

MEMORANDUM

TO: Mignosa Family Limited Partnership
c/o Messrs. Michael Mignosa and
Mark Mignosa
338 Granite Avenue
Milton, MA 02186

FROM: Mr. Jeffrey S. Dirk, P.E.*, PTOE, FITE *JSD*
Managing Partner
Vanasse & Associates, Inc.
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**Professional Engineer in CT, MA, ME, NH, RI and VA*

DATE: October 9, 2024

RE: 10133

SUBJECT: Transportation Impact Evaluation
Proposed Fruit Center Market Place Restaurant Retenancy
10 Bassett Street - Milton, Massachusetts

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Evaluation (TIE) in support of the proposed retenancy of the existing restaurant space located on the 2nd floor of the Fruit Center Market Place (a.k.a. Milton Market Place) at 10 Bassett Street in Milton, Massachusetts (hereafter referred to as the "Project"). This assessment: i) reviews the existing conditions of the transportation infrastructure serving the Project site; ii) evaluates the potential increase in traffic over the former restaurant that operated within the tenant space; and iii) provides an assessment of the parking demands that may be associated with the Project. This assessment was conducted in general accordance with the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE),¹ the Project is expected to generate approximately 434 vehicle trips on an average weekday and 554 vehicle trips on a Saturday (both two-way, 24-hour volumes), with less than 10 vehicle trips expected during the weekday morning peak-hour (the proposed restaurant will not serve breakfast), 58 vehicle trips expected during the weekday midday peak-hour (lunch), 39 vehicle trips expected during the weekday evening peak-hour and 52 vehicle trips expected during the Saturday midday peak-hour;
2. In comparison to the former restaurant, the proposed restaurant is expected to generate 136 *additional* vehicle trips on an average weekday and 172 *additional* vehicle trips on a Saturday, with 21 *fewer* vehicle trips during the weekday morning peak-hour, 18 *additional* vehicle trips during the weekday midday peak-hour, 12 *additional* vehicle trips during the weekday evening peak-hour and 16 *additional* vehicle trips during the Saturday midday peak-hour;

¹*Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.



3. When distributed over the respective peak hours, the predicted traffic volume increases are not considered significant and would not be expected to result in a significant change (increase) in motorist delays or vehicle queuing at the driveways or along the roadways that serve the Project site over the conditions that existed with the former restaurant;
4. Using peak parking demand data from the ITE² for a similar land use, the proposed restaurant is predicted to have a peak parking demand of approximately 48 parking spaces on a weekday and 56 parking spaces on a Saturday. In comparison to the former restaurant, the parking demands for the proposed restaurant will be 15 parking spaces higher on a weekday during the peak parking demand period and 17 parking spaces higher on a Saturday;
5. Given the number of parking spaces that are provided at the Project site (190 parking spaces) and the public parking that is provided at and in the vicinity of the Project site, there should be sufficient parking to accommodate the predicted increase in parking during the peak parking demand period;
6. No apparent safety deficiencies were noted in the vicinity of the Project site based on a review of motor vehicle crash data available from MassDOT; and
7. The existing access configuration and circulation within the Project site is appropriate for the existing uses and the proposed restaurant, and conveys traffic in an efficient manner and consistent with circulation patterns in a parking lot that serves commercial uses.

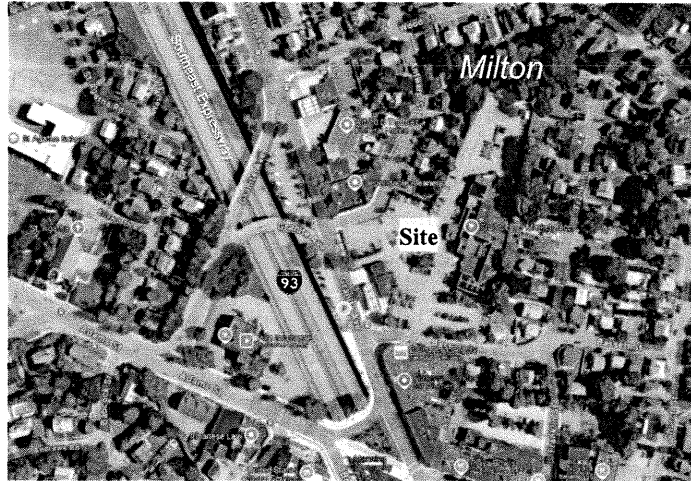
In consideration of the findings above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure. Recommendations have been provided to enhance circulation within the Project site and to encourage the use of alternative modes of transportation to the use of single-occupancy vehicles by employees. The following details our evaluation of the Project.

PROJECT DESCRIPTION

The Project will entail the retention of the existing restaurant space located on the 2nd floor of the Fruit Center Market Place at 10 Bassett Street in Milton, Massachusetts. The Project site encompasses approximately 2.08 ± acres of land that is occupied by a two-story, wood framed commercial building with multiple tenants and a supporting parking lot, and is bounded by Antwerp Street and residential properties to the north; Bassett Street and residential and commercial properties to the south; residential properties to the east; and Granite Avenue, Antwerp Street, a commercial property (Milton Fuel) and residential properties to the west.

²*Parking Generation*, 6th Edition; Institute of Transportation Engineers; Washington, D.C.; October 2023.





Source: ©2024 Google

The proposed restaurant will not serve breakfast, which was offered by the former restaurant, but will serve lunch (same as the former restaurant) and dinner. The former restaurant had a seated (licensed) capacity of 68 persons and a portion of their customers used the common seating area (48 seats) that is provided for use by the tenants of the Fruit Center Market Place that is enclosed and heated. The proposed restaurant will provide 51 seats in the restaurant area and will use up to 48 of the seats in the common seating area, or a total seated capacity for up to 99 persons.

Access to the Project site is and will continue to be provided by way of three (3) driveways that are configured as follows: a full access driveway that intersects the north side of Bassett Street approximately 100 feet east of Granite Avenue; a one-way, right-turn exit only driveway that intersects the east side of Granite Avenue approximately 90 feet south of Antwerp Street; and a full access driveway that intersects the south side of Antwerp Street approximately 35 feet east of Granite Avenue. Loading and deliveries for the tenants of the Fruit Center Market Place occurs by way of a loading area situated adjacent to the northeast corner of the building. The proposed restaurant will use the same vendors and will likely be served by the same trucks that provide deliveries to the Fruit Center store.

On-site parking is and will continue to be provided for 190 vehicles to accommodate the parking demands of tenants of the Fruit Center Market Place, including the proposed restaurant. The on-site parking is signed for use by customers (and employees) of the Fruit Center Market Place, with the majority of the parking spaces limited to 1-hour parking. In addition, there are 34 municipal parking spaces that are accessed through and adjacent to the Fruit Center Market Place to the immediate south of the commercial building that front along Bassett Street. These parking spaces are also available for use by customers of the Fruit Center Market Place and have a 2-hour parking limit.

EXISTING CONDITIONS CONTEXT

In order to establish the existing conditions context of the Project with respect to the transportation infrastructure, a review of existing conditions within the study area was undertaken. The field investigation consisted of review of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services traffic volumes; and vehicle travel speeds; as well as posted speed limits and land use information



for the roadways in the vicinity of the Project site. The following provides a description of the transportation infrastructure serving the Project site.

