

Land Use Quantities

Project: Johnston Road Land Use Study - Transportation Study

Project No.: OT-08-025

This table was created to develop an estimate of future build-out based on the total land area quantities provided in the preliminary alternative concepts.

Table 1 - Build-Out Quantity Approximations

Preliminary Alternative Concept	Land Use Designation (New Traffic Generators)	Total Land Area (ha)	Build-Out Approximation		
			Assumptions	Quantity	Resulting Build-Out Units
Concept A	Light Industrial	22.80	2-storey buildings occupying 30% of the total land area ¹	1,473	Gross Floor Area (1,000 ft ²)
	Industrial	23.00	2-storey buildings occupying 30% of the total land area ¹	1,485	Gross Floor Area (1,000 ft ²)
	Townhouse	0.60	40 units per ha ²	24	dwelling units
	Stacked Townhouse	2.70	60 units per ha ²	162	dwelling units
	Apartments	3.70	75 units per ha ²	278	dwelling units
	Office	4.60	2-storey buildings occupying 30% of the total land area ¹	297	Gross Floor Area (1,000 ft ²)
	Commercial	0.00	1-storey buildings occupying 35% of the total land area ³	0	Gross Floor Area (1,000 ft ²)
Concept B	Light Industrial	27.90	2-storey buildings occupying 30% of the total land area ¹	1,802	Gross Floor Area (1,000 ft ²)
	Industrial	23.00	2-storey buildings occupying 30% of the total land area ¹	1,485	Gross Floor Area (1,000 ft ²)
	Townhouse	0.00	40 units per ha ²	0	dwelling units
	Stacked Townhouse	3.20	60 units per ha ²	192	dwelling units
	Apartments	0.00	75 units per ha ²	0	dwelling units
	Office	2.60	2-storey buildings occupying 30% of the total land area ¹	168	Gross Floor Area (1,000 ft ²)
	Commercial	1.80	1-storey buildings occupying 35% of the total land area ³	68	Gross Floor Area (1,000 ft ²)
Concept C	Light Industrial	21.00	2-storey buildings occupying 30% of the total land area ¹	1,356	Gross Floor Area (1,000 ft ²)
	Industrial	23.00	2-storey buildings occupying 30% of the total land area ¹	1,485	Gross Floor Area (1,000 ft ²)
	Townhouse	0.00	40 units per ha ²	0	dwelling units
	Stacked Townhouse	4.80	60 units per ha ²	288	dwelling units
	Apartments	0.00	75 units per ha ²	0	dwelling units
	Office	1.10	2-storey buildings occupying 30% of the total land area ¹	71	Gross Floor Area (1,000 ft ²)
	Commercial	15.20	1-storey buildings occupying 35% of the total land area ³	573	Gross Floor Area (1,000 ft ²)

1. Industrial and Office build-out assumptions based on discussions with city land use planning staff.

2. Residential build-out assumptions based on existing residential examples (i.e. Claridge - New Edinborough Common development) and the assumption of low rise apartments.

3. Commercial build-out assumptions based on existing commercial (retail) complex on the southeast corner of the Lory Greenberg / Conroy intersection.

Preferred Concept	Light Industrial	65.10	2-storey buildings occupying 30% of the total land area ¹	4,204	Gross Floor Area (1,000 ft ²)
	Industrial	0.00	2-storey buildings occupying 30% of the total land area ¹	0	Gross Floor Area (1,000 ft ²)
	Townhouse	0.00	40 units per ha ²	0	dwelling units
	Stacked Townhouse	0.00	60 units per ha ²	0	dwelling units
	Apartments	0.00	75 units per ha ²	0	dwelling units
	Office	0.00	2-storey buildings occupying 30% of the total land area ¹	0	Gross Floor Area (1,000 ft ²)
	Commercial	0.00	1-storey buildings occupying 35% of the total land area ³	0	Gross Floor Area (1,000 ft ²)

ITE Land Use Approximation and Trip Rates

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The table indicates the land uses as approximated using ITE Trip Generation Land Use (for forecasting purposes) as well as the corresponding trip rates.

Table 2 - ITE Land Use Approximation and corresponding Trip Generation Rates

Land Use (as per Preliminary Alternative Concepts labeling)	ITE Land Use Approximation (ITE Trip Generation, 8th Ed. - Code - Land Use Type)	Trip Generation Rates						
		Units	AM Peak Hour			PM Peak Hour		
			Trip Rate	% Inbound	% Outbound	Trip Rate	% Inbound	% Outbound
Light Industrial	Land Use 110, 770 (average)	1,000 SF GFA	1.18	86%	14%	1.13	18%	83%
	110 - General Light Industrial	1,000 SF GFA	0.92	88%	12%	0.97	12%	88%
	770 - Business Park	1,000 SF GFA	1.43	84%	16%	1.29	23%	77%
Industrial	Land Use 110, 770 (average)	1,000 SF GFA	1.18	86%	14%	1.13	18%	83%
	110 - General Light Industrial	1,000 SF GFA	0.92	88%	12%	0.97	12%	88%
	770 - Business Park	1,000 SF GFA	1.43	84%	16%	1.29	23%	77%
Townhouse	Land Use 230 - Residential Condominium/Townhouse	Dwelling Units	0.44	17%	83%	0.52	67%	33%
Stacked Townhouse	Land Use 230 - Residential Condominium/Townhouse	Dwelling Units	0.44	17%	83%	0.52	67%	33%
Apartments	Land Use 221 - Low Rise Apartment	Dwelling Units	0.46	21%	79%	0.58	65%	35%
Office	Land Use 770 - Business Park	1,000 SF GFA	1.43	84%	16%	1.29	23%	77%
Commercial	Land Use 834, 836, 850, 851, 880 and 912 (average - see below)	1,000 SF GFA	17.69	61%	39%	20.12	46%	54%
	720 - Medical-Dental Office	1,000 SF GFA	2.30	79%	21%	3.46	27%	73%
	850 - Supermarket	1,000 SF GFA	3.59	61%	39%	10.50	51%	49%
	851 - Convenience Market	1,000 SF GFA	67.03	50%	50%	52.41	51%	49%
	880 - Pharmacy/Drugstore without Drive-Through	1,000 SF GFA	3.20	59%	41%	8.42	50%	50%
	912 - Drive-in Bank	1,000 SF GFA	12.35	56%	44%	25.82	50%	50%

Trip Generation Estimate

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The table below provides an estimate of the total trip generation for each of the preliminary alternative Concepts.

Table 3 - Total Trip Generation Estimates for the Preliminary Alternative Concepts

Preliminary Alternative Concept	Land Use Designation (New Traffic Generators)	Build-Out Approximation		Trips					
				AM Peak Hour			PM Peak Hour		
		Quantity	Units	Total	In	Out	Total	In	Out
Concept A	Light Industrial	1,473	Gross Floor Area (1,000 ft ²)	1,730	1,488	242	1,664	303	1,427
	Industrial	1,485	Gross Floor Area (1,000 ft ²)	1,745	1,501	244	1,679	305	1,440
	Townhouse	24	dwelling units	11	2	9	12	7	3
	Stacked Townhouse	162	dwelling units	71	12	59	84	48	24
	Apartments	278	dwelling units	128	27	101	161	83	45
	Office	297	Gross Floor Area (1,000 ft ²)	425	357	68	383	98	327
	Commercial	0	Gross Floor Area (1,000 ft ²)	0	0	0	0	0	0
TOTALS				4,110	3,387	724	3,984	844	3,266
Concept B	Light Industrial	1,802	Gross Floor Area (1,000 ft ²)	2,117	1,821	296	2,036	371	1,747
	Industrial	1,485	Gross Floor Area (1,000 ft ²)	1,745	1,501	244	1,679	305	1,440
	Townhouse	0	dwelling units	0	0	0	0	0	0
	Stacked Townhouse	192	dwelling units	84	14	70	100	57	28
	Apartments	0	dwelling units	0	0	0	0	0	0
	Office	168	Gross Floor Area (1,000 ft ²)	240	202	38	217	55	185
	Commercial	68	Gross Floor Area (1,000 ft ²)	1,200	732	468	1,365	550	650
TOTALS				5,387	4,270	1,117	5,396	1,337	4,050
Concept C	Light Industrial	1,356	Gross Floor Area (1,000 ft ²)	1,594	1,370	223	1,533	279	1,315
	Industrial	1,485	Gross Floor Area (1,000 ft ²)	1,745	1,501	244	1,679	305	1,440
	Townhouse	0	dwelling units	0	0	0	0	0	0
	Stacked Townhouse	288	dwelling units	127	22	105	150	85	42
	Apartments	0	dwelling units	0	0	0	0	0	0
	Office	71	Gross Floor Area (1,000 ft ²)	102	85	16	92	23	78
	Commercial	573	Gross Floor Area (1,000 ft ²)	10,132	6,181	3,952	11,523	4,641	5,492
TOTALS				13,700	9,159	4,540	14,975	5,333	8,366
Preferred Concept	Light Industrial	4,204	Gross Floor Area (1,000 ft ²)	4,940	4,249	692	4,751	865	4,076
	Industrial	0	Gross Floor Area (1,000 ft ²)	0	0	0	0	0	0
	Townhouse	0	dwelling units	0	0	0	0	0	0
	Stacked Townhouse	0	dwelling units	0	0	0	0	0	0
	Apartments	0	dwelling units	0	0	0	0	0	0
	Office	0	Gross Floor Area (1,000 ft ²)	0	0	0	0	0	0
	Commercial	0	Gross Floor Area (1,000 ft ²)	0	0	0	0	0	0
TOTALS				4,940	4,249	692	4,751	865	4,076

Mode Share Assignment of Trip Estimates

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Table 4a indicates the mode share assumptions as per the City of Ottawa TMP and Table 4b indicates the total trips p

Table 4a - Mode Share Assumptions

Travel Mode	Assumed Proportion of Total Trips
Automobile	57%
Transit	30%
Walking	10%
Cycling	3%
TOTAL	100%

Table 4b - Total Trips Per Mode

Preliminary Alternative Concept	Land Use Designation (New Traffic Generators)	Trips					
		AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
Concept A	Automobile	2,343	1,930	412	2,271	481	1,862
	Transit	1,233	1,016	217	1,195	253	980
	Walking	411	339	72	398	84	327
	Cycling	123	102	22	120	25	98
	TOTAL	4,110	3,387	724	3,984	844	3,266
Concept B	Automobile	3,071	2,434	637	3,076	762	2,308
	Transit	1,616	1,281	335	1,619	401	1,215
	Walking	539	427	112	540	134	405
	Cycling	162	128	34	162	40	121
	TOTAL	5,387	4,270	1,117	5,396	1,337	4,050
Concept C	Automobile	7,809	5,221	2,588	8,536	3,040	4,769
	Transit	4,110	2,748	1,362	4,493	1,600	2,510
	Walking	1,370	916	454	1,498	533	837
	Cycling	411	275	136	449	160	251
	TOTAL	13,700	9,159	4,540	14,975	5,333	8,366
Preferred Concept	Automobile	2,816	2,422	394	2,708	493	2,323
	Transit	1,482	1,275	207	1,425	259	1,223
	Walking	494	425	69	475	86	408
	Cycling	148	127	21	143	26	122
	TOTAL	4,940	4,249	692	4,751	865	4,076

Trip Assignment

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Table 5a indicates the general distribution assumptions (as per Section 4.4 of the report) and Table 5b lists the corresponding automobile traffic volumes.

