

ITE and Trip Generation

www.ite.org

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Institute of Transportation Engineers

- Nearly 17,000 members
- 92 countries
- 10 districts
- 84 local sections
- 137 student chapters

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ITE Trip Generation Manual

It is:

- substantial collection of survey data
- widely quoted
- very useful guide to practitioners
- always requires interpretation

It is not:

- some kind of de-facto parking standard
- a recommended level of parking provision
- applicable to every situation

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ITE Trip Generation Manual

8th Edition published Nov 08

162 land use activities

550 sites

4800 surveys

all pre-2000 data removed

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ITE Trip Generation Manual

Three volumes, first of which is the User Guide

This emphasises:

- key difference between access to data and making recommendations
- expert interpretation is vital
- context is all important
- the key relevance of the pass-by and linked trips
- always look at the sample size
- always refer to the upper and lower bounds

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Trip Generation User Guide

- key reference for recommended practice
- choice of independent variable and time period
- recommended methodology for estimating trip generation of new developments
- guidelines for undertaking trip generation studies
- detail of pass-by, primary and diverted linked trips
- advice for when mix or size not fully defined
- methods for multi-use developments
- useful appendices – trucks, TDM, literature guide
- look for new *Trip Generation Handbook* next year

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Current Related Activities



- I) ITE Bicycle and Pedestrian Trip Generation Report
 - a) ITE Task Force (14 ITE subject matter experts)
 - establish a consistent land-use specific count and survey methodology
 - investigate how trip generation rates could be developed
 - b) ITE draft report to be developed
- II) The National Bicycle & Pedestrian Documentation Program (under review by FHWA/ used by Caltrans in San Diego)
 - provision of consistent model for data collection
 - provision of data

<http://www.ite.org/tripgen/otherresources.asp>



ITE Trip Generation Manual



Suggested good practice:

- always use your own site surveys first
- then validate or confirm its appropriateness or otherwise by reference to other surveyed or published data from elsewhere

Do not:

- turn to the published data first
- and then seek to validate it from your surveys



ITE Trip Generation Manual



Interpretation relies on understanding the adjustments involved with:

- existing uses
- pass by and linked trips
- multi-purpose trips
- mode splitting.

Again, getting it right requires expert interpretation



Scenario Setting



The use of worst-case scenarios.

- invariably leads to over-provision and wasted resources
- and potentially self-fulfilling prophecies

Good practice

- choose design scenarios carefully. Your appraisal may include a worst-case situation
- assessments should be based on what you expect is typically going to be experienced or most likely to occur



Trip Generation Assessments



Good practice:

- make sure the rates you use are properly grounded in reality
- pay very careful attention to context
- properly account for pass-by and linked trips
- use a most-likely scenario, supported by appropriate sensitivity analysis



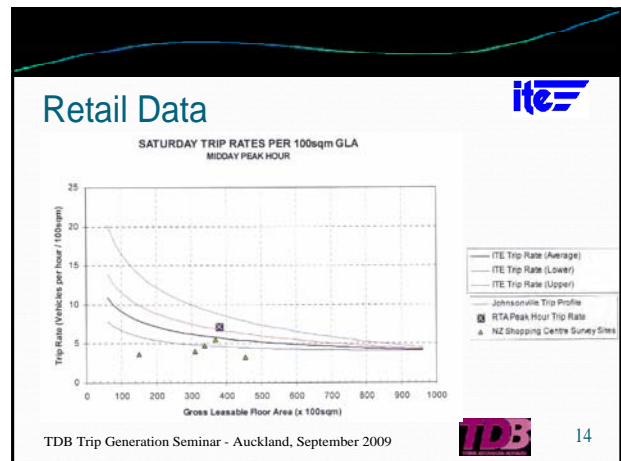
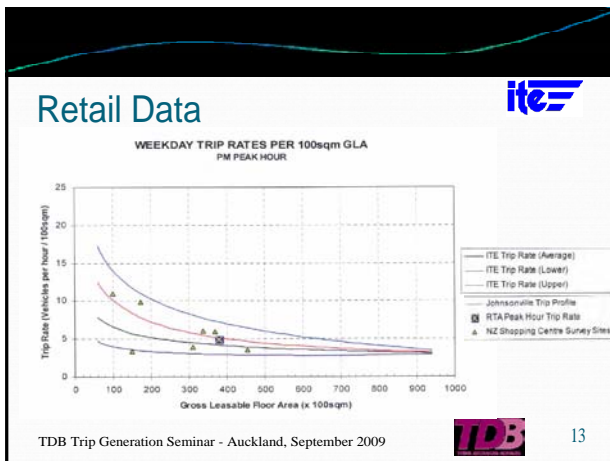
Trip Generation Practice



Issues

- importance of relevant local surveys
- judgement in selecting similar types and context
- proportions of pass-by and linked trips
- ongoing evolution of land use activities
- service volumes
- importance of active trip constraints
- mode change potential and effects





Many & varied sources

For example see sites such as:

TRICS UK
<http://www.trics.org/>

MAX
<http://www.max-success.eu/index.phtml>

TRIS Online
<http://ntlsearch.bts.gov/tris/index.do>

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Data Collection is Ongoing

ITE have a range of student chapter initiatives involving 18 universities whose reports are freely available:

http://www.westernite.org/datacollectionfund/data_collection.htm

Aim is to interest students and confirm the importance of factual surveys.