Roadways

Granite Avenue

Granite Avenue is an urban minor arterial that is under Town jurisdiction and traverses a general northwest-southeast alignment parallel to Interstate 93 (I-93). In the vicinity of the Project site, Granite Avenue is a one-way northbound roadway that accommodates two (2) travel lanes within a paved area of between 30 and 40 feet provides with marked shoulders along both sides. Sidewalks are provided along both sides of roadway and on-street parking is permitted in marked spaces and in a separate parking area along the west side the roadway. A posted speed limit is not provided in the vicinity of the Project site and, as such, the statutory speed limit pursuant to MGL c.90§17C is 25 miles per hour (mph).³ Illumination is provided by way of streetlights mounted on wood or ornamental steel poles. Land use along Granite Avenue in the vicinity of the Project site consists of commercial properties and municipal parking.

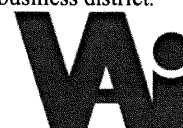
Bassett Street

Bassett Street is a two-way local access roadway that is under Town jurisdiction and traverses a general east-west alignment between Granite Avenue and Church Street. In the vicinity of the Project site, Bassett Street provides an approximate 30-foot wide traveled-way that accommodates two-way travel with centerline pavement markings provided approaching Granite Avenue and an on-street parking lane provided along the south side of a section of the roadway between Granite Avenue and Franklin Street. Sidewalks are provided along both sides of Bassett Street. A posted speed limit is not provided and, as such, the statutory speed limit is 25 mph. Illumination is provided by way of streetlights mounted on wood poles. Land use along Bassett Street in the vicinity of the Project site consists of residential and commercial properties and a municipal parking lot.

Antwerp Street

Antwerp Street is a two-way local access roadway that is under Town jurisdiction and traverses a general northeast-southwest alignment between Granite Avenue and Squantum Street. In the vicinity of the Project site, Antwerp Street provides an approximate 24-foot wide traveled-way that accommodates two-way travel with no centerline or shoulder pavement markings. On-street parking lane is prohibited along the east (Project) site of the roadway with 30-minute parking allowed along the west side between Wood Street and 97 Antwerp Street and 2-hour parking along the Antwerp Street frontage of the commercial building at 388 Granite Avenue. Sidewalks are provided along both sides of Antwerp Street. A posted speed limit is not provided and, as such, the statutory speed limit is 25 mph. Illumination is provided by way of streetlights mounted on wood poles. Land use along Antwerp Street in the vicinity of the Project site consists of residential and commercial properties.

³The statutory or “prima facie” speed limit is defined in M.G.L Chapter 90, Section 17, as the speed which would be deemed reasonable and proper to operate a motor vehicle. The Town of Milton notified MassDOT of the adoption of M.G.L Chapter 90, Section 17C on April 5, 2018, which establishes a statutory speed limit of 25 mph in a thickly settled or business district.



Pedestrian and Bicycle Facilities

A review of pedestrian and bicycle facilities along the roadways in the vicinity of the Project site was undertaken. Based on this review and as identified above, sidewalks are provided along both sides of Granite Avenue, Bassett Street and Antwerp Street, with marked crosswalks provided for crossing Bassett Street and Antwerp Street at Granite Avenue, and for crossing Granite Avenue at Bassett Street (south leg) and at a midblock location north of Antwerp Street (opposite 330 Granite Avenue). The pedestrian crossings at the Granite Avenue/Bassett Street intersection are incorporated into the traffic signal system at the intersection and include pedestrian pushbuttons, signal indications and phasing.

A bicycle lane is provided along the east side of Granite Avenue south of Bassett Street that transitions to a shared traveled-way configuration (i.e., motor vehicles and bicyclists sharing the roadway)⁴ north of the intersection. Bassett Street and Antwerp Street do not provide bicycle accommodations; however, the lower traffic volumes and vehicle travel speeds are conducive to bicycle travel recognizing that motor vehicles will need to maneuver around a bicyclist when there is not traffic traveling in the opposite direction.

Public Transportation Services

Regularly scheduled public transportation services are provided in the vicinity of the Project site by the Massachusetts Bay Transportation Authority (MBTA). The MBTA operates the following bus routes that include a stop at the Granite Avenue/Bassett Street intersection immediately adjacent to the Project site and are accessible to employees and customers of the Fruit Center Market Place:

- Route 215, *Quincy Center Station - Ashmont Station via West Quincy*
- Route 217, *Quincy Center Station - Ashmont Station via Wollaston Station*
- Route 245, *Quincy Center Station - Mattapan Station*

In addition, the MBTA provides The Ride demand responsive paratransit services to eligible persons who cannot use fixed-route transit (bus, subway, trolley) due to a physical, cognitive or mental disability in compliance with Americans with Disabilities Act (ADA) requirements.

Motor Vehicle Crash Data

A review of the MassDOT statewide High Crash Location List indicated that there are no locations in the vicinity of the Project site that are identified as high crash locations.

PROJECT-GENERATED TRAFFIC

In order to develop the traffic characteristics of the former and proposed restaurant, trip-generation statistics published by the ITE⁵ for Land Use Code (LUC) 932, *High-Turnover (Sit-Down) Restaurant*, was used. This LUC is described by ITE as follows:

“This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, these restaurants

⁴A minimum combined travel lane and paved shoulder width of 14 feet is required to support bicycle travel in a shared traveled-way condition.

⁵Institute of Transportation Engineers, op. cit. 1.



serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal."

This description would apply to the former restaurant, which served breakfast and lunch on weekdays and on Saturday generally between 8:00 AM and 3:00 PM, with brunch on Sunday between 11:00 AM and 3:00 PM. The proposed restaurant will not serve breakfast and will be open from 11:00 AM to 12:00 AM (midnight), with food service ending at 10:00 PM. Lunch service will be offered Monday through Friday from 11:00 AM to 3:00 PM, and dinner service will be offered from Sunday through Thursday from 3:00 to 9:00 PM, and on Friday and Saturday from 3:00 PM to 10:00 PM. Brunch will be offered on Saturday and Sunday from 11:00 AM to 3:00 PM. As such, this LUC is not an exact match for the proposed restaurant and likely overstates the volume of traffic that will be generated. That being said, the comparative assessment of trips between the existing and proposed restaurant provides a reasonable estimate of the potential change in traffic.

Table 1 summarizes and compares the trip characteristics of the proposed and former restaurants, with the detailed trip-generation calculations attached.

Table 1
TRIP-GENERATION SUMMARY

Time Period	Vehicle Trips ^a		
	(A) Proposed Restaurant (99 Seats)	(B) Former Restaurant (68 Seats)	(A-B) Difference
<i>Average Weekday:</i>	434	298	+136
<i>Weekday Morning Peak-Hour:</i>	<10	31	-21
<i>Weekday Midday Peak-Hour:^b</i>	58	40	+18
<i>Weekday Evening Peak-Hour:</i>	39	<10	+19
<i>Saturday:</i>	554	382	+172
<i>Saturday Midday Peak-Hour:</i>	52	36	+16

^aBased on ITE LUC 932, *High-Turnover (Sit-Down) Restaurant*.

^bWeekday morning peak-hour of generator.

Project-Generated Traffic-Volume Summary

As can be seen in Table 1, the Project is expected to generate approximately 434 vehicle trips on an average weekday and 554 vehicle trips on a Saturday (both two-way, 24-hour volumes), with less than 10 vehicle trips expected during the weekday morning peak-hour (the proposed restaurant will not serve breakfast), 58 vehicle trips expected during the weekday midday peak-hour (lunch), 39 vehicle trips expected during the weekday evening peak-hour and 52 vehicle trips expected during the Saturday midday peak-hour.

