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## Chapter 7

# Commute Trips by Time of Day

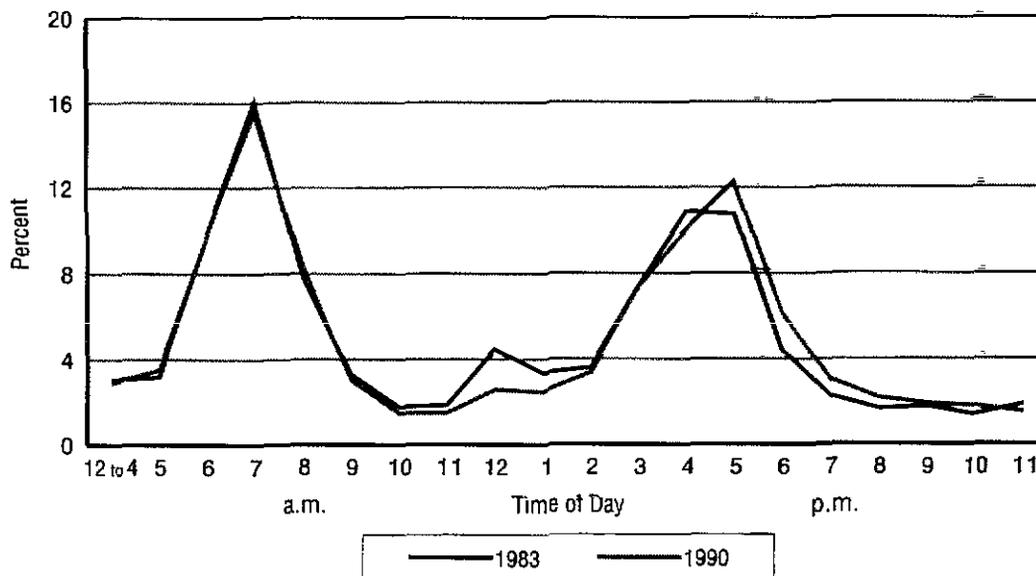
This chapter reviews commute trip patterns in terms of time of day of trip starts. Changes in trip patterns and variations by gender between 1983 and 1990 are analyzed. In addition, privately operated vehicle occupancy rates are reviewed to detect time-of-day differences or similarities.

The information is for trips of 75 miles or less.

### Key Findings

- Commuting patterns are remarkably similar for all urban size groups.
- The 7:00 a.m. to 7:59 a.m. morning rush hour has the highest concentration of commuter trips.
- Rail commuting peaks more sharply in the morning and evening peak periods of travel than does commuting in POVs.
- The evening peak period of commuting expanded in duration from 1983 to 1990, because more 1990 commuters started their trip home during later hours of the evening.
- The peak period of morning commuting for males begins one hour earlier than for females. There is no discernible difference between males and females in evening peak periods of commuting.
- The peak periods of commuting show no differences in vehicle occupancy rates from other hours of the day.

**FIGURE 7-1**  
**Commute Person Trips by Time of Day**



*Note: Excludes trips greater than 75 miles.*

### Morning Peak Hour is Most Concentrated

The 7:00 a.m. to 7:59 a.m. hour had a greater share (15.4 percent) of 1990 commuter trips than any other hour of the day (Figure 7-1 and Table 7-1). The second highest peak hour was from 5:00 p.m. to 5:59 p.m. (12.2 percent).

