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July 6, 2017

City of Spokane
Attn: Inga Note, P.E.
Senior Traffic Planning Engineer
808 W. Spokane Falls Boulevard
Spokane, WA 99201

Re: Trip Generation & Distribution Letter for **The Falls** Proposed Development
829 W Broadway Avenue

Dear Inga,

DCI Engineers understands that the City of Spokane requires a trip generation and distribution letter to understand the possible traffic impacts for the proposed Falls Development to be constructed at 829 W Broadway. A vicinity map of the site location is included in Appendix I.

Project Description
The proposed project includes the redevelopment of a 2.25-acre property located along the north side of the Spokane River. The property was previously a YWCA. The existing structures and paved surface parking lot will be demolished and removed for the proposed development. The current project proposes (2) 13-story towers that contain a mix of condominiums, apartments, hotel, restaurant, and parking garage space along with a 3-story building that will be primarily office space. See Appendix III for the proposed project site plan. The current program matrix for the project can be found in Appendix VI.

Trip Generation Summary:
The number of trips generated by this project was estimated using information found in the 9th Edition of ITE's *Trip Generation Manual* along with excerpts from the 3rd Edition of ITE's *Trip Generation Handbook*. These resources were used to calculate the number of trips entering and exiting the site during the AM and PM Peak Hours. The *Trip Generation Manual* was used to determine the total number of existing and proposed trips entering and exiting the site during the AM and PM peak hours based on prior and proposed land uses. The land use for the existing site was Recreation Community Center. The proposed land uses are Hotel, High-Rise Apartments, Quality Restaurant, General Office, and High-Rise Condominiums. The fitted curve equation was used in instances when it was representative of the data. When the fitted curve was not available or not representative data, the average rate was used. Pass-by trips and internal capture were not considered for this project as they were determined to be negligible. The corresponding charts from the ITE Manual and the trip calculations are included in Appendix II. The following is a summary of the anticipated trip generation for the proposed project.

Land Use 485 – Recreational Community Center (Existing)

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 73 trips are generated
      - 66% IN, 48 trips
      - 34% OUT, 25 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 98 trips are generated
      - 49% IN, 48 trips
      - 51% OUT, 50 trips

Land Use 310 - Hotel

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. Rooms
    - Approximately 66 trips are generated
      - 59% IN, 39 trips
      - 41% OUT, 27 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. Rooms
    - Approximately 74 trips are generated
      - 51% IN, 38 trips
      - 49% OUT, 36 trips

Land Use 710 – General Office Building

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 31 trips are generated
      - 88% IN, 27 trips
      - 12% OUT, 4 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 30 trips are generated
      - 17% IN, 5 trips
      - 83% OUT, 25 trips

Land Use 931 – Quality Restaurant

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 22 trips are generated

- 67% IN, 15 trips
- 33% OUT, 7 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. 1000 s.f. of gross floor area
    - Approximately 201 trips are generated
      - 67% IN, 135 trips
      - 33% OUT, 66 trips

Land Use 222 – High-Rise Apartments

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. dwelling units
    - Approximately 38 trips are generated
      - 25% IN, 9 trips
      - 75% OUT, 29 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. dwelling units
    - Approximately 53 trips are generated
      - 61% IN, 32 trips
      - 39% OUT, 21 trips

Land Use 232 – High-Rise Residential Condominiums

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 7-9 AM
  - Average vehicle trip ends vs. dwelling units
    - Approximately 9 trips are generated
      - 19% IN, 2 trips
      - 81% OUT, 7 trips

- Weekday, Peak Hour of Adjacent Street Traffic, One hour between 4-6 PM
  - Average vehicle trip ends vs. dwelling units
    - Approximately 10 trips are generated
      - 62% IN, 6 trips
      - 38% OUT, 4 trips

Existing Trips		
AM Trips:	**73**	Trips
Entering:	**48**	Trips
Exiting:	**25**	Trips
PM Trips:	**98**	Trips
Entering:	**48**	Trips
Exiting:	**50**	Trips

Total New Trips		
AM Trips:	**166**	Trips
Entering:	**92**	Trips
Exiting:	**74**	Trips
PM Trips:	**368**	Trips
Entering:	**216**	Trips
Exiting:	**152**	Trips

Infill Trip Generation

Because of the site's proximity to downtown, it was advised by Inga Note of the City of Spokane to consider Infill Trip Generation to take into account walking, transit, and biking trips to and from the site and get a more accurate representation of the vehicular trips generated by the site. The process for determining infill trip generation is detailed in Chapter 7 of the *Trip Generation Handbook*, which can be found in Appendix IV. Additionally, data from Appendices C and D of the *Trip Generation Handbook* were used in these calculations. Data used is highlighted and can also be found in Appendix IV. Calculations for the infill trip generation can be found in Appendix II. The following is a summary of the anticipated infill trip generation for the proposed project.

Land Use	Peak Hour	Net Total Proposed Trips	Net Proposed Trips In	Net Proposed Trips Out
Hotel	AM	64	38	26
	PM	68	33	35
Office	AM	22	19	3
	PM	21	4	17
Restaurant	AM	14	10	4
	PM	127	87	40
Apartment	AM	31	8	23
	PM	38	23	15
Condominium	AM	8	2	6
	PM	8	5	3
Total	AM	139	77	62
	PM	262	152	110

Summary

Based on the results provided above, accounting for existing trips along with infill trips, the estimated net total trips generated by the proposed site are as follows:

Net Trips		
AM Trips:	**66**	Trips
Entering:	**29**	Trips
Exiting:	**37**	Trips
PM Trips:	**164**	Trips
Entering:	**104**	Trips
Exiting:	**60**	Trips

These trip calculations along with the appropriate pages from the ITE Manual can be found in Appendix II.

Trip Distribution and Assignment:
Appendix V includes exhibits that show the estimated distribution of the newly generated trips by the proposed development. The figures show the outgoing and incoming trips for both the AM and PM peak hours of adjacent street traffic.

We believe that the trips will be fairly consistent in the directions they are coming and going during AM and PM peak hours. Because residents of the site are anticipated to be working downtown or using I-90, a majority (~60%) of the outbound trips in the AM and inbound trips in the PM are expected to be going toward or coming from downtown or I-90, with 40% going to or coming from elsewhere. Incoming trips in the AM and outgoing trips in the PM are expected to have a distribution of approximately 50% south toward downtown and I-90, with 50% elsewhere.

If you have any questions, please don't hesitate to contact me.

Sincerely,
DCI Engineers Inc.

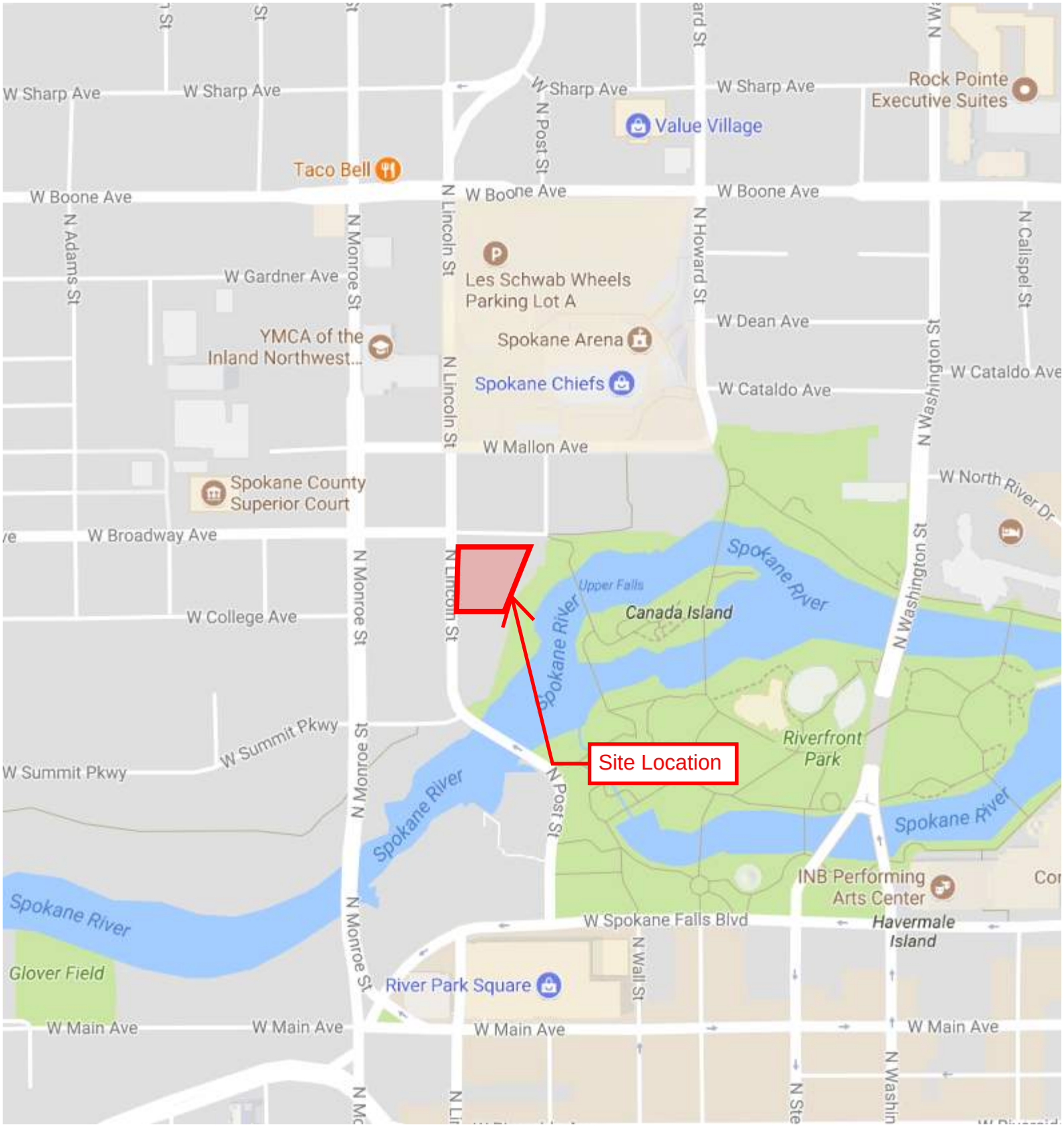
Wade Gelhausen, P.E.
Associate Principal

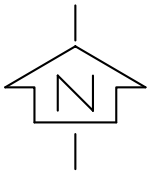
Sam Shastany, E.I.T.
Project Engineer

Appendix I: Vicinity Map
Appendix II: Calculations/ITE Manual (AM & PM Peak Hour)
Appendix III: Site Plan
Appendix IV: ITE Handbook Excerpts
Appendix V: Trip Distribution (AM & PM Peak Hour)
Appendix VI: Current Program Matrix

Appendix I

Vicinity Map





Appendix II

Trip Generation Calculations

Per Institute of Transportation Engineers Trip Generation Manual - 9th Edition

Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	495 - Recreational Community Center			
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area			
1000 Sq. Feet Gross Floor Area	35.6			
On A:	Weekday			
	Peak Hour of Adjacent Street Traffic			
	One Hour Between 7 and 9 a.m.			
Average Rate:	2.05	➔	73	Total Trips
Fitted Curve Equation (If given):		➔		Total Trips

Equation Used:
- (●) Average Rate
- ( ) Fitted Curve Equation

Total Trips: **73**

Percent Entering:	66%	➔	**48 Entering Trips**
Percent Exiting:	34%	➔	**25 Exiting Trips**

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Trip Generation Calculations

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Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	495 - Recreational Community Center		
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area		
1000 Sq. Feet Gross Floor Area	35.6		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 4 and 6 p.m.		
Average Rate:	2.74	➔	98 Total Trips
Fitted Curve Equation (If given):		➔	Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

Total Trips: **98**

Percent Entering:	49%	➔	**48 Entering Trips**
Percent Exiting:	51%	➔	**50 Exiting Trips**

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Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	310 - Hotel		
Average Vehicle Trip Ends Vs.:	Rooms		
Rooms	124		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 7 and 9 a.m.		
Average Rate:	0.53	➔	66 Total Trips
Fitted Curve Equation (If given):		➔	Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

Total Trips: **66**

Percent Entering:	59%	➔	**39 Entering Trips**
Percent Exiting:	41%	➔	**27 Exiting Trips**

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Date: 7/6/2017
Job Number: 17042-0024
Architect: CollinsWoerman
Project: The Falls Development

Land Use: 310 - Hotel
Average Vehicle Trip Ends Vs.: Rooms
Rooms 124
On A: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Average Rate: 0.60 → 74 Total Trips
Fitted Curve Equation (If given): → Total Trips

Equation Used:
(●) Average Rate
( ) Fitted Curve Equation

Total Trips: **74**

Percent Entering: 51% → **38 Entering Trips**
Percent Exiting: 49% → **36 Exiting Trips**

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	710 - General Office Building		
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area		
1000 Sq. Feet Gross Floor Area	20.038		
On A:	Weekday AM Peak Hour		
Average Rate:	1.56	➔	31 Total Trips
Fitted Curve Equation (If given):	Ln(T)=0.80Ln(X)+1.57	➔	72 Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

*Average rate used because fitted curve equation is representative of buildings with greater square footage (500,000+)

Total Trips: **31**

Percent Entering:	88%	➔	**27 Entering Trips**
Percent Exiting:	12%	➔	**4 Exiting Trips**

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Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	710 - General Office Building		
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area		
1000 Sq. Feet Gross Floor Area	20.038		
On A:	Weekday		
	PM Peak Hour		
Average Rate:	1.49	➔	30 Total Trips
Fitted Curve Equation (If given):	T=1.12(X)+78.45	➔	111 Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

*Average rate used because fitted curve equation is representative of buildings with greater square footage (500,000+)

Total Trips: **30**

Percent Entering:	17%	➔	**5 Entering Trips**
Percent Exiting:	83%	➔	**25 Exiting Trips**

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Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	931 - Quality Restaurant		
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area		
1000 Sq. Feet Gross Floor Area	26.882		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 7 and 9 a.m.		
Average Rate:	0.81	➔	22 Total Trips
Fitted Curve Equation (If given):		➔	Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

*Directional distribution data not available for AM peak hour and assumed to be equal to directional distribution for PM peak hour.

Total Trips: **22**

Percent Entering:	67%	➔	**15 Entering Trips**
Percent Exiting:	33%	➔	**7 Exiting Trips**

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Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	931 - Quality Restaurant		
Average Vehicle Trip Ends Vs.:	1000 Sq. Feet Gross Floor Area		
1000 Sq. Feet Gross Floor Area	26.882		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 4 and 6 p.m.		
Average Rate:	7.49	➔	201 Total Trips
Fitted Curve Equation (If given):		➔	Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

Total Trips: **201**

Percent Entering:	67%	➔	**135 Entering Trips**
Percent Exiting:	33%	➔	**66 Exiting Trips**

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Trip Generation Calculations

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	232 - High-Rise Residential Condominium/Townhouse		
Average Vehicle Trip Ends Vs.:	Dwelling Units		
Dwelling Units	26		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 7 and 9 a.m.		
Average Rate:	0.34	➔	9 Total Trips
Fitted Curve Equation (If given):	T=0.29(X)+28.86	➔	35 Total Trips

Equation Used: (•) Average Rate ( ) Fitted Curve Equation

*Average rate used because fitted curve is representative of studies with many (>100) units.

Total Trips: **9**

Percent Entering:	19%	➔	**2 Entering Trips**
Percent Exiting:	81%	➔	**7 Exiting Trips**

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date:	7/6/2017
Job Number:	17042-0024
Architect:	CollinsWoerman
Project:	The Falls Development

Land Use:	232 - High-Rise Residential Condominium/Townhouse		
Average Vehicle Trip Ends Vs.:	Dwelling Units		
Dwelling Units	26		
On A:	Weekday		
	Peak Hour of Adjacent Street Traffic		
	One Hour Between 4 and 6 p.m.		
Average Rate:	0.38	→	10 Total Trips
Fitted Curve Equation (If given):	T=0.34(X)+28.86	→	22 Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

*Average rate used because fitted curve is representative of studies with many (>100) units.

Total Trips: **10**

Percent Entering:	62%	→	**6 Entering Trips**
Percent Exiting:	38%	→	**4 Exiting Trips**

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Trip Generation Calculations

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date: 7/6/2017
Job Number: 17042-0024
Architect: CollinsWoerman
Project: The Falls Development

Land Use: 222 - High-Rise Apartment
Average Vehicle Trip Ends Vs.: Dwelling Units
Dwelling Units 126
On A: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Average Rate:	0.30	➔	38 Total Trips
Fitted Curve Equation (If given):	Ln(T)=0.99Ln(x)-1.14	➔	38 Total Trips

Equation Used: (●) Average Rate ( ) Fitted Curve Equation

Total Trips: **38**

Percent Entering:	25%	➔	**9 Entering Trips**
Percent Exiting:	75%	➔	**29 Exiting Trips**

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Trip Generation Calculations

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date: 7/6/2017
Job Number: 17042-0024
Architect: CollinsWoerman
Project: The Falls Development

Land Use: 222 - High-Rise Apartment
Average Vehicle Trip Ends Vs.: Dwelling Units
Dwelling Units 126
On A: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Average Rate:	0.35	→	44 Total Trips
Fitted Curve Equation (If given):	T=0.32(x)+12.30	→	53 Total Trips

Equation Used:
- ○ Average Rate
- ◉ Fitted Curve Equation

Total Trips: **53**

Percent Entering:	61%	→	**32 Entering Trips**
Percent Exiting:	39%	→	**21 Exiting Trips**

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Trip Generation Calculations

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Copy Sheet As Necessary for Additional Land Uses or Time Periods

Date: 7/6/2017
Job Number: 17042-0024
Architect: CollinsWoerman
Project: The Falls Development

Trip Calculation Summary

Land Use:	485 - Recreational Community Center (Existing)
AM Trips:	73 Trips
Entering:	48 Trips
Exiting:	25 Trips
PM Trips:	98 Trips
Entering:	48 Trips
Exiting:	50 Trips

Land Use:	**310 - Hotel**
AM Trips:	66 Trips
Entering:	39 Trips
Exiting:	27 Trips
PM Trips:	74 Trips
Entering:	38 Trips
Exiting:	36 Trips

Land Use:	**710 - General Office Building**
AM Trips:	31 Trips
Entering:	27 Trips
Exiting:	4 Trips
PM Trips:	30 Trips
Entering:	5 Trips
Exiting:	25 Trips

Land Use:	**931 - Quality Restaurant**
AM Trips:	22 Trips
Entering:	15 Trips
Exiting:	7 Trips
PM Trips:	201 Trips
Entering:	135 Trips
Exiting:	66 Trips

Land Use:	**222 - High-Rise Apartments**
AM Trips:	38 Trips
Entering:	9 Trips
Exiting:	29 Trips
PM Trips:	53 Trips
Entering:	32 Trips
Exiting:	21 Trips

Land Use:	**232 - High-Rise Residential Condominium**
AM Trips:	9 Trips
Entering:	2 Trips
Exiting:	7 Trips
PM Trips:	10 Trips
Entering:	6 Trips
Exiting:	4 Trips

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Infill Trip Generation

*Based on Chapter 7 of the Trip Generation Handbook, Third Edition

Land Use	Peak Hour	Baseline Vehicle Mode Share* (Incoming)	Baseline Vehicle Mode Share* (Outgoing)	Baseline Vehicle Occupancy* (Incoming)	Baseline Vehicle Occupancy* (Outgoing)	Study Site Vehicle Mode Share**	Study Site Vehicle Occupancy**	Incoming Infill Trips	Outgoing Infill Trips
Hotel	AM	94%	97%	1.29	1.32	94%	1.32	38	26
Hotel	PM	96%	100%	1.33	1.55	96%	1.55	33	35
Office	AM	99%	100%	1.06	1.06	69%	1.07	19	3
Office	PM	100%	99%	1.11	1.07	68%	1.06	4	17
Apartment	AM	100%	100%	1.22	1.10	83%	1.17	8	23
Apartment	PM	99%	100%	1.15	1.14	78%	1.26	23	15
Condominium	AM	95%	95%	1.17	1.17	83%	1.17	2	6
Condominium	PM	95%	95%	1.26	1.26	78%	1.26	5	3
Restaurant	AM	100%	100%	1.62	1.52	75%	1.89	10	4
Restaurant	PM	100%	100%	1.62	1.52	75%	1.89	87	40

*Baseline Vehicle Mode Share and Vehicle Occupancy based on data from Appendix C of the Trip Generation Handbook, Third Edition. Numbers used are averages of incoming and outgoing numbers. Similar land uses were used when exact land use data was not available. Where no similar land use is available, baseline vehicle mode share is assumed to be 0.95 and baseline vehicle occupancy is assumed to equal study site vehicle occupancy per section 7.4.1.

