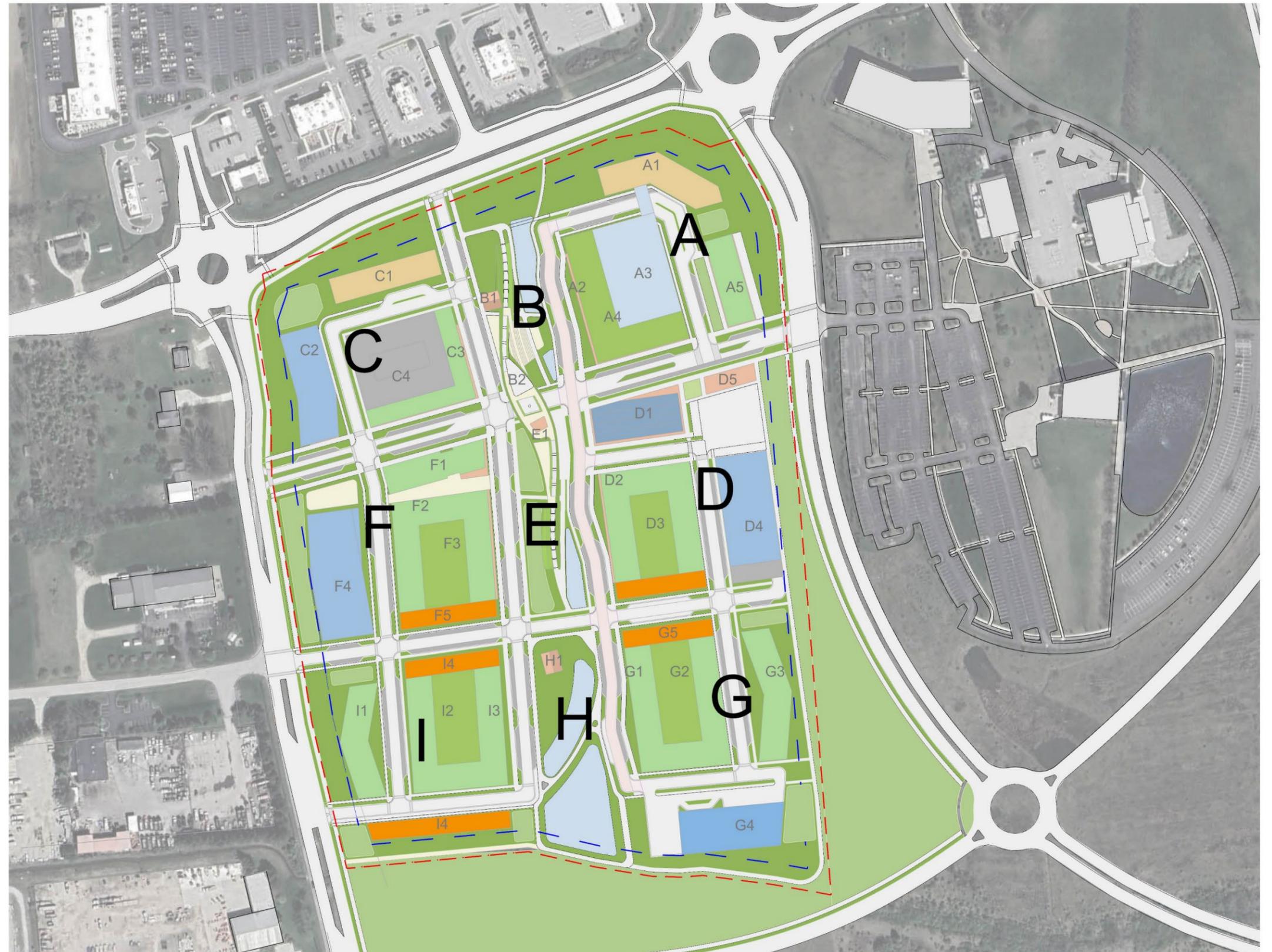
Drew Laurent, AICP
Transportation Planner
Carpenter Marty Transportation

Attachment

Attachment



SITE PLAN - 11/12/2025



TOTAL DEVELOPMENT		
BLOCK AREA (SF)		1,659,700
(ACRES)		38.101
HOTEL		345,800
OFFICE / RESEARCH		570,800
CONFERENCE		51,000
RETAIL		159,600
RESIDENTIAL		1,199,700
(UNITS) APPROX		1,411
	STUDIO (25%)	353
	1 BED (50%)	706
	2 BED (25%)	353
TOWNHOUSE		57
PARKING	REQUIRED	4576
	Surface (spaces)	372
	Garage (spaces)	4143
	TOTAL	4514
TOTAL DEV excluding parking		2,383,900
TOTAL DEV with parking		3,291,663

Minutes

Cosgray Commons TIS

Meeting Date: 12/11/2025

Meeting Subject: Cosgray Commons TIS MOU

Meeting Location: Virtual via Microsoft Teams

Attendees

X	Drew Laurent	Carpenter Marty	X	Luke Sutton	Union County
X	Leiana Yates	Carpenter Marty	X	Kristi Norfolk	ODOT D6
X	Aidan Parsons	Carpenter Marty	X	Jessica Ormeroid	ODOT D6
X	Tina Wawszkiewicz	City of Dublin	X	Andrew Hurst	ODOT D6
X	Cameron Burrell	City of Dublin	X	Kristen Mastalski	Franklin County
X	Chris Will	City of Dublin	X	Bill Hebble	Franklin County

Copied Parties

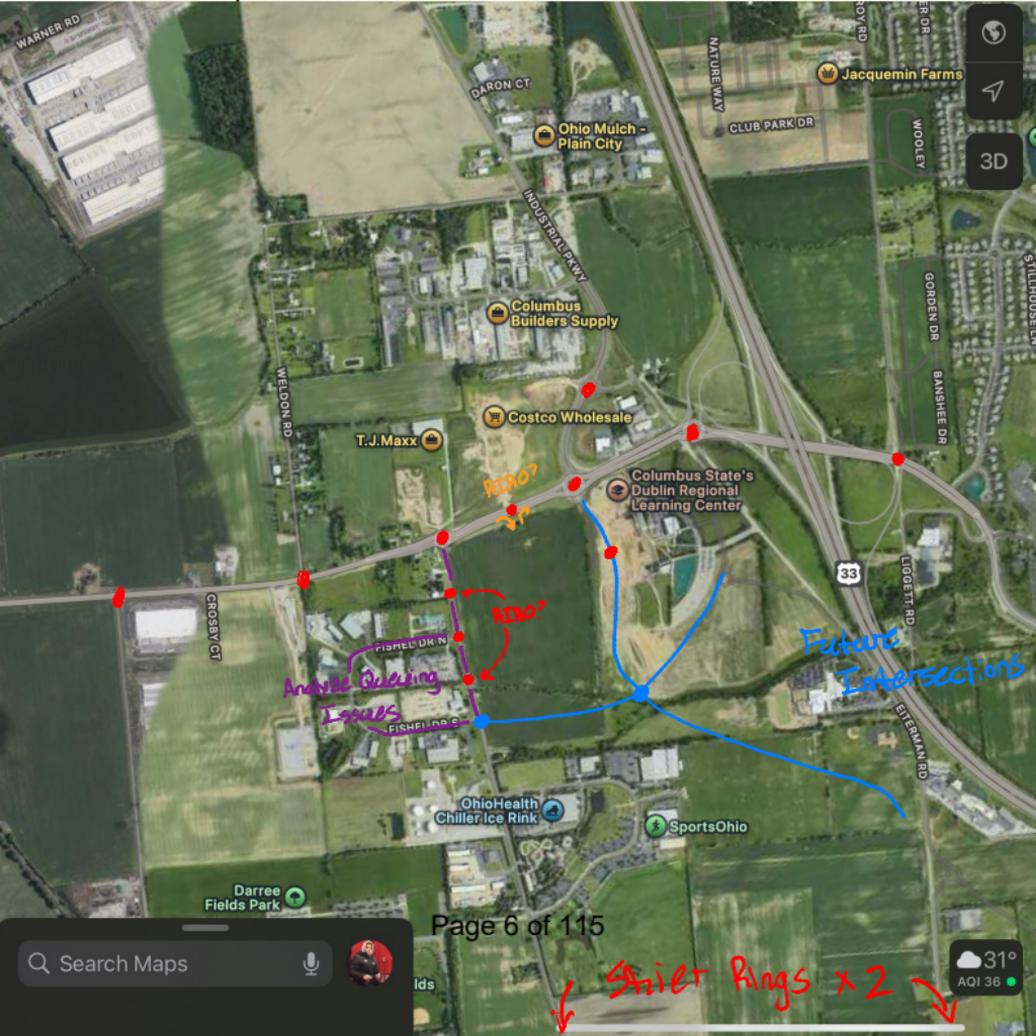
X	Gina Balsamo	Carpenter Marty			

The enclosed constitutes the writer's understanding of the meeting. Any corrections and/or clarifications should be directed to the writer's attention within three (3) business days upon receipt of the meeting minutes.

Agenda & Notes

- Overview by Carpenter Marty
 - Overview of anticipated study intersections
 - SR-161 & Houchard Road
 - SR-161 & Weldon Road
 - SR-161 & Cosgray Road
 - SR-161 & University Boulevard
 - SR-161 & Heritage Blvd./US-33 SB Ramps
 - SR-161 & US-33 NB Off-Ramp/Hyland-Croy Road
 - Industrial Parkway & Dublin Green/Old Industrial Parkway
 - Cosgray Road & Fischel Drive N.
 - Cosgray Road & Fischel Drive S.
 - Cosgray Road & Shier Rings Road
 - Shier Rings Road & Eiterman Road

- Overview of the density plan
 - Over 500 peak hour trips anticipated
 - Hotel, conference center, mixed residential, retail
 - Carpenter Marty to complete trip generation analysis
- ODOT corridor study (to be completed early next year)
 - From east edge of Plain City to US-33
 - Assumptions for land uses along the corridor, may not align with proposed Cosgray Commons development
 - ODOT to share once completed (ODOT)
 - ODOT to send current counts available (ODOT)
 - ODOT to provide the Transmodeler files (ODOT)
- Franklin County
 - Little input, along for the ride with the limited amount of ownership in the area, would like to remain included
 - Coordinating with ODOT at Houchard and 161
- Union County
 - Analyze Industrial Parkway & Dublin Greene/Old Industrial Parkway roundabout
- Send out trip generation analysis and distribution analysis prior to MOU submittal (Carpenter Marty)
- Add Shier Rings & Cosgray & Shier Rings & Eiterman to the study
- Horizon Year
 - 20 year horizon since over 500 trips on ODOT intersections
 - Potentially 10 year horizon with others
 - CM to come up with thoughts on approach to Horizon Year and provide to group as a part of MOU (Carpenter Marty)
- Growth Rates & Background Developments
 - Utilize background data from corridor study model
 - Jerome Innovation district (Houchard Road extension)
 - CM to determine how to build future Eiterman Road connection into Horizon Year analysis
- Look at the development with & without the RI/RO access point at Post Road. If in ODOT jurisdiction, ODOT may not support it unless the adjacent roundabouts have capacity issues.
- TIS must be submitted for PDP to be complete
 - Submitted & agency coordination must be complete
 - Dependent on magnitude of first round of comments



Stair Rings x 2

Mobile Ordering Zones

Future Intersections

R3007

R3007

Scenario - 1

Scenario Name: AM Peak

User Group:

Dev. phase: 1

No. of Years to Project 0

Traffic:

Analyst Note:

Warning:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
310 - Hotel	General	Rooms	200	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	41	38	79
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.49(X) - 18.48$	52%	48%	
310(1) - Hotel	General	Rooms	150	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	29	26	55
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.49(X) - 18.48$	52%	48%	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	General	Dwelling Units	1411	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	135	450	585
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.42(X) - 7.77$	23%	77%	
710 - General Office Building	General	1000 Sq. Ft. GFA	285.4	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	299	41	340
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 1.12(X) + 19.95$	88%	12%	
760 - Research and Development Center	General	1000 Sq. Ft. GFA	285.4	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Average	107	30	137
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				0.48	78%	22%	
820 - Shopping Center (>150k)	General	1000 Sq. Ft. GLA	159.6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	143	87	230
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.61(X) + 132.89$	62%	38%	
215 - Single-Family Attached Housing	General	Dwelling Units	57	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.	Best Fit (LIN)	5	14	19
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.59(X) - 15.25$	25%	75%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
310 - Hotel	100	100	1	1	52	48
310(1) - Hotel	100	100	1	1	52	48
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	23	77
710 - General Office Building	99	100	1.1	1.1	88	12
760 - Research and Development Center	100	100	1	1	78	22
820 - Shopping Center (>150k)	100	100	1	1	62	38
215 - Single-Family Attached Housing	100	100	1	1	25	75

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
310 - Hotel	41	38	0	0	41	38
		79	0	0		79
310(1) - Hotel	29	26	0	0	29	26
		55	0	0		55
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	135	450	0	0	135	450
		585	0	0		585
710 - General Office Building	329	45	3	0	332	45
		374	3	0		377
760 - Research and Development Center	107	30	0	0	107	30
		137	0	0		137
820 - Shopping Center (>150k)	143	87	0	0	143	87
		230	0	0		230
215 - Single-Family Attached Housing	5	14	0	0	5	14
		19	0	0		19

INTERNAL VEHICLE TRIP REDUCTION

LAND USE GROUP ASSIGNMENT:

Land Use	Land Use Group
310 - Hotel	Hotel
310(1) - Hotel	Hotel
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	Residential
710 - General Office Building	Office
760 - Research and Development Center	Office
820 - Shopping Center (>150k)	Retail
215 - Single-Family Attached Housing	Residential

BALANCED PERSON TRIPS:

310 - Hotel	310(1) - Hotel
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Persons Exit	PAF	UIPTC	Unconstrained Demand
45	1	0	0
Persons Entry	PAF	UIPTC	Unconstrained Demand
332	1	0	0
710 - General Office Building			
Persons Exit	PAF	UIPTC	Unconstrained Demand
45	1	14	6
Persons Entry	PAF	UIPTC	Unconstrained Demand
332	1	2	7
710 - General Office Building			
Persons Exit	PAF	UIPTC	Unconstrained Demand
45	1	0.25	0
Persons Entry	PAF	UIPTC	Unconstrained Demand
332	1	0.75	2
760 - Research and Development Center			
Persons Exit	PAF	UIPTC	Unconstrained Demand
30	1	14	4
Persons Entry	PAF	UIPTC	Unconstrained Demand
107	1	2	2
760 - Research and Development Center			
Persons Exit	PAF	UIPTC	Unconstrained Demand
30	1	0.25	0
Persons Entry	PAF	UIPTC	Unconstrained Demand
107	1	0.75	1
820 - Shopping Center (>150k)			
Persons Exit	PAF	UIPTC	Unconstrained Demand
88	1	7	6
Persons Entry	PAF	UIPTC	Unconstrained Demand
143	1	8.5	12

====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	6
<<<== BALANCED <<<==	7
====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	4
<<<== BALANCED <<<==	2
====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0

Unconstrained Demand	UIPTC	PAF	Persons Entry
0	0	1	107
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	0	1	30
820 - Shopping Center (>150k)			
Unconstrained Demand	UIPTC	PAF	Persons Entry
23	16	1	143
Unconstrained Demand	UIPTC	PAF	Persons Exit
13	14.5	1	88
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
0	0	1	5
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	0.5	1	14
820 - Shopping Center (>150k)			
Unconstrained Demand	UIPTC	PAF	Persons Entry
23	16	1	143
Unconstrained Demand	UIPTC	PAF	Persons Exit
13	14.5	1	88
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
0	0	1	5
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	0.5	1	14
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
0	1	1	5
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	0.5	1	14

INTERNAL PERSON TRIPS:

310 - Hotel			
Internal Person Trips From	Entry	Exit	Total
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	0	0	0
710 - General Office Building	0	2	2
760 - Research and Development Center	0	1	1
820 - Shopping Center (>150k)	0	3	3
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	0	6	6
310(1) - Hotel			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	0	0	0
710 - General Office Building	0	2	2
760 - Research and Development Center	0	1	1
820 - Shopping Center (>150k)	0	2	2
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	0	5	5
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
310(1) - Hotel	0	0	0
710 - General Office Building	0	2	2
760 - Research and Development Center	0	1	1
820 - Shopping Center (>150k)	1	2	4
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	1	5	6
710 - General Office Building			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	2	0	2
310(1) - Hotel	2	0	2
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	2	0	2
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	7	6	13
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	13	6	19
760 - Research and Development Center			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	1	0	1
310(1) - Hotel	1	0	1
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	1	0	1
710 - General Office Building	0	0	0

820 - Shopping Center (>150k)	2	4	6
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	5	4	9
820 - Shopping Center (>150k)			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	3	0	3
310(1) - Hotel	2	0	2
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	2	1	4
710 - General Office Building	6	7	13
760 - Research and Development Center	4	2	6
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	17	10	27
215 - Single-Family Attached Housing			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	0	0	0
710 - General Office Building	0	0	0
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	0	0	0
Total Internal Person Trips	0	0	0

INTERNAL VEHICLE TRIPS AND CAPTURE:

310 - Hotel			
Total Internal Person Trips	0	6	6
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	6	6
Total External Vehicle Trips	41	32	73
Internal Vehicle Trip Capture	0%	16%	0%
310(1) - Hotel			
Total Internal Person Trips	0	5	5
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	5	5
Total External Vehicle Trips	29	21	50
Internal Vehicle Trip Capture	0%	19%	0%
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit			
Total Internal Person Trips	1	5	6
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	1	5	6
Total External Vehicle Trips	134	445	579
Internal Vehicle Trip Capture	1%	1%	0%
710 - General Office Building			
Total Internal Person Trips	13	6	19
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	13	6	19
Total External Vehicle Trips	286	35	321
Internal Vehicle Trip Capture	4%	15%	0%
760 - Research and Development Center			
Total Internal Person Trips	5	4	9
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	5	4	9
Total External Vehicle Trips	102	26	128
Internal Vehicle Trip Capture	5%	13%	0%
820 - Shopping Center (>150k)			
Total Internal Person Trips	17	10	27
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	17	10	27
Total External Vehicle Trips	126	77	203
Internal Vehicle Trip Capture	12%	11%	0%
215 - Single-Family Attached Housing			
Total Internal Person Trips	0	0	0
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	0	0	0
Total External Vehicle Trips	5	14	19
Internal Vehicle Trip Capture	0%	0%	0%

PASS-BY VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Pass-by Vehicle Trip %		Pass-by Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	41	32	0.00%	0.00%	0	0
310(1) - Hotel	29	21	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	134	445	0.00%	0.00%	0	0
710 - General Office Building	286	35	0.00%	0.00%	0	0
760 - Research and Development Center	102	26	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	126	77	0.00%	0.00%	0	0
215 - Single-Family Attached Housing	5	14	0.00%	0.00%	0	0

DIVERTED VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	41	32	0.00%	0.00%	0	0
310(1) - Hotel	29	21	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	134	445	0.00%	0.00%	0	0
710 - General Office Building	286	35	0.00%	0.00%	0	0
760 - Research and Development Center	102	26	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	126	77	0.00%	0.00%	0	0
215 - Single-Family Attached Housing	5	14	0.00%	0.00%	0	0

EXTRA VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	41	32	0.00%	0.00%	0	0
310(1) - Hotel	29	21	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	134	445	0.00%	0.00%	0	0
710 - General Office Building	286	35	0.00%	0.00%	0	0
760 - Research and Development Center	102	26	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	126	77	0.00%	0.00%	0	0
215 - Single-Family Attached Housing	5	14	0.00%	0.00%	0	0

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
310 - Hotel	41	32	73
310(1) - Hotel	29	21	50
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	134	445	579
710 - General Office Building	286	35	321
760 - Research and Development Center	102	26	128
820 - Shopping Center (>150k)	126	77	203
215 - Single-Family Attached Housing	5	14	19

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	759	686	1445
Internal Vehicle Trips	36	36	72
External Vehicle Trips	723	650	1373
Internal Vehicle Trip Capture	5%	5%	5%
Pass-by Vehicle Trips	0	0	0
Diverted Vehicle Trips	0	0	0
Extra Reduced Vehicle Trips	0	0	0
New Vehicle Trips	723	650	1373

Scenario - 2
 Scenario Name: PM Peak
 Dev. phase: 1
 Analyst Note:
 Warning:

User Group:
 No. of Years to Project 0
 Traffic:

VEHICLE TRIPS BEFORE REDUCTION

Land Use & Data Source	Location	IV	Size	Time Period	Method	Entry	Exit	Total
					Rate/Equation	Split%	Split%	
310 - Hotel	General	Rooms	200	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN)	59	56	115
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.85(X) - 55.22$	51%	49%	
310(1) - Hotel	General	Rooms	150	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN)	37	35	72
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.85(X) - 55.22$	51%	49%	
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	General	Dwelling Units	1411	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN)	327	184	511
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.36(X) + 3.07$	64%	36%	
710 - General Office Building	General	1000 Sq. Ft. GFA	285.4	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN)	50	263	313
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.99(X) + 31.14$	16%	84%	
760 - Research and Development Center	General	1000 Sq. Ft. GFA	285.4	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Average	32	96	128
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				0.45	25%	75%	
820 - Shopping Center (>150k)	General	1000 Sq. Ft. GLA	159.6	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LOG)	352	367	719
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$\ln(T) = 0.66\ln(X) + 3.23$	49%	51%	
215 - Single-Family Attached Housing	General	Dwelling Units	57	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	Best Fit (LIN)	14	11	25
Data Source: Trip Generation Manual, 12th Ed	Urban/Suburban				$T = 0.57(X) - 7.84$	57%	43%	

VEHICLE TO PERSON TRIP CONVERSION

BASELINE SITE VEHICLE CHARACTERISTICS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
310 - Hotel	100	100	1	1	51	49
310(1) - Hotel	100	100	1	1	51	49
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	100	100	1	1	64	36
710 - General Office Building	100	99	1.1	1.1	16	84
760 - Research and Development Center	100	100	1	1	25	75
820 - Shopping Center (>150k)	100	100	1	1	49	51
215 - Single-Family Attached Housing	100	100	1	1	57	43

ESTIMATED BASELINE SITE PERSON TRIPS:

Land Use	Baseline Site Vehicle Mode Share		Baseline Site Vehicle Occupancy		Baseline Site Vehicle Directional Split	
	Entry (%)	Exit (%)	Entry	Exit	Entry (%)	Exit (%)
310 - Hotel	59	56	0	0	59	56
		115	0	0		115
310(1) - Hotel	37	35	0	0	37	35
		72	0	0		72
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	327	184	0	0	327	184
		511	0	0		511
710 - General Office Building	55	290	0	3	55	293
		345	0	3		348
760 - Research and Development Center	32	96	0	0	32	96
		128	0	0		128
820 - Shopping Center (>150k)	352	367	0	0	352	367
		719	0	0		719
215 - Single-Family Attached Housing	14	11	0	0	14	11
		25	0	0		25

INTERNAL VEHICLE TRIP REDUCTION

LAND USE GROUP ASSIGNMENT:

Land Use	Land Use Group
310 - Hotel	Hotel
310(1) - Hotel	Hotel
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	Residential
710 - General Office Building	Office
760 - Research and Development Center	Office
820 - Shopping Center (>150k)	Retail
215 - Single-Family Attached Housing	Residential

BALANCED PERSON TRIPS:

310 - Hotel	310(1) - Hotel
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Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	0	0	0	0	0	1	37
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	0	0	0	0	1	1	35
310 - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	0.5	0	0	0	0	1	327
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	3	2	1	1	0.75	1	184
310 - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	0	0	0	0	1	1	55
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	0	0	0	0	1	1	293
310 - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	0	0	0	0	1	1	32
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	0	0	0	0	1	1	96
310 - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	8	4	4	4	1	1	352
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	8.5	5	5	9	2.5	1	367
310 - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
56	1	0.5	0	0	0	0	1	14
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
59	1	3	2	0	0	0.75	1	11
310(1) - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
35	1	0.5	0	0	0	1	1	327
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
37	1	3	1	1	1	0.75	1	184
310(1) - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
35	1	0	0	0	0	1	1	55
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
37	1	0	0	0	0	1	1	293
310(1) - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
35	1	0	0	0	0	1	1	32
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
37	1	0	0	0	0	1	1	96
310(1) - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
35	1	8	3	3	4	1	1	352
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
37	1	8.5	3	3	9	2.5	1	367
310(1) - Hotel								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
35	1	0.5	0	0	0	0	1	14
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
37	1	3	1	0	0	0.75	1	11
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
184	1	1	2	2	8	14.25	1	55
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
327	1	1	3	1	1	0.5	1	293
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
184	1	1	2	2	5	14.25	1	32
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
327	1	1	3	0	0	0.5	1	96
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
184	1	21	39	18	18	5	1	352
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
327	1	23	75	48	48	13	1	367
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
184	1	0	0	0	0	1	1	14
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
327	1	0	0	0	0	1	1	11
710 - General Office Building								
Persons Exit	PAF	UIPTC	Unconstrained Demand	====> BALANCED ==>>>	Unconstrained Demand	UIPTC	PAF	Persons Entry
184	1	0	0	0	0	1	1	11
Persons Entry	PAF	UIPTC	Unconstrained Demand	<<<== BALANCED <<<==	Unconstrained Demand	UIPTC	PAF	Persons Exit
327	1	0	0	0	0	1	1	11
760 - Research and Development Center								

Persons Exit	PAF	UIPTC	Unconstrained Demand
293	1	0	0
Persons Entry	PAF	UIPTC	Unconstrained Demand
55	1	0	0
710 - General Office Building			
Persons Exit	PAF	UIPTC	Unconstrained Demand
293	1	10	29
Persons Entry	PAF	UIPTC	Unconstrained Demand
55	1	15.5	9
710 - General Office Building			
Persons Exit	PAF	UIPTC	Unconstrained Demand
293	1	0.5	1
Persons Entry	PAF	UIPTC	Unconstrained Demand
55	1	14.25	8
760 - Research and Development Center			
Persons Exit	PAF	UIPTC	Unconstrained Demand
96	1	10	10
Persons Entry	PAF	UIPTC	Unconstrained Demand
32	1	15.5	5
760 - Research and Development Center			
Persons Exit	PAF	UIPTC	Unconstrained Demand
96	1	0.5	0
Persons Entry	PAF	UIPTC	Unconstrained Demand
32	1	14.25	5
820 - Shopping Center (>150k)			
Persons Exit	PAF	UIPTC	Unconstrained Demand
367	1	13	48
Persons Entry	PAF	UIPTC	Unconstrained Demand
352	1	5	18

====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	14
<<<== BALANCED <<<==	4
====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	10
<<<== BALANCED <<<==	4
====> BALANCED ==>>>	0
<<<== BALANCED <<<==	0
====> BALANCED ==>>>	3
<<<== BALANCED <<<==	2

Unconstrained Demand	UIPTC	PAF	Persons Entry
0	0	1	32
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	0	1	96
820 - Shopping Center (>150k)			
Unconstrained Demand	UIPTC	PAF	Persons Entry
14	4	1	352
Unconstrained Demand	UIPTC	PAF	Persons Exit
4	1	1	367
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
0	1	1	14
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	1	1	11
820 - Shopping Center (>150k)			
Unconstrained Demand	UIPTC	PAF	Persons Entry
14	4	1	352
Unconstrained Demand	UIPTC	PAF	Persons Exit
4	1	1	367
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
0	1	1	14
Unconstrained Demand	UIPTC	PAF	Persons Exit
0	1	1	11
215 - Single-Family Attached Housing			
Unconstrained Demand	UIPTC	PAF	Persons Entry
3	23	1	14
Unconstrained Demand	UIPTC	PAF	Persons Exit
2	21	1	11

INTERNAL PERSON TRIPS:

310 - Hotel			
Internal Person Trips From	Entry	Exit	Total
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	1	0	1
710 - General Office Building	0	0	0
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	5	4	9
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	6	4	10
310(1) - Hotel			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	1	0	1
710 - General Office Building	0	0	0
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	3	3	6
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	4	3	7
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	1	1
310(1) - Hotel	0	1	1
710 - General Office Building	1	2	3
760 - Research and Development Center	0	2	2
820 - Shopping Center (>150k)	48	18	65
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	49	24	73
710 - General Office Building			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	2	1	3
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	4	14	18
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	6	15	21
760 - Research and Development Center			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	2	0	2
710 - General Office Building	0	0	0

820 - Shopping Center (>150k)	4	10	13
215 - Single-Family Attached Housing	0	0	0
Total Internal Person Trips	6	10	16
820 - Shopping Center (>150k)			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	4	5	9
310(1) - Hotel	3	3	6
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	18	48	65
710 - General Office Building	14	4	18
760 - Research and Development Center	10	4	13
215 - Single-Family Attached Housing	2	3	5
Total Internal Person Trips	51	67	118
215 - Single-Family Attached Housing			
Internal Person Trips From	Entry	Exit	Total
310 - Hotel	0	0	0
310(1) - Hotel	0	0	0
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit	0	0	0
710 - General Office Building	0	0	0
760 - Research and Development Center	0	0	0
820 - Shopping Center (>150k)	3	2	5
Total Internal Person Trips	3	2	5

INTERNAL VEHICLE TRIPS AND CAPTURE:

310 - Hotel			
Total Internal Person Trips	6	4	10
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	6	4	10
Total External Vehicle Trips	53	52	105
Internal Vehicle Trip Capture	10%	7%	0%
310(1) - Hotel			
Total Internal Person Trips	4	3	7
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	4	3	7
Total External Vehicle Trips	33	32	65
Internal Vehicle Trip Capture	11%	8%	0%
221 - Multifamily Housing (Mid-Rise)-Not Close to Rail Transit			
Total Internal Person Trips	49	24	73
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	49	24	73
Total External Vehicle Trips	278	160	438
Internal Vehicle Trip Capture	15%	13%	0%
710 - General Office Building			
Total Internal Person Trips	6	15	21
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	6	15	21
Total External Vehicle Trips	44	248	292
Internal Vehicle Trip Capture	12%	6%	0%
760 - Research and Development Center			
Total Internal Person Trips	6	10	16
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	6	10	16
Total External Vehicle Trips	26	86	112
Internal Vehicle Trip Capture	19%	10%	0%
820 - Shopping Center (>150k)			
Total Internal Person Trips	51	67	118
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	51	67	118
Total External Vehicle Trips	301	300	601
Internal Vehicle Trip Capture	14%	18%	0%
215 - Single-Family Attached Housing			
Total Internal Person Trips	3	2	5
Vehicle Mode Share	100%	100%	-
Vehicle Occupancy	1.00	1.00	-
Total Vehicle Internal Trips	3	2	5
Total External Vehicle Trips	11	9	20
Internal Vehicle Trip Capture	21%	19%	0%

PASS-BY VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Pass-by Vehicle Trip %		Pass-by Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	53	52	0.00%	0.00%	0	0
310(1) - Hotel	33	32	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	278	160	0.00%	0.00%	0	0
710 - General Office Building	44	248	0.00%	0.00%	0	0
760 - Research and Development Center	26	86	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	301	300	29.00%	29.00%	87	87
215 - Single-Family Attached Housing	11	9	0.00%	0.00%	0	0

DIVERTED VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	53	52	0.00%	0.00%	0	0
310(1) - Hotel	33	32	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	278	160	0.00%	0.00%	0	0
710 - General Office Building	44	248	0.00%	0.00%	0	0
760 - Research and Development Center	26	86	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	301	300	0.00%	0.00%	0	0
215 - Single-Family Attached Housing	11	9	0.00%	0.00%	0	0

EXTRA VEHICLE TRIP REDUCTION

Land Use	External Vehicle Trips		Diverted Vehicle Trip %		Diverted Vehicle Trips	
	Entry	Exit	Entry (%)	Exit (%)	Entry	Exit
310 - Hotel	53	52	0.00%	0.00%	0	0
310(1) - Hotel	33	32	0.00%	0.00%	0	0
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	278	160	0.00%	0.00%	0	0
710 - General Office Building	44	248	0.00%	0.00%	0	0
760 - Research and Development Center	26	86	0.00%	0.00%	0	0
820 - Shopping Center (>150k)	214	213	0.00%	0.00%	0	0
215 - Single-Family Attached Housing	11	9	0.00%	0.00%	0	0

NEW VEHICLE TRIPS

Land Use	New Vehicle Trips		
	Entry	Exit	Total
310 - Hotel	53	52	105
310(1) - Hotel	33	32	65
221 - Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	278	160	438
710 - General Office Building	44	248	292
760 - Research and Development Center	26	86	112
820 - Shopping Center (>150k)	214	213	427
215 - Single-Family Attached Housing	11	9	20

RESULTS

Site Totals	Entry	Exit	Total
Vehicle Trips Before Reduction	871	1012	1883
Internal Vehicle Trips	125	125	250
External Vehicle Trips	746	887	1633
Internal Vehicle Trip Capture	14%	12%	13%
Pass-by Vehicle Trips	87	87	174
Diverted Vehicle Trips	0	0	0
Extra Reduced Vehicle Trips	0	0	0
New Vehicle Trips	659	800	1459

Land Use: 310 Hotel

Description

A hotel is a place of lodging that provides overnight accommodation and supporting facilities such as a full-service restaurant, concierge service, valet parking, cocktail lounge, meeting rooms, banquet room, and convention facilities. A hotel typically provides a swimming pool or another recreational facility such as a fitness room.

Additional Data

Some properties in this land use provide guest transportation services (e.g., airport shuttle, limousine service, golf course shuttle service) which may have an impact on the overall trip generation rates.

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in California, District of Columbia, Delaware, Florida, Indiana, Minnesota, New Jersey, Ontario (CAN), Pennsylvania, South Dakota, Vermont, and Washington.

Trip generation at a hotel may be related to the presence of supporting facilities such as convention space, restaurants, meeting/banquet space, and retail facilities. Future data submissions should specify the presence of these amenities. Reporting the level of activity at the supporting facilities such as full, empty, partially active, number of people attending a meeting/banquet during observation may also be useful in further analysis of this land use.

Source Numbers

357, 507, 577, 728, 867, 872, 925, 951, 1009, 1021, 1026, 1046, 1219, 1222, 1224

Hotel (310)

Vehicle Trip Ends vs: Rooms
On a: Weekday

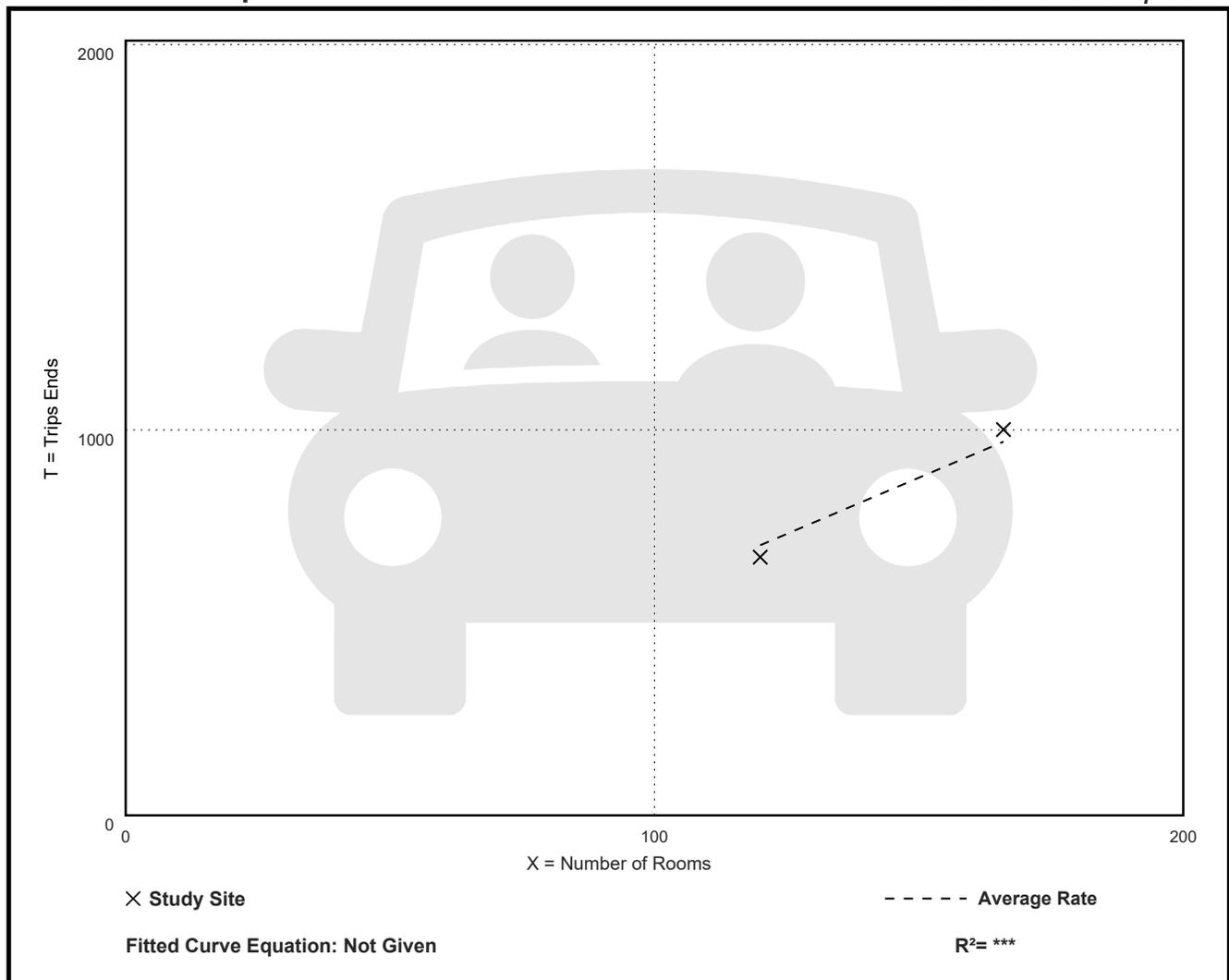
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Rooms: 143
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
5.84	5.58 - 6.03	***

Data Plot and Equation

Caution – Small Sample Size



Hotel (310)

Vehicle Trip Ends vs: Rooms

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: 17

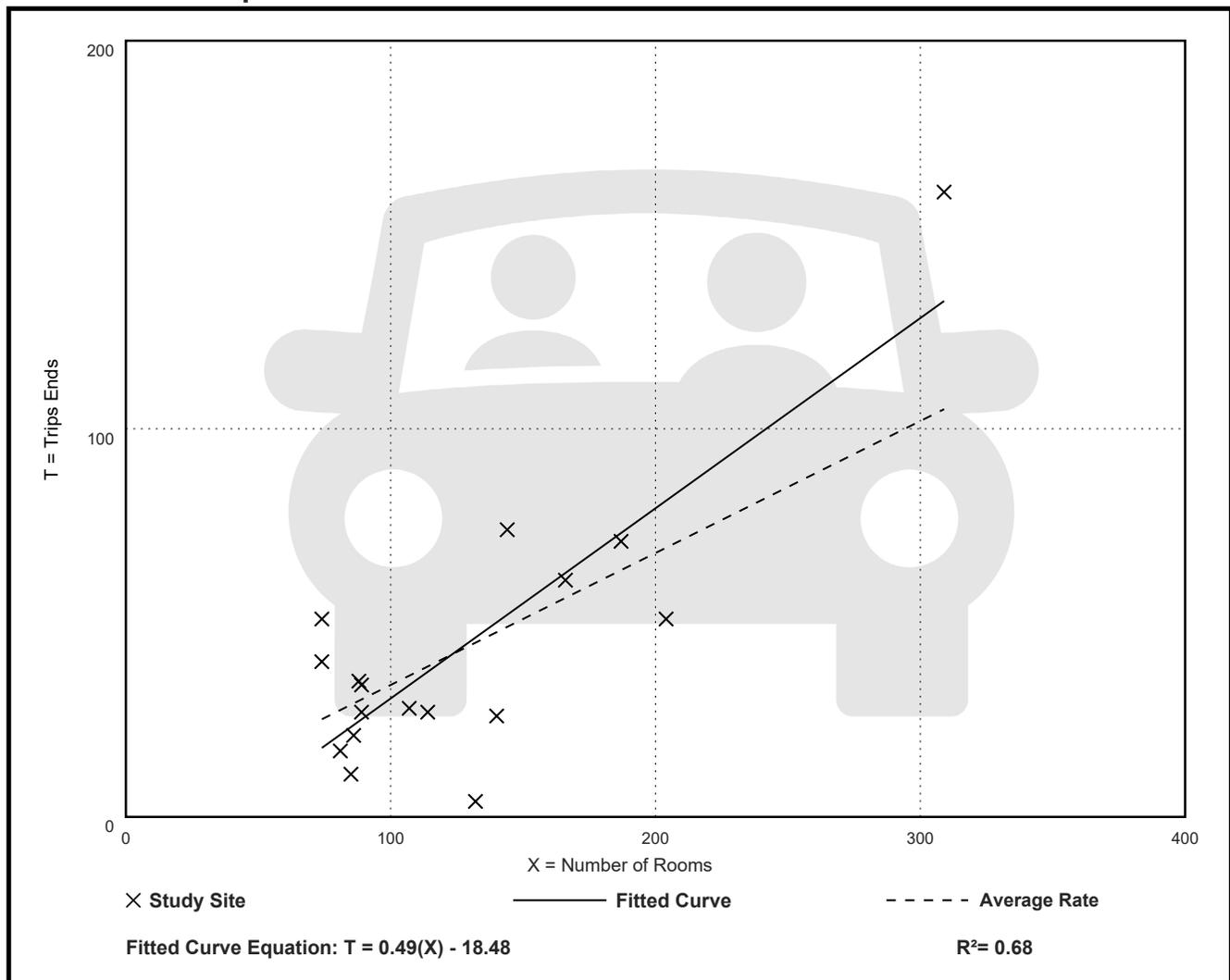
Avg. Num. of Rooms: 128

Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.34	0.03 - 0.69	0.16

Data Plot and Equation



Hotel (310)

Vehicle Trip Ends vs: Rooms

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: 20

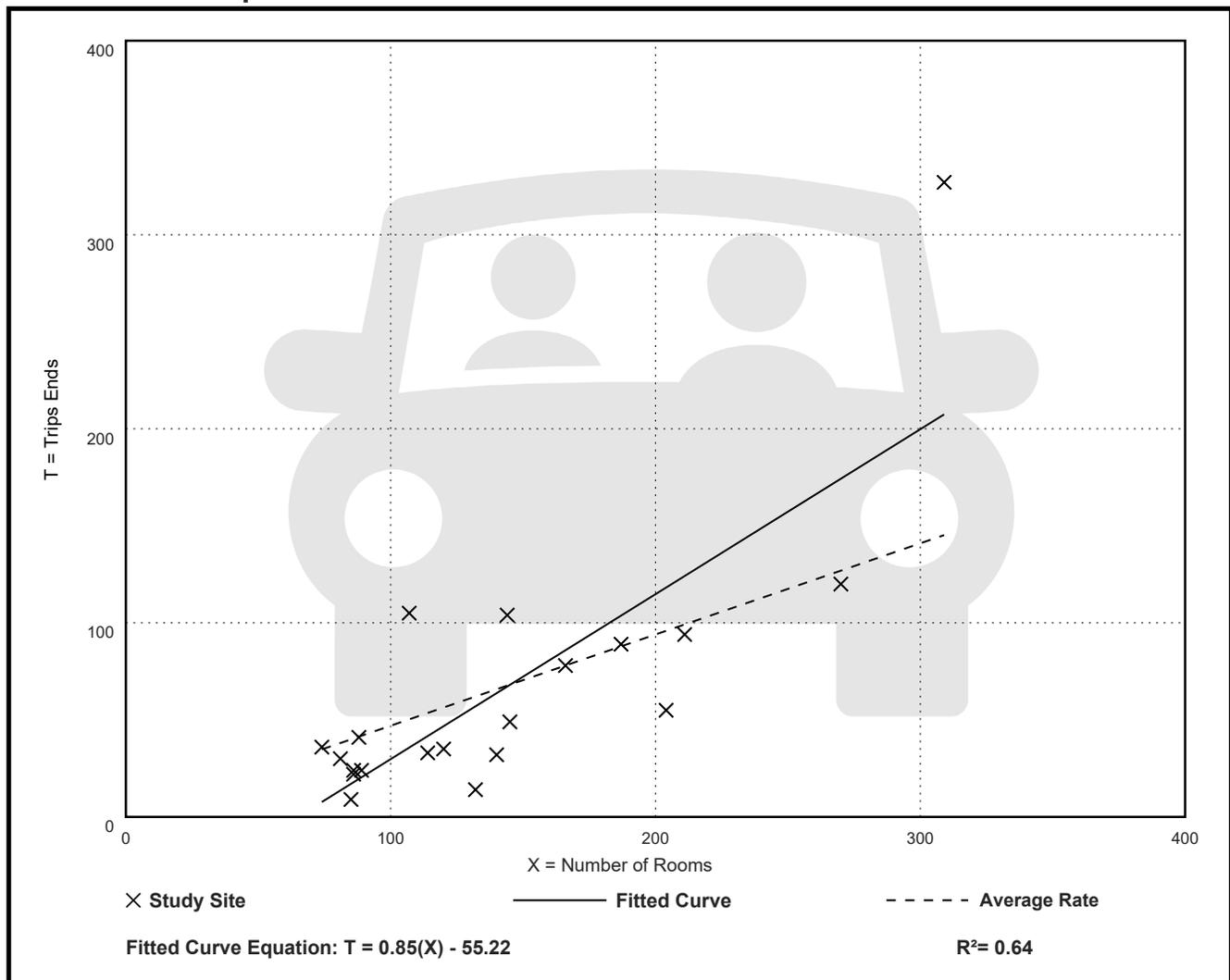
Avg. Num. of Rooms: 142

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.47	0.11 - 1.06	0.28

Data Plot and Equation



Hotel (310)