In comparison to the former restaurant, the proposed restaurant is expected to generate 136 *additional* vehicle trips on an average weekday and 172 *additional* vehicle trips on a Saturday, with 21 *fewer* vehicle



trips during the weekday morning peak-hour, 18 *additional* vehicle trips during the weekday midday peak-hour, 12 *additional* vehicle trips during the weekday evening peak-hour and 16 *additional* vehicle trips during the Saturday midday peak-hour.

When distributed over the respective peak hours, the predicted traffic volume increases are not considered significant and would not be expected to result in a significant change (increase) in motorist delays or vehicle queuing at the driveways or along the roadways that serve the Project site over the conditions that existed with the former restaurant.

PARKING DEMAND ASSESSMENT

A comparative assessment of the parking demands of the former and proposed restaurants was completed using data provided by the ITE⁶ for the same land use that was used to complete the trip comparison (high-turnover (sit-down) restaurant). The ITE parking data is based on observations that have been conducted at specific land uses, including a high-turnover (sit-down) restaurant, and includes predictive parking demand data that can be used as a guide to determine the adequacy of parking to support a specific land use or uses under study. The ITE data for a high-turnover (sit-down) restaurant differentiates between restaurants that serve breakfast and those that do not, with limited data available for restaurants that do serve breakfast. As such, the data for a restaurant that does not serve breakfast was used. It should be noted that the peak parking demand for a restaurant with or without breakfast service occurs around 12:00 PM so the resulting calculations as to the peak demand would be similar as the peak does not occur during the breakfast period.

Table 2 summarizes the ITE peak parking demand data for a high-turnover (sit-down) restaurant that does not serve breakfast.

Table 2
PEAK PARKING DEMAND RATIOS

Day of Week	Peak Parking Demand Ratio per Seat ^a		
	Mean	85 th Percentile ^b	Maximum
<i>Weekday:</i>	0.28	0.48	0.48
<i>Saturday:</i>	0.38	0.56	0.73

^aITE LUC 932, *High-Turnover (Sit-Down) Restaurant, Does Not Serve Breakfast.*

^bThe 85th percentile peak-parking demand is the parking demand at which 85 percent of the observed values fall below and 15 percent of the values are above.

As can be seen in Table 2, the mean peak-parking demand on a weekday was observed to be 0.28 parking spaces per seat for a restaurant that does not serve breakfast, with the 85th percentile peak-parking demand found to be 0.48 parking spaces per seat and the maximum peak-parking demand observed to be 0.48 parking spaces per seat. On a Saturday, the mean peak-parking demand was observed to be 0.56 parking

⁶Institute of Transportation Engineers, op. cit. 2.



spaces per seat, with the 85th percentile peak-parking demand found to be 0.48 parking spaces per seat and the maximum peak-parking demand observed to be 0.73 parking spaces per seat

the Table 3 summarizes the calculated peak parking demands for the proposed and former restaurants using the 85th percentile ITE parking demand ratios, which is a common design approach and represents an above-average design consideration.

Table 3
PEAK PARKING DEMANDS

Day of Week	Peak Parking Demand (No. of Parking Spaces)		
	(A) Proposed Restaurant (99 Seats)	(B) Former Restaurant (68 Seats)	(A-B) Difference
<i>Weekday:</i>	48	33	+15
<i>Saturday:</i>	56	39	+17

Based on the 85th percentile ITE peak parking demand data, the proposed restaurant will have a peak parking demand of approximately 48 parking spaces on a weekday and 56 parking spaces on a Saturday. In comparison to the former restaurant, the parking demands for the proposed restaurant will be 15 parking spaces higher on a weekday during the peak parking demand period and 17 parking spaces higher on a Saturday.

Given the number of parking spaces that are provided at the Project site (190 parking spaces) and the public parking that is provided at and in the vicinity of the Project site, there should be sufficient parking to accommodate the predicted increase in parking during the peak parking demand period.

SUMMARY

VAI has conducted a Transportation Impact Evaluation in support of the proposed retenancy of the existing restaurant space located on the 2nd floor of the Fruit Center Market Place at 10 Bassett Street in Milton, Massachusetts. This assessment has: i) reviewed the existing conditions of the transportation infrastructure serving the Project site; ii) evaluated the potential increase in traffic over the former restaurant that operated within the tenant space; and iii) provided an assessment of the parking demands that may be associated with the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE,⁷ the Project is expected to generate approximately 434 vehicle trips on an average weekday and 554 vehicle trips on a Saturday (both two-way, 24-hour volumes), with less than 10 vehicle trips expected during the weekday morning peak-hour (the proposed restaurant will not serve breakfast), 58 vehicle trips expected during the

⁷Institute of Transportation Engineers, op. cit. 1.



weekday midday peak-hour (lunch), 39 vehicle trips expected during the weekday evening peak-hour and 52 vehicle trips expected during the Saturday midday peak-hour;

2. In comparison to the former restaurant, the proposed restaurant is expected to generate 136 *additional* vehicle trips on an average weekday and 172 *additional* vehicle trips on a Saturday, with 21 *fewer* vehicle trips during the weekday morning peak-hour, 18 *additional* vehicle trips during the weekday midday peak-hour, 12 *additional* vehicle trips during the weekday evening peak-hour and 16 *additional* vehicle trips during the Saturday midday peak-hour;
3. When distributed over the respective peak hours, the predicted traffic volume increases are not considered significant and would not be expected to result in a significant change (increase) in motorist delays or vehicle queuing at the driveways or along the roadways that serve the Project site over the conditions that existed with the former restaurant;
4. Using peak parking demand data from the ITE⁸ for a similar land use, the proposed restaurant is predicted to have a peak parking demand of approximately 48 parking spaces on a weekday and 56 parking spaces on a Saturday. In comparison to the former restaurant, the parking demands for the proposed restaurant will be 15 parking spaces higher on a weekday during the peak parking demand period and 17 parking spaces higher on a Saturday;
5. Given the number of parking spaces that are provided at the Project site (190 parking spaces) and the public parking that is provided at and in the vicinity of the Project site, there should be sufficient parking to accommodate the predicted increase in parking during the peak parking demand period;
6. No apparent safety deficiencies were noted in the vicinity of the Project site based on a review of motor vehicle crash data available from MassDOT; and
7. The existing access configuration and circulation within the Project site is appropriate for the existing uses and the proposed restaurant, and conveys traffic in an efficient manner and consistent with circulation patterns in a parking lot that serves commercial uses.

In consideration of these findings, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner.

RECOMMENDATIONS

The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation that should be considered for advancement during routine parking lot maintenance activities:

- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).⁹
- Directional arrows and parking space markings should consist of white markings.

⁸Institute of Transportation Engineers, op. cit. 2.

⁹*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.



- *Granite Avenue Driveway* - A “Do Not Enter” (MUTCD R5-1) sign should be installed on the back side of the STOP-sign and should face Granite Avenue and a marked STOP-line should be provided in advance of the sidewalk.
- *Antwerp Street Driveway* – A STOP-sign and marked STOP-line should be provided.
- *Bassett Street Driveway* - A STOP-sign and marked STOP-line should be provided. In addition, “Keep Right” (MUTCD R4-7a) signs should be installed on either end of the raised island that is located in the center of the driveway.
- Signs and landscaping within intersection sight triangle areas should be designed and maintained so as not to restrict lines of sight.
- Snow accumulations (windrows) within sight triangle areas shall be promptly removed where such accumulations would impede sight lines.
- Consideration should be given to providing electric vehicle (EV) charging stations for use by customers.

