

ANALYSIS BRIEF

AUTO OCCUPANCY



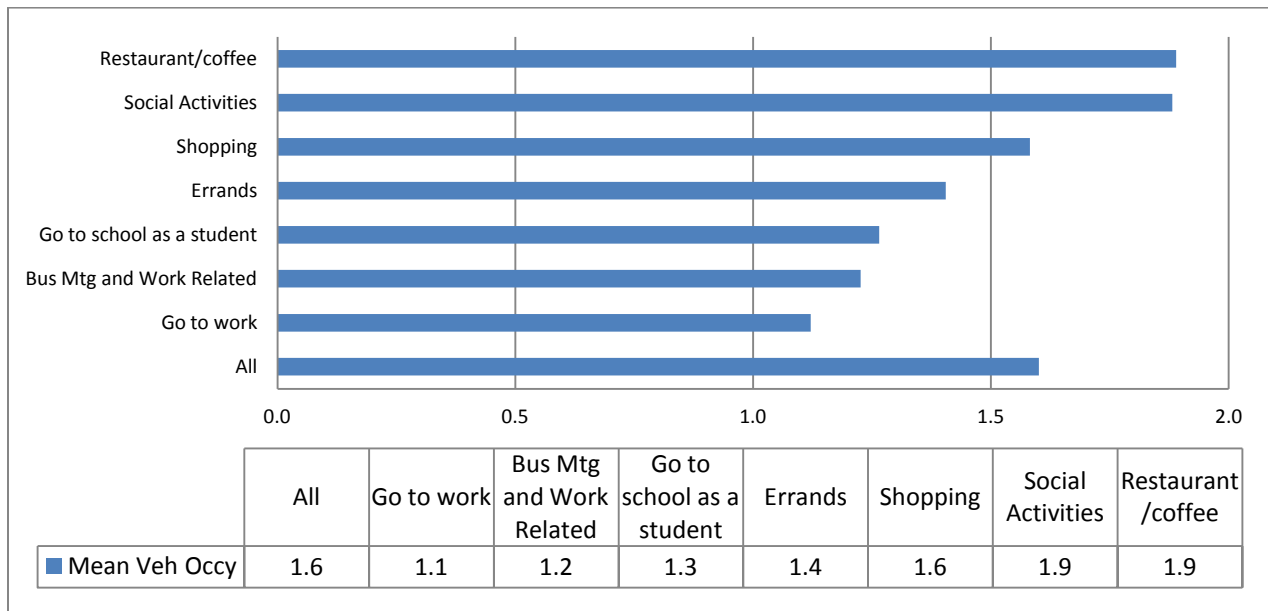
Nancy McGuckin
www.travelbehavior.us

People travel together for a lot of reasons. For example, traveling together on a road trip is part of the fun, and people often drive together for shopping, errands, or to go out to eat. The data in this brief also indicate that area type has an influence: people driving to places downtown are more likely to drive alone than people driving to places in the suburbs.

Auto occupancy can be measured many ways. The data shown here are of two types: 1) a national household survey that tracks the household vehicle and how many people are in it throughout the sample day, and 2) samples of businesses in different metro areas where each location—like a store or an office building—is cordoned off and all the people and cars entering are counted. The two measures have inherent differences, but can show some of the same data relationships and direction.

Looking at the NHTS data, the purpose of the type—for instance a shopping trip or to go to a restaurant—is related to auto occupancy. Figure 1 shows the average vehicle occupancy for a few common types of trip purposes. Of these selected purposes, travel to work has the lowest vehicle occupancy while trips for shopping, errands, and to restaurants and coffee shops have higher average occupancies.