Table 5a - Trip Distribution (as per Section 4.4 of the report)

Direction	Assumed Proportion of Total Trips
Northwest	10%
North	60%
East / Northeast	10%
South / Southeast	5%
West / Southwest	15%
TOTAL	100%

Table 5b - General Trip Assignment (Automobile)

To / From	Concept A		Concept B		Concept C		Preferred Concept	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
<i>AM Peak Hour</i>	1,930	412	2,434	637	5,221	2,588	2,422	394
West (Albion Road and Bank Street)	1,062	227	1,339	350	2,871	1,423	1,332	217
East (Conroy Road)	869	186	1,095	287	2,349	1,165	1,090	177
<i>PM Peak Hour</i>	481	1,862	762	2,308	3,040	4,769	493	2,323
West (Albion Road and Bank Street)	265	1,024	419	1,270	1,672	2,623	271	1,278
East (Conroy Road)	216	838	343	1,039	1,368	2,146	222	1,045

1. Assumed half of North O-D pair would split equally between Bank Street and Conroy Road.

Preliminary Traffic Assessment

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Table 6 superimposes potential site trips with existing volume information to gain understanding of potential future needs and impacts.

Table 6 - Preliminary Forecast

To / From	Existing Traffic		Potential Total Traffic Volume						Preferred Concept	
	Inbound ¹	Outbound ¹	Concept A		Concept B		Concept C		Inbound ^{2,3}	Outbound ^{2,3}
			Inbound ^{2,3}	Outbound ^{2,3}	Inbound ^{2,3}	Outbound ^{2,3}	Inbound ^{2,3}	Outbound ^{2,3}		
<i>AM Peak Hour</i>										
West (Bank / Johnston Int)	274	703	805	816	943	878	1,710	1,415	940	811
East (Conroy / Johnston Int)	169	308	820	447	990	523	1,931	1,181	986	441
<i>PM Peak Hour</i>										
West (Bank / Johnston Int)	655	453	787	965	865	1,088	1,491	1,764	791	1,092
East (Conroy / Johnston Int)	457	312	619	940	714	1,091	1,483	1,921	623	1,096

1. Volumes extracted from Existing Traffic Volume Figure (Inbound considered toward the study area).
2. Assumed traffic to / From west would split between Albion Road and Bank Street (50% / 50%).
3. Assumed traffic to / from east would split - 75% Johnston, 25% east-west access road (north of Johnston Road)

General Light Industrial (110)

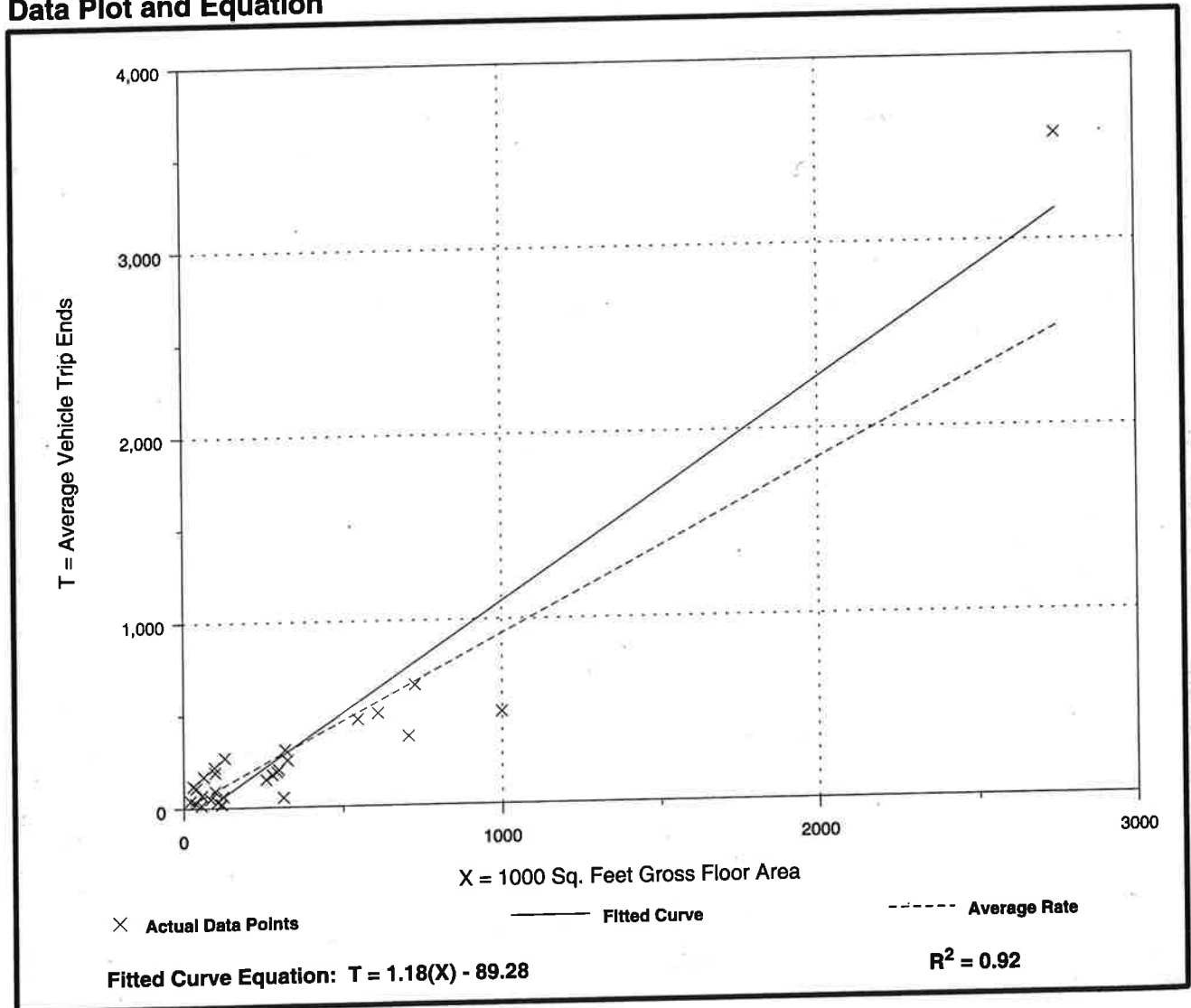
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 29
 Average 1000 Sq. Feet GFA: 336
 Directional Distribution: 88% entering, 12% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.92	0.17 - 4.00	1.07

Data Plot and Equation



General Light Industrial (110)

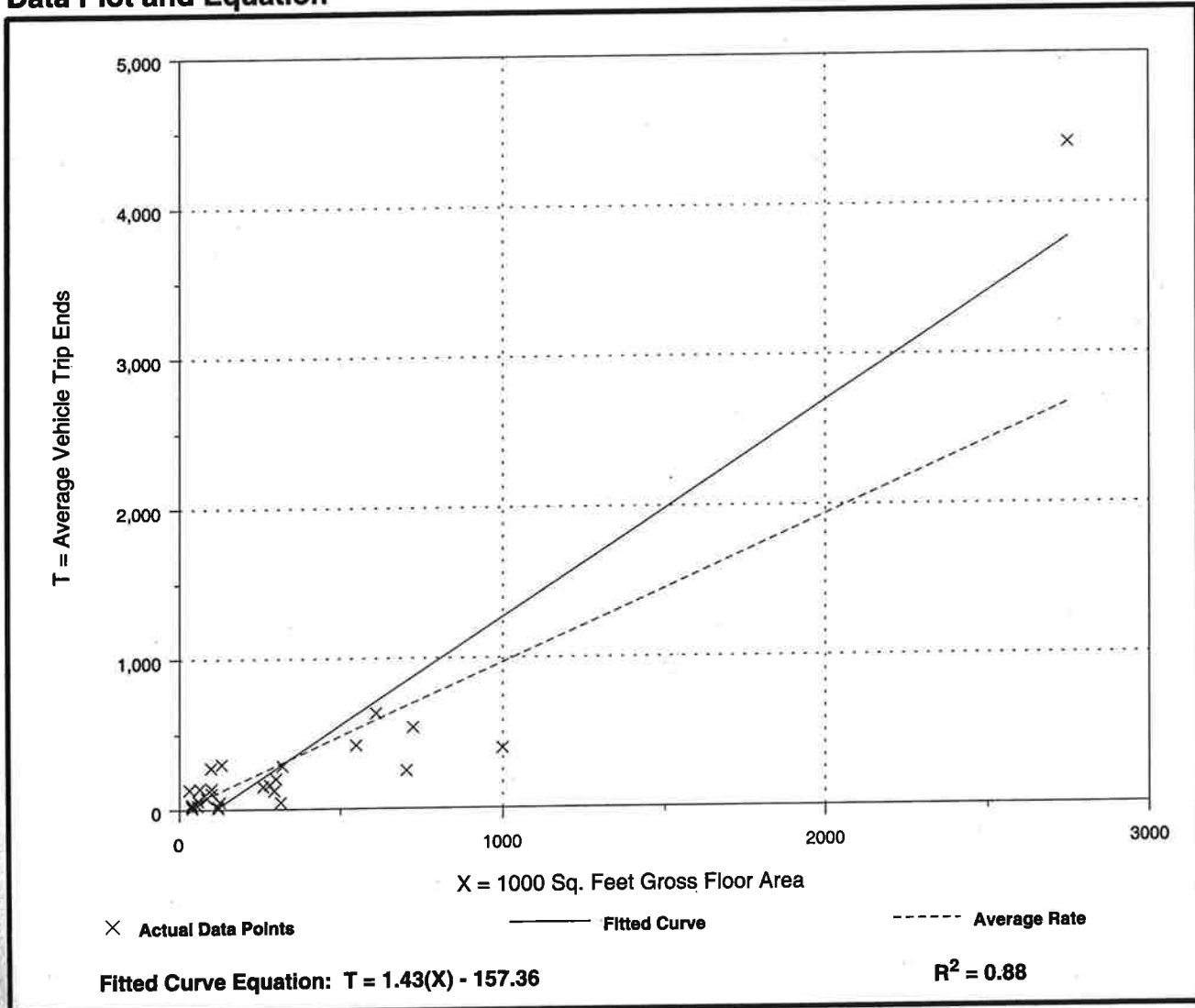
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 27
 Average 1000 Sq. Feet GFA: 345
 Directional Distribution: 12% entering, 88% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.97	0.08 - 4.50	1.16