### More Trips in the 5:00 p.m. to 5:59 p.m. 1990 Peak Hour

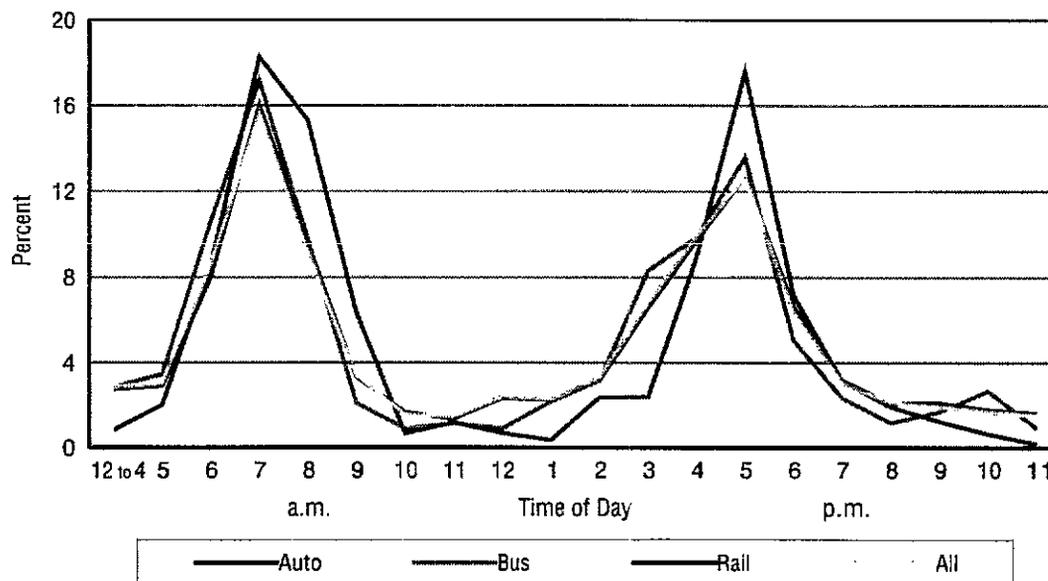
While there was very little change from 1983 to 1990 in the morning commuting pattern, some changes did occur in the evening commute hours. First, 1990 commuter trips were more concentrated in the 5:00 p.m. to 5:59 p.m. hour (Figure 7-1) than in 1983 (12.2 percent versus 10.7 percent of total daily commuting trips).

Second, the evening peak period expanded in duration. This is due to the survey finding that more 1990 commuters began their trips home from work later in the evening than in 1983. As shown in Table 7-1, 6.11 percent of 1990 commuter trips were started between 6:00 p.m. and 6:59 p.m., up from 4.4 percent in 1983. Likewise, the 7:00 a.m. to 7:59 p.m. and 8:00 p.m. to 8:59 p.m. hours had greater proportions of daily commuter trips in 1990 than in 1983.

Since the standard trip purpose coding procedure for NPTS does not specifically account for trip-chaining, it is likely that many of the trips from work to home begin earlier and include a stop before arriving home. The last trip to home in a chain that starts at work is coded as the "work-to-home" trip in NPTS. This may also account for some of the p.m. peak period spread.

**FIGURE 7-2**  
**Commute Person Trips by Time of Day**  
**(Trips by Mode)**

**1990**



*Note: Excludes trips greater than 75 miles.*

### Commutes by Rail Show Greatest Peaking

More than any other mode of commuter travel, person trips by rail are more concentrated in the peak hours. Figure 7-2 and Table 7-2 show that the rail peak hours of 6:00 a.m. to 9:59 a.m. and 4:00 p.m. to 7:59 p.m. saw a higher concentration of commuters (48.6 percent of total daily rail trips in the a.m. peak hours and 36.9 percent in the p.m. peak hours) than any other mode.

### Urban Size Not a Factor in Commuting Patterns

There is a remarkable similarity in the commuting patterns of the four urban size groups. As seen in Table 7-1, the variation in the morning peak period from 6:00 a.m. to 8:59 a.m. was very small. The range was from 32.9 percent to

34.0 percent of 1990 daily commuter trips in urban areas of more than 1 million and from 33.4 percent to 33.5 percent in the smaller urban groups. This similarity in commuting patterns among urban size groups also holds true for the evening peak hours.

### Peak Periods Do Not Attract Higher Occupancy Rates

As shown in Table 7-3, POV trips had slightly higher average occupancy rates from 3:00 p.m. to 8:00 p.m. Except for this increase during the late afternoon and evening, vehicle occupancy shows surprisingly little fluctuation over the course of the day.

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### **Female Commuters Start Later in the Day**

The highest proportion of morning commuting trips by women is from 7:00 a.m. to 8:59 a.m. (25.8 percent of all daily female commuting trips). The most frequent commuting start time for males was between 6:00 a.m. and 7:59 a.m. (24.4 percent of all daily male commuting trips).

### **No Gender Difference in Evening Commuting**

In contrast, Table 7-4 shows that the evening commute period did not show any gender differences. Approximately the same proportions of males and females commuted in the three hourly periods between 4:00 p.m. and 6:59 p.m. Within these three hours, males made 28 percent of all the daily male commuter trips. These same hours also accounted for 28.4 percent of all the daily female commute trips. These differences may also reflect different trip-chaining patterns between men and women.