**Study Site Vehicle Mode Share and Vehicle Occupancy based on data from Appendix D of the Trip Generation Handbook, Third Edition

Existing Trips

AM Trips:	**73** Trips
Entering:	**48** Trips
Exiting:	**25** Trips
PM Trips:	**98** Trips
Entering:	**48** Trips
Exiting:	**50** Trips

Total New Trips (Before Infill Calcs)

AM Trips:	**166** Trips
Entering:	**92** Trips
Exiting:	**74** Trips
PM Trips:	**368** Trips
Entering:	**216** Trips
Exiting:	**152** Trips

Total New Trips (After Infill Calcs)

AM Trips:	**139** Trips
Entering:	**77** Trips
Exiting:	**62** Trips
PM Trips:	**262** Trips
Entering:	**152** Trips
Exiting:	**110** Trips

Net Trips

AM Trips:	**66** Trips
Entering:	**29** Trips
Exiting:	**37** Trips
PM Trips:	**164** Trips
Entering:	**104** Trips
Exiting:	**60** Trips

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Recreational Community Center
(495)

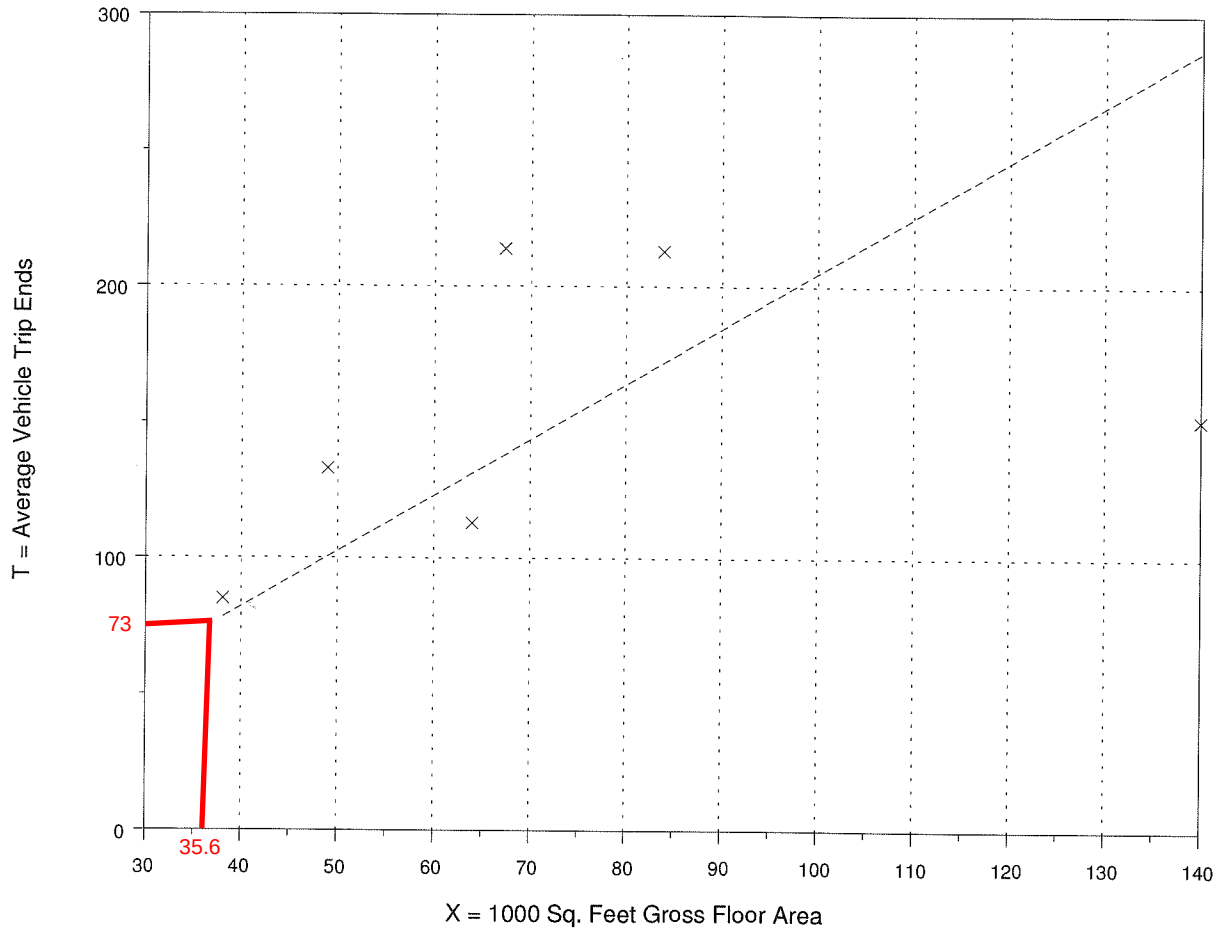
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 6
Average 1000 Sq. Feet GFA: 74
Directional Distribution: 66% entering, 34% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.05	1.08 - 3.18	1.62

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Recreational Community Center
(495)

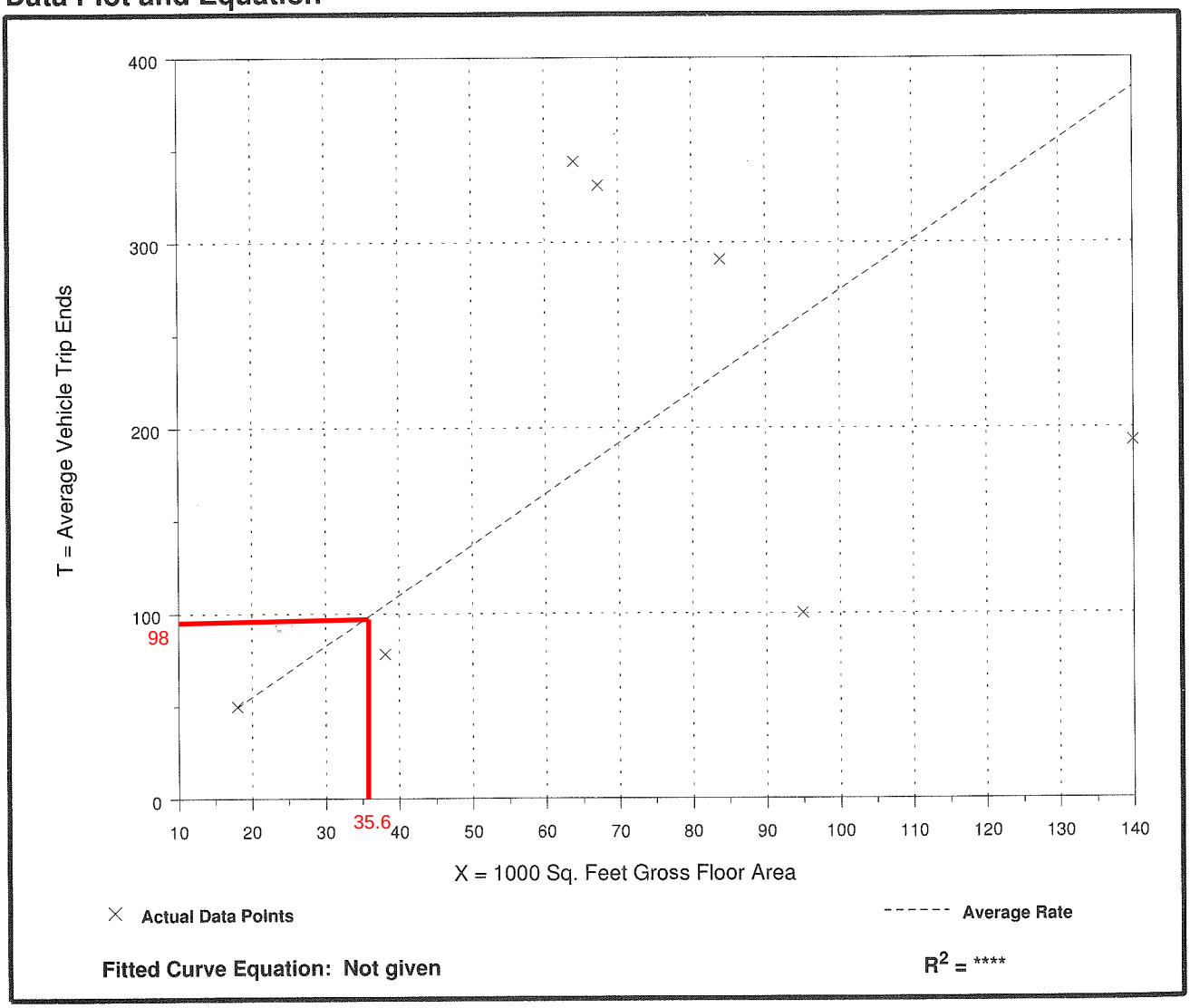
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 7
Average 1000 Sq. Feet GFA: 72
Directional Distribution: 49% entering, 51% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.74	1.05 - 5.37	2.32

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Hotel
(310)

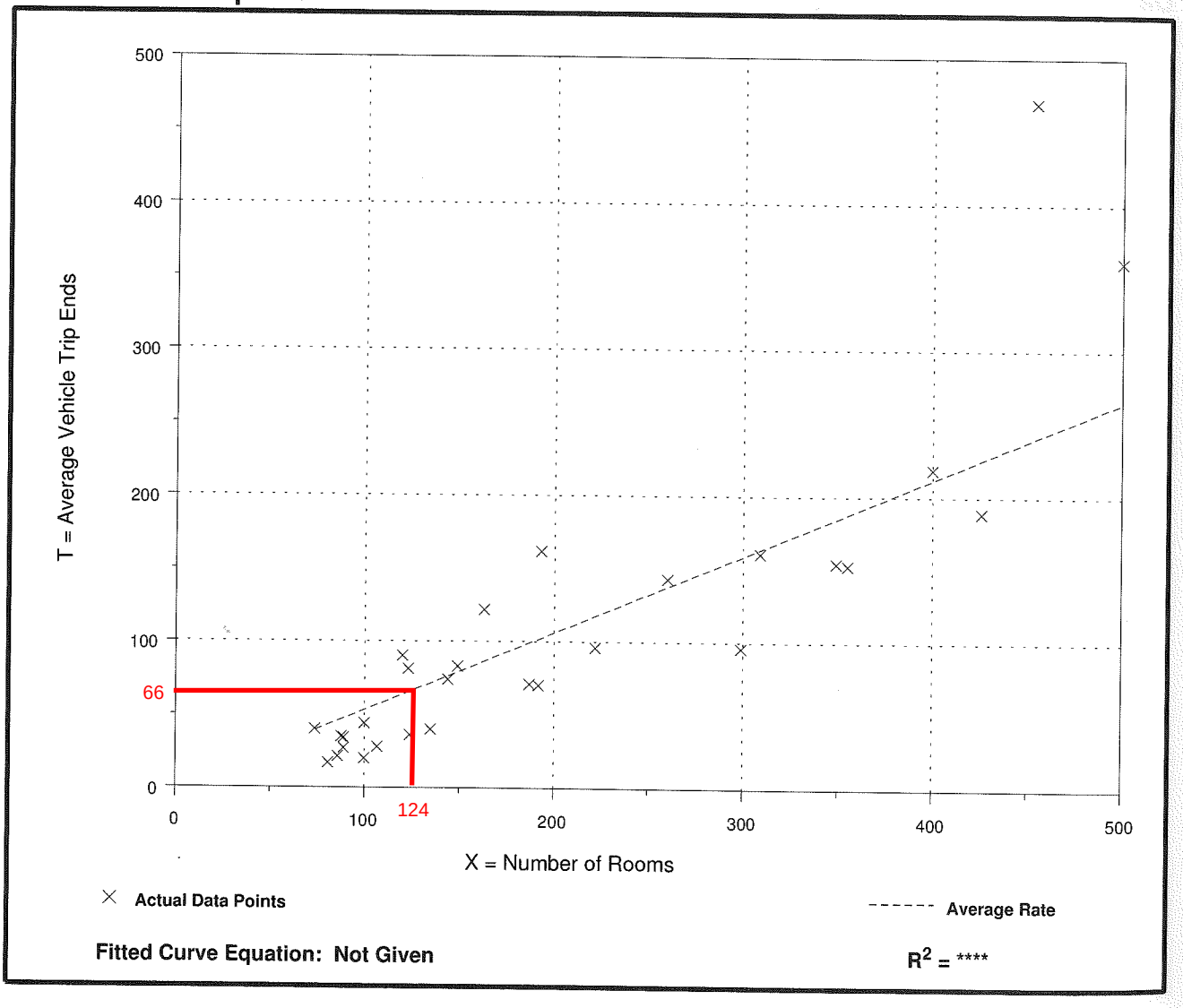
Average Vehicle Trip Ends vs: Rooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 29
Average Number of Rooms: 204
Directional Distribution: 59% entering, 41% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.53	0.20 - 1.03	0.76

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2 = ****

Hotel
(310)

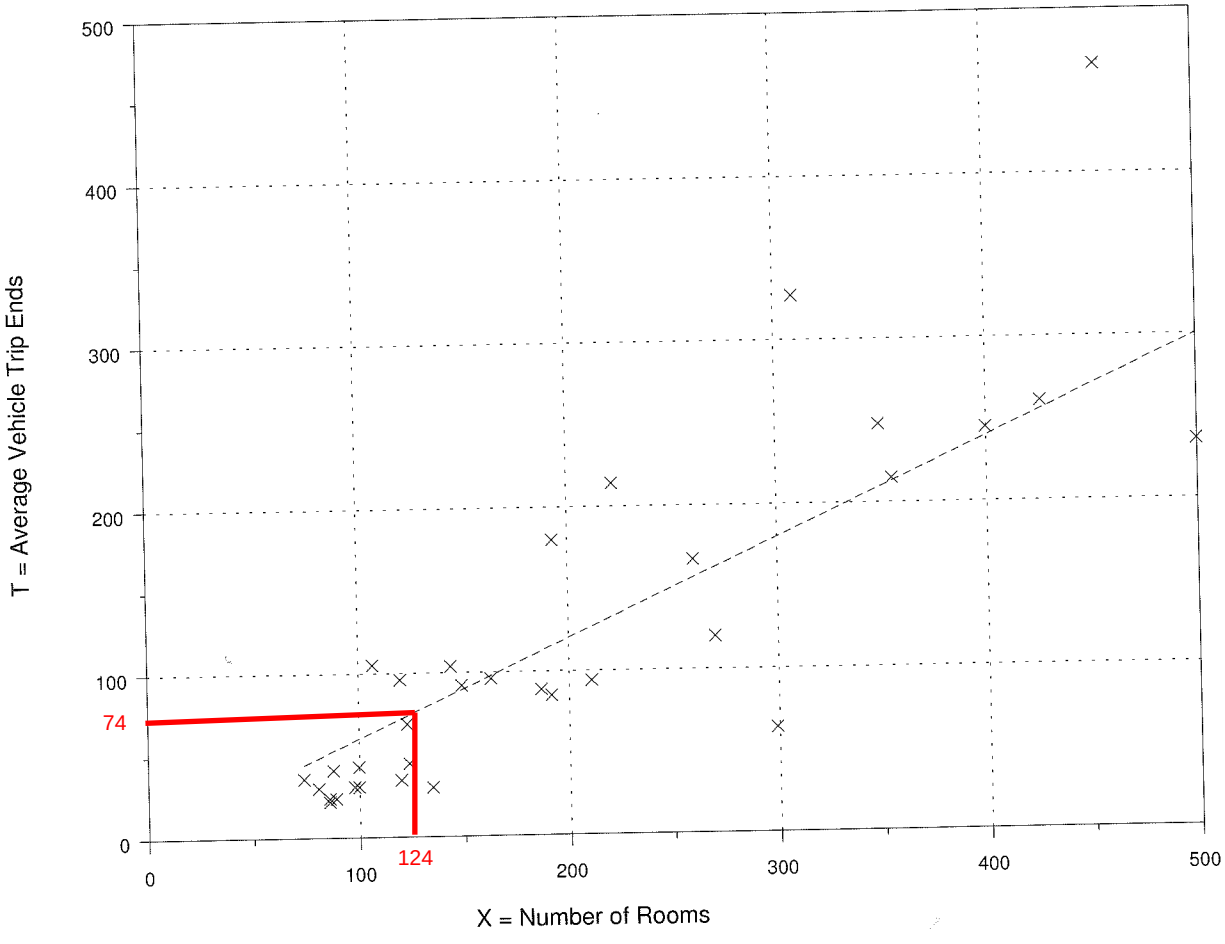
Average Vehicle Trip Ends vs: **Rooms**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 33
Average Number of Rooms: 200
Directional Distribution: 51% entering, 49% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.21 - 1.06	0.81

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2 = ****

General Office Building
(710)