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Other Available ITE Materials

TPC Wiki
<http://www.ite.org/tripgen/otherresources.asp>

Mixed Use Developments
http://www.ite.org/meetcon/2008AM/Session%203_Brian%20Bochner.pdf

Estimation from Travel Demand Curves
http://www.ite.org/councils/Trans_Plan/newsletters/TPCwinter09.pdf

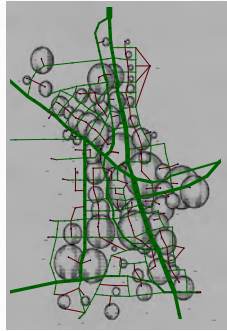
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The Next Generation of Trip Generation

Dan Hardy
 Montgomery County Planning Department
 WDCSI Meeting 11/12/08

- What's current at ITE
- ITE Web Seminars on Trip Generation Research
- Transportation Planning Council activities
- Next steps in research



- 6D Analysis – Fehr & Peers
- NCHRP 8-51 – TTI
- TOD – PB Placemaking

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Enter questions and comments in the chat room. Indicate the instructor's you wish to respond

6D factors that influence trip generation:

- Density dwellings, jobs per acre
- Diversity mix of housing, jobs, retail
- Design connectivity, walkability
- Destinations regional accessibility
- Distance to Transit rail, bus proximity
- Demographics household size, income

Factors correlated with reduced trip generation

- Internal and Walk
- MXD Population and Employment (scale)
- Population and Employment Density
- Jobs / Housing Diversity - Index of jobs/housing vs Ideal
- Building Mix - balance of commercial, office, and public
- Intersections per square mile
- Transit
- Rail station within MXD
- Transit stops per square mile
- Employment within a 30 minutes by transit

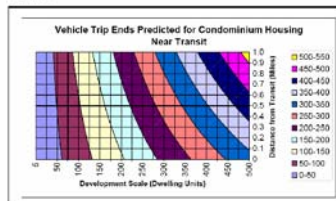
Condominium Housing Within a Mile of Transit

Average Vehicle Trip Ends vs. Development Scale, Distance to Transit
On a Weekday
During A.M. Peak Hour of Adjacent Street Traffic

Number of Sites: 21 (San Diego) Avg. Number of Dwelling Units: 171

Trip Generation per Dwelling Unit

Equation Plot



Equation: $T = 0.38 + Exp(-0.04 \cdot D) + 0.37 \cdot S$

Three New Data Sites

- ✓ 5-6 land uses each
 - Office
 - Retail
 - Restaurant
 - Residential
 - Hotel
 - Cinema



- ✓ Site generation "neutral"
 - Based on percent of site trips
 - Eliminates effects of different total site generation

- ✓ 10-40% (total) internal capture

- ✓ Proximity data

Estimating Internal Capture for Mixed-Use Developments

New Unconstrained Internal Capture Rates

Preliminary - Do Not Use - Subject To Change

From \ To	Office	Retail	Restaurant	Residential	Cinema	Hotel
Office	-	2%	8%	3%	1%	1%
Retail	2%	-	3%	17%	8%	7%
Restaurant	3%	30%	-	11%	9%	0%
Residential	4%	42%	27%	-	2%	2%
Cinema	0%	36%	29%	7%	-	7%
Hotel	0%	28%	34%	3%	0%	-

- 4 separate tables for
 - AM peak, PM peak
 - Origin end, destination end

Estimating Internal Capture for Mixed-Use Developments

TOD housing generates 50% less traffic than conventional housing

ITE Trip Manual
6.67 trips per unit

Detailed counts of 17 residential TODs
3.55 trips per unit

pb placemaking

Testing the implications

- 8 acre theoretical site
- Four TOD-housing building products
 - Garden Apts
 - Townhomes
 - "Texas Donut"
 - 6-story Mid-rise
- Test two parking ratios
 - 2.2 spaces per unit
 - 1.1 spaces per unit
 - Both transit friendly