Transportation Demand Management

In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles by employees, the following Transportation Demand Management (TDM) measures should be considered:

- A Transportation Coordinator (TC) should be assigned, who may also have other duties, to coordinate the TDM program;
- The TC should coordinate a ride matching program for employees;
- Information regarding public transportation services, maps, schedules, and fare information should be posted in a central location and/or otherwise made available to employees;
- A “welcome packet” should be provided to employees that should include the contact information for the TC and detailing available public transportation services, bicycle and walking alternatives, and other commuter options; and
- Bicycle parking should be provided within the Project site.

Implementation of the aforementioned recommendations will serve to enhance circulation within the Project site and encourage the use of alternative modes of transportation to the use of single-occupancy vehicles by employees.

Attachments: Trip-Generation Calculations



ATTACHMENTS

TRIP-GENERATION CALCULATIONS

Former Restaurant



Graph Look Up



ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGm Desk Reference

TGm Appendices

Support Documents

Add Users

Comments

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday

TRIP TYPE:

Vehicle

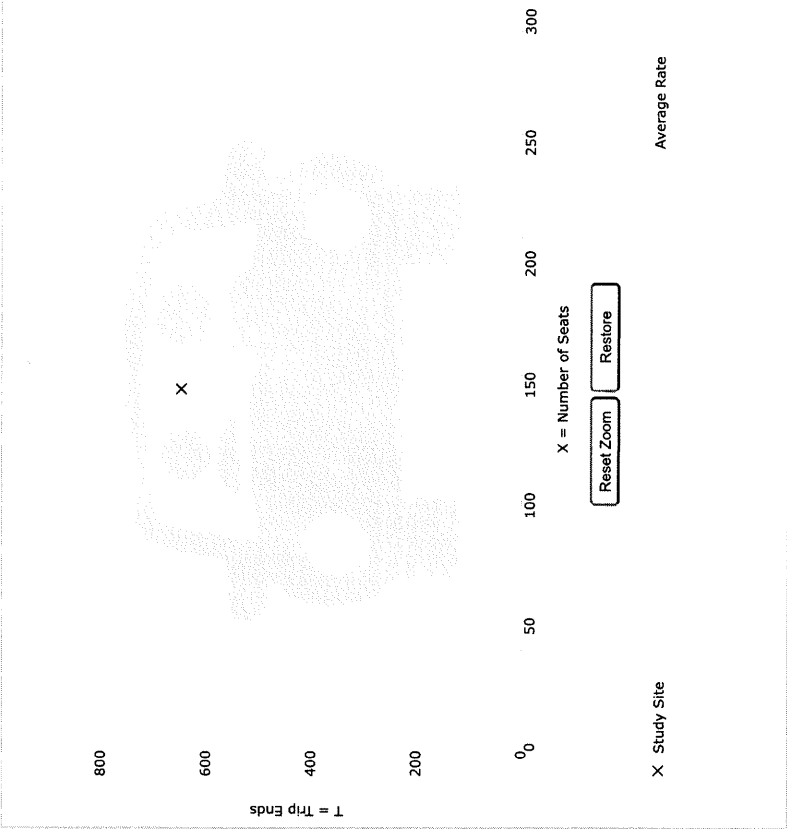
ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Data Plot and Equation

Caution - Small Sample Size



DATA STATISTICS

Land Use:

High-Turnover (Sit-Down) Restaurant (932) [Click for Description and Data Plots](#)

Independent Variable:

Seats

Time Period:

Weekday

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

1

Avg. Num. of Seats:

148

Average Rate:

4.37

Range of Rates:

4.37 - 4.37

Standard Deviation:

Fitted Curve Equation:

Not Given

R²:

Directional Distribution:

50% entering, 50% exiting

Calculated Trip Ends:

Average Rate: 287 (Total), 148 (Entry), 148 (Exit)

Add-ons to do more

Try OTISS Pro



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How to Use ITETripGen

TGiv Data Reference

TGiv Appendixes

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LAND USE GROUP:

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LAND USE:

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

Vehicle

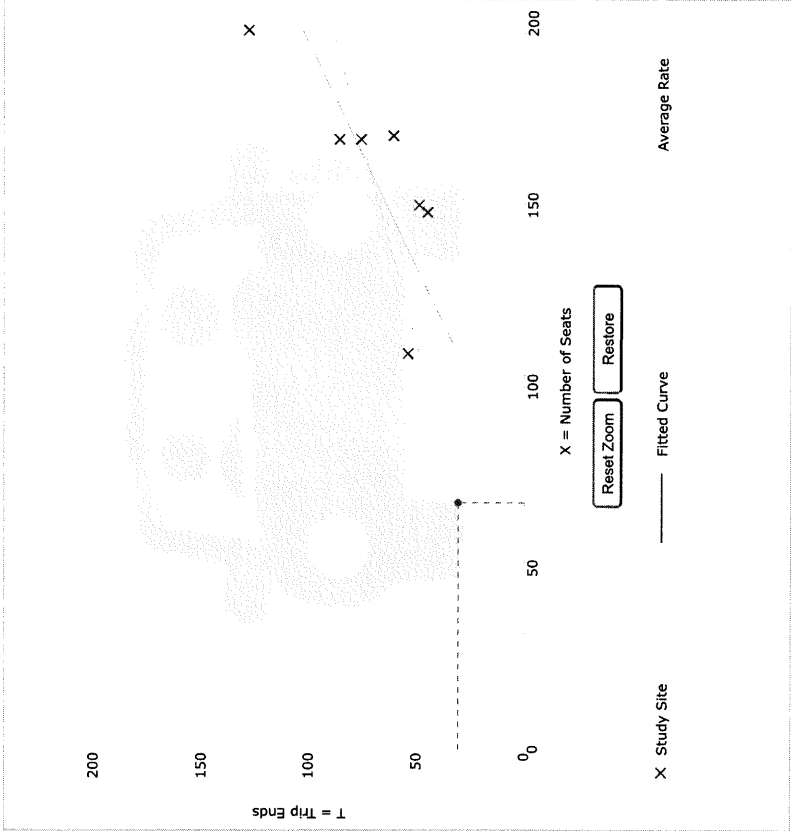
ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Trip ends are not estimated for some methods as it yields negative values

Data Plot and Equation



DATA STATISTICS

Land Use: High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots

Independent Variable: Seats

Time Period: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 7

Avg. Num. of Seats: 159

Average Rate: 0.45

Range of Rates: 0.30 - 0.65

Standard Deviation: 0.13

Fitted Curve Equation: $T = 0.81(X) - 57.37$

R^2 : 0.56

Directional Distribution: 52% entering, 48% exiting

Calculated Trip Ends: Average Rate: 31 (Total), 16 (Entry), 15 (Exit)

Fitted Curve: Not Available



Graph Look Up

ITE TripGen Web-based App

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932

LAND USE GROUP:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday, AM Peak Hour of Generator

TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

68

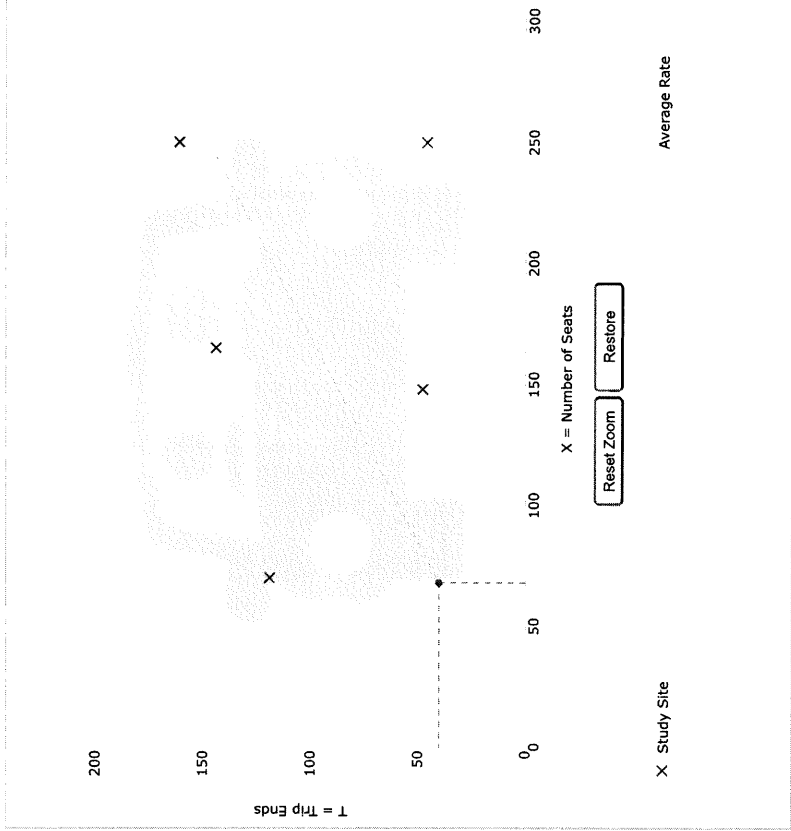
Calculate

Data Plot and Equation

Caution – Small Sample Size

DATA STATISTICS

Land Use:	High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots
Independent Variable:	Seats
Time Period:	Weekday
AM Peak Hour of Generator	
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	5
Avg. Num. of Seats:	177
Average Rate:	0.59
Range of Rates:	0.18 - 1.70
Standard Deviation:	0.46
Fitted Curve Equation:	Not Given
R ² :	***
Directional Distribution:	60% entering, 40% exiting
Calculated Trip Ends:	Average Rate: 40 (Total), 24 (Entry), 16 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Add-ons to TGm

Try OTISS Pro



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SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

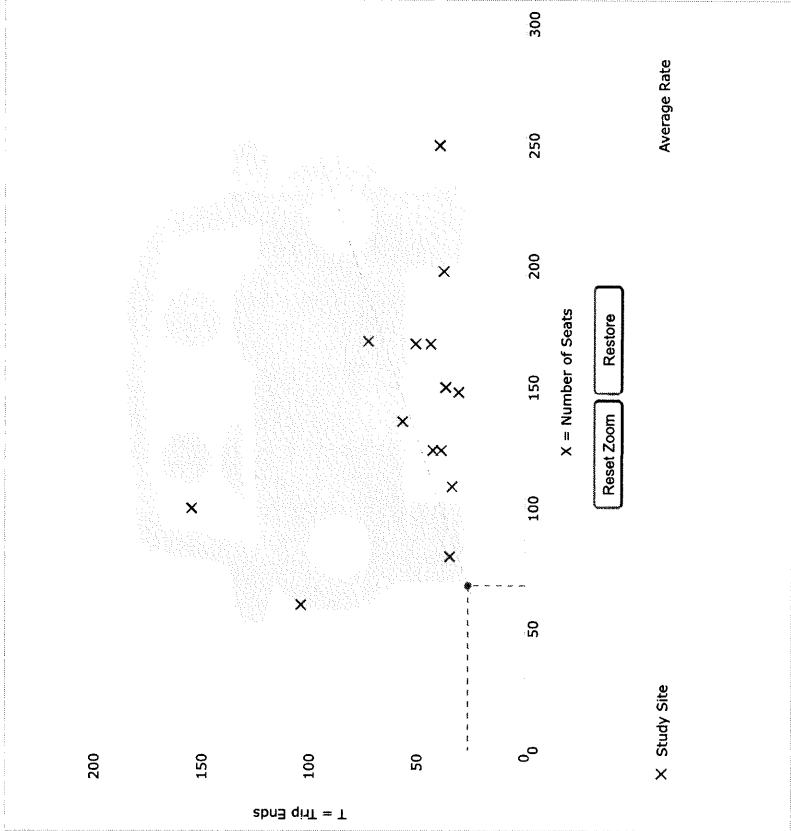
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

68

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Data Plot and Equation



DATA STATISTICS

Land Use: High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots

Independent Variable: Seats

Time Period: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 14

Avg. Num. of Seats: 142

Average Rate: 0.39

Range of Rates: 0.16 - 1.73

Standard Deviation: 0.39

Fitted Curve Equation: Not Given

R²: 0.44

Directional Distribution: 57% entering, 43% exiting

Calculated Trip Ends: Average Rate: 27 (Total), 15 (Entry), 12 (Exit)

add-ons to do more

Try OTISS Pro



Graph Look Up



ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGw Data Reference

TGw Appendices

Support Documents

Add Users

Comments

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE:

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Saturday

TRIP TYPE:

Vehicle

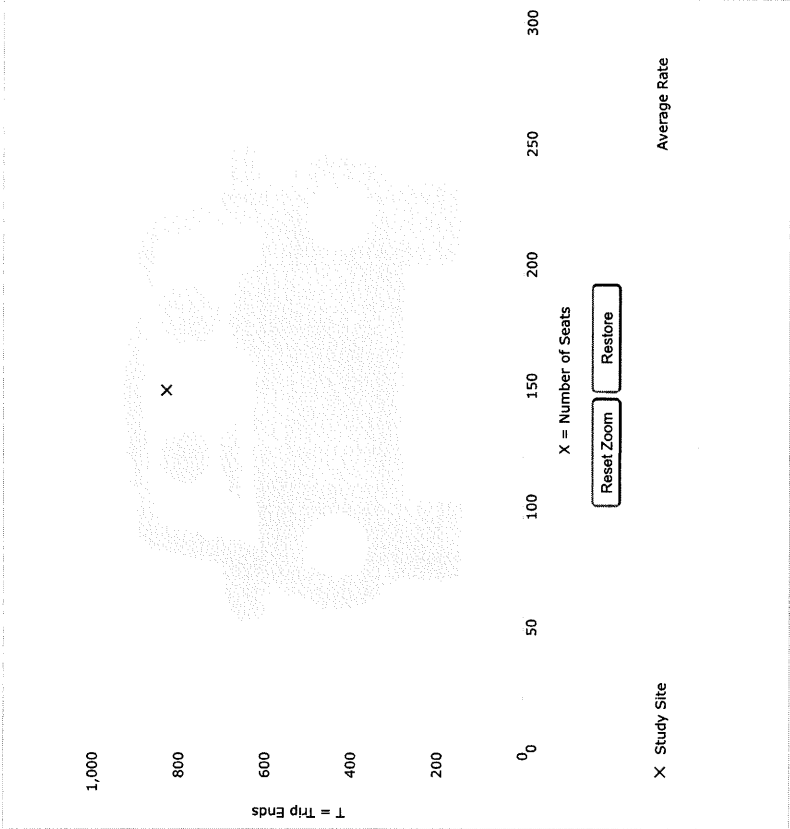
ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Data Plot and Equation