Vehicle Trip Ends vs: Rooms

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 5

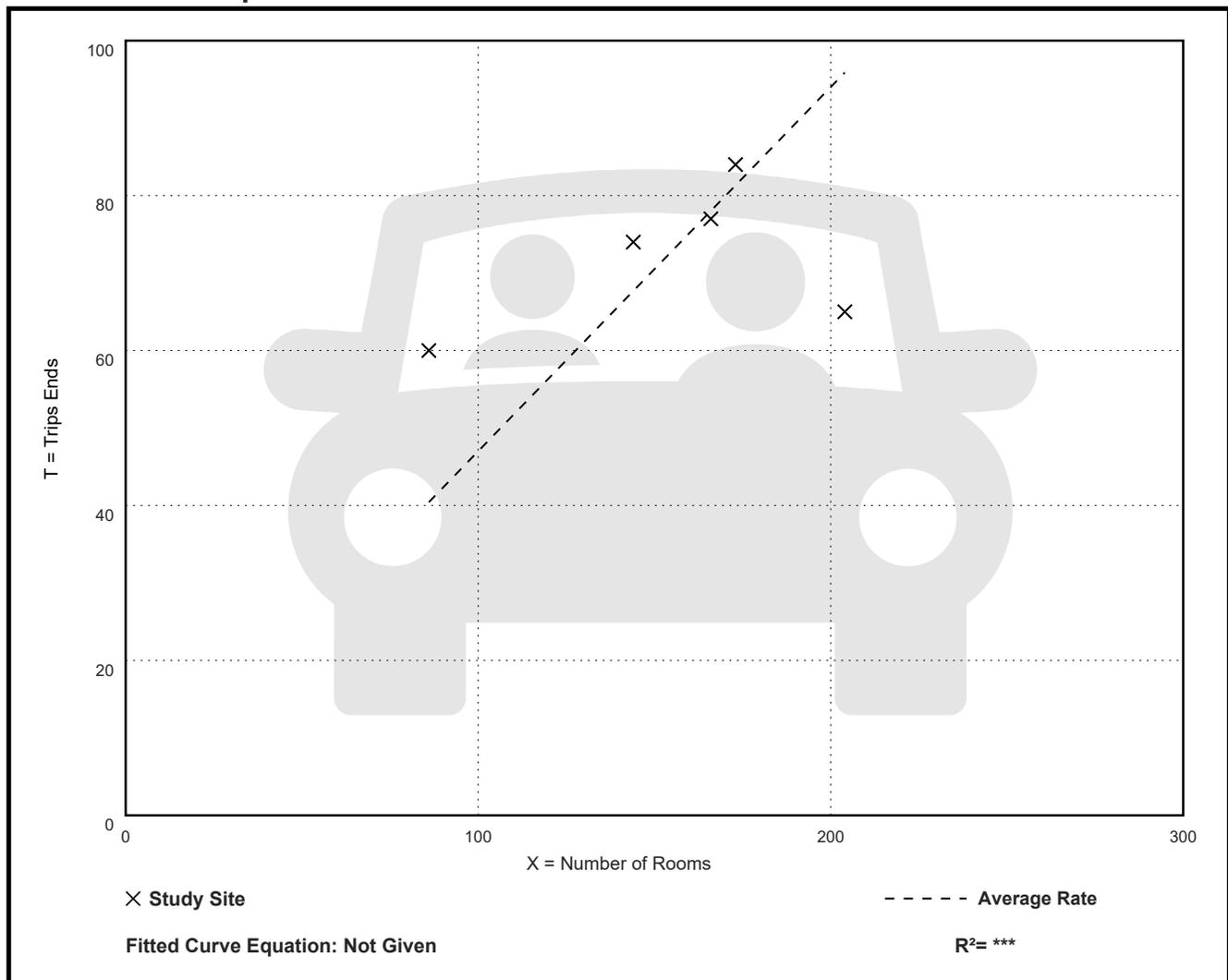
Avg. Num. of Rooms: 155

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.47	0.32 - 0.70	0.12

Data Plot and Equation



Hotel (310)

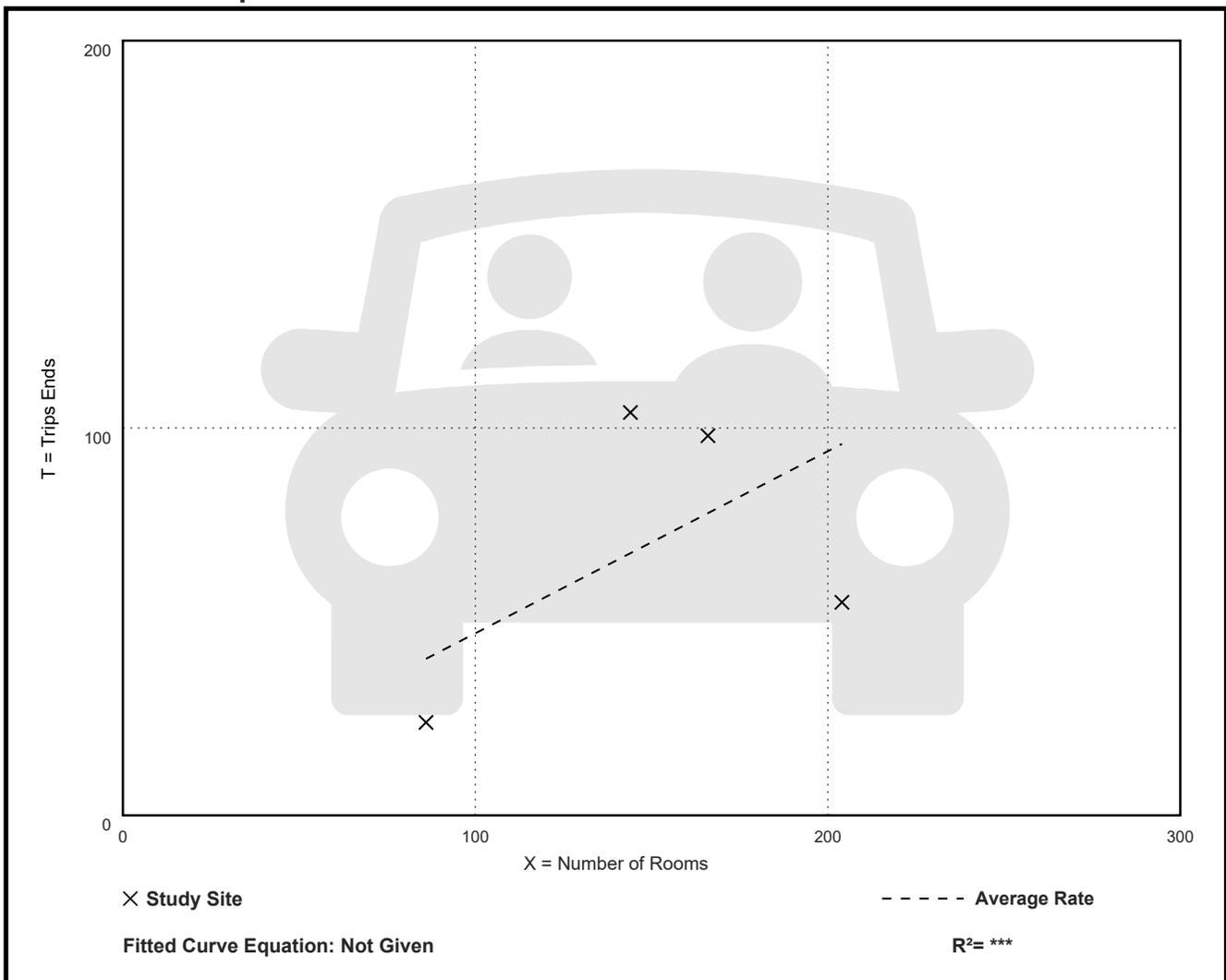
Vehicle Trip Ends vs: Rooms
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 4
 Avg. Num. of Rooms: 150
 Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.47	0.27 - 0.72	0.23

Data Plot and Equation



Hotel (310)

Vehicle Trip Ends vs: Rooms
On a: Saturday

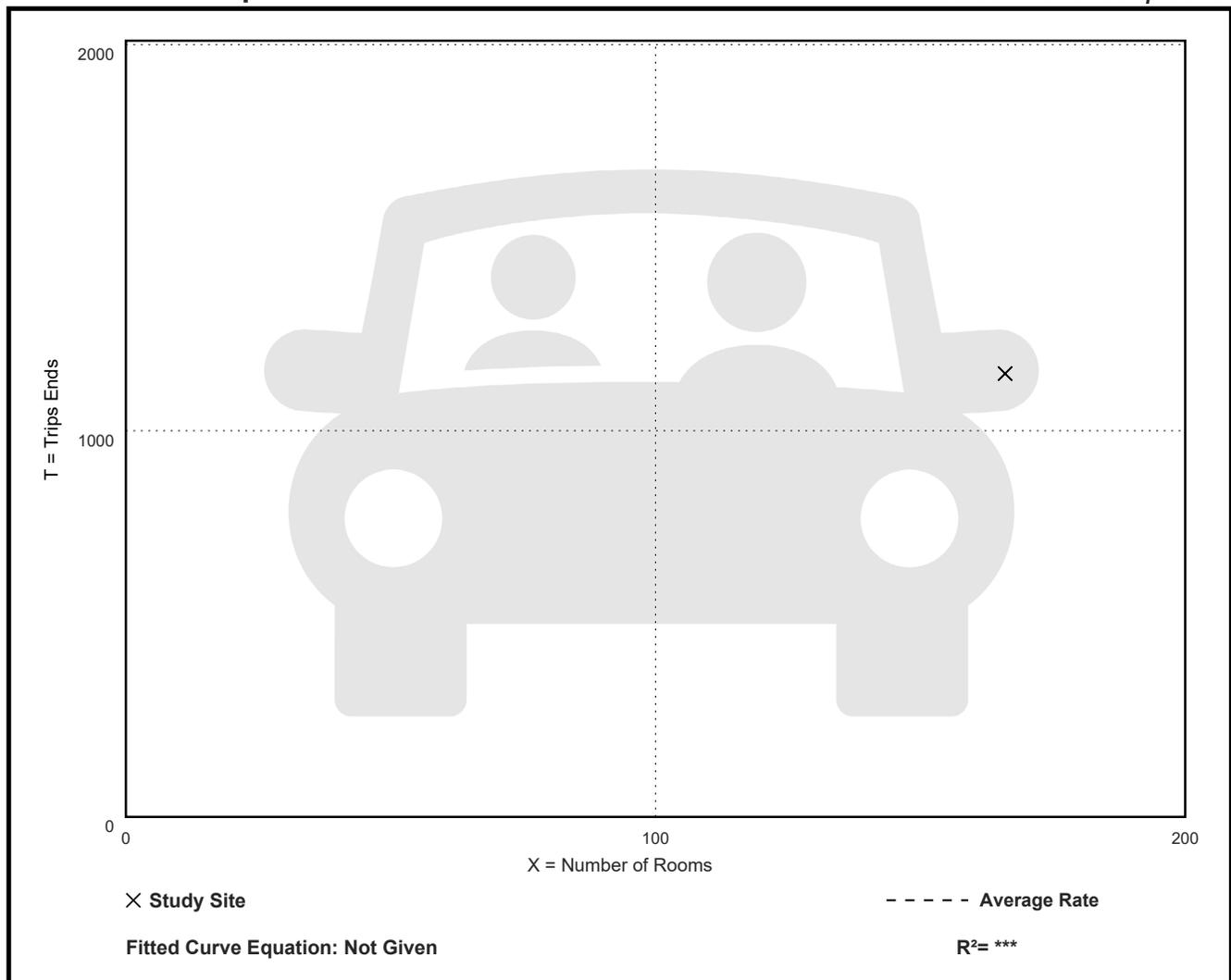
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Rooms: 166
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
6.92	6.92 - 6.92	***

Data Plot and Equation

Caution – Small Sample Size



Hotel (310)

Vehicle Trip Ends vs: Rooms

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 3

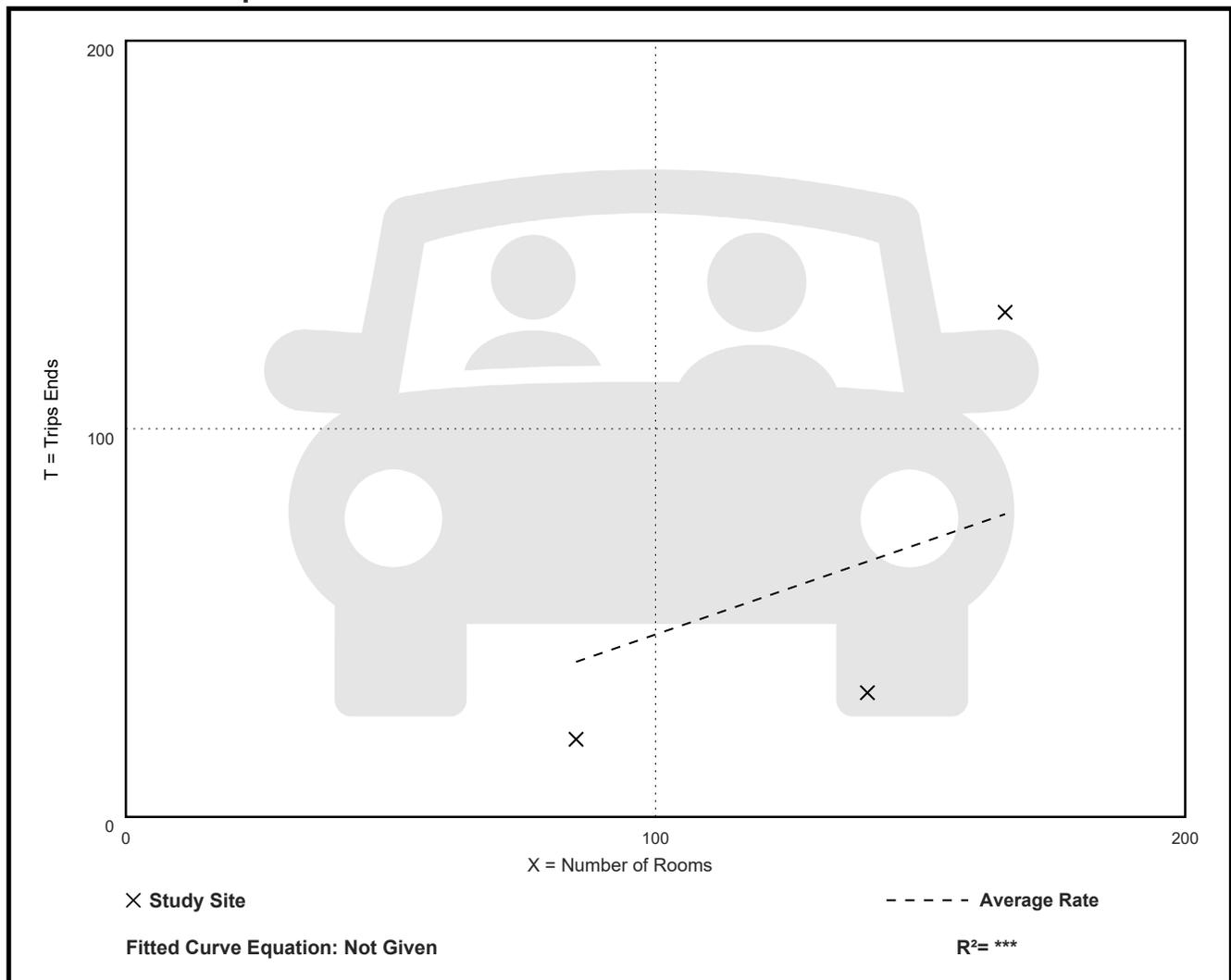
Avg. Num. of Rooms: 130

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.47	0.23 - 0.78	0.33

Data Plot and Equation



Hotel (310)

Vehicle Trip Ends vs: Rooms
On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Rooms: 166

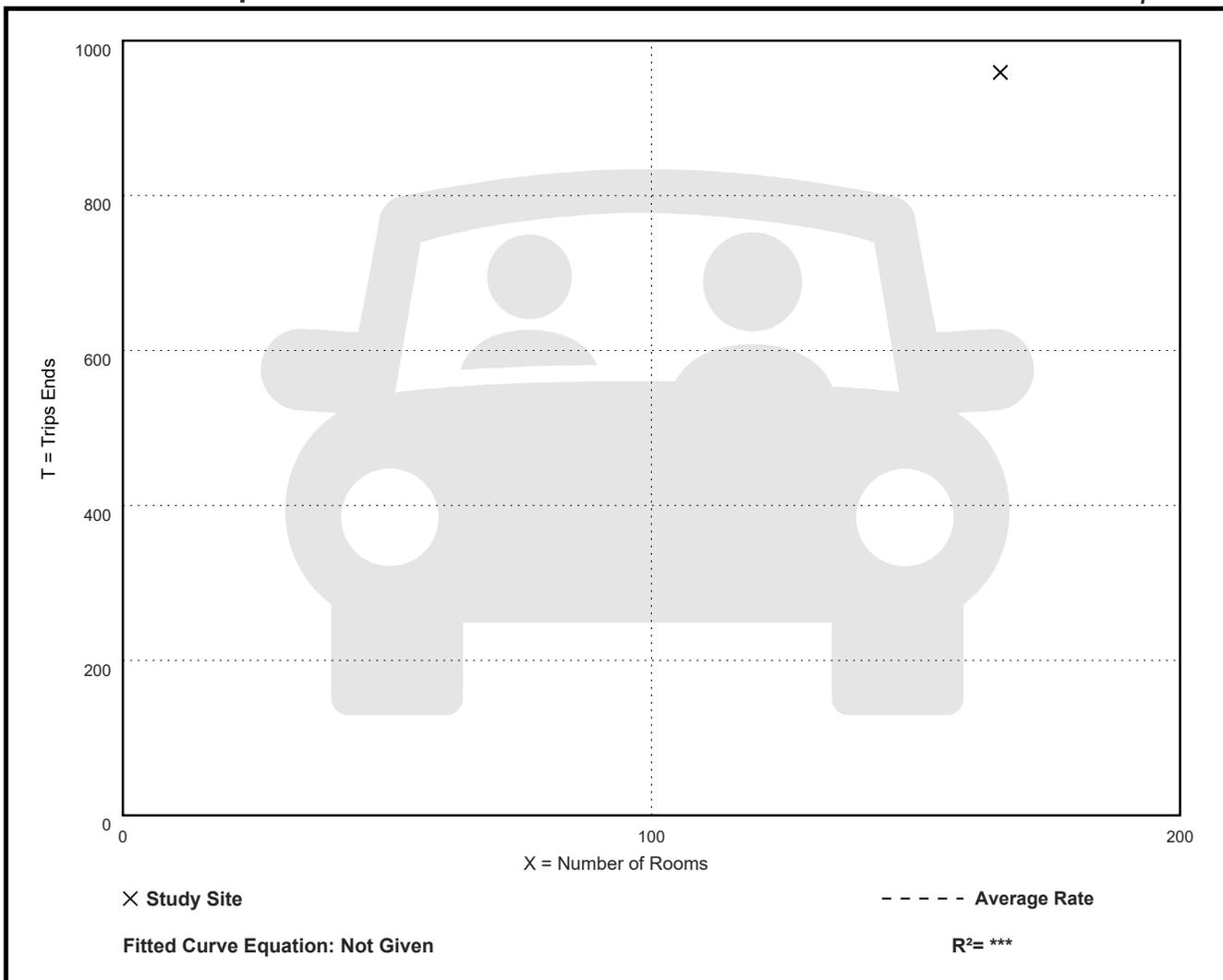
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
5.78	5.78 - 5.78	***

Data Plot and Equation

Caution – Small Sample Size



Hotel (310)

Vehicle Trip Ends vs: Rooms

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Rooms: 166

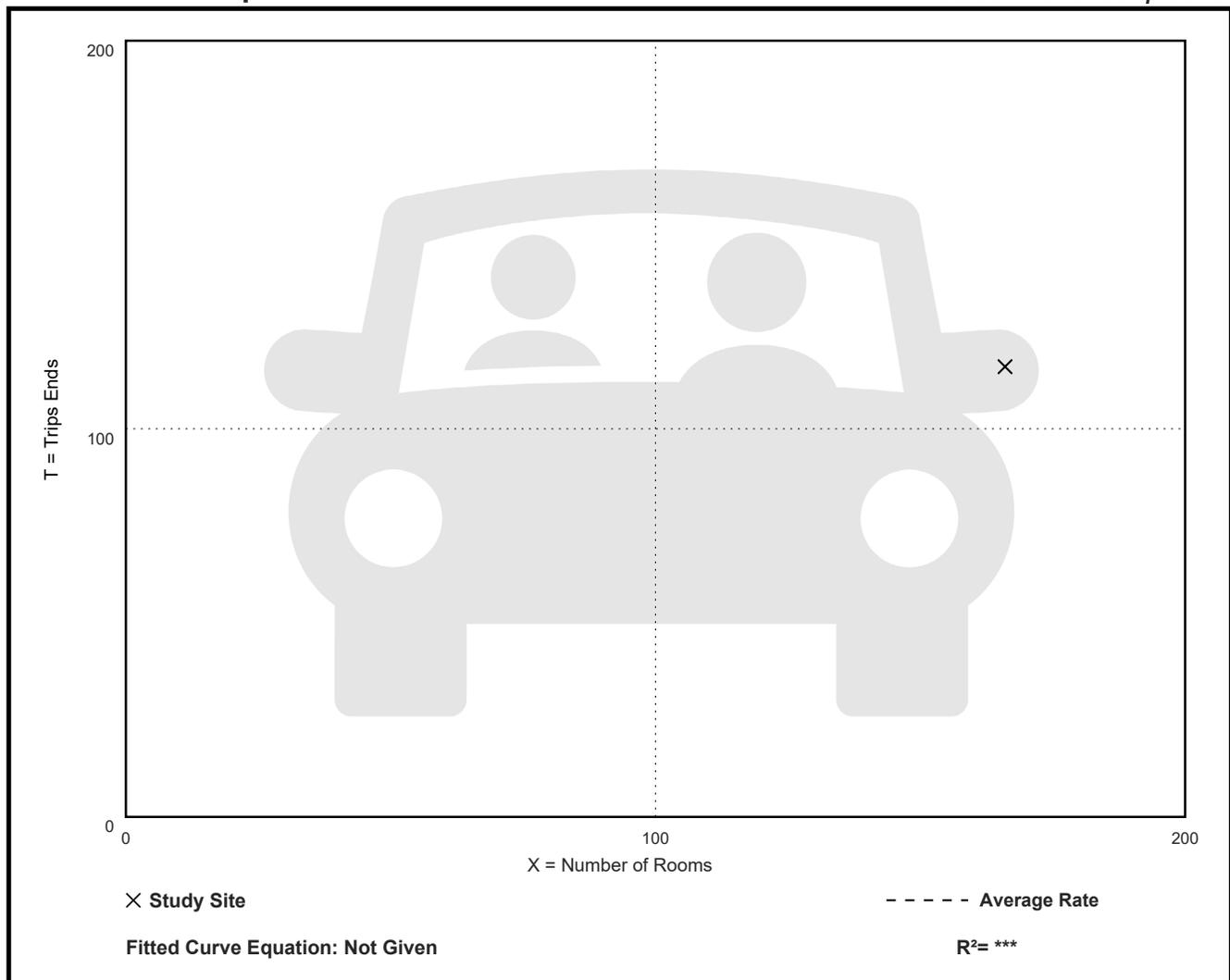
Directional Distribution: 67% entering, 33% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.70	0.70 - 0.70	***

Data Plot and Equation

Caution – Small Sample Size



Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing is a residential building with between four and 10 floors of residence. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and a set of hallways.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there was an average of 2.5 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96 percent of the total dwelling units were occupied.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, District of Columbia, Florida, Georgia, Massachusetts, Minnesota, Montana, New Jersey, New York, Ontario (CAN), Oregon, and Virginia.

Source Numbers

818, 857, 862, 866, 901, 904, 910, 949, 951, 963, 964, 966, 967, 969, 970, 1004, 1014, 1022, 1023, 1025, 1031, 1032, 1035, 1047, 1057, 1058, 1071, 1076, 1219, 1292

Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

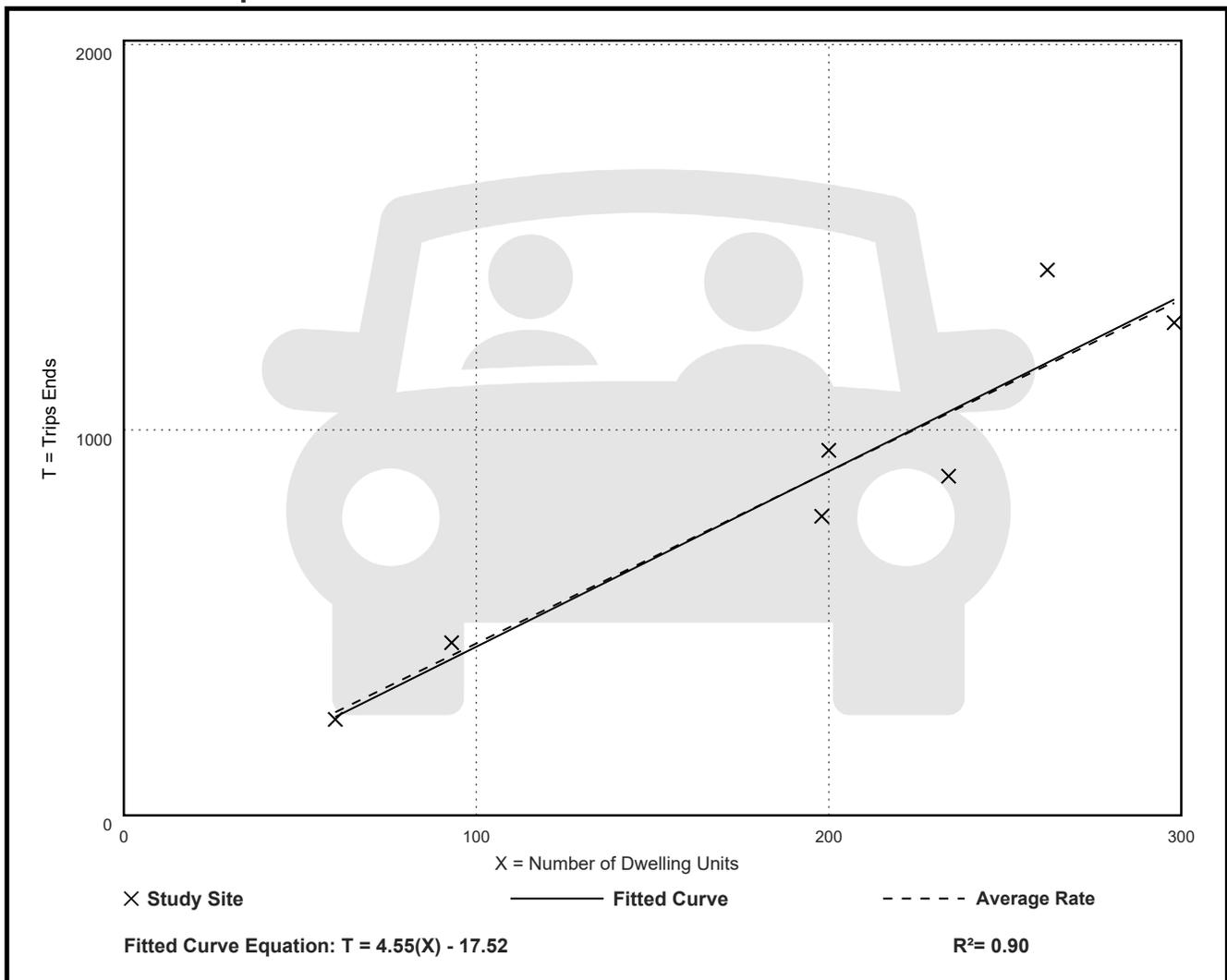
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 192
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.46	3.76 - 5.40	0.62

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

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: 20

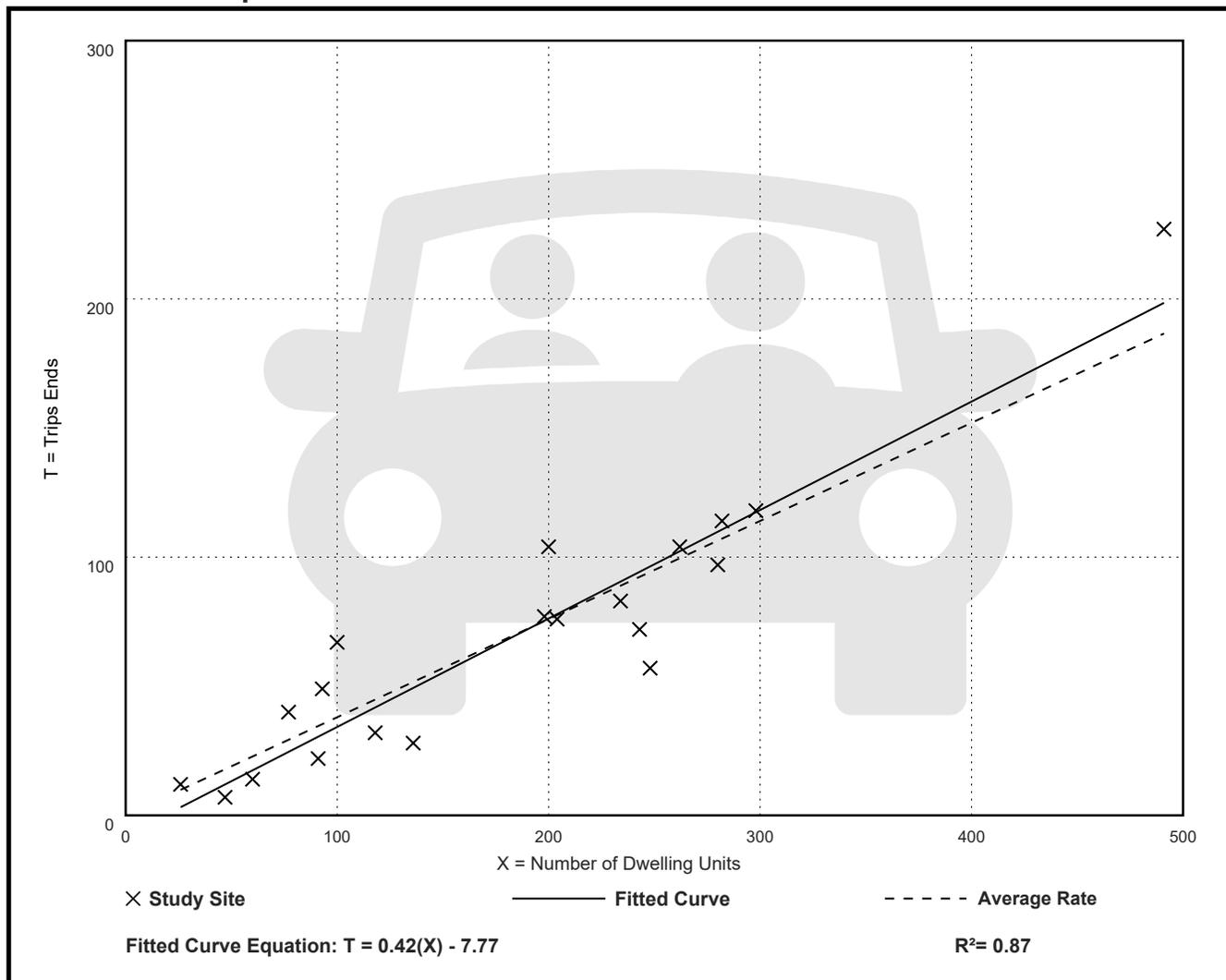
Avg. Num. of Dwelling Units: 184

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.15 - 0.67	0.10

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

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: 21

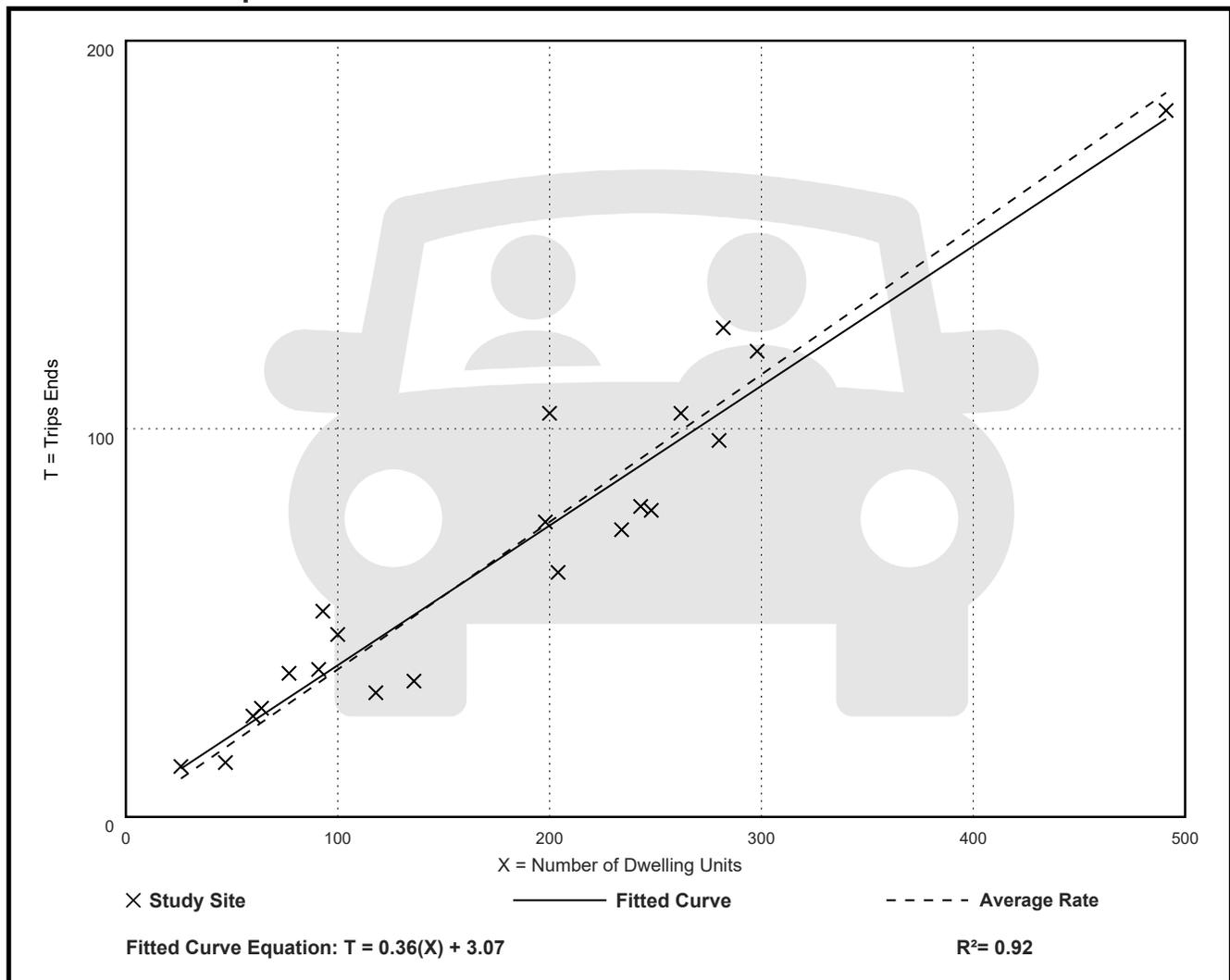
Avg. Num. of Dwelling Units: 179

Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.26 - 0.57	0.07

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 11

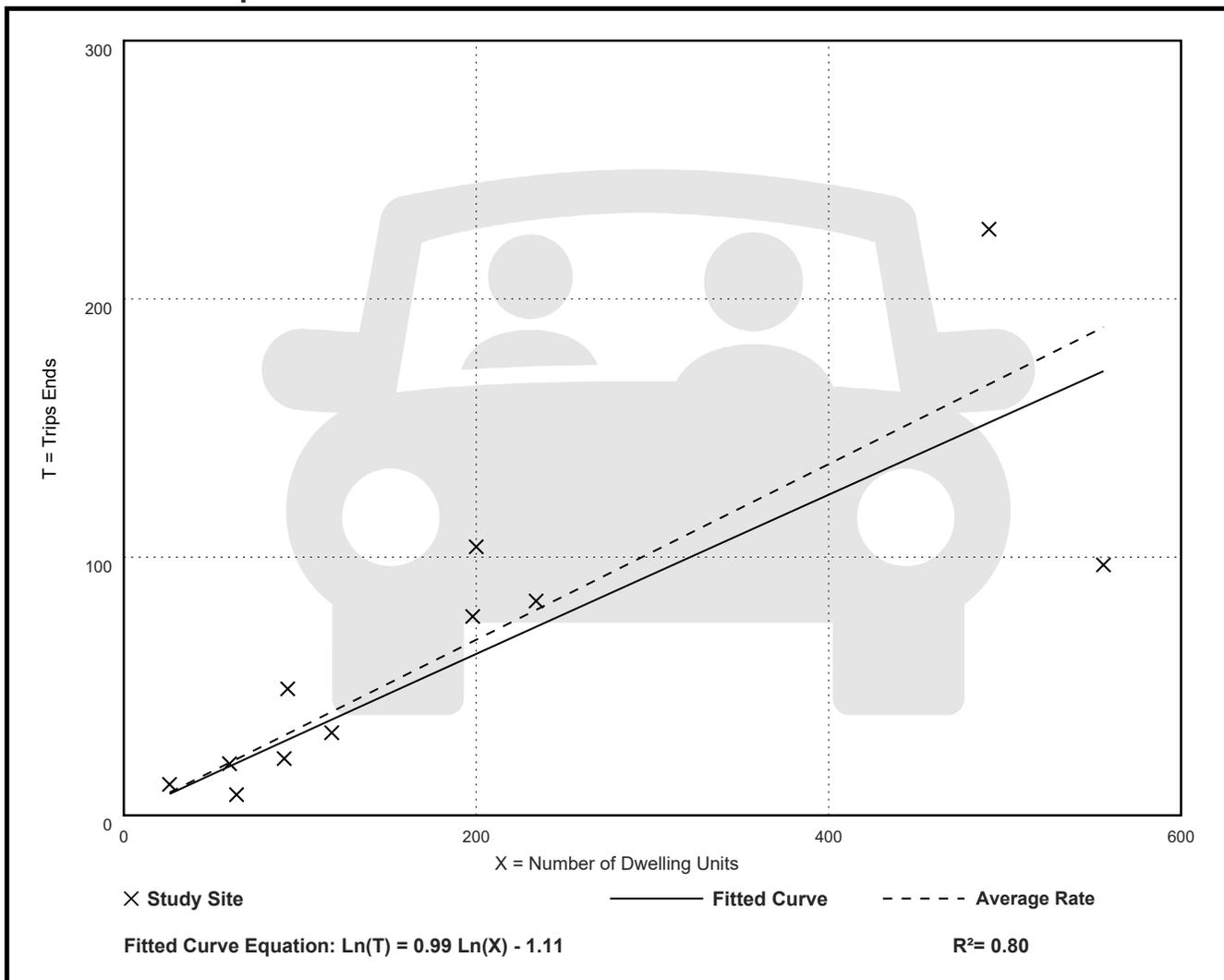
Avg. Num. of Dwelling Units: 194

Directional Distribution: 20% entering, 80% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.34	0.13 - 0.53	0.14

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 11

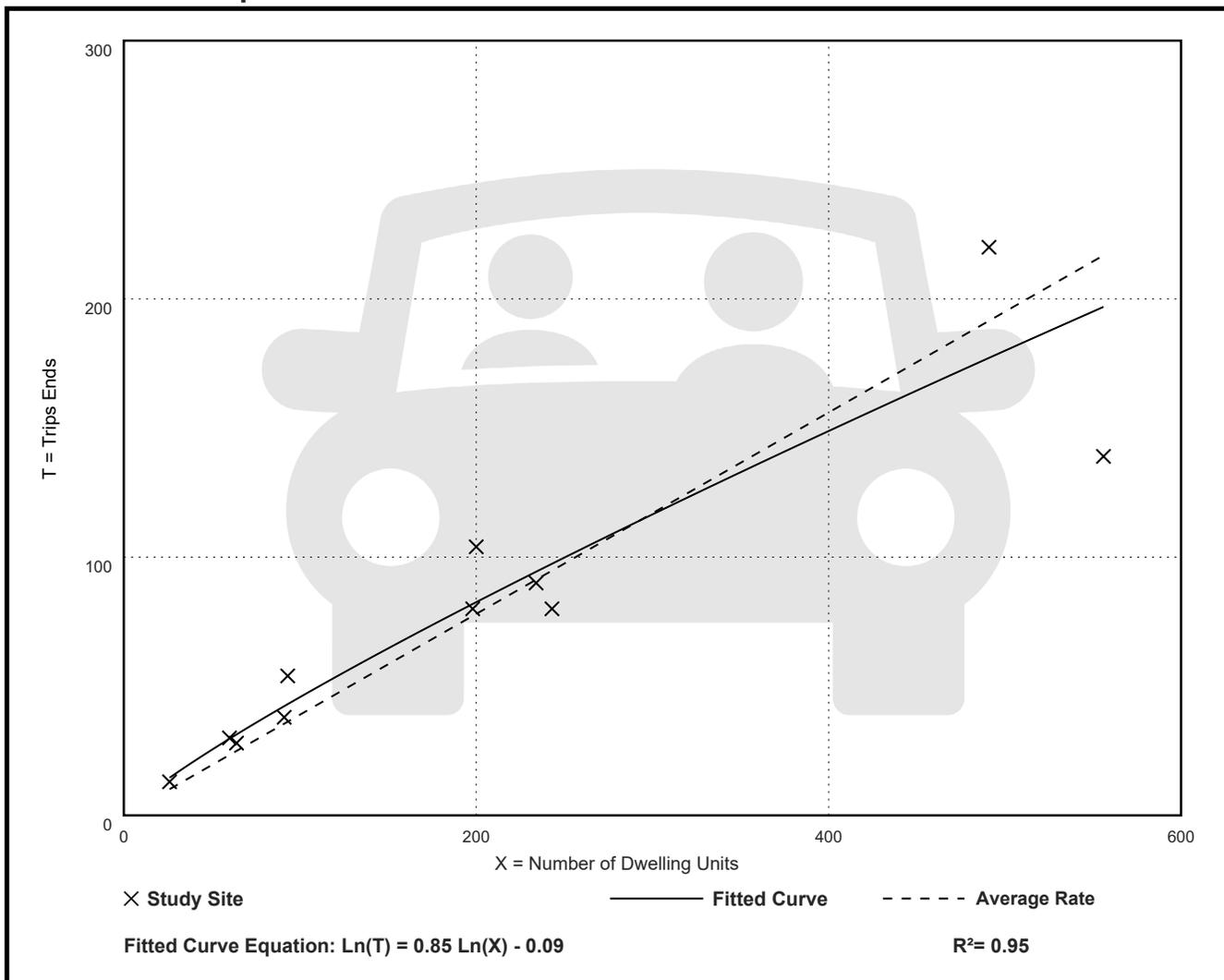
Avg. Num. of Dwelling Units: 205

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.25 - 0.58	0.10

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

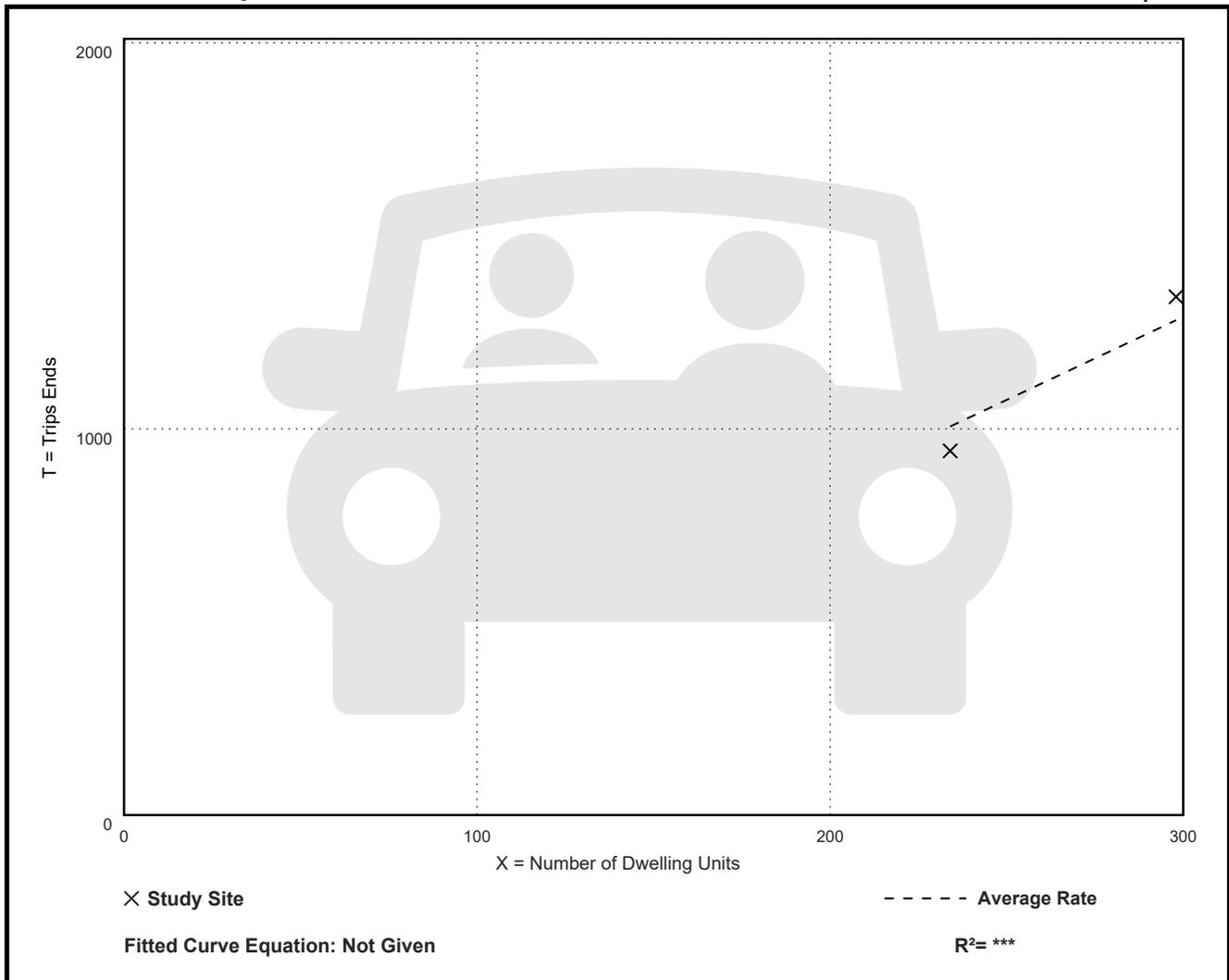
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 266
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.30	4.03 - 4.50	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 266