**TABLE 7-1**  
**Commute Trips by Time of Day and Urban Size Group**  
**(Weekdays)**

**1983**

**Urban Size Group**

Start Time (a.m.)	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	0.51 %	0.32 %	0.45 %	0.43 %	0.45 %
1:00 to 1:59	0.39	0.43	0.64	0.51	0.49
2:00 to 2:59	0.61	0.45	0.30	0.47	0.47
3:00 to 3:59	0.88	0.41	0.34	0.41	0.54
4:00 to 4:59	0.70	1.26	0.95	1.41	1.08
5:00 to 5:59	2.88	3.59	2.76	3.47	3.16
6:00 to 6:59	9.07	9.74	8.52	10.85	9.73
7:00 to 7:59	17.28	16.56	15.38	15.08	15.98
8:00 to 8:59	7.32	7.89	11.57	6.49	7.81
9:00 to 9:59	2.75	3.67	3.64	3.21	3.27
10:00 to 10:59	1.98	1.71	1.53	1.56	1.74
11:00 to 11:59	1.93	1.28	1.65	2.16	1.84

Start Time (p.m.)	Under 1.25 Million	1.25 Million + w/o Rail	1.25 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	4.97 %	3.91 %	3.40 %	4.72 %	4.46 %
1:00 to 1:59	3.31	1.94	2.41	4.18	3.33
2:00 to 2:59	3.40	2.97	4.17	3.79	3.58
3:00 to 3:59	7.67	7.84	5.92	7.82	7.38
4:00 to 4:59	10.79	11.22	10.42	10.80	10.84
5:00 to 5:59	10.79	9.86	11.59	10.81	10.70
6:00 to 6:59	4.08	5.21	4.63	4.12	4.39
7:00 to 7:59	2.11	3.24	3.06	1.71	2.21
8:00 to 8:59	1.82	1.77	1.31	1.48	1.63
9:00 to 9:59	1.87	1.44	1.92	1.63	1.73
10:00 to 10:59	1.32	2.01	1.19	1.10	1.35
11:00 to 11:59	1.48	1.28	2.20	2.06	1.84
<b>Total</b>	<b>100.00 %</b>	<b>100.00 %</b>	<b>100.00 %</b>	<b>100.00 %</b>	<b>100.00 %</b>

Commute Trips (in Millions)	12,386	6,334	7,337	14,370	40,991
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*Note: Excludes trips of 75 miles or more.*

*(Continued)*

**TABLE 7-1 (Continued)**  
**Commute Trips by Time of Day and Urban Size Group**  
**(Weekdays)**

**1990**

**Urban Size Group**

<b>Start Time (a.m.)</b>	<b>Under 1 Million</b>	<b>1 Million + w/o Rail</b>	<b>1 Million + w/ Rail</b>	<b>Not Urban Area</b>	<b>All</b>
12:00 to 12:59	0.57%	0.87%	0.62%	0.87%	0.75%
1:00 to 1:59	0.37	0.66	0.50	0.30	0.43
2:00 to 2:59	0.34	0.50	0.25	0.26	0.33
3:00 to 3:59	0.39	0.26	0.41	0.39	0.37
4:00 to 4:59	1.00	1.08	0.90	1.03	1.01
5:00 to 5:59	2.53	3.59	3.12	4.24	3.49
6:00 to 6:59	9.16	8.37	8.29	11.67	9.71
7:00 to 7:59	15.75	15.94	15.28	15.06	15.44
8:00 to 8:59	8.46	8.55	10.44	6.81	8.32
9:00 to 9:59	3.06	3.11	4.06	2.26	3.00
10:00 to 10:59	1.71	1.42	1.62	1.21	1.45
11:00 to 11:59	1.82	1.37	1.21	1.47	1.47
<b>Start Time (p.m.)</b>	<b>Under 1 Million</b>	<b>1 Million + w/o Rail</b>	<b>1 Million + w/ Rail</b>	<b>Not Urban Area</b>	<b>All</b>
12:00 to 12:59	2.85%	2.35%	2.01%	2.83%	2.56%
1:00 to 1:59	2.84	1.93	2.12	2.72	2.45
2:00 to 2:59	3.46	3.84	2.66	3.43	3.35
3:00 to 3:59	6.82	6.17	7.45	8.27	7.34
4:00 to 4:59	10.10	10.18	9.45	10.21	10.02
5:00 to 5:59	12.86	12.62	12.60	11.30	12.20
6:00 to 6:59	5.73	6.61	6.88	5.59	6.11
7:00 to 7:59	2.94	3.30	2.95	2.84	2.98
8:00 to 8:59	1.82	2.30	2.29	2.12	2.13
9:00 to 9:59	2.17	1.54	1.98	1.82	1.87
10:00 to 10:59	1.80	1.95	1.30	1.91	1.76
11:00 to 11:59	1.43	1.49	1.60	1.40	1.47
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
<b>Commute Trips (in Millions)</b>	<b>9,540</b>	<b>8,846</b>	<b>9,437</b>	<b>15,562</b>	<b>43,386</b>