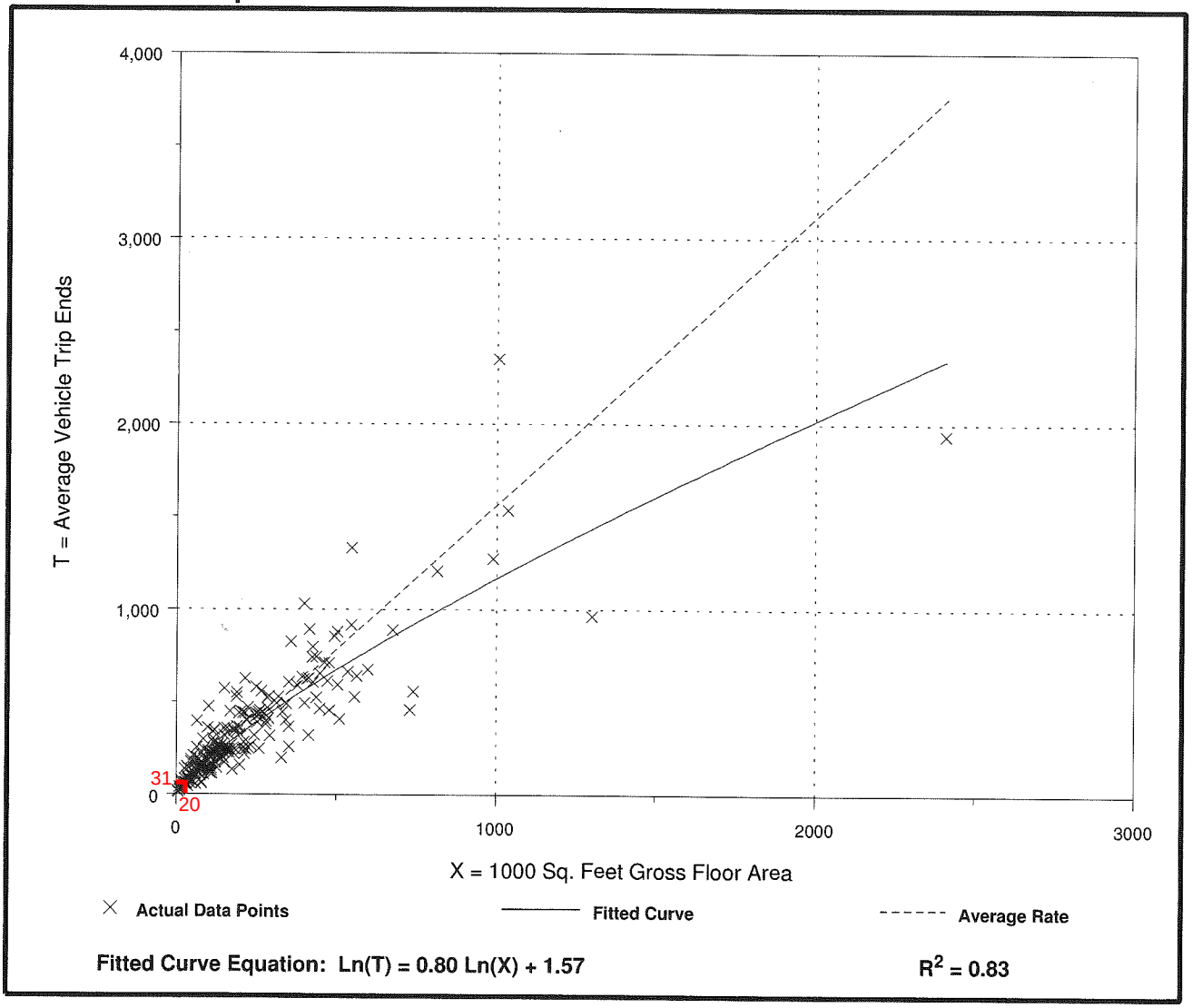
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
A.M. Peak Hour

Number of Studies: 218
Average 1000 Sq. Feet GFA: 222
Directional Distribution: 88% entering, 12% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.56	0.60 - 5.98	1.40

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.80 Ln(X) + 1.57

R^2 = 0.83

General Office Building
(710)

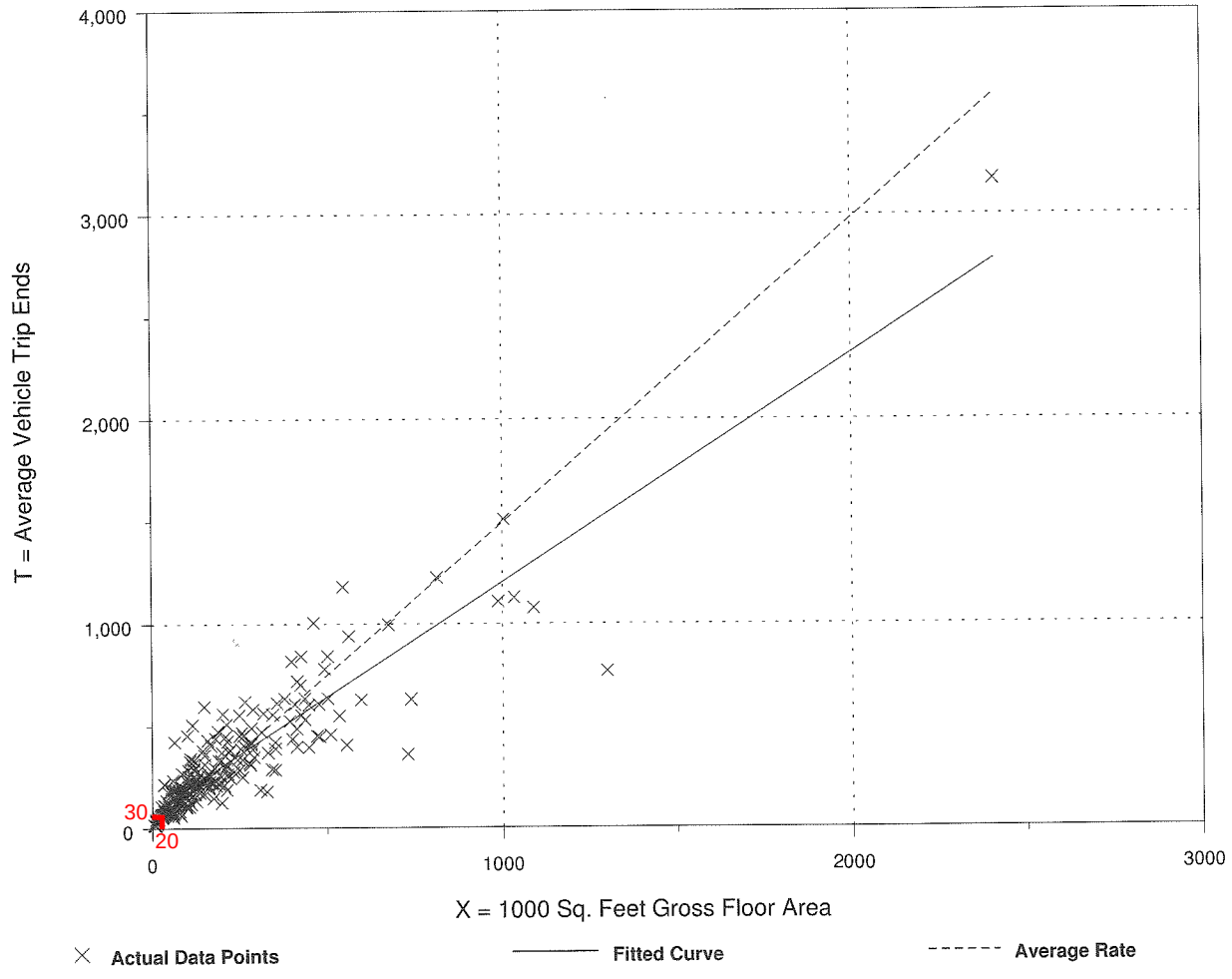
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
P.M. Peak Hour

Number of Studies: 236
Average 1000 Sq. Feet GFA: 215
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation



Fitted Curve Equation: T = 1.12(X) + 78.45

R^2 = 0.82

Quality Restaurant
(931)

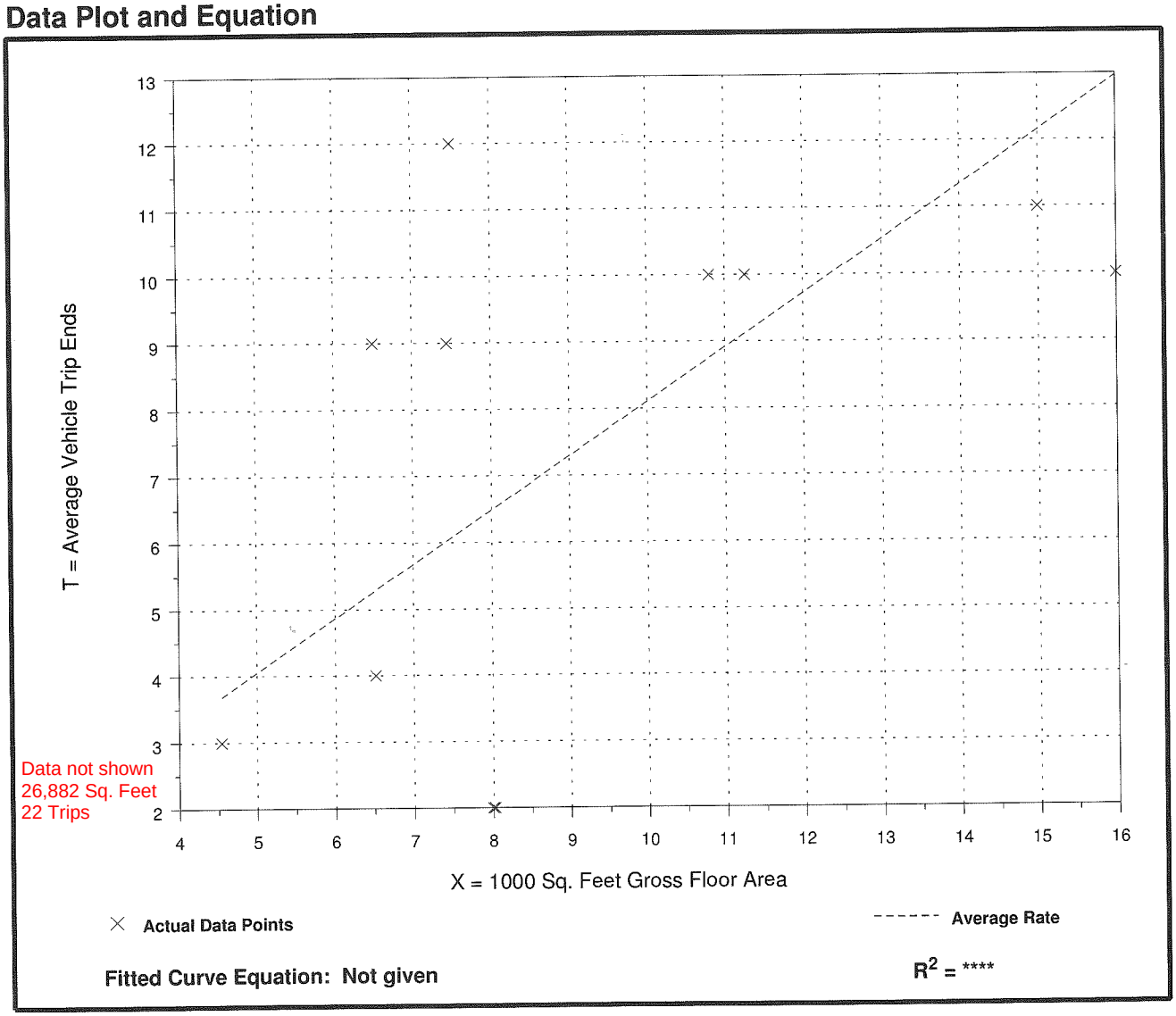
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 11
Average 1000 Sq. Feet GFA: 9
Directional Distribution: Not available

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.81	0.25 - 1.60	0.93

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Quality Restaurant
(931)

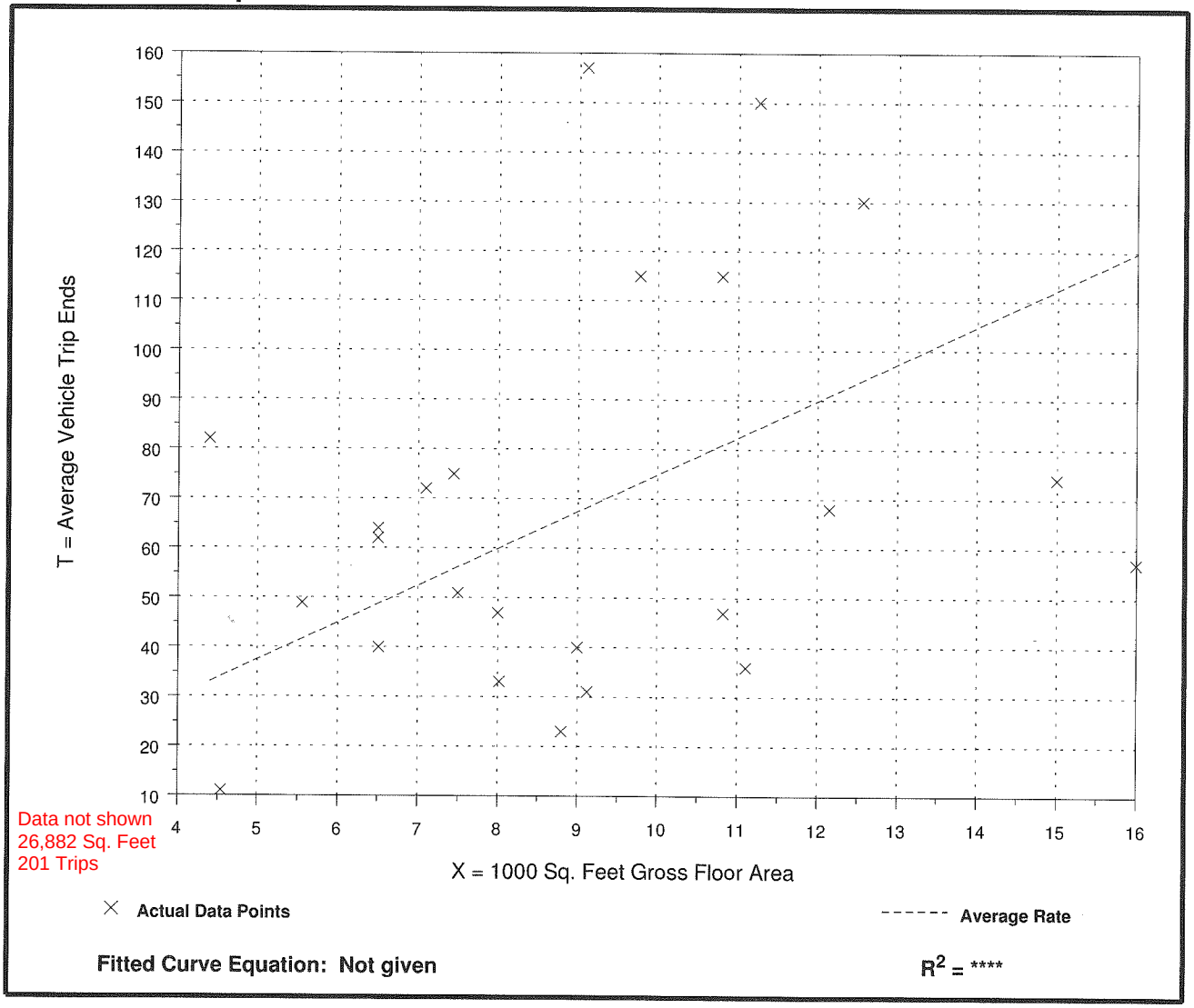
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 24
Average 1000 Sq. Feet GFA: 9
Directional Distribution: 67% entering, 33% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
7.49	2.42 - 18.64	4.89

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

High-Rise Residential Condominium/Townhouse
(232)

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

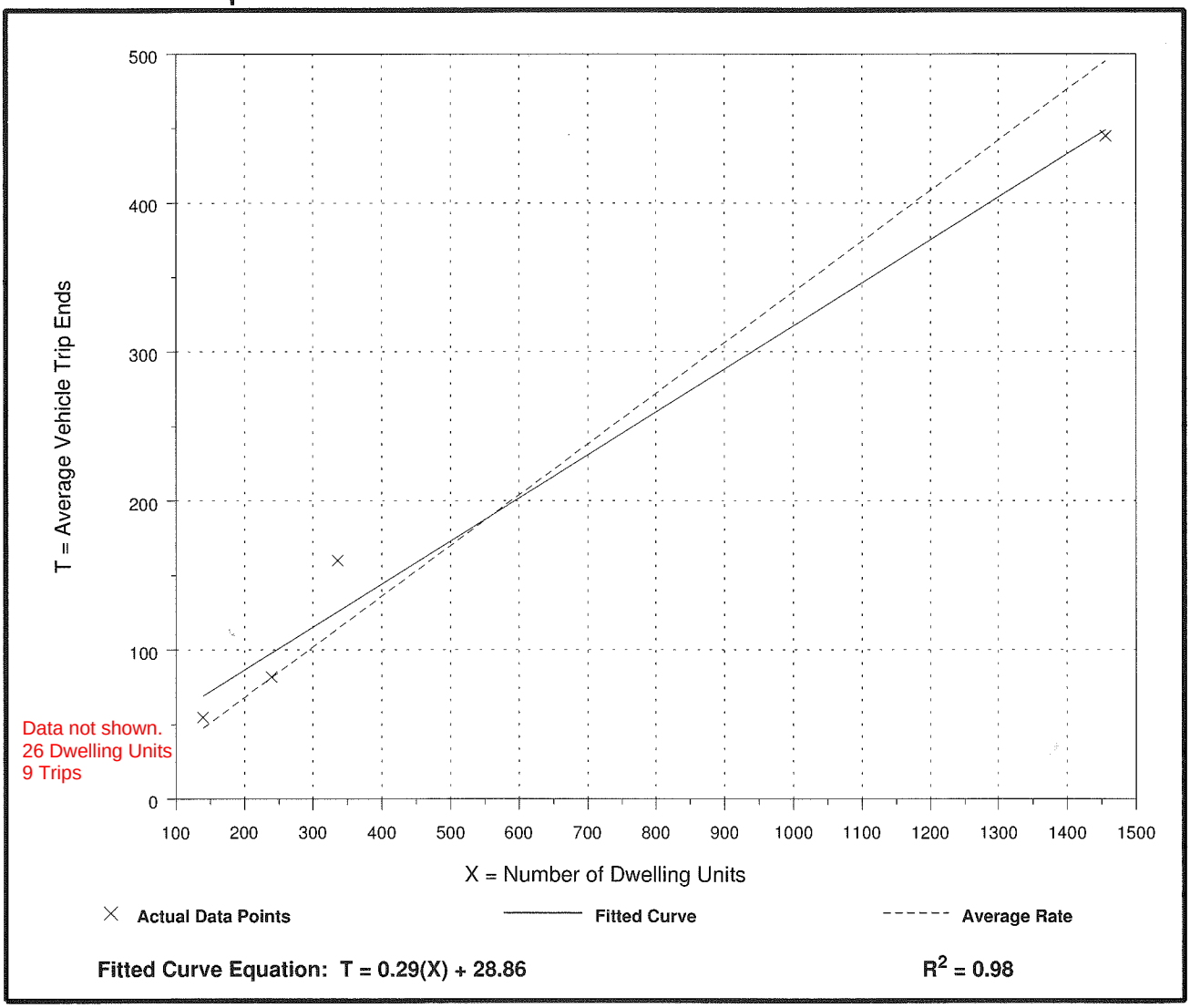
Number of Studies: 4
Avg. Number of Dwelling Units: 543
Directional Distribution: 19% entering, 81% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.34	0.31 - 0.48	0.59

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: T = 0.29(X) + 28.86

R^2 = 0.98

High-Rise Residential Condominium/Townhouse
(232)

