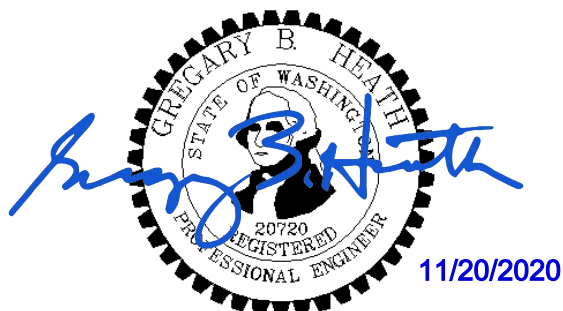




MESSENGER HOUSE
TRIP GENERATION AND PARKING ANALYSIS

Bainbridge Island, WA



Prepared for: Mr. Justin Younker
Cascadia Development

November 2020

MESSINGER HOUSE

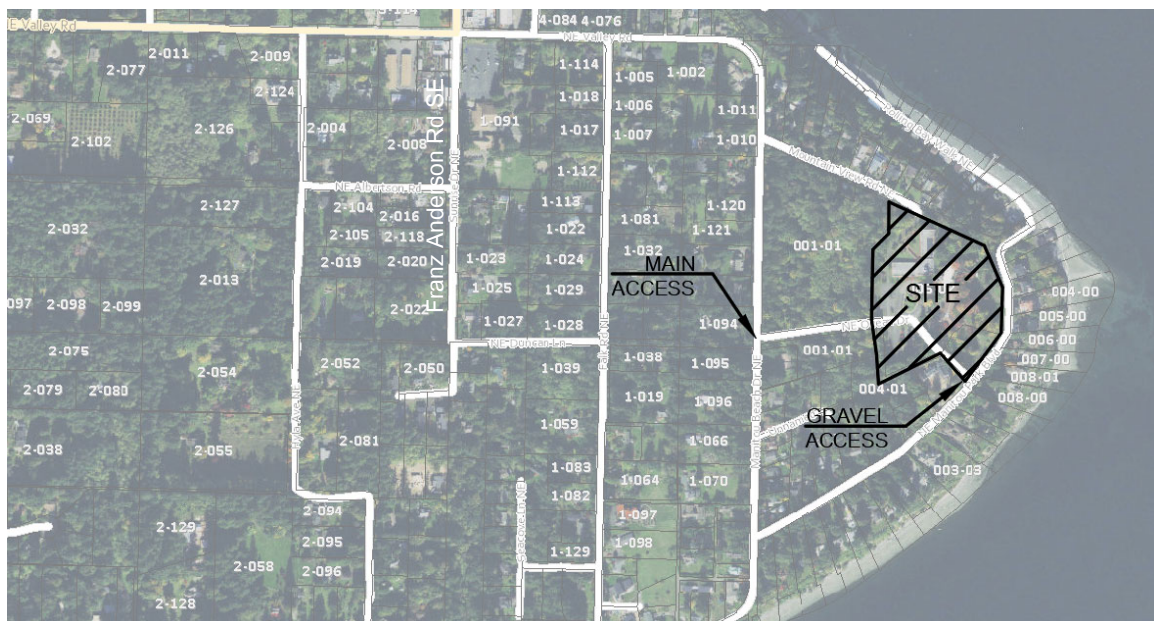
TRIP GENERATION AND PARKING ANALYSIS

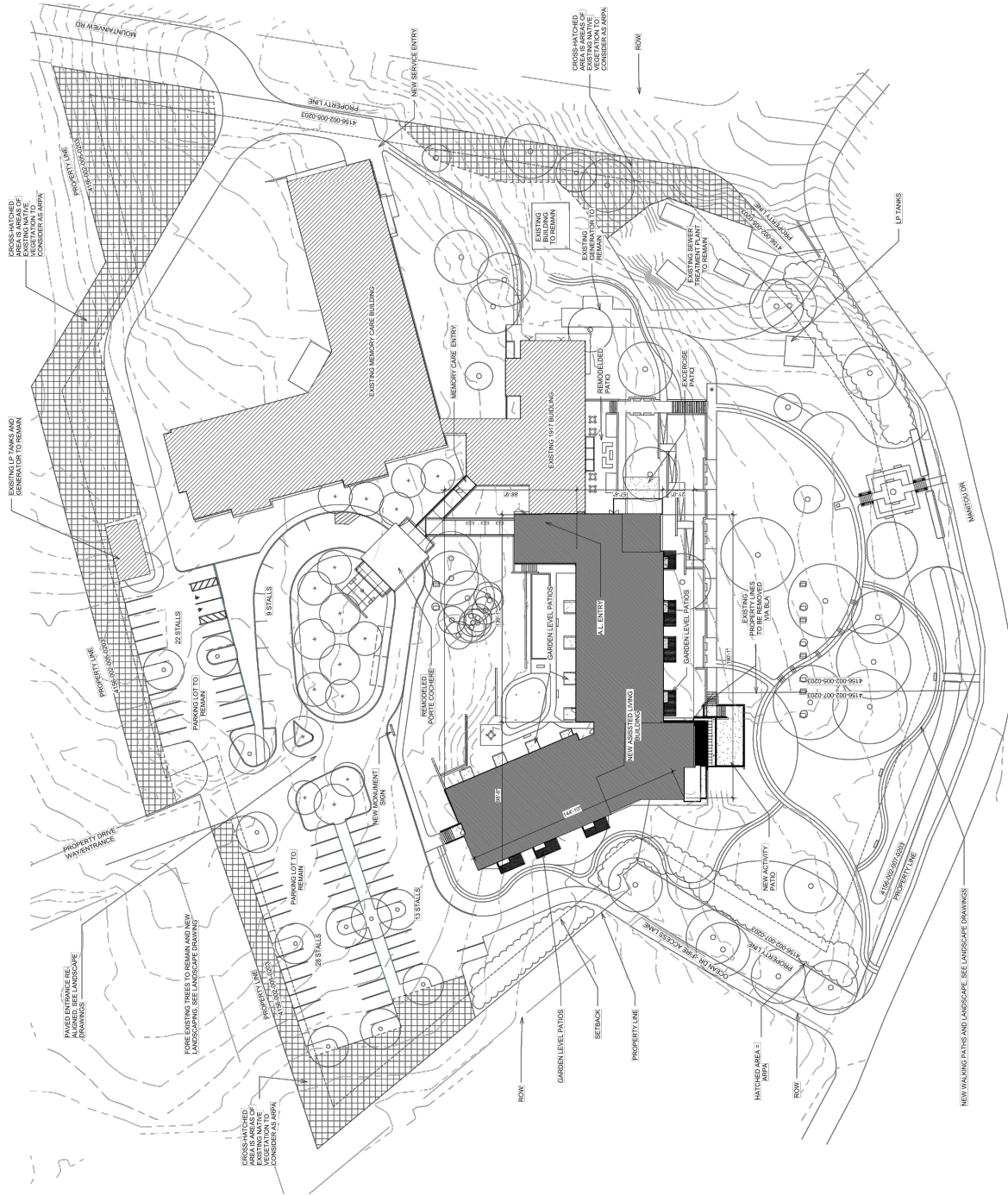
PROJECT DESCRIPTION

The Messenger House project proposes to convert an existing senior housing facility containing a total of 96 beds with 50 beds associated with memory care and 46 beds associated with skilled nursing in the city of Bainbridge Island. The subject property is associated with two tax parcels 4156-002-005-0203 and 4156-002-007-0003.

The building will be reconfigured to provide the following type of care: 39 beds for memory care, 43 beds for assisted living and 14 beds for independent living. The site currently has 72 parking stalls which are proposed to be maintained. Access to the site is proposed via one primary driveway extending east from Manitou Beach Drive NE which is existing and is the signed main entrance. In addition, right of way for NE Ocean Drive extends through the site to NE Manitou Park Boulevard where it is graveled and as a secondary access for emergency purposes. Surrounding land use is a mixture of residential with some commercial located north and west in the Rolling Bay area of Bainbridge Island. A conceptual site plan illustrating the proposed site layout is presented in Figure 1. A site aerial is provided below locating the project.

Site Aerial





1 SITE PLAN
1/8" = 1'-0"

HEATH & ASSOCIATES
TRAFFIC AND CIVIL ENGINEERING

MESSANGER HOUSE

SITE PLAN
FIGURE 1

TRIP GENERATION

Trip generation is used to determine the magnitude of project impacts on the surrounding street system. This is usually denoted by the quantity or specific number of new trips that enter and exit a project during a designated time period, such as a specific peak hour (AM or PM) or an entire day. Data presented in this report was taken from the Institute of Transportation Engineer's publication *Trip Generation*, 10th Edition.