Data Plot and Equation



Business Park (770)

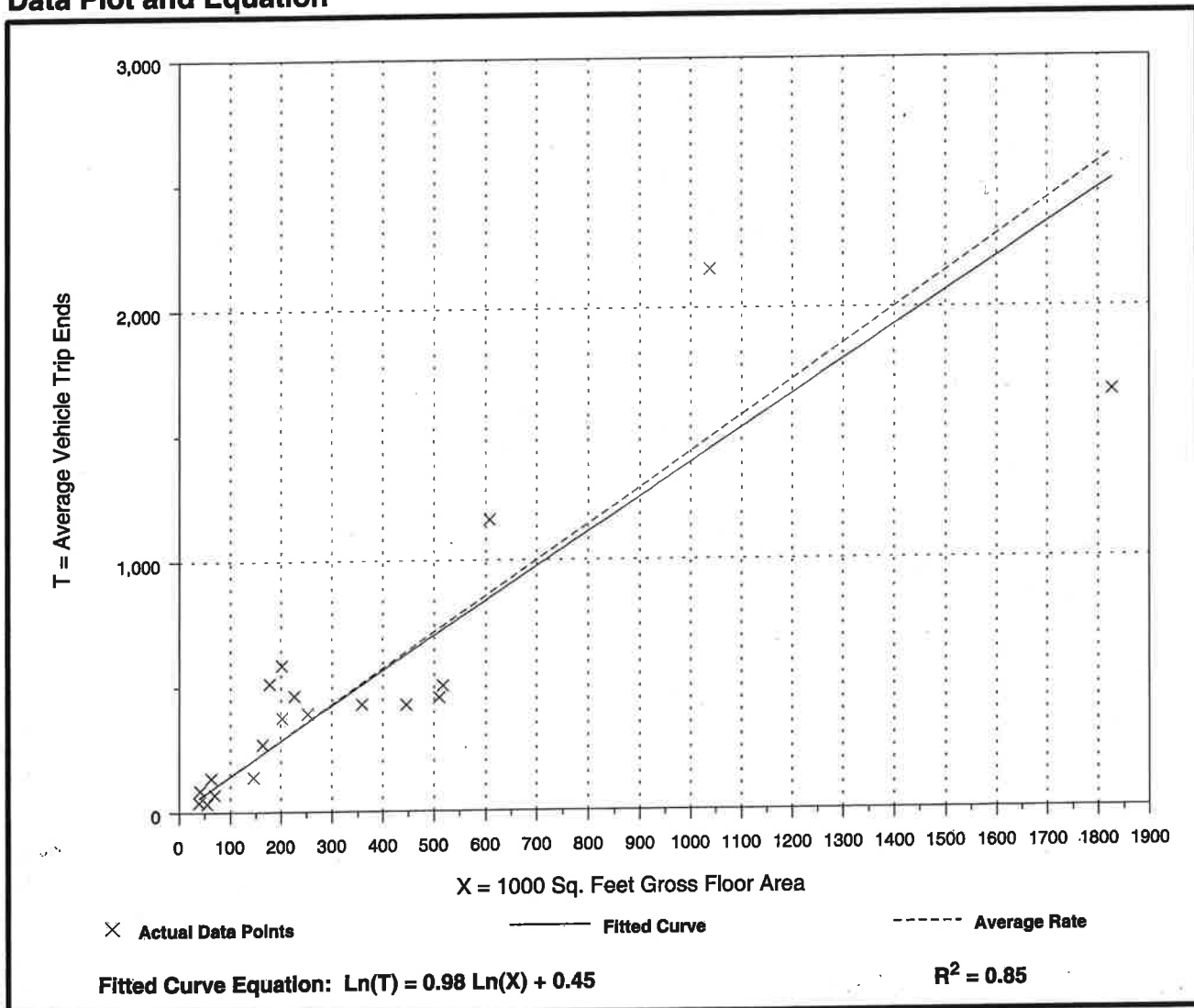
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
A.M. Peak Hour

Number of Studies: 19
 Average 1000 Sq. Feet GFA: 366
 Directional Distribution: 84% entering, 16% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.43	0.65 - 2.90	1.34

Data Plot and Equation



Business Park (770)

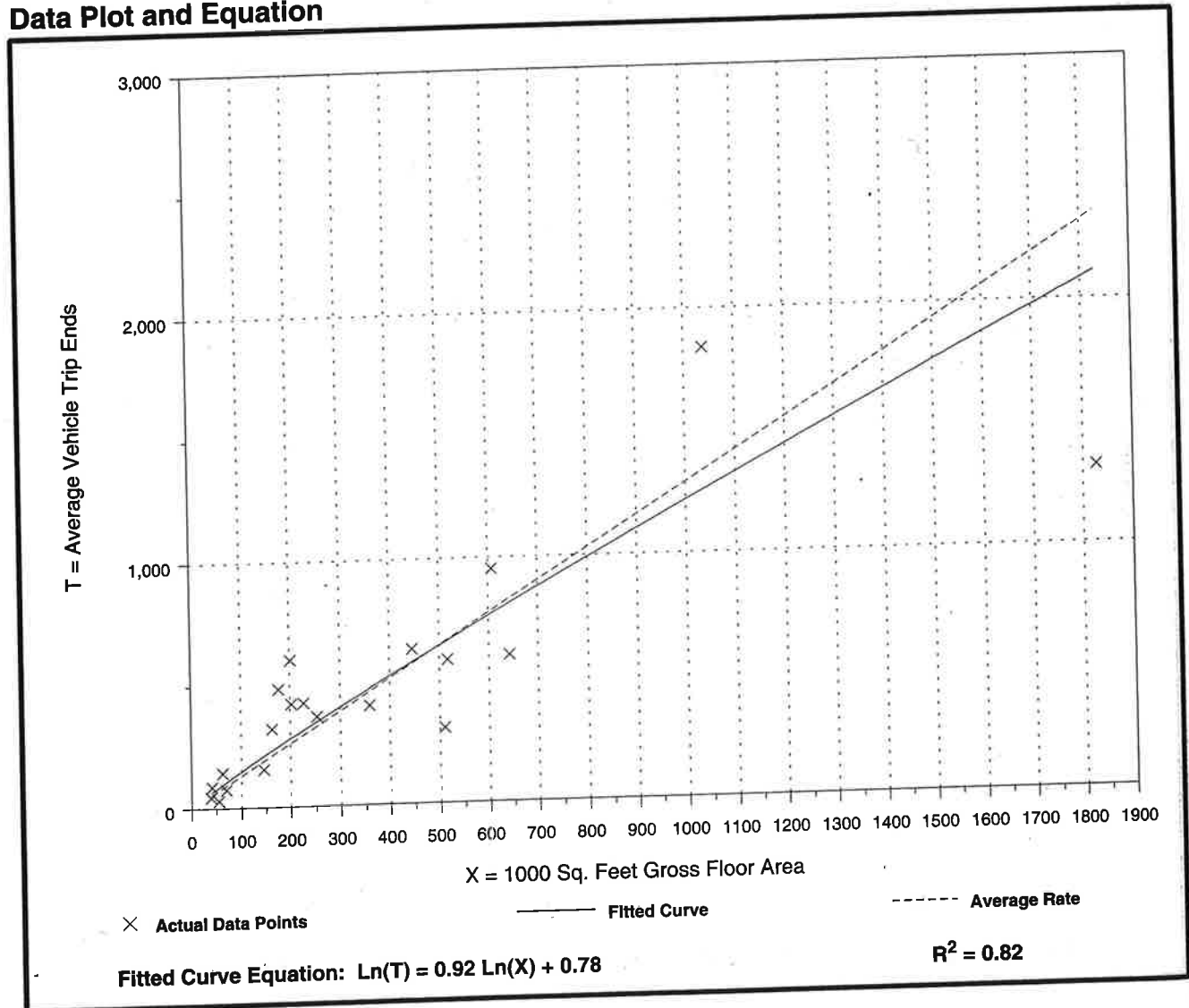
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 20
 Average 1000 Sq. Feet GFA: 379
 Directional Distribution: 23% entering, 77% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.29	0.55 - 2.97	1.28

Data Plot and Equation



Residential Condominium/Townhouse (230)