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

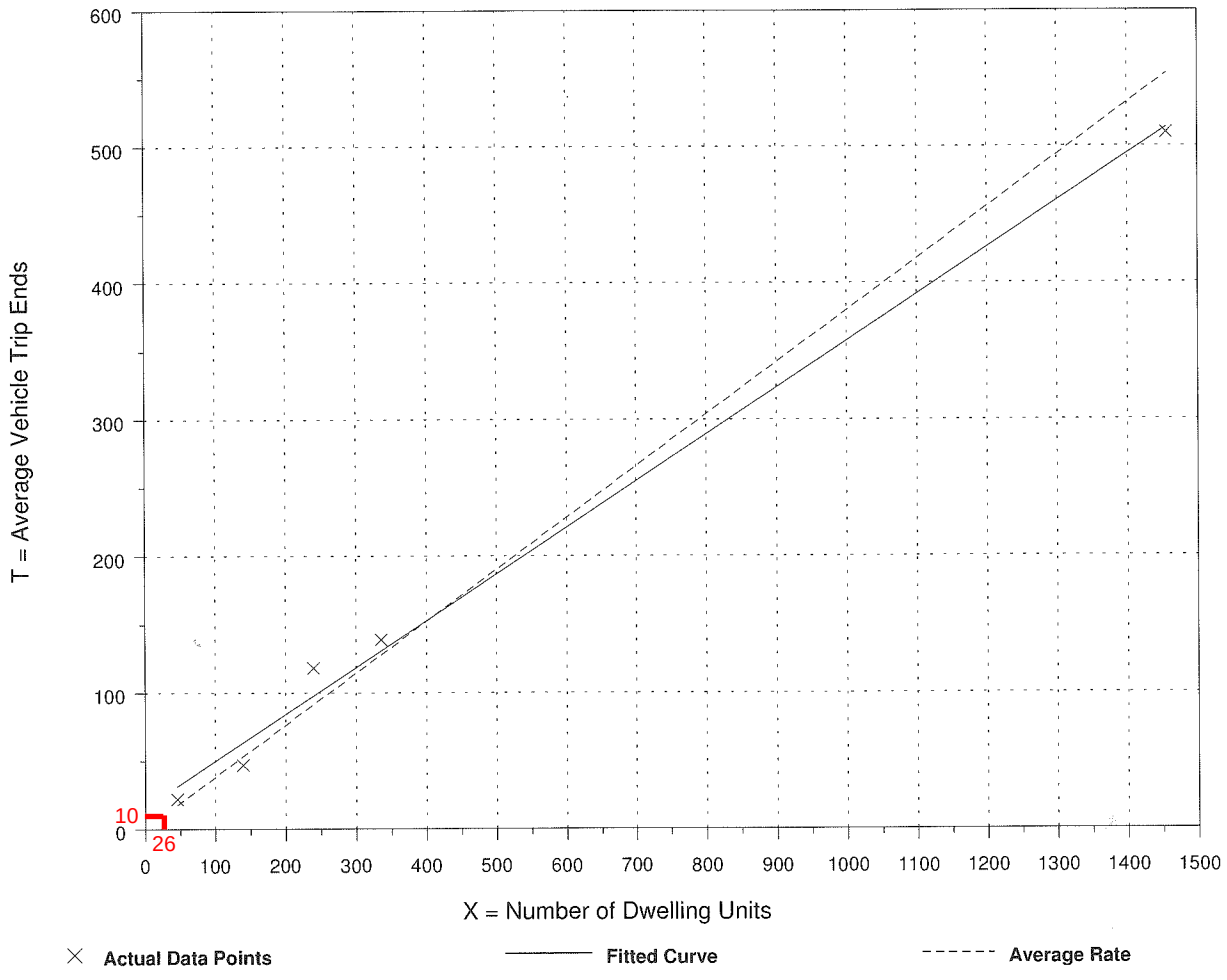
Number of Studies: 5
Avg. Number of Dwelling Units: 444
Directional Distribution: 62% entering, 38% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.34 - 0.49	0.62

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: T = 0.34(X) + 15.47

R^2 = 0.99

High-Rise Apartment
(222)

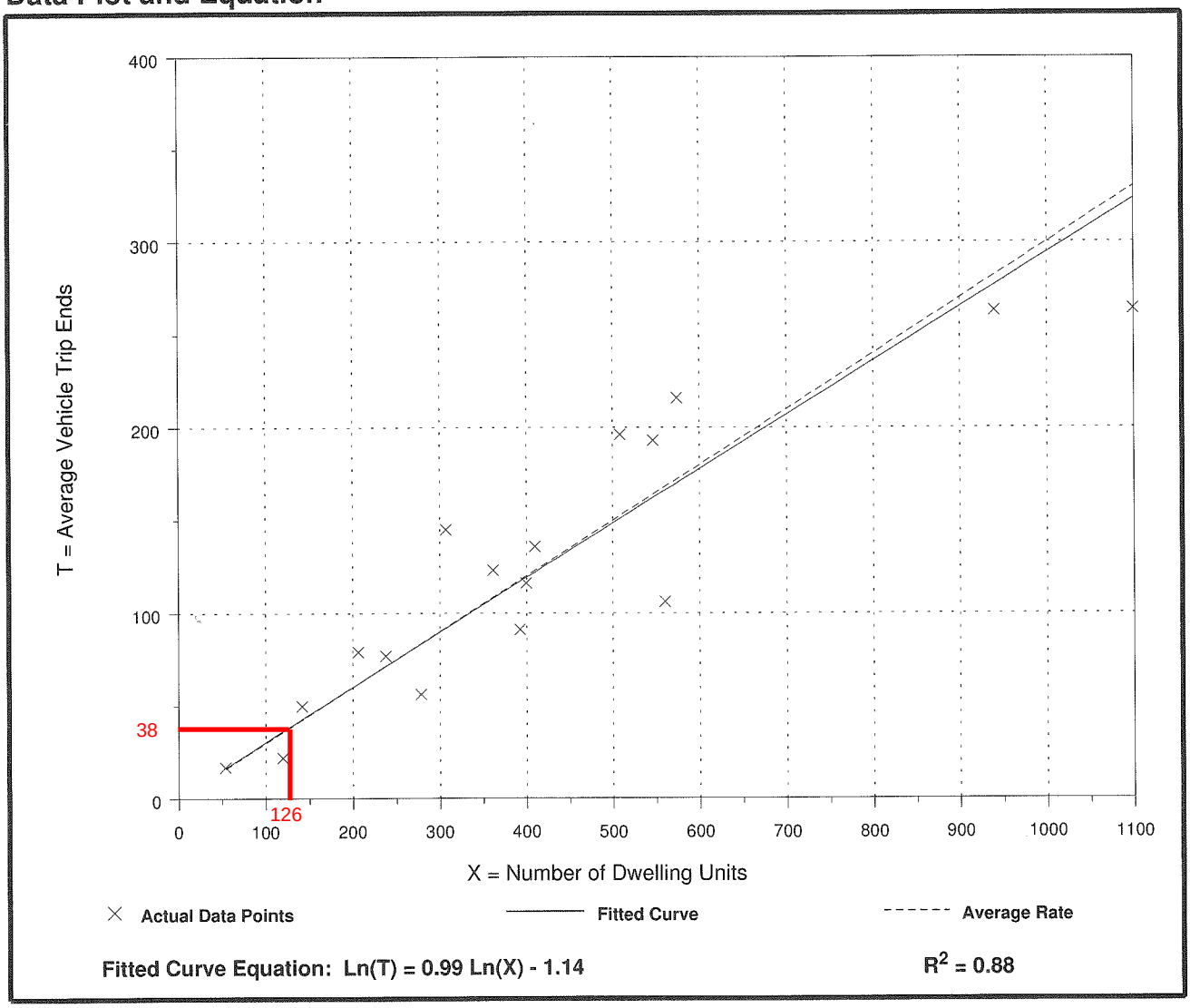
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 17
Avg. Number of Dwelling Units: 420
Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.18 - 0.47	0.55

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.99 Ln(X) - 1.14

R^2 = 0.88

High-Rise Apartment
(222)

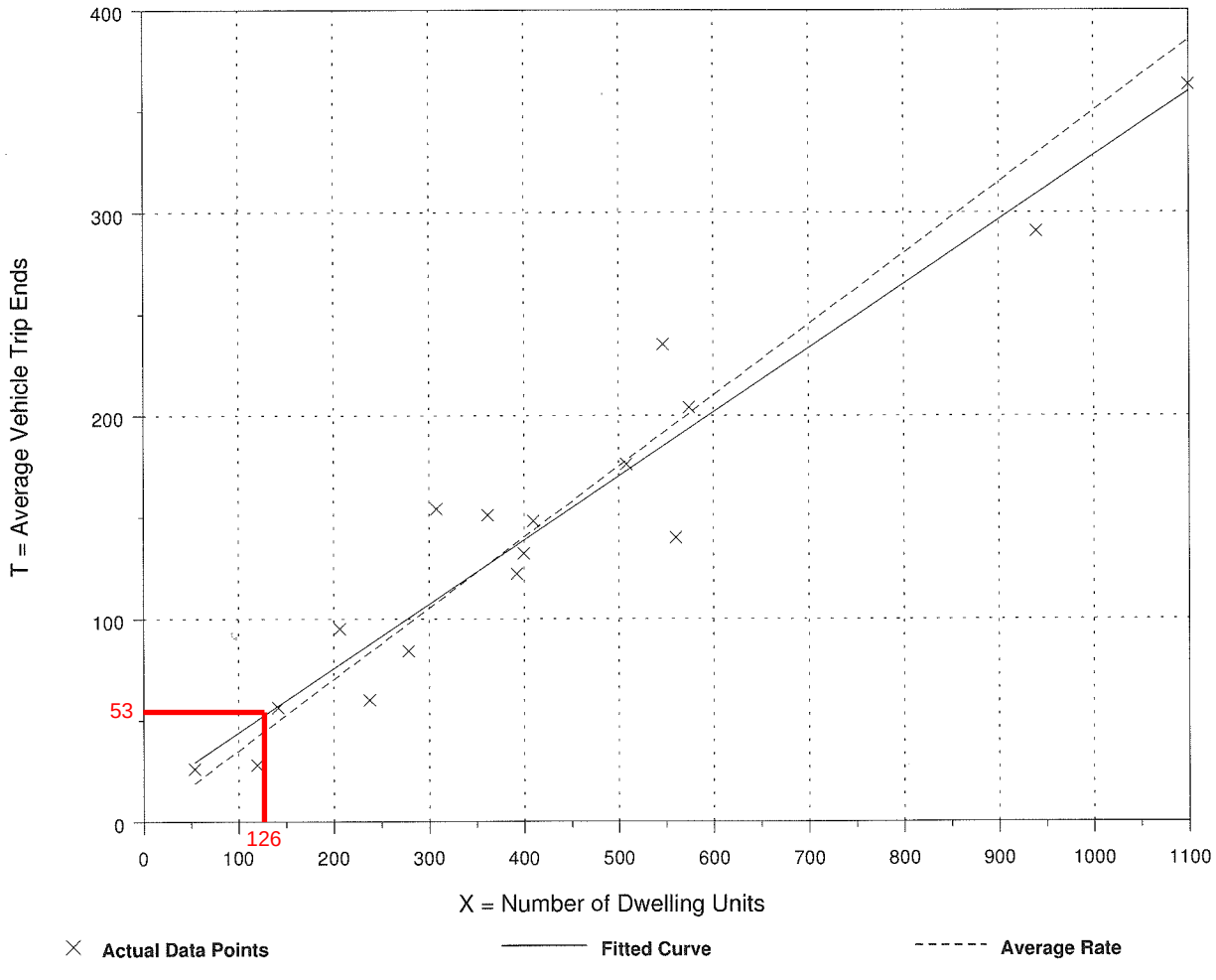
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 17
Avg. Number of Dwelling Units: 420
Directional Distribution: 61% entering, 39% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.35	0.23 - 0.50	0.59

Data Plot and Equation



Fitted Curve Equation: T = 0.32(X) + 12.30

R^2 = 0.92

Appendix III

1 **SITE PLAN**
1" = 20'-0"

PROJECT NORTH

0' 5' 10' 20' 40'

COLLINS WOERMAN

710 SECOND AVENUE SUITE 1400
SEATTLE, WASHINGTON 98104-1710
T. 206.245.2100 F. 206.245.2101

PROJECT

THE FALLS

829 W. BROADWAY AVE
SPOKANE, WA. 99201

OWNER

CONSULTANT

ISSUED

MARK	DATE	DESCRIPTION

PROJECT NO.	LBST01.17.013
DRAWN BY	Author
ISSUE DATE	6/20/2017

SEAL

SHEET TITLE / NUMBER

SITE PLAN
SETBACKS

XA1.4

Appendix IV

7 Trip Generation for Urban Infill/Redevelopment

7.1 Background

This chapter presents a recommended approach for estimating person and vehicle trip generation for development and redevelopment in compact, urbanized, mostly developed areas where walking, bicycling, and transit are viable modes of transportation. Development in this type of area is also known as "infill" development.

The current *Trip Generation Manual* data volumes do not reflect trip generation at urban infill sites. Redevelopment in built out areas and new development in areas that are almost fully built out often results in fewer vehicle trips generated than would result in suburban and outlying locations. These effects may be the result of modal shifts:

- More walking (because of closer proximity of complementary uses);
- More transit ridership (because of convenient, frequent transit service);
- More bicycling (because of bicycle facilities that improve safety or reduce travel time); or
- Higher vehicle occupancy (because of more carpooling that results from overall traffic congestion, preferential treatments along roadway network, or parking pricing).

In recent years, several research efforts have collected trip generation data at various types of infill sites and devised methods and tools for estimating vehicle trip generation for infill and related types of development sites. The approach recommended in this chapter draws from the research findings and was selected for its ease of application and likelihood of widespread acceptance. The approach relies on data that are typically available for proposed developments at the time of their applications for zoning, land use revisions, and development review.

The recommended approach conforms to the Chapter 3 flow chart for estimation of site trip generation (see Figure 3.1):

- The baseline vehicle trip generation estimates used in the infill trip estimation method are produced using the procedures presented in Chapters 4 and 9, as appropriate.
- Vehicle trip estimates are converted to person trips using methods presented in Chapter 5.
- If the infill development is a mixed-use development, the internal capture trips should be estimated (using the Chapter 6 procedures) prior to applying the external trip adjustments presented in this chapter.
- The product of the process recommended in this chapter is an estimate of the total person trips entering or exiting the study site by pedestrian, bicycle, or transit mode.
- If the infill site is located near a rail or rapid transit station or a multi-route bus transit center with high-frequency service, the procedures presented in Chapter 8 should also be applied to the product of the person trip estimates produced in this chapter.
- Infill development can attract vehicle traffic that is currently on adjacent or nearby streets. Refer to Chapter 10 for guidance on estimating pass-by and diverted trips.

7.2 Definition of Infill Development

For the purpose of this *Handbook,* an infill site is a site for which the surrounding area within a one-half mile radius is mostly developed (perhaps, more than 80 percent[10]). An infill site can be in or around a central business district, an urban center, or any other area that is substantially developed.

The following are suggested approximate thresholds for typical infill sites. A particular site does not need to satisfy all four criteria to be considered infill. However, most infill sites will exhibit most of the characteristics; few will exhibit none or only one.

- Walkable area—A study site or proxy site is likely infill if it is located within a built urban or suburban district composed of traditional central city blocks (typically 200 to 500 ft. long [approximately 61 to 152 m long]) with sidewalks on all block faces, crosswalks at all intersections, and pedestrian phases on all traffic signals. The analyst may define other metrics for walkability.[11]
- Convenient/frequent transit service—A study site or proxy site is likely infill if there is a light or heavy rail station within one-half mile, or a bus rapid transit station or bus stop on the same or the adjacent block, providing peak headways of typically 20 minutes or less for 4 to 6 hours each weekday.
- Bicycle accessible—A study site or proxy site is likely infill if it has a pedestrian entry, parking lot/garage, and/or location of bicycle parking within one block of a designated bicycle facility such as a marked bicycle lane, a signed bicycle route, a bicycle boulevard, or an off-street path.
- Mix of interacting land uses—A study site or proxy site is likely infill if it is located in a district composed of a mix of commercial, residential, retail, dining, civic, cultural, or other interacting land uses so that a worker, resident, or visitor of the district need not travel long distances for everyday needs and services.

These thresholds are not intended to limit applications to just highly urban sites. The threshold size, density, and intensity of the context in which the study site and proxy site are located are not as important as the similarity in their contextual characteristics. Criteria may be adjusted, for example, by a local agency to represent a small town business district or nearly fully developed suburban sites exhibiting the stated characteristics. Similarly, a small-to-medium municipality may be well-served by peak transit service of 30-minute headways, for peak periods shorter than 2 hours, with a result of significant transit use in corridors served during those periods.

7.3 Underlying Assumptions for Infill Site Trip Generation

The recommended method relies on an underlying premise that a particular land use will generate the same number of person trips regardless of context (whether general suburban, suburban business district, or general urban), with the only differences being the mode of travel and vehicle occupancy for person trips that enter or exit the land use.

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[10] For this calculation, surface and structured parking is considered "developed" and rural land and open space are considered "undeveloped." Public streets are excluded from the computation.

[11] Other less measurable characteristics of a walkable network include buffers that separate pedestrians from moving traffic, landscaping (especially street trees that provide shade), pedestrian scaled lighting, buildings that front the back of sidewalk, direct entries onto sidewalks, and architectural interest at the scale of the pedestrian.

Vehicle trips are the portion of person trips that use a vehicle (personal passenger vehicle or truck), adjusted for vehicle occupancy. The formula is

$$\textit{vehicle trips} = \frac{\textit{person trips} * \textit{vehicle mode share}}{\textit{average vehicle occupancy}}$$

$$VT = (PT * MS) / VO$$

where

VT = vehicle trips

PT = person trips

MS = person trip mode share in vehicles

VO = average vehicle occupancy

The equation can be reordered to calculate person trips as the dependent variable. For a baseline site:

$$\textit{baseline person trips} = \frac{\textit{baseline vehicles trips} * \textit{baseline vehicle occupancy}}{\textit{baseline person trip mode share in vehicles}}$$

$$PT_{BL} = (VT_{BL} * VO_{BL}) / MS_{BL}$$

where

PT_{BL} = baseline person trips

VT_{BL} = baseline vehicle trips

VO_{BL} = baseline vehicle occupancy

MS_{BL} = baseline person trip mode share in vehicles

For an infill site (substituting for study site in the equation above):

$$\textit{infill site vehicle trips} = \frac{\textit{infill site vehicle trips} * \textit{infill site vehicle occupancy}}{\textit{infill site person trip mode share in vehicles}}$$

$$PT_{SS} = (VT_{SS} * VO_{SS}) / MS_{SS}$$

where

PT_{SS} = infill site person trips

VT_{SS} = infill site vehicle trips

VO_{SS} = infill site vehicle occupancy

MS_{SS} = infill site person trip mode share in vehicles

Given the assumption that baseline site person trips and infill site person trips are the same, the two equations are equal. The result is the following formula for calculating vehicle trips for an infill site, using the mode shares of person trips in vehicles and vehicle occupancy for baseline and infill conditions:

$$\textit{infill site vehicle trips} = \textit{baseline vehicle trips} * \frac{\textit{infill site vehicle mode share}}{\textit{baseline vehicle mode share}} * \frac{\textit{baseline veh. occ.}}{\textit{infill site veh. occ.}}$$

$$VT_{SS} = VT_{BL} * (MS_{SS} / MS_{BL}) * (VO_{BL} / VO_{SS})$$

where

VT_{SS} = infill site vehicle trips

VT_{BL} = baseline vehicle trips

MS_{SS} = infill site person trip mode share in motor vehicles

MS_{BL} = baseline person trip mode share in motor vehicles

VO_{BL} = baseline vehicle occupancy

VO_{SS} = infill site vehicle occupancy

If the infill study site and baseline vehicle occupancy values are the same (as is typically the case), the equation simplifies to

$$\textit{infill site vehicle trips} = \textit{baseline vehicle trips} * \frac{\textit{infill site vehicle mode share}}{\textit{baseline vehicle mode share}}$$

$$VT_{SS} = VT_{BL} * (MS_{SS} / MS_{BL})$$

where

VT_{SS} = infill site vehicle trips

VT_{BL} = baseline vehicle trips

MS_{SS} = infill site person trip mode share in vehicles

MS_{BL} = baseline person trip mode share in vehicles

Given:

Study site is estimated to generate 300 PM peak hour vehicle trips.

Baseline person trips mode share in vehicles is 95 percent.

Study site person trip mode share in vehicles is 80 percent (based on survey of three proxy sites).

Baseline site and study site vehicle occupancy is assumed to be the same.

Infill vehicle trips are calculated as follows:

$$\textit{infill site vehicle trips} = 300 * \frac{0.80}{0.95} = 253$$

The recommended approach described below requires the analyst to determine four values:

- Mode shares for baseline sites and for the infill site; and
- Vehicle occupancy for baseline sites and the infill site.