Existing Trip Generation

The current facility would be defined as a Land Use Code 620 for both the memory care and the skilled nursing. The excerpts from the ITE Trip Generation Manual, 10th Edition are added to the appendix. Table 1 below summarizes anticipated vehicular trips for the average weekday daily trips (AWDT), AM peak hour and PM peak hour.

Table 1: Existing Trip Generation

Land Use	Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Memory Care	50	153	6	3	9	4	7	11
Skilled Nurs.	46	141	6	2	8	3	7	10
Total	96	294	12	5	17	7	14	21

Based on the data presented in Table 2, the project is anticipated to generate 21 new AM peak hour trips (5 in/16 out) and 26 new PM peak hour trips (16 in/10 out).

Proposed Trip Generation

The new configuration modifies the trip generation slightly as the following unit counts are proposed along with the designated land uses from the ITE Trip Generation Manual, 10th Edition which are also added to the appendix.

The new configuration proposes:

39 beds of memory care (LUC 620 – Nursing Home)

43 beds of assisted living (LUC 254 – Assisted Living)

14 units of independent living (LUC 252 – Senior Adult Housing Attached)

Table 2 on the following page summarizes anticipated vehicular trips for the new configuration.

Table 2: Proposed Trip Generation

Land Use	Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Memory Care	39	119	5	1	6	3	6	9
Asst. Living	43	112	5	3	8	4	7	11
Sr. Housing	14	51	1	2	3	2	2	4
Total	96	282	11	6	17	9	15	24

Net Difference between the current configuration and the new configuration shows a 12 trip daily reduction with a net zero difference for the AM peak hour and a 3 trip increase in the PM peak hour.

The trip threshold for Bainbridge Island in terms of additional traffic analysis is a net 50 trip increase in daily traffic or a 5 trip increase in peak hour traffic. Neither of these thresholds are met with the new configuration proposed for the Messenger House.

PARKING ANALYSIS

Chapter 18.15 of the Bainbridge Island Development Standards and Guidelines was reviewed for parking requirements as established in Table 18.15.020-1. The uses proposed at Messenger House are not listed therefore the guidelines stipulate that a parking analysis be provided for city review. The parking analysis should be based on a review of local jurisdictions along with any analysis that can be determined by a literature search of accepted practices.

PARKING GENERATION MANUAL, 5TH EDITION

Forecast parking demands associated with the Messenger House project were obtained from the Institute of Transportation Engineering publication, *Parking Generation* 5th Edition (2019). The Land Use Code as shown were used for determining peak parking demands. Table 3 summarizes projected rates for both average rates and 85th percentile rates.

Table 3: Parking Demands

Land Use	Peak Period	Unit of Measure	Size	Avg. (veh/unit)	Parked Veh.	85th %-tile (veh/unit)	Parked Veh.
Memory Care LUC 620	9 AM – 3 PM	beds	39	0.48	19	0.68	27
Assisted Living LUC 254	11 AM - 3 PM	beds	43	0.39	17	0.58	25
Sr. Housing LUC 252	10 PM – 8 AM	units	14	0.61	9	0.67	10
Average					45		62

Based on ITE data, an average parking demand for the Messenger House is expected to be approximately 45 parked vehicles. A more conservative estimation, using the 85th percentile from the data set, indicates approximately 62 parked vehicles. The Messenger House has proposed an on-site parking supply on 72 stalls with additional parking available in the circular driveway serving the porte cochere. Given the 72 car availability and the 85th percentile need of 62 stalls adequate parking based on the Parking Generation Manual is met using the latest parking generation information.

JURISDICTIONAL COMPARISONS

Three nearby jurisdictions were reviewed in terms of on-site parking requirements to provide an additional parking metric. Requirements were obtained through the respective municipal codes. The largest shift proposed at Messenger House would incorporate 18 employees at stabilization.

Kitsap County: Minimum Parking – 0.5 per unit plus 1 per each on-duty employee.¹

Applying the above requirements would yield: $0.5 \times 96 + 18 = \mathbf{64 \text{ spaces}}$.

Gig Harbor: Minimum Parking – 1 for each four beds.²

Applying the above requirements would yield: $96/4 = \mathbf{24 \text{ spaces}}$.

Poulsbo: Minimum Parking – 1 for each two beds plus one space for every two full-time employees on the largest shift.³

Applying the above requirements would yield: $96/2 + 18/2 = \mathbf{57 \text{ spaces}}$.

¹ Kitsap County Municipal Code: Table 17.490.030

² Gig Harbor Municipal Code: Table 17.72.030

³ Poulsbo Municipal Code: 18.70.080

Messenger House proposes a parking supply of 72 spaces, exceeding that which would be required from three nearby jurisdictions.

SUMMARY

Messenger House proposes to modify the existing 96 bed memory bed/skilled nursing facility to 39 memory care, 43 assisted living and 14 units of independent living. The site would have 72 on-site parking spaces. Trip generation was analyzed for the change in uses of the Messenger House site.

Estimated parking demands were obtained from published ITE parking literature. In addition, two nearby jurisdiction's minimum parking requirements for day car uses were examined for reference.

1. The project is not exceeding city of Bainbridge Island trip generation threshold criteria of 50 additional daily trips or 5 peak hour trips therefore no further analysis is needed.
2. The parking proposed for the site of 72 stalls is adequate to serve the project including the change in uses.

MESSENGER HOUSE
TRIP GENERATION AND PARKING ANALYSIS

APPENDIX

ITE TRIP GENERATION SHEETS
LUC 620 – NURSING HOME

Land Use: 620 Nursing Home

Description

A nursing home is any facility whose primary function is to provide care for persons who are unable to care for themselves. Examples of such facilities include rest homes and chronic care and convalescent homes. Skilled nurses and nursing aides are present 24 hours a day at these sites. Nursing homes are occupied by residents who do little or no driving; traffic is primarily generated by employees, visitors, and deliveries. Assisted living (Land Use 254) and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the four general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:00 a.m. and 12:00 p.m. and 1:30 and 2:30 p.m., respectively.

The average numbers of person trips per vehicle trip at the three general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.03 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.12 during Weekday, AM Peak Hour of Generator
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), Florida, New Hampshire, New Jersey, New York, Ontario, Canada, and Texas.

Source Numbers

436, 502, 598, 734, 878, 971, 972

Nursing Home (620)

Vehicle Trip Ends vs: Beds
On a: Weekday

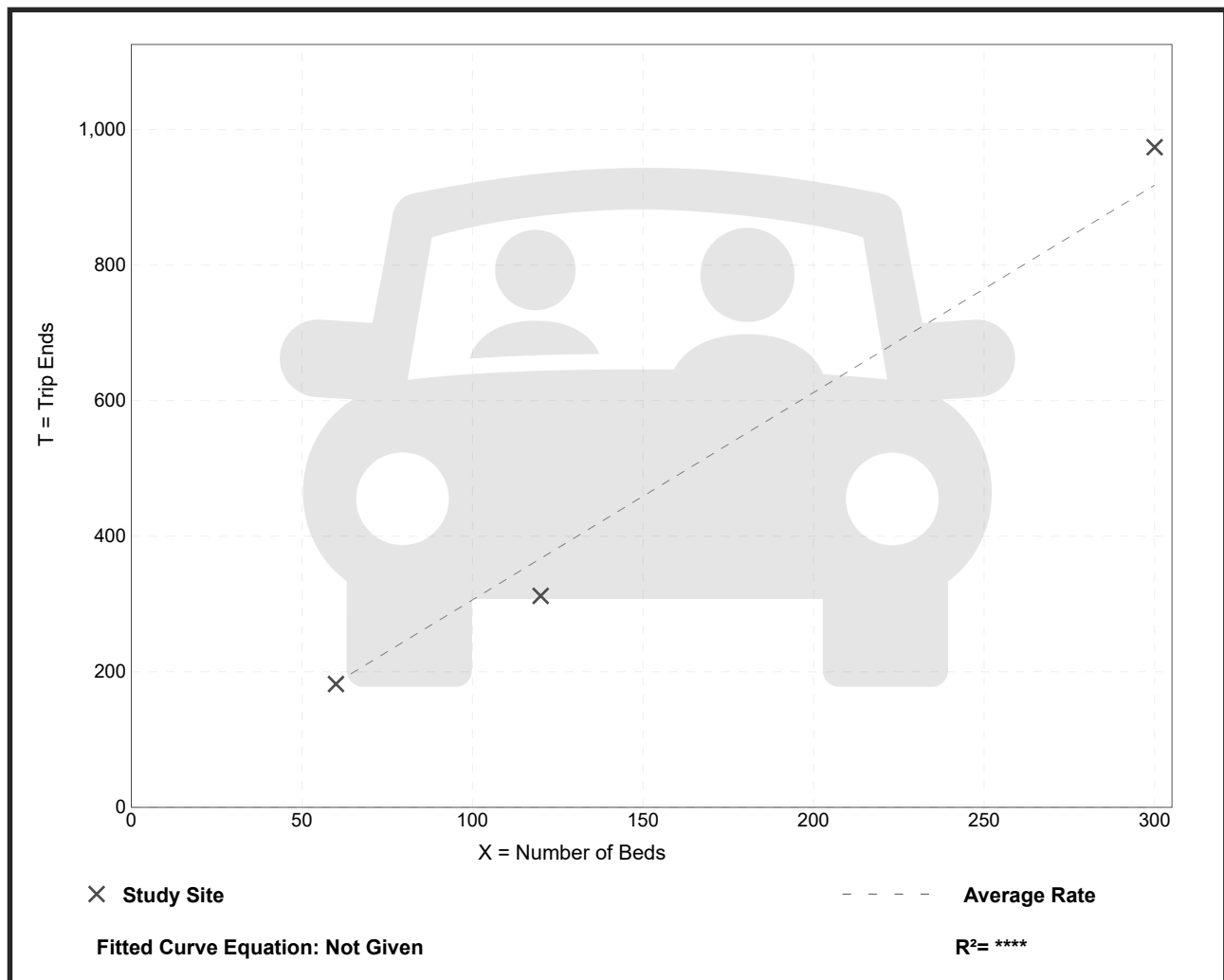
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Beds: 160
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
3.06	2.60 - 3.25	0.33