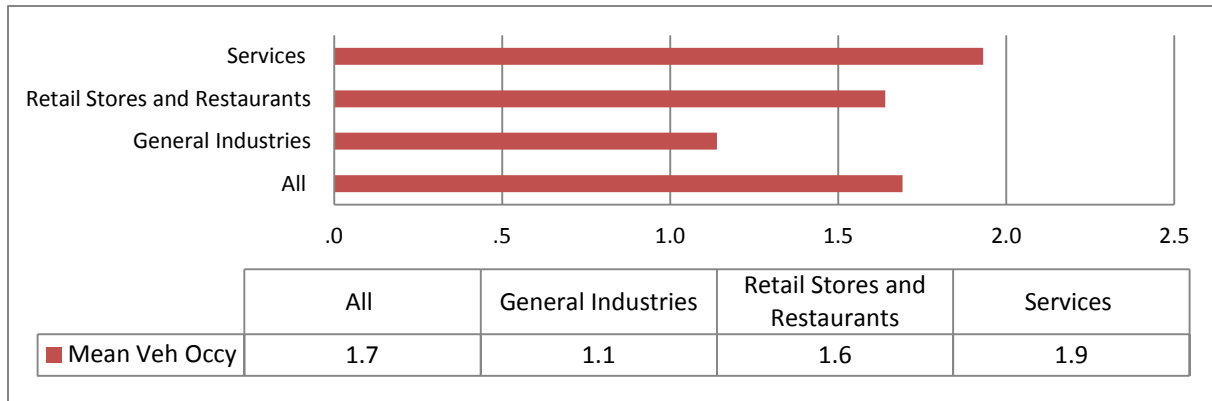
Figure 1 – Average Vehicle Occupancy by Purpose of Travel, NHTS 2009



Auto Occupancy

Figure 2 shows the auto occupancy data from a large survey of sites located in the Atlanta region¹ with the locations divided into general businesses, retail and service. General industries include offices, retail includes both large and small stores, and the service sector includes banks, auto repair, theaters, doctor's offices and the like. Even though these rates are only in one metro region and measured in a different way than those shown in Figure 1, the range of estimates (1.7-1.9 in Atlanta and 1.6-1.9 for the nation as a whole) are not so different.

Figure 2 –Average Vehicle Occupancy by Establishment Type* (Atlanta Region)



*Visitor Trips only

Auto occupancy may also be related to the kind of area where the business is located. According to the site-specific data, people arriving at businesses located in the urban core² or central business district (CBD) are more likely to drive alone than people arriving at sites in the close in less dense areas (the data shown here are from the Pittsburgh region), resulting in lower vehicle occupancy.

Figure 3 – Percent Drive Alone and Average Vehicle Occupancy by Industry Type and Area Type

Industry Type		CBD	Urban/Dense Suburban	Suburban/Rural
		% Drive Alone	79%	56%
General	Mean Veh Occy	1.3	1.7	1.4
	% Drive Alone	67%	50%	65%
Retail	Mean Veh Occy	1.4	2.2	1.5
	% Drive Alone	55%	52%	82%
Service	Mean Veh Occy	1.6	1.5	1.4

Source: Southwestern Pennsylvania Commission Establishment Survey, 2003, visitor trips only

1 The data shown in this brief are from a number of establishment surveys which the author had a role, including Dallas-Ft. Work (1994), Atlanta Region (1997), San Juan (1998) and Pittsburgh (2003). The surveys ranged in size from 165 to 270 sampled establishments of different types and sizes. The data shown here are for visitors (weighted).

2 Area types are established by the planning agency contracting the sample survey – the density considered CBD or dense suburban in Dallas-Ft. Worth might be different than the density considered CBD or dense suburban in Pittsburgh.

Auto Occupancy

Figure 4 compares auto occupancy for retail and service business in different metro areas. Remember that area type is defined differently in different regions—all regions called the downtown core a CBD, and separately and uniquely determined what areas were urban fringe, dense suburban, or outer suburban/rural.