The simplicity or complexity of the method lies within the way these values are determined. If the baseline and study site vehicle occupancy are assumed to be identical, neither value is required for the calculation of infill site vehicle trips.

7.4 Process for Estimating Infill Trip Generation

The recommended process for estimating infill site trip generation follows three steps:

- Step 1—Determine baseline mode shares and vehicle occupancy
- Step 2—Estimate study site mode shares and vehicle occupancy
- Step 3—Estimate vehicle trips for study site

The method is both simple and transparent, using person trips as the common denominator. The method can be readily applied across all land uses and contexts without further model development.

7.4.1 Step 1—Determine Baseline Mode Shares and Vehicle Occupancy

Baseline site mode shares and vehicle occupancy are discussed and presented in Chapter 5. The analyst should use values listed in Tables C.1 through C.3 in Appendix C for baseline site mode shares and vehicle occupancy. If baseline data are not available in the tables, either

- Use a default value of 95 percent vehicle mode share and assume no change in vehicle occupancy between the baseline and study sites;
- Use the average of mode share and vehicle occupancy data collected at three or more comparable developments in baseline locations. A procedure for collecting baseline data is provided in Chapter 12.

It is incorrect to simply assume baseline values of 100 percent person trips by vehicle and a 1.00 vehicle occupancy.

7.4.2 Step 2—Estimate Study Site Mode Shares and Vehicle Occupancy

The following section presents three alternative methods for deriving the study site mode share and vehicle occupancy factors. The analyst should consider all three methods in order to select a preferred method for a particular study site application. Method A is recommended if there are sufficient data in the national database for the land use type and site context.

7.4.2.1 Method A—Use Data from National Database

Tables D.1 through D.7 in Appendix D provide infill trip generation mode share (and limited vehicle occupancy) data summaries that can be used directly to estimate the same for a study site. If the tables include data for at least three sites of an applicable land use type in a similar context, the analyst should compute an average mode share and vehicle occupancy (if the latter are likely to be different for the study site than for baseline sites in the same area) and use for the study site (described below in Step 3).

Conclusions Drawn from Limited Infill Data

- Fewer vehicle trips than baseline sites
- The more urban the site, the fewer vehicle trips
- Proximity to rail transit results in greater vehicle trip reduction than bus transit availability
- In most cases, walk trips exceed transit and bike trips

This method is easy and convenient to apply and does not require the expense of significant new data collection. It is consistent with the recommended use of *Trip Generation Manual* data (described in Chapter 4) to estimate vehicle trips. However, the shortage of existing infill data makes the utility of the method quite limited and the method has not been formally validated.

The method uses qualitative context descriptors in lieu of quantifiable metrics describing varying levels of context. This is done to simplify the estimation process and reduce the quantity of data required to both develop and apply the estimation method. The flexibility afforded in this method of qualifying infill areas relies on the professional judgment of the analyst to account for any variations in similar contexts found in different locales.

The data in Tables D.1 through D.7 in Appendix D represent a start on an infill trip generation database, but are still very limited. There are too few sites in each context type to be able to conclude much other than that the more "urban" the site, the lower the motor vehicle mode shares. Data are needed from more sites, more land uses, and more contexts to permit the development of a set of adjustment factors or models that are applicable across the most commonly analyzed land uses, let alone all land use codes. Nevertheless, the limited data do provide significant findings and conclusions, as follows.

- The total vehicle mode shares of person trips at infill sites are consistently and significantly below baseline levels for most land uses for which data are available from multiple sites. Correspondingly, vehicle trips at infill sites are below those at baseline sites.
- The variance in the percentage of trips made by motor vehicle appears to be related to the site context (that is, the more urban settings have lower motor vehicle mode shares) and proximity to rail transit.

- Walk mode makes up most of the non-motor vehicle mode shares. Even at infill sites where rail stations are nearby, the walk mode share appears in large sample results to exceed transit mode share at most sites surveyed. Bicycle trips, where counted separately, make up a small percentage of person trips.

7.4.2.2 Method B—Use Data from Local Proxy Sites

This method uses trip generation surveys at local proxy sites to estimate mode share and vehicle occupancy for the study site. This method has the potential to provide accurate results because characteristics of the study site and the proxy site(s) can be very similar. If properly selected, use of proxy sites as a basis for infill mode share and vehicle occupancy could yield more accurate data than small sample national data summaries.

The analyst should select at least three comparable infill (proxy) sites at which to collect data. Proxy sites should have developments of similar character (with the same land use type, general size, and types of activity) and context. If three sites are not available, two may be sufficient if they are very similar to the study site in development and context characteristics. Proxy sites near the study site are preferred.

Context characteristics to consider include, but are not limited to, the following:

- Area type;
- Density;
- Compactness (as measured by land coverage);
- Development mix within one-quarter to one-half mile;
- Parking availability, convenience, and pricing;
- Pedestrian environment;
- Transit service levels (defined as number of routes, headways, and proximity of stops/stations to site); and
- Apparent vitality (visible level of activity).

It is important that the analyst focuses on characteristics that make the mode shares and vehicle occupancy of the potential proxy sites similar to those of the study site.

Chapter 12 provides guidance on how to develop and execute a data collection plan to collect person trips by mode and vehicle occupancy at an infill site. The analyst should submit any new infill data to ITE for inclusion in the national infill trip generation database.

7.4.2.3 Method C—Use Relationships Developed for Local Application

Several research projects (described in Appendix H) have compiled infill trip generation data and have developed multivariate approaches to account for the influence of urban context characteristics on trip generation. These research results are limited to a small number of land uses and site contexts at this time. However, they may provide sufficient information for adjusting baseline trip generation estimates for these land uses in the regions where they were developed.

7.4.3 Step 3—Estimate Vehicle Trips for Study Site

The analyst should use the equations in section 7.3 of this chapter to calculate vehicle trips for the study site:

$$\textit{infill site vehicle trips} = \textit{baseline vehicle trips} * \frac{\textit{infill site vehicle mode share}}{\textit{baseline vehicle mode share}} * \frac{\textit{baseline veh.occ.}}{\textit{infill site veh.occ.}}$$

$$VT_{SS} = VT_{BL} * (MS_{SS} / MS_{BL}) * (VO_{BL} / VO_{SS})$$

where

VT_{SS} = infill site vehicle trips

VT_{BL} = baseline vehicle trips (developed using procedures presented in Chapters 4 and 9)

MS_{SS} = infill site person trip mode share in motor vehicles (from step 2 above)

MS_{BL} = baseline person trip mode share in motor vehicles (from step 1 above)

VO_{BL} = baseline vehicle occupancy (from step 1 above)

VO_{SS} = infill site vehicle occupancy (from step 2 above)

7.5 Examples of Recommended Process

7.5.1 Method A—Use Data from National Database

Objective: Estimate weekday AM and PM street peak hour vehicle trips for a proposed 320,000 square foot, free-standing, mixed tenant, general office building to be located on a redevelopment site in a mid-sized regional CBD well-served by transit. There is a light rail station three blocks away that is served by two lines. Parking supply more than meets demand but most employees must pay to park. The area is very walkable and attracts some bicycle commuting and visitors. The regional CBD has the same land use and activity mix as most healthy mid-size downtowns.

Step 1—Determine Baseline Mode Shares and Vehicle Occupancy: In the professional judgment of the analyst, the baseline mode share and vehicle occupancy data in Appendix C are sufficient for this application.

- AM motor vehicle mode share—99 percent inbound and 100 percent outbound
- PM motor vehicle mode share—100 percent inbound and 99 percent outbound
- AM vehicle occupancy—1.06 (both inbound and outbound)
- PM vehicle occupancy—1.11 inbound and 1.07 outbound

Step 2—Estimate Study Site Mode Shares and Vehicle Occupancy: Table D.2 in Appendix D shows data for several downtown general office buildings with rail transit stations within one-quarter mile (area type "0Ta"). The average mode shares and vehicle occupancy for those buildings are as follows:

Proxy Office Buildings	Range of Floor Areas (1,000 GSF)	AM				PM			
		Mode Share Percent				Mode Share Percent			
		Motor Vehicle	Transit	Walk	Bike	Motor Vehicle	Transit	Walk	Bike
Average	64–416	46	30	18	6	42	35	19	4

Vehicle occupancy data are not provided. Even though vehicle occupancy for an office building in this regional CBD could be a little higher than for typical suburban sites due to parking fees, in the professional judgment of the analyst the study site vehicle occupancy is assumed to be the same as the baseline level.

Step 3—Estimate Vehicle Trips for Study Site: The data requirements for the equation in section 7.4.3 are

- Proxy site vehicle mode share—from step 2
- Baseline vehicle mode share—from step 1
- Baseline vehicle trips—from Chapter 4 of this *Handbook*

Calculations of the AM and PM baseline vehicle trips are shown in the first set of rows in the following worksheets. Calculations of infill vehicle trips are shown in the second set of rows.

Compute baseline vehicle trips for 320,000 sq. ft. GFA office building (Land Use Code 710 in *Trip Generation Manual*). Use fitted curve equations because the AM Peak Hour and PM Peak Hour data pages contain 218 and 236 data points, respectively.	
AM Peak Hour	PM Peak Hour
Ln (T) = 0.80 Ln (x) + 1.57 for x = 320, T = 485	T = 1.12 (x) +78.45 for x = 320, T = 437
Inbound trips = 0.88 x 485 = 427 Outbound trips = 0.12 x 485 = 58	Inbound trips = 0.17 x 437 = 74 Outbound trips = 0.83 x 437 = 363
Compute infill vehicle trips adjusting for mode share and vehicle occupancy: $\textit{infill site vehicle trips} = \textit{baseline vehicle trips} * \frac{\textit{infill site vehicle mode share}}{\textit{baseline average mode share}}$	
AM Peak Hour	PM Peak Hour
Infill Site Vehicle Trips Inbound Trips = 427 * 46%/99% = 198 Outbound Trips = 58 * 46%/100% = 27	Infill Site Vehicle Trips Inbound Trips = 74 * 42%/100% = 31 Outbound Trips = 363 * 42%/99% = 154

7.5.2 Method B—Use Data from Local Proxy Sites

Because the study site is located near a rail transit station, an alternative approach for estimating vehicle trip generation is to use (1) the Appendix D infill data for estimating walk and bike trips only and (2) Chapter 8, Transit-Friendly Development guidance for estimating transit trips.

Objective: Estimate weekday AM and PM street peak hour vehicle trips for a proposed 150-room motel to be located in an almost fully developed outlying business district about three blocks by four blocks in size.

The business district consists of low- to mid-rise office buildings totaling about 800,000 sq. ft., six high turnover sit-down and quality restaurants, 800,000 sq. ft. of retail, 800 apartments in low- to mid-rise buildings, and small amounts of supporting and complementary commercial. Blocks average about 400 ft. by 500 ft (122 m by 152 m). There are three bus routes with 12–20 minute headways connecting this area to downtown (three miles east) and a medical center (two miles south). Parking is adequate in every block with some in pay garages (two-hour free parking with validation), some in free lots, and 30-minute and two-hour meters on street. Informal observations indicate there are significant walking and transit use in the business district. Based on this description, the motel study site qualifies as an urban infill setting.

Step 1—Determine Baseline Mode Shares and Vehicle Occupancy: Appendix C provides the following baseline values for surveyed motels:

- AM motor vehicle mode share—93.3 percent inbound and 99.0 percent outbound
- PM motor vehicle mode share—98.7 percent inbound and 98.0 percent outbound
- AM vehicle occupancy—1.26 (inbound and outbound)
- PM vehicle occupancy—1.31 inbound and 1.30 outbound

Step 2: Estimate Study Site Mode Shares and Vehicle Occupancy: The available infill trip generation data in Appendix D do not include any information for motels. The analyst needs to use the Method B approach in order to estimate study site mode shares and vehicle occupancy.

There are no hotels or motels in the business district. The anticipated market for the proposed motel is for business travel to places in the business district, downtown, and the medical center. There are potential proxy motels in another business district five miles south of downtown. The proxy site business district is four blocks by seven blocks averaging about 400 ft. on a side. It includes 1,200,000 sq. ft. of office, 14 various restaurants, 600,000 sq. ft. of retail, 1,200 apartments, one movie theater, and similar parking, transit service, and walkability. The proxy business district is determined to be similar to the study site business district.

Person trip mode shares and vehicle occupancy are collected at three motels within the proxy site business district. The data are presented in the following worksheet. The average proxy site values for directional mode shares and vehicle occupancy for both the AM and PM peak periods are determined to be reasonable and appropriate to use for the study site.

Proxy Motels	Occupied Rooms	AM					PM				
		Mode Share Percent				Vehicle Occup.	Mode Share Percent				Vehicle Occup.
		Motor Vehicle	Transit	Walk	Bike		Motor Vehicle	Transit	Walk	Bike	
1	78	85	5	9	1	1.24	76	8	15	1	1.31
2	143	89	7	2	2	1.36	89	4	5	2	1.15
3	189	90	3	7	0	1.33	90	0	10	0	1.32
Average		88	5	6	1	1.31	85	4	10	1	1.26

Step 3—Estimate Vehicle Trips for Study Site: The data requirements for the equation in section 7.4.3 are

- Proxy site person trips in motor vehicle mode share—from step 2
- Baseline person trips in motor vehicle mode share—from step 1
- Proxy site vehicle occupancy—from step 2
- Baseline vehicle occupancy—from step 1
- Baseline vehicle trips—from Chapter 4 in this *Handbook*

Calculations of the AM and PM baseline vehicle trips are shown in the first set of rows in the following worksheet. Calculations of infill vehicle trips are shown in the second set of rows.

Compute baseline vehicle trips for 150-room motel (from *Trip Generation Manual*): Use Land Use Code 320 (Motel) fitted curve equations because the AM Peak Hour of Adjacent Street Traffic and the PM Peak Hour of Adjacent Street Traffic data pages contain 24 and 26 data points, respectively.	
AM Peak Hour	PM Peak Hour
Ln (T) = 0.92 Ln (x) – 0.46 for x = 150, T = 63	Ln (T) = 0.94 Ln (x) – 0.51 for x = 150, T = 67
Inbound Trips = 0.36 * 63 = 23 Outbound Trips = 0.64 * 63 = 40	Inbound Trips = 0.54 * 67 = 36 Outbound Trips = 0.46 * 67 = 31
Compute infill vehicle trips adjusting for mode share and vehicle occupancy using baseline data and proxy site data and formula (1) in chapter, which is: $\textit{infill site vehicle trips} = \textit{baseline vehicle trips} * \frac{\textit{infill site vehicle mode share}}{\textit{baseline vehicle mode share}} * \frac{\textit{baseline veh. occ.}}{\textit{infill site veh.occ.}}$	
AM Peak Hour	PM Peak Hour
Infill Site Vehicle Trips Inbound Trips = 23 * 88%/93.3% * 1.26/1.31 = 21 Outbound Trips = 40 * 88%/99.0% * 1.26/1.31 = 34	Infill Site Vehicle Trips Inbound Trips = 36 * 85%/98.7% * 1.31/1.26 = 32 Outbound Trips = 31 * 85%/98% * 1.30/1.26 = 28

Appendix D. Person Trip Data for Infill Sites

This appendix contains a compilation of infill site modal person trip data originating in part from the sources described in Appendix H and in part from data collected at additional sites specifically for development of this *Handbook*. These limited data represent a start on an infill trip generation database. More data are needed for additional land uses and sites to confirm the conclusions described in Chapter 7 and to develop comprehensive mode share and vehicle occupancy for infill development across all major land use classifications and context types.

Tables D.1 through D.5 contain AM and PM peak period mode share information for residential (Table D.1), office (D.2), general retail (D.3), convenience store (D.4), and restaurant (D.5) in infill settings. Site context is represented by area type categories described in Chapter 3 of this *Handbook*. Many of the sites are non-isolated and required a combination of interview and count data to determine mode shares. Data were collected during one or more weekday peak periods. All data were collected directionally but were combined to report as non-directional. Vehicle occupancy was not reported for most sites.

Tables D.6 and D.7 present directional (inbound and outbound) mode share and vehicle occupancy during AM and PM peak periods, respectively, for a subset of the sites presented in Tables D.1 through D.5.

Data collected at infill sites, though limited, provides some significant findings and conclusions.

- One of the most important findings is confirmation that the motor vehicle mode share at infill development is consistently and significantly less than 100 percent. This finding is true for all of the land uses for which data are reported.
- The variance in the percentage of trips made by motor vehicle appears to depend on the site context (the more-urban settings have lower motor vehicle mode shares) and the proximity of rail transit.
- The proximity of an infill site to a university campus appears to result in a significant reduction in the motor vehicle mode share.[4]
- Walking is the predominant mode of the non-motor vehicle trips at infill sites. Even at sites close to rail stations, walk trips tend to substantially outnumber transit trips.
- Bicycle trips, where counted separately, make up a small percentage of the person trips at infill sites.

Although data presented in the tables demonstrates that infill development generates fewer person trips by motor vehicle, more data are needed to determine to what extent the motor vehicle mode share changes with changes in site context.

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[4] This finding was also observed in the *California Urban Infill Trip Generation Study*. Data collected at multiple mixed-use sites near the University of California at Berkeley campus showed significantly lower vehicle trips than similar mixed-use sites elsewhere. Further investigation found that nearly 50 percent of the persons surveyed were associated with the campus either as a student, faculty, or staff. Source: Kimley-Horn and Associates, Inc. Economic & Planning Systems, and Gene Bregman & Associates. *Trip-Generation Rates for Urban Infill Land Uses in California Phase 2: Data Collection Final Report*. California Department of Transportation (Caltrans) Headquarters Divisions of Transportation Planning and Research & Innovation, Sacramento, CA, 2009.

