# 1 Introduction

## Trip Generation Basics

Trip generation is one measure of travel behavior. It is based on the notion that people regularly travel to or from a particular land use and location, and that the amount and type of activity at the location—whether retail, office, residential, or service-oriented—uniquely determine the amount, type, and mode of that travel. The calculation of the number of trips entering or exiting different kinds of land uses forms the foundation of trip generation estimation. The basic premise upon which all trip generation estimates are based is that the number of trips entering and exiting two development sites with the same land use, size, and setting will be comparable.

As an illustration of trip generation, consider that people leave their homes every day to travel to work, go shopping, go to school, visit friends, or attend appointments. Each departure from the home is considered a trip. Each return to the home is likewise considered a trip. If a cordon is placed around the residence to record the comings and goings over a 24-hour period, the number of trips the dwelling unit generates per day can be determined. If four trips leave the home—for instance, one to work, one to school, one to shop, and one to the dentist—and these same four trips return to the home on the same day, the dwelling unit has a trip generation rate, for that particular day, of eight trips per day (four outbound and four inbound). If additional trips are made to or from that dwelling unit by visitors, by delivery vehicles, or other service personnel, these trips would also be considered trips generated by the residence.

Similarly, travel to and from any type of location can be counted. Each specific type of establishment—a factory, a store, an office building, or an entire shopping center—is considered a trip generator.

As noted above, the fundamental measurement for trip generation is trips. In technical terms, a trip has an origin and a destination at its two ends (known as trip ends). Each trip end is a part of a trip. For site trip generation, the analyst is usually interested in trips entering (inbound) and exiting (outbound) a site. An entering trip end is a destination trip end; an exiting trip end is an origin trip end.

## Uses of Trip Generation Data

The basic product of the procedures in the *Trip Generation Manual* (TGM) is an estimate of the inbound and outbound trips by mode (vehicle, person, truck, transit, bicycle, pedestrian) for a study site. These trip generation estimates are used for a variety of functions, such as:

- Determining site access and circulation requirements for a study site;
- Estimating future traffic volumes upon which off-site transportation improvements are based;
- Determining fees for use in addressing potential impacts to the transportation systems; or
- Evaluating the implications of requests for potential zoning or land use changes.

In some cases, the modal trip generation estimates can be used for purposes beyond trip generation, such as to assess parking demand, forecast regional travel for special generators, or estimate vehicular emissions or other environmental measures.

## *Trip Generation Manual*

### Purpose

The purpose of the *Trip Generation Manual* (TGM) is to present a summary of trip generation data that have been voluntarily collected and submitted to ITE. This manual represents the 12th edition and incorporates data from the previous 11 editions and various supplements. As additional trip generation data become available, they will be distributed through periodic updates of this resource.

The *Trip Generation Manual* contains text, tables, data plots, and statistics that describe the current state-of-the-practice understanding of the relationship between pedestrian, bicycle, transit, motor vehicle, and truck trip generation and characteristics associated with an individual development site or land use. The manual presents land use descriptions and data plots for combinations of available land uses, time periods, independent variables, modes, and settings contained in the ITE database.

Data contained in TGM are presented for informational purposes. Guidance on the proper interpretation and application of trip generation data is provided in the ITE Recommended Practice, *Trip Generation Handbook*. More information on relevant Handbook items is contained in Chapter 8 “Approaches for Estimating Trip Generation.”

### Format

The hard-copy volumes of TGM include the most frequently used combinations of land uses, time periods, independent variables, modes, and settings, including land use descriptions and data plots.

ITETripGen web app provides electronic access to all TGM content, including all statistics, data plots, and land use descriptions. The app also provides access to pass-by trip data, time-of-day distributions, modal plots for all land uses, truck trip generation data, and the *Trip Generation Handbook*, an ITE Recommended Practice on how to use TGM.

### Organization

The *Trip Generation Manual*, 12th Edition, hard copy is organized in five volumes. Volume 1 is the Desk Reference and contains Chapters 1 through 10. In addition to this Chapter, Volume 1 contains:

- **Chapter 2** presents a discussion of the emerging trends in trip generation.
- **Chapter 3** presents a summary of the changes in the 12th Edition relative to the 11th Edition.
- **Chapter 4** provides a glossary of terms used in the 12th Edition. Definitions are presented for trip types and modes, various settings used to classify study site locations, time periods for which trip generation is reported, and independent variables for which a relationship to trip generation is plotted. Terms used on the land use description pages and in the data plots are also defined in Chapter 4.
- **Chapter 5** describes the ITE trip generation database. The data included in the 12th Edition were voluntarily collected and submitted to ITE by public agencies, developers, consulting firms, student chapters, and associations. The data represent person (either total or by travel mode) and vehicle (either total or by vehicle classification) trip generation studies for which at least one hour of counts were conducted on a given day.

- **Chapter 6** describes the generic contents of the trip generation data plots and their associated statistics. It also offers guidance on understanding the data presented in the manual.
- **Chapter 7** presents instructions for reading the data plots and includes a sample problem and solution using 12th Edition data plots.
- **Chapter 8** provides important supplemental information on the contents of the *ITE Trip Generation Handbook*, an ITE Recommended Practice that provides guidance on how to use and interpret the data in TGM.
- **Chapter 9** presents ITE's procedure for updating the trip generation database and associated data plots and statistics.
- **Chapter 10** lists the sources for all data presented in the 12th Edition.

Volumes 2 through 5 present data plots organized by land use and site setting:

- **Volume 2** includes the land use descriptions and data plots for all land uses with urban data, including dense multi-use urban and center city core areas.
- **Volumes 3 through 5** include land use descriptions and data plots for all land uses with general urban/suburban and rural data.

The technical appendices in the 12th Edition provide pass-by trip percentages, time-of-day distributions, modal plots for all land uses, and truck trip generation data. The appendices are accessible through the ITETripGen web app.

## Land Use Descriptions and Trip Generation Data Plots

Each land use code begins with one or more pages of text describing the characteristics of the development sites in the land use. These are followed by one or more pages of data plots and associated statistics.

Under the heading **Land Use Description**, a summary description is provided for the sites where the data were collected.

The section under the heading **Additional Data** may include the following information:

- The decades during which the data were collected
- The states/provinces for the study sites
- Any cautionary notes for application of the data

The section under the heading **Sources** lists source numbers that comprise the database for the land use. Chapter 10 provides a source name for each source number.

For all land use descriptions—regardless of setting—the listings for decades, states/provinces, and sources represent the full database for that land use and subcategory.