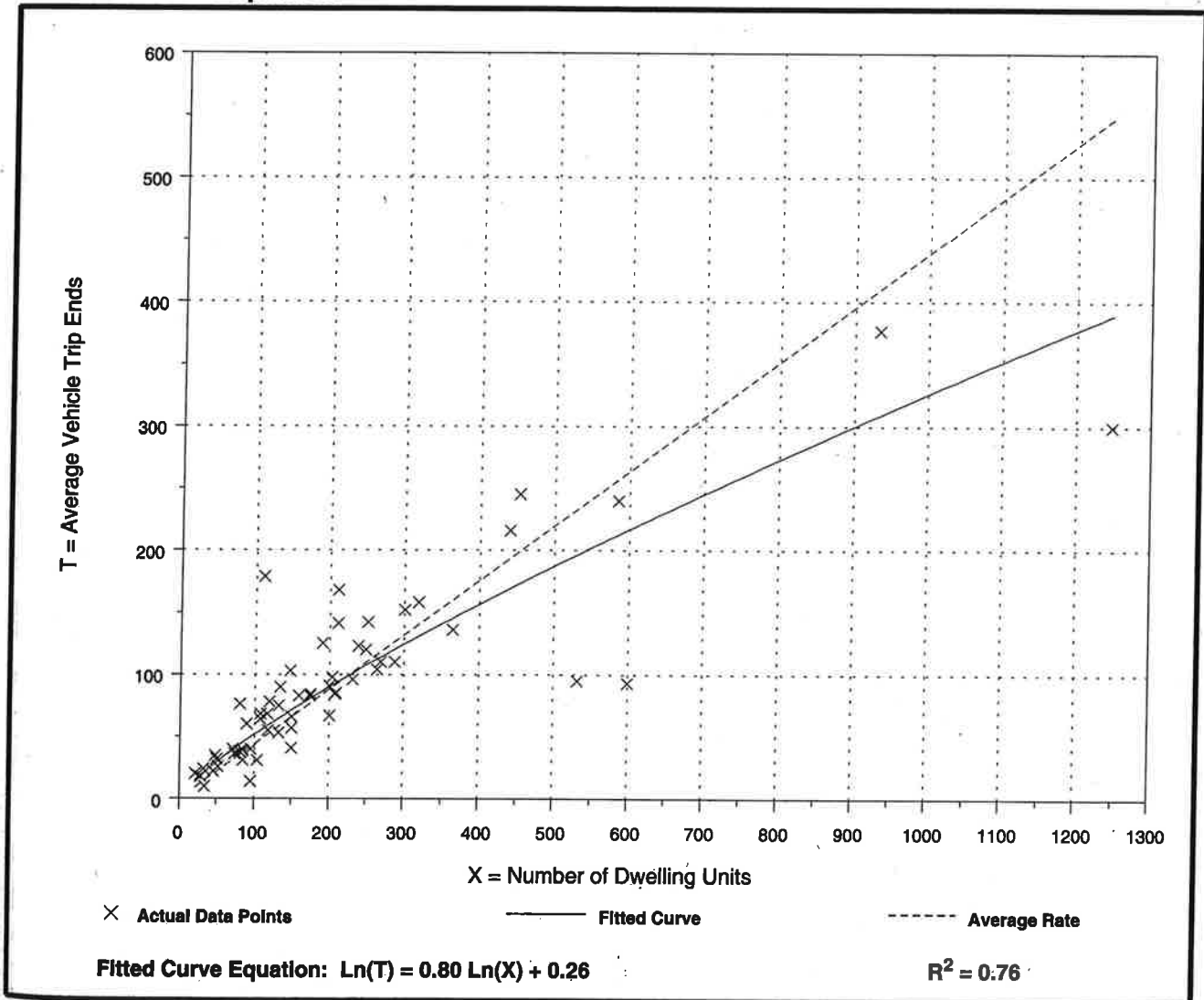
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 59
 Avg. Number of Dwelling Units: 213
 Directional Distribution: 17% entering, 83% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.61	0.69

Data Plot and Equation



Residential Condominium/Townhouse (230)

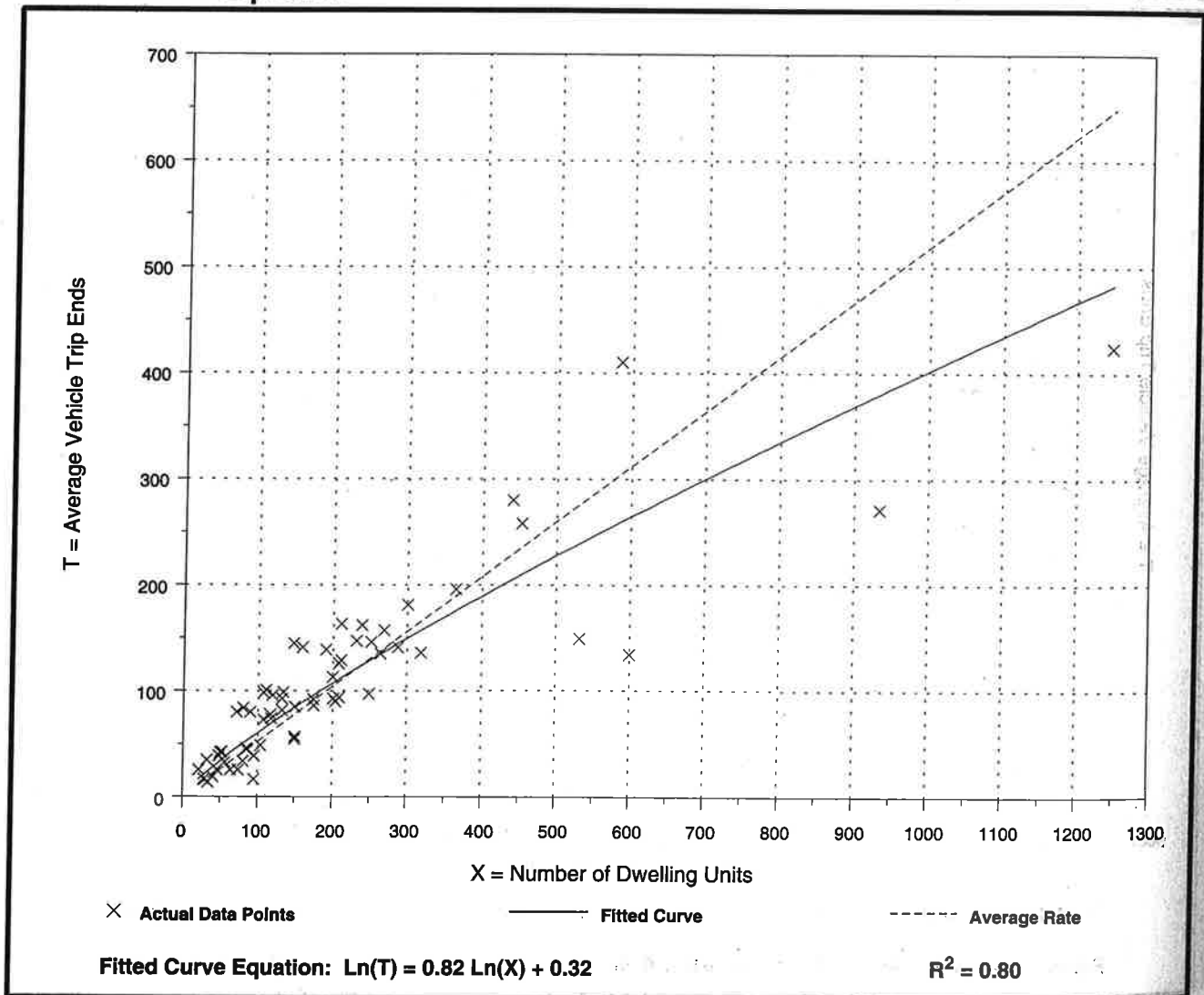
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 62
 Avg. Number of Dwelling Units: 205
 Directional Distribution: 67% entering, 33% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.18 - 1.24	0.75

Data Plot and Equation



Low-Rise Apartment (221)

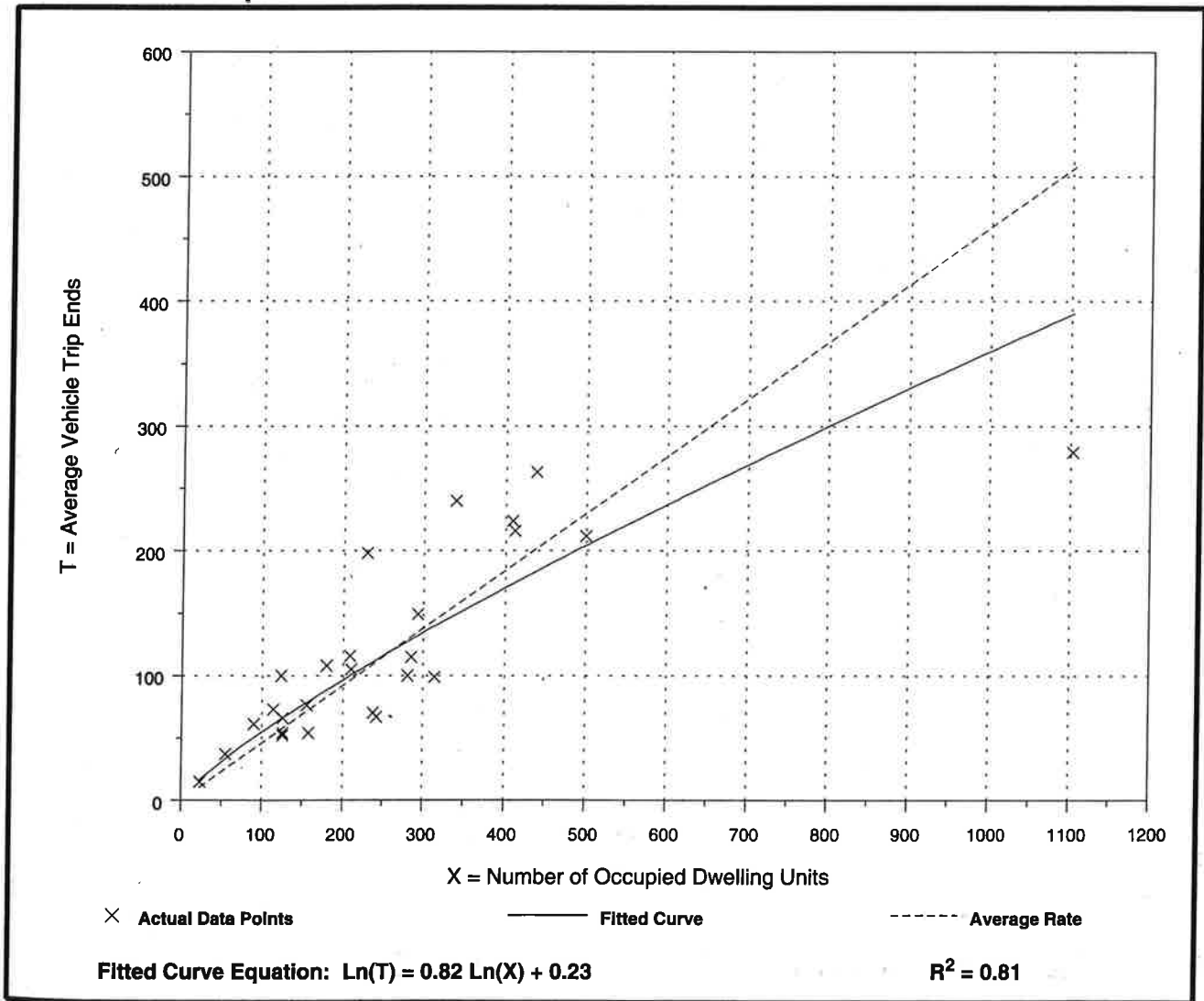
Average Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 27
 Avg. Num. of Occupied Dwelling Units: 257
 Directional Distribution: 21% entering, 79% exiting

Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.25 - 0.86	0.70

Data Plot and Equation



Low-Rise Apartment (221)

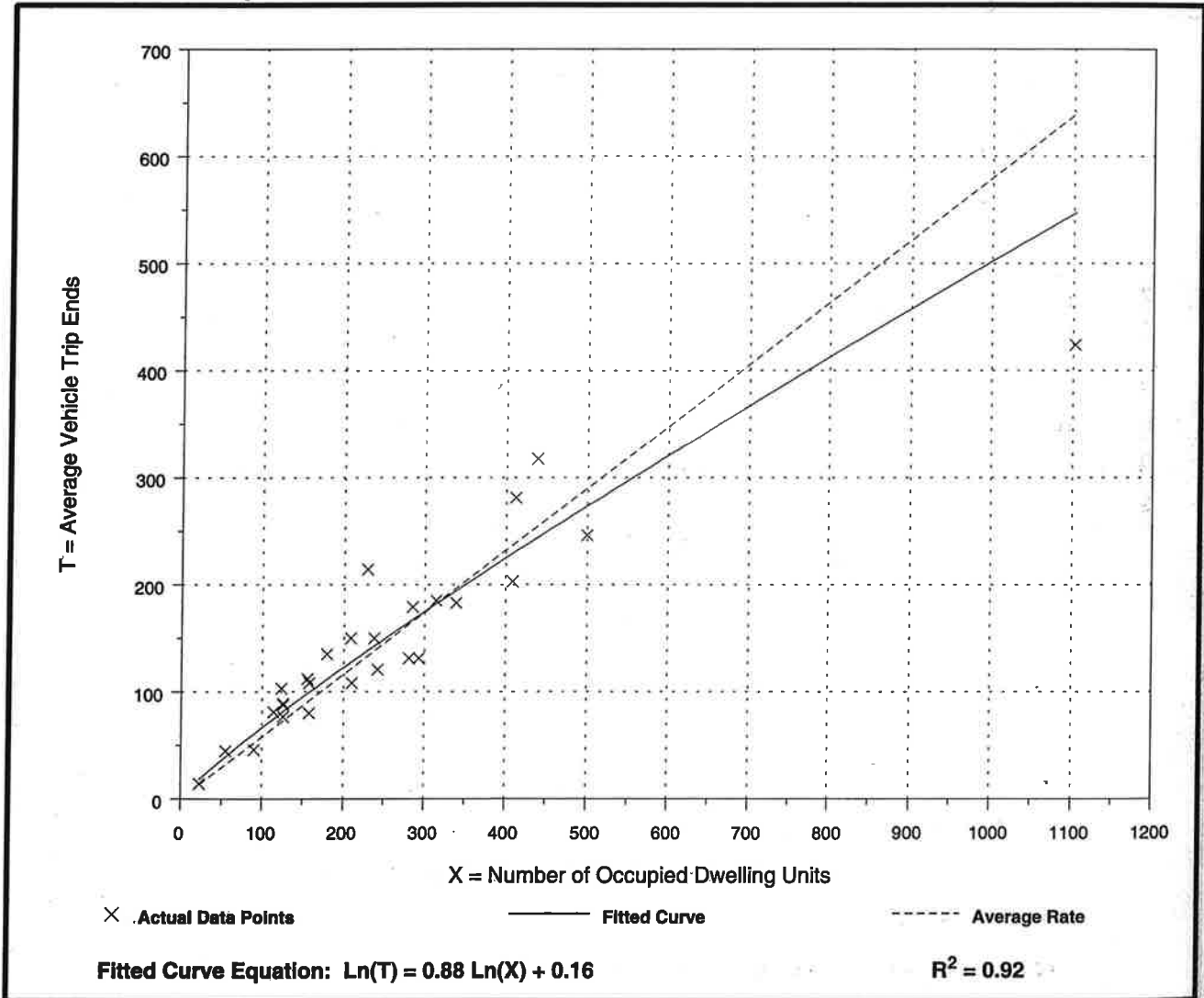
Average Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 27
 Avg. Num. of Occupied Dwelling Units: 257
 Directional Distribution: 65% entering, 35% exiting

Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.58	0.38 - 0.93	0.77

Data Plot and Equation



Medical-Dental Office Building (720)

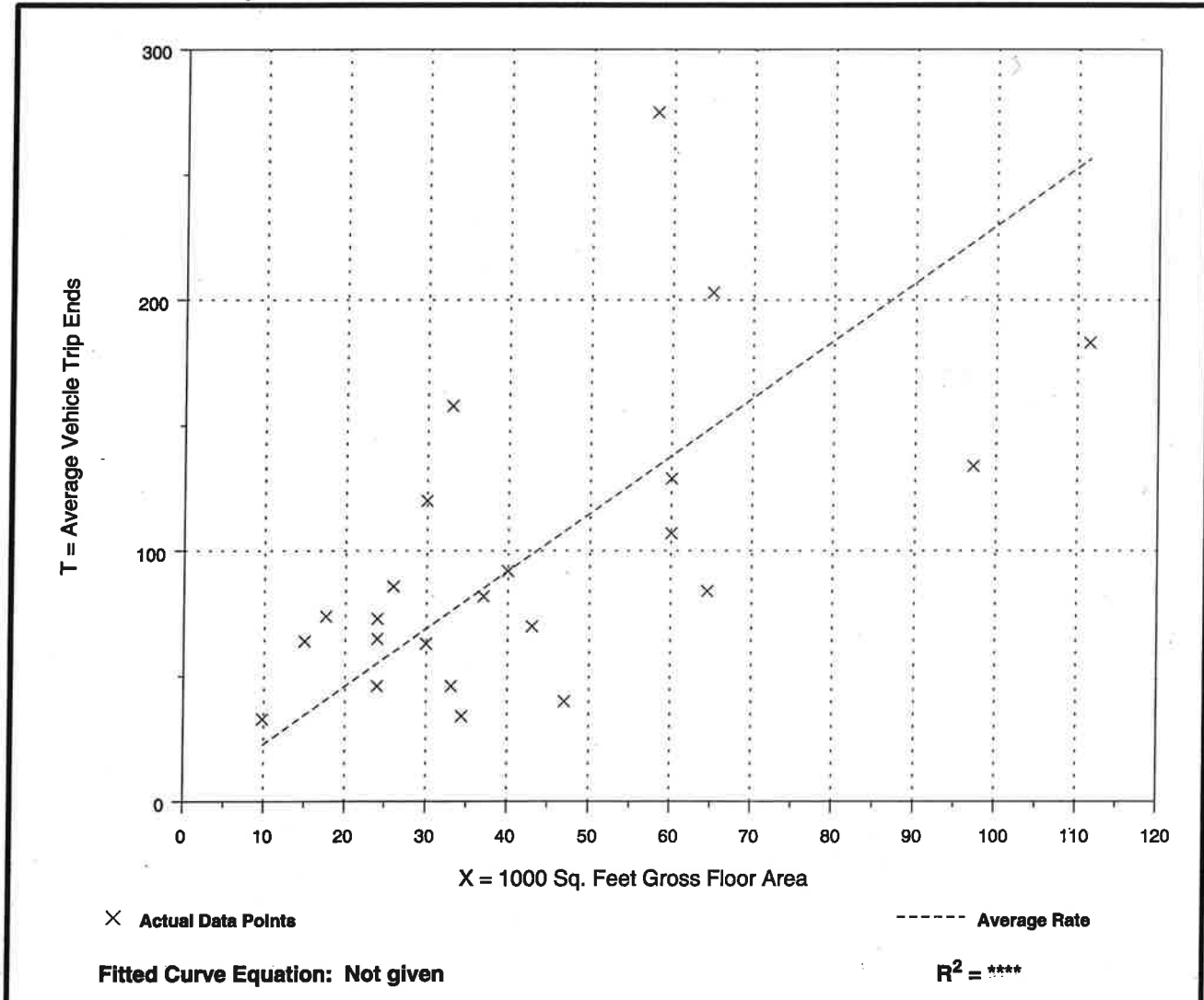
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 23
 Average 1000 Sq. Feet GFA: 43
 Directional Distribution: 79% entering, 21% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.30	0.85 - 4.79	1.88

Data Plot and Equation



Medical-Dental Office Building (720)