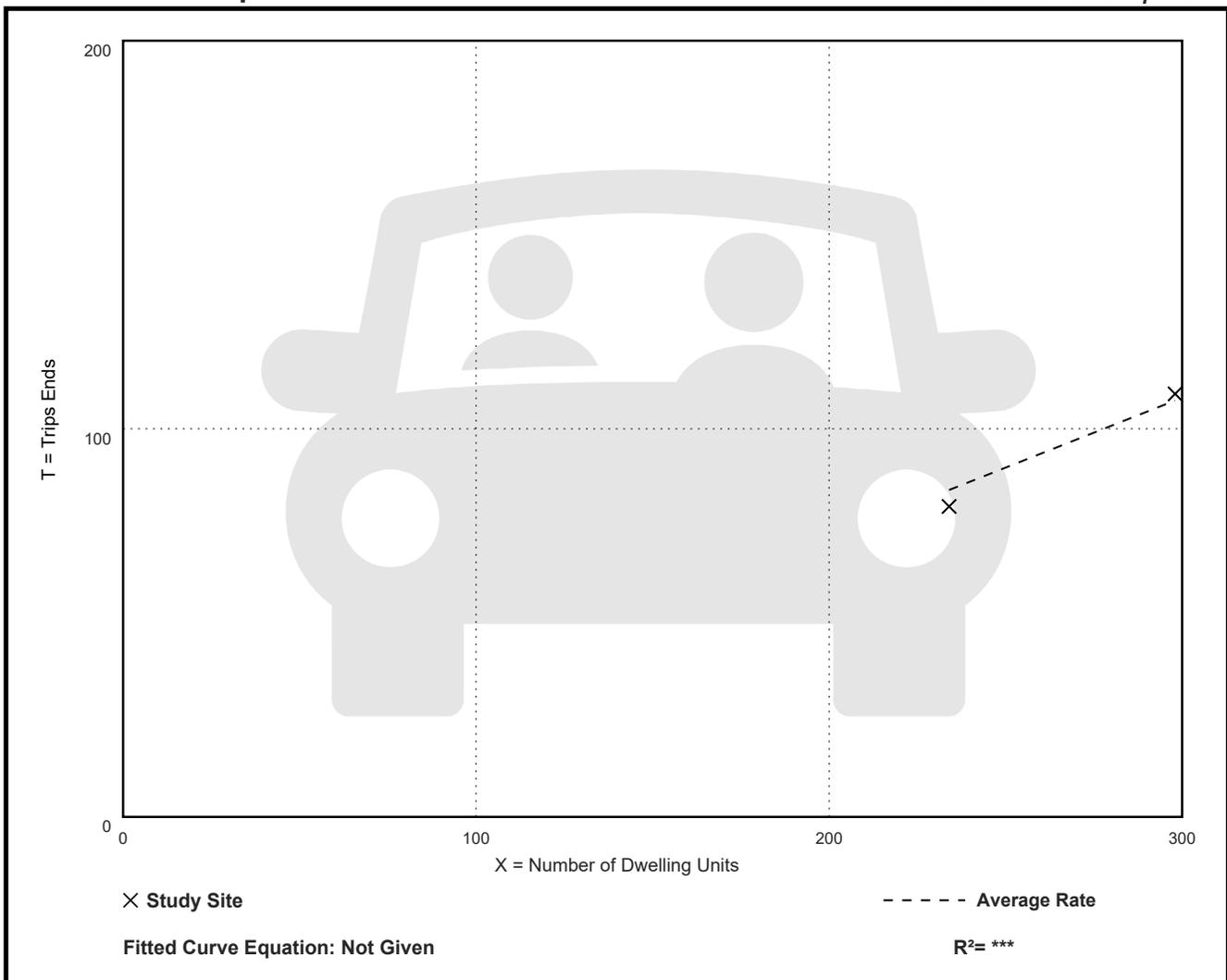
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.34 - 0.37	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 266

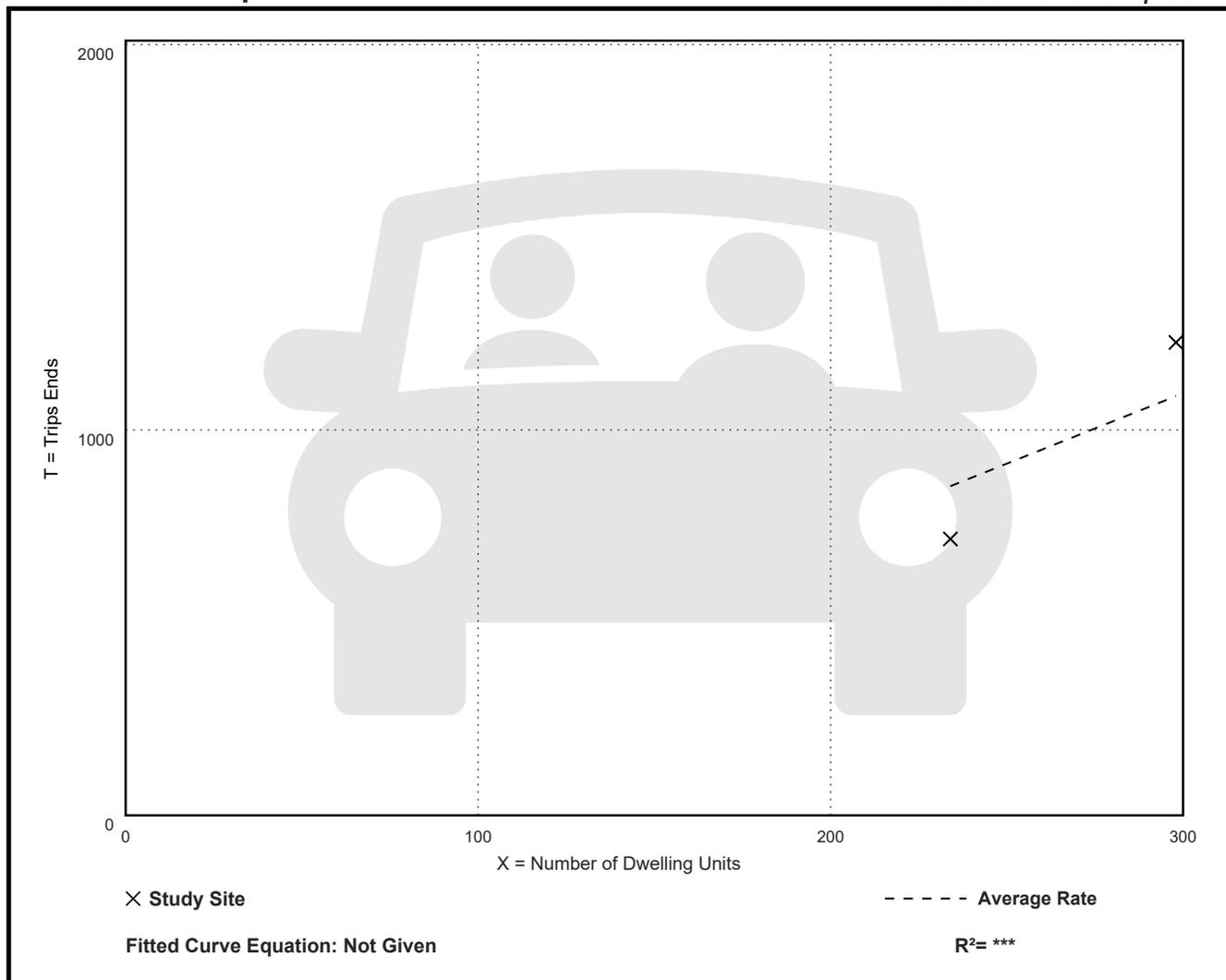
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.65	3.06 - 4.12	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 266

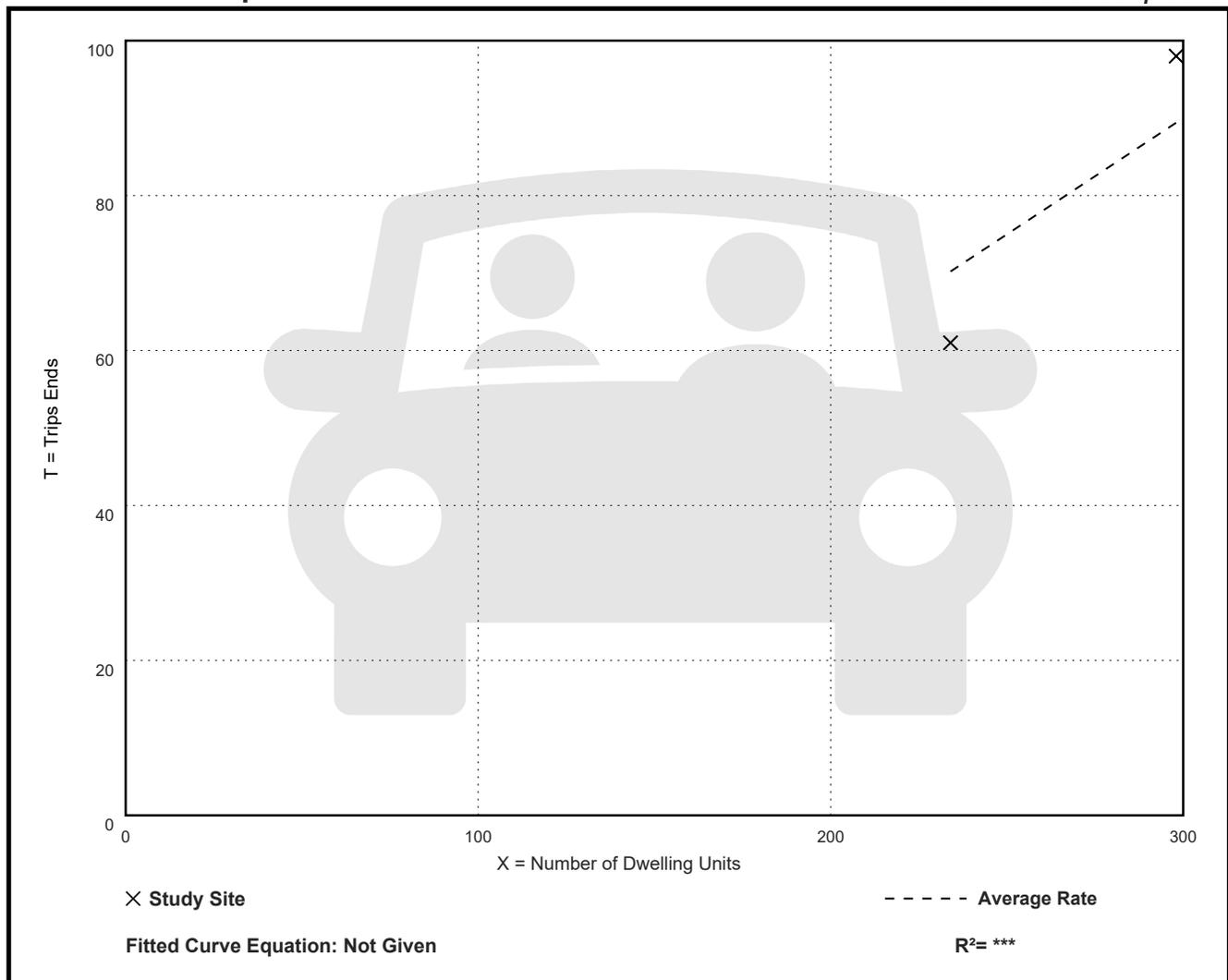
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.26 - 0.33	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents
On a: Weekday

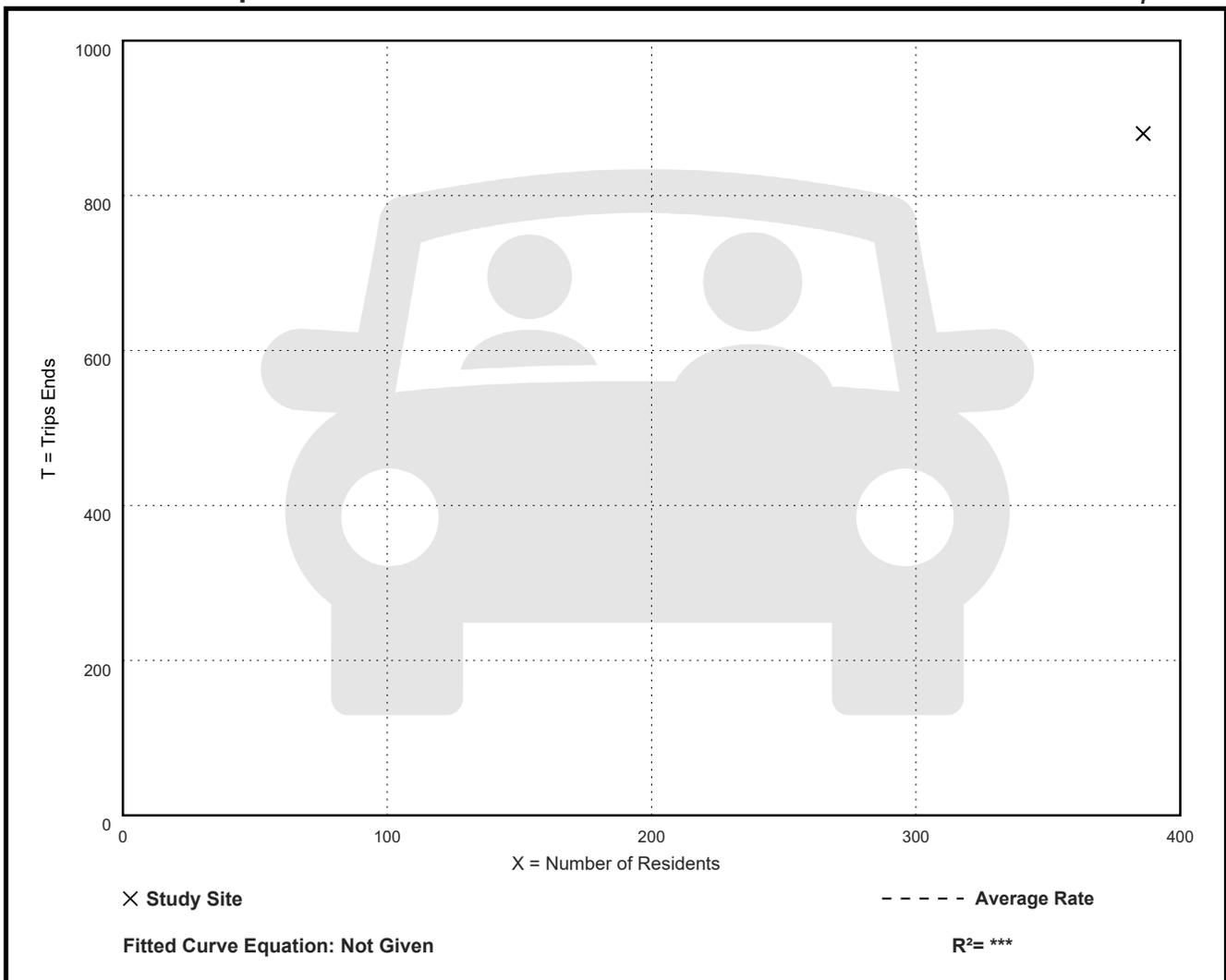
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 386
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.28	2.28 - 2.28	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

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: 1

Avg. Num. of Residents: 386

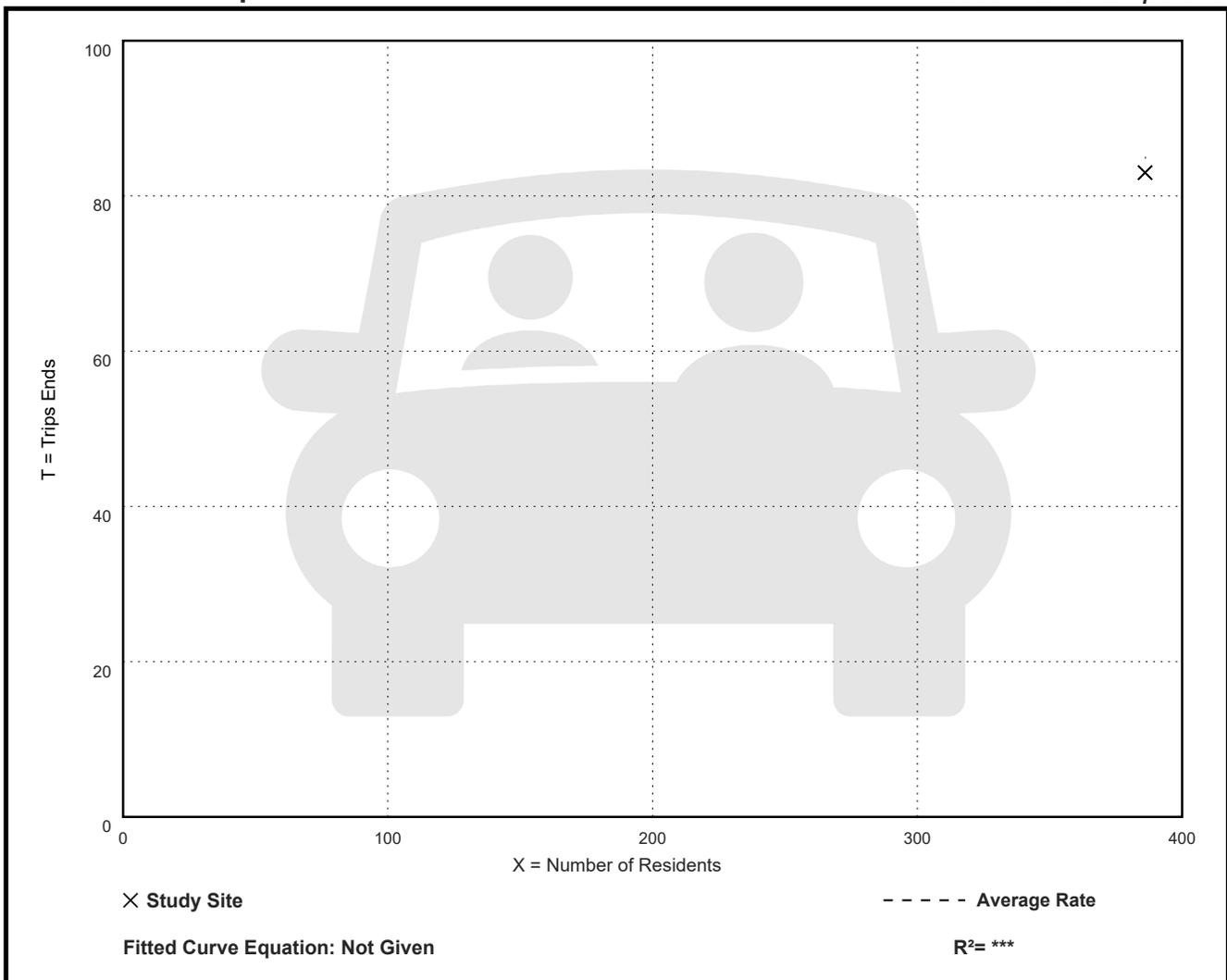
Directional Distribution: 20% entering, 80% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.22	0.22 - 0.22	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

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: 1

Avg. Num. of Residents: 386

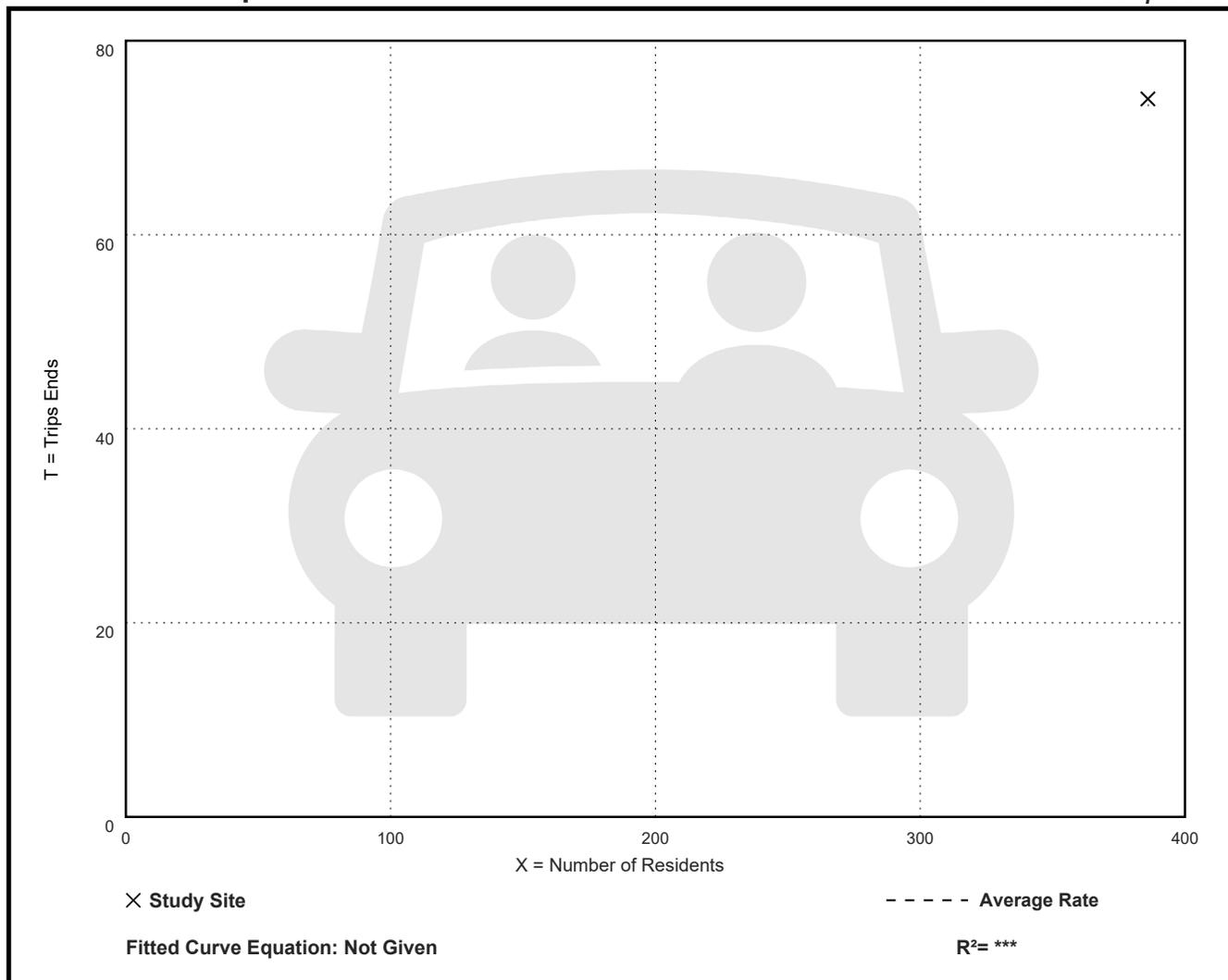
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.19	0.19 - 0.19	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 386

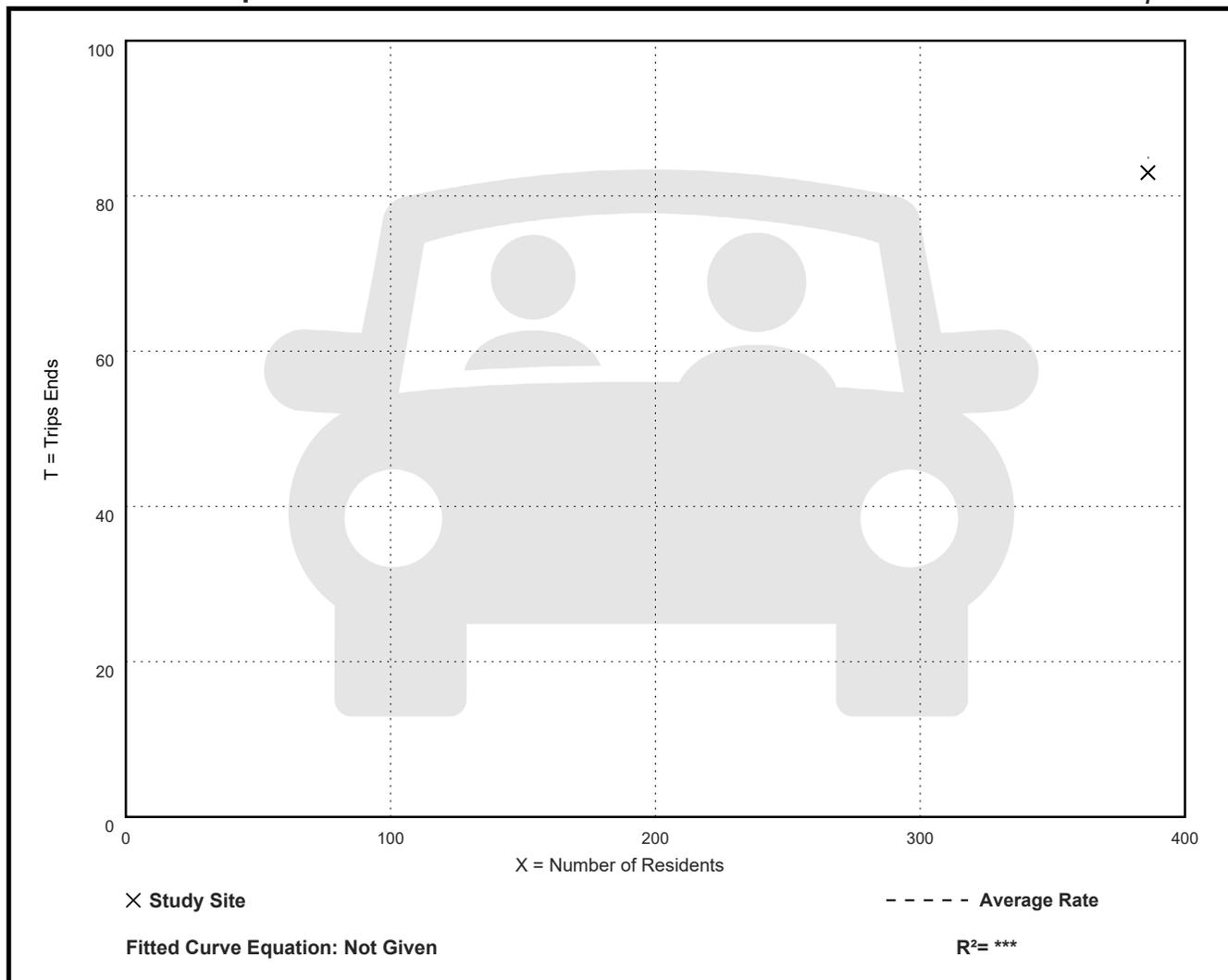
Directional Distribution: 20% entering, 80% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.22	0.22 - 0.22	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 386

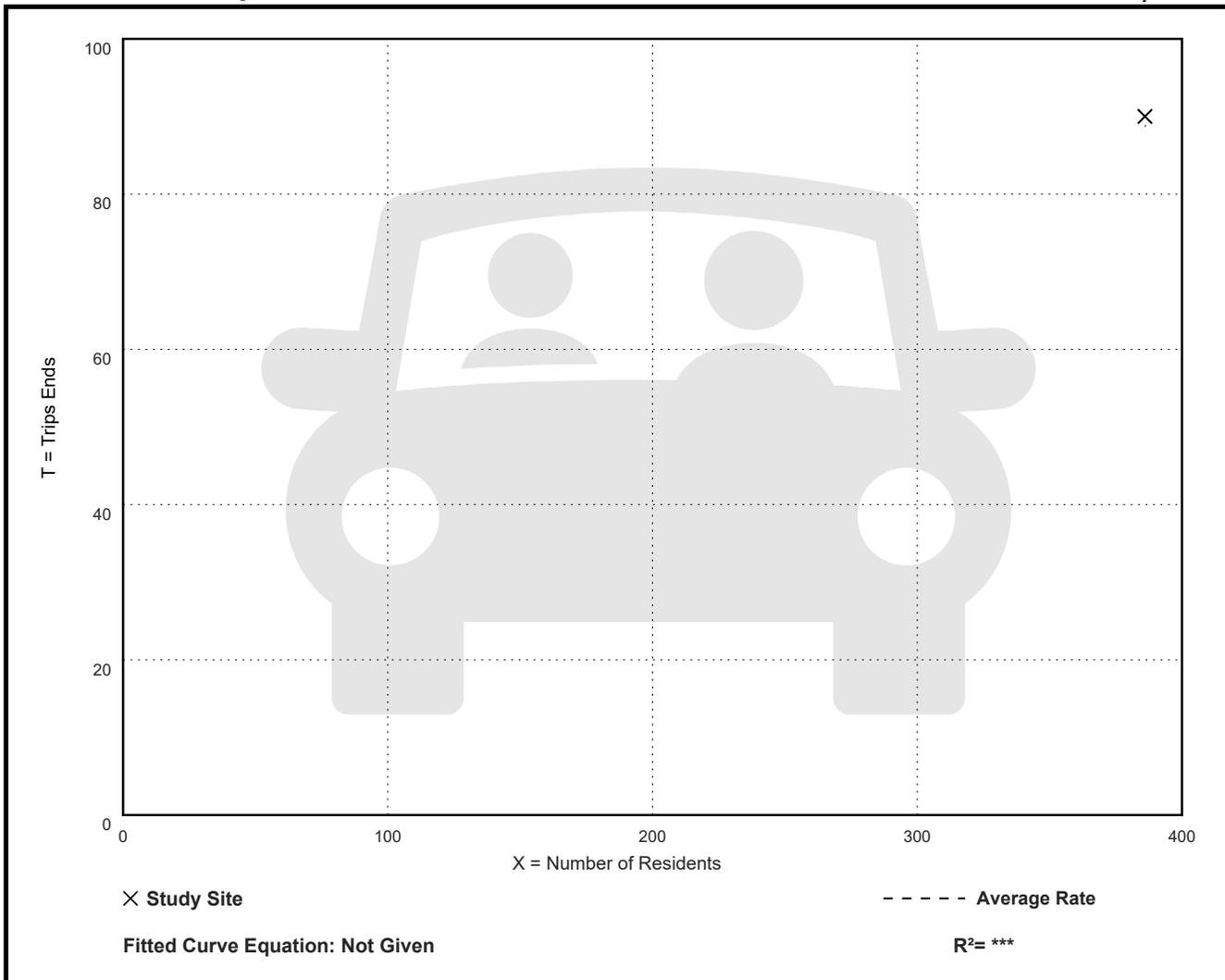
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.23	0.23 - 0.23	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents
On a: Saturday

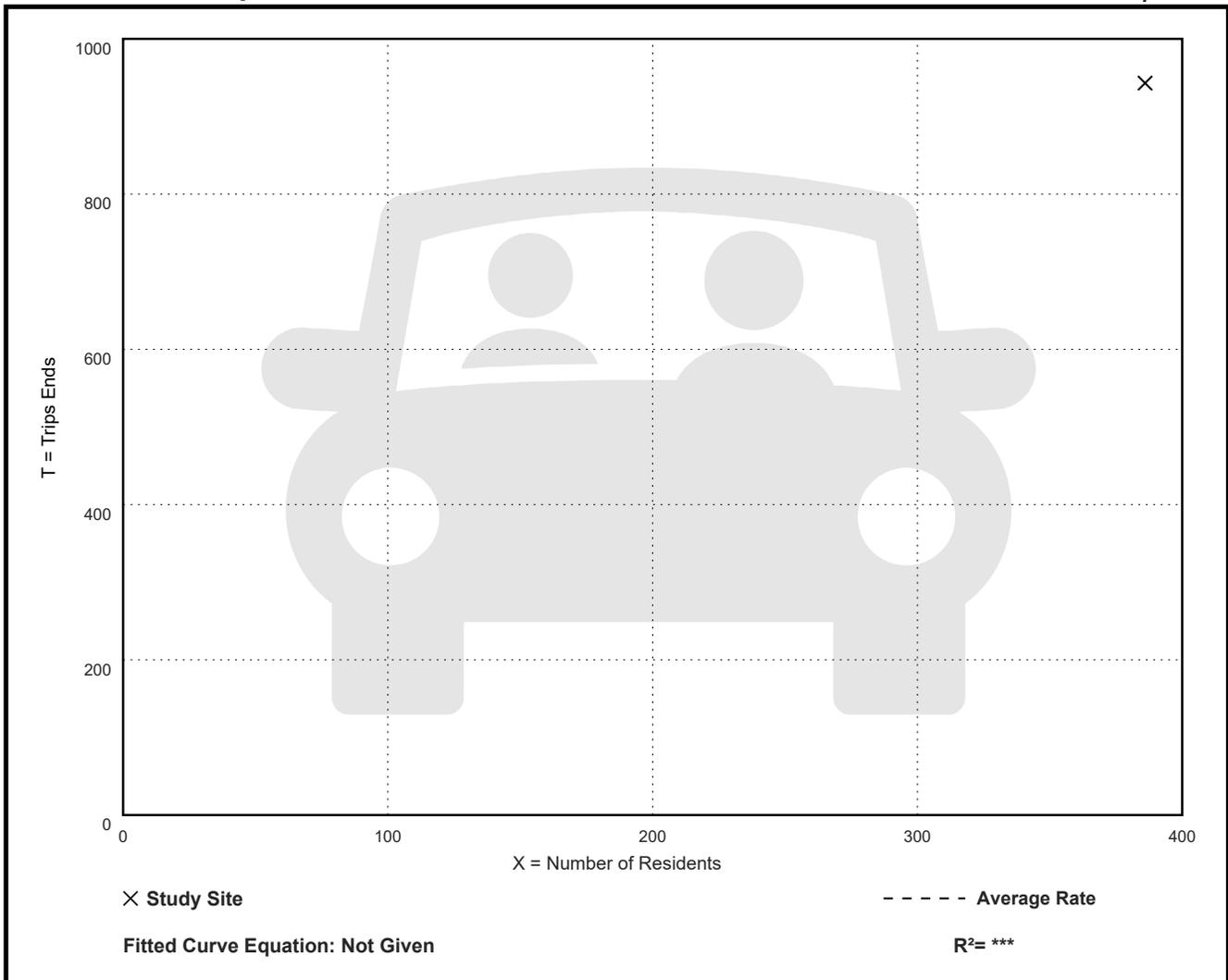
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 386
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.44	2.44 - 2.44	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 386

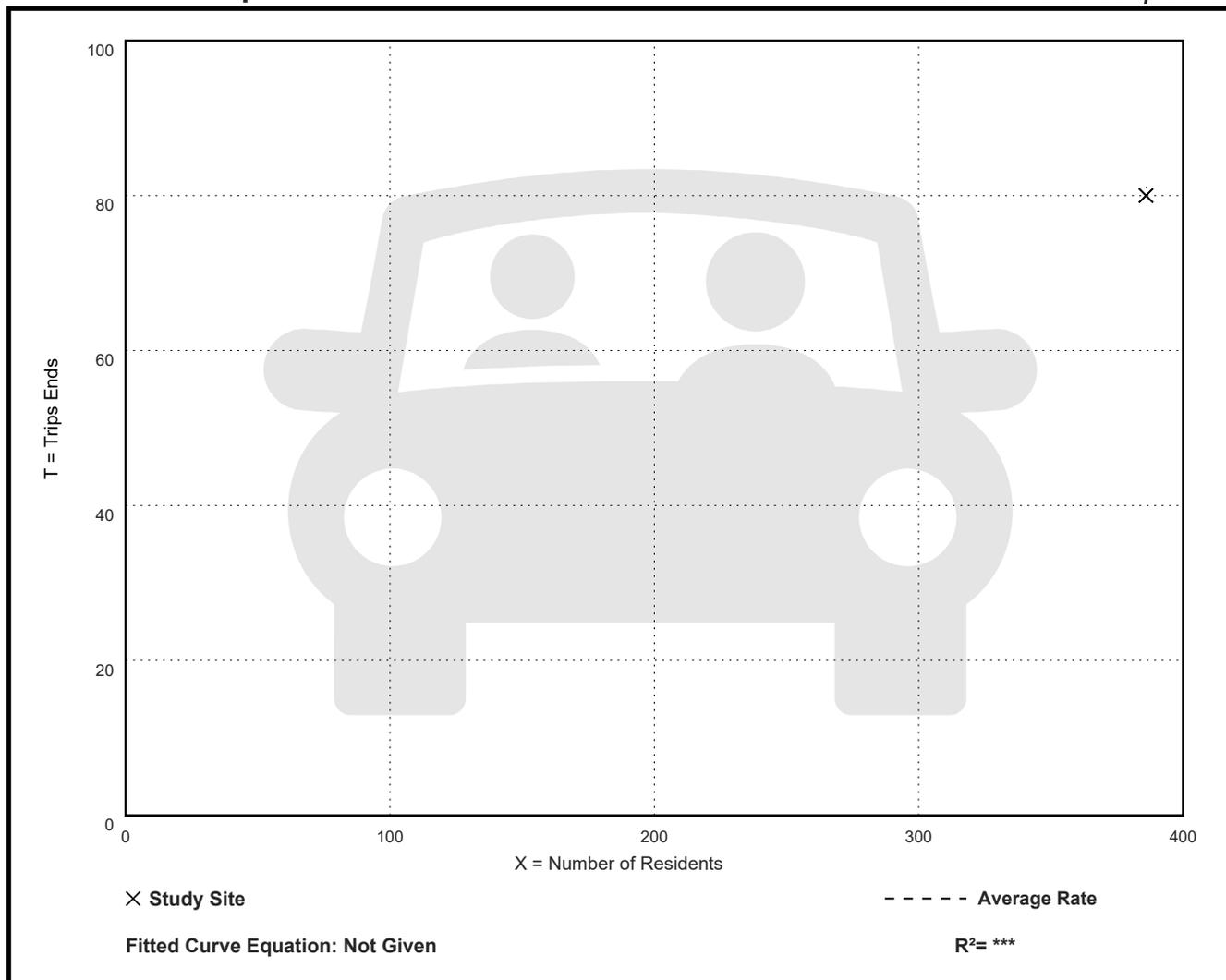
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.21	0.21 - 0.21	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

On a: Sunday

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 386

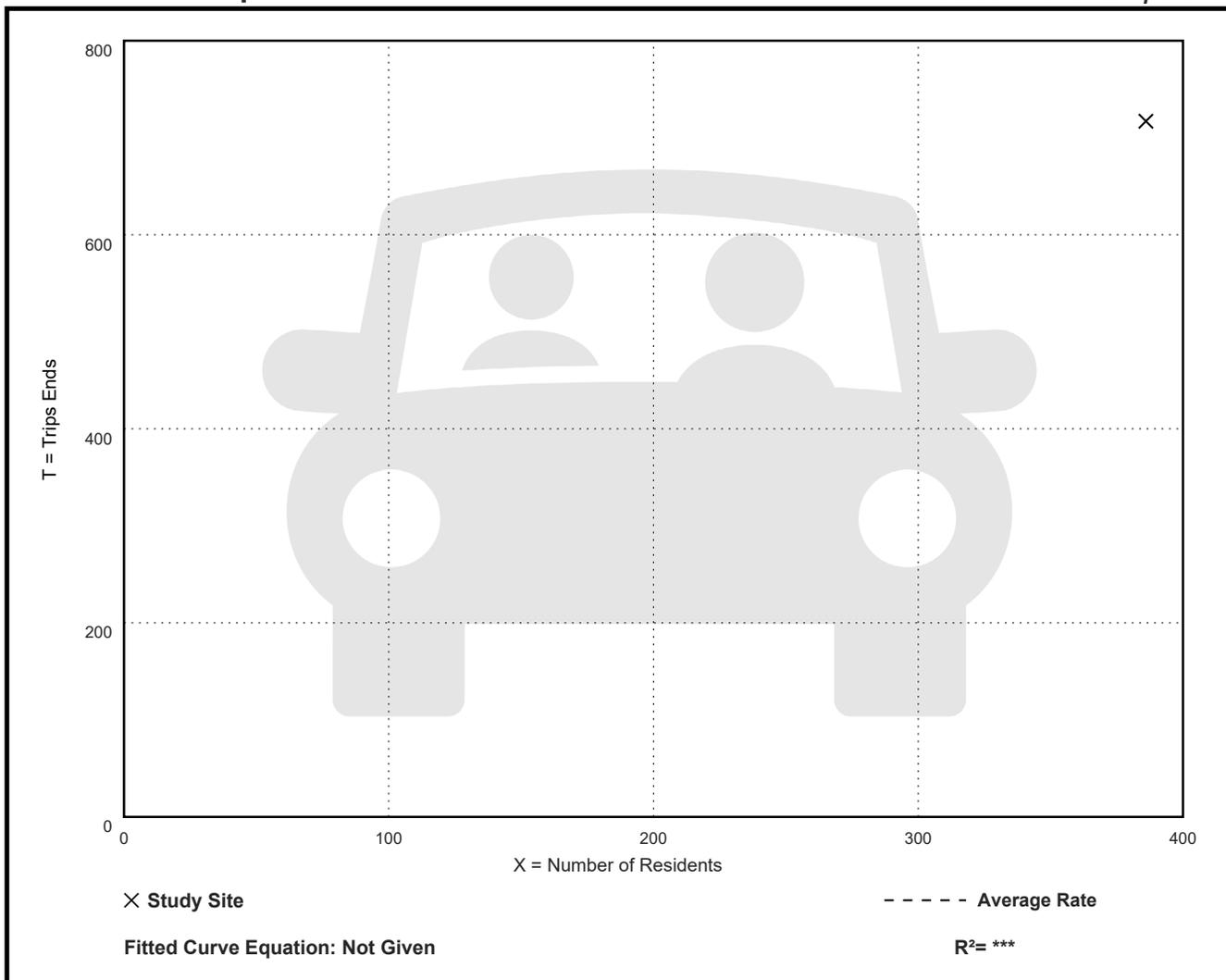
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
1.86	1.86 - 1.86	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Residents

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 386

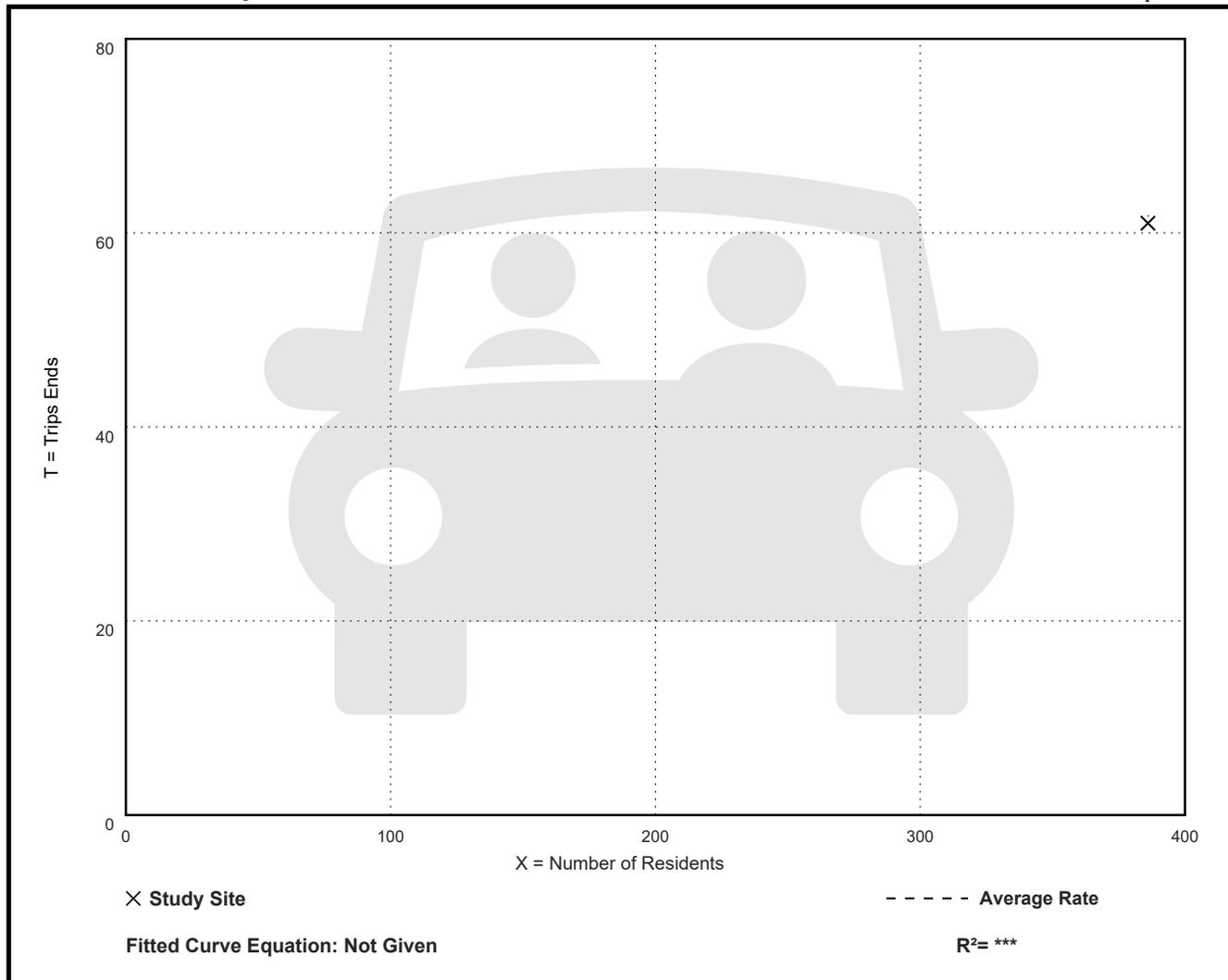
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.16	0.16 - 0.16	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Walk+Bike+Transit 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: 7