Data Plot and Equation

Caution – Small Sample Size



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

Nursing Home (620)

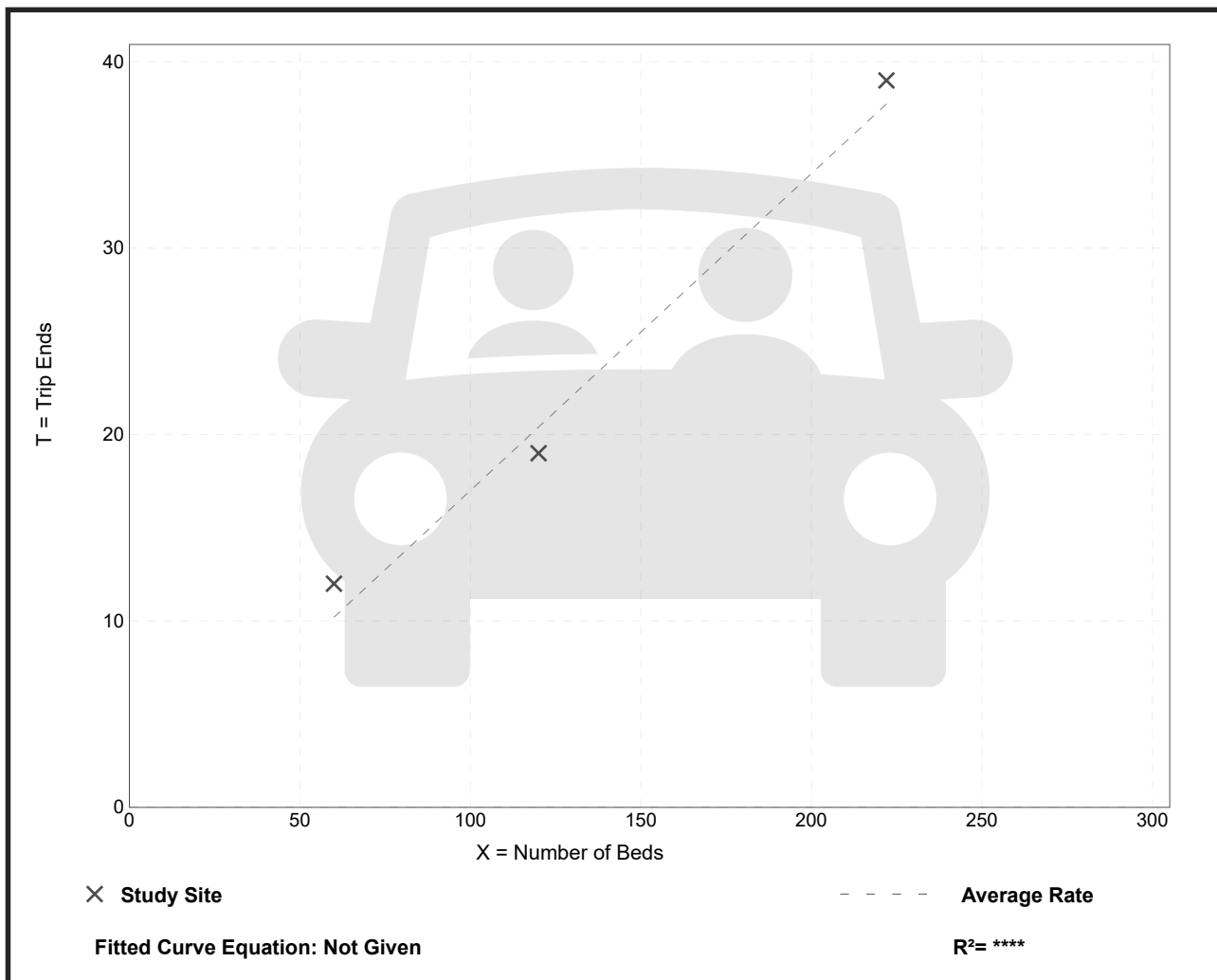
Vehicle Trip Ends vs: Beds
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 3
 Avg. Num. of Beds: 134
 Directional Distribution: 72% entering, 28% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.17	0.16 - 0.20	0.02

Data Plot and Equation

Caution – Small Sample Size



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Nursing Home (620)

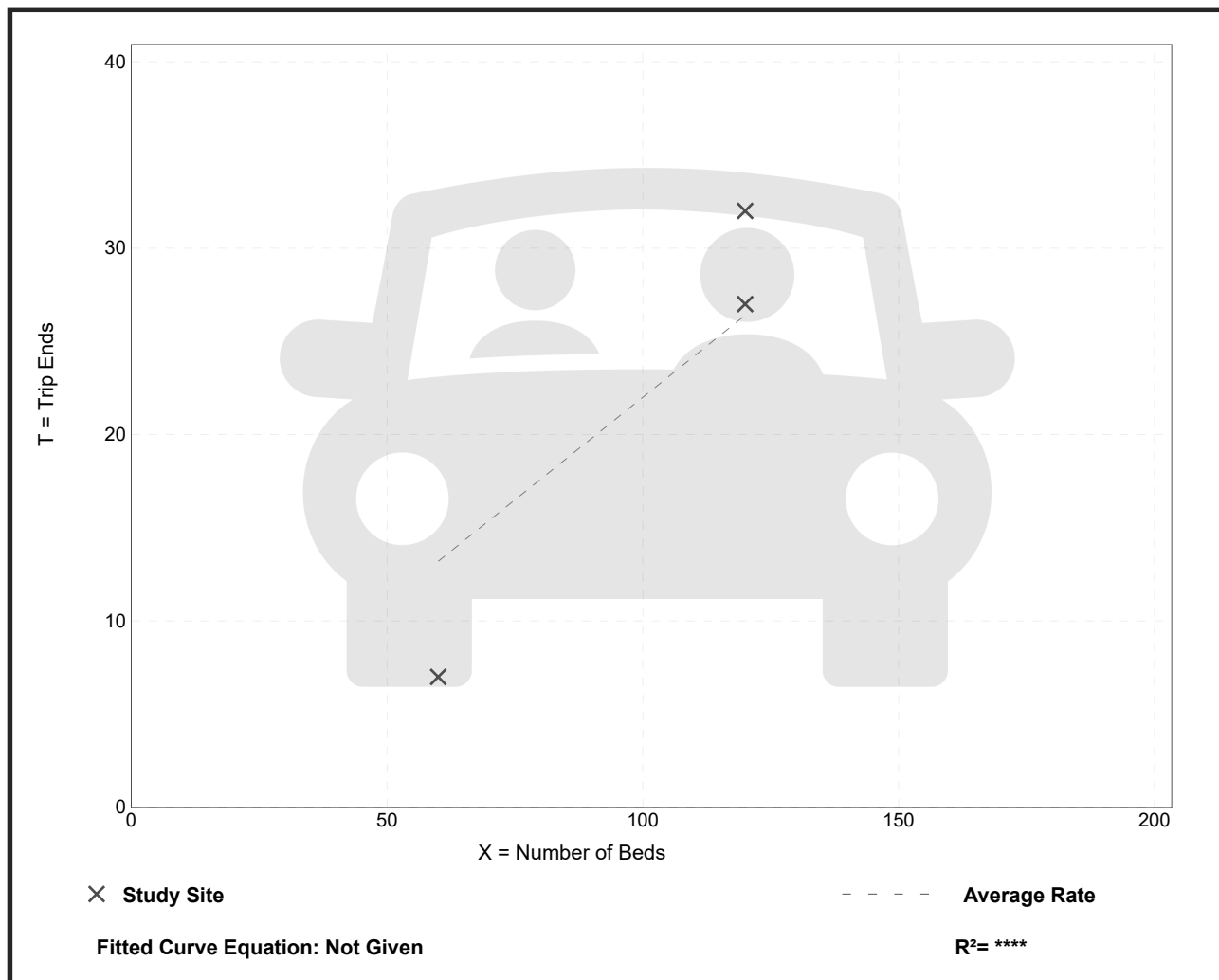
Vehicle Trip Ends vs: Beds
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 3
 Avg. Num. of Beds: 100
 Directional Distribution: 33% entering, 67% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.22	0.12 - 0.27	0.07