Figure 4 - Comparison of Average Vehicle Occupancy in Different Metro Areas*

Business Type	Area Type	Atlanta	DFW	Pittsburgh	San Juan
Retail	CBD	1.4	1.4	1.4	1.9
	Urban/Suburban	1.5	1.6	2.2	1.6
	Suburban/Rural	1.9	2.1	1.5	1.5
	Overall Retail	1.6	1.6	1.7	1.5
Service	CBD	1.2	1.2	1.6	1.6
	Urban	1.4	2.2	1.5	1.6
	Suburban/Rural	2.0	1.8	1.4	1.5
	Overall Service	1.9	1.9	1.5	1.6

*Visitor trips only

Average occupancy for commute trips, according to the NHTS, vary little by area type. Figure 5 shows the average auto occupancy for vehicle commutes by different measures of area type. Only commute trips made in very high density areas show even a nominal difference.

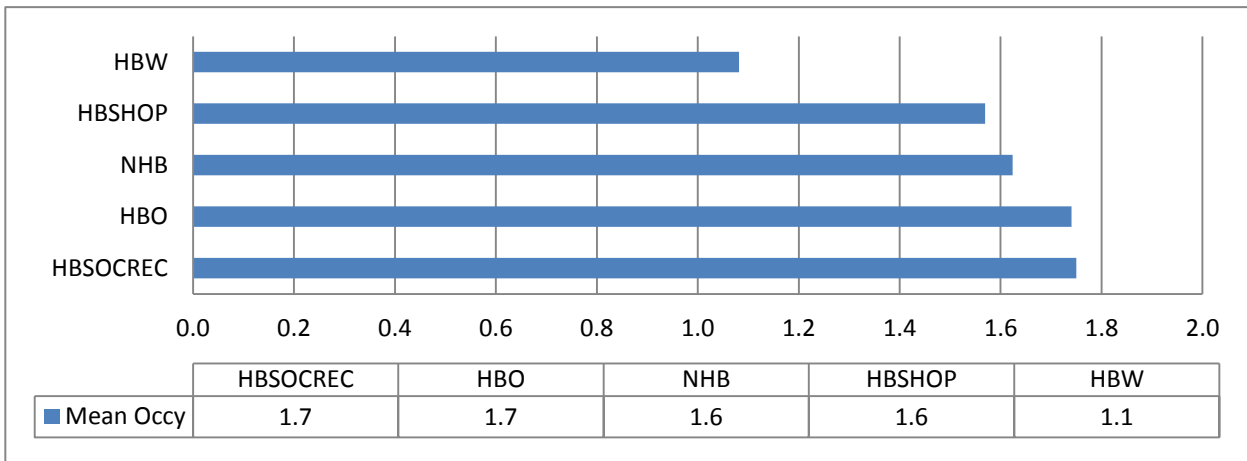
Figure 5 – Average Commute Vehicle Occupancy by Different Area Types (NHTS 2009)

Area Designation	Work Trip Occy	Residential Density	Work Trip Occy	MSA Size	Work Trip Occy
Town and Country	1.1	Low Density	1.1	<250K	1.1
Suburban	1.1	Mid-Density	1.1	250-499K	1.1
Urban	1.1	High Density	1.1	500-999K	1.1
		Very High Density	1.2	1 mil-2.9 mil	1.1
				3 mil+	1.1

Compared to other trip purposes, home-based work trips (HBW) have the lowest occupancy rates, while social, recreational, and shopping trips have the highest (Figure 6). The occupancy estimates for Home-based other and non home-based trips fall in between.

Auto Occupancy

Figure 6 –Average Vehicle Occupancy by General Trips Purpose (NHTS 2009)



This quick look at some of the available data on auto occupancy leads to a few basic conclusions:

The first is that the trip purpose or destination type is an important factor in auto occupancy— at the site level recreational and entertainment services will have higher occupancy than government services, for example. This may account for the high variability in trips destined to places classified as ‘services’.

Secondly, at the site level vehicle occupancy is a function of the occupancy for visitor trips and the relative number of visitors to a site compared to workers. Worker vehicle occupancy is relatively low and stable, even for higher density areas.

Lastly, land use characteristics may be related to vehicle occupancy, and greater detail on parking availability and cost would be useful to understand this relation. More research is necessary to fully comprehend the factors related to differences in vehicle occupancy.

Nancy McGuckin, Travel Behavior Analyst

Publications and analysis at:

www.travelbehavior.us