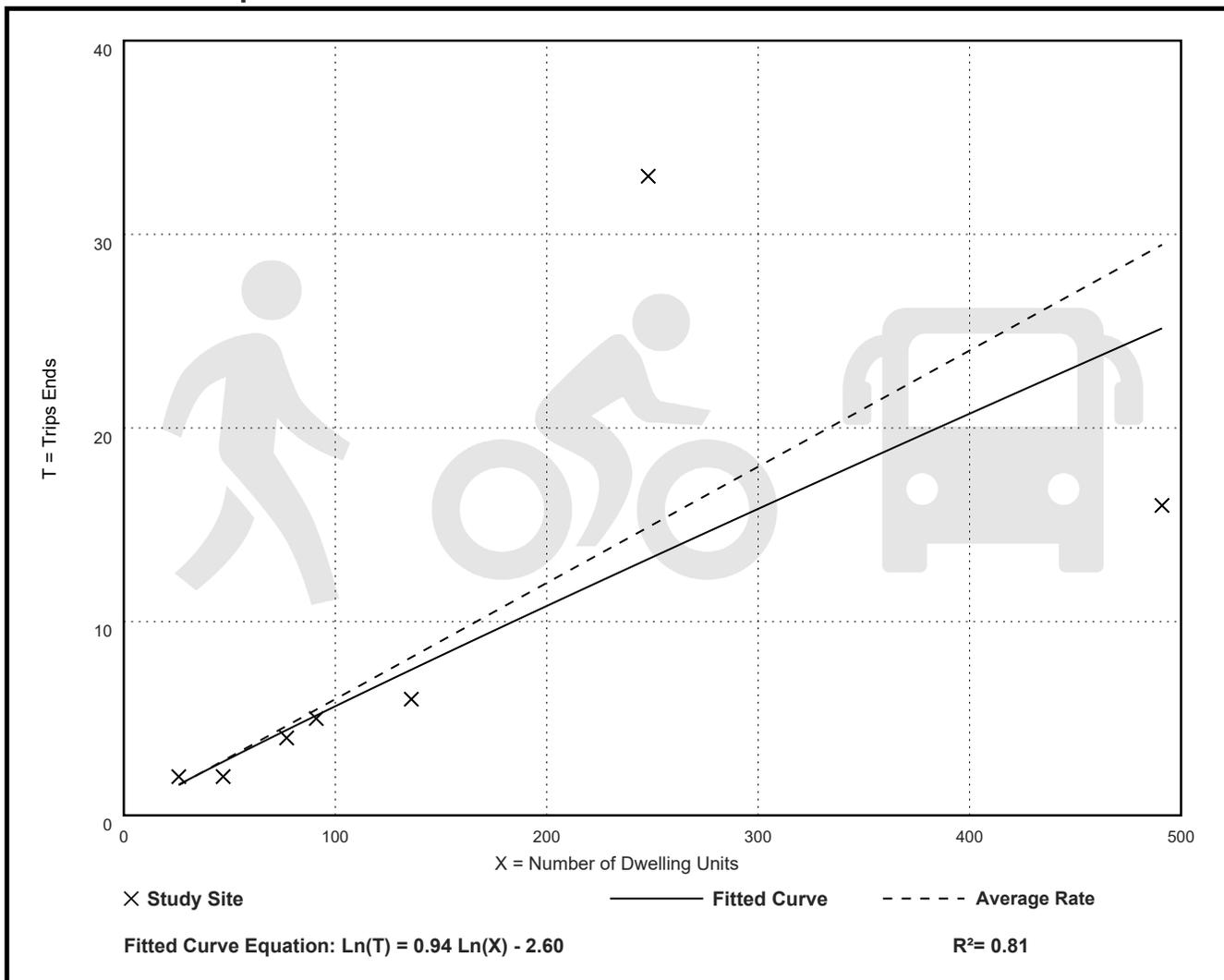
Avg. Num. of Dwelling Units: 159

Directional Distribution: 64% entering, 36% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.06	0.03 - 0.13	0.04

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Walk+Bike+Transit 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: 8

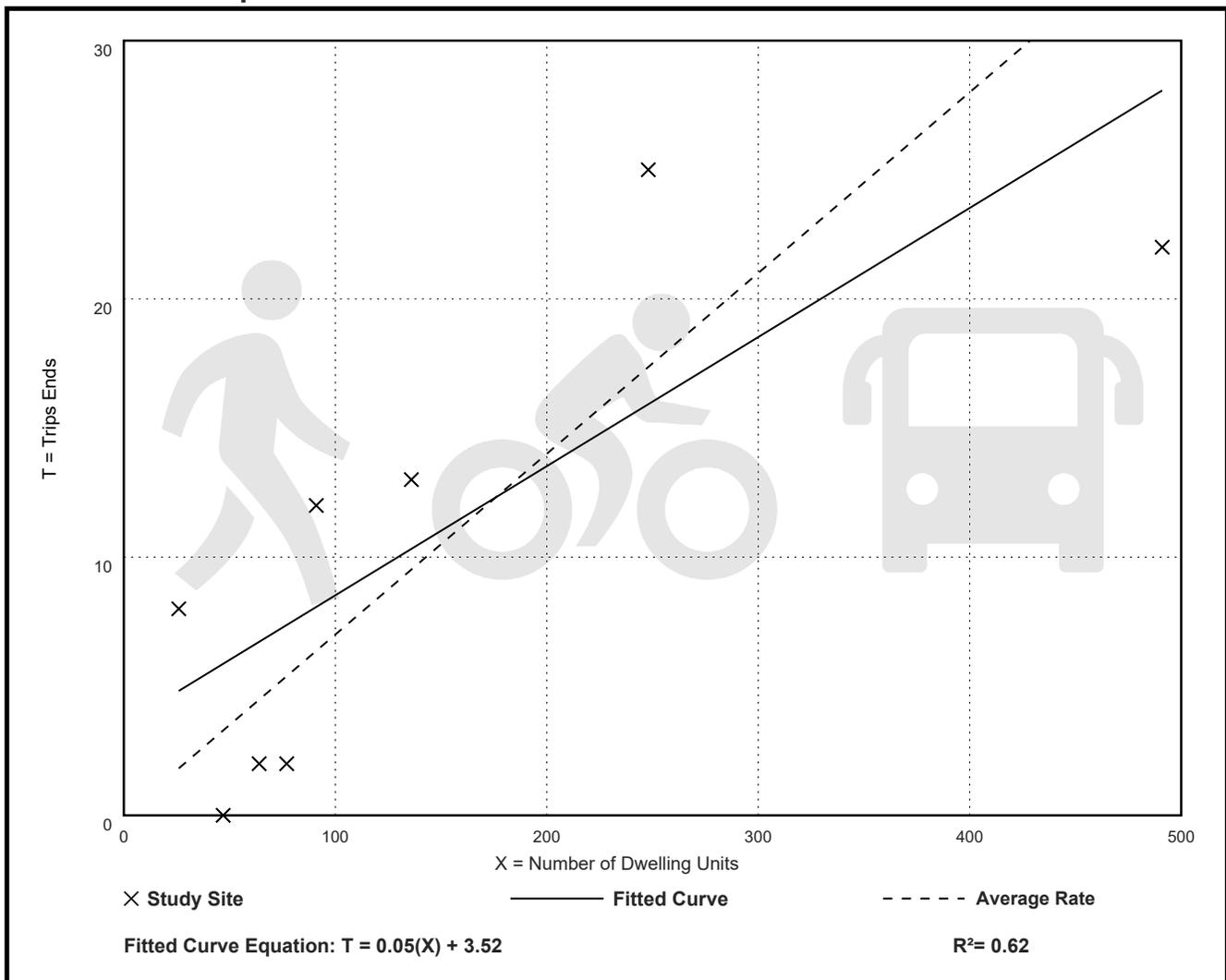
Avg. Num. of Dwelling Units: 148

Directional Distribution: 50% entering, 50% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.07	0.00 - 0.31	0.05

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Walk+Bike+Transit Trip Ends vs: Dwelling Units

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 5

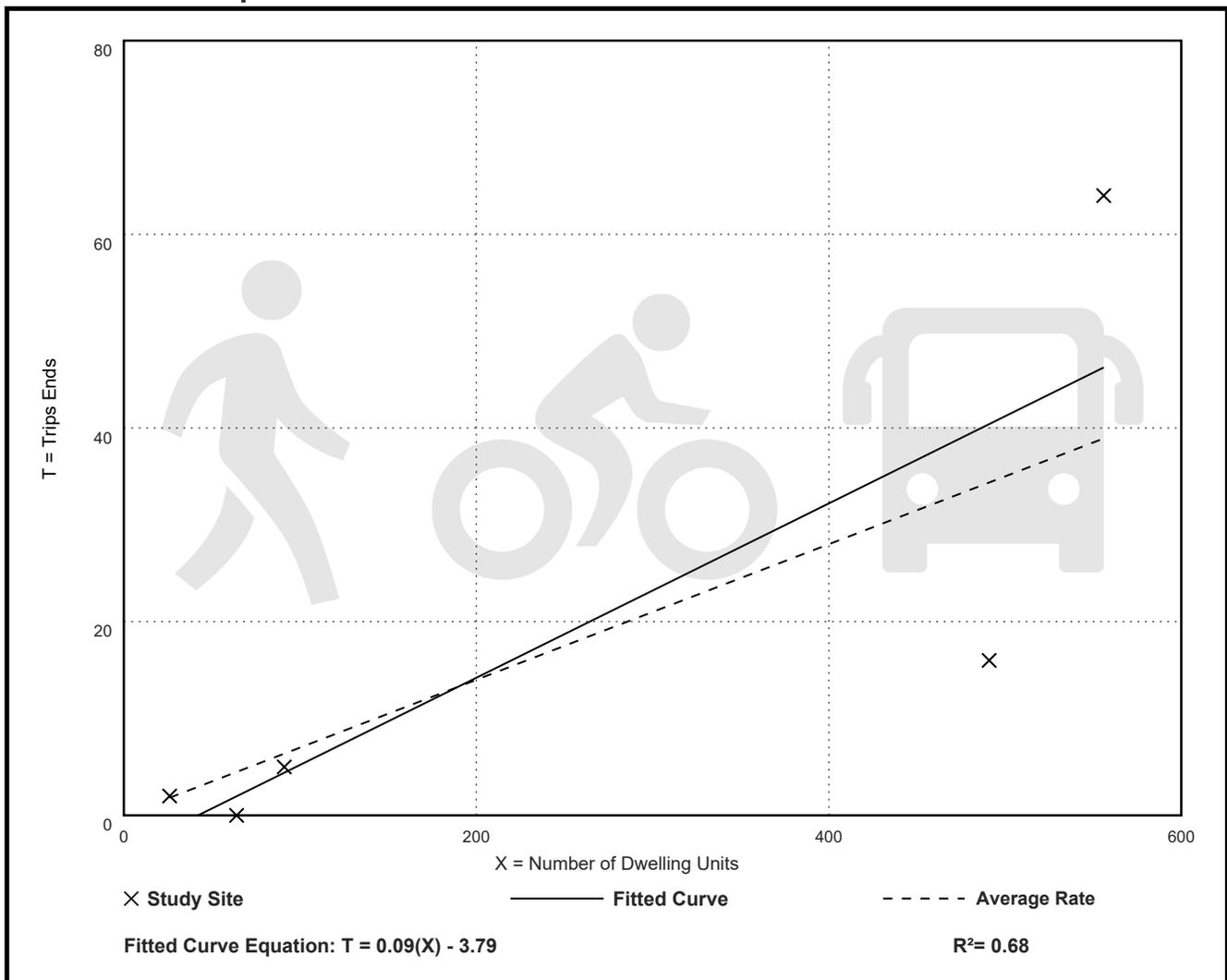
Avg. Num. of Dwelling Units: 246

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.07	0.00 - 0.12	0.05

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Walk+Bike+Transit Trip Ends vs: Dwelling Units

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 5

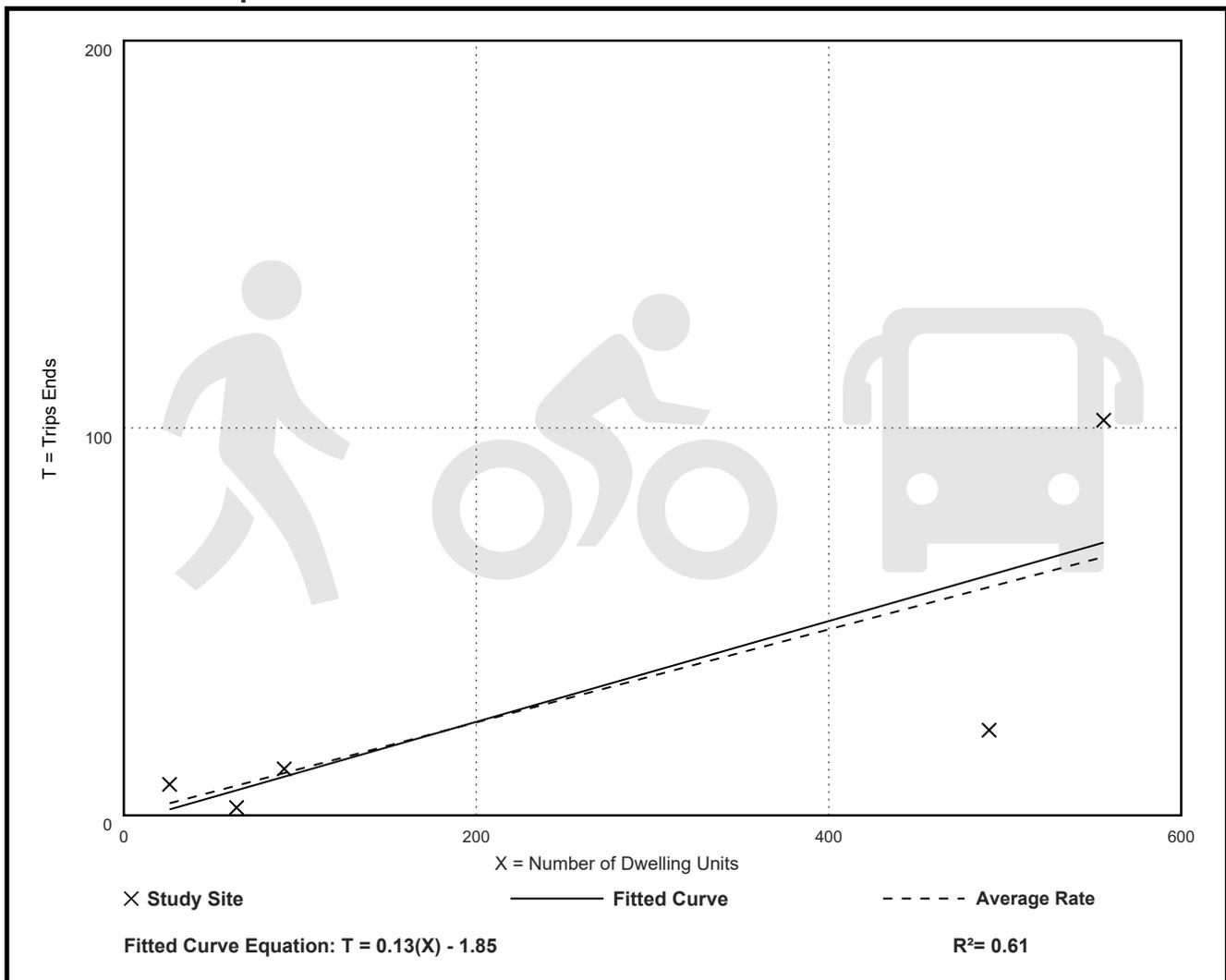
Avg. Num. of Dwelling Units: 246

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.12	0.03 - 0.31	0.08

Data Plot and Equation



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

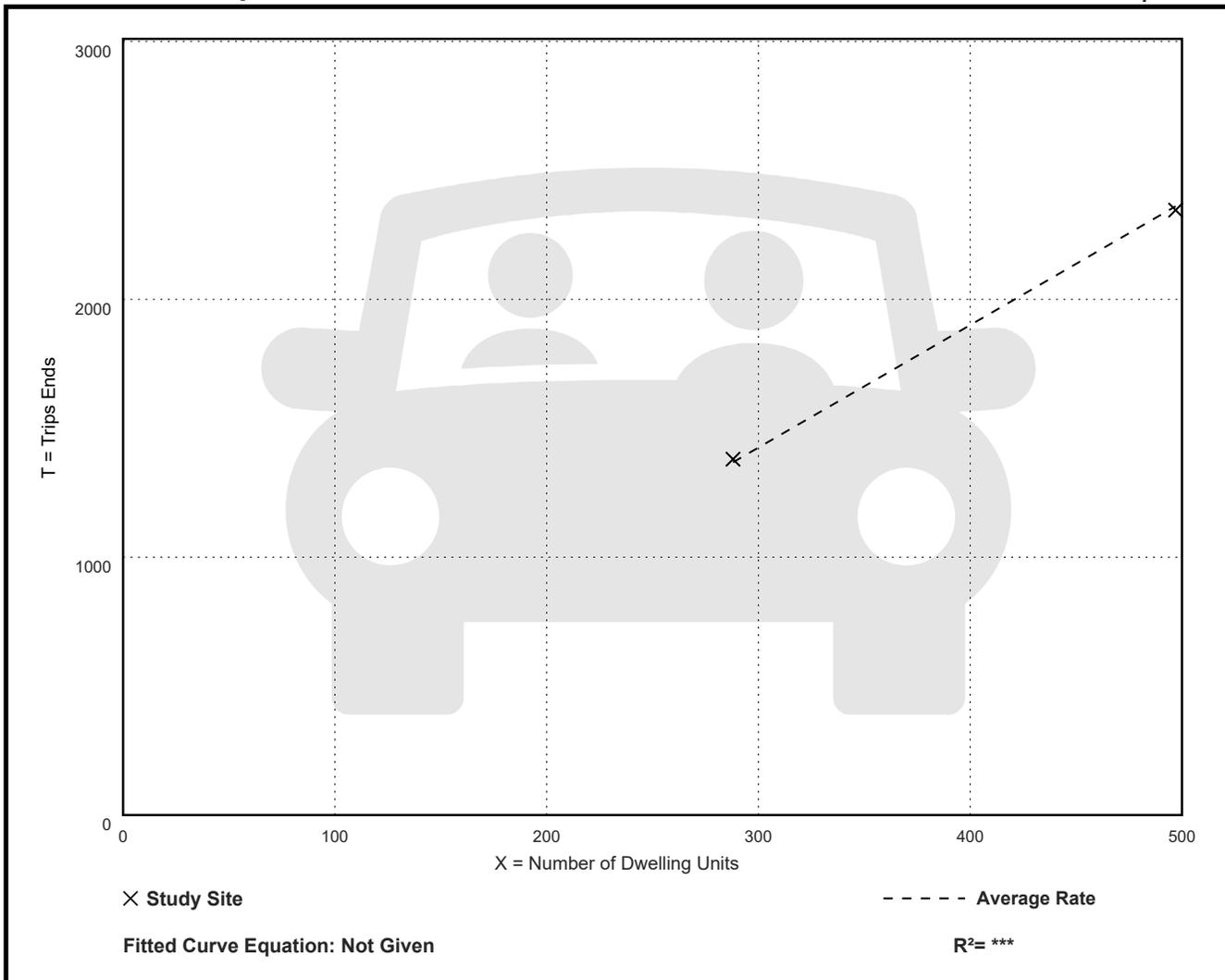
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Dwelling Units: 393
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.75	4.72 - 4.79	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

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: 7

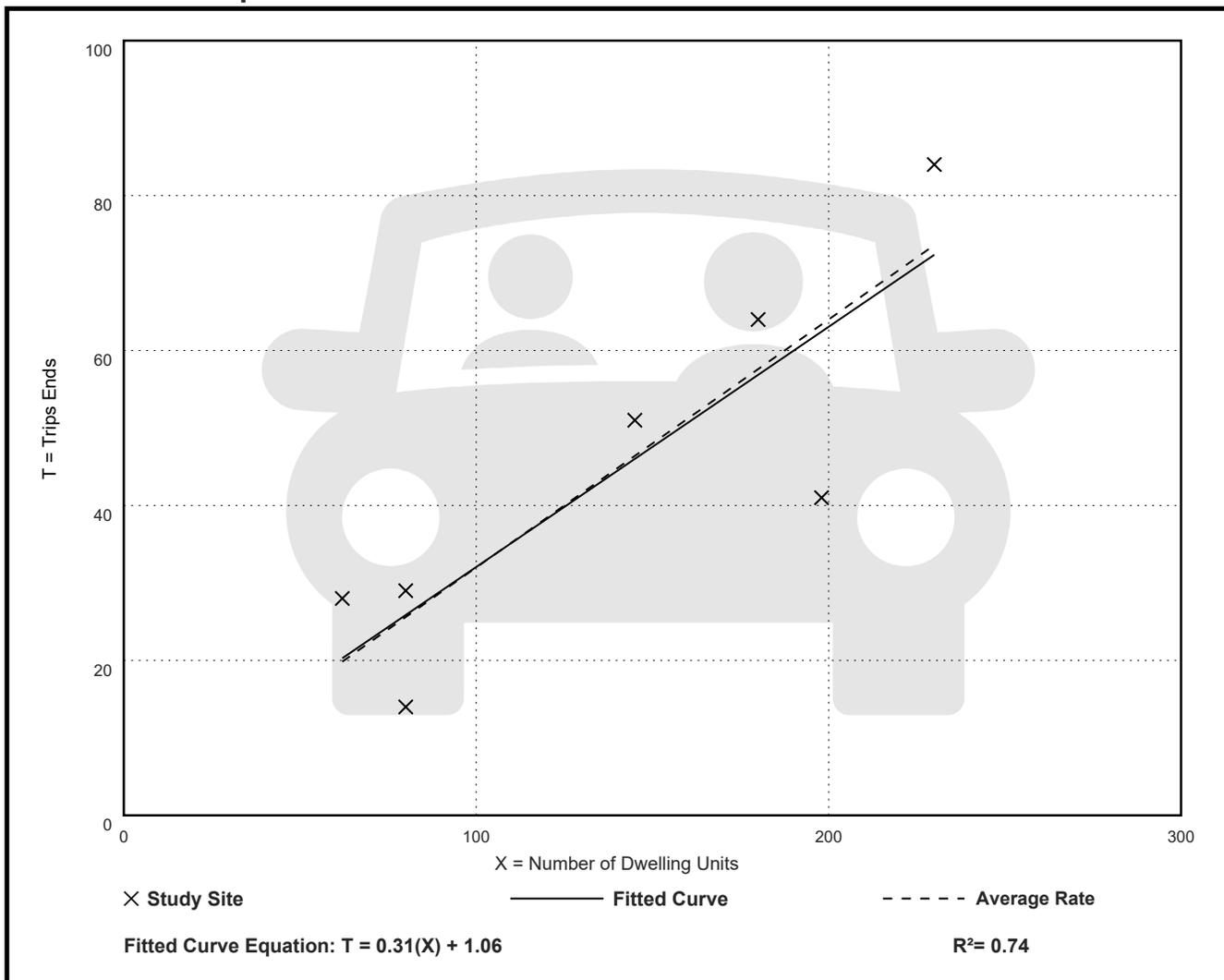
Avg. Num. of Dwelling Units: 139

Directional Distribution: 39% entering, 61% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.18 - 0.45	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

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: 7

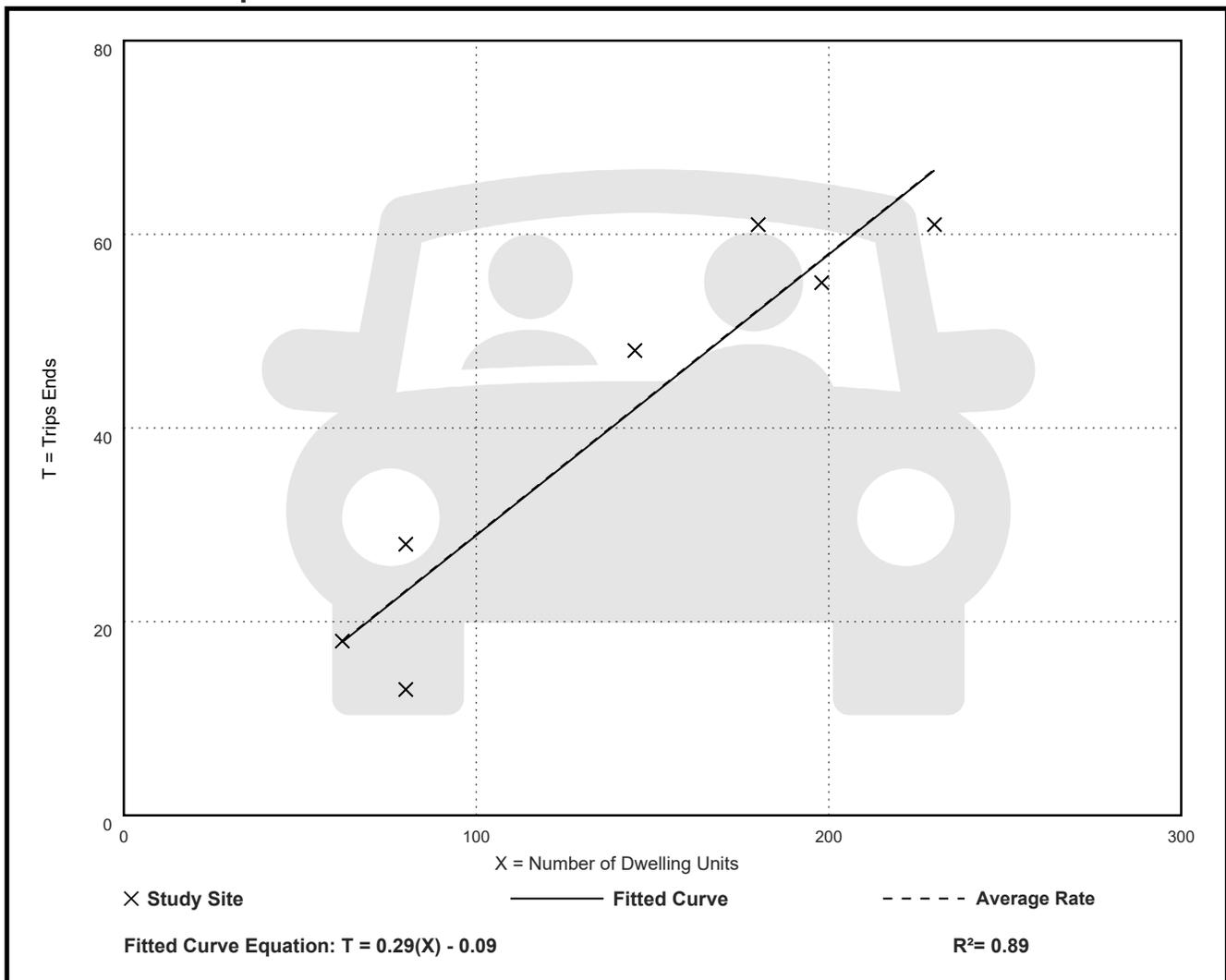
Avg. Num. of Dwelling Units: 139

Directional Distribution: 65% entering, 35% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.29	0.16 - 0.35	0.05

Data Plot and Equation



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 130

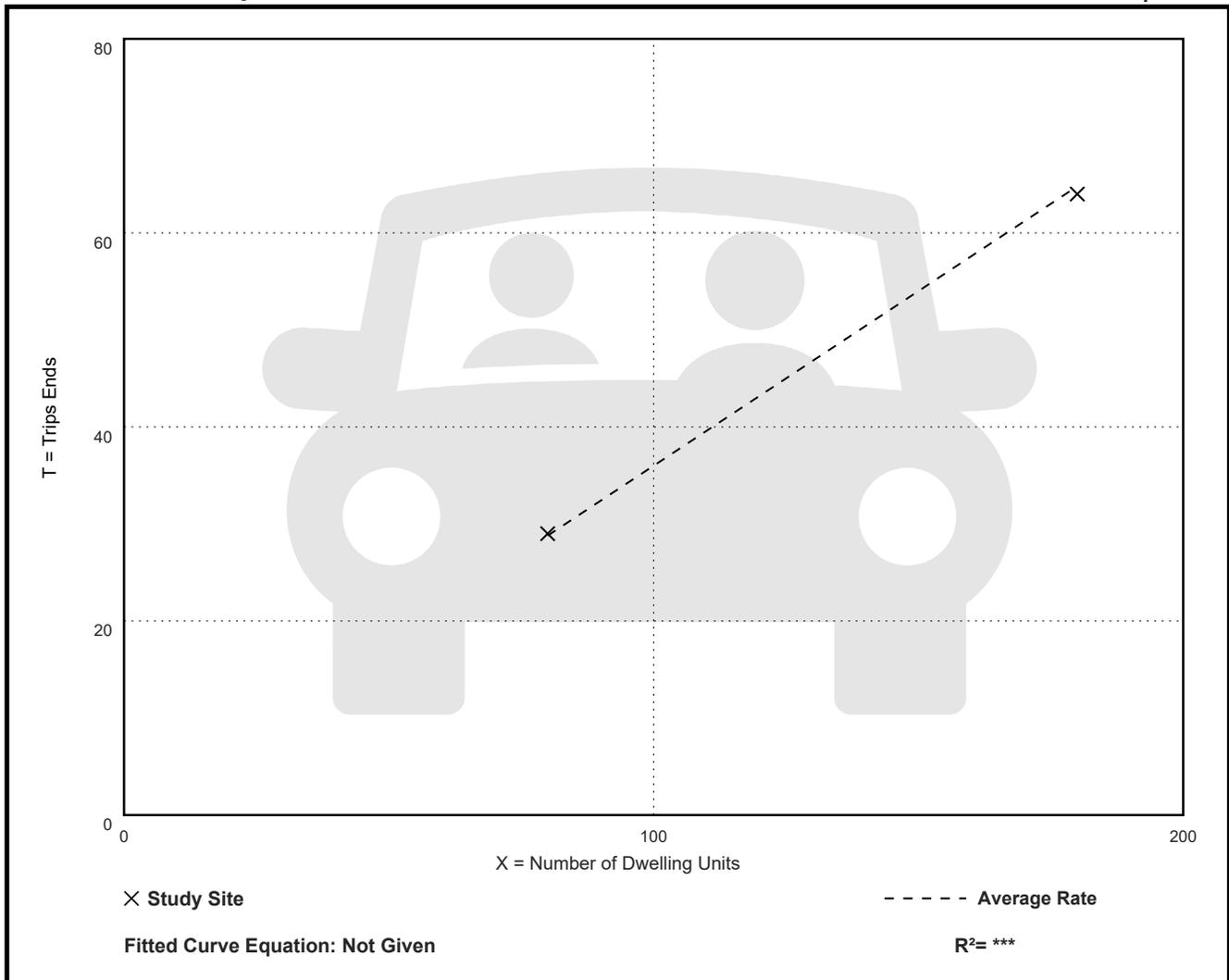
Directional Distribution: 38% entering, 62% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.36 - 0.36	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 130

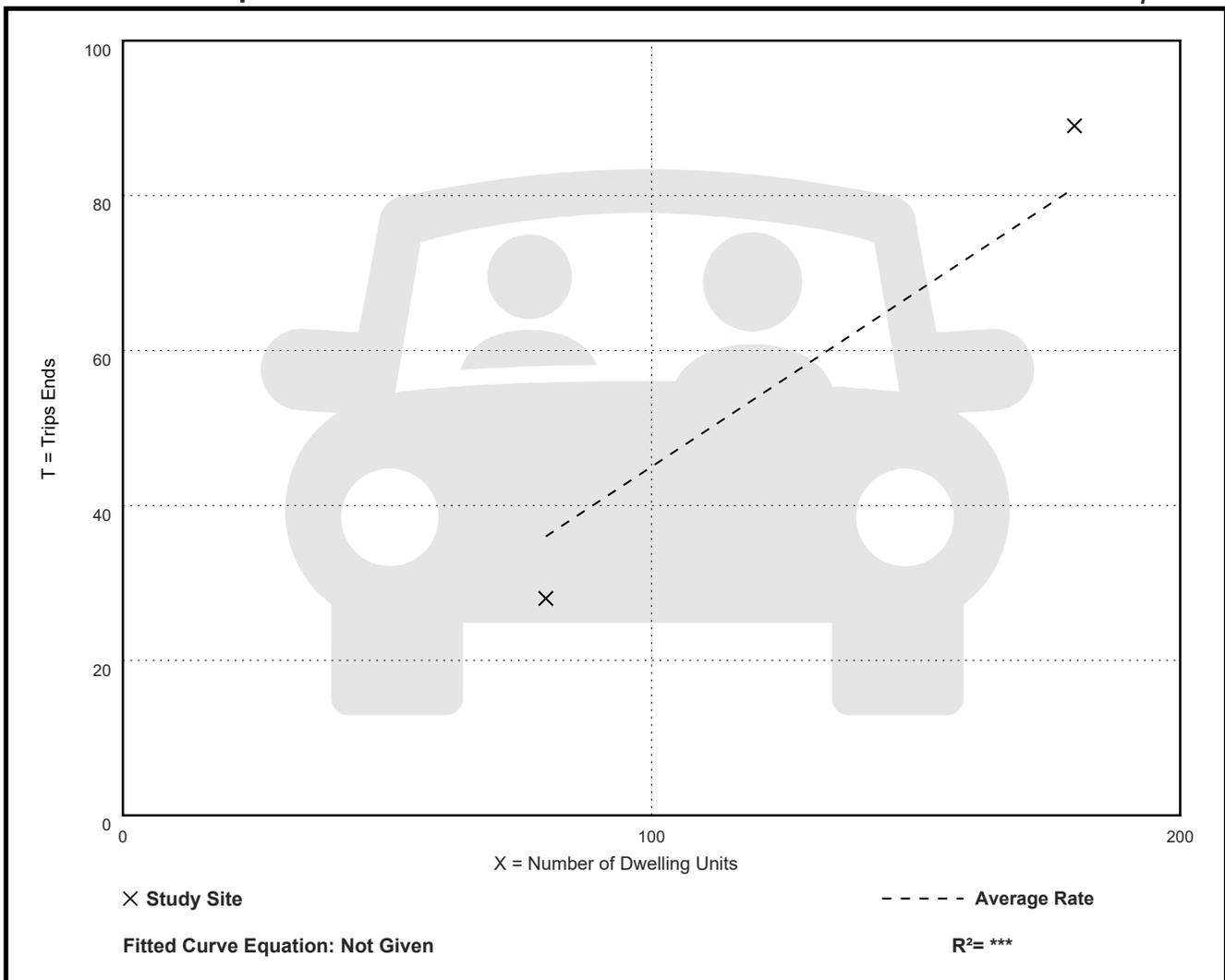
Directional Distribution: 75% entering, 25% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.45	0.35 - 0.49	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Walk+Bike+Transit 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: 5

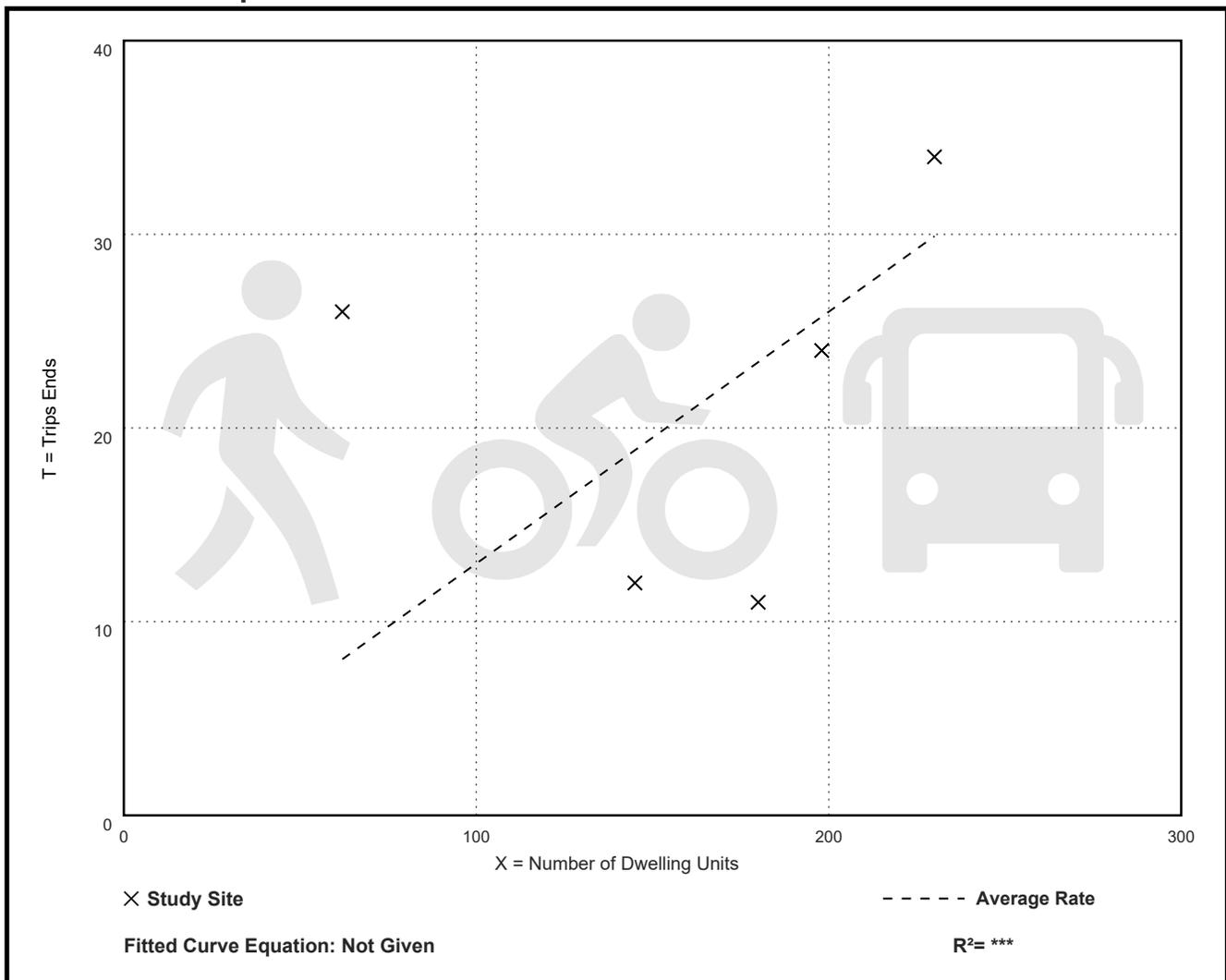
Avg. Num. of Dwelling Units: 163

Directional Distribution: 36% entering, 64% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.13	0.06 - 0.42	0.10

Data Plot and Equation



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Walk+Bike+Transit 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: 5

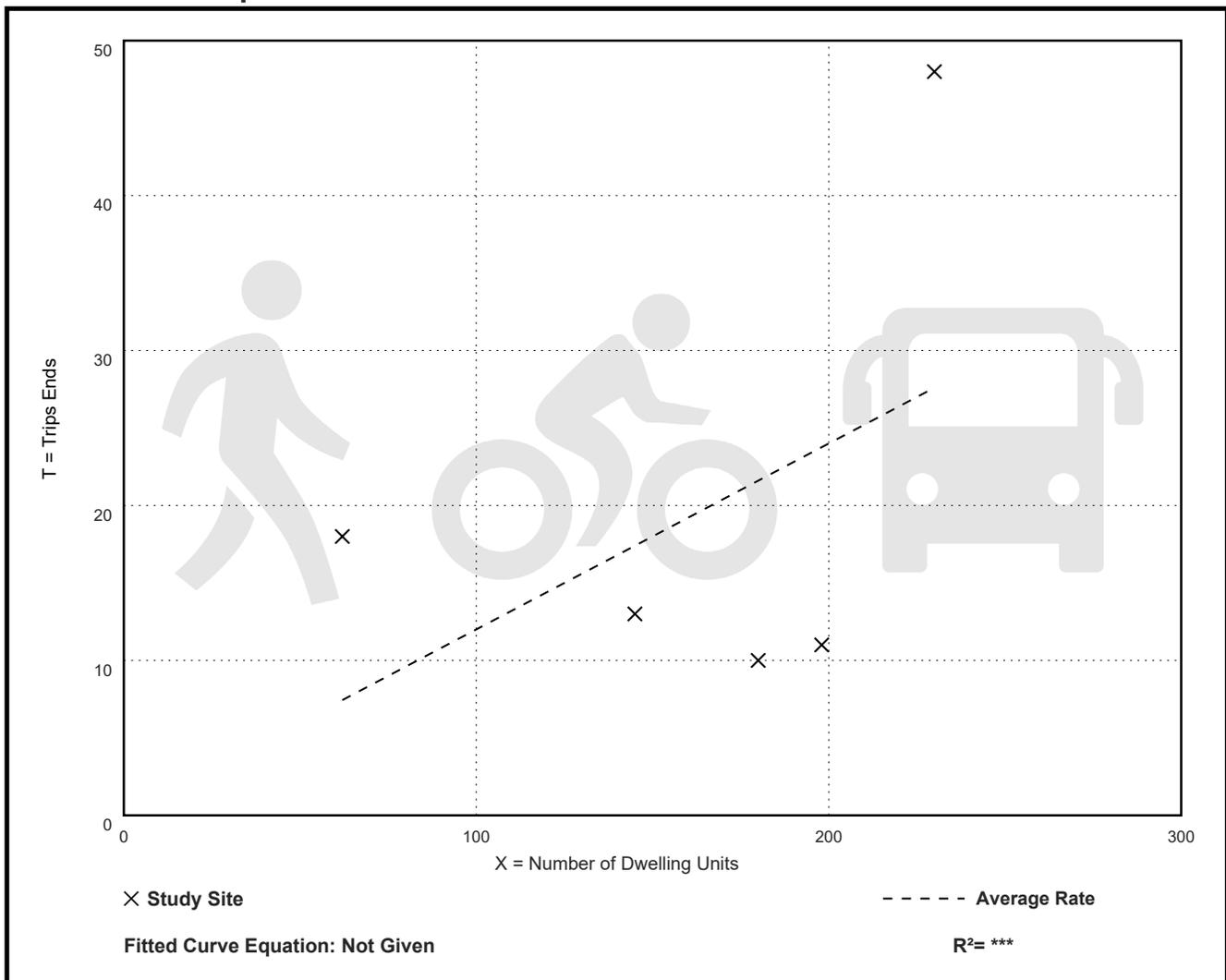
Avg. Num. of Dwelling Units: 163

Directional Distribution: 58% entering, 42% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.12	0.06 - 0.29	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Walk+Bike+Transit Trip Ends vs: Dwelling Units