Table D.1 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples—Multi-Family Residential

Land Use	Location	Area Type[1]	Occupied Develop-ment Units	ITE LUC	AM						PM						Source
					Mode Shares				Vehicle Occupancy	Sample Size[3]	Mode Shares				Vehicle Occupancy	Sample Size[3]	
					Motor Vehicle[2]	Transit	Walk	Bike			Motor Vehicle[2]	Transit	Walk	Bike			
Apartments	Los Angeles, CA	I	113 DU	220	66	0	34		1.14	48-115	77	2	21		1.20	33-84	Caltrans/UC Davis; TTI
Apartments	Los Angeles, CA	ITa	221 DU	220	80	2	18		1.12	143-148	45	0	55		1.17	61-123	Caltrans/UC Davis; TTI
Apartments	Pasadena, CA	ITo	355 DU	220	82	5	13		1.19	177-198	68	1	31		1.21	111-215	Caltrans/UC Davis; TTI
Apartments	Culver City, CA	3	110 DU	220	83	0	17		1.17	93-128	78	17	5		1.26	48-131	Caltrans/UC Davis; TTI
Apartments	Los Angeles, CA	3	73 DU	220	69	31	0		1.12	83	60	40	0		1.14	76	Gibson Transp. Consult.
Apartments	Los Angeles, CA	3	72 DU	220	59	41	0		1.18	29	46	54	0		1.18	27	Gibson Transp. Consult.
Apartments	Brentwood, CA	6	178 DU	220	100	0	0		1.22	156	92	3	5		1.47	313	Fehr & Peers
Simple average - all					77.0	11.3	11.7		1.16		66.6	16.7	16.7		1.23		
Simple average - 1					76.0	2.3	21.7		1.15		63.3	1.0	35.7		1.19		
Simple average - 3					70.3	24.0	5.7		1.16		61.3	37.0	1.7		1.19		
High Rise Apts.	San Diego, CA	0	211 DU	222	77	3	20		na	na	73	7	20		na	na	Caltrans/Kimley-Horn
High Rise Apts.	San Francisco, CA	0Ta	178 DU	222	38	19	43		na	49	27	23	50		na	64	Caltrans/UC Davis
High Rise Apts.	Los Angeles, CA	0Ta	309 DU	222	33	4	63		na	54	39	0	61		na	24	Caltrans/UC Davis; TTI
High Rise Apts.	Pasadena, CA	1M	259 DU	222	79	2	19		na	121	55	1	44		na	73	Caltrans/UC Davis; TTI
Simple average - all					56.8	7.0	36.3		na		48.5	7.8	43.8		na		
Simple average - 0					49.3	8.7	42.0		na		46.3	10.0	43.7		na		
Mid Rise Apts.	Berkeley, CA	1TaC	44 DU	223	0	11	89		na	na	7	27	66		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Berkeley, CA	1TaC	98 DU	223	20	7	73		na	na	24	5	71		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Berkeley, CA	1TaC	34 DU	223	50	25	25		na	na	15	9	76		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Berkeley, CA	1TaC	58 DU	223	21	17	62		na	na	20	7	73		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Berkeley, CA	1TaC	100 DU	223	44	22	34		na	na	24	14	62		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Oakland, CA	3	107 DU	223	50	22	28		na	79	40	20	40		na	65	Caltrans/UC Davis
Mid Rise Apts.	Oakland, CA	3Ta	220 DU	223	61	21	18		na	111	54	19	27		na	137	Caltrans/UC Davis
Mid Rise Apts.	Emeryville, CA	3Ta	101 DU	223	70	9	21		na	48	71	2	27		na	105	Caltrans/UC Davis
Mid Rise Apts.	Sacramento, CA	3Ta	66 DU	223	62	4	34		na	40	67	2	31		na	37	Caltrans/UC Davis
Mid Rise Apts.	Berkeley, CA	3Ta	71 DU	223	57	29	14		na	na	35	30	35		na	na	Caltrans/Kimley-Horn
Mid Rise Apts.	Pasadena, CA	3To	221 DU	223	68	15	17		1.11	142-205	59	8	33		1.12	70-209	Caltrans/UC Davis; TTI
Simple average - all					45.7	16.5	37.7		na		37.8	13.0	49.2		na		
Simple average - 1TaC					27.0	16.4	56.6		na		18.0	12.4	69.6		na		
Simple average - 3Ta					62.5	15.8	21.8		na		56.8	13.3	30.0		na		
Simple average - all Ta					42.8	16.1	41.1		na		35.2	12.8	52.0		na		
Mid Rise Condos.	San Diego, CA	0	149 DU	230	85	2	13		na	na	69	0	31		na	na	Caltrans/Kimley-Horn

Notes: Simple averages are shown only where at least three sites are available for similar combinations of area type, context, and rail transit availability. Sums of average mode shares may not add to 100% due to rounding. "na" designates not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural. Special context conditions noted are (C) adjacent to university campus, (M) mixed-use within larger development. Rail transit availability is (Ta) rail transit station within 1/4 mile or (To) rail station immediately adjacent or connected-TOD.

[2] Motor vehicle trips is the sum of person trips in personal passenger vehicles and trucks.

Table D.2 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples—Office

Land Use	Location	Area Type[1]	Occupied Develop-ment Units	ITE LUC	AM Mode Shares: Motor Vehicle[2]	AM Mode Shares: Transit	AM Mode Shares: Walk	AM Mode Shares: Bike	AM Vehicle Occupancy	AM Sample Size[3]	PM Mode Shares: Motor Vehicle[2]	PM Mode Shares: Transit	PM Mode Shares: Walk	PM Mode Shares: Bike	PM Vehicle Occupancy	PM Sample Size[3]	Source
Office	Los Angeles. CA	0	138,100 sf	710	95	4	1		na	na	77	23	0		na	na	Caltrans/Kimley-Horn
Office	Sacramento, CA	0Ta	416,000 sf	710	62	9	27	2	na	193	66	12	19	3	na	272	Caltrans/UC Davis
Office	Sacramento, CA	0Ta	64,000 sf	710	69	7	11	13	na	25	68	8	17	7	na	44	Caltrans/UC Davis
Office	Oakland, CA	0Ta	192,000 sf	710	52	41	2	6	na	36	34	51	9	6	na	72	Caltrans/UC Davis
Office	San Francisco, CA	0Ta	310,000 sf	710	42	37	16	5	na	60	39	41	16	4	na	110	Caltrans/UC Davis
Office	San Francisco, CA	0Ta	321,000 sf	710	20	61	17	2	na	118	19	64	15	2	na	178	Caltrans/UC Davis
Office	San Francisco, CA	0Ta	229,000 sf	710	33	26	34	7	na	37	25	35	39	1	na	72	Caltrans/UC Davis
Office	Oakland, CA	1	175,000 sf	710	52	30	11	7	na	46	55	27	13	5	na	65	Caltrans/UC Davis
Office	Emeryville. CA	3Ta	235,000 sf	710	51	22	13	14	na	62	56	14	22	8	na	153	Caltrans/UC Davis
Office	San Francisco. CA	3Ta	50,000 sf	710	100	0	0	0	na	41	82	4	14	0	na	68	Caltrans/UC Davis
Office	Pasadena, CA	4	98,600 sf	710	70	25	5	0	1.06	205	69	26	3	2	1.08	263	Gibson Transp. Consult.
Office	Culver City, CA	5	347,000 sf	710	83	14	0	3	1.03	747	91	9	0	0	1.04	681	Gibson Transp. Consult.
Office	Los Angeles, CA	5	180,000 sf	710	71	23	5	1	1.15	233	68	22	9	1	1.07	338	Gibson Transp. Consult.
Office	Seal Beach, CA	6	265,000 sf	710	100	0	0	0	1.04	427	na	na	na	na	na	na	Gibson Transp. Consult.
Simple average - all					64.3	21.4	10.1	4.6	1.07		57.6	25.8	13.5	3.3	1.06		
Simple average - 0Ta					46.3	30.2	17.8	5.8	na		41.8	35.2	19.2	3.8	na		

Notes: Simple averages are shown only where at least three sites are available for similar combinations of area type, context, and rail transit availability. Sums of average mode shares may not add to 100% due to rounding. "na" designates not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural. Special context conditions noted are (C) adjacent to university campus, (M) mixed-use wiithin larger development. Rail transit availability is (Ta) rail transit station within 1/4 mile or (To) rail station immediately adjacent or connected-TOD.

[2] Motor vehicle trips is the sum of person trips in personal passenger vehicles and trucks.

[3] Number of person trips covered by usable interviews; if two values are listed, the number of vehicles counted for vehicle occupancy is shown after the dash.

Table D.3 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples—General Retail

Table D.3 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples - General Retail

					AM						PM					
					Mode Shares						Mode Shares					
Land Use	Location	Area Type[1]	Occupied Develop-ment Units	ITE LUC	Motor Vehicle[2]	Transit	Walk	Bike	Vehicle Occupancy	Sample Size[3]	Motor Vehicle[2]	Transit	Walk	Bike	Vehicle Occupancy	Sample Size[3]	Source
Shopping center[4]	Pasadena, CA	1	497,600 sf	820	na	na	na		na	na	78	18	4		1.39	252-1190	Caltrans/UC Davis; TTI
Shopping center	Los Angeles, CA	3	54,900 sf	820	86	12	2		1.44	42	62	37	1		1.04	43	Gibson Transp. Consult.
Shopping center	Los Angeles, CA	4	11,000 sf	820	68	24	8		1.39	348	63	33	4		1.19	474	Gibson Transp. Consult.
Simple average - all					77.0	18.0	5.0		1.42		62.5	35.0	2.5		1.12		
Supermarket	San Diego, CA	0	43,300 sf	850	50	10	40		na	na	50	12	38		na	na	Caltrans/Kimley-Horn
Office supply	Oakland, CA	3M	30,000 sf	867	na	na	na		na	na	85	0	15		na	41	Caltrans/UC Davis
Retail apparel	Los Angeles, CA	3	44,800 sf	876	95	5	0		1.12	53	54	45	1		1.13	58	Gibson Transp. Consult.
Pharmacy	Oakland, CA	0ToM	11,000 sf	880	na	na	na		na	na	0	45	55		na	46	Caltrans/UC Davis
Copy/print shop	Berkeley, CA	1TaC	3,000 sf	na	na	na	na		na	na	38	0	62		na	na	Caltrans/Kimley-Horn
Flower shop	Berkeley, CA	1TaC	2,400 sf	na	100	0	0		na	na	100	0	0		na	na	Caltrans/Kimley-Horn
Simple average - all retail					72.5	14.3	13.3		1.31		52.4	28.3	19.3		1.15		

Notes: Simple averages are shown only where at least three sites are available for similar combinations of area type, context, and rail transit availability. Sums of average mode shares may not add to 100% due to rounding. "na" designates not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural. Special context conditions noted are (C) adjacent to university campus, (M) mixed-use within larger development. Rail transit availability is (Ta) rail transit station within 1/4 mile or (To) rail station immediately adjacent or connected-TOD.

[2] Motor vehicle trips is the sum of person trips in personal passenger vehicles and trucks.

[3] Number of person trips covered by usable interviews; if two values are listed, the number of vehicles counted for vehicle occupancy is shown after the dash.

[4] Section surveyed.

Table D.4 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples—Convenience Store

Land Use	Location	Area Type[1]	Occupied Develop-ment Units	ITE LUC	AM Mode Shares Motor Vehicle[2]	AM Mode Shares Transit	AM Mode Shares Walk	AM Mode Shares Bike	AM Vehicle Occupancy	AM Sample Size[3]	PM Mode Shares Motor Vehicle[2]	PM Mode Shares Transit	PM Mode Shares Walk	PM Mode Shares Bike	PM Vehicle Occupancy	PM Sample Size[3]	Source
Convenience store	Portland, OR	1Ta	2,100 sf	851	na	na	na	na	na	na	19	13	61	7	na	31	OTREC/Portland State U
Convenience store	Portland, OR	1Ta	2,400 sf	851	na	na	na	na	na	na	28	13	52	7	na	46	OTREC/Portland State U
Convenience store	Portland, OR	1Ta	3,318 sf	851	na	na	na	na	na	na	29	6	56	9	na	34	OTREC/Portland State U
Convenience store	Portland, OR	3	2,600 sf	851	na	na	na	na	na	na	42	13	39	6	na	32	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	66	4	26	4	na	47	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	39	8	51	2	na	83	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	62	8	19	11	na	37	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	88	2	10	0	na	51	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	45	10	31	14	na	42	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	25	8	55	12	na	40	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	74	0	16	10	na	32	OTREC/Portland State U
Convenience store	Portland, OR	3	2,400 sf	851	na	na	na	na	na	na	63	3	27	7	na	30	OTREC/Portland State U
Convenience store	Portland, OR	3	2,464 sf	851	na	na	na	na	na	na	56	0	37	7	na	31	OTREC/Portland State U
Convenience store	Portland, OR	3	3,334 sf	851	na	na	na	na	na	na	77	3	13	7	na	31	OTREC/Portland State U
Convenience store	Portland, OR	3Ta	2,400 sf	851	na	na	na	na	na	na	67	15	15	3	na	33	OTREC/Portland State U
Convenience store	Clackamas, OR	5	2,475 sf	851	na	na	na	na	na	na	90	0	7	3	na	41	OTREC/Portland State U
Convenience store	Gresham, OR	5	2,500 sf	851	na	na	na	na	na	na	74	0	10	16	na	31	OTREC/Portland State U
Convenience store	Portland, OR	5	2,500 sf	851	na	na	na	na	na	na	76	3	21	0	na	34	OTREC/Portland State U
Convenience store	Forest Grove, OR	6	2,400 sf	851	na	na	na	na	na	na	70	0	19	11	na	69	OTREC/Portland State U
Convenience store	Wilsonville, OR	6	2,500 sf	851	na	na	na	na	na	na	94	0	6	0	na	35	OTREC/Portland State U
Convenience store	Aloha, OR	6	3,000 sf	851	na	na	na	na	na	na	56	11	24	9	na	48	OTREC/Portland State U
Simple average - all											59.0	5.7	28.3	6.9			
Simple average - 1Ta											25.3	10.7	56.3	7.7			
Simple average - 3											57.9	5.4	29.5	7.3			
Simple average - 5											80.0	1.0	12.7	6.3			
Simple average - 6											73.3	3.7	16.3	6.7			

Notes: Simple averages are shown only where at least three sites are available for similar combinations of area type, context, and rail transit availability. Sums of average mode shares may not add to 100% due to rounding. "na" designates not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural. Special context conditions noted are (C) adjacent to university campus, (M) mixed-use within larger development. Rail transit availability is (Ta) rail transit station within 1/4 mile or (To) rail station immediately adjacent or connected-TOD.
[2] Motor vehicle trips is the sum of person trips in personal passenger vehicles and trucks.
[3] Number of person trips covered by usable interviews; if two values are listed, the number of vehicles counted for vehicle occupancy is shown after the dash.

Table D.5 Infill Weekday AM and PM Non-Directional Peak Period Mode Share and Vehicle Occupancy Examples—Restaurant

					AM						PM						
					Mode Shares						Mode Shares						
Land Use	Location	Area Type[1]	Occupied Development Units	ITE LUC	Motor Vehicle[2]	Transit	Walk	Bike	Vehicle Occupancy	Sample Size[3]	Motor Vehicle[2]	Transit	Walk	Bike	Vehicle Occupancy	Sample Size[3]	Source
HT sit-down restaurant	Portland, OR	3	2,250 sf	932	na	na	na	na	na	na	79	3	0	18	na	33	OTREC/Portland State U
HT sit-down restaurant	Portland, OR	3	1,100 sf	932	na	na	na	na	na	na	65	4	22	9	na	46	OTREC/Portland State U
HT sit-down restaurant	Portland, OR	3	2,000 sf	932	na	na	na	na	na	na	58	6	26	10	na	31	OTREC/Portland State U
HT sit-down restaurant	Burbank, CA	3	5,000 sf	932	na	na	na	na	na	na	98	1	0	1	1.89	86	Gibson Transp. Consult.
HT sit-down restaurant	Portland, OR	5	2,100 sf	932	na	na	na	na	na	na	90	0	10	0	na	30	OTREC/Portland State U
Simple average - all											78.0	2.8	11.6	7.6	na		
Simple average - 3											75.0	3.5	12.0	9.5	na		
Fast food	San Diego, CA	0	1,250 sf	933	50	13	37		na	na	17	0	83		na	na	Caltrans/Kimley-Horn
Fast food	Berkeley, CA	1TaC	4,500 sf	933	64	0	36		na	na	35	8	57		na	na	Caltrans/Kimley-Horn
Fast food	Berkeley, CA	3Ta	5,000 sf	933	33	11	56		na	na	57	10	33		na	na	Caltrans/Kimley-Horn
Simple average - all					49.0	8.0	43.0				36.3	6.0	57.7				
Coffee shop	San Francisco, CA	0M	1,556 sf	936	24	18	58	0	na	49	31	8	61	0	na	38	Caltrans/UC Davis
Coffee shop	San Francisco, CA	0M	1,097 sf	936	12	32	56	0	na	79	na	na	na	na	na	na	Caltrans/UC Davis
Coffee shop	Oakland, CA	0M	1,100 sf	936	na	na	na	na	na	na	na	na	na	na	na	na	Caltrans/UC Davis
Coffee shop	Sacramento, CA	0TaM	1,652 sf	936	22	18	59	1	na	145	25	9	61	5	na	44	Caltrans/UC Davis
Coffee shop	Oakland, CA	3M	1,329 sf	936	na	na	na	na	na	na	93	2	5	0	na	44	Caltrans/UC Davis
Coffee shop	Oakland, CA	3M	1,300 sf	936	45	7	44	4	na	123	24	10	62	4	na	49	Caltrans/UC Davis
Simple average - all					25.8	18.8	54.3	1.3			43.3	7.3	47.3	2.3			
Simple average - 0M					18.0	25.0	57.0	0.0			31.0	8.0	61.0	0.0			
Bar/rest./entertainment (night club)	Berkeley, CA	1TaC	12,000 sf	925 or 936	na	na	na		na	na	43	29	28		na	na	Caltrans/Kimley-Horn
Simple avg. all restaurant					35.7	14.1	50.1				55.0	6.9	38.1				

Notes: Simple averages are shown only where at least three sites are available for similar combinations of area type, context, and rail transit availability. Sums of average mode shares may not add to 100% due to rounding. "na" designates not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural. Special context conditions noted are (C) adjacent to university campus, (M) mixed-use wiithin larger development. Rail transit availability is (Ta) rail transit station within 1/4 mile or (To) rail station immediately adjacent or connected-TOD.

[2] Motor vehicle trips is the sum of person trips in personal passenger vehicles and trucks.

[3] Number of person trips covered by usable interviews; if two values are listed, the number of vehicles counted for vehicle occupancy is shown after the dash.

Table D.6 Infill Development Weekday Directional AM Peak Period Mode Share and Vehicle Occupancy Examples

Land Use	Location	Area Type[1]	Develop-ment Units[2]	ITE LUC	Inbound							Outbound							Source
					Mode Shares							Mode Shares							
					Personal Passenger Vehicle	Truck	Walk	Transit	Bike	Vehicle Occ.	Sample Size	Personal Passenger Vehicle	Truck	Walk	Transit	Bike	Vehicle Occ.	Sample Size	
Apartments	Los Angeles, CA	3	73 DU	220	na	na	na	na	na	na	na	72	0	28	0	0	1.18	58	Gibson Transp. Consult.
Apartments[3]	Los Angeles, CA	3C	72 DU	220	na	na	na	na	na	na	na	86	0	14	0	0	1.19	25	Gibson Transp. Consult.
Simple average					na	na	na	na	na	na	na	79.0	0.0	21.0	0.0	0.0	1.19		
Office	Culver City, CA	5	347,000	710	82	3	13	0	2	1.04	530	70	6	19	0	6	1.03	217	Gibson Transp. Consult.
Office	Pasadena, CA	4	98,600	710	74	2	18	6	0	1.05	174	33	3	64	0	0	1.22	31	Gibson Transp. Consult.
Office	Los Angeles, CA	5	180,000	710	71	1	21	6	1	1.07	207	54	4	42	0	0	1.00	26	Gibson Transp. Consult.
Office	Seal Beach, CA	6	265,000	710	98	2	0	0	0	1.04	393	74	26	0	0	0	1.08	34	Gibson Transp. Consult.
Simple average					81.3	2.0	13.0	3.0	0.8	1.05		57.8	9.8	31.3	0.0	1.5	1.08		
Shopping center	Los Angeles, CA	4	11,000	820	68	0	25	5	2	1.21	179	69	0	23	6	2	1.18	169	Gibson Transp. Consult.
Shopping center	Los Angeles, CA	3	54,900	820	70	12	15	0	3	1.05	32	na	na	na	na	na	na	na	Gibson Transp. Consult.
Retail apparel	Los Angeles, CA	3	44,800	876	68	0	32	0	0	1.15	31	50	8	42	0	0	1.09	22	Gibson Transp. Consult.
Simple average					68.7	4.0	24.0	1.7	1.7	1.14		59.5	4.0	32.5	3.0	1.0	1.14		

na - not available or insufficient sample size.

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural, (C) adjacent to university campus, (Ta) rail transit station within 1/4 mile, (To) rail station immediately adjacent or connected-TOD.

[2] Development units in gross square feet of floor area unless otherwise indicated.

[3] Serving UCLA campus area.