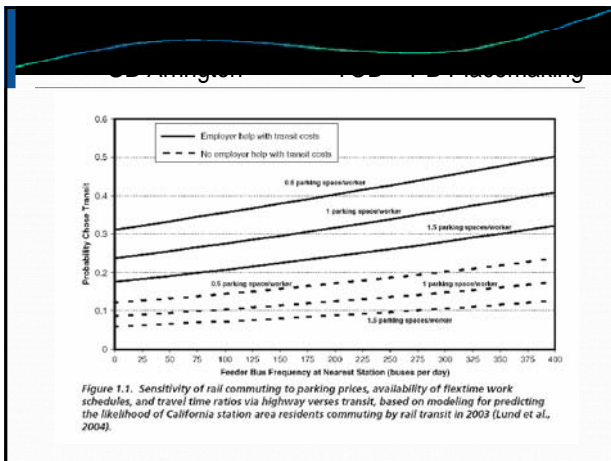
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TCRP REPORT 128

Effects of TOD on Housing, Parking, and Travel

Table 2.A. Comparison of TOD housing and ITE vehicle trip generation

Housing Type	Units/acre	Veh. Trip Rate (ITE)	TOD Housing	
			Trip Rate	% of ITE
Metroplex (1.5)	1,400	107	60%	57%
Office (1.5)	1,500	107	60%	57%
Office (2.0)	2,000	107	60%	57%
Office (3.0)	3,000	107	60%	57%
Office (4.0)	4,000	107	60%	57%
Office (5.0)	5,000	107	60%	57%
Office (6.0)	6,000	107	60%	57%
Office (7.0)	7,000	107	60%	57%
Office (8.0)	8,000	107	60%	57%
Office (9.0)	9,000	107	60%	57%
Office (10.0)	10,000	107	60%	57%
Office (11.0)	11,000	107	60%	57%
Office (12.0)	12,000	107	60%	57%
Office (13.0)	13,000	107	60%	57%
Office (14.0)	14,000	107	60%	57%
Office (15.0)	15,000	107	60%	57%
Office (16.0)	16,000	107	60%	57%
Office (17.0)	17,000	107	60%	57%
Office (18.0)	18,000	107	60%	57%
Office (19.0)	19,000	107	60%	57%
Office (20.0)	20,000	107	60%	57%
Office (21.0)	21,000	107	60%	57%
Office (22.0)	22,000	107	60%	57%
Office (23.0)	23,000	107	60%	57%
Office (24.0)	24,000	107	60%	57%
Office (25.0)	25,000	107	60%	57%
Office (26.0)	26,000	107	60%	57%
Office (27.0)	27,000	107	60%	57%
Office (28.0)	28,000	107	60%	57%
Office (29.0)	29,000	107	60%	57%
Office (30.0)	30,000	107	60%	57%
Office (31.0)	31,000	107	60%	57%
Office (32.0)	32,000	107	60%	57%
Office (33.0)	33,000	107	60%	57%
Office (34.0)	34,000	107	60%	57%
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Office (36.0)	36,000	107	60%	57%
Office (37.0)	37,000	107	60%	57%
Office (38.0)	38,000	107	60%	57%
Office (39.0)	39,000	107	60%	57%
Office (40.0)	40,000	107	60%	57%
Office (41.0)	41,000	107	60%	57%
Office (42.0)	42,000	107	60%	57%
Office (43.0)	43,000	107	60%	57%
Office (44.0)	44,000	107	60%	57%
Office (45.0)	45,000	107	60%	57%
Office (46.0)	46,000	107	60%	57%
Office (47.0)	47,000	107	60%	57%
Office (48.0)	48,000	107	60%	57%
Office (49.0)	49,000	107	60%	57%
Office (50.0)	50,000	107	60%	57%



- Newsletters
 - International data sources
- Web Resources
- Future Research Projects
- Other?

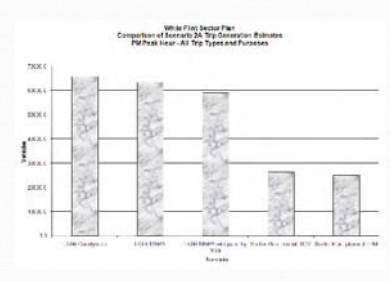
http://www.tdbonline.org/who_we_are

Figure 8. Comparison of 66 and 82 DTRs. Predicted Vehicle Trip Rates - Total

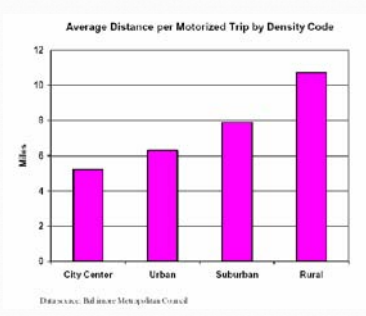
- Newsletters
- Web Resources
 - Links
- Future Research Projects
- Other?



- Newsletters
- Web Resources
- Future Research Projects
 - CBD internal capture
- Other?



- Newsletters
- Web Resources
- Future Research Projects
 - VMT
 - carbon
 - climate change
- Other?



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