Data Plot and Equation

Caution – Small Sample Size



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APPENDIX

ITE TRIP GENERATION SHEETS
LUC 254 – ASSISTED LIVING

Land Use: 254

Assisted Living

Description

An assisted living complex is a residential setting that provides either routine general protective oversight or assistance with activities necessary for independent living to mentally or physically limited persons. It commonly has separate living quarters for residents. Its services typically include dining, housekeeping, social and physical activities, medication administration, and transportation. Alzheimer's and ALS care are commonly offered by these facilities, though the living quarters for these patients may be located separately from the other residents. Assisted care commonly bridges the gap between independent living and nursing homes. In some areas of the country, assisted living residences may be called personal care, residential care, or domiciliary care. Staff may be available at an assisted care facility 24 hours a day, but skilled medical care—which is limited in nature—is not required. Congregate care facility (Land Use 253), continuing care retirement community (Land Use 255), and nursing home (Land Use 620) are related uses.

Additional Data

The rooms in these facilities may be private or shared accommodations, consisting of either a single room or a small apartment-style unit with a kitchenette and living space.

Time-of-day distribution data for this land use are presented in Appendix A. For the four general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:30 a.m. and 12:30 p.m. and 12:30 and 1:30 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in New Jersey, New York, Oregon, Pennsylvania, Tennessee, and Texas.

Source Numbers

244, 573, 581, 611, 725, 876, 877, 912

Assisted Living (254)

Vehicle Trip Ends vs: Beds
On a: Weekday

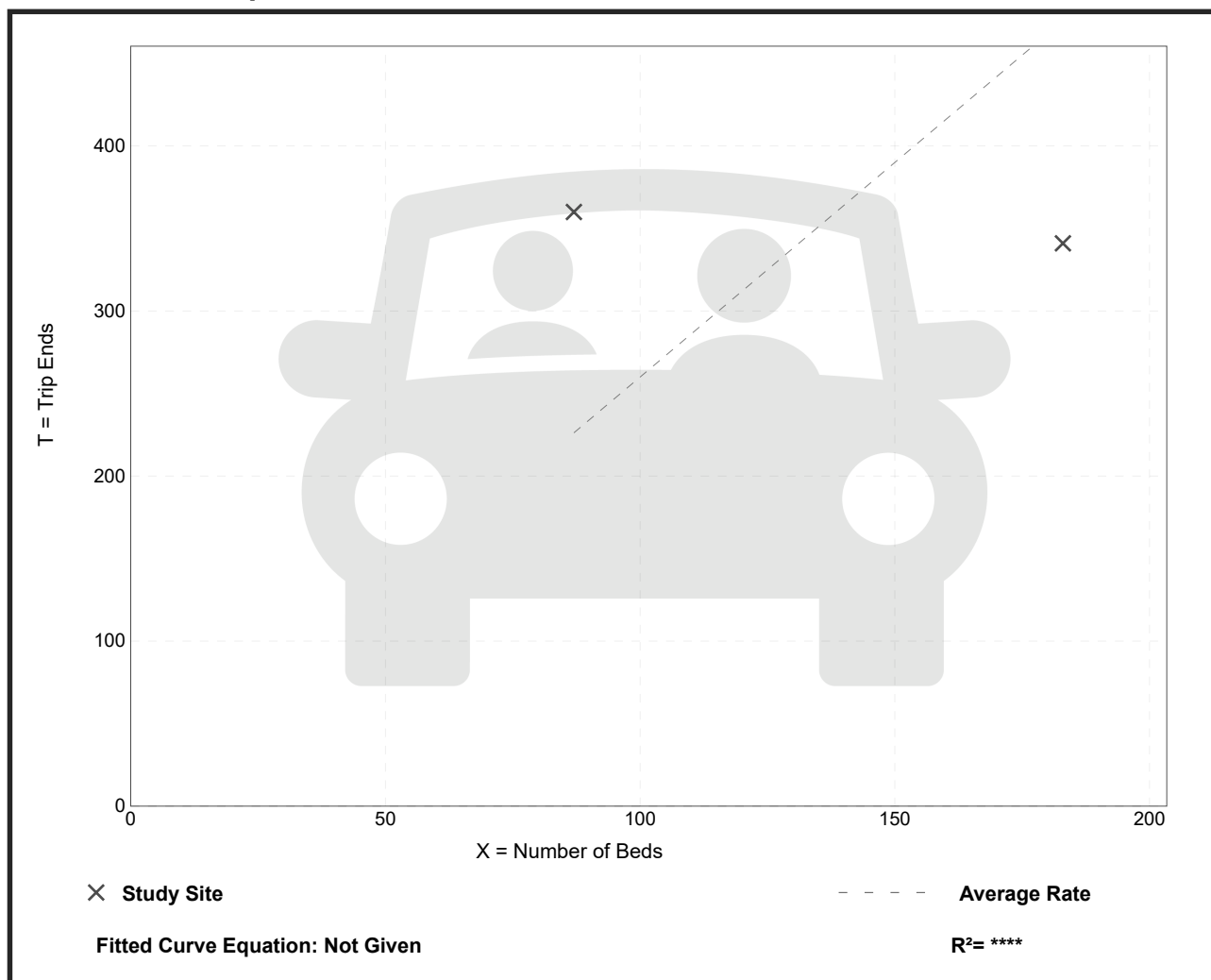
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. Num. of Beds: 135
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
2.60	1.86 - 4.14	*

Data Plot and Equation

Caution – Small Sample Size



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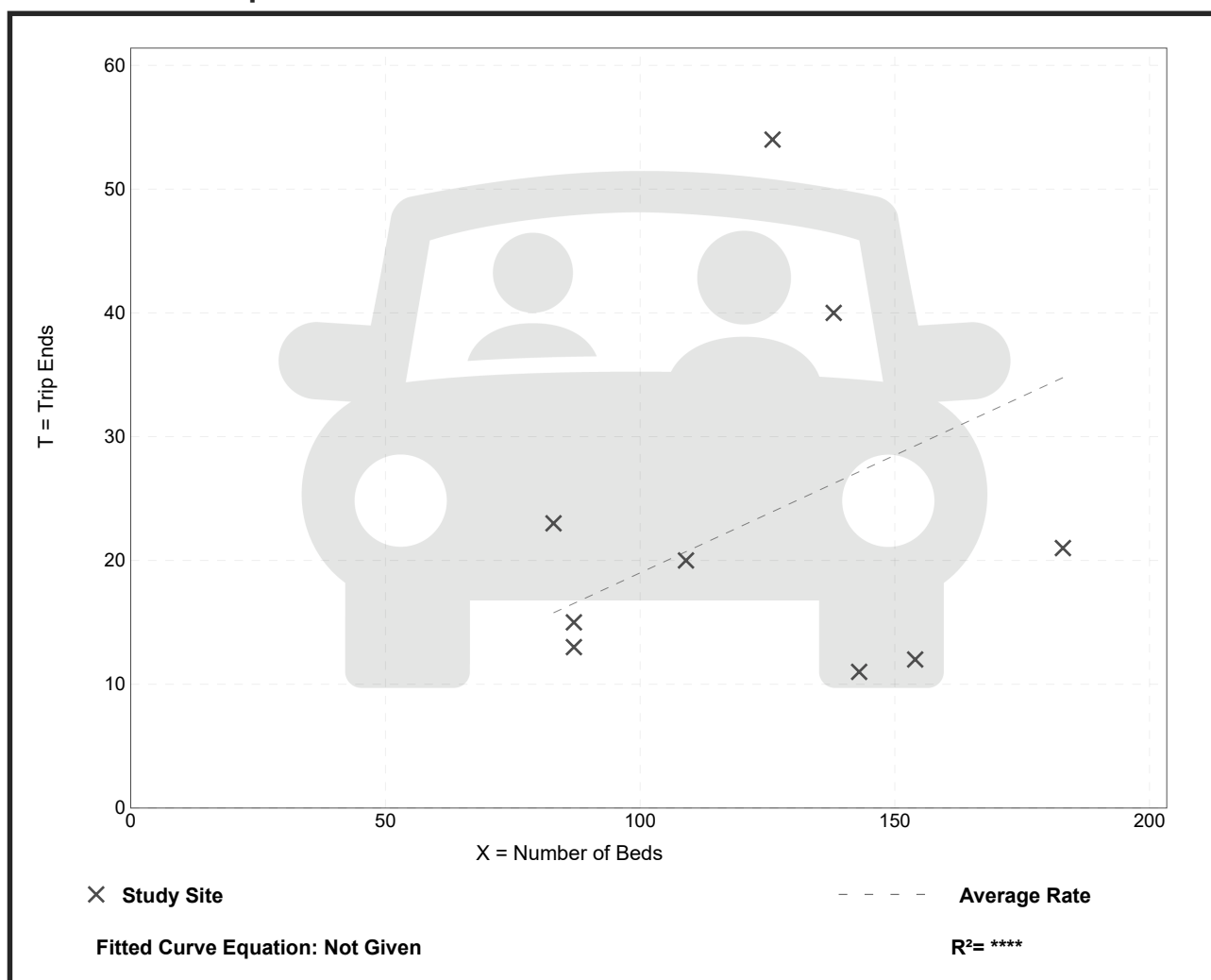
Assisted Living (254)