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Dwelling Units: 180

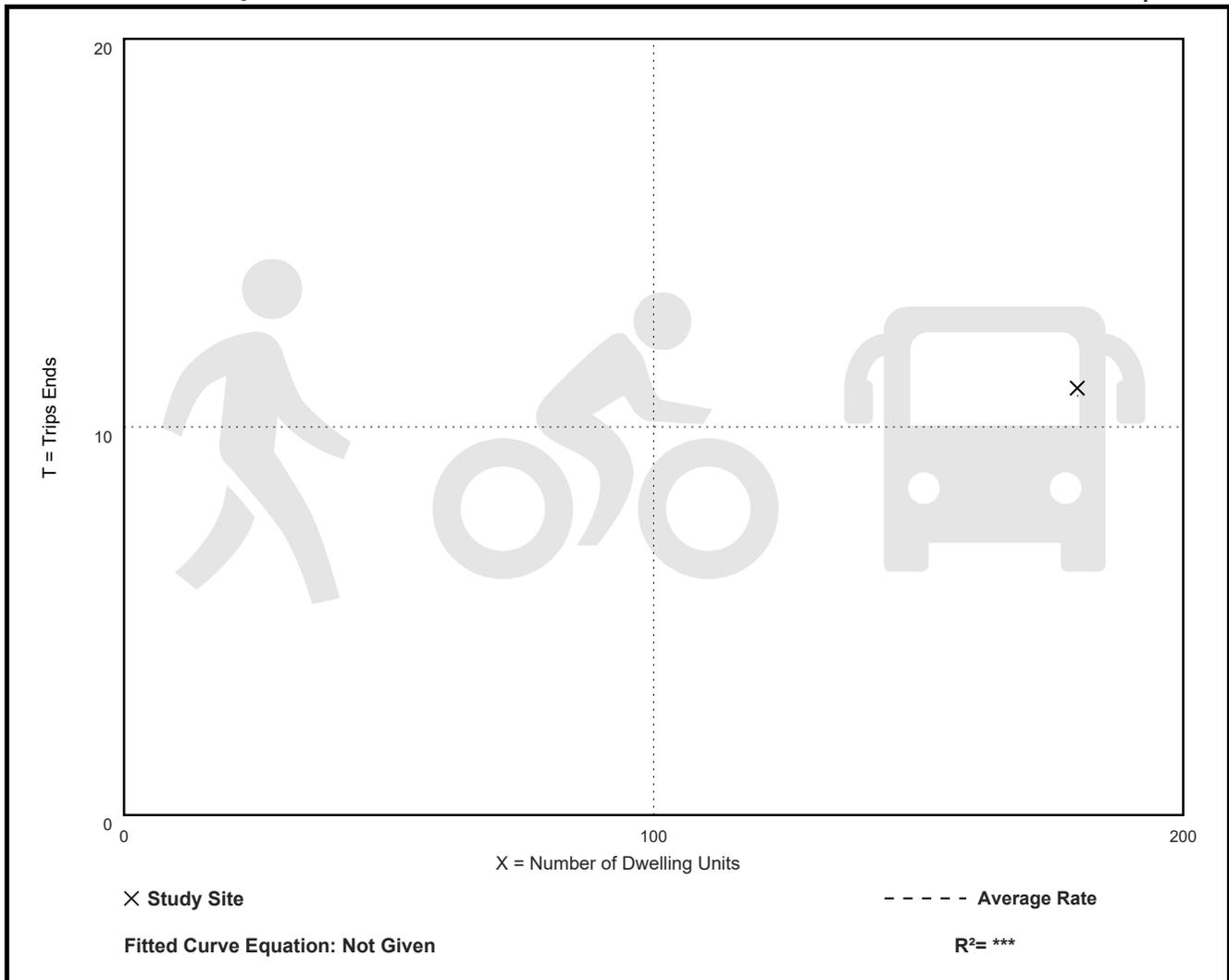
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.06	0.06 - 0.06	***

Data Plot and Equation

Caution – Small Sample Size



Multifamily Housing (Mid-Rise) Close to Rail Transit (221)

Walk+Bike+Transit Trip Ends vs: Dwelling Units

On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Dwelling Units: 180

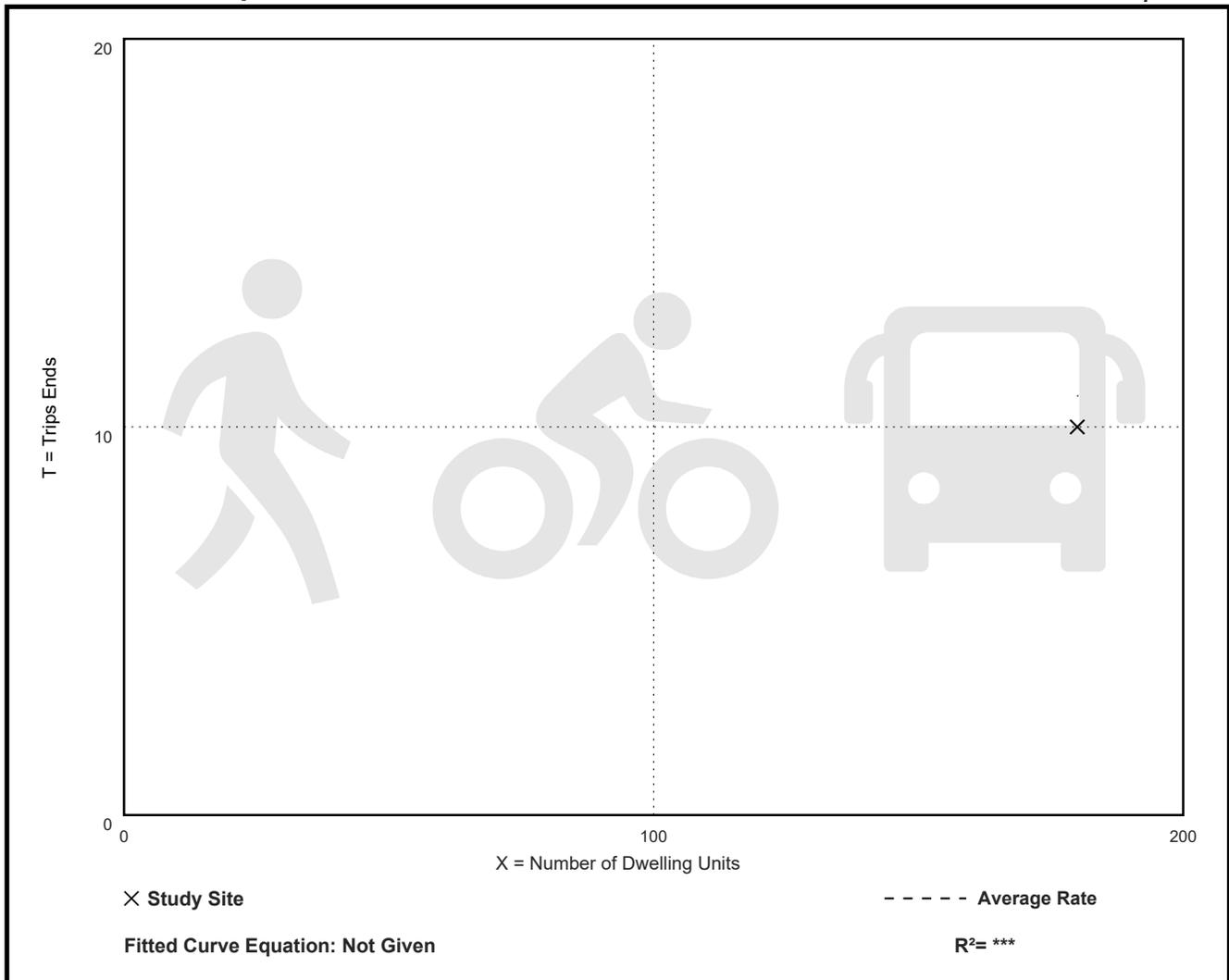
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.06	0.06 - 0.06	***

Data Plot and Equation

Caution – Small Sample Size



Land Use: 710

General Office Building

Description

A general office building is a building with multiple tenants that employ persons in the management, direction, or conduct of legal, accounting, engineering, consulting, real estate, insurance, financial, or other professional services. A general office building with a gross floor area of 10,000 square feet or less is classified as a small office building (Land Use 712).

Additional Data

If two or more general office buildings are in close physical proximity (within walking distance) and function as a unit (perhaps with a shared parking facility and common or complementary tenants), the total gross floor area or employment of the paired office buildings can be used for calculating the site trip generation. If the individual buildings are isolated or not functionally related to one another, trip generation should be calculated for each building separately.

The average building occupancy varies considerably among the studies for which occupancy data were provided. The reported occupied gross floor area was 88 percent for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, Connecticut, Georgia, Indiana, Kentucky, Maine, Minnesota, Montana, New Hampshire, New Jersey, Ontario (CAN), Texas, Utah, and Virginia.

Source Numbers

404, 407, 408, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 944, 946, 964, 965, 972, 1009, 1030, 1058, 1061, 1219, 1221

General Office Building (710)

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

Setting/Location: General Urban/Suburban

Number of Studies: 22

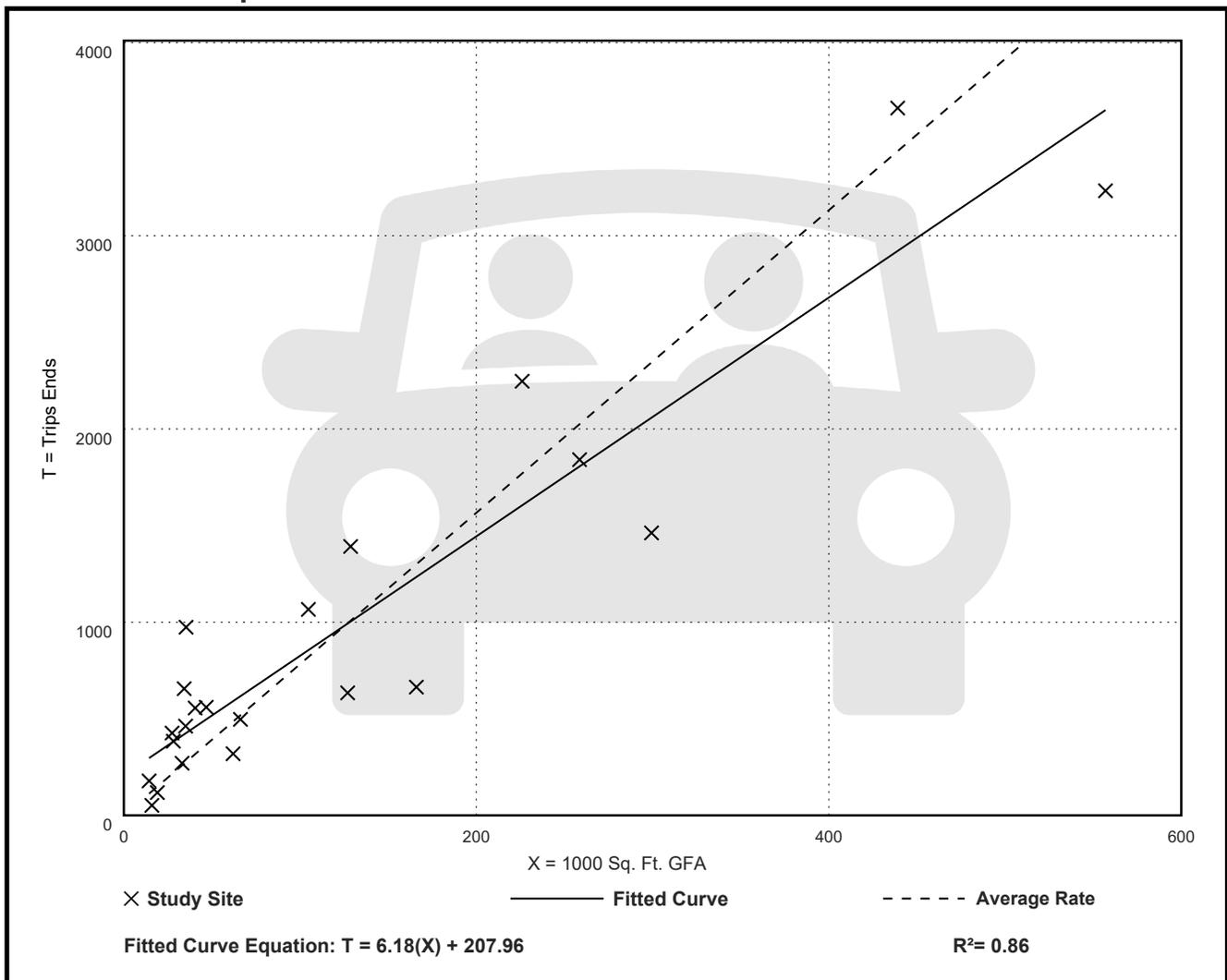
Avg. 1000 Sq. Ft. GFA: 126

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.83	3.27 - 27.56	3.71

Data Plot and Equation



General Office Building (710)

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: 54

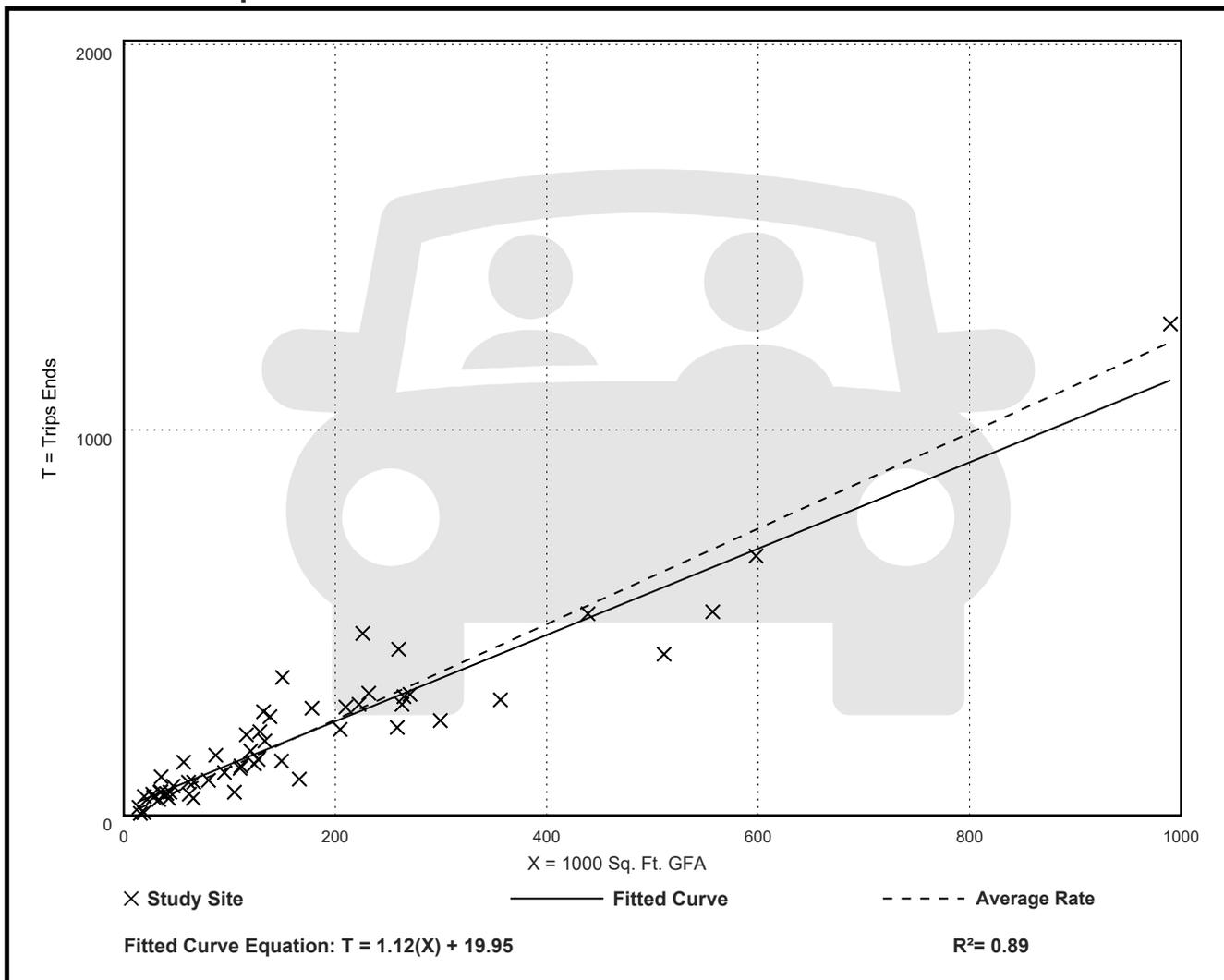
Avg. 1000 Sq. Ft. GFA: 170

Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.24	0.32 - 2.83	0.40

Data Plot and Equation



General Office Building (710)

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: 53

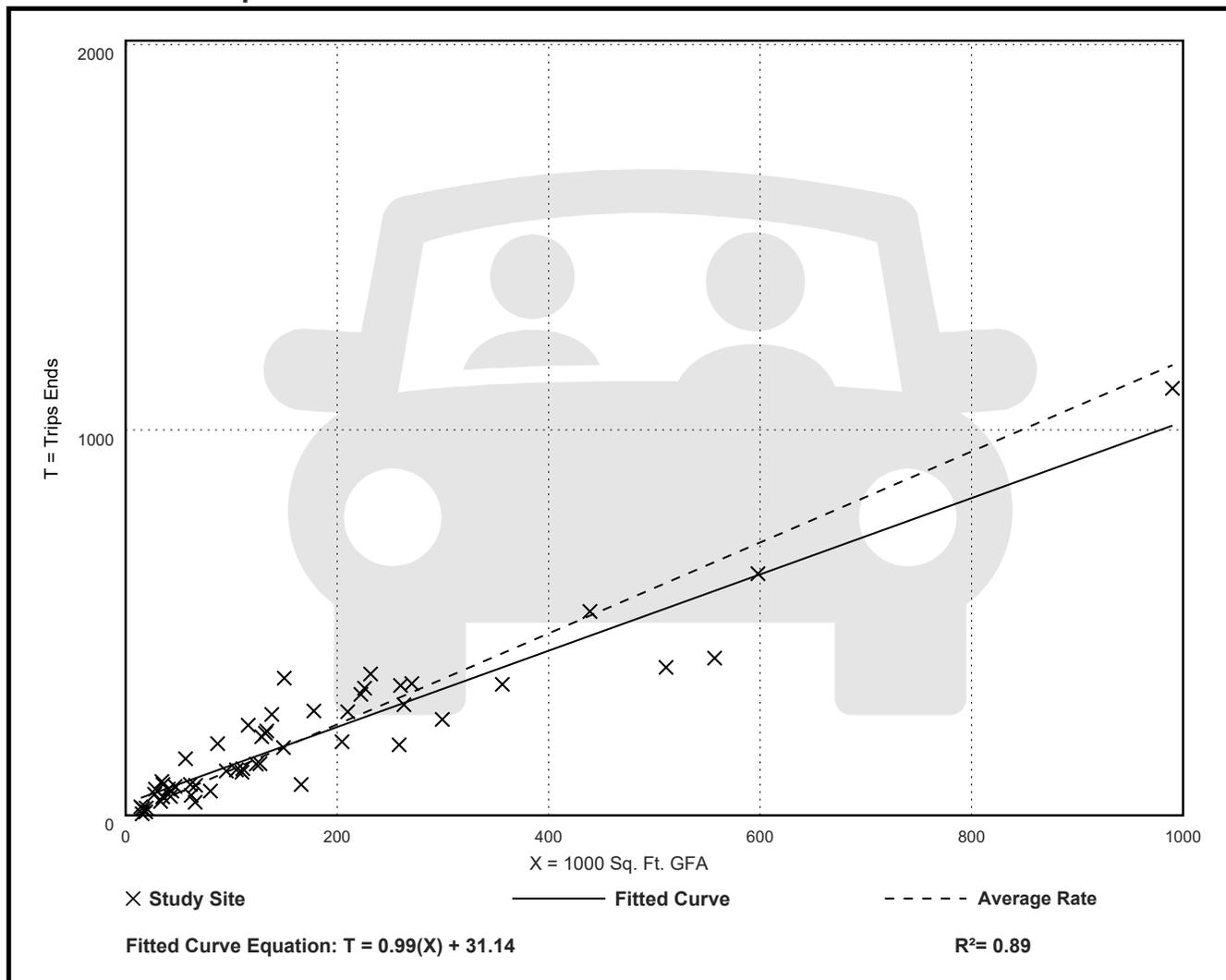
Avg. 1000 Sq. Ft. GFA: 166

Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.18	0.26 - 2.59	0.41

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 35

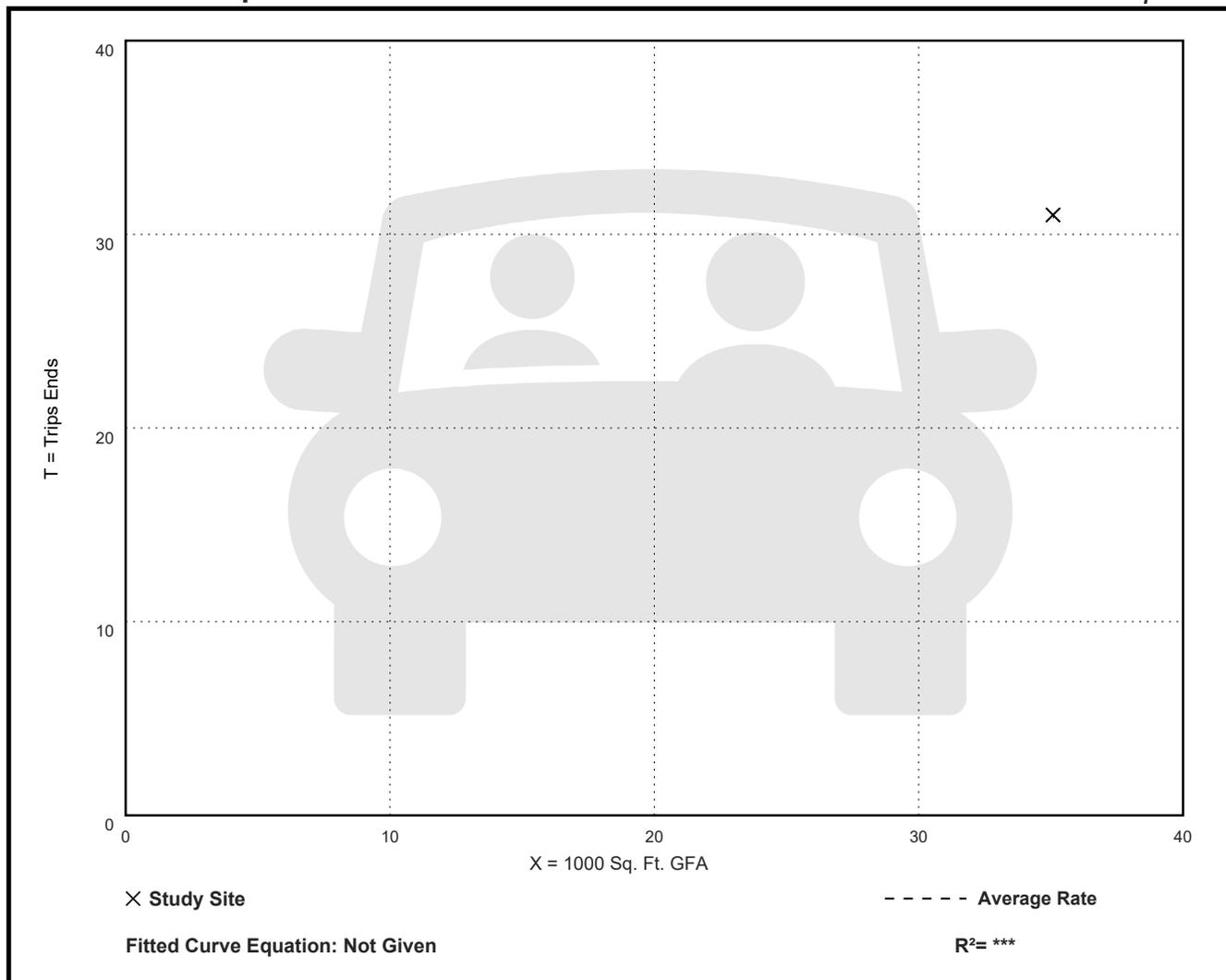
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.88	0.88 - 0.88	***

Data Plot and Equation

Caution – Small Sample Size



General Office Building (710)

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

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 35

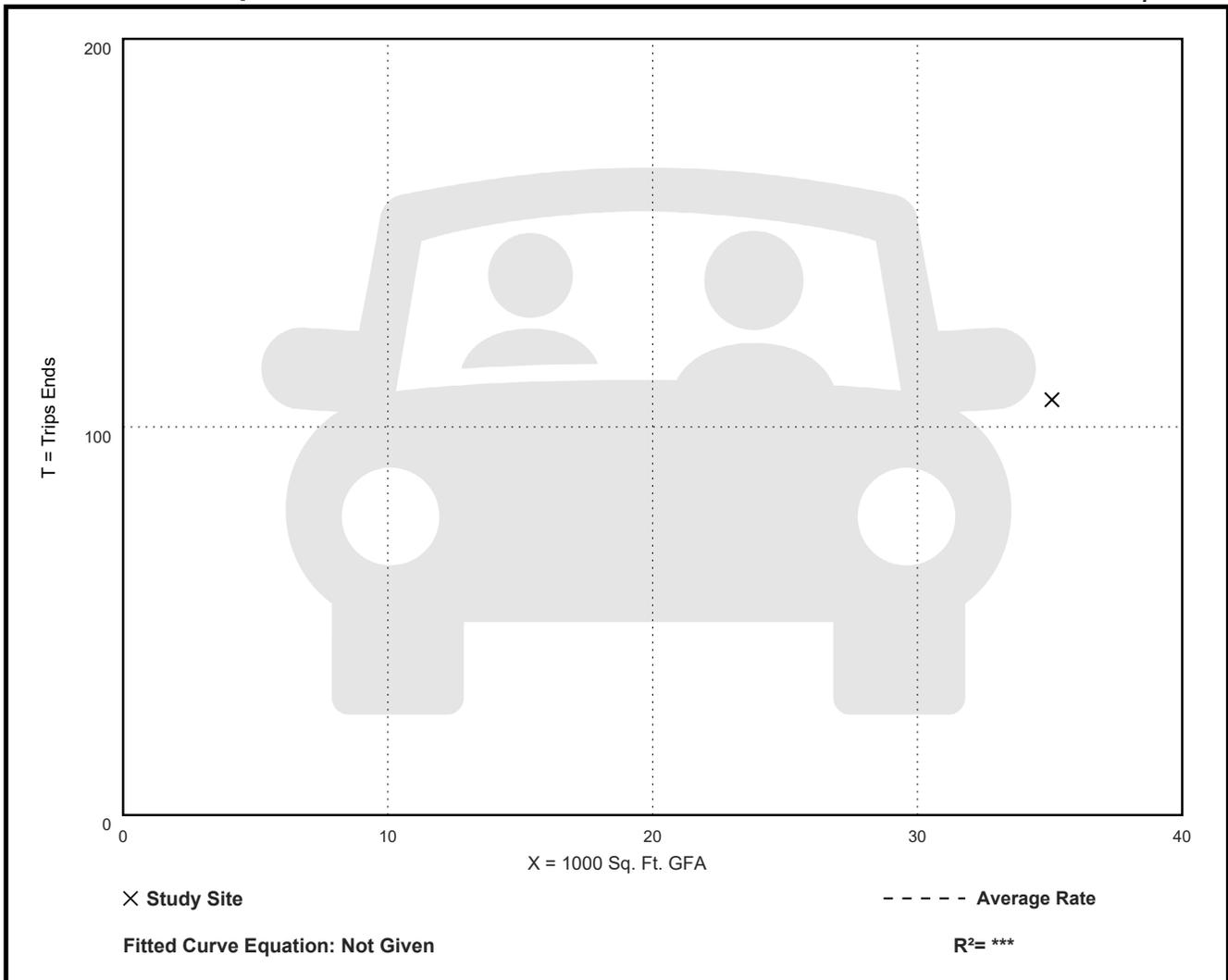
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.05	3.05 - 3.05	***

Data Plot and Equation

Caution – Small Sample Size



General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GFA: 35

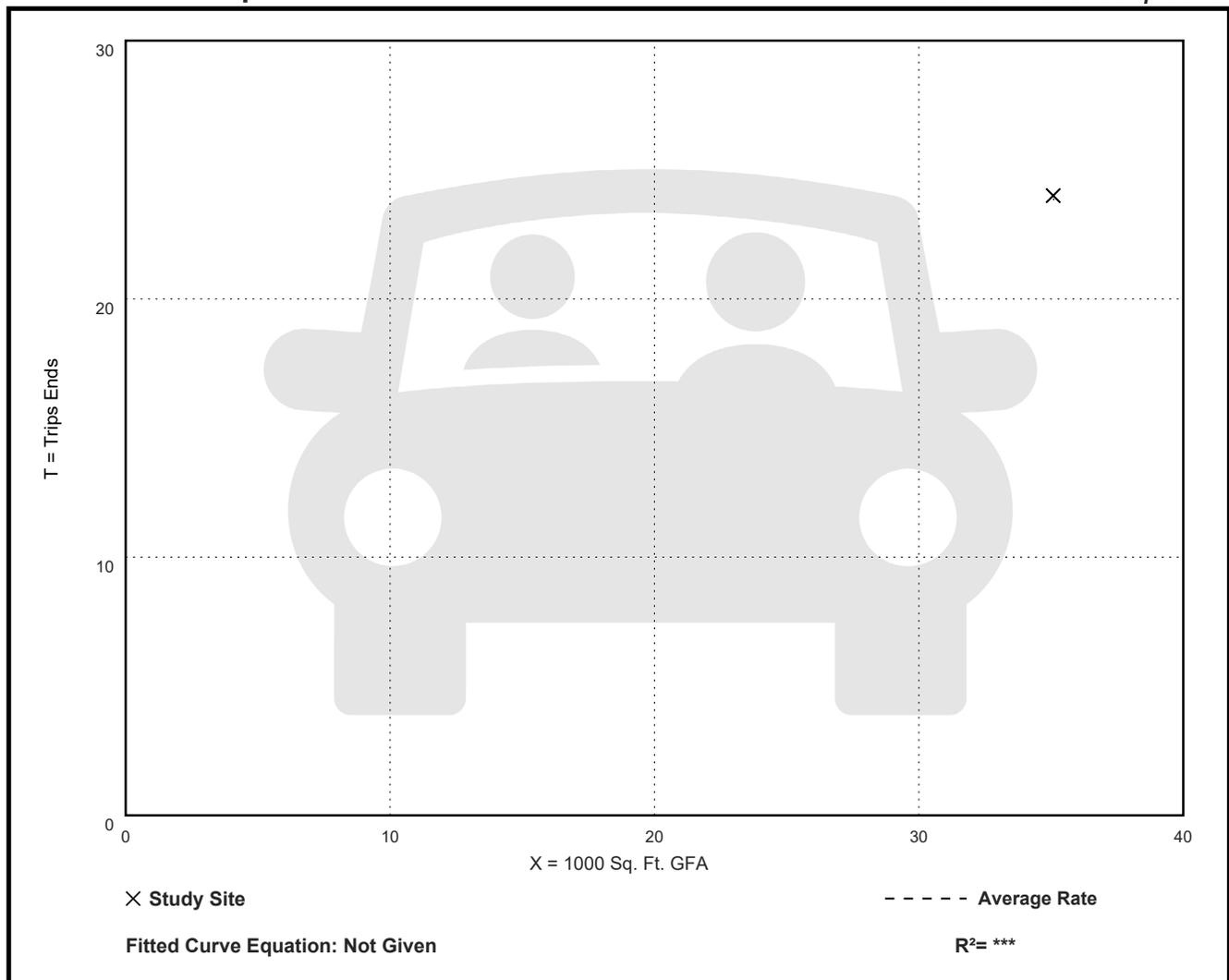
Directional Distribution: 58% entering, 42% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.68	0.68 - 0.68	***

Data Plot and Equation

Caution – Small Sample Size



General Office Building (710)

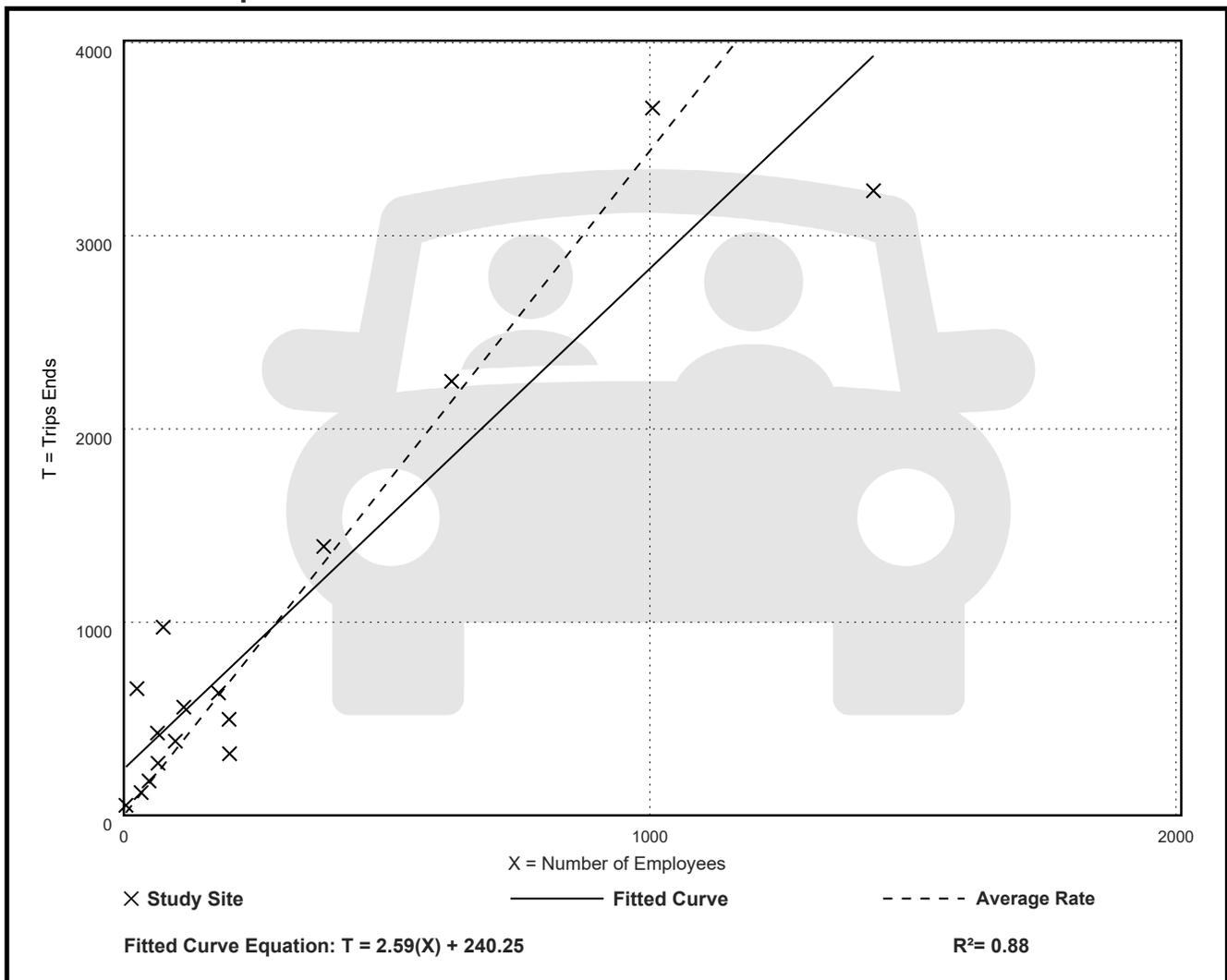
Vehicle Trip Ends vs: **Employees**
On a: **Weekday**

Setting/Location: General Urban/Suburban
Number of Studies: 16
Avg. Num. of Employees: 284
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.44	1.59 - 26.24	2.38

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: **Employees**

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: 24

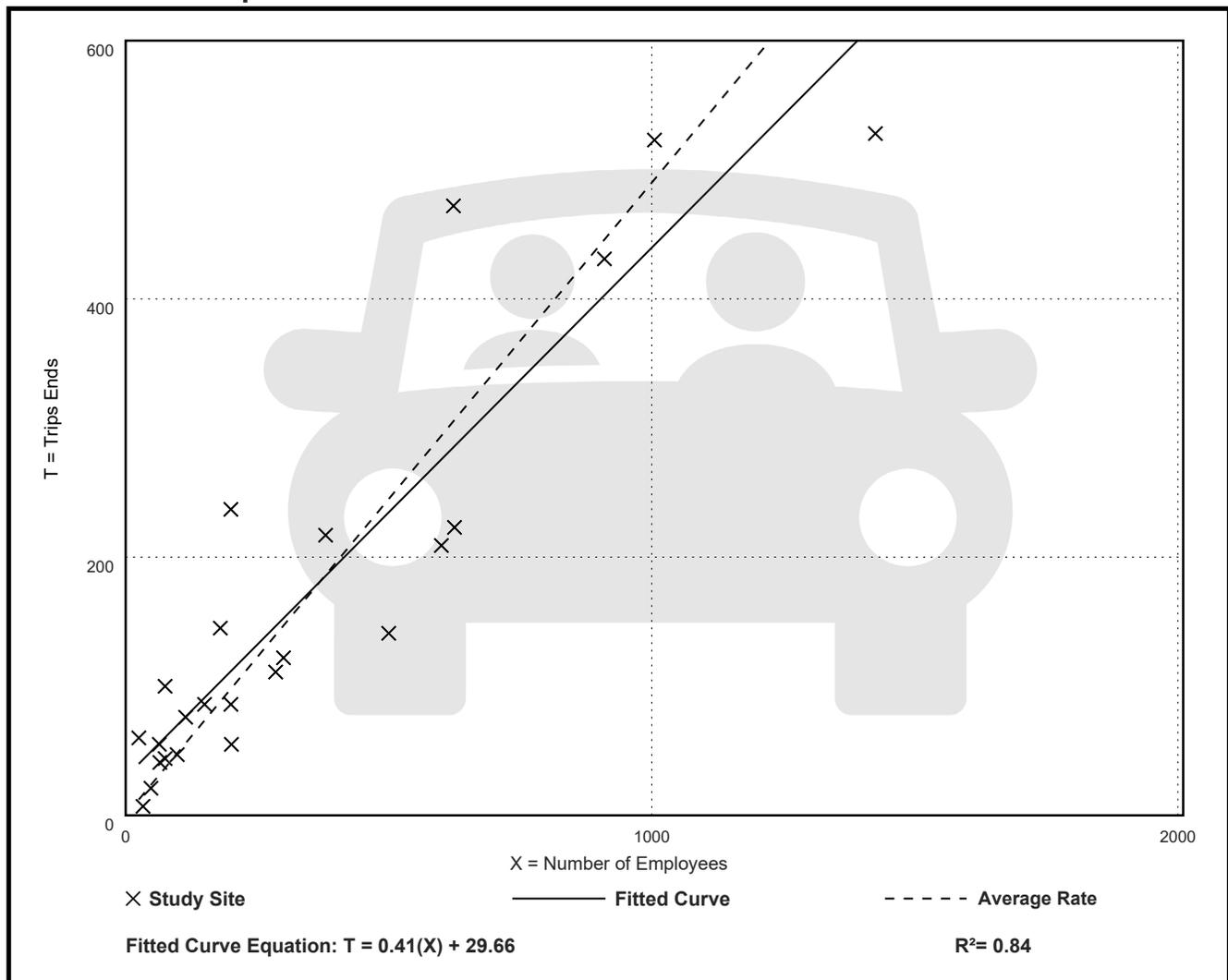
Avg. Num. of Employees: 341

Directional Distribution: 86% entering, 14% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.49	0.21 - 2.40	0.23

Data Plot and Equation



General Office Building (710)

Vehicle Trip Ends vs: Employees

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: 25

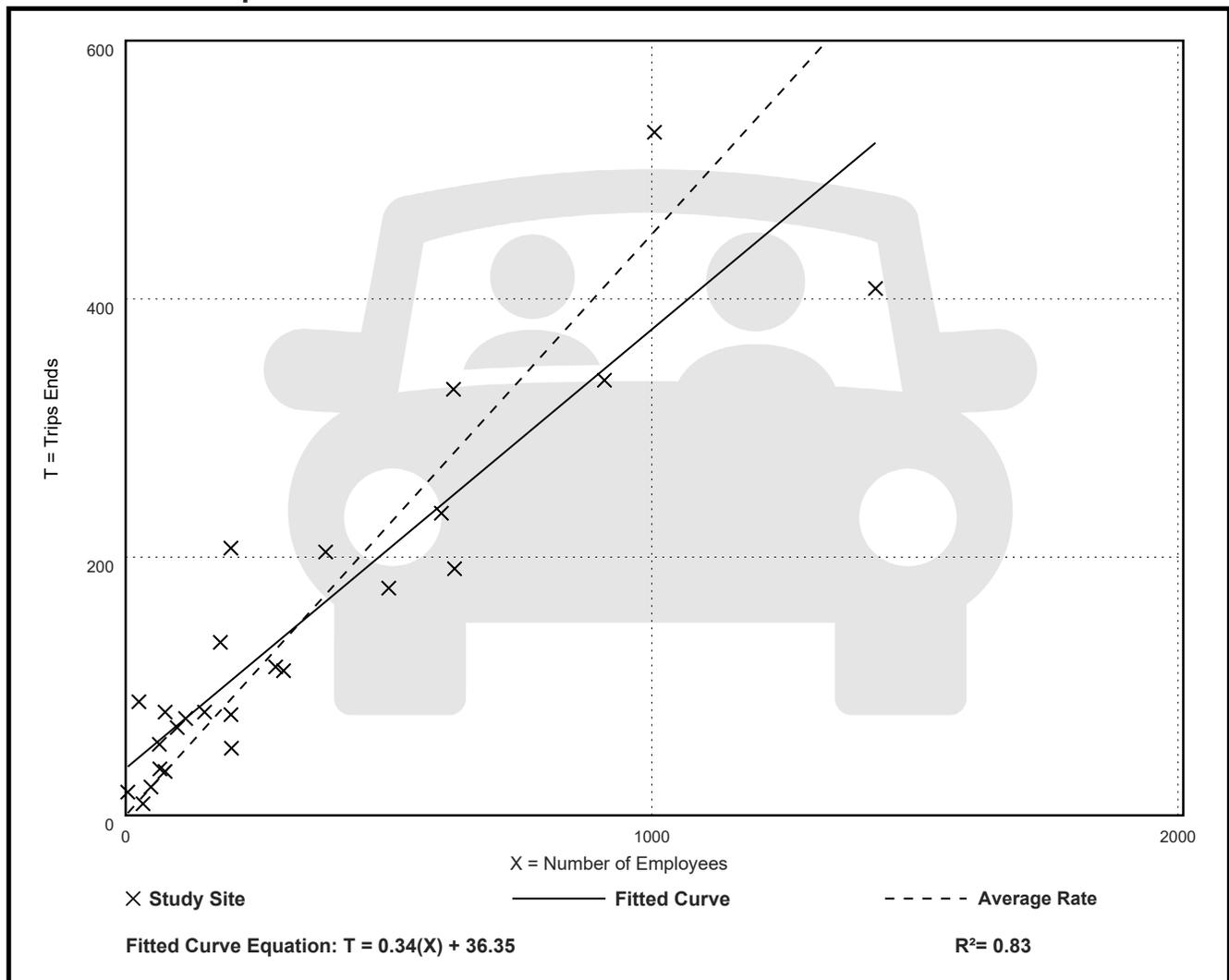
Avg. Num. of Employees: 327

Directional Distribution: 18% entering, 82% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.45	0.26 - 4.50	0.26

Data Plot and Equation



General Office Building (710)

Walk+Bike+Transit 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: 17

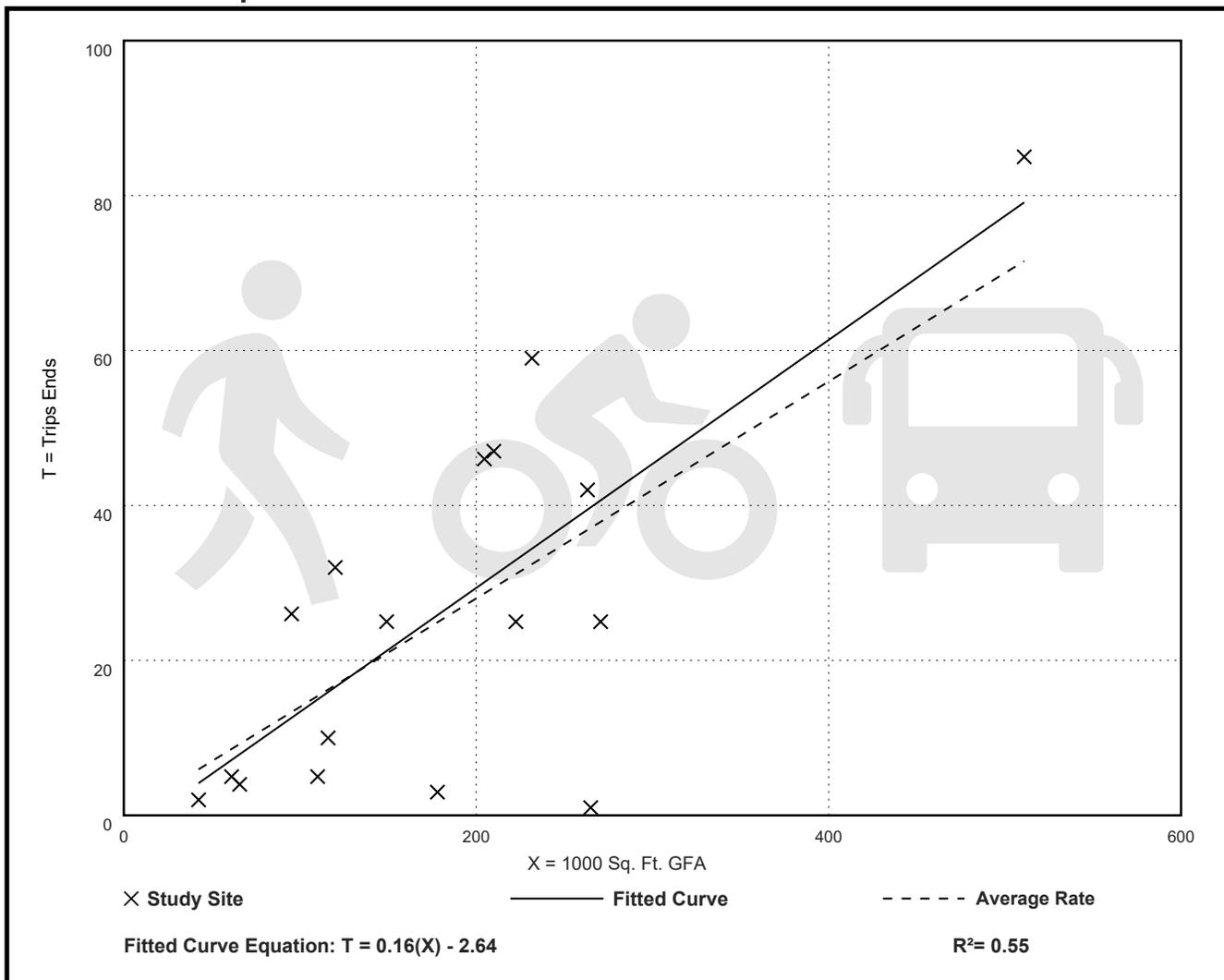
Avg. 1000 Sq. Ft. GFA: 183

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.14	0.00 - 0.27	0.08

Data Plot and Equation



General Office Building (710)