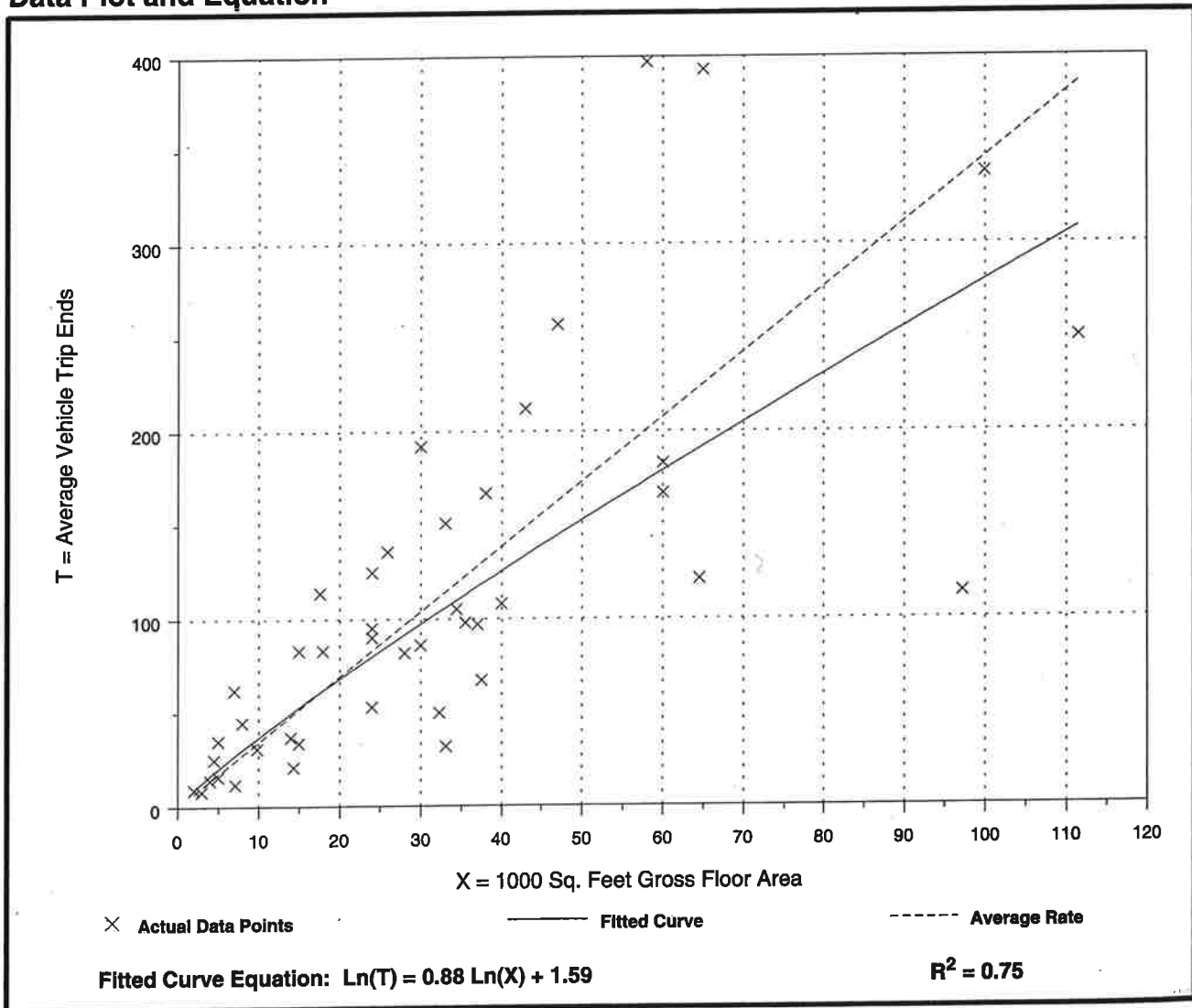
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 43
Average 1000 Sq. Feet GFA: 32
Directional Distribution: 27% entering, 73% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.46	0.97 - 8.86	2.50

Data Plot and Equation



Supermarket (850)

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

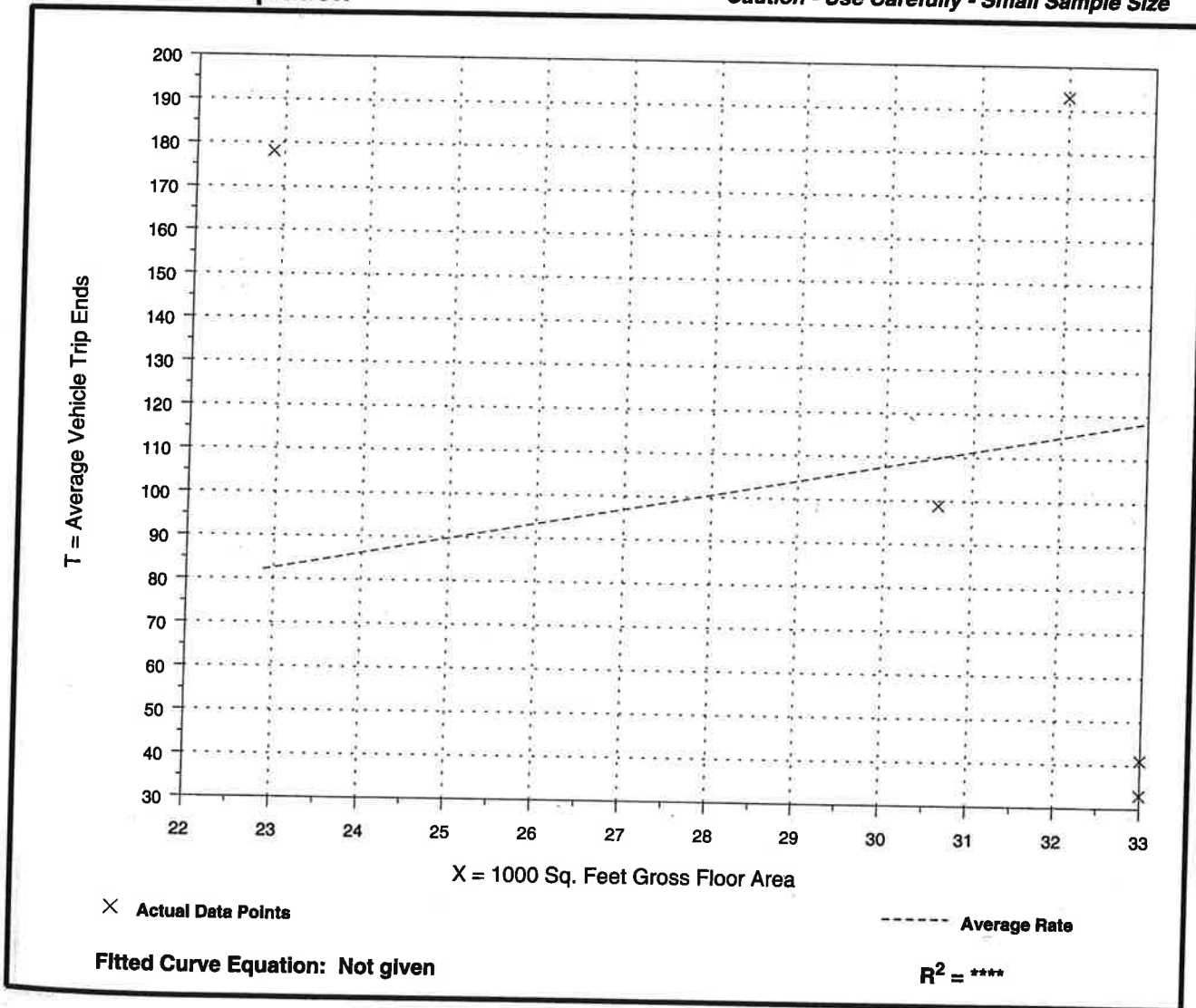
Number of Studies: 5
 Average 1000 Sq. Feet GFA: 30
 Directional Distribution: 61% entering, 39% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.59	1.00 - 7.78	3.18

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Supermarket (850)

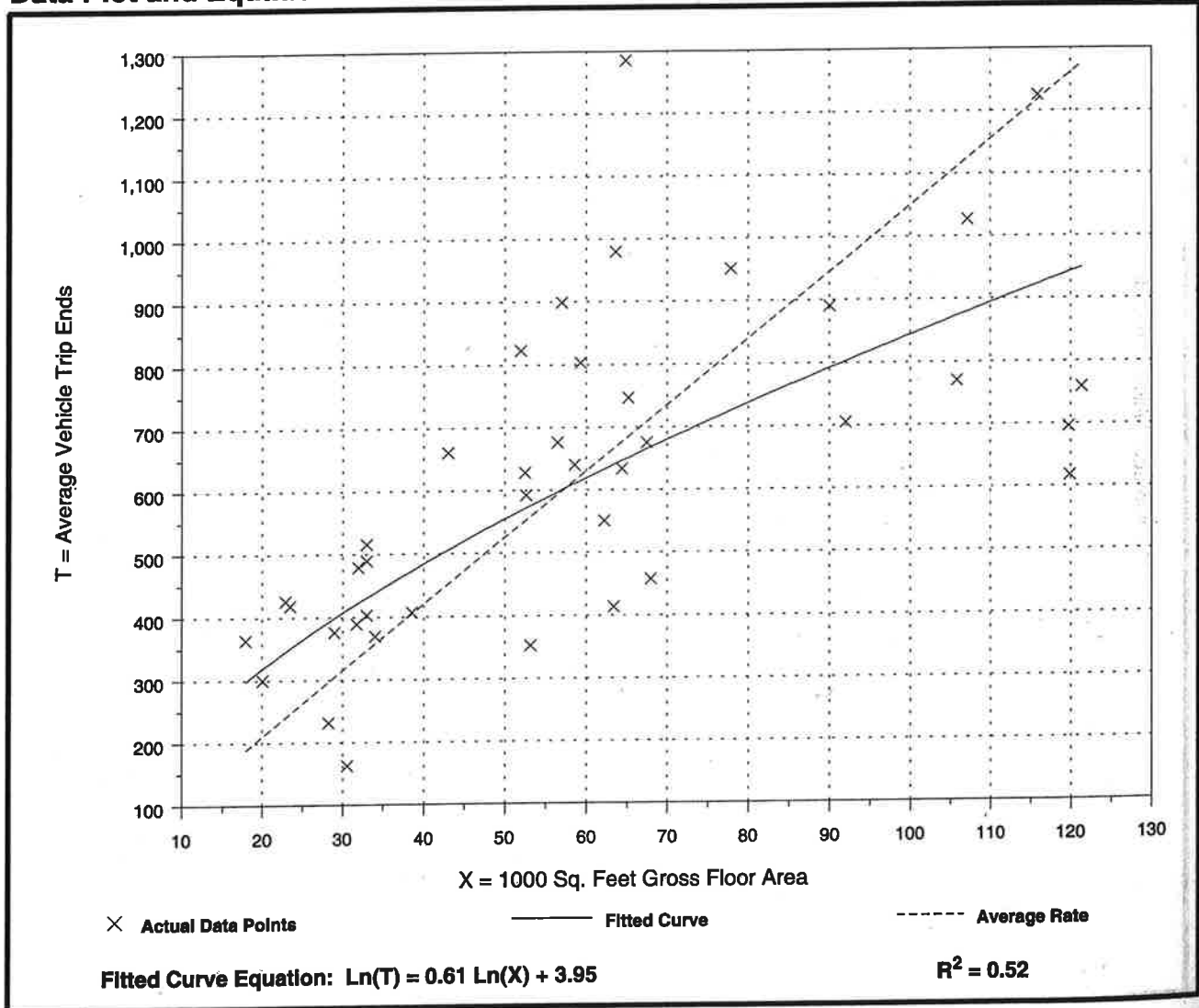
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 40
 Average 1000 Sq. Feet GFA: 59
 Directional Distribution: 51% entering, 49% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
10.50	5.15 - 20.29	4.97

