

# Profile of Highway Rest Area Usage and Users

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A profile of rest area usage patterns and of rest area user attributes is presented based on interviews at 13 rest areas in five states, on a nationwide telephone survey, and on unpublished data furnished by a number of states. These data show that rest area usage, as a function of mainline traffic, varies widely and averages 10.3 percent. Trucks and recreational vehicles are more likely to enter rest areas than are passenger automobiles. The demographic characteristics of the rest area user population are closely matched to those of the long trip driving population with a slight overrepresentation of older drivers. Toilet use and resting-stretching together account for more than 80 percent of all the stated reasons for stopping at rest areas. The average time in a rest area is somewhat longer than 10 minutes, with a pronounced increase in length of stay at lunchtime. Recreational vehicles and trucks generally stay for longer periods. Rest areas, and public financing thereof, have the overwhelming approval of the user population. However, there are some perceived security problems associated with rest area use at night.

The last reported nationwide study of rest area usage was made in 1971 and 1972 under the auspices of the FHWA (1). In the intervening years there have been considerable changes in a number of the factors that, reasonably, could be considered to have a major impact on usage patterns. These factors include the following:

- Population demographics, especially age distribution and family size. Between 1970 and 1986 the percentage of the population 65 years or older increased from 11.2 to 14.0, whereas the percentage 17 years or younger decreased from 32.7 to 25.0. In the same period, the average household size decreased from 3.14 to 2.67 members (2).

- Automobile ownership and use. Between 1970 and 1987 the total number of privately owned passenger automobiles increased by more than 50 percent to a total of almost 138 million (3). At the same time total vehicle miles of travel on the rural interstate system increased by 116 percent. The increase for other rural arterial highways was 31 percent (4,5).

- Automobile design and characteristics. There have been considerable changes in automobile design and characteristics. Of special interest, as directly affecting the need for a vehicle stop, is average fuel consumption. For passenger cars, fuel consumption increased from 13.5 mi/gal (mpg) in 1970 to 18.3 mpg in 1986 (3). Although this increase was partially offset by reduced fuel tank sizes, a corollary of vehicle downsizing, the net result was still a considerable increase in total miles per tankful. This trend can be expected to accelerate since newer models show considerably higher fuel economy. From 1978 to 1986 the sales weighted fuel economy of pas-

senger cars increased from 19.7 mpg to 27.9 mpg (6). Also worth mentioning is that the market penetration of factory-installed automobile airconditioning, a prime determinant of the comfort of long-distance automobile travel, increased from 60.1 percent in 1970 to 85.2 percent in 1987 (4,5).

In view of these considerations, an update of rest area usage patterns appears to be indicated. This update is the subject of the present paper. The material presented is mainly based on data collected by KLD Associates as part of NCHRP Study 2-15 (7). Data were collected at 13 rest areas in five states and supplemented by a nationwide telephone survey of 500 randomly dialed respondents as well as by data collected by individual states.

## REST AREA USAGE

The 1971-1972 nationwide study of rest area usage (1) found that the percentage of mainline traffic entering ranged from 1.0 to 27.4 percent. Fifty of the 54 rest areas checked ranged from 3.0 to 14.9 percent with a weighted average of 7.6 percent. Eighty percent of these were passenger cars.

Traffic counts at nine of the rest areas in which field studies were performed showed a range of entering traffic between 5.5 and 17.7 percent, with a weighted average of 10.3 percent.

	Percentage		
	Entering	Of Total Entering	Of Mainline Total
Cars	9.4	76.3	83.5
Recreational vehicles	16.7	10.2	6.3
Trucks	13.8	12.7	9.5
Other	11.8	0.9	7.8

A number of states have published rest area usage studies or have made the results of such studies available. These results are as shown in Table 1. A smaller number of studies have reported on traffic composition. The few that do, e.g., Michigan, invariably report that the rest area population shows a considerably higher proportion of commercial and recreational vehicles (RVs) than does the mainline traffic stream.