Table D.7 Infill Development Weekday Directional PM Peak Period Mode Share and Vehicle Occupancy Examples

Land Use	Location	Area Type[1]	Develop-ment Units[2]	ITE LUC	Inbound Mode Shares: Personal Passenger Vehicle	Inbound Mode Shares: Truck	Inbound Mode Shares: Walk	Inbound Mode Shares: Transit	Inbound Mode Shares: Bike	Inbound Vehicle Occ.	Inbound Sample Size	Outbound Mode Shares: Personal Passenger Vehicle	Outbound Mode Shares: Truck	Outbound Mode Shares: Walk	Outbound Mode Shares: Transit	Outbound Mode Shares: Bike	Outbound Vehicle Occ.	Outbound Sample Size	Source
Apartments	Los Angeles, CA	3	73 DU	220	76	0	24	0	0	1.14	30	na	na	na	na	na	na	na	Gibson Transp. Consult.
Apartments[3]	Los Angeles, CA	3C	72 DU	220	64	0	36	0	0	1.23	22	na	na	na	na	na	na	na	Gibson Transp. Consult.
Simple average					70.0	0.0	30.0	0.0	0.0	1.19		na	na	na	na	na	na		
Office	Culver City, CA	5	347,000	710	51	7	39	0	3	1.04	106	95	2	2	0	1	1.03	575	Gibson Transp. Consult.
Office	Pasadena, CA	4	98,600	710	70	5	24	0	1	1.11	80	80	2	13	3	2	1.03	183	Gibson Transp. Consult.
Office	Los Angeles, CA	5	180,000	710	74	0	26	0	0	1.36	37	66	1	22	10	1	1.11	301	Gibson Transp. Consult.
Simple average					65.0	4.0	29.7	0.0	1.3	1.17		80.3	1.7	12.3	4.3	1.3	1.06		
Shopping center	Los Angeles, CA	4	11,000	820	60	1	35	3	1	1.31	225	64	1	31	3	1	1.45	249	Gibson Transp. Consult.
Shopping center	Los Angeles, CA	3	54,900	820	64	0	35	0	1	1.46	288	60	0	39	0	1	1.42	297	Gibson Transp. Consult.
Retail apparel	Los Angeles, CA	3	44,800	876	55	0	45	0	0	1.13	77	52	1	46	1	0	1.12	87	Gibson Transp. Consult.
Simple average					59.7	0.3	38.3	1.0	0.7	1.30		58.7	0.7	38.7	1.3	0.7	1.33		
High turn restaurant	Burbank, CA	3	5,000	932	99.0	0	0	0	1	1.90	50	97	0	2	0	1	1.88	36	Gibson Transp. Consult.
Simple average					99.0	0.0	0.0	0.0	1.0	1.90		97.0	0.0	2.0	0.0	1.0	1.88		

na - not available or insufficient sample size

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) generall suburban, (7) special district, (8) rural town business district, (9) rural, (C) adjacent to university campus, (Ta) rail transit station within 1/4 mile, (To) rail station immediately adjacent or connected-TOD.

[2] Development units in gross square feet of floor area unless otherwise indicated.

[3] Serving UCLA campus area.

Appendix C. Person Trip Data For Baseline Sites

Baseline Mode Shares

Trip Generation Manual contains no data on mode shares for baseline site trip generation. For this *Handbook*, a limited amount of weekday peak period (7:00–9:00 a.m., 4:00–6:00 p.m.) site trip generation mode share data were collected for baseline sites to provide a general starting point for baseline mode shares for the most common land use types. Baseline data were collected at apartments, motels, offices, shopping centers, restaurants, a bank, and a bowling alley. The land use types were selected so the data would be transferrable to similar land uses (for example, residential apartment mode shares should be applicable to all suburban baseline apartment classifications). Tables C.1 and C.2 show the available weekday AM and PM peak period average mode shares and ranges for the baseline sites at which data were collected.

There are not enough samples to derive precise percentages by mode for the land use codes for which data were collected. However, for all but one direction during one peak period for one land use category,[3] the motor vehicle percentage (personal passenger vehicle plus truck) of total person trips is at least 96 percent. Nearly half of the land use category averages in the tables are 100 percent motor vehicle. Based on the limited data shown, the following conclusions appear reasonable:

- The percentage mode share of person trips made by motor vehicle for baseline sites appears to be 96 percent or more. Where sample sizes exceed 100 observations, almost all the individual sites have motor vehicle shares of 96 percent or more.
- Almost all non-vehicle trips are by walking (rather than transit or bicycle).
- From the limited number of samples with more than 100 observations, it appears that there may be only very small **directional** differences in motor vehicle share percentages for some land uses. Smaller samples contain larger variations that could be the result of data noise from the smaller samples. More data are needed to fully understand the directional differences.
- Motor vehicle percentages are only available in this data set for a few land uses. The findings may or may not be transferrable to other land uses based on limited alternative opportunities. However, it may be reasonable to assume similar results for land uses within the same land use *category* (such as residential, lodging, or general retail).
- If the analyst assumes a baseline mode share of 96 percent motor vehicles, it means the ITE vehicle trip generation rates/equations represent 96 percent of the total **person** trips. The other 4 percent would be walk, bicycle, or transit trips.

Baseline Vehicle Occupancy

Trip Generation Manual contains limited vehicle occupancy data for some land use classifications. Table C.3 summarizes the vehicle occupancy data. All data are for baseline sites. Many of the most commonly analyzed land use codes are not included in this table.

[3] Inbound trips during the AM peak period at three motels were an average 94 percent motor vehicle.

The limited baseline site weekday peak period (7:00–9:00 a.m., 4:00–6:00 p.m.) data collection conducted for this *Handbook* also includes vehicle occupancy. These data were collected to provide a general starting point for baseline vehicle occupancy for the most common land use types. Tables C.1 and C.2 show the available average vehicle occupancy values for the counted baseline sites.

For land uses for which there are sample sizes of more than 100 observations, vehicle occupancy is fairly consistent for a given land use. For those few land uses, inbound and outbound vehicle occupancy is similar. However, there are differences in vehicle occupancy by land use. Likewise, there could be some land uses for which directional peak period vehicle occupancy might logically differ, such as office. That remains to be determined through more data collection.

Vehicle occupancy values shown in Tables C.1 through C.3 for similar land uses appear to be similar, considering the effect of limited samples sizes and number of sites. This *Handbook* recommends that additional data be collected—especially for the land uses most frequently analyzed in infill areas where the differences between baseline and infill trip generation rates may differ significantly.

Table C.1 Baseline Weekday AM Peak Period Mode Share and Vehicle Occupancy Examples

Land Use	Location	Area Type[1]	Develop-ment Units[2]	ITE LUC	Inbound							Outbound							Source
					Mode Shares					Vehicle Occ.	Sample Size	Mode Shares					Vehicle Occ.	Sample Size	
					Personal Passenger Vehicle	Truck	Walk	Transit	Bike			Personal Passenger Vehicle	Truck	Walk	Transit	Bike			
Apartments	Falmouth, ME	5	173 DU	220	82	18	0	0	0	1.22	23	98	2	0	0	0	1.10	128	Kevin Hooper Assoc.
Apartments	Mt. Pleasant, SC	6	240 DU	220	92	0	8	0	0	1.02	49	96	0	4	0	0	1.06	126	Iteris, Inc.
Apartments	Oklahoma City, OK	6	360 DU	220	88	12	0	0	0	1.05	39	99	1	0	0	0	1.07	145	Traffic Engr. Consultants
Apartments	Tampa, FL	6	278 DU	220	93	6	0	0	1	1.14	46	95	2	1	0	2	1.14	153	Parsons Brinkerhoff
Apartments	Tampa, FL	6	317 DU	220	90	2	6	2	0	1.23	40	97	1	1	0	1	1.09	158	Parsons Brinkerhoff
Apartments	Tampa, FL	6	689 DU	220	90	4	6	0	0	1.12	73	96	0	3	0	1	1.08	314	Parsons Brinkerhoff
Simple average					89.2	7.0	3.3	0.3	0.2	1.13		96.8	1.0	1.5	0.0	0.7	1.09		
Motel	College Station, TX	5	133 rooms	320	91	3	3	3	0	1.29	33	96	1	2	1	0	1.32	116	Texas A&M University
Motel	College Station, TX	5	*68 rooms*	320	90	0	10	0	0	1.21	19	95	5	0	0	0	1.25	77	Texas A&M University
Motel	College Station, TX	5	*79 rooms*	320	96	0	4	0	0	1.29	23	99	1	0	0	0	1.20	66	Texas A&M University
Simple average					92.3	1.0	5.7	1.0	0.0	1.26		96.7	2.3	0.7	0.3	0.0	1.26		
Bowling alley	College Station, TX	5	73,000	437	94.0	3	3	0	0	1.13	71	100	0	0	0	0	1.00	8	TX A&M Transp. Inst.
Simple average					94.0	3.0	3.0	0.0	0.0	1.13		100.0	0.0	0.0	0.0	0.0	1.00		
Office	Falmouth, ME	6	178,000	710	97	2	0	1	0	1.06	438	90	10	0	0	0	1.06	39	Kevin Hooper Assoc.
Simple average					97.0	2.0	0.0	1.0	0.0	1.06		90.0	10.0	0.0	0.0	0.0	1.06		
Shopping center[3]	Bryan, TX	5	*110,000*	820	100	0	0	0	0	1.19	179	100	0	0	0	0	1.19	130	TX A&M Transp. Inst.
Shopping center[3]	College Station, TX	5	*116,000*	820	100	0	0	0	0	1.14	233	100	0	0	0	0	1.13	210	TX A&M Transp. Inst.
Simple average					100.0	0.0	0.0	0.0	0.0	1.17		100.0	0.0	0.0	0.0	0.0	1.16		

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural, (C) adjacent to university campus, (Ta) rail transit station within 1/4 mile, (To) rail station immediately adjacent or connected-TOD.

[2] Development units in gross square feet of floor area unless otherwise indicated. Italics denote *occcupied* development units.

[3] Anchored by large grocery store.

Table C.2 Baseline Weekday PM Peak Period Mode Share and Vehicle Occupancy Examples

Land Use	Location	Area Type[1]	Develop-ment Units[2]	ITE LUC	Inbound Mode Shares: Personal Passenger Vehicle	Inbound: Truck	Inbound: Walk	Inbound: Transit	Inbound: Bike	Inbound: Vehicle Occ.	Inbound: Sample Size	Outbound Mode Shares: Personal Passenger Vehicle	Outbound: Truck	Outbound: Walk	Outbound: Transit	Outbound: Bike	Outbound: Vehicle Occ.	Outbound: Sample Size	Source
Apartments	Falmouth, ME	5	173 DU	220	96	3	1	0	0	1.15	126	96	4	0	0	0	1.14	189	Kevin Hooper Assoc.
Apartments	Mt. Pleasant, SC	6	240 DU	220	93	1	4	1	1	1.15	124	87	1	12	0	0	1.08	68	Iteris, Inc.
Apartments	Oklahoma City, OK	6	360 DU	220	100	0	0	0	0	1.10	186	99	1	0	0	0	1.24	78	Traffic Engr. Consultants
Apartments	Tampa, FL	6	278 DU	220	97	1	1	0	1	1.20	138	97	2	1	0	0	1.30	58	Parsons Brinkerhoff
Apartments	Tampa, FL	6	317 DU	220	98	0	1	0	1	1.14	614	96	0	3	0	1	1.26	96	Parsons Brinkerhoff
Apartments	Tampa, FL	6	689 DU	220	94	1	4	0	1	1.14	317	93	1	5	0	1	1.22	190	Parsons Brinkerhoff
Simple average					96.3	1.0	1.8	0.2	0.7	1.15		94.7	1.5	3.5	0.0	0.3	1.21		
Motel	College Station, TX	5	133 rooms	320	94	2	4	0	0	1.33	67	98	2	0	0	0	1.55	51	Texas A&M University
Motel	College Station, TX	5	*68 rooms*	320	93	7	0	0	0	1.12	28	87	7	7	0	0	1.08	15	Texas A&M University
Motel	College Station, TX	5	*79 rooms*	320	100	0	0	0	0	1.47	44	100	0	0	0	0	1.26	29	Texas A&M University
Simple average					95.7	3.0	1.3	0.0	0.0	1.31		95.0	3.0	2.3	0.0	0.0	1.30		
Bowling alley	College Station, TX	5	73,000	437	100	0	0	0	0	1.27	75	100	0	0	0	0	1.33	27	TX A&M Transp. Inst.
Simple average					100	0	0	0	0	1.27		100	0	0	0	0	1.33		
Office	Falmouth, ME	6	178,000	710	96	4	0	0	0	1.11	47	98	1	1	0	0	1.07	452	Kevin Hooper Assoc.
Simple average					96	4	0	0	0	1.11		98	1	1	0	0	1.07		
Shopping center[4]	Bryan, TX	5	*153,000*	820	100	0	0	0	0	1.19	198	100	0	0	0	0	1.19	229	TX A&M Transp. Inst.
Shopping center[5]	Bryan, TX	5	*110,000*	820	100	0	0	0	0	1.22	666	100	0	0	0	0	1.20	498	TX A&M Transp. Inst.
Shopping center[5]	College Station, TX	5	*116,000*	820	100	0	0	0	0	1.21	362	100	0	0	0	0	1.23	274	TX A&M Transp. Inst.
Shopping center	Mt. Pleasant, SC	5	68,000	820	100	0	0	0	0	1.27	286	100	0	0	0	0	1.16	258	Iteris, Inc.
Shopping center[5]	Falmouth, ME	6	48,800	820	100	0	0	0	0	1.16	665	99	1	0	0	0	1.14	663	Kevin Hooper Assoc.
Simple average					100	0	0	0	0	1.21		99.8	0.2	0	0	0	1.18		
Bank	Prospect, KY	5	2,500	912	100	0	0	0	0	1.11	19	100	0	0	0	0	1.16	21	Jacobs Engr. Group
Simple average					100	0	0	0	0	1.11		100	0	0	0	0	1.16		
Quality restaurant	Oklahoma City, OK	6	5,000	931	100	0	0	0	0	1.62	105	100	0	0	0	0	1.52	54	Traffic Engr. Consultants
High turn restaurant	Mt. Pleasant, SC	6	8,150	932	100	0	0	0	0	1.33	151	97	3	0	0	0	1.34	39	Iteris, Inc.
Drive-thru restaurant	Prospect, KY	5	2,800	934	96	0	4	0	0	1.27	135	96	0	4	0	0	1.30	139	Jacobs Engr. Group
Simple average					98.7	0.0	1.3	0.0	0.0	1.41		97.7	1.0	1.3	0.0	0.0	1.39		

[1] Area types: (0) regional CBD, (1) urban core, (2) activity center, (3) general urban, (4) suburban business district, (5) suburban strip commercial, (6) general suburban, (7) special district, (8) rural town business district, (9) rural, (C) adjacent to university campus, (Ta) rail transit station within 1/4 mile, (To) rail station immediately adjacent or connected-TOD.

[2] Development units in gross square feet of floor area unless otherwise indicated. Italics denote *occcupied* development units.

[3] There are two Brentwoods in California. This one is a suburb in the San Francisco Bay Area.

[4] Anchored by discount store.

[5] Anchored by grocery store comprising major portion of total floor area.

Table C.3 Baseline Vehicle Occupancy in *Trip Generation Manual* Data Volumes

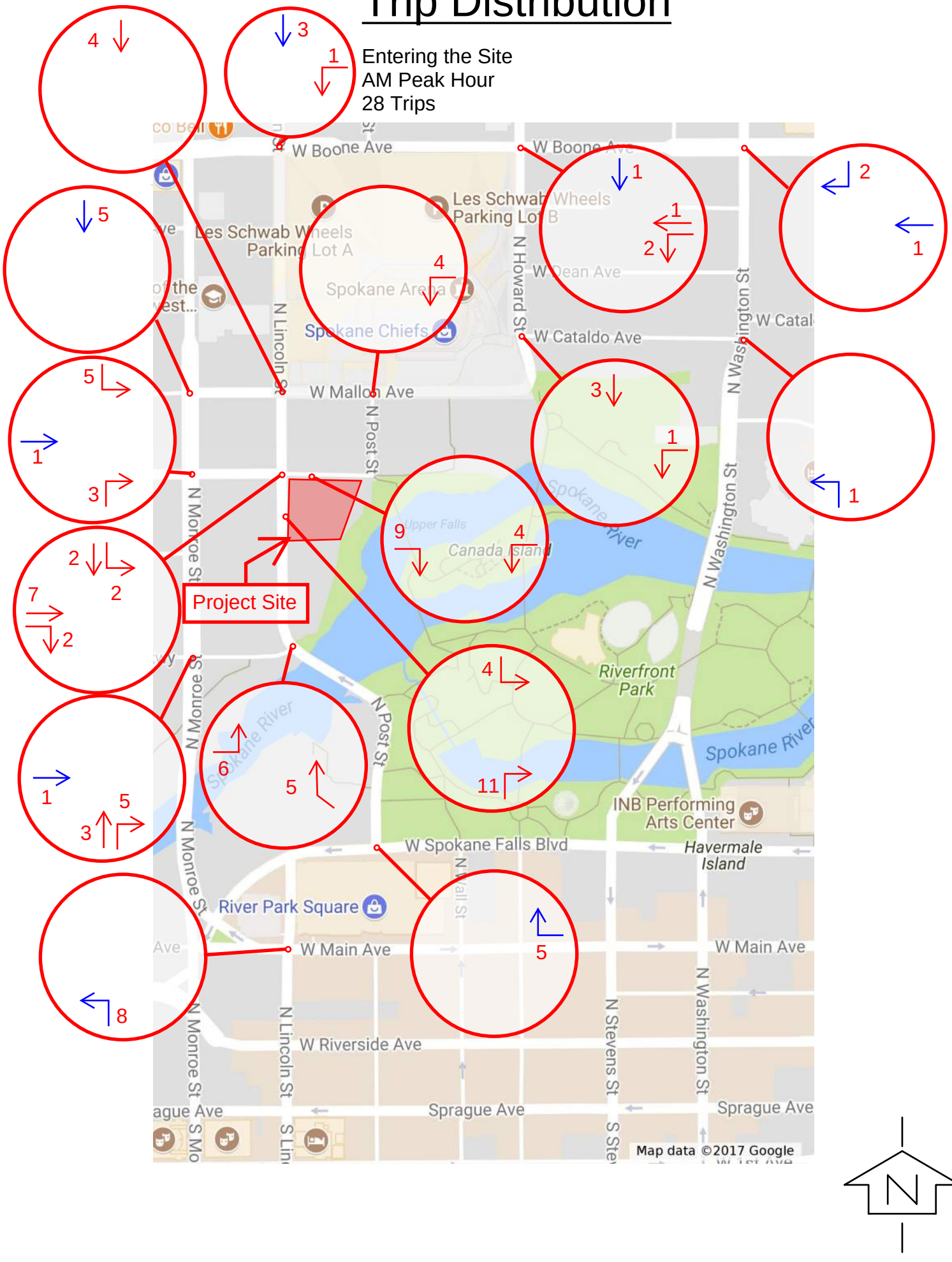
Land Use Classification		Time Period	Vehicle Occupancy		
Code	Description		Average	Range	Comment
021	Commercial Airport	Weekday		1.79–2.42	
022	General Aviation Airport	Weekday		1.20–1.70	
030	Intermodal Truck Terminal	Weekday	1.16		avg. of 2 studies
110	General Light Industrial	Not Available	1.3		for all industrial sites
120	General Heavy Industrial	Not Available			
150	Warehousing	Not Available			
130	Industrial Park	Weekday	1.37	1.20–1.80	
140	Manufacturing	Weekday		1.20–1.30	
151	Mini-Warehouse	Weekday		1.20–1.90	
714	Corporate Headquarters Building	Weekday	1.2	1.03–1.74	avg. of 10 studies
715	Single Tenant Office Building	Not Available	1.1	1.03–1.14	avg. of 10 studies
720	Medical Dental Office Building	Not Available	1.37	1.32–1.44	avg. of 6 studies
731	State Motor Vehicles Department	Weekday	1.38	1.30–1.48	
732	United States Post Office	Weekday	1.14		avg. of 4 studies
760	Research and Development Center	Weekday	1.19	1.10–1.33	avg. of 13 studies
812	Building Materials and Lumber Store	Weekday	1.17	1.10–1.21	
815	Free-Standing Discount Store	Weekday	1.32	1.19–1.46	avg. of 2 sites
816	Hardware/Paint Store	Weekday	1.31	1.15–1.39	avg. of all sites
857	Discount Club	Not Available	1.45		limited sample
860	Wholesale Market	Weekday	1.21		avg. for site
890	Furniture Store	Weekday	1.42	1.12–2.00	
920	Copy, Print, and Express Ship Store	AM street pk	1.12		
		PM street pk	1.21		
		Pk. Hour	1.16		
931	Quality Restaurant	Weekday	1.78	1.59–1.98	
932	High-Turnover (Sit-Down) Restaurant	Weekday	1.52	1.39–1.69	

Source: *Trip Generation Manual*, 9th Edition, Institute of Transportation Engineers, Washington, DC, 2012.