Data Plot and Equation



Convenience Market (Open 24 Hours) (851)

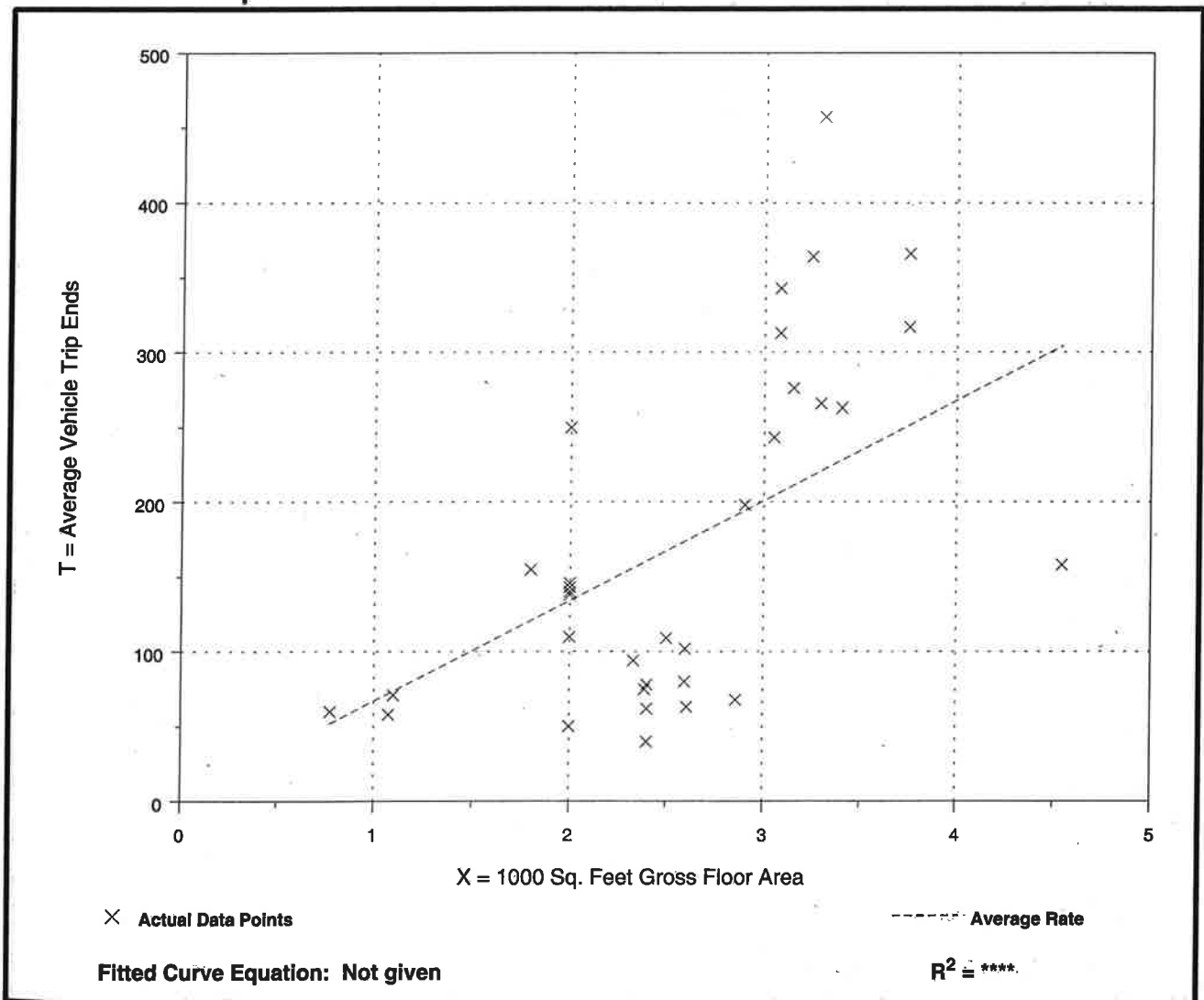
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 33
 Average 1000 Sq. Feet GFA: 3
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
67.03	16.67 - 138.48	33.78

Data Plot and Equation



Convenience Market (Open 24 Hours) (851)

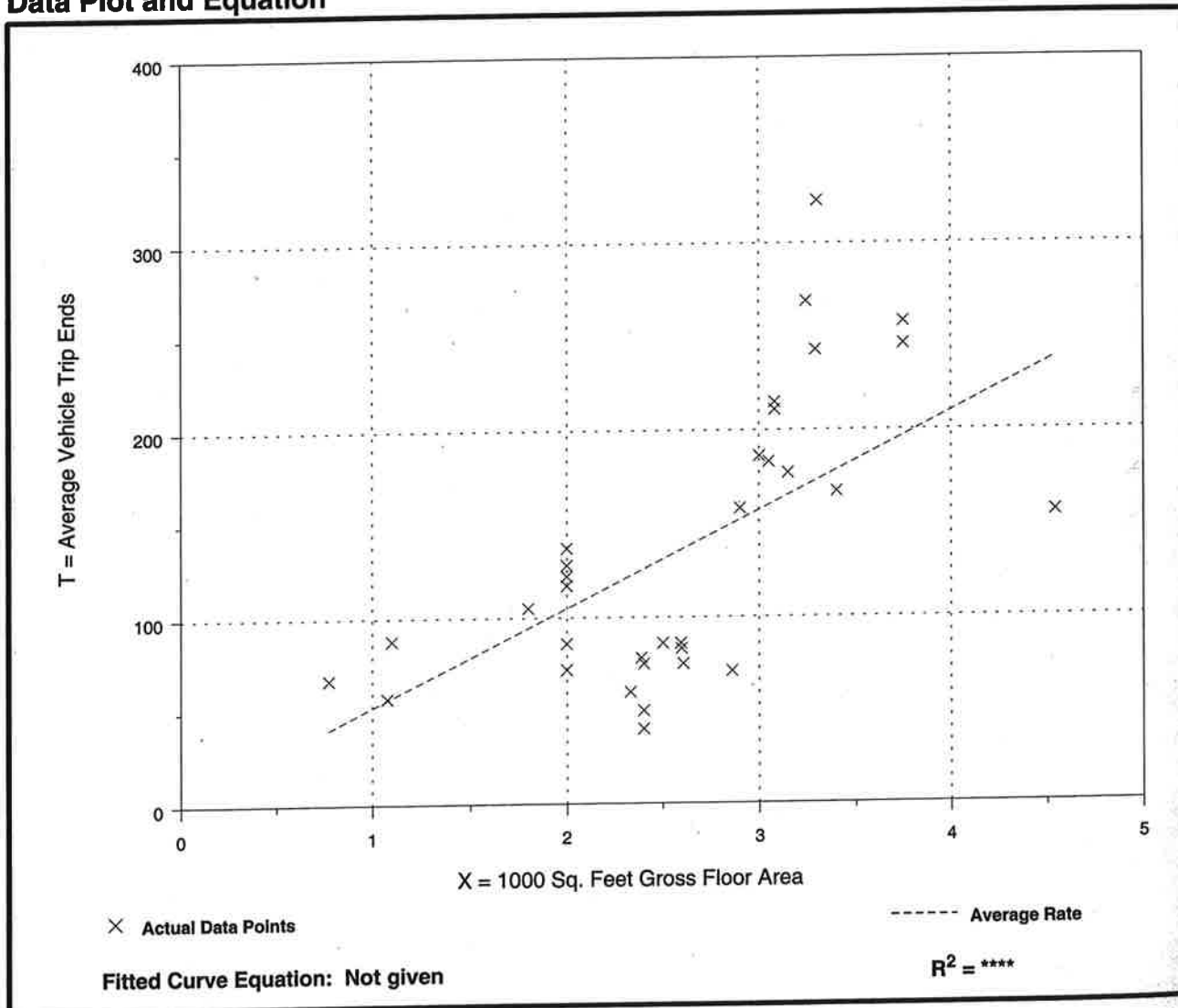
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 33
 Average 1000 Sq. Feet GFA: 3
 Directional Distribution: 51% entering, 49% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
52.41	16.67 - 97.88	21.41

Data Plot and Equation



Pharmacy/Drugstore without Drive-Through Window (880)