*Note: Excludes trips of 75 miles or more.*

**TABLE 7-2**  
**Person Commute Trips by Mode and Time of Day**  
 (Urbanized Area Households, Weekday Travel)

1990

Start Time (a.m.)	Travel Mode											All
	Auto	Pickup/ Other Truck	Passenger Van	Other POV	Bus	Rail	Taxi	Bicycle	Walk	Other	%	
12:00 to 12:59	0.63%	0.73%	1.23%	0.74%	1.09%	*%	*%	0.69%	0.99%	*%	0.68%	
1:00 to 1:59	0.41	0.86	*	1.33	1.66	*	*	1.26	0.75	*	0.51	
2:00 to 2:59	0.43	0.31	*	0.58	*	*	*	*	0.15	*	0.36	
3:00 to 3:59	0.41	0.29	*	*	*	0.44	*	1.78	0.19	*	0.36	
4:00 to 4:59	0.90	1.67	0.93	2.12	0.15	0.40	6.90	3.38	0.99	*	0.99	
5:00 to 5:59	2.93	4.54	2.84	4.15	3.48	2.03	*	1.69	1.88	1.55	3.07	
6:00 to 6:59	8.03	12.32	11.23	8.49	10.62	8.60	*	6.00	5.33	10.24	8.62	
7:00 to 7:59	16.02	15.67	11.93	19.94	17.15	18.27	13.85	11.43	10.26	8.09	15.65	
8:00 to 8:59	9.60	5.32	11.00	7.73	9.79	15.32	16.45	10.32	7.67	0.11	9.16	
9:00 to 9:59	3.36	2.55	4.08	1.78	2.11	6.38	9.97	1.25	6.06	2.71	3.42	
10:00 to 10:59	1.67	0.95	1.43	1.12	0.91	0.69	2.74	2.63	3.06	*	1.59	
11:00 to 11:59	1.38	1.56	1.39	0.82	1.16	1.20	*	1.96	3.43	*	1.47	

\* Insufficient data

Note: Excludes trips greater than 75 miles.

(Continued)

**TABLE 7-2 (Continued)**  
**Person Commute Trips by Mode and Time of Day**  
 (Urbanized Area Households, Weekday Travel)

1990

Start Time (p.m.)	Travel Mode										All
	Auto	Pickup/ Other Truck	Passenger Van	Other POV	Bus	Rail	Taxi	Bicycle	Walk	Other	
12:00 to 12:59	2.36%	1.75%	2.88%	7.80%	0.91%	0.70%	2.78%	1.78%	5.28%	4.91%	2.41%
1:00 to 1:59	2.30	2.02	2.13	1.59	2.19	0.37	4.86	3.92	4.36	*	2.31
2:00 to 2:59	3.17	3.82	3.28	1.48	3.18	2.39	3.75	4.29	4.77	6.95	3.31
3:00 to 3:59	6.59	7.91	7.84	10.78	8.32	2.41	1.28	5.74	6.32	25.06	6.83
4:00 to 4:59	9.72	11.59	10.17	9.25	9.85	8.93	2.60	11.88	9.10	5.54	9.90
5:00 to 5:59	12.71	11.60	11.96	9.19	13.60	17.59	9.97	14.61	13.52	15.70	12.70
6:00 to 6:59	6.63	5.75	6.59	5.04	5.06	7.19	6.57	4.66	5.69	2.16	6.40
7:00 to 7:59	3.19	2.73	2.82	1.55	2.35	3.16	1.61	5.19	2.66	*	3.05
8:00 to 8:59	2.07	1.78	3.78	0.69	1.16	1.91	5.45	*	3.41	10.63	2.13
9:00 to 9:59	2.11	1.37	0.96	1.85	1.68	1.23	1.78	2.06	1.37	*	1.91
10:00 to 10:59	1.77	1.46	1.01	N/A	2.67	0.63	6.46	2.70	1.21	*	1.68
11:00 to 11:59	1.80	1.47	0.49	1.97	0.90	0.16	3.00	0.79	1.55	6.35	1.50
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
Commute Trips (in Millions)	22,596	3,741	1,126	305	991	640	70	124	1,407	73	31,078

Note: Excludes trips greater than 75 miles.