Appendix V

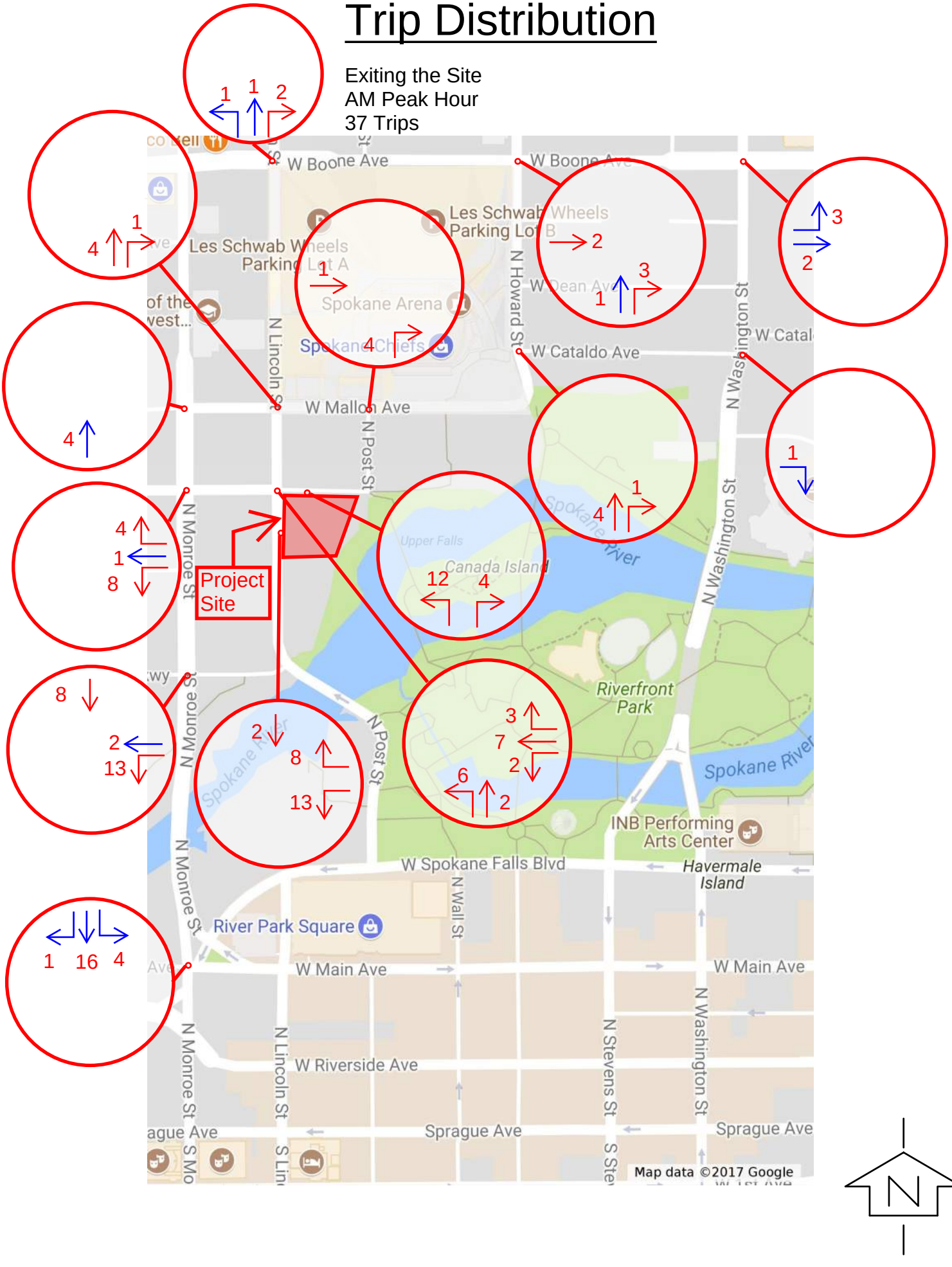
Trip Distribution

Entering the Site
AM Peak Hour
28 Trips



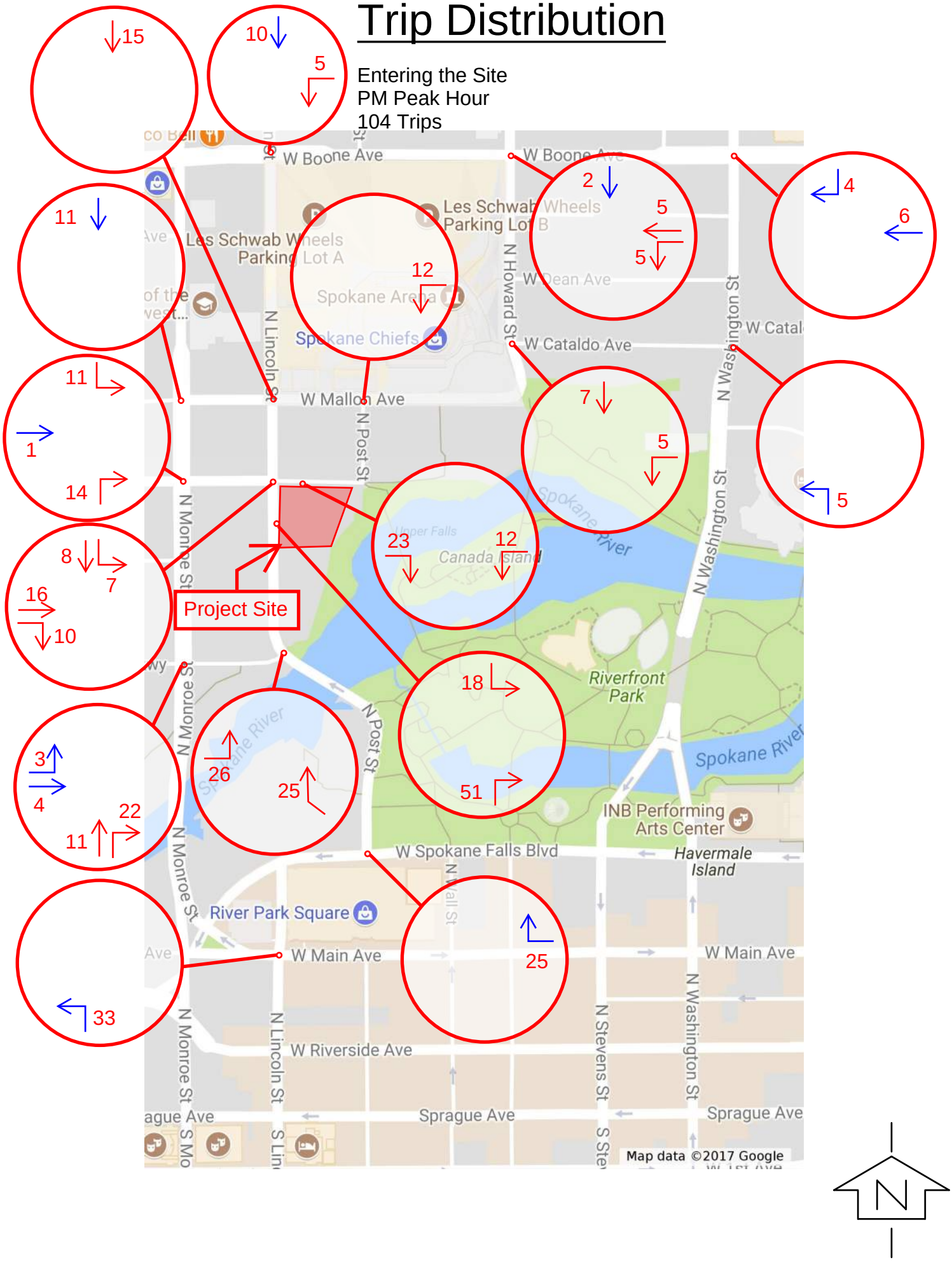
Trip Distribution

Exiting the Site
AM Peak Hour
37 Trips



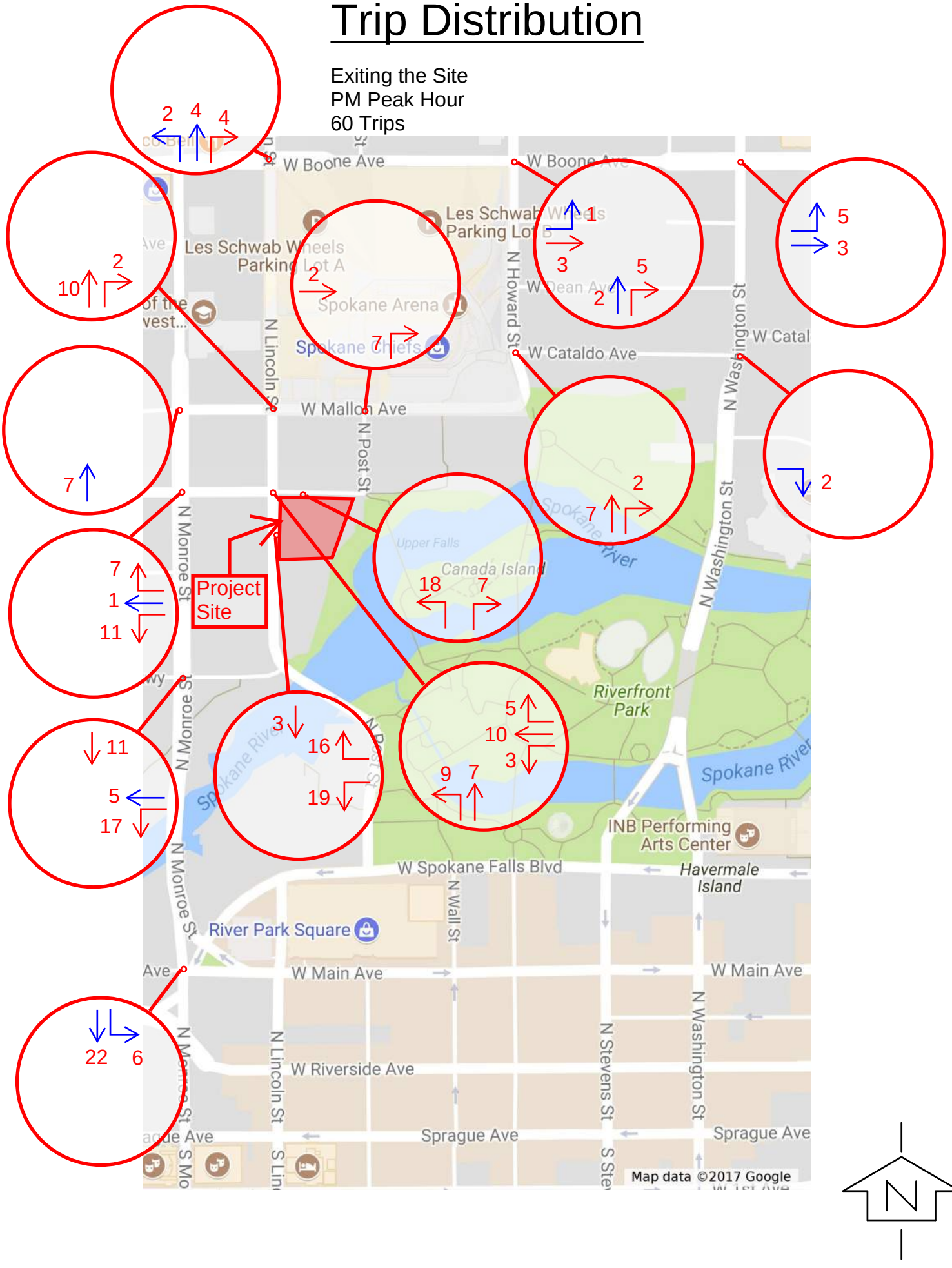
Trip Distribution

Entering the Site
PM Peak Hour
104 Trips



Trip Distribution

Exiting the Site
PM Peak Hour
60 Trips



Appendix VI

BUILDING A - SOUTH TOWER

								OFFICE			HOTEL				
LEVEL	HEIGHT	ELEVATION	# STAIRS	PARKING STALLS	GARAGE GSF	SERVICE/ LOAD/MECH	RETAIL RSF	OFFICE GSF	RSF	COMMON AREA	HOTEL GSF	RSF	COMMON AREA	INTERIOR AMENITY	# KEYS
L1	10'	1880'	2			1,561	6,189								
L1.5	10'	1890'					4,016								
L2	14'	1900'	2												
L3	10'	1914'	2												
L4	10'	1924'	2												
L5	10'	1934'	2												
L6	10'	1944'	2												
L7	10'	1954'	2												
L8	10'	1964'	2												
L9	10'	1974'	2												
L10	10'	1984'	2												
L11	10'	1994'	2												
L12	10'	2004'	2												
L13	12'	2014'	2												
ROOF/ME	15'	2026'	2			1,260									
SUBTOTAL			28	0	0	2,821	10,205	0	0	0	0	0	0	0	0

BUILDING B - NORTH TOWER

								OFFICE			HOTEL				
	HEIGHT	ELEVATION	# STAIRS	PARKING STALLS	GARAGE GSF	SERVICE/ LOAD/MECH	RETAIL RSF	OFFICE GSF	RSF	COMMON AREA	HOTEL GSF	RSF	COMMON AREA	INTERIOR AMENITY	# KEYS
L1	20'	1880'	3			3,171	6,270				8,161	6,896	708		
L2	14'	1900'	4								13,004	2,887	2,564	7,057	6
L3	10'	1914'	4								13,004	9,898	2,610		23
L4	10'	1924'	4								10,507	7,759	2,311		19
L5	10'	1934'	2								10,507	7,759	2,311		19
L6	10'	1944'	2								10,507	7,759	2,311		19
L7	10'	1954'	2								10,507	7,759	2,311		19
L8	10'	1964'	2								10,507	7,759	2,311		19
L9	10'	1974'	2												
L10	10'	1984'	2												
L11	10'	1994'	2												
L12	10'	2004'	2												
L13	12'	2014'	2												
ROOF/ME	15'	2026'	2			1,840									
SUBTOTAL			35	0	0	5,011	6,270	0	0	0	86,704	58,476	17,437	7,057	124

BUILDING C - WEST PODIUM

								OFFICE			HOTEL				
	HEIGHT	ELEVATION	# STAIRS	PARKING STALLS	GARAGE GSF	SERVICE/ LOAD/MECH	RETAIL RSF	OFFICE GSF	RSF	COMMON AREA	HOTEL GSF	RSF	COMMON AREA	INTERIOR AMENITY	# KEYS
L1	20'	1880'	3				7,729			1,278					
L2	14'	1900'	4					9,421	8,440	595					
L3	14'	1914'	4					9,421	8,440	595					
ROOF/ME	15'	1924'	4			722		1,196		474					
SUBTOTAL				0	0	722	7,729	20,038	16,880	2,942	0	0	0	0	0

PARKING GARAGE & PLAZA

								OFFICE			HOTEL				
LEVEL	HEIGHT	ELEVATION	# STAIRS	PARKING STALLS	GARAGE GSF	SERVICE/ LOAD/MECH	RETAIL RSF	OFFICE GSF	RSF	COMMON AREA	HOTEL GSF	RSF	COMMON AREA	INTERIOR AMENITY	# KEYS
L1	20'	1880'		16											
P1	12'	1868'	2	108	52,181	3,235	2,678								
P2	10'	1858'	2	173	69,835										
P3	10'	1848'	1	91	34,584										
SUBTOTAL			5	388	156,600	3,235	2,678	0	0	0	0	0	0	0	0
PROJECT TOTALS =			#REF!	388	156,600	11,789	26,882	20,038	16,880	2,942	86,704	58,476	17,437	7,057	124

APARTMENTS									
APT GSF	RSF	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	OPEN 1 BEDROOM	1 BEDROOM	2 BEDROOM	3 BEDROOM	TOWNHOME
11,390	6,826	4,046		7	1	2	1		3
9,223	7,380	2,584		6	1	4	1		
10,905	5,294	1,822	3,336	6	1	3	2		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,425	1,831		10	1	6	3		
10,740	8,394	1,862		10	1	6	3		
10,740	8,394	1,862		10	1	6	3		
10,740	8,394	1,862		10	1	6	3		
10,410	8,249	1,651		3			1	2	
2,439	0	1,179							
151,767	111,906	29,685	3,336	122	13	69	35	2	3

CONDOMINIUMS							
CONDO GSF	RENT/ LEASE	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	2 BEDROOM	2 BEDROOM	3 BEDROOM
0	0	0	0	0	0	0	0

APARTMENTS									
APT GSF	RSF	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	OPEN 1 BEDROOM	1 BEDROOM	2 BEDROOM	3 BEDROOM	TOWNHOME
0	0	0	0	0	0	0	0	0	0

CONDOMINIUMS							
CONDO GSF	RENT/ LEASE	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	1 BEDROOM	2 BEDROOM	3 BEDROOM
1,798		1,798					
10,403	8,113	1,836		6	1	5	
10,403	8,293	1,656		6	1	5	
10,403	8,293	1,656		6	1	5	
10,403	8,293	1,656		6	1	5	
9,331	7,355	1,567		2	0	0	2
		1,416					
52,741	40,347	11,585	0	26	4	20	2

APARTMENTS									
APT GSF	RSF	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	OPEN 1 BEDROOM	1 BEDROOM	2 BEDROOM	3 BEDROOM	TOWNHOME
0	0	0	0	0	0	0	0	0	0

CONDOMINIUMS							
CONDO GSF	RENT/ LEASE	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	2 BEDROOM	2 BEDROOM	3 BEDROOM
0	0	0	0	0	0	0	0

APARTMENTS									
APT GSF	RSF	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	OPEN 1 BEDROOM	1 BEDROOM	2 BEDROOM	3 BEDROOM	TOWNHOME
4,664	3,919	745		4		4			
4,664	3,919	745	0	4	0	4	0	0	0
156,431	115,825	30,430	3,336	126	13	73	35	2	3

CONDOMINIUMS							
CONDO GSF	RENT/ LEASE	COMMON AREA	INTERIOR AMENITY	TOTAL UNITS	2 BEDROOM	2 BEDROOM	3 BEDROOM
0	0	0	0	0	0	0	0
52,741	40,347	11,585	0	26	4	20	2