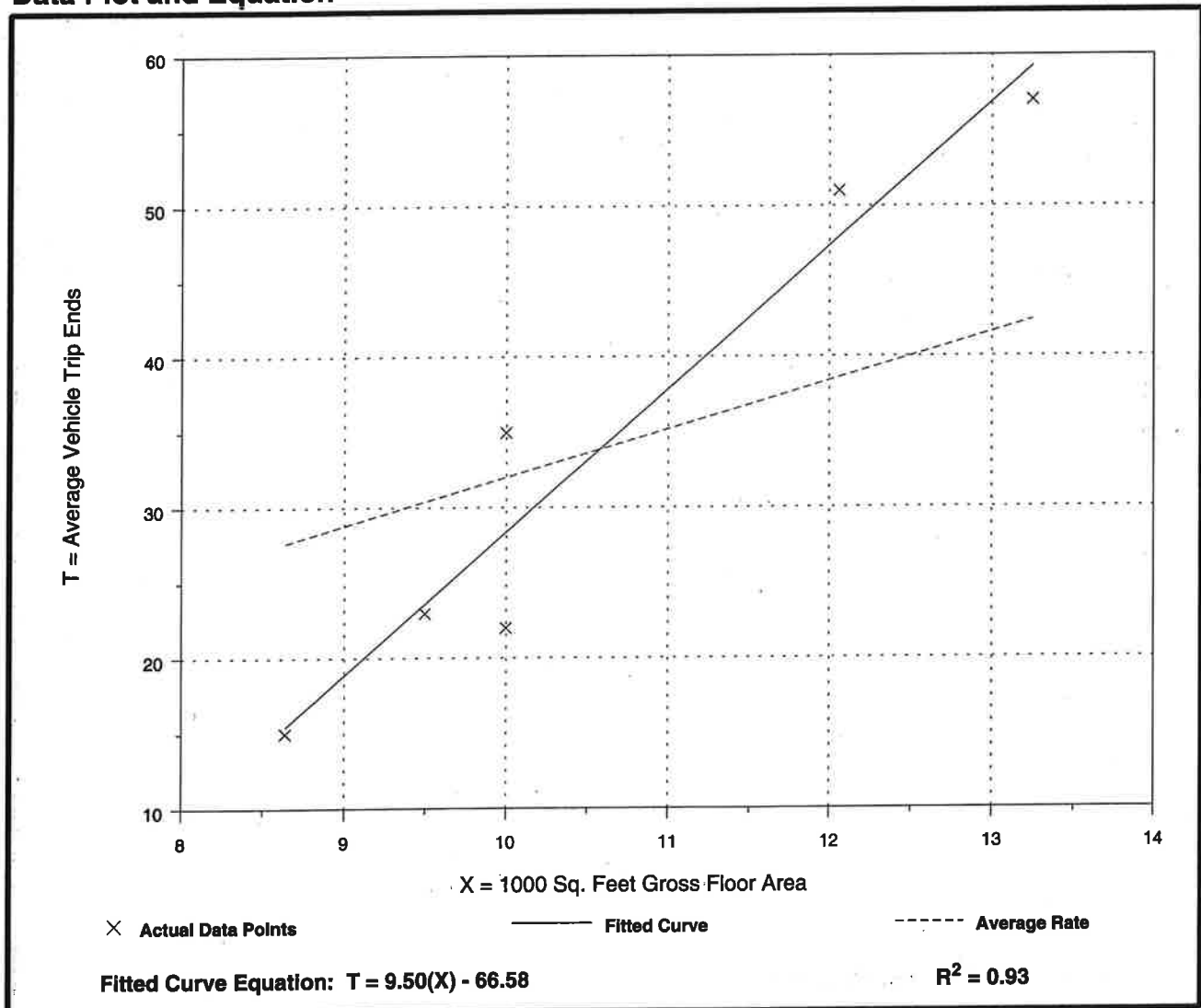
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 6
 Average 1000 Sq. Feet GFA: 11
 Directional Distribution: 59% entering, 41% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.20	1.74 - 4.30	2.00

Data Plot and Equation



Pharmacy/Drugstore without Drive-Through Window (880)

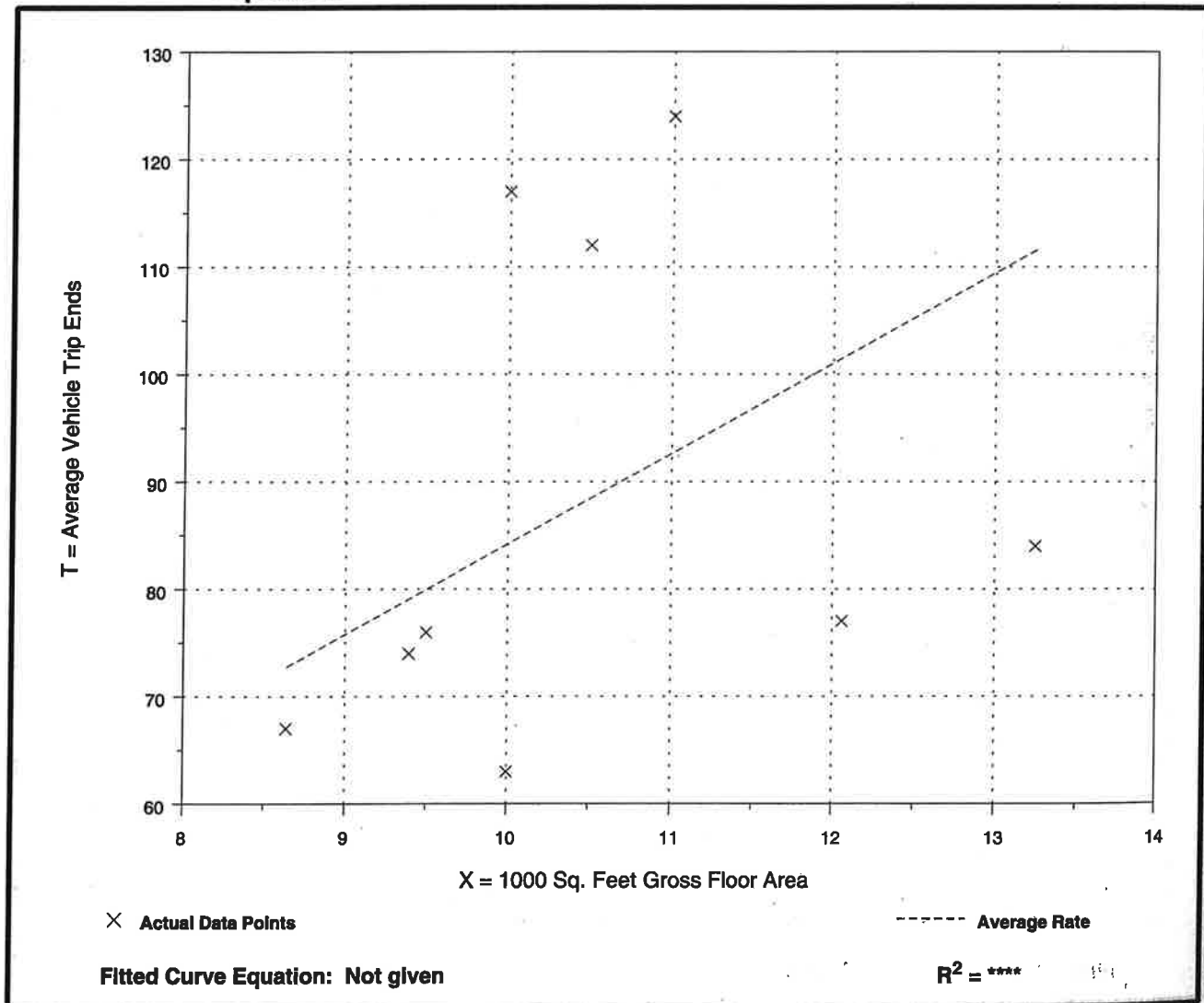
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 9
 Average 1000 Sq. Feet GFA: 10
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
8.42	6.30 - 11.70	3.48

Data Plot and Equation



Drive-in Bank (912)

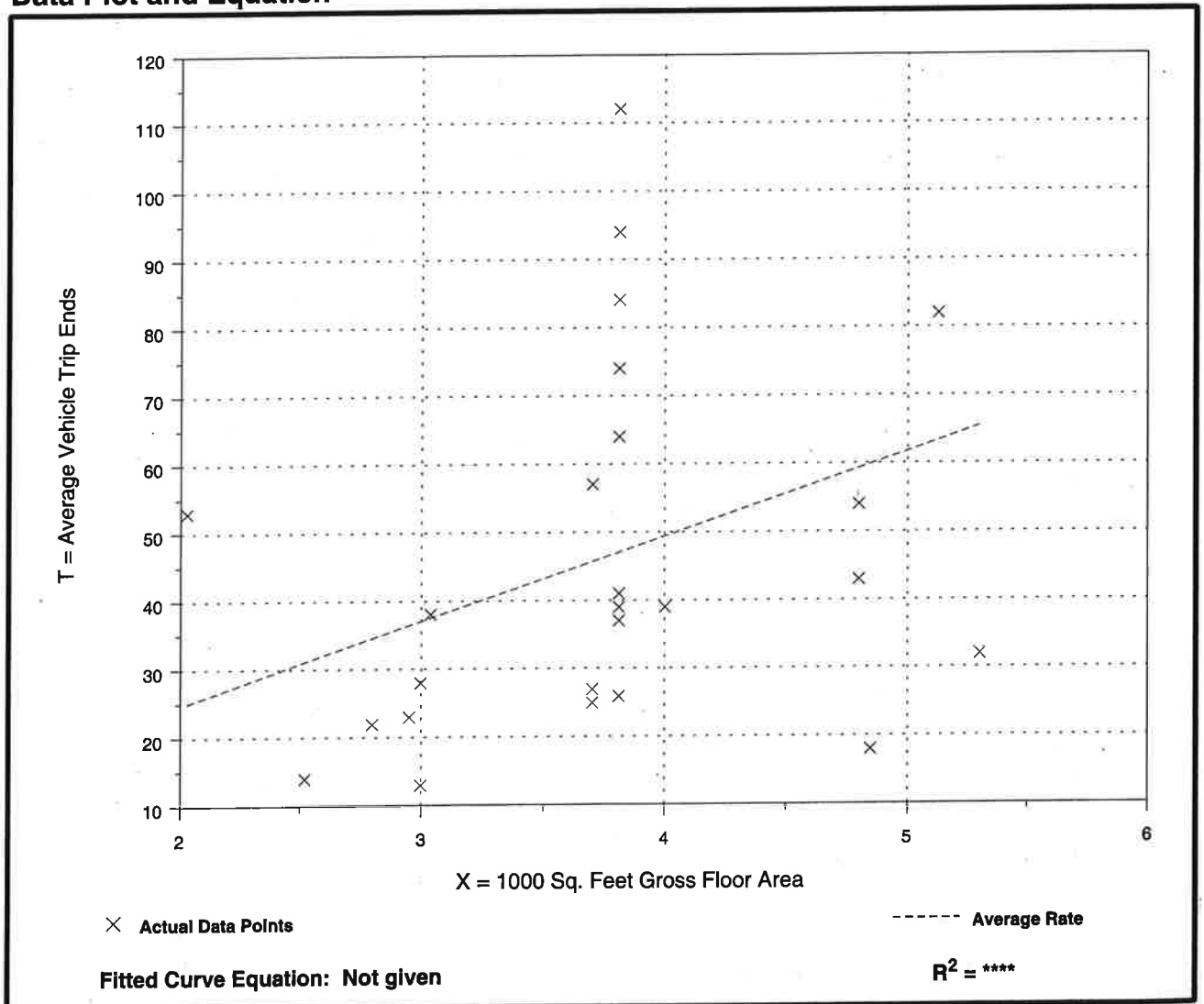
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 26
 Average 1000 Sq. Feet GFA: 4
 Directional Distribution: 56% entering, 44% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
12.35	3.71 - 29.40	7.38

Data Plot and Equation



Drive-in Bank (912)

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 71
 Average 1000 Sq. Feet GFA: 4
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
25.82	3.09 - 109.68	18.37

Data Plot and Equation