Walk+Bike+Transit 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: 15

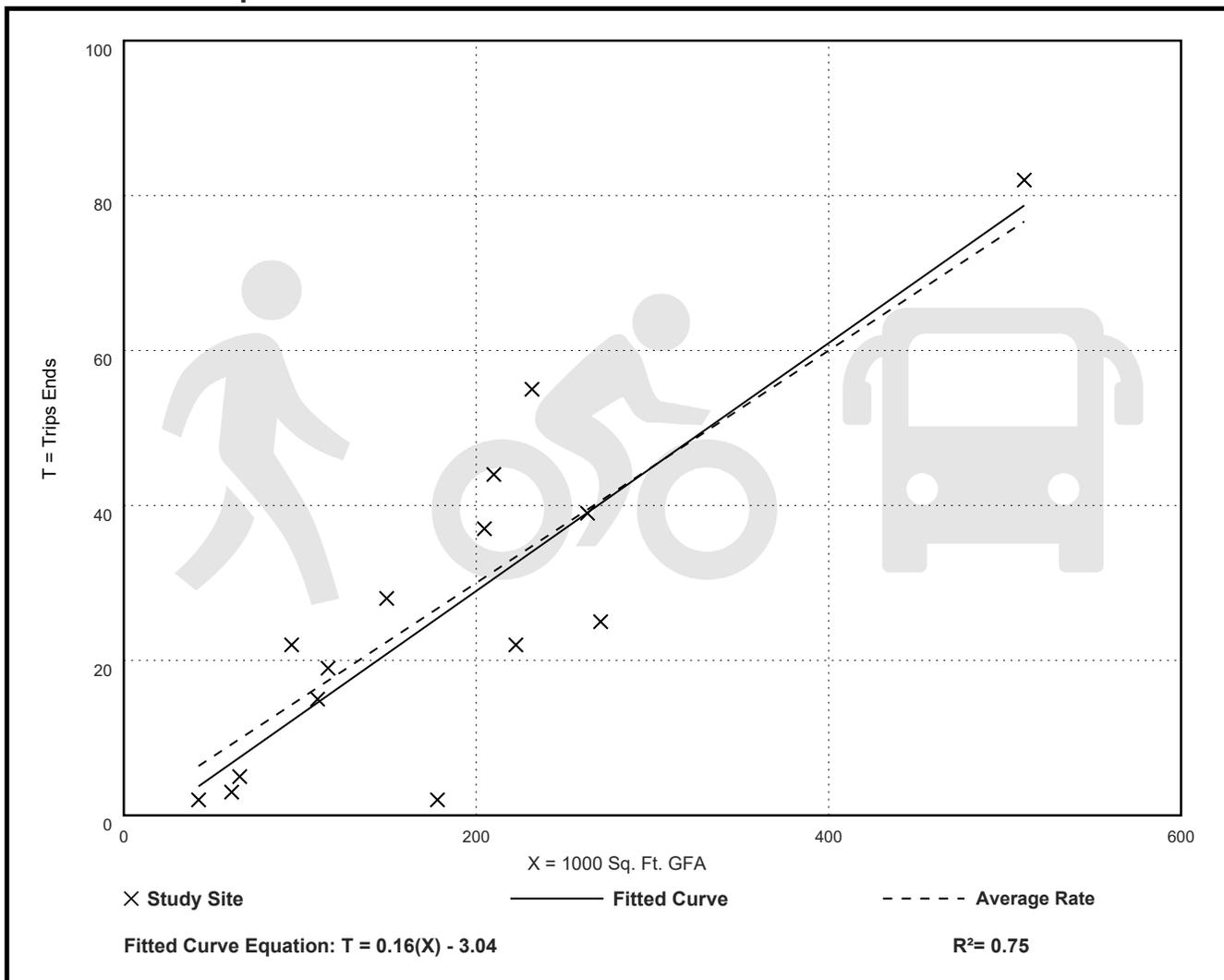
Avg. 1000 Sq. Ft. GFA: 182

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.15	0.01 - 0.24	0.06

Data Plot and Equation



General Office Building (710)

Walk+Bike+Transit Trip Ends vs: Employees

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: 7

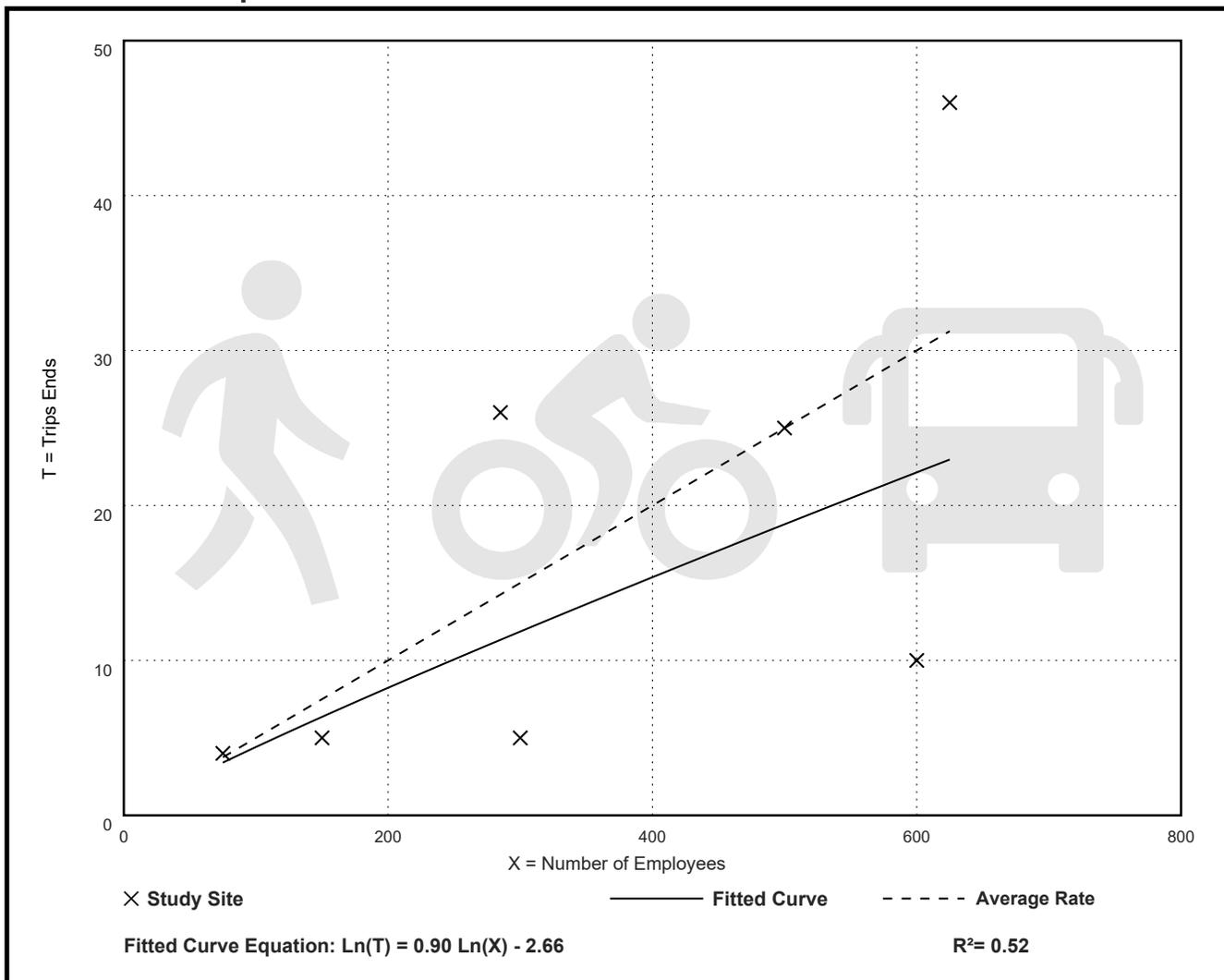
Avg. Num. of Employees: 362

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.05	0.02 - 0.09	0.03

Data Plot and Equation



General Office Building (710)

Walk+Bike+Transit Trip Ends vs: Employees

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: 7

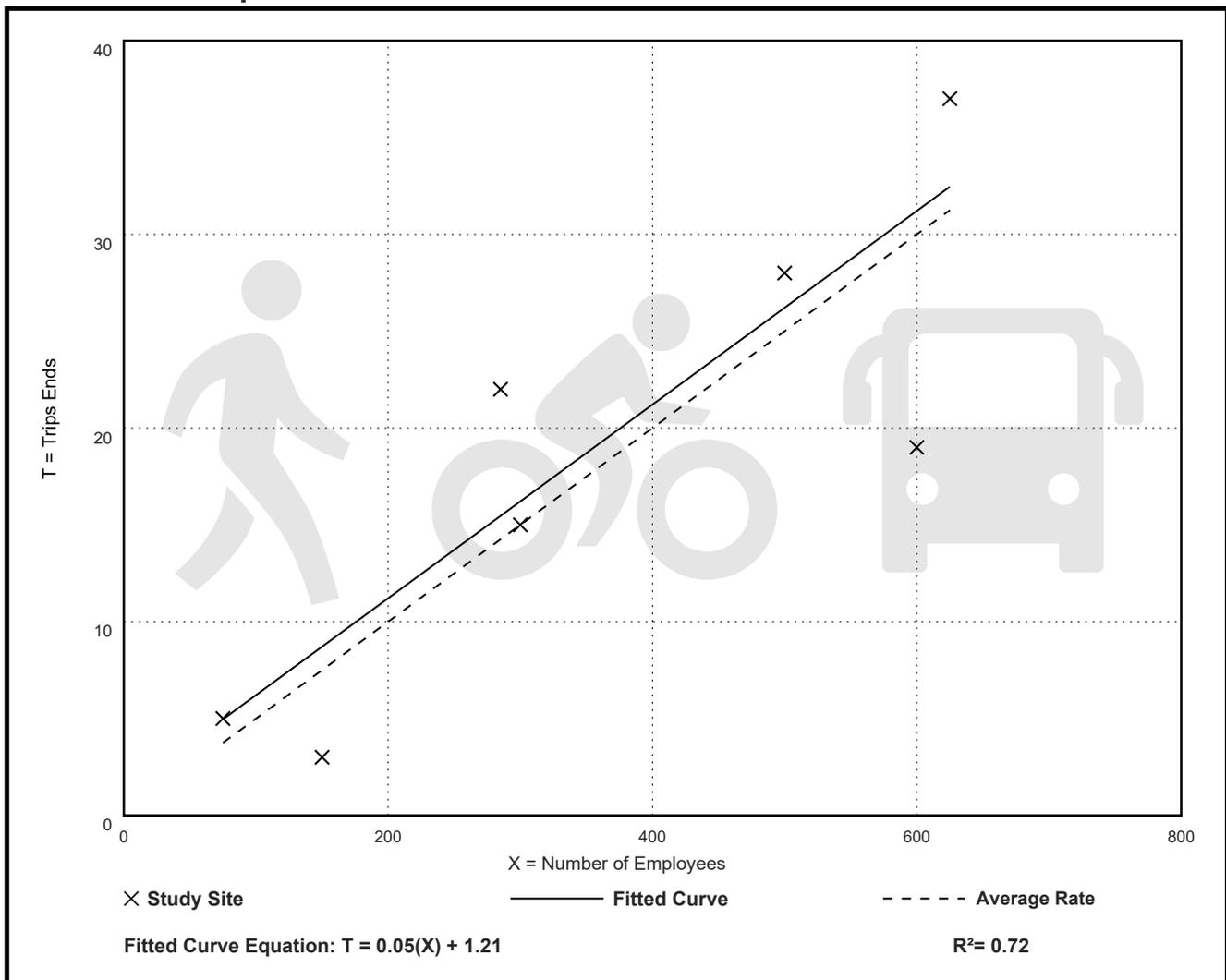
Avg. Num. of Employees: 362

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.05	0.02 - 0.08	0.02

Data Plot and Equation



Land Use: 760

Research and Development Center

Description

A research and development center is a facility or group of facilities devoted almost exclusively to research and development activities. The types of businesses included in this land use category vary significantly. Research and development centers may include offices and light fabrication areas.

Additional Data

The sites were surveyed in the 1990s, the 2000s, and the 2010s in Alberta (CAN), Iowa, Montana, and Pennsylvania.

Source Numbers

630, 723, 911, 973

Research and Development Center (760)

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: 13

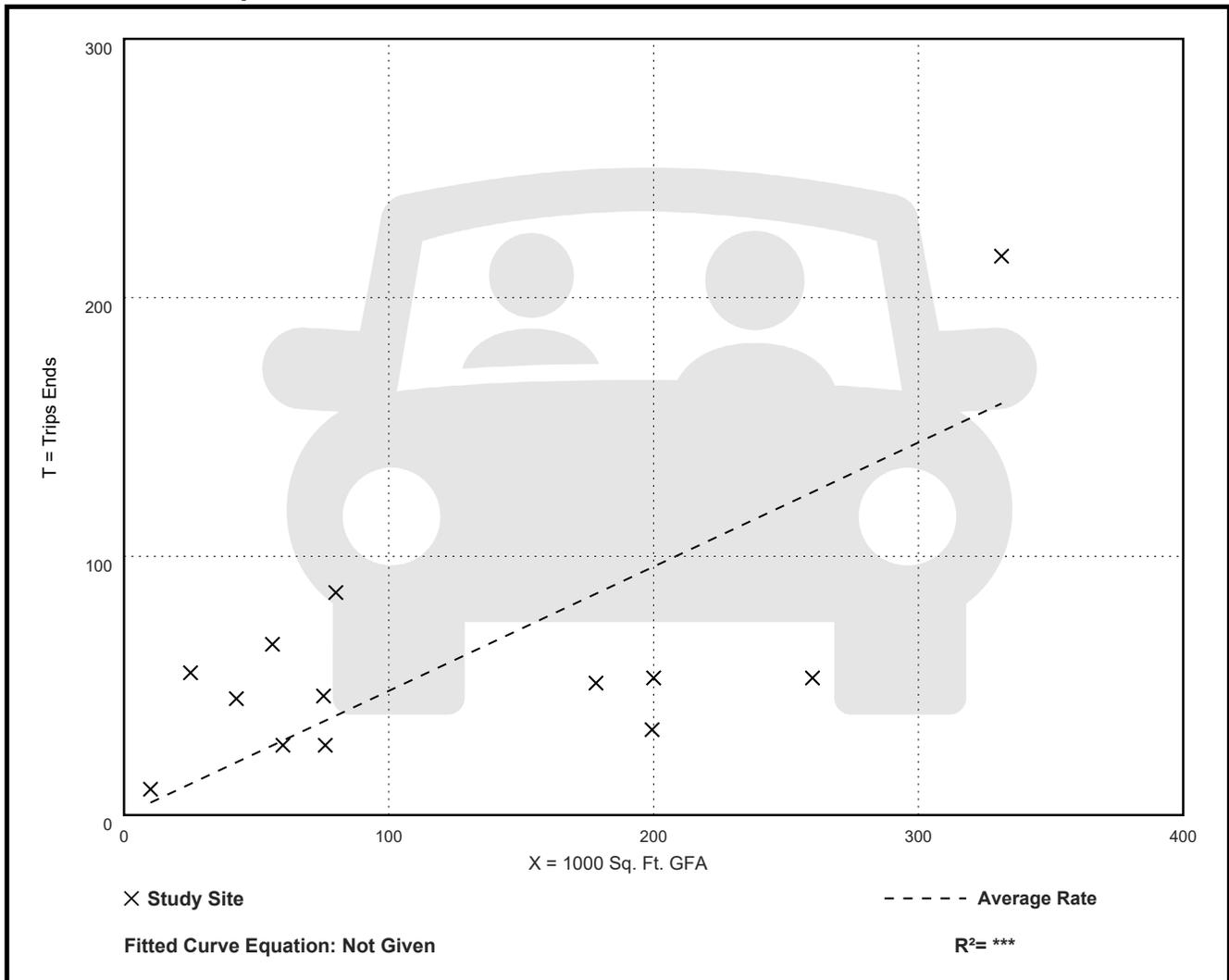
Avg. 1000 Sq. Ft. GFA: 123

Directional Distribution: 78% entering, 22% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.48	0.17 - 2.19	0.38

Data Plot and Equation



Research and Development Center (760)

Vehicle Trip Ends vs: Employees

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: 9

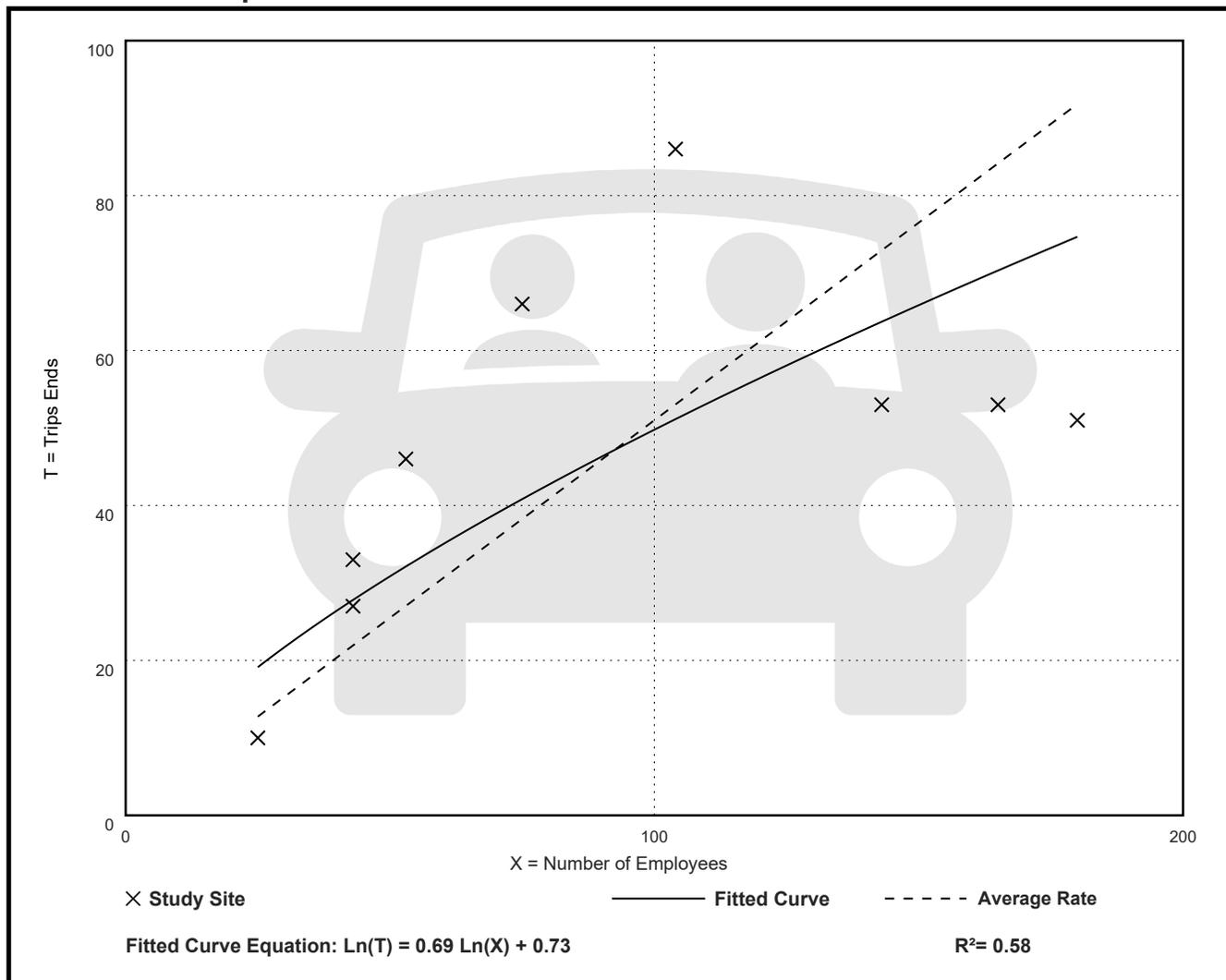
Avg. Num. of Employees: 92

Directional Distribution: 72% entering, 28% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.51	0.28 - 0.88	0.26

Data Plot and Equation



Research and Development Center (760)

Vehicle Trip Ends vs: Employees

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: 9

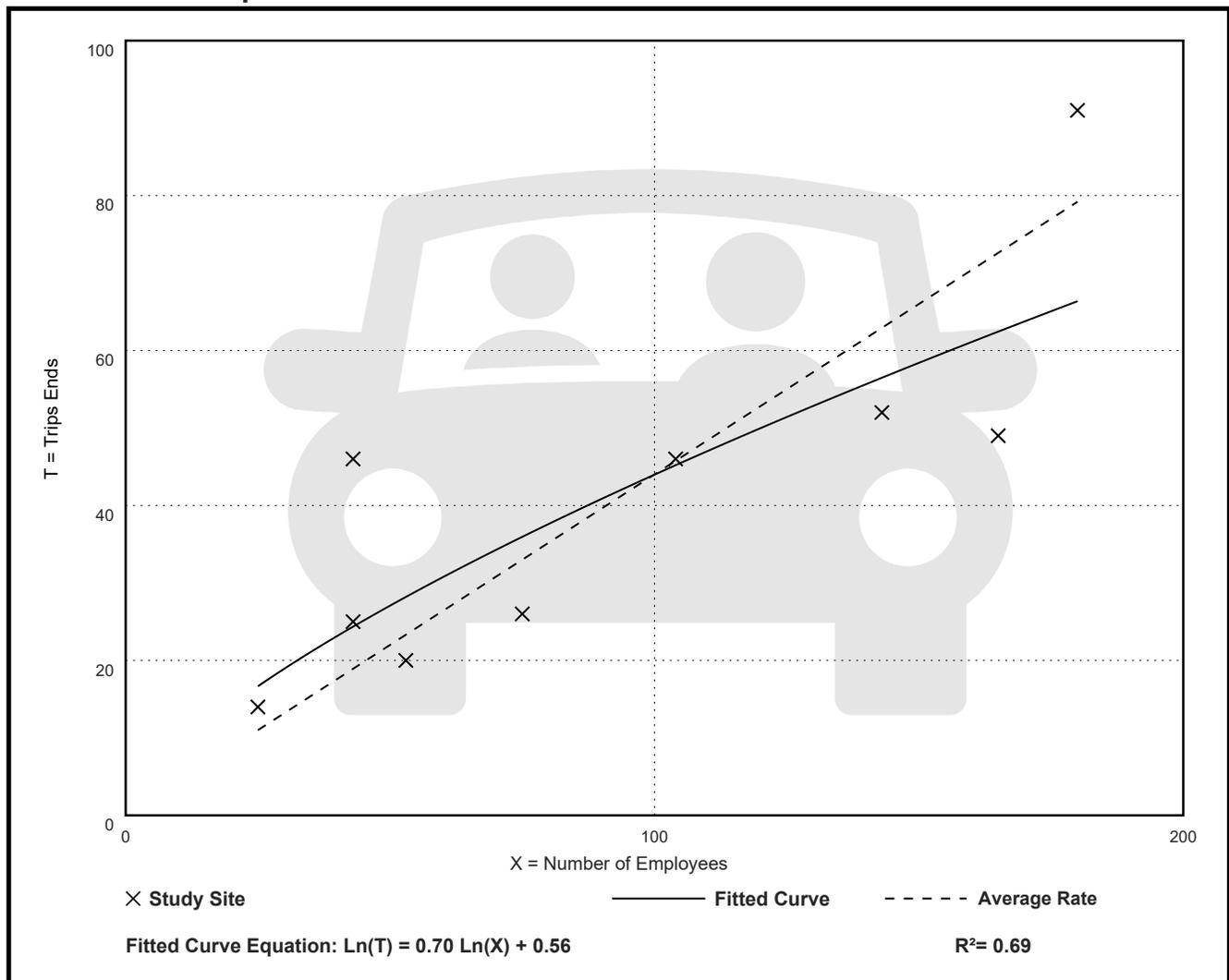
Avg. Num. of Employees: 92

Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.44	0.30 - 1.07	0.18

Data Plot and Equation



Research and Development Center (760)

Walk+Bike+Transit 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: 10

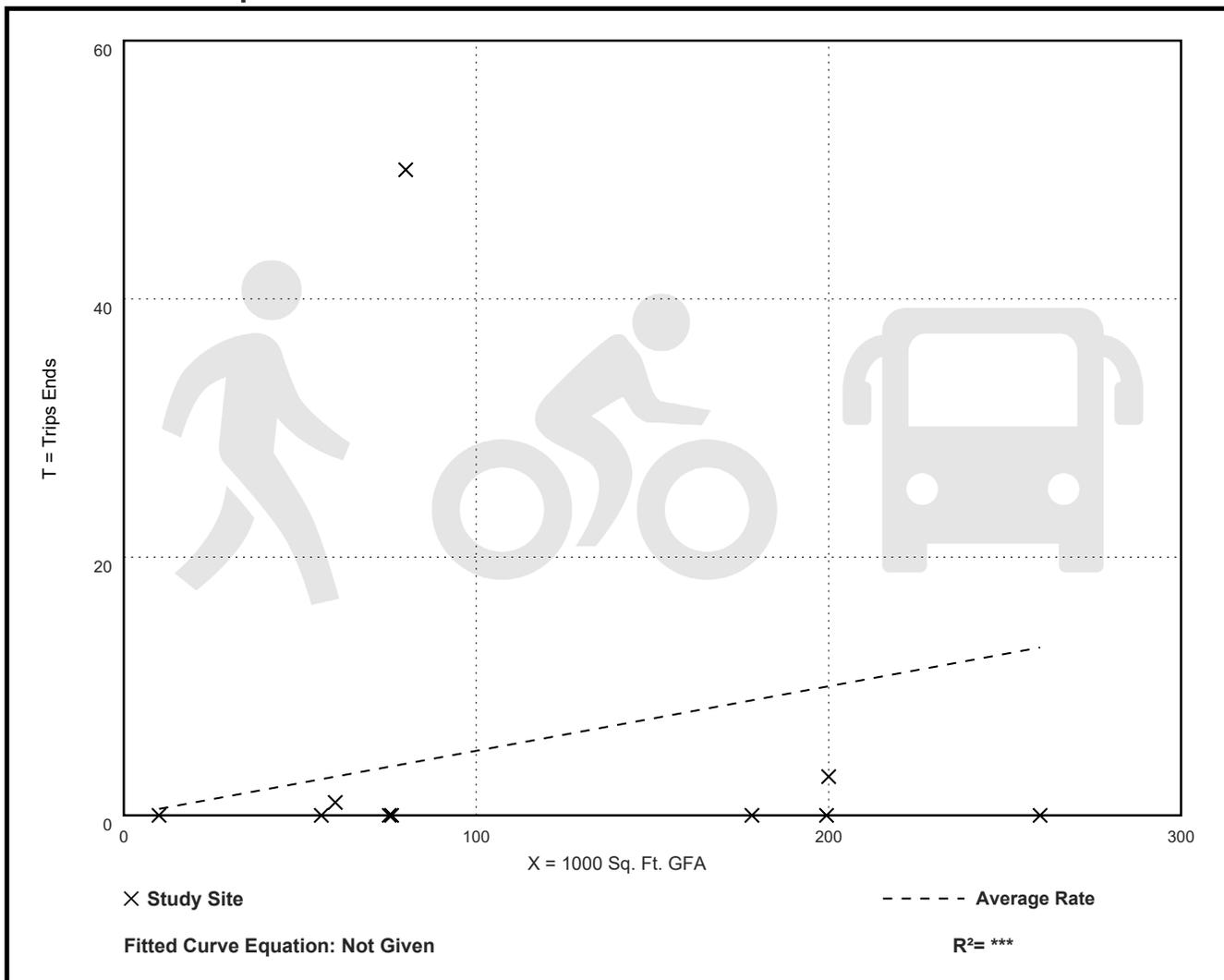
Avg. 1000 Sq. Ft. GFA: 120

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.05	0.00 - 0.63	0.16

Data Plot and Equation



Research and Development Center (760)

Walk+Bike+Transit 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: 10

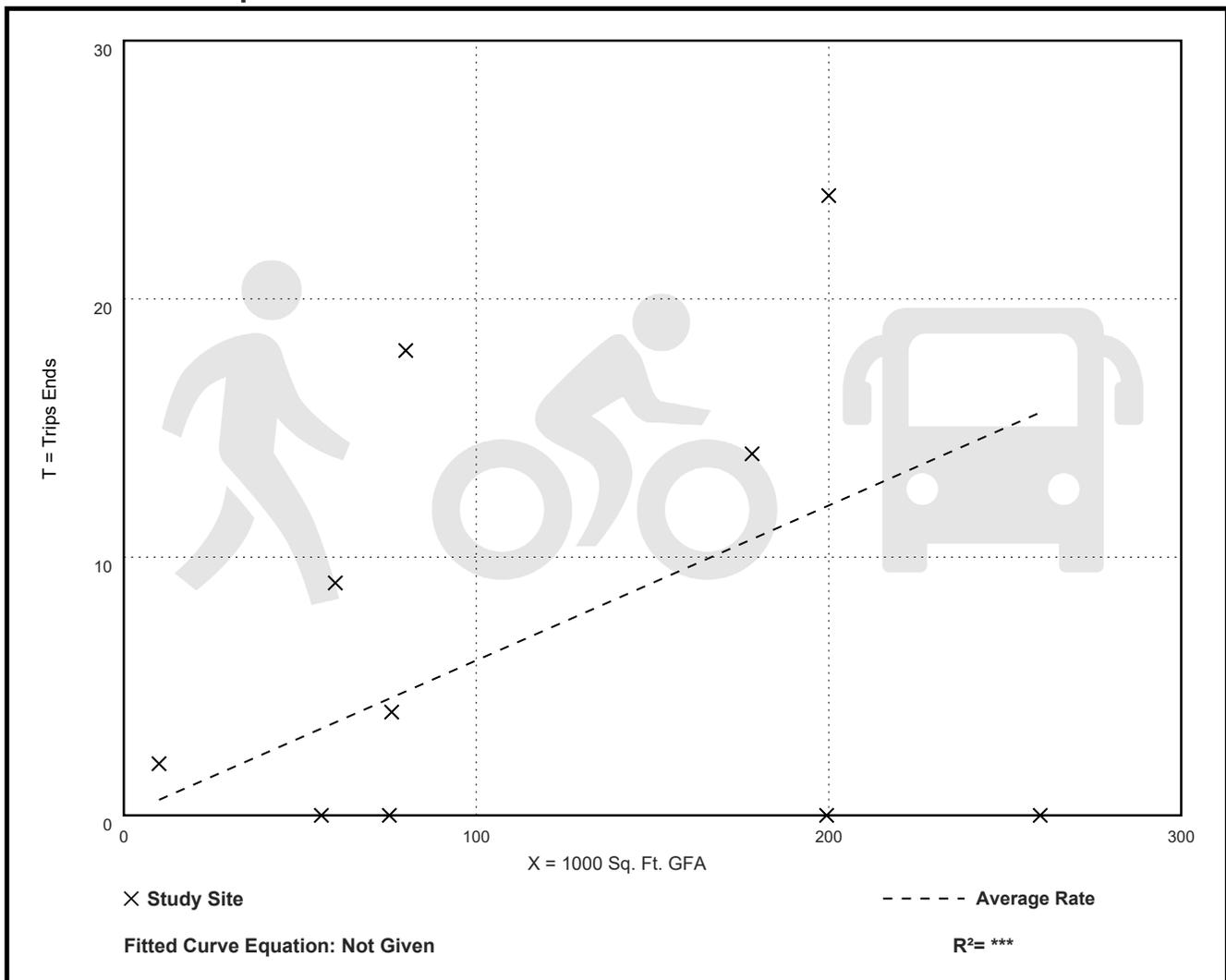
Avg. 1000 Sq. Ft. GFA: 120

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.06	0.00 - 0.23	0.07

Data Plot and Equation



Research and Development Center (760)

Walk+Bike+Transit Trip Ends vs: Employees

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: 9

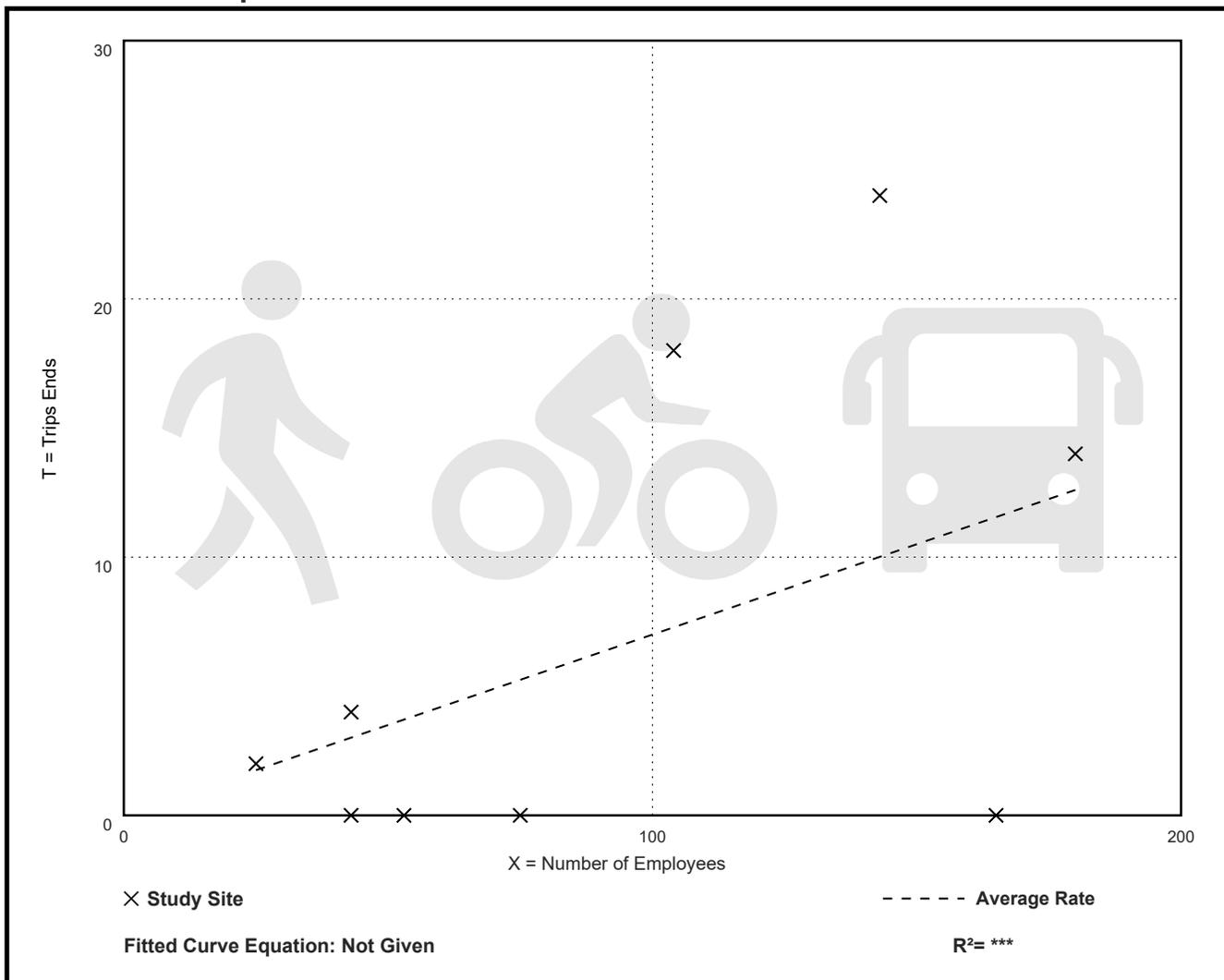
Avg. Num. of Employees: 92

Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.07	0.00 - 0.17	0.07

Data Plot and Equation



Land Use: 820

Shopping Center (>150k)

Description

A shopping center is an integrated group of commercial establishments planned, developed, owned, and managed as a unit. Each study site in this land use has at least 150,000 square feet of gross leasable area (GLA). It often has more than one anchor store. Depending on its specific size and tenants, various names can be assigned to a shopping center within this size range, including community center, regional center, superregional center, fashion center, and power center.

A shopping center of this size typically contains more than retail merchandising facilities, with common tenants including office space, a movie theater, restaurants, a post office, banks, a health club, and recreational facilities.

A shopping center of this size can be enclosed or open-air. The vehicle trips generated at a shopping center are based upon the total GLA of the center. In the case of a smaller center without an enclosed mall or peripheral buildings, the GLA is the same as the gross floor area of the building.

The 150,000-square-foot GLA threshold value between a community/regional shopping center and a shopping plaza (Land Use 821) is based on an examination of trip generation data. For a shopping plaza smaller than the threshold value, the presence or absence of a supermarket within the plaza has a measurable effect on site trip generation. For a shopping center that is larger than the threshold value, the trips generated by its other major tenants mask any effects of the presence or absence of an on-site supermarket.

Additional Data

The sites were surveyed in the 1990s, the 2000s, 2010s, and the 2020s in Alberta (CAN), California, Colorado, Connecticut, Florida, Georgia, Illinois, Kentucky, Maryland, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels—peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points. These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied include peripheral buildings, it can be assumed that some of the data show their effect.

Source Numbers

365, 385, 404, 442, 446, 562, 629, 702, 715, 728, 868, 871, 880, 899, 912, 926, 946, 962, 974, 978, 1034, 1040, 1067, 1236, 1250, 1283

Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

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: 32

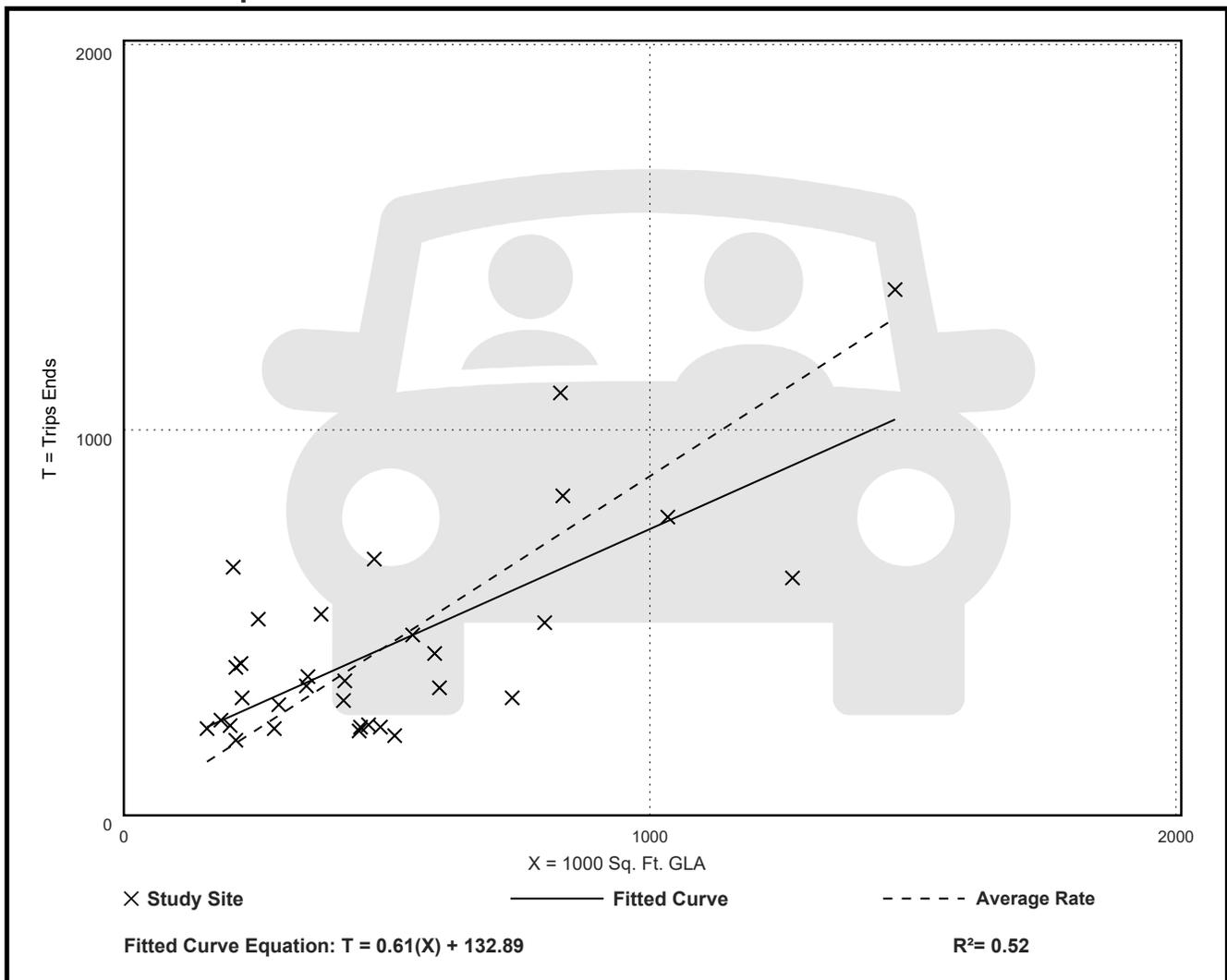
Avg. 1000 Sq. Ft. GLA: 498

Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.88	0.40 - 3.10	0.45

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

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: 55

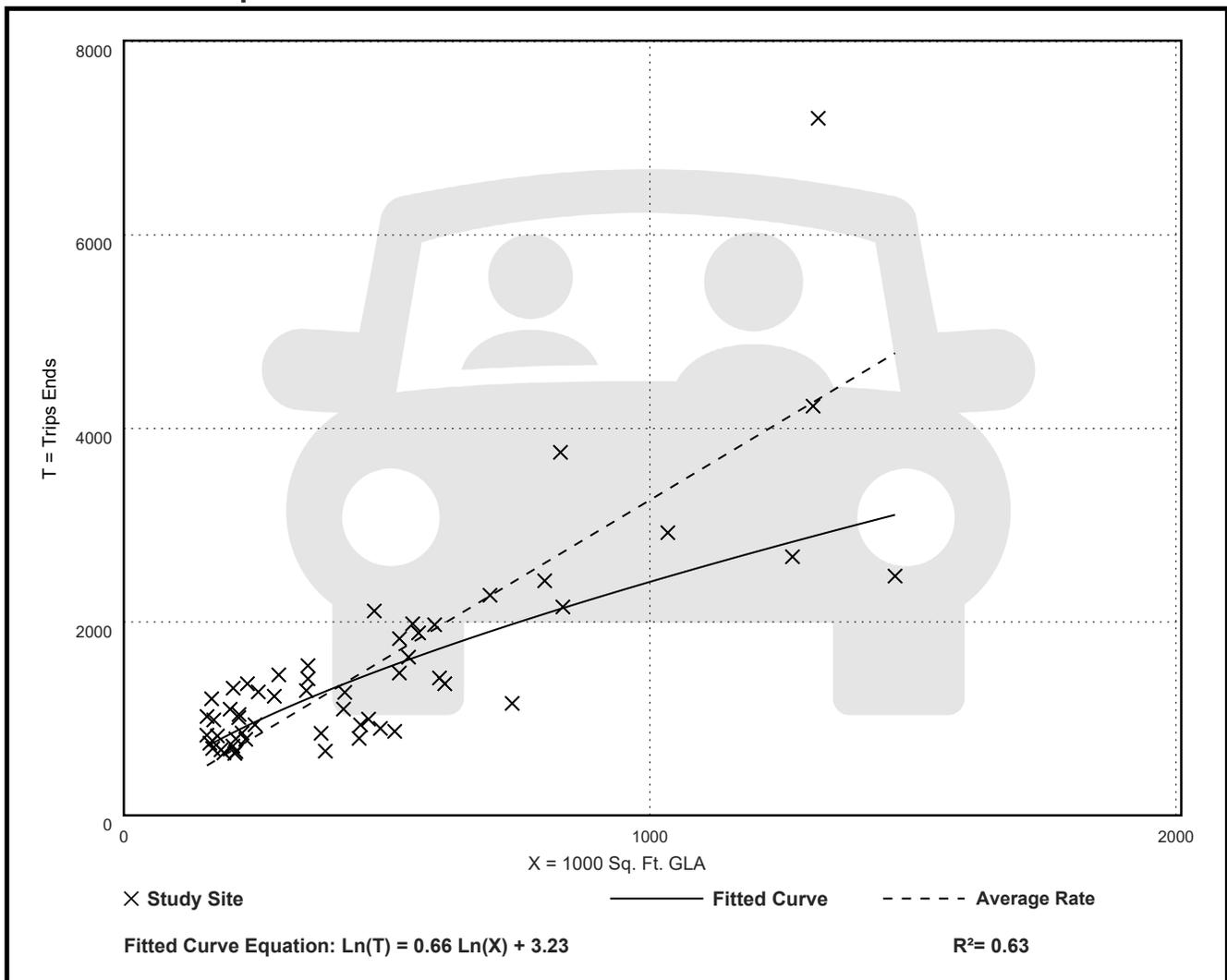
Avg. 1000 Sq. Ft. GLA: 460

Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.26	1.57 - 7.22	1.25

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

**On a: Weekday,
AM Peak Hour of Generator**

Setting/Location: General Urban/Suburban

Number of Studies: 27

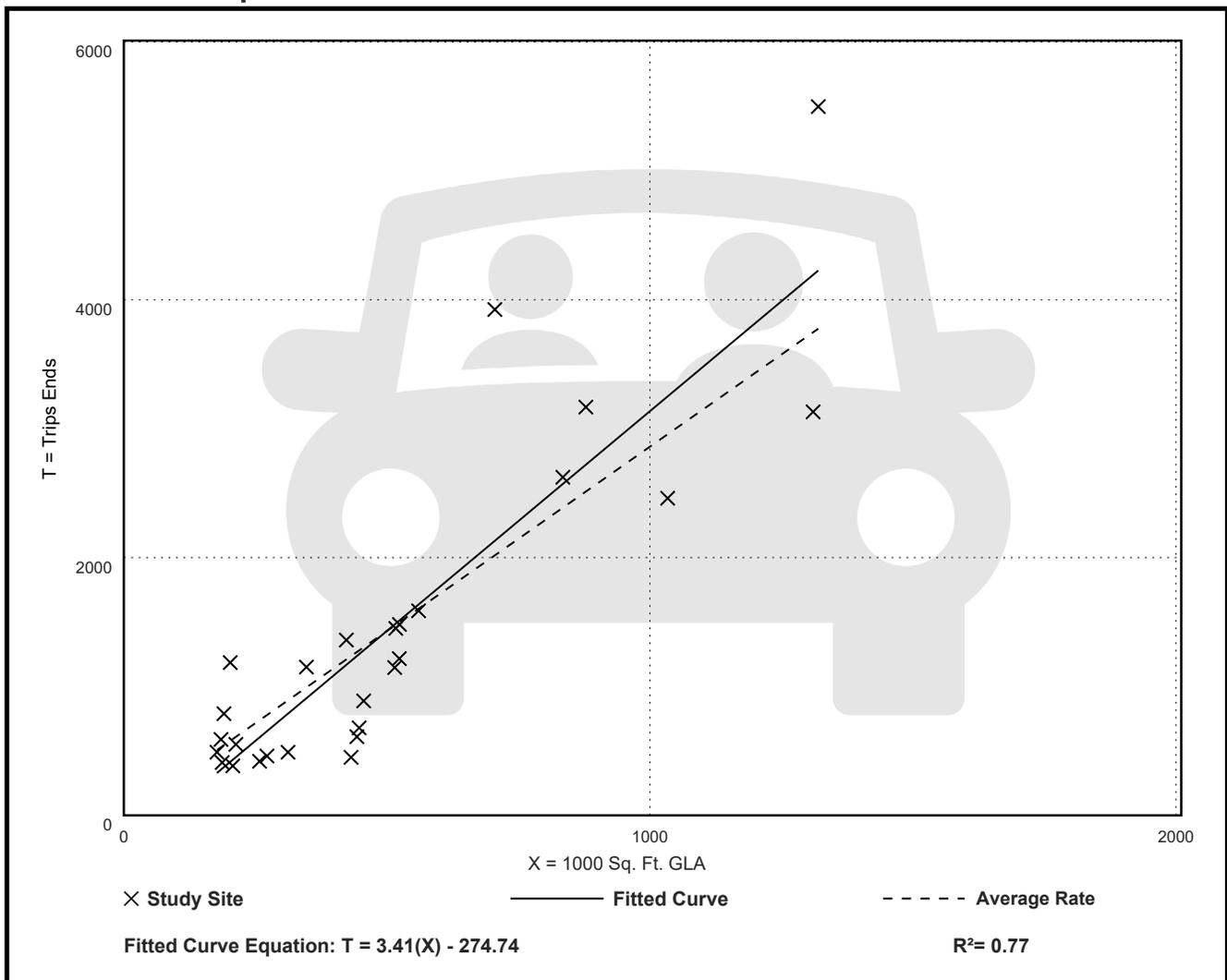
Avg. 1000 Sq. Ft. GLA: 499

Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.86	1.04 - 5.86	1.12

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

**On a: Weekday,
PM Peak Hour of Generator**

Setting/Location: General Urban/Suburban

Number of Studies: 27

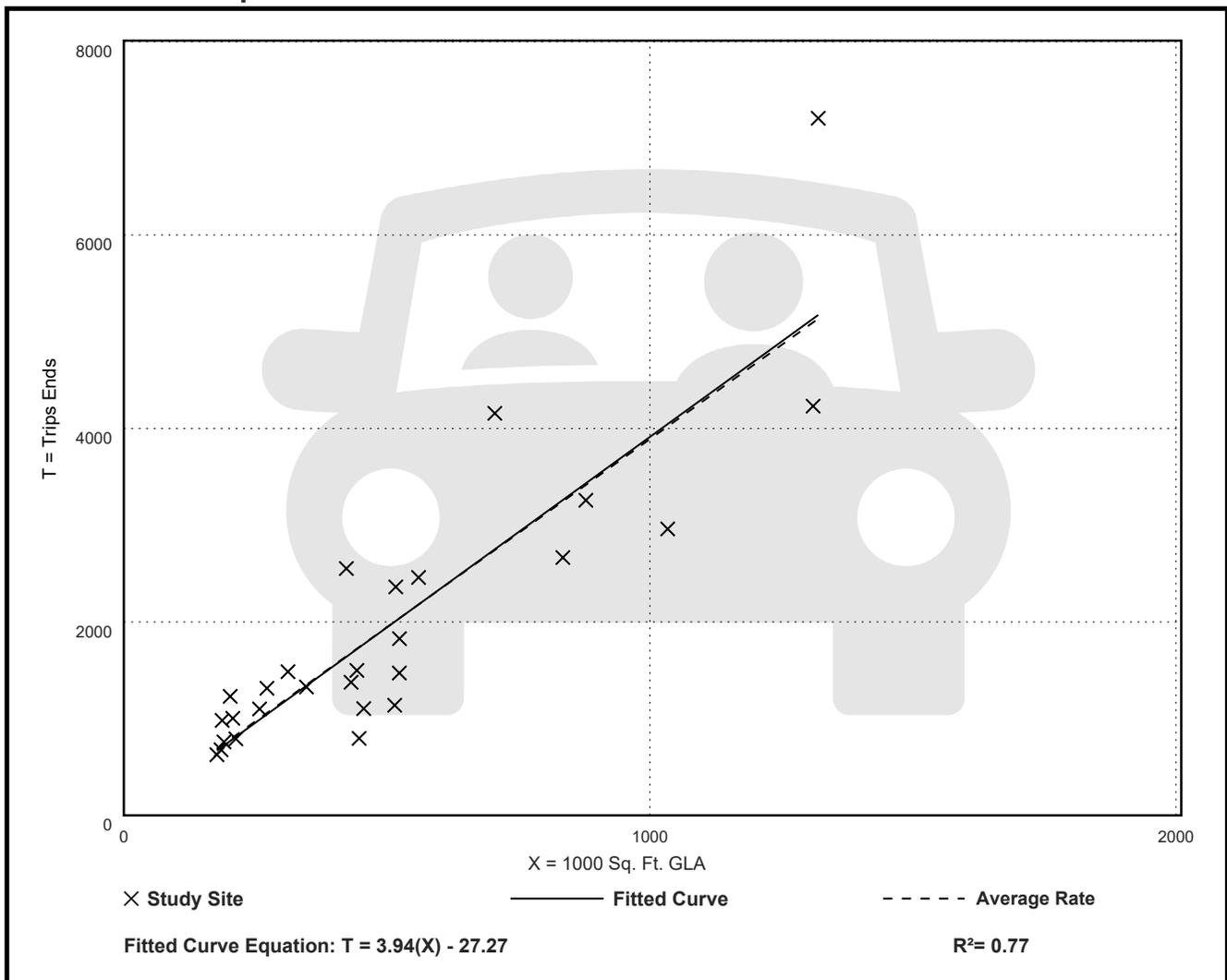
Avg. 1000 Sq. Ft. GLA: 499

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.89	1.78 - 6.08	1.18

Data Plot and Equation



Shopping Center (>150k) (820)

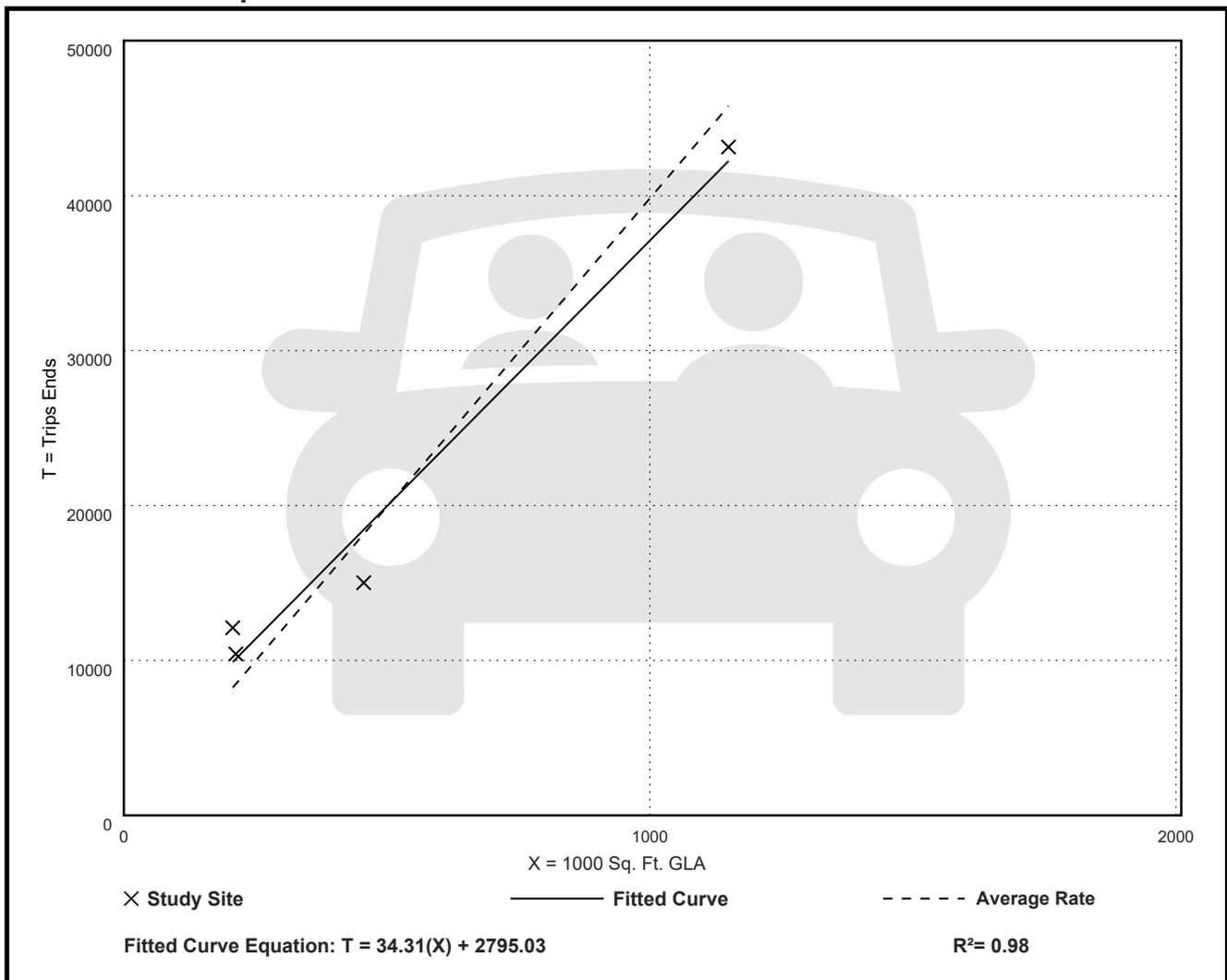
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: **Saturday**

Setting/Location: General Urban/Suburban
Number of Studies: 4
Avg. 1000 Sq. Ft. GLA: 506
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
39.83	32.93 - 58.46	8.79

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 29

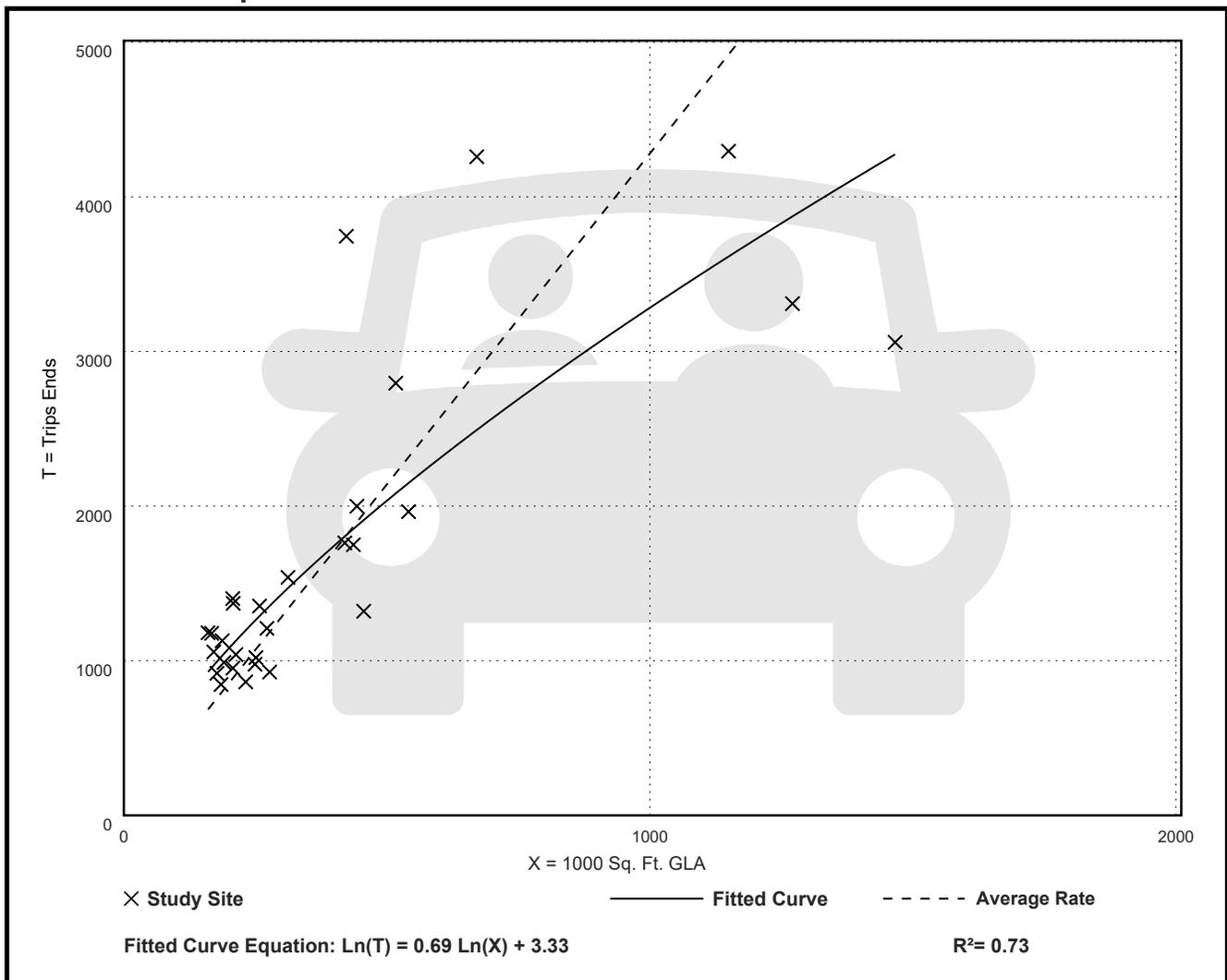
Avg. 1000 Sq. Ft. GLA: 404

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.28	2.09 - 8.85	1.68

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Sunday

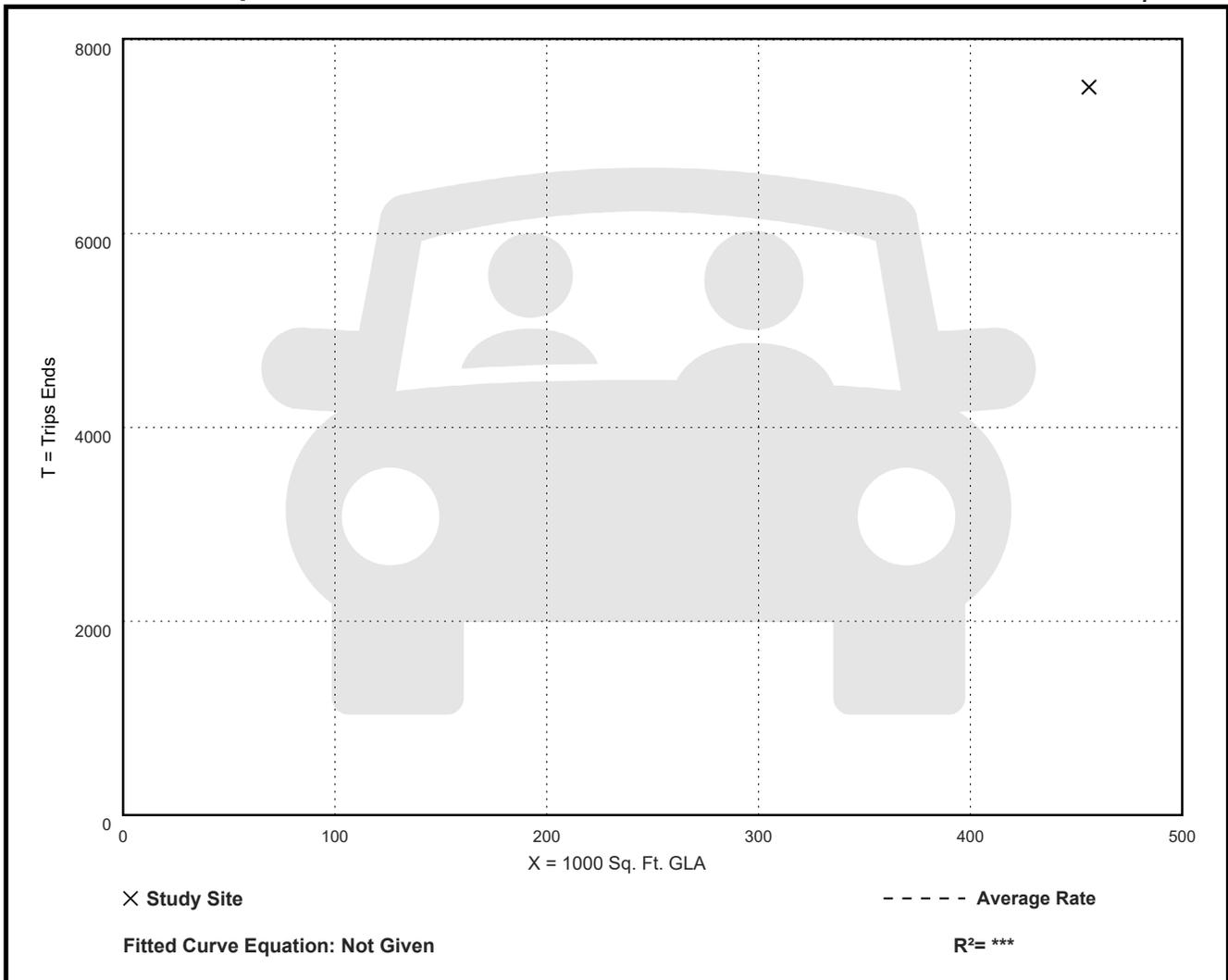
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GLA: 456
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
16.47	16.47 - 16.47	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GLA: 456

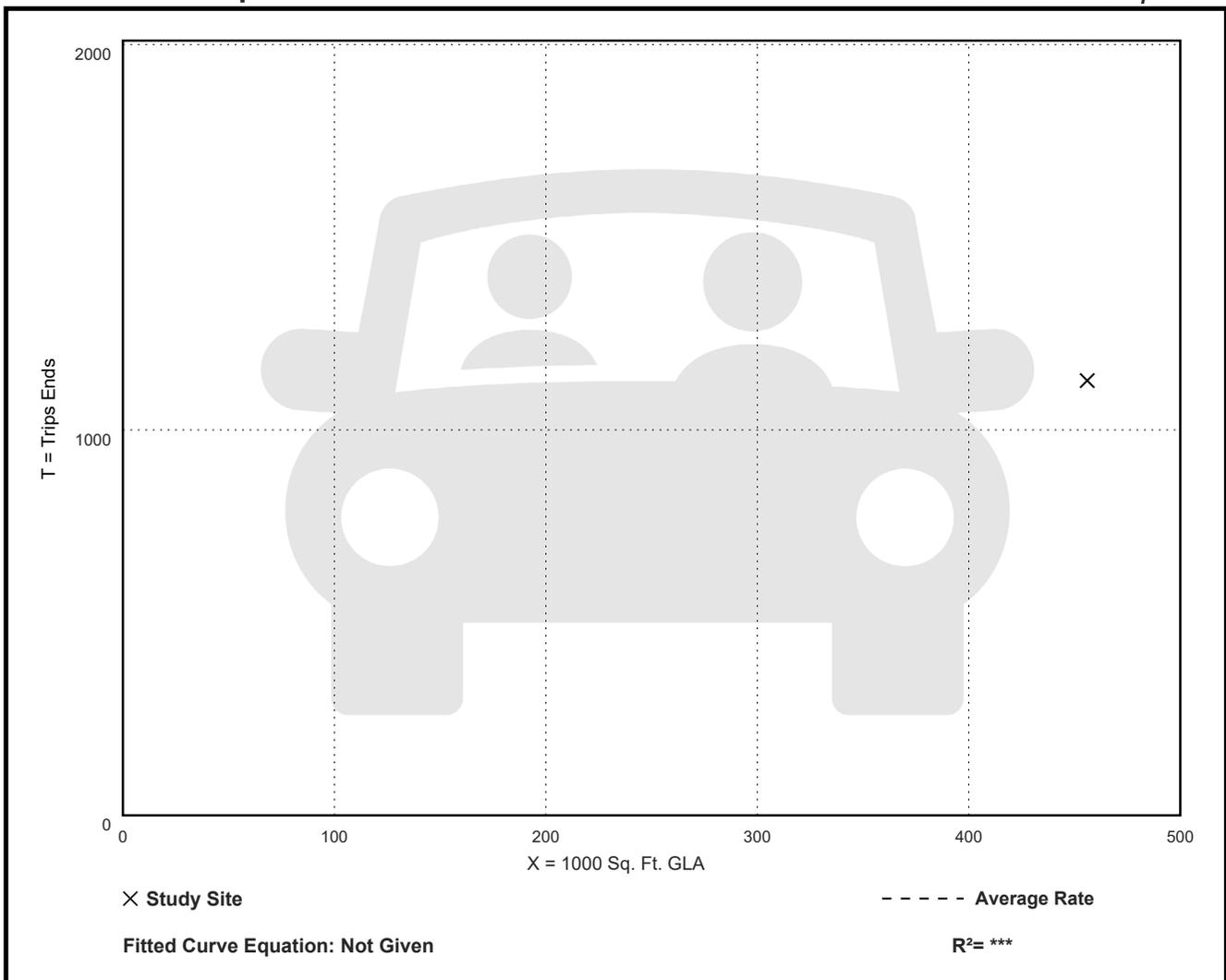
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.47	2.47 - 2.47	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

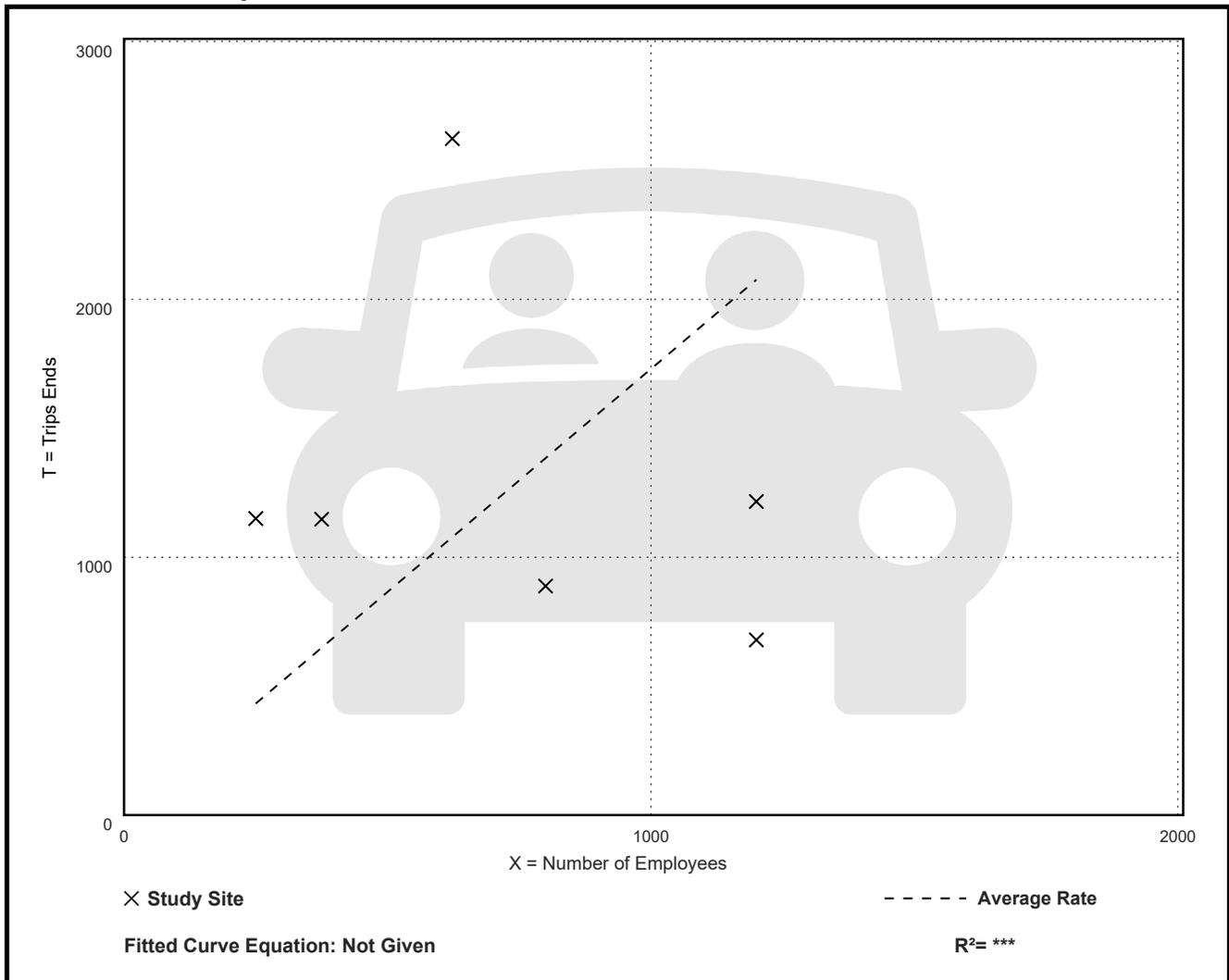
Vehicle Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 6
 Avg. Num. of Employees: 741
 Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.73	0.57 - 4.60	1.57

Data Plot and Equation



Shopping Center (>150k) (820)

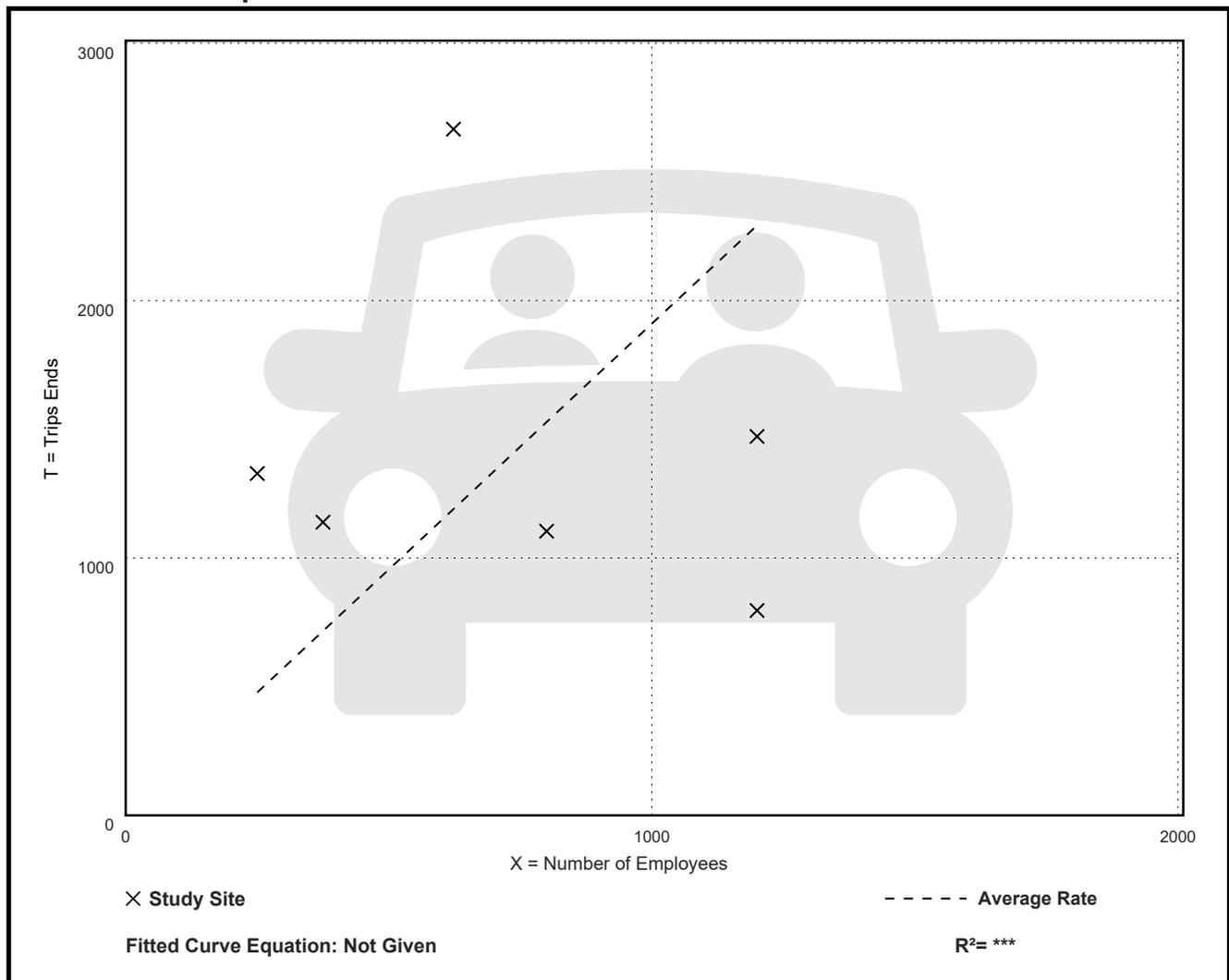
Vehicle Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 6
 Avg. Num. of Employees: 741
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.91	0.66 - 5.31	1.60

Data Plot and Equation



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: Employees
On a: Saturday

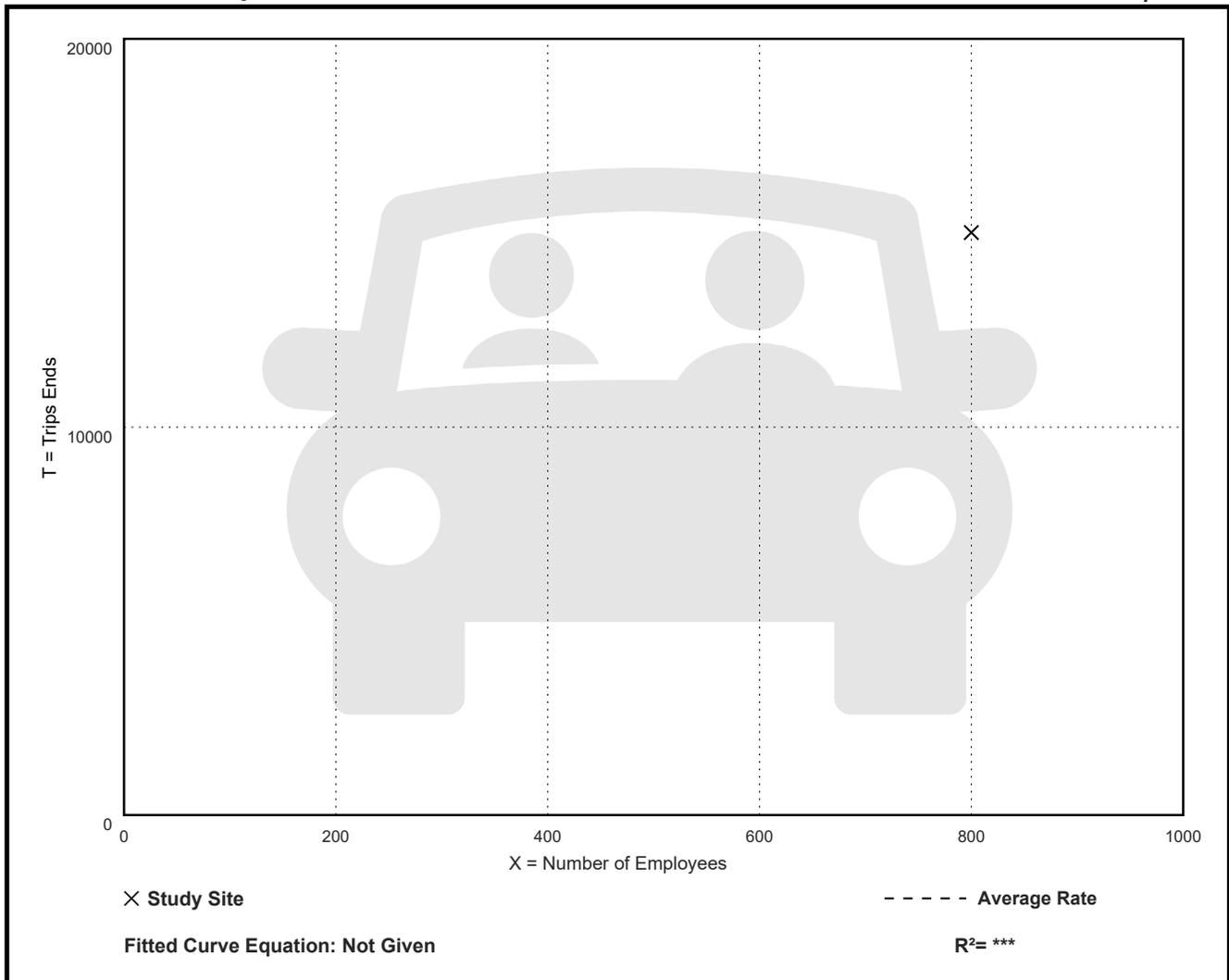
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Employees: 800
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
18.77	18.77 - 18.77	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: Employees

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Employees: 800

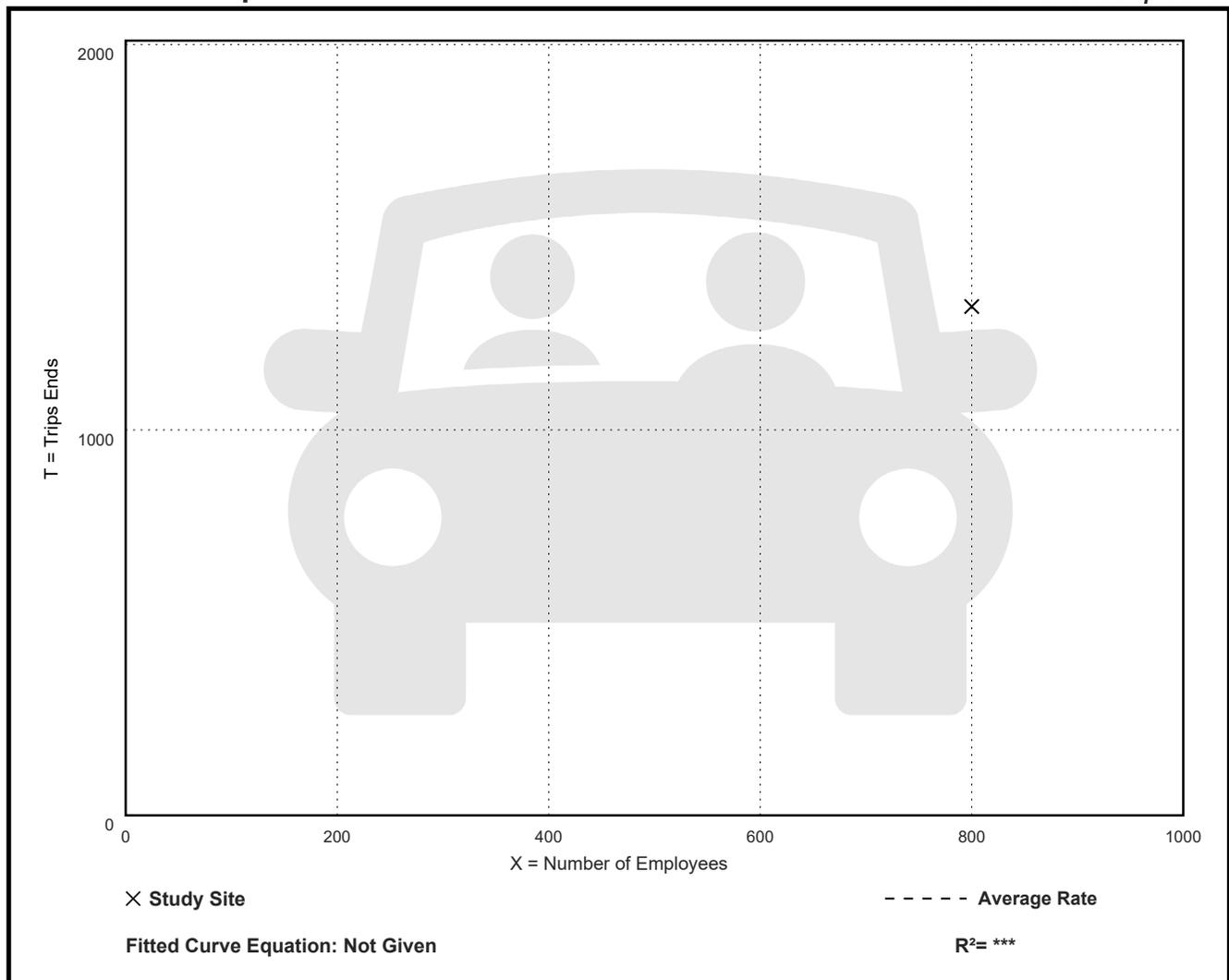
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.65	1.65 - 1.65	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: Employees
On a: **Sunday**

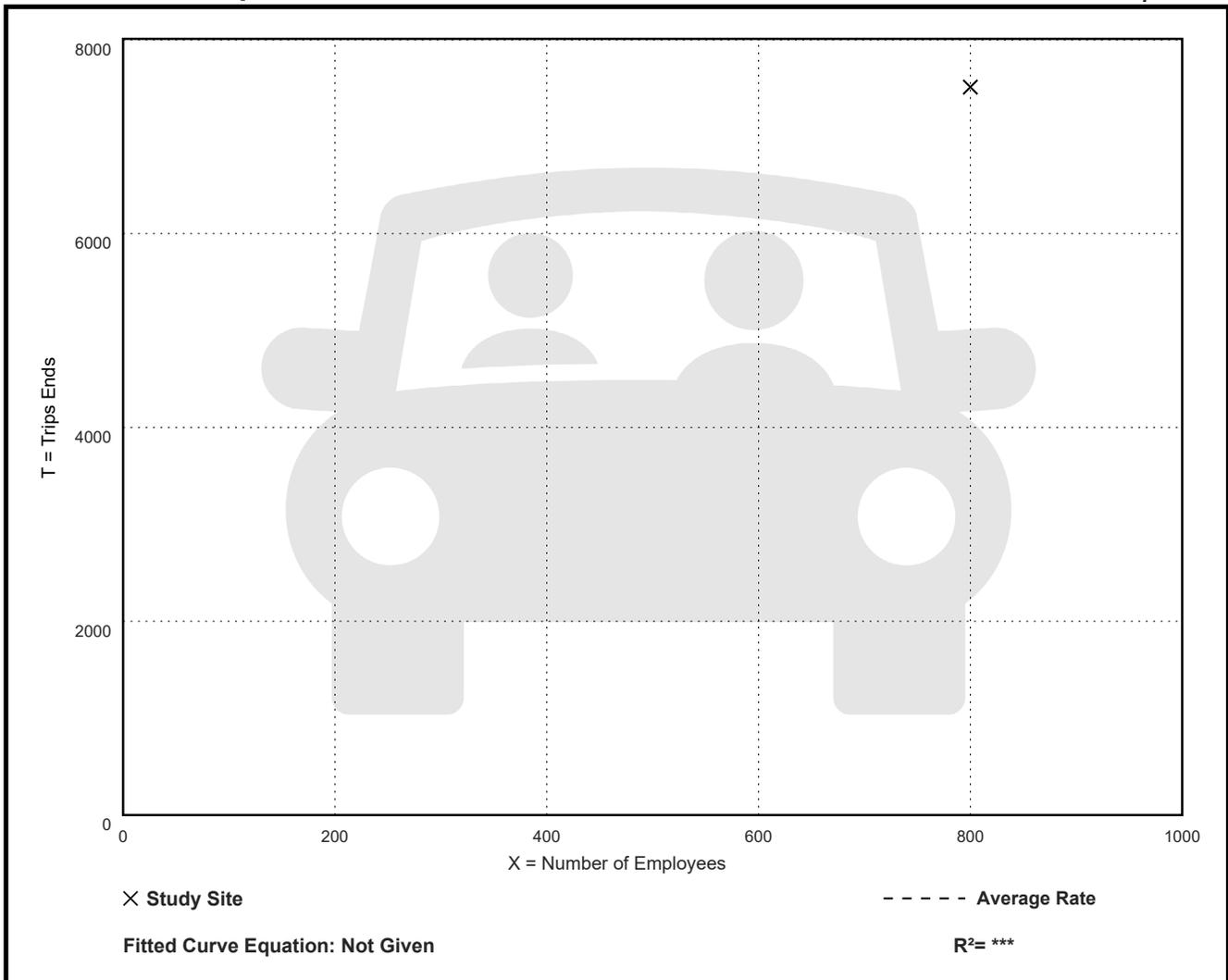
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Employees: 800
Directional Distribution: Not Available

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
9.39	9.39 - 9.39	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

Vehicle Trip Ends vs: Employees

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Employees: 800

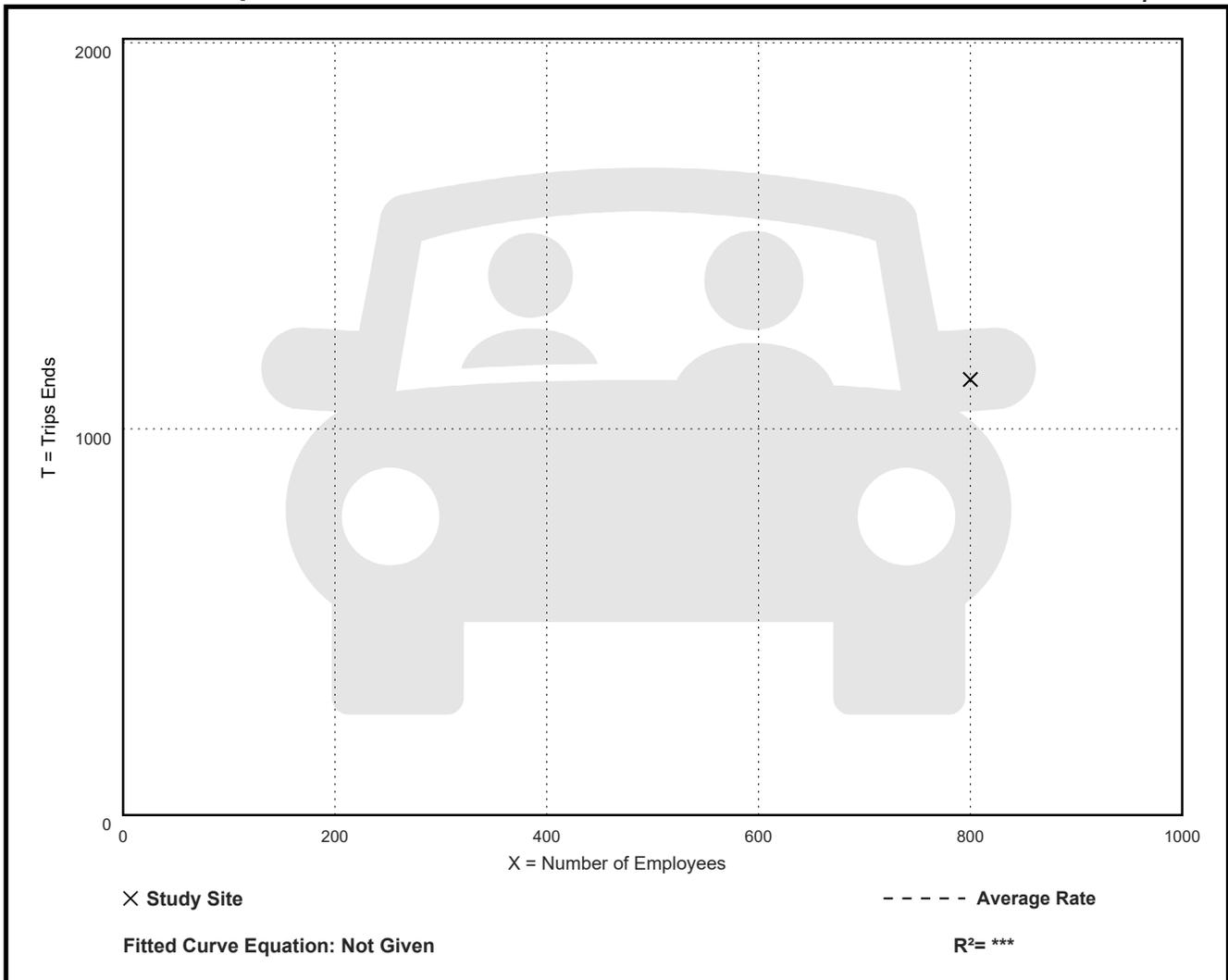
Directional Distribution: Not Available

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.41	1.41 - 1.41	***

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (>150k) (820)

Walk+Bike+Transit Trip Ends vs: 1000 Sq. Ft. GLA

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. 1000 Sq. Ft. GLA: 160

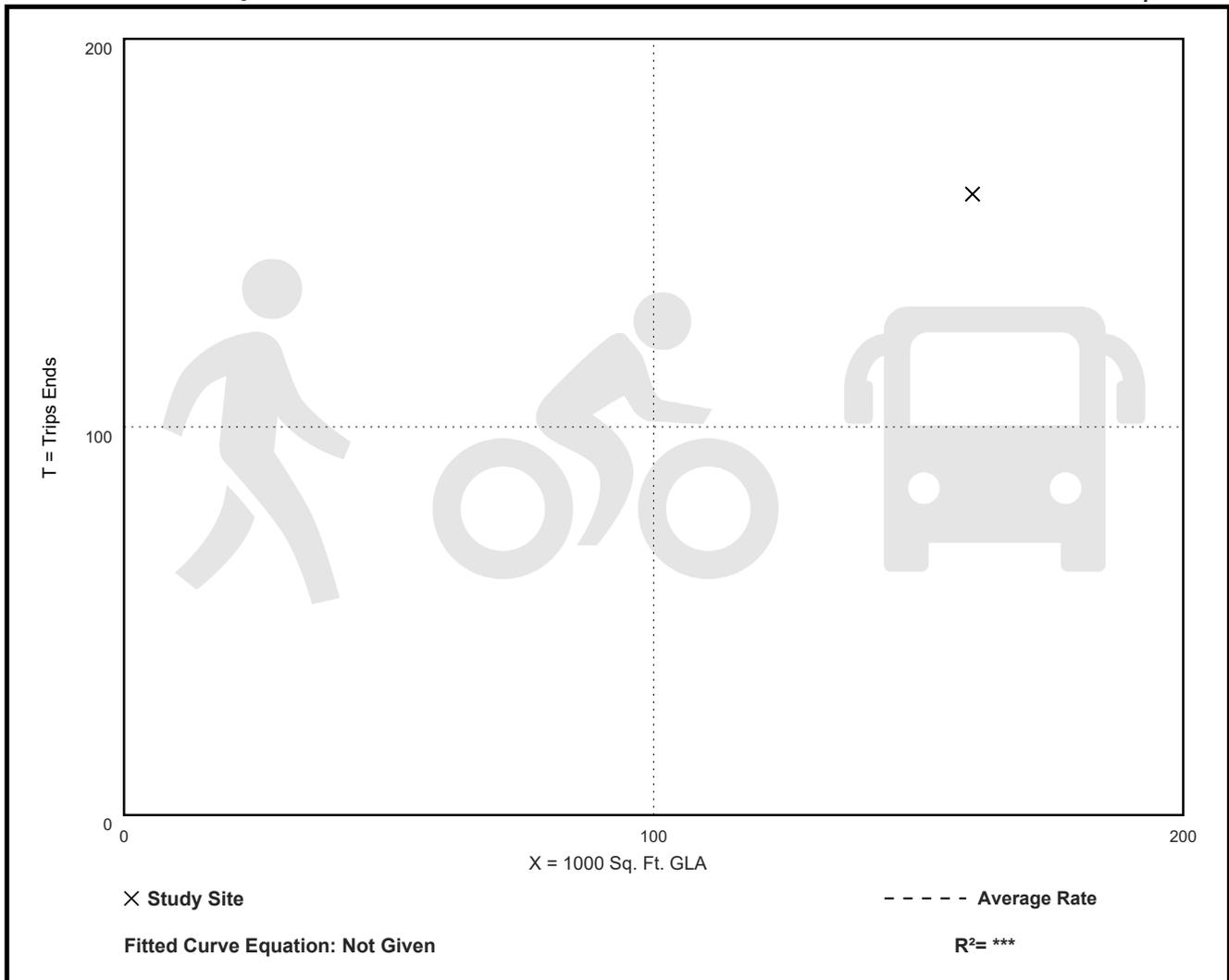
Directional Distribution: Not Available

Walk+Bike+Transit Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
1.00	1.00 - 1.00	***

Data Plot and Equation

Caution – Small Sample Size



Land Use: 215

Single-Family Attached Housing

Description

Single-family attached housing includes any single-family housing unit that shares a wall with an adjoining dwelling unit, whether the walls are for living space, a vehicle garage, or storage space. This land use includes duplexes (defined as a single structure with two distinct dwelling units, typically joined side-by-side and each with at least one outside entrance) and townhouses/rowhouses (defined as a single structure with three or more distinct dwelling units, joined side-by-side in a row and each with an outside entrance).