**TABLE 7-3**  
**Average Commute Vehicle Occupancy by Time of Day and Urban Size Group**

**1990**

Urban Size Group

Start Time (a.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	1.01	1.00	1.12	1.15	1.08
1:00 to 1:59	1.18	1.05	1.15	1.03	1.08
2:00 to 2:59	1.00	1.04	1.00	1.31	1.09
3:00 to 3:59	1.00	1.00	1.41	1.08	1.13
4:00 to 4:59	1.04	1.11	1.06	1.08	1.07
5:00 to 5:59	1.08	1.17	1.07	1.11	1.11
6:00 to 6:59	1.08	1.10	1.10	1.14	1.11
7:00 to 7:59	1.10	1.10	1.06	1.12	1.10
8:00 to 8:59	1.06	1.09	1.05	1.09	1.07
9:00 to 9:59	1.06	1.12	1.06	1.11	1.09
10:00 to 10:59	1.08	1.11	1.05	1.21	1.12
11:00 to 11:59	1.07	1.10	1.11	1.08	1.09

Start Time (p.m.)	Under 1 Million	1 Million + w/o Rail	1 Million + w/ Rail	Not Urban Area	All
12:00 to 12:59	1.08	1.12	1.06	1.19	1.13
1:00 to 1:59	1.08	1.17	1.21	1.16	1.15
2:00 to 2:59	1.07	1.13	1.09	1.16	1.12
3:00 to 3:59	1.16	1.12	1.13	1.21	1.17
4:00 to 4:59	1.11	1.15	1.15	1.15	1.14
5:00 to 5:59	1.16	1.14	1.14	1.15	1.15
6:00 to 6:59	1.14	1.19	1.10	1.20	1.16
7:00 to 7:59	1.12	1.20	1.13	1.19	1.17
8:00 to 8:59	1.08	1.12	1.10	1.19	1.14
9:00 to 9:59	1.17	1.13	1.07	1.22	1.16
10:00 to 10:59	1.08	1.20	1.14	1.16	1.14
11:00 to 11:59	1.02	1.08	1.07	1.10	1.07
All	1.10	1.13	1.10	1.15	1.12

*Note: Excludes trips of 75 miles or more.*

**TABLE 7-4**  
**Commute Trip Start Time by Gender**  
**(Urbanized Area Households)**

**1990**

**Gender**

Start Time (a.m.)	Male	Female	All
12:00 to 12:59	0.95 %	0.43 %	0.72 %
1:00 to 1:59	0.71	0.21	0.48
2:00 to 2:59	0.55	0.27	0.42
3:00 to 3:59	0.48	0.37	0.43
4:00 to 4:59	1.32	0.66	1.02
5:00 to 5:59	4.06	1.86	3.07
6:00 to 6:59	10.38	6.31	8.54
7:00 to 7:59	14.03	15.77	14.82
8:00 to 8:59	6.92	11.02	8.78
9:00 to 9:59	3.22	4.16	3.64
10:00 to 10:59	1.75	2.13	1.92
11:00 to 11:59	1.66	1.78	1.71
Start Time (p.m.)	Male	Female	All
12:00 to 12:59	2.59 %	2.85 %	2.71 %
1:00 to 1:59	2.05	2.89	2.43
2:00 to 2:59	3.67	3.63	3.65
3:00 to 3:59	6.83	6.89	6.86
4:00 to 4:59	9.76	9.57	9.67
5:00 to 5:59	11.59	12.76	12.12
6:00 to 6:59	6.60	5.99	6.32
7:00 to 7:59	3.17	3.08	3.12
8:00 to 8:59	2.28	1.98	2.14
9:00 to 9:59	1.94	1.92	1.93
10:00 to 10:59	1.94	1.75	1.85
11:00 to 11:59	1.56	1.71	1.63
<b>Total</b>	<b>100.00 %</b>	<b>100.00 %</b>	<b>100.00 %</b>
<b>Commute Trips (in Millions)</b>	<b>17,015</b>	<b>14,058</b>	<b>31,073</b>

*Note: Excludes trips of 75 miles or more.*