Vehicle Trip Ends vs: Beds
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Beds: 123
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.19	0.08 - 0.43	0.12

Data Plot and Equation



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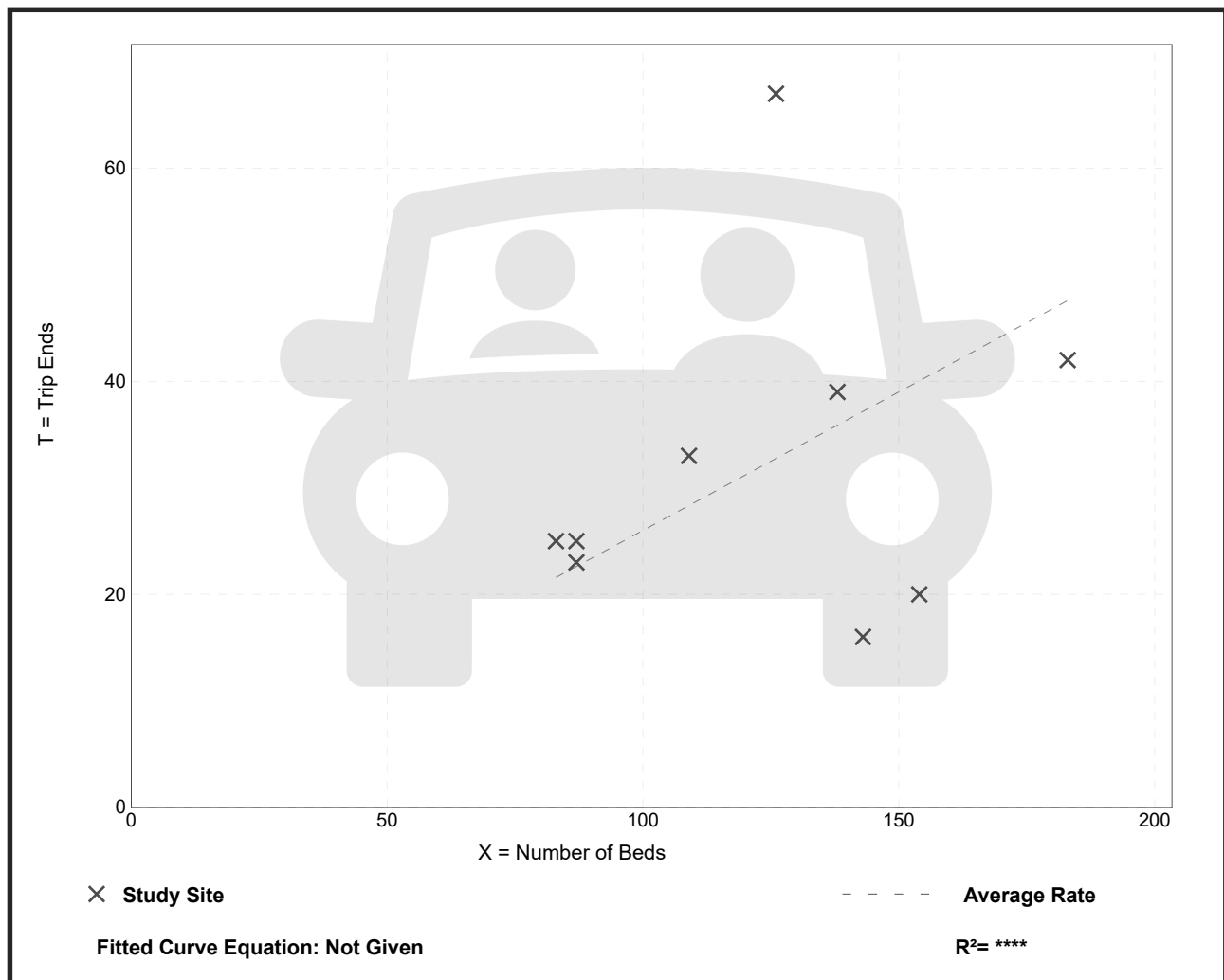
Assisted Living (254)

Vehicle Trip Ends vs: Beds
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Beds: 123
 Directional Distribution: 38% entering, 62% exiting

Vehicle Trip Generation per Bed

Average Rate	Range of Rates	Standard Deviation
0.26	0.11 - 0.53	0.13

Data Plot and Equation



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APPENDIX

ITE TRIP GENERATION SHEETS
LUC 252 – SENIOR ADULT HOUSING – ATTACHED

Land Use: 252

Senior Adult Housing—Attached

Description

Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing, and active adult communities. These developments may include limited social or recreational services. However, they generally lack centralized dining and onsite medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired. Senior adult housing—detached (Land Use 251), congregate care facility (Land Use 253), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the one general urban/suburban site with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Alberta (CAN), California, Illinois, New Hampshire, New Jersey, New York, and Pennsylvania.

Source Numbers

272, 501, 576, 602, 703, 734, 741, 902, 970

Senior Adult Housing - Attached (252)

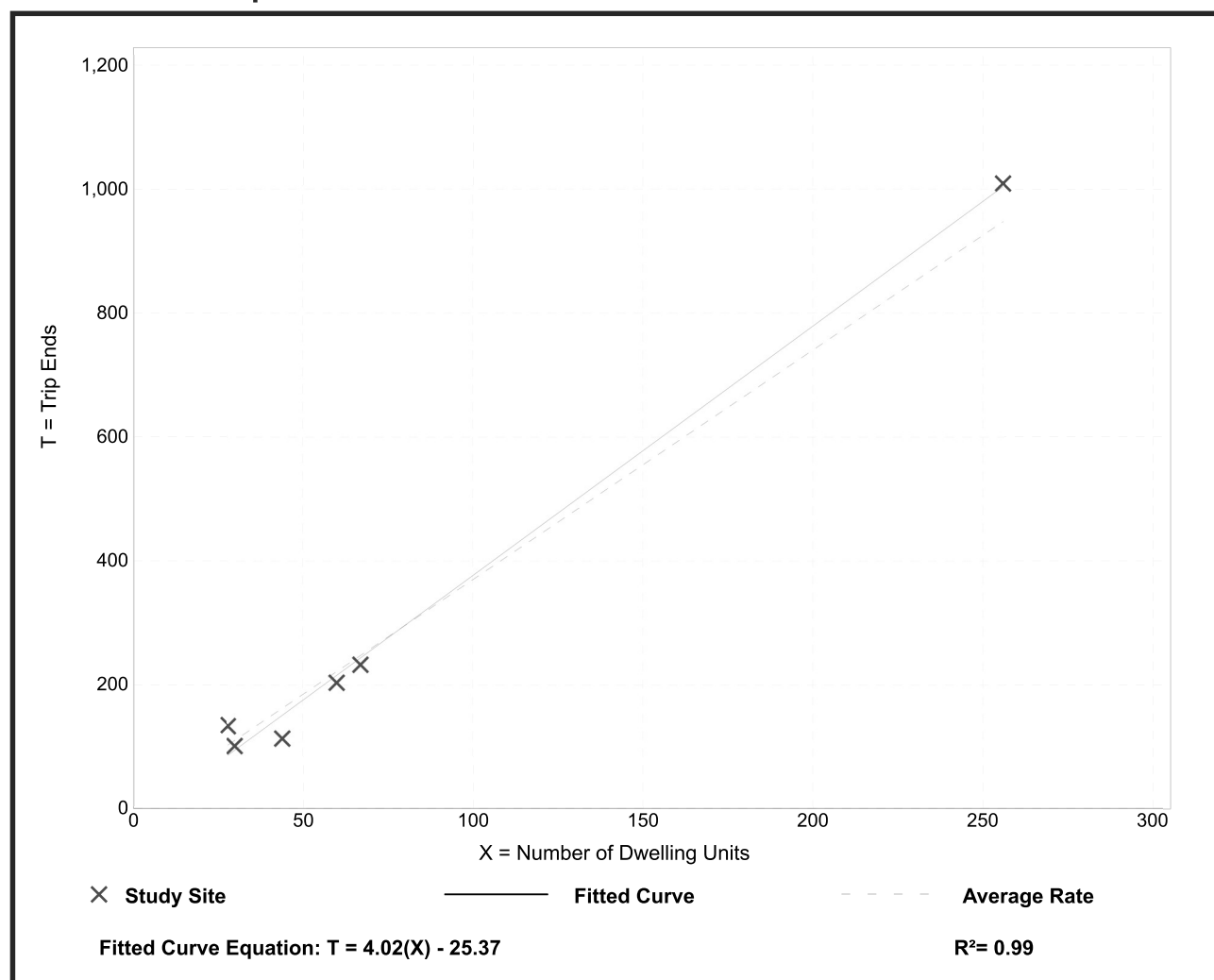
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 81
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
3.70	2.59 - 4.79	0.53