Additional Data

The sites were surveyed in the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, Georgia, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Dakota, Utah, and Wisconsin.

Source Numbers

357, 390, 418, 525, 571, 583, 638, 868, 869, 870, 896, 912, 959, 1009, 1046, 1056, 1058, 1077

Single-Family Attached Housing (215)

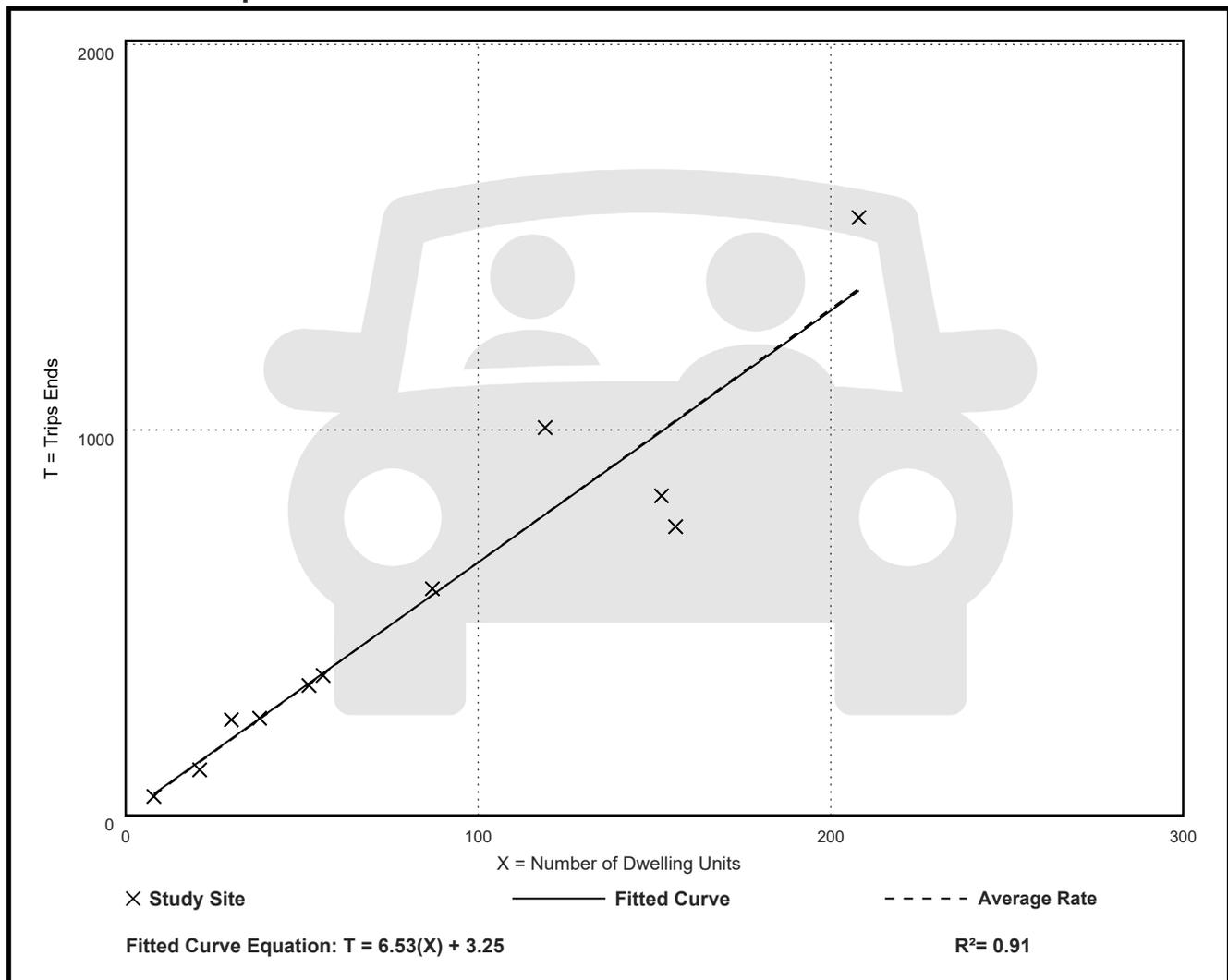
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 84
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.57	4.80 - 8.45	1.28

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: 26

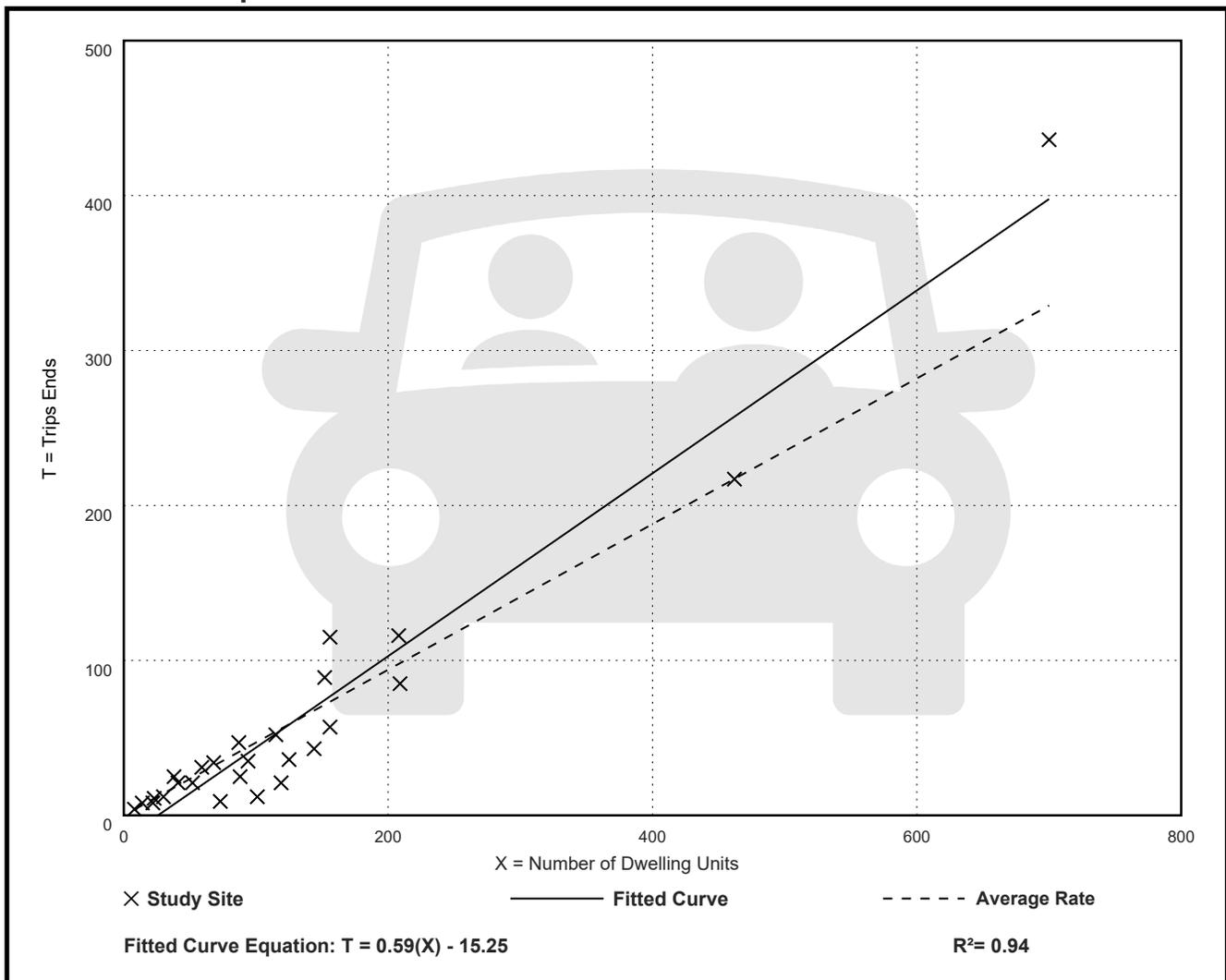
Avg. Num. of Dwelling Units: 129

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.12 - 0.74	0.16

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: 31

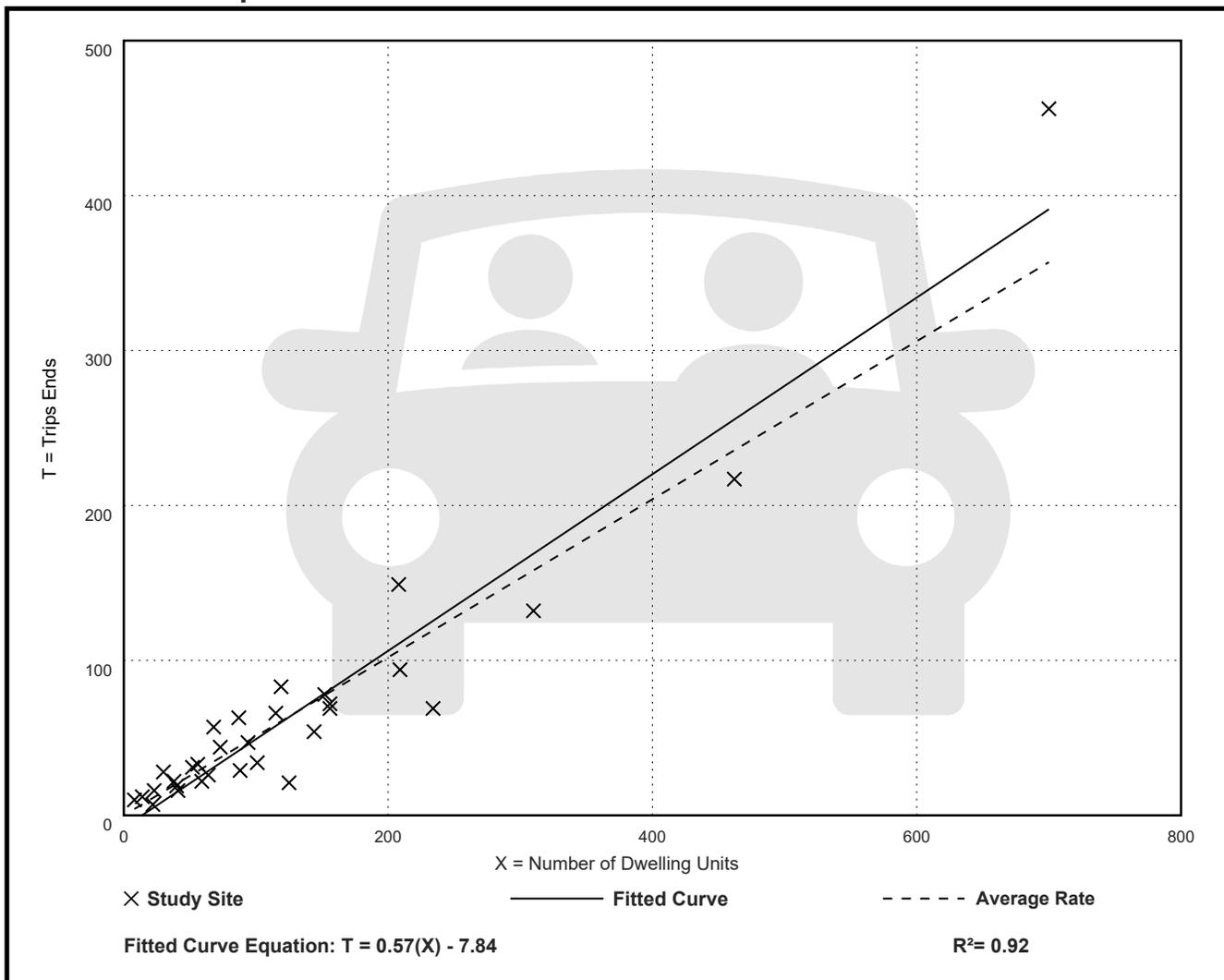
Avg. Num. of Dwelling Units: 131

Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.17 - 1.25	0.16

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 10

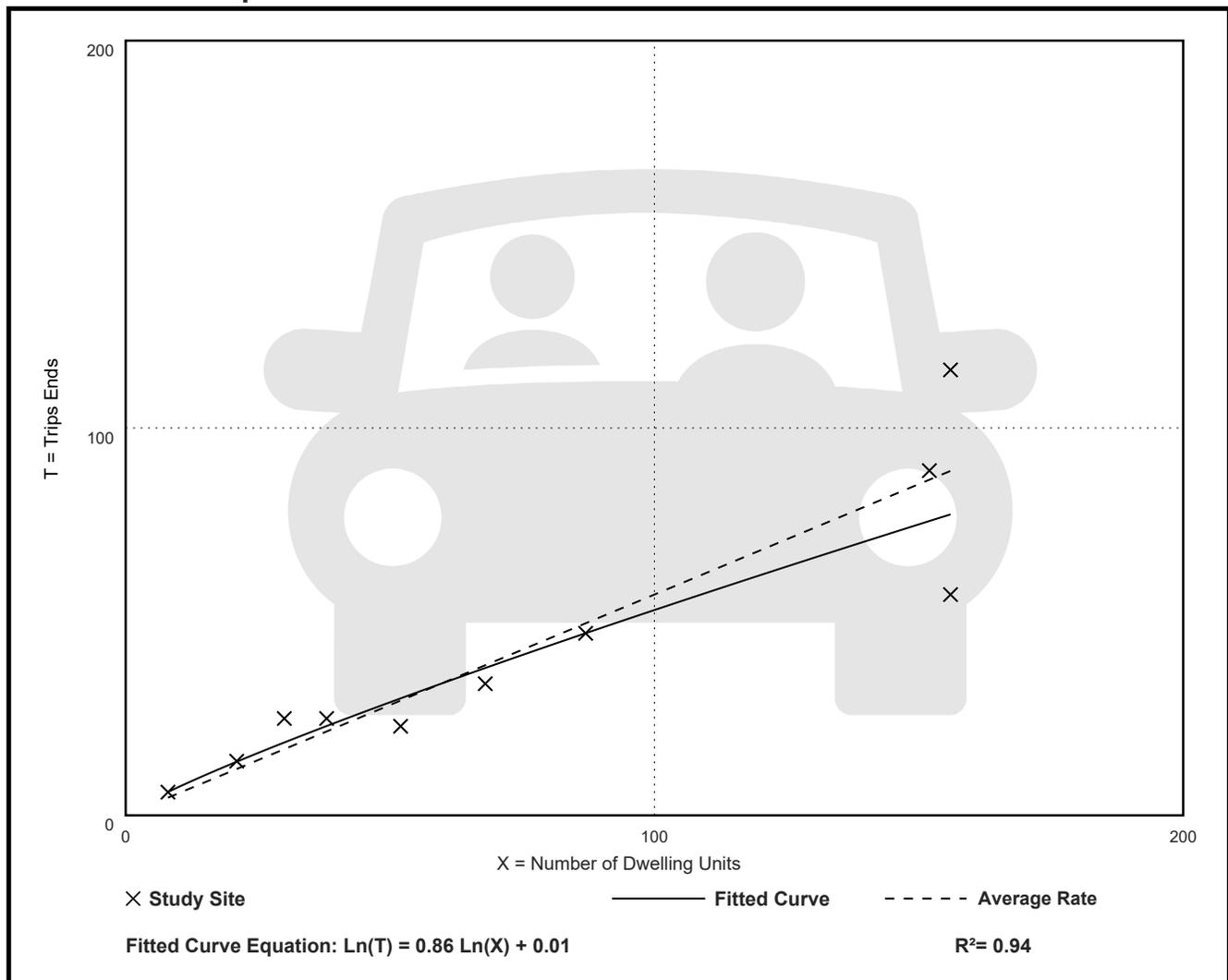
Avg. Num. of Dwelling Units: 77

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.37 - 0.83	0.15

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 13

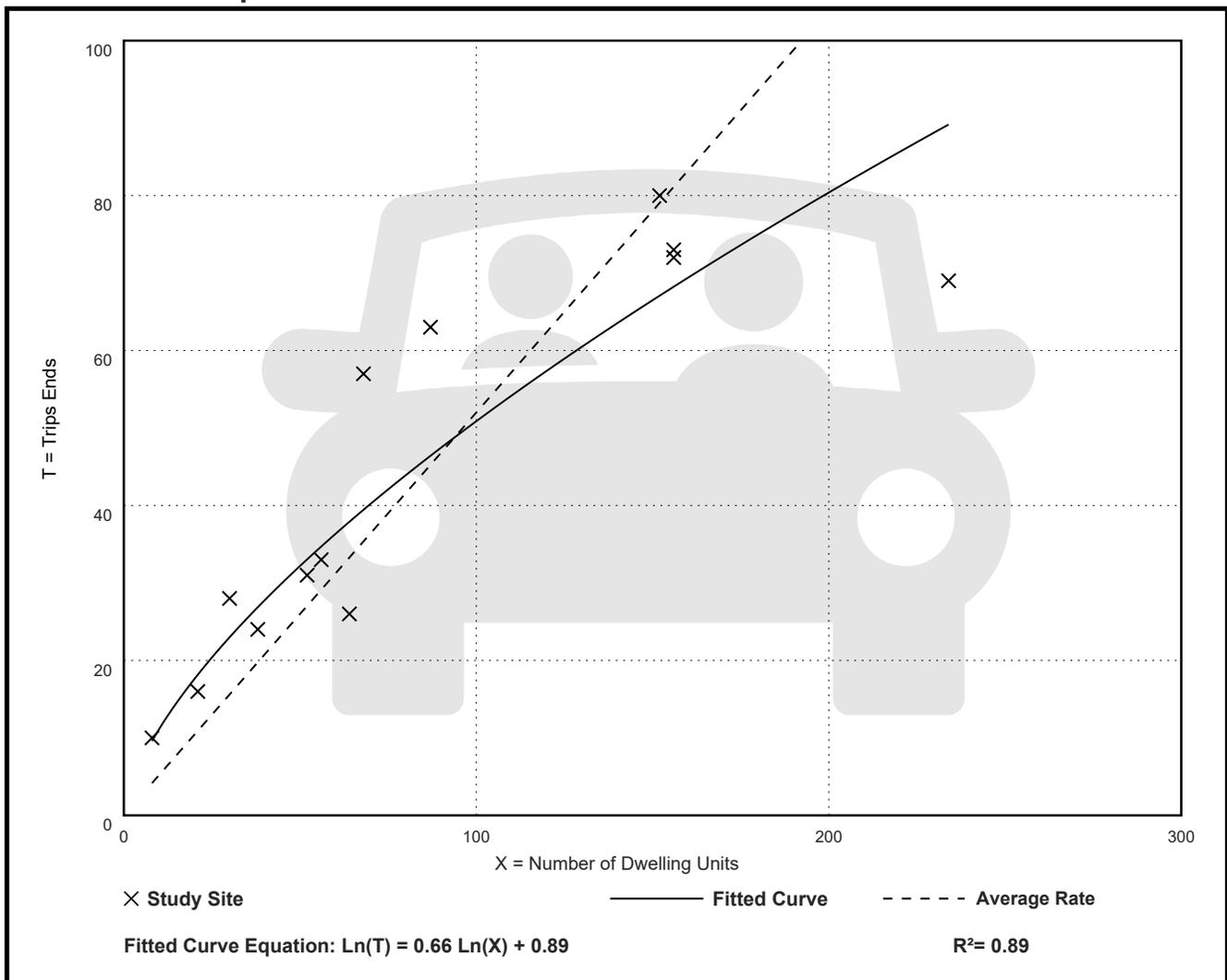
Avg. Num. of Dwelling Units: 86

Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.29 - 1.25	0.19

Data Plot and Equation



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 2

Avg. Num. of Dwelling Units: 386

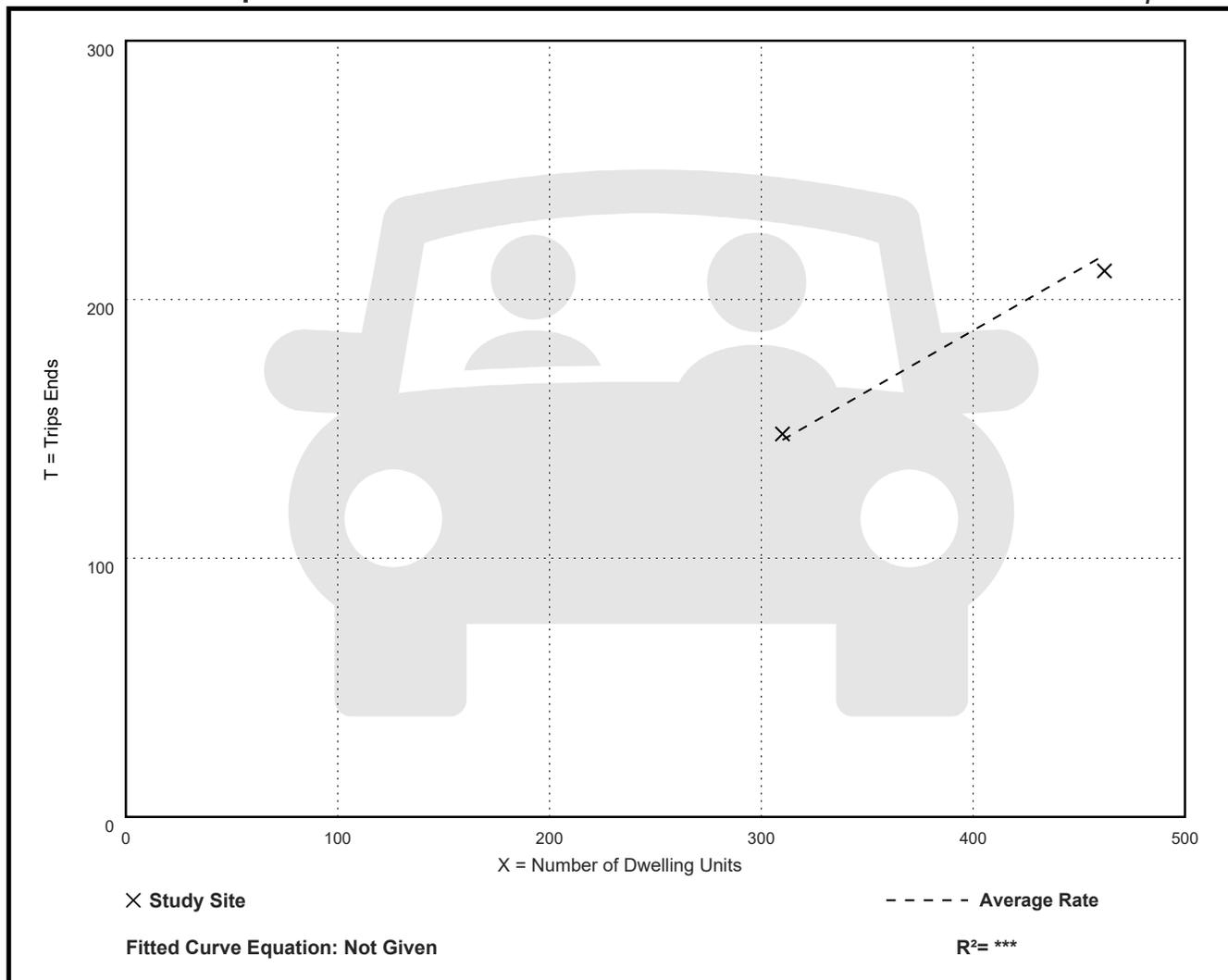
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.47	0.46 - 0.48	***

Data Plot and Equation

Caution – Small Sample Size



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Residents
On a: Weekday

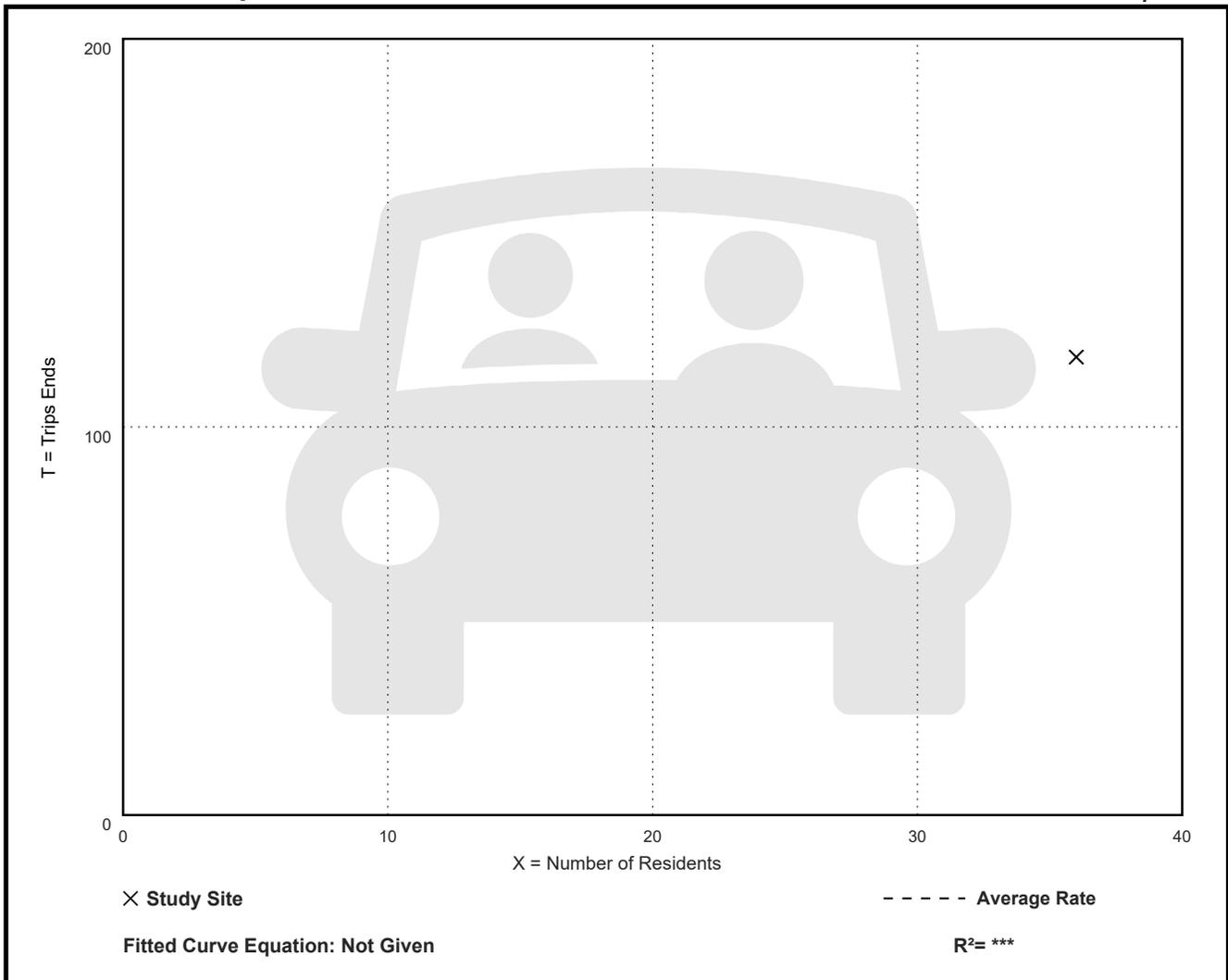
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Residents: 36
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
3.28	3.28 - 3.28	***

Data Plot and Equation

Caution – Small Sample Size



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Residents

On a: Weekday,

AM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 36

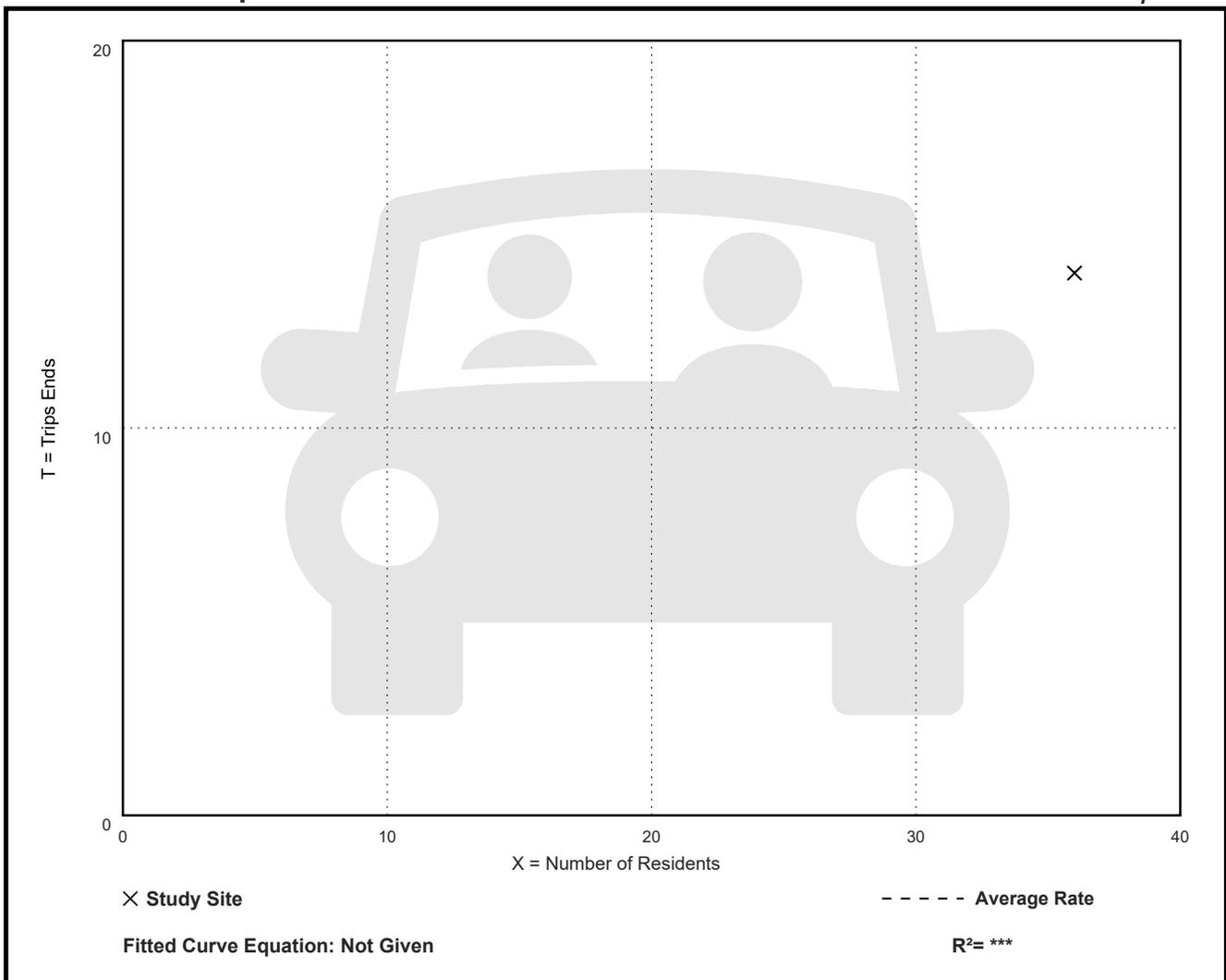
Directional Distribution: Not Available

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.39	0.39 - 0.39	***

Data Plot and Equation

Caution – Small Sample Size



Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Residents

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Residents: 36

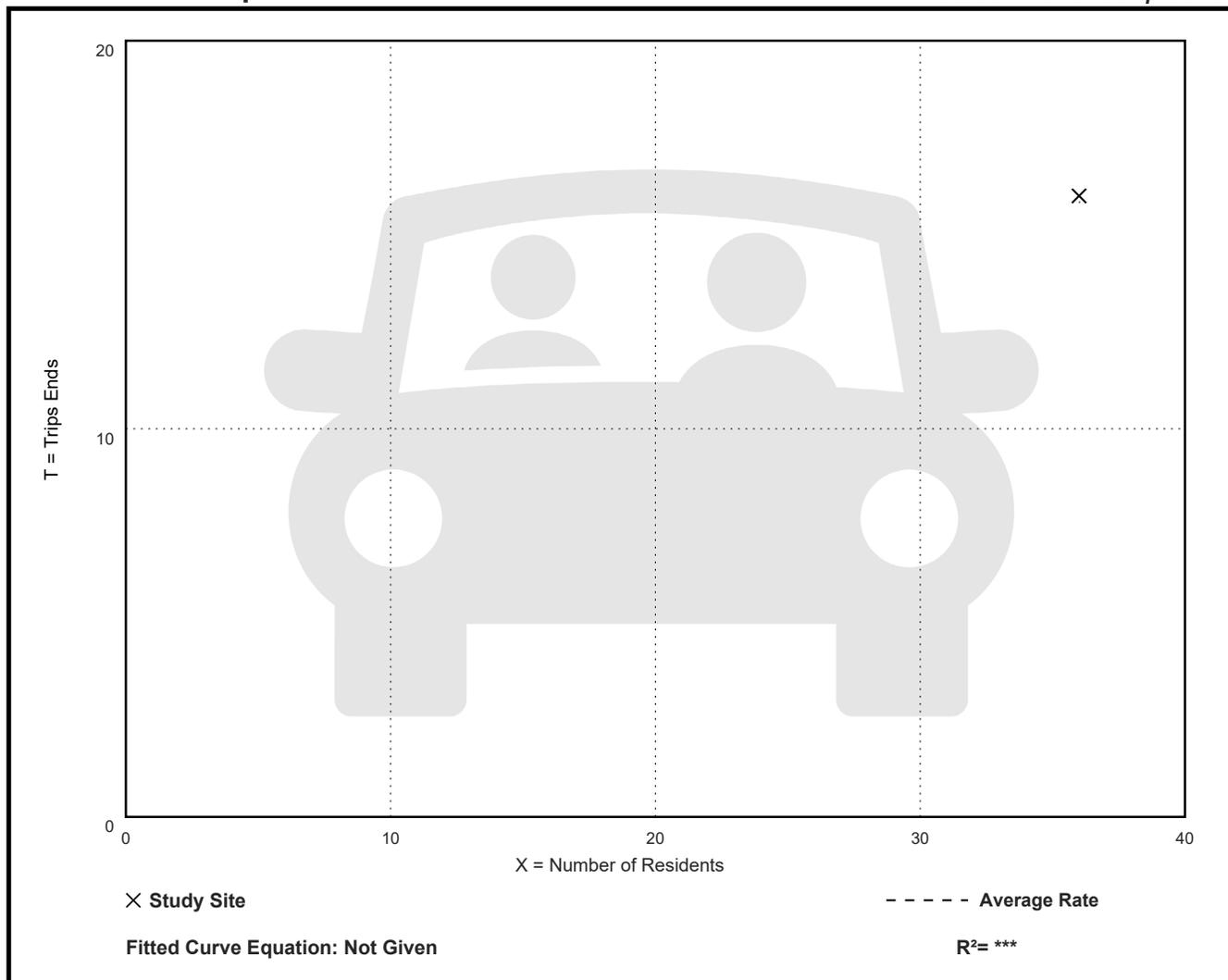
Directional Distribution: Not Available

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.44	0.44 - 0.44	***

Data Plot and Equation

Caution – Small Sample Size



Single-Family Attached Housing (215)

Walk+Bike+Transit 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: 7

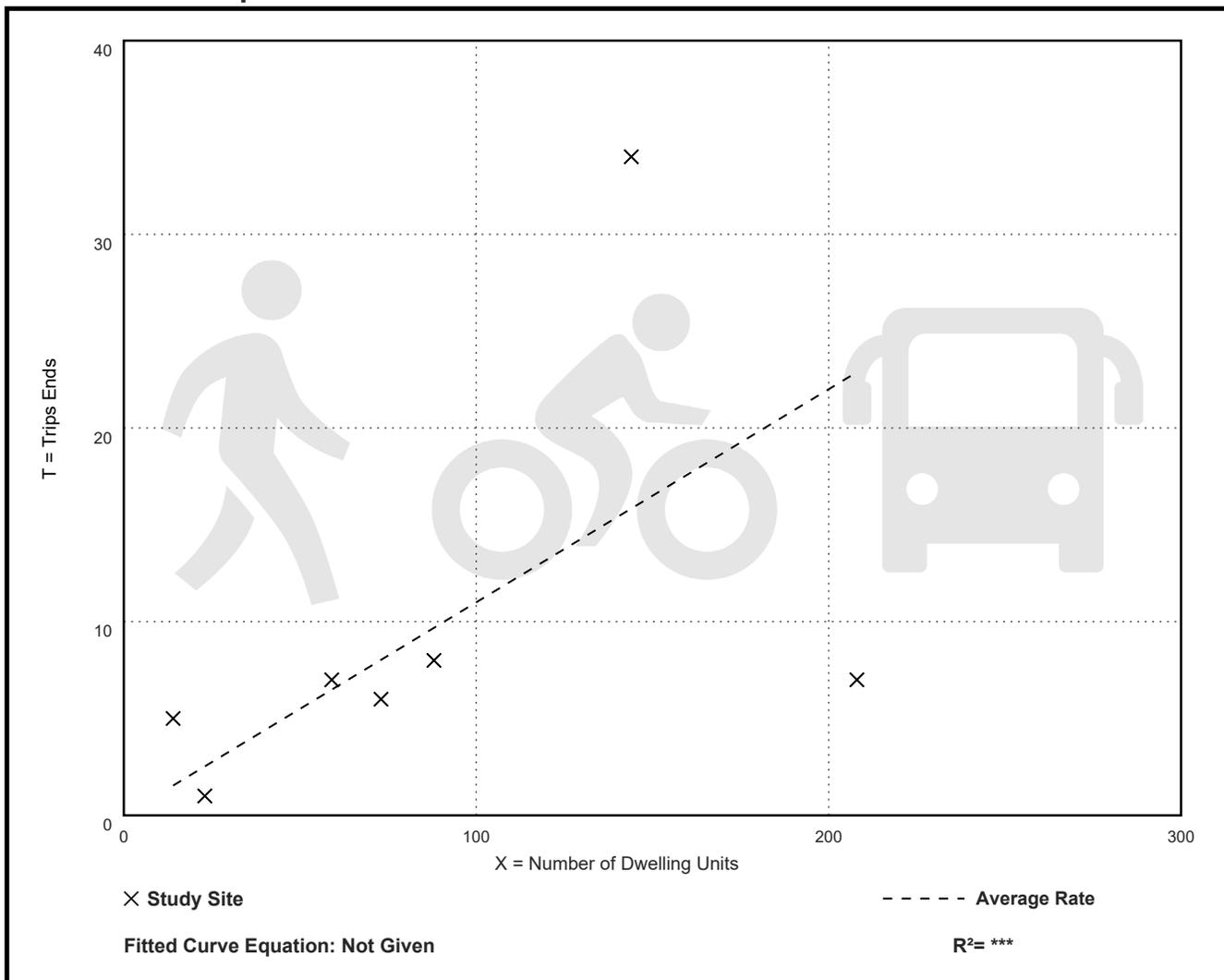
Avg. Num. of Dwelling Units: 87

Directional Distribution: 25% entering, 75% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.11	0.03 - 0.36	0.09

Data Plot and Equation



Single-Family Attached Housing (215)

Walk+Bike+Transit 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: 7

Avg. Num. of Dwelling Units: 87

Directional Distribution: 62% entering, 38% exiting

Walk+Bike+Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.18	0.08 - 0.31	0.11

Data Plot and Equation