Caution - Small Sample Size



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:

High-Turnover (Sit-Down) Restaurant (932). Click for Description and Data Plots

Independent Variable:

Seats

Time Period:

Saturday

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

1

Avg. Num. of Seats:

148

Average Rate:

5.60

Range of Rates:

5.60 - 5.60

Standard Deviation:

Fitted Curve Equation:

Not Given

R²:

Directional Distribution:

50% entering, 50% exiting

Calculated Trip Ends:

Average Rate: 381 (Total), 190 (Entry), 191 (Exit)

Add-ons to do more

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ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGw Disk Reference

TGM Appendices

Support Documents

Add Users

Comments

Ad-dons to do more

Ty OTISS Pro

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Saturday, Peak Hour of Generator

TRIP TYPE:

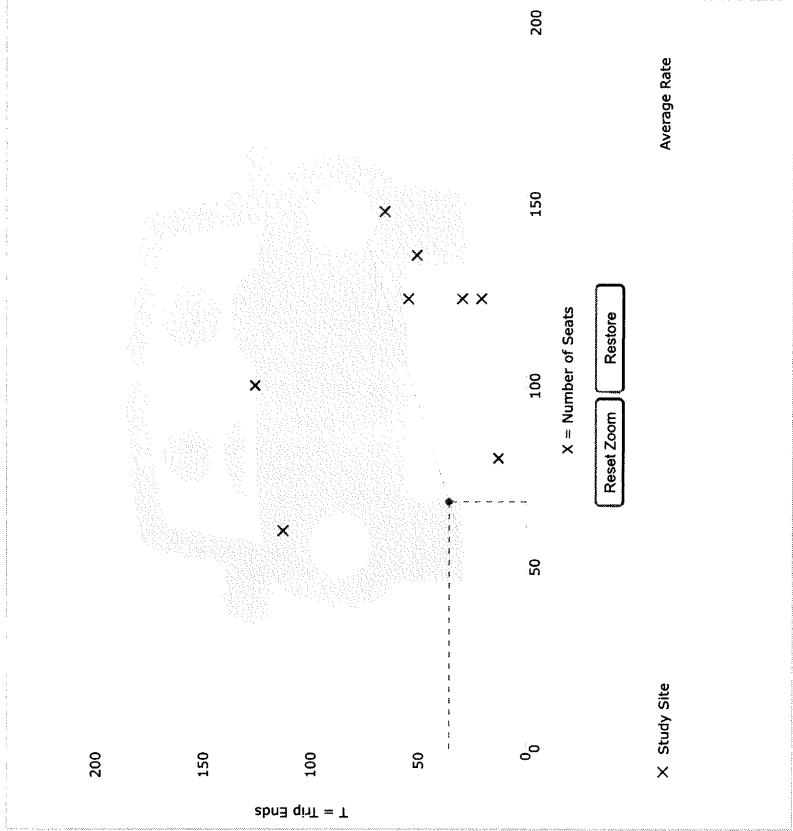
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

68

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use: High-Turnover (Sit-Down) Restaurant (932). Click for Description and Data Plots

Independent Variable: Seats

Time Period: Saturday

Peak Hour of Generator: General Urban/Suburban

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 8

Avg. Num. of Seats: 112

Average Rate: 0.53

Range of Rates: 0.16 - 1.88

Standard Deviation: 0.51

Fitted Curve Equation: Not Given

R²: ****

Directional Distribution: 53% entering, 47% exiting

Calculated Trip Ends: Average Rate: 36 (Total), 19 (Entry), 17 (Exit)

Proposed Restaurant



Graph Look Up



ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGAW Data Reference

TGAW Appendices

Support Documents

Add Users

Comments

Query Filter

DATA SOURCE:

SEARCH BY LAND USE CODE:

LAND USE GROUP:

LAND USE :

LAND USE SUBCATEGORY:

SETTING/LOCATION:

INDEPENDENT VARIABLE (IV):

TIME PERIOD:

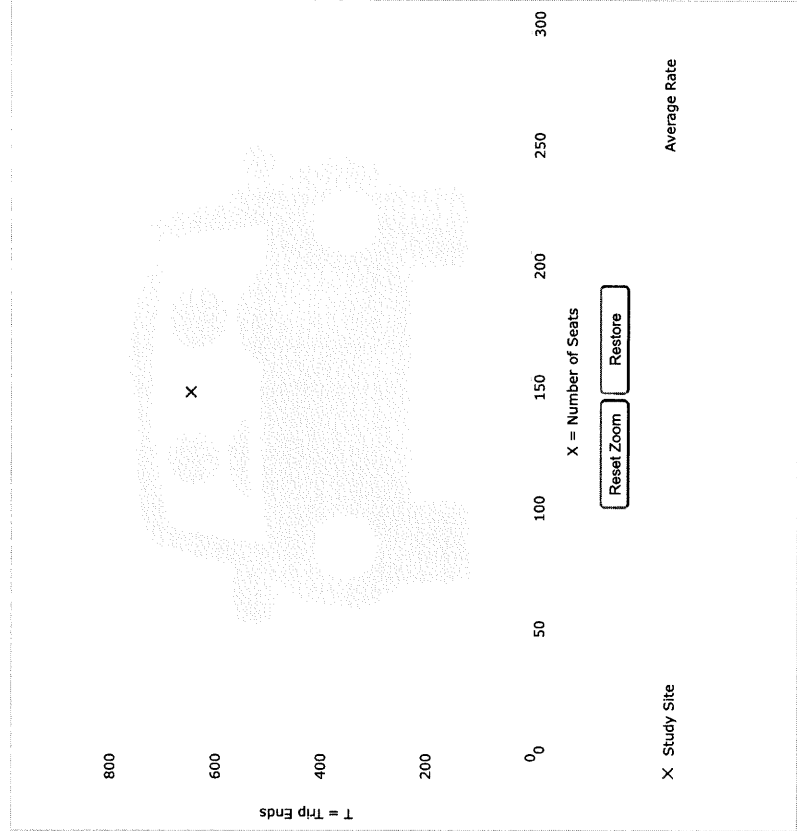
TRIP TYPE:

ENTER IV VALUE TO CALCULATE TRIPS:

Data Plot and Equation

Caution – Small Sample Size

DATA STATISTICS



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Land Use:
High-Turnover (Sit-Down) Restaurant (932) Click for
Description and Data Plots

Independent Variable:

Seats

Time Period:

Weekday

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

1

Avg. Num. of Seats:

148

Average Rate

4.37

Range of Rates:

4.37 - 4.37

Standard Deviation:

0.000

Fitted Curve Equation:

Not Given

R²

0.000

Directional Distribution:

50% entering, 50% exiting

Calculated Trip Ends:

Average Rate: 433 (Total), 216 (Entry), 217 (Exit)

Add-ons to do more

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Graph Look Up

How to Use ITETripGen

TGm Desk Reference

TGm Appendices

Support Documents

Add Users

Comments

Adapters to do more

TyOTISS Pro

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:

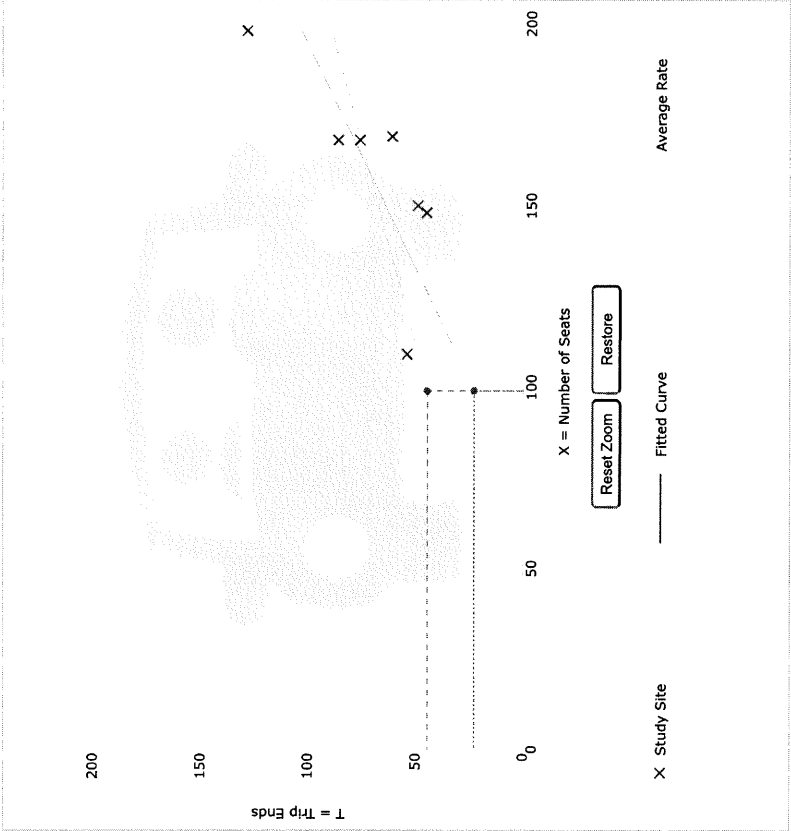
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

99

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use:
High-Turnover (Sit-Down) Restaurant (932). Click for Description and Data Plot

Independent Variable:
Seats

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
7

Avg. Num. of Seats:
150

Average Rate
0.45

Range of Rates:
0.30 - 0.65

Standard Deviation:
0.13

Fitted Curve Equation:
 $T = 0.81(X) - 67.37$

R²:
0.58

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 45 (Total), 23 (Entry), 22 (Exit)
Fitted Curve: 23 (Total), 12 (Entry), 11 (Exit)



Graph Look Up

ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGKit Disk Reference

TGKit Appendices

Support Documents

Add Users

Comments

Add-ons to do more

Try CTISS Pro

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Weekday, AM Peak Hour of Generator

TRIP TYPE:

Vehicle

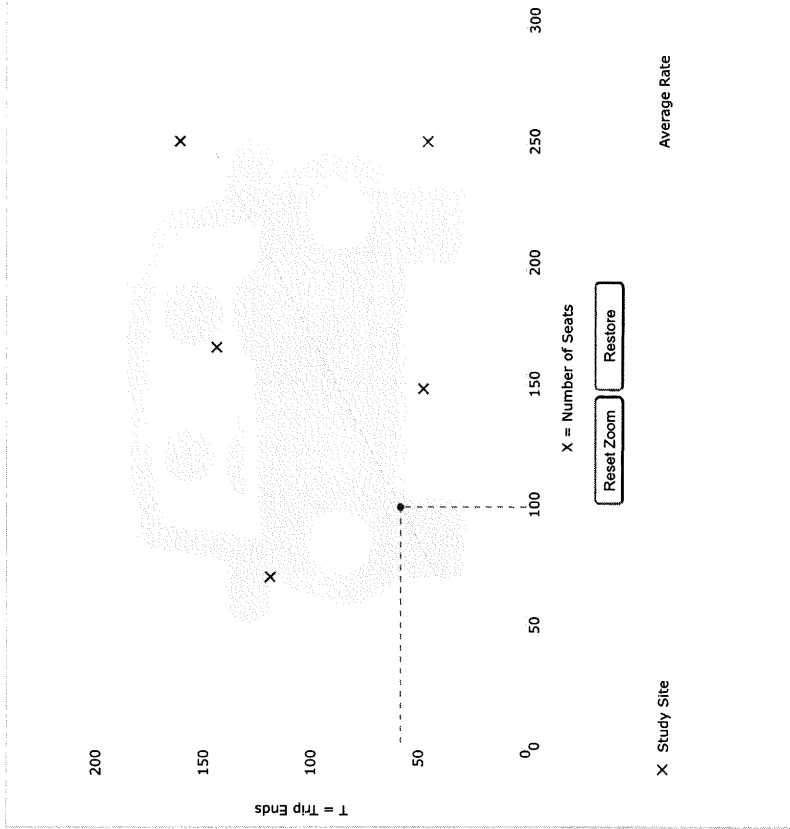
ENTER IV VALUE TO CALCULATE TRIPS:

99

Calculate

Data Plot and Equation

Caution - Small Sample Size



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:	High-Turnover (Sit-Down) Restaurant (932). Click for Description and Data Plots
Independent Variable:	Seats
Time Period:	Weekday
Setting/Location:	AM Peak Hour of Generator
General Urban/Suburban	
Trip Type:	Vehicle
Number of Studies:	5
Avg. Num. of Seats:	177
Average Rate:	0.59
Range of Rates:	0.18 - 1.70
Standard Deviation:	0.46
Fitted Curve Equation:	Not Given
R ² :	***
Directional Distribution:	60% entering, 40% exiting
Calculated Trip Ends:	Average Rate: 58 (Total), 35 (Entry), 23 (Exit)



Graph Look Up

ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGIS Data Reference

TGIS Appendices

Support Documents

Add Users

Comments

Add-ons to do more

TyOTISS Pro

Query Filter

DATA SOURCE: Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE: 932

LAND USE GROUP: (900-999) Services

LAND USE: 932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY: All Sites

SETTING/LOCATION: General Urban/Suburban

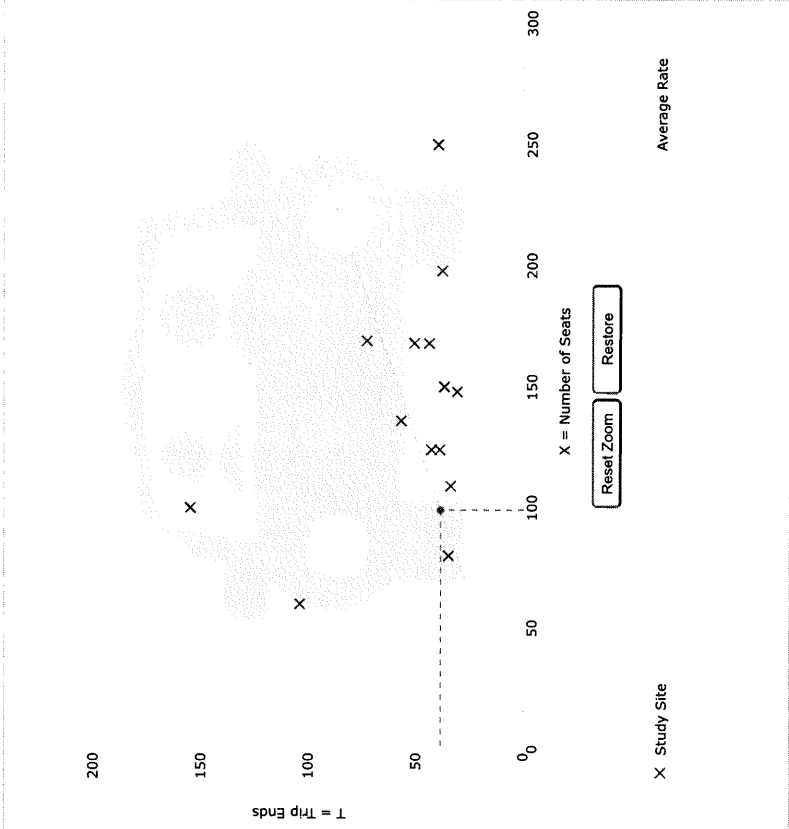
INDEPENDENT VARIABLE (IV): Seats

TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 99 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use: High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots

Independent Variable: Seats

Time Period: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 14

Avg. Num. of Seats: 142

Average Rate: 0.39

Range of Rates: 0.16 - 1.73

Standard Deviation: 0.39

Fitted Curve Equation: Not Given

R²:

Directional Distribution: 57% entering, 43% exiting

Calculated Trip Ends: Average Rate: 39 (Total), 22 (Entry), 17 (Exit)



Graph Look Up



ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGA Data Reference

TGA Appendices

Support Documents

Add Users

Comments

Adaptions to do more

Try OTISS Pro

Query Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
932

LAND USE GROUP:
(900-999) Services

LAND USE:
932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

INDEPENDENT VARIABLE (IV):
Seats

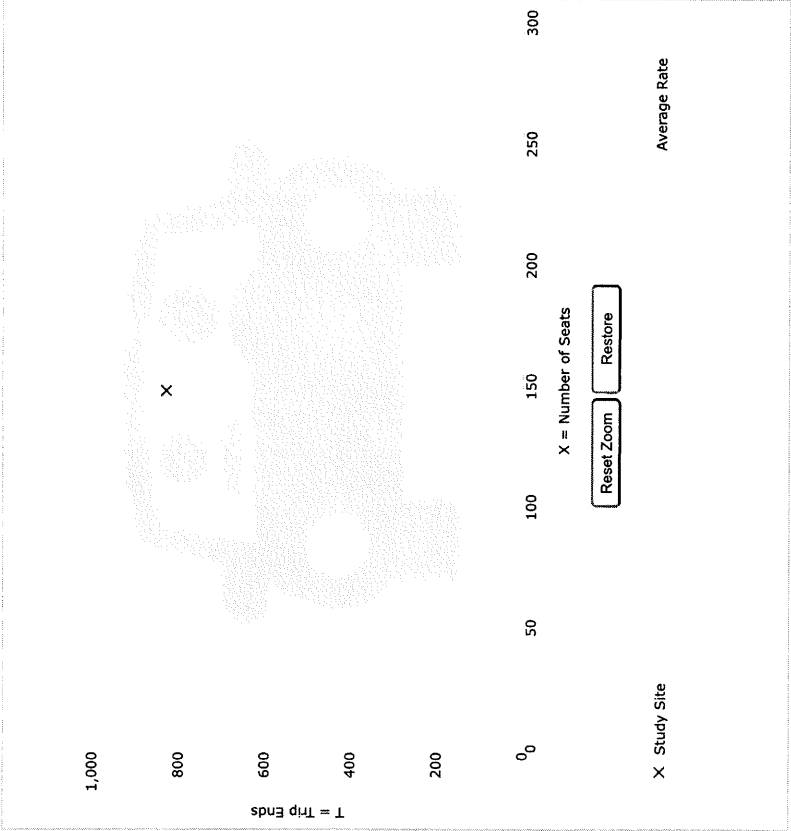
TIME PERIOD:
Saturday

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
99 Calculate

Data Plot and Equation

Caution - Small Sample Size



DATA STATISTICS

Land Use:	High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots
Independent Variable:	Seats
Time Period:	Saturday
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	1
Avg. Num. of Seats:	148
Average Rate:	5.60
Range of Rates:	5.60 - 5.60
Standard Deviation:	****
Fitted Curve Equation:	Not Given
R ²	****
Directional Distribution:	50% entering, 50% exiting
Calculated Trip Ends:	Average Rate: 584 (Total), 277 (Entry), 277 (Exit)



Graph Look Up



ITETripGen Web-based App

Graph Look Up

How to Use ITETripGen

TGen Desk Reference

TGen Appendices

Support Documents

Add Users

Comments

Query Filter

DATA SOURCE:

Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:

932

LAND USE GROUP:

(900-999) Services

LAND USE:

932 - High-Turnover (Sit-Down) Restaurant

LAND USE SUBCATEGORY:

All Sites

SETTING/LOCATION:

General Urban/Suburban

INDEPENDENT VARIABLE (IV):

Seats

TIME PERIOD:

Saturday, Peak Hour of Generator

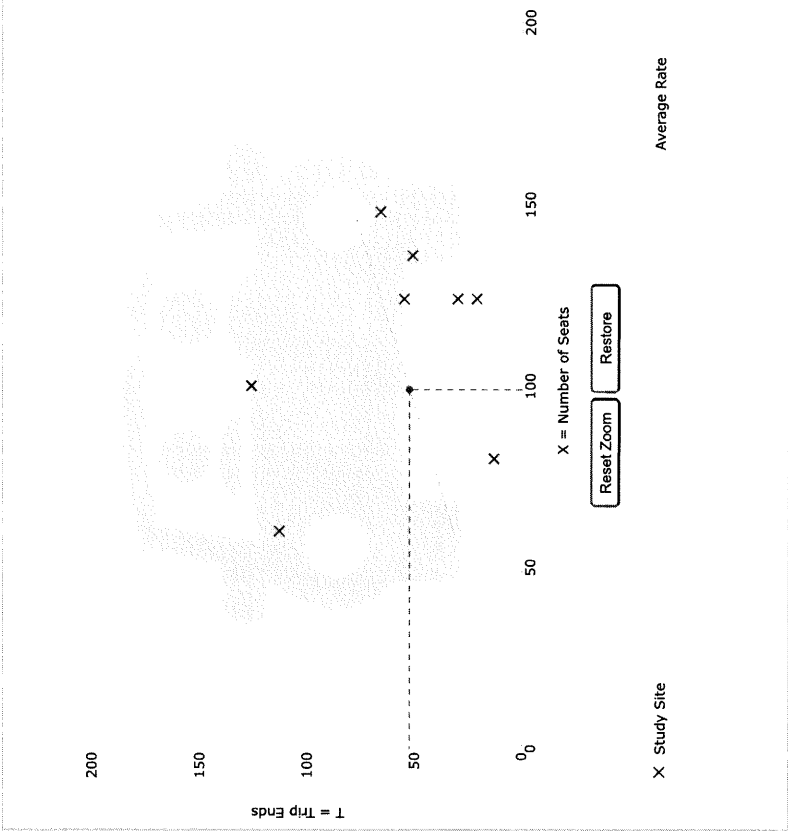
TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

99 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:	High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots
Independent Variable:	Seats
Time Period:	Saturday
Peak Hour of Generator	
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	8
Avg. Num. of Seats	112
Average Rate:	0.53
Range of Rates:	0.16 - 1.88
Standard Deviation:	0.51
Fitted Curve Equation:	Not Given
R ² :	***
Directional Distribution:	53% entering, 47% exiting
Calculated Trip Ends:	Average Rate: 52 (Total), 28 (Entry), 24 (Exit)

Add-ons to do more

Try OTIS Pro