Data Plot and Equation



Trip Generation Manual, 10th Edition • Institute of Transportation Engineers

Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units

**On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.**

Setting/Location: General Urban/Suburban

Number of Studies: 11

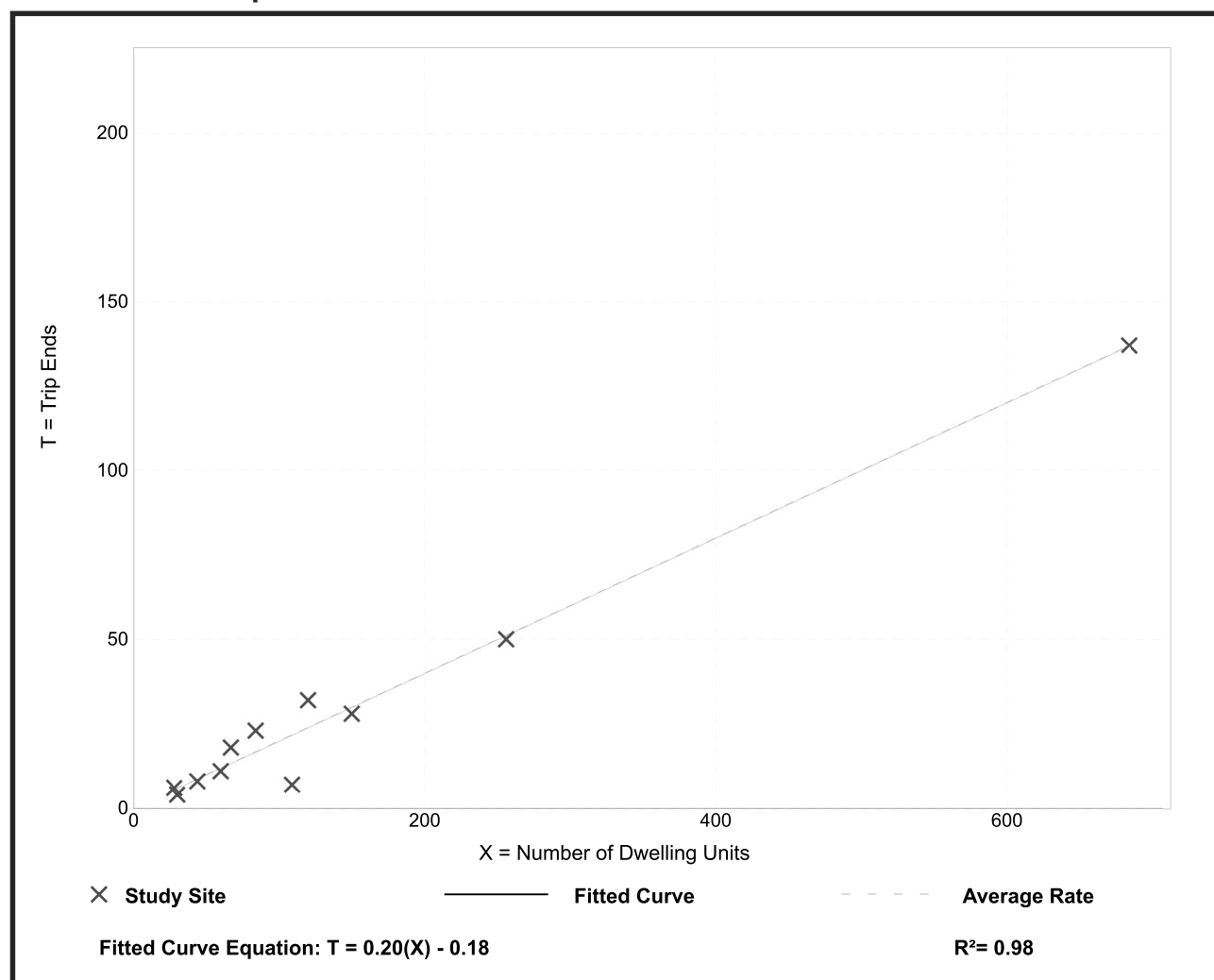
Avg. Num. of Dwelling Units: 148

Directional Distribution: 35% entering, 65% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.06 - 0.27	0.05

Data Plot and Equation



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Senior Adult Housing - Attached (252)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 11

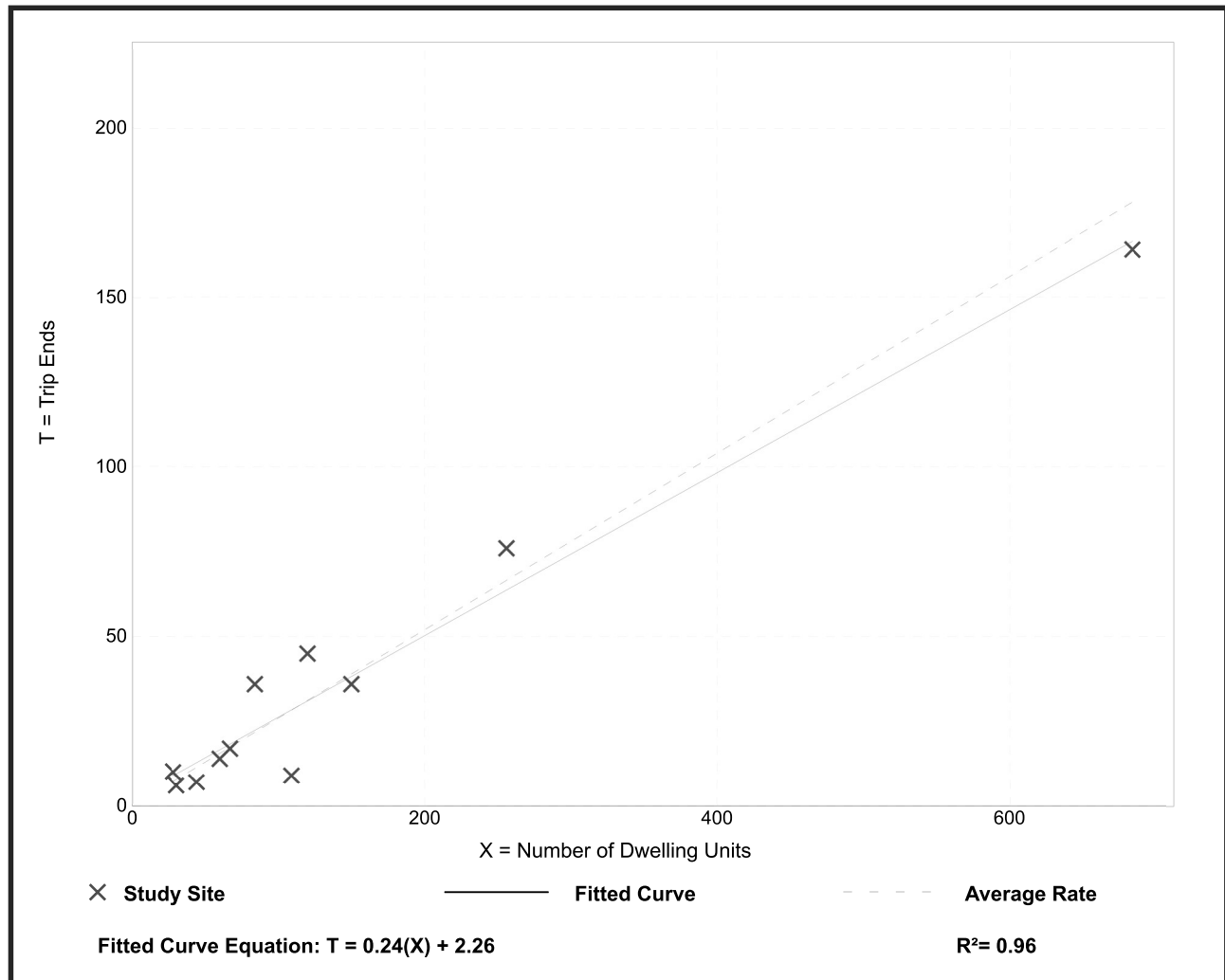
Avg. Num. of Dwelling Units: 148

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.26	0.08 - 0.43	0.08

Data Plot and Equation



Trip Generation Manual, 10th Edition • Institute of Transportation Engineers

MESSENGER HOUSE
TRIP GENERATION AND PARKING ANALYSIS

APPENDIX

ITE PARKING DEMAND SHEET
LUC 620 – NURSING HOME

Nursing Home (620)

Peak Period Parking Demand vs: Dwelling Units

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 9:00 a.m. - 3:00 p.m.

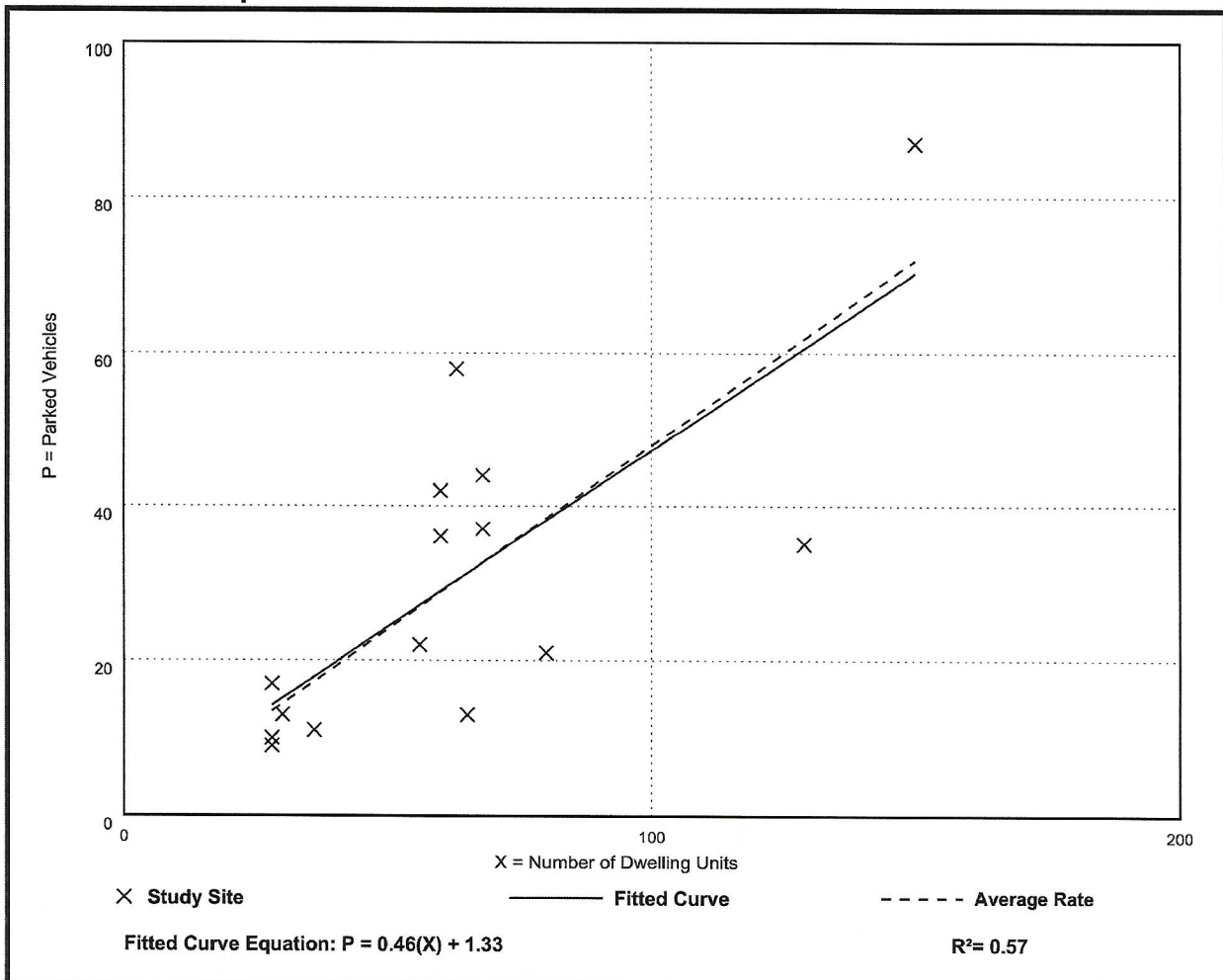
Number of Studies: 15

Avg. Num. of Dwelling Units: 63

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.48	0.20 - 0.92	0.33 / 0.68	***	0.21 (44%)

Data Plot and Equation



APPENDIX

ITE PARKING DEMAND SHEET
LUC 254 – ASSISTED LIVING

Assisted Living (254)

Peak Period Parking Demand vs: Beds

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 11:00 a.m. - 3:00 p.m.

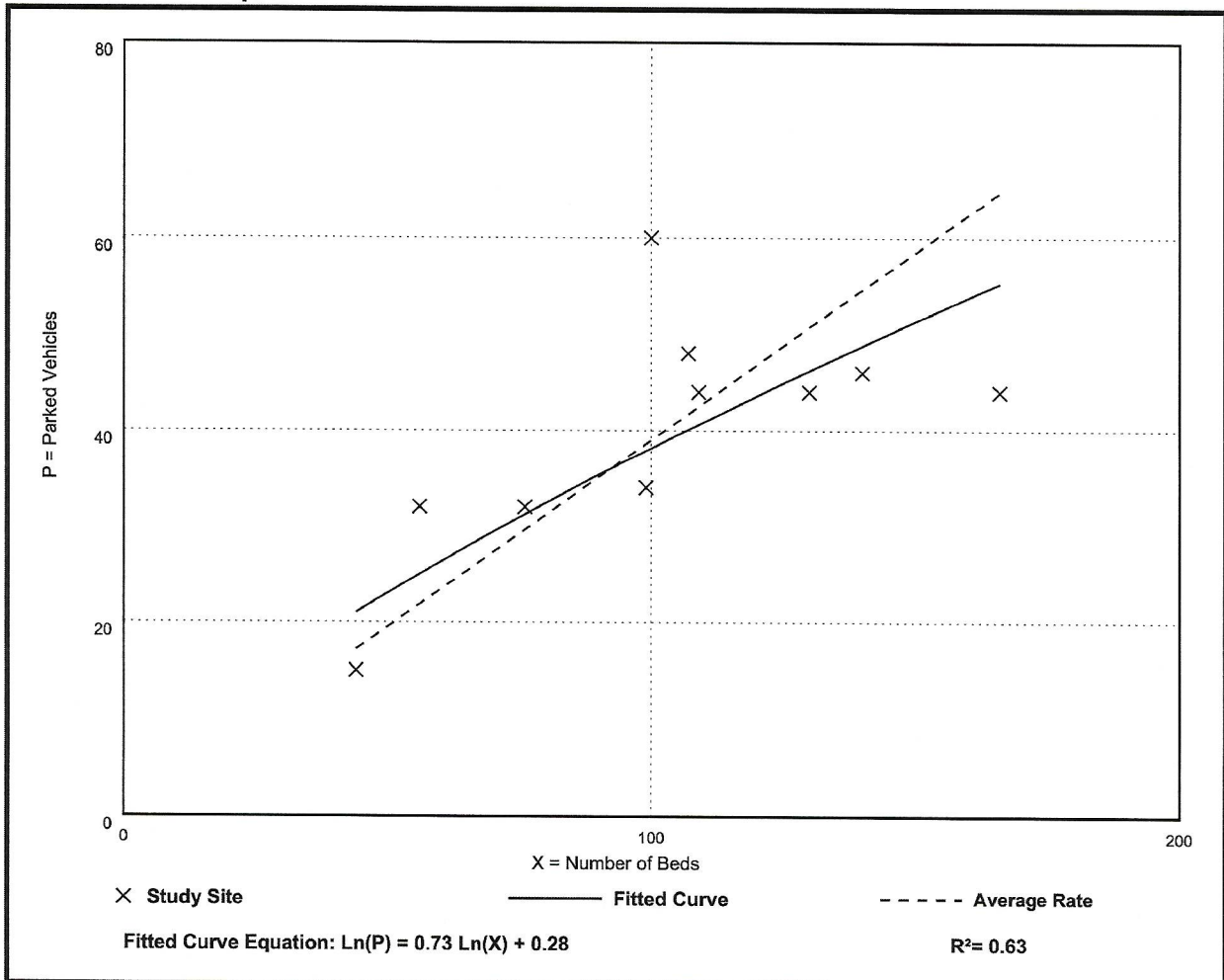
Number of Studies: 10

Avg. Num. of Beds: 103

Peak Period Parking Demand per Bed

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.39	0.27 - 0.60	0.34 / 0.58	***	0.11 (28%)

Data Plot and Equation



Land Use Descriptions and Data Plots

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APPENDIX

ITE PARKING DEMAND SHEET
LUC 252 – SENIOR ADULT HOUSING – ATTACHED

Senior Adult Housing - Attached (252)

Peak Period Parking Demand vs: Dwelling Units

On a: Weekday (Monday - Friday)

Setting/Location: General Urban/Suburban

Peak Period of Parking Demand: 10:00 p.m. - 8:00 a.m.

Number of Studies: 3

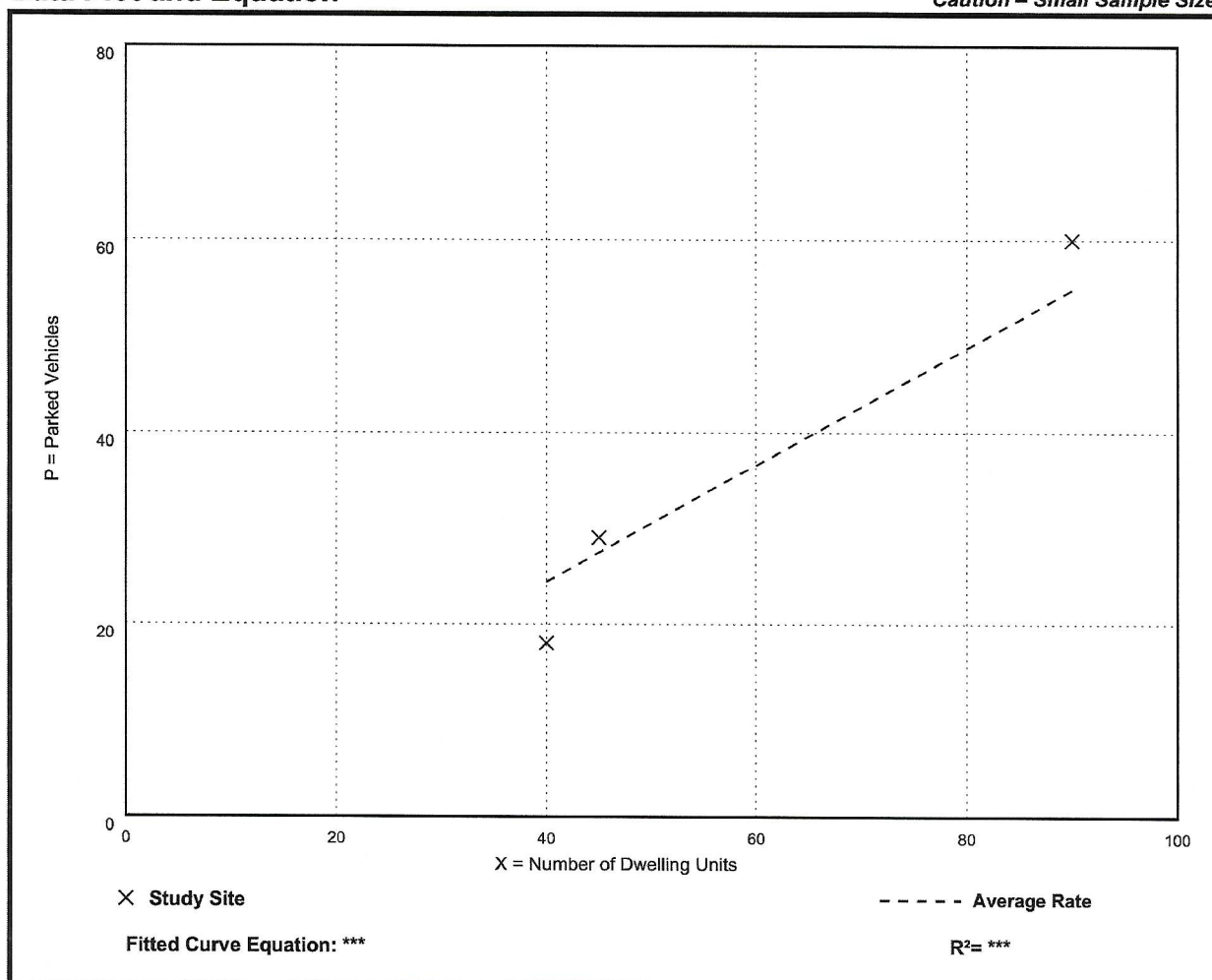
Avg. Num. of Dwelling Units: 58

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.61	0.45 - 0.67	0.51 / 0.67	***	0.11 (18%)

Data Plot and Equation

Caution – Small Sample Size



APPENDIX

PARKING REQUIREMENTS
KITSAP COUNTY

17.490.030 Number of spaces required.

Off-street parking spaces shall be provided as follows:

Land Use	Parking Spaces Required in All Zones (Except as Modified to the Right)	High Capacity Transit Station Area Modifications
Residential		
Single-Family (attached or detached)	During subdivision, 2 per unit + 0.5 per unit on street or set aside; for historical lots or lots with no standing requirement, 3 per unit. 1 additional space for accessory dwelling units or accessory living quarters. Garages are not calculated towards any parking requirement.	2 per unit, 1 additional space per guest house, accessory dwelling unit or accessory living quarter. Garages are calculated towards parking requirement.
Multifamily (Condos/Townhouses/Apartments) and Cottage Housing	1.5 per unit + 0.5 per unit on street or set aside	Units with 1 or fewer bedrooms: 1 space per unit + 0.5 spaces per unit set aside. Units with 2 or more bedrooms: 1.5 spaces per unit + 0.5 spaces per unit set aside.
Senior Housing	0.5 per unit; 1 per on-duty employee	

APPENDIX

PARKING REQUIREMENTS
GIG HARBOR

17.72.030 Number of off-street parking spaces.

The following is the number of off-street parking spaces required for each of the uses identified below:

Use	Required Parking
Dwelling, single-family	Two off-street parking spaces per dwelling unit. ³
Dwelling, duplex	Two off-street parking spaces per dwelling unit. ³
Dwelling, triplex	One off-street parking space for each studio unit, 1.5 off-street parking spaces for each one-bedroom unit, and two off-street parking spaces for units with two or more bedrooms. ³
Dwelling, fourplex	One off-street parking space for each studio unit, 1.5 off-street parking spaces for each one-bedroom unit, and two off-street parking spaces for units with two or more bedrooms. ³
Dwelling, multiple-family	One off-street parking space for each studio unit, 1.5 off-street parking spaces for each one-bedroom unit, and two off-street parking spaces for units with two or more bedrooms. ³
Accessory apartment	One off-street parking space per accessory apartment in addition to parking required for primary dwelling unit.
Family day care provider	Two off-street parking spaces.
Home occupation	One off-street parking space in addition to parking required for any other use; two parking spaces shall be required if the occupation requires customers or clients to visit the premises at any time.
Adult family home	Two off-street parking spaces.
Independent living facility	One off-street parking space for every four beds based on maximum capacity as determined by the International Building Code. ¹
Assisted living facility	One off-street parking space for every four beds based on maximum capacity as determined by the International Building Code. ¹
Skilled nursing facility	One off-street parking space for every four beds based on maximum capacity as determined by the International Building Code. ¹

APPENDIX

PARKING REQUIREMENTS
POULSBO

18.70.080 Parking.

The following standards apply to parking in the RL, RM and RH zoning districts. All other applicable provisions from Chapter [18.140](#) also apply. The minimum off-street parking spaces required are as set forth below; on-street parking does not contribute towards the following requirements:

A. Residential.

1. Single-family detached: two spaces per dwelling unit.
2. Accessory dwelling unit: one space in addition to spaces required for primary residence.
3. Multifamily attached: one and one-half spaces; provided, that studio apartments (apartments with one room enclosing all activities) may provide one space. Guest parking shall be provided at one space per four units.
4. Cottage: two spaces per unit with a minimum of one space provided on site; remaining may be allowed (but not required) to be accommodated in a shared on-site parking area.
5. Rooming or boarding home: one per sleeping unit, plus one per employee and/or owner(s).
6. Residential units restricted to use for seniors (sixty-five years and older): one and one-quarter spaces per dwelling unit.

B. Assisted living, senior congregate care, residential care center: one for each two regular beds (or units), plus one space for every two full-time employees on largest shift.

C. Bed and breakfast: one space per room, plus spaces required for residential unit.