The proportion of passing traffic that will enter a highway rest area is a function of traffic stream characteristics, such as composition and distribution by trip purpose and by trip length; general area characteristics, especially the frequency, distance to, and accessibility of alternate stopping opportunities; and temporal factors such as season, day of the week, and hour of the day. However, no general model exists by which these factors can be combined to predict rest area usage. As a standard, Reiersen and Adams (8) recommend basing

TABLE 1 STATE STUDIES OF REST AREA USAGE

State	Year	No. in Sample	Percent Entering	Comments
California	1981	16	2.1-21	
Kansas	1983	29	5.6-21	
Michigan	1985	7	4.6-31	Weekdays
Michigan	1985	7	7.7-32	Weekends
Montana	?	16	5-50	Federal-aid interstate (FAI) routes
Montana	?	16	1-25	Non-FAI routes
Nebraska	1987	8	5.1-15	
New York	1980	14	4.9-29	I87 only
Utah	1977-1978	2	13.8-17	Welcome centers
Virginia	1987	11	8.9-3.5	
Washington	1985	28	0.8-12	FAI routes
Washington	1985	10	2-11	Non-FAI routes

expected usage on the percentage estimated from usage counts of existing rest areas. The traffic data assembled for the present study indicate that no simple algorithm will explain usage differences between rest areas.

FHWA Technical Advisory T5140.8 (see reference 8) gives use percentage figures as a function of route characteristics and rest area spacing. The formulae are of the type  $P = C \times DSL$ , where  $P$  is the proportion of mainline traffic entering the rest area;  $DSL$  is the actual distance between rest areas in miles; and  $C$  is a constant depending on route characteristics (interstate—0.0024; primary, recreational—0.0016; primary, rural—0.0011). These formulations do not include traffic stream or area characteristics except insofar as these are reflected in the three highway types for which coefficients are defined. For a 50-mi spacing, the recommended  $P$  value for the design of an interstate rest area is thus 12 percent, a figure that appears to be in line with the values shown in Table 1. This procedure, however, does not account for the many factors, most of whose influence has, so far, not been quantified, which leads a significant proportion of rest areas to show usage percentages in excess of 20 percent. Although available data are somewhat limited, there is every indication that rest area usage, in many cases, is higher than would be predicted using the FHWA formulation.

The same FHWA document also recommends that parking be provided on the assumption that 25 percent of the entering traffic will be trucks or RVs. According to the latest data (5) trucks and buses constitute over 36 percent of total rural interstate vehicle miles of travel (VMT). The assumed entering truck traffic volume thus appears to be too low. This conclusion is supported by Michigan data quoted earlier and by visual observations of rest areas, which consistently indicated, especially during certain hours of the day, that truck and RV parking facilities approached or exceeded capacity much more often than did automobile parking areas.

Several approaches are possible to use these data and relationships to estimate total rest area usage.

1. The expected number of stops for each average daily traffic (ADT) class has been computed by using ADT data by highway classification described elsewhere (5); average rest area spacing from a survey of 46 states (7); and the FHWA formulae for percentage entering. The overall estimate for yearly rest area use for the United States as a whole is thus as follows: Interstate highways,  $402 \times 10^6$ ; and other primary highways,  $208 \times 10^6$  (total,  $610 \times 10^6$ ).

2. Data on total annual VMT on long trips (i.e., >100 mi) from Nationwide Personal Transportation Study (NPTS) data (9) and on average distance between stops (138 mi) and preference for rest area stops (59.8 percent) from a telephone survey (7) showed that the expected annual total number of rest area stops can be computed as 648 million.

A rough check on these orders of magnitude can be obtained by using data from one state. In 1985, researchers in Washington recorded a total 8,322,602 vehicles entering all of its interstate rest areas. According to U.S. DOT (5), Washington drivers, in 1985, accumulated a total VMT, on rural interstate highways, of  $2,625 \times 10^6$  miles or 1.70 percent of the United States total. If Washington is considered representative of the United States, then extrapolating from the state total and adjusting for differences in average interstate rest area spacing (United States, 44.4 mi; Washington, 35 mi) would yield a national total of 386 million vehicles using interstate rest areas.

There is, thus, a good basis to support an estimate of over 600 million vehicles entering rest areas each year in the United States.

#### DEMOGRAPHIC ATTRIBUTES OF REST AREA USERS

User demographics, discussed in this section, are based on visual observation of 1,630 rest area users. Of these, 817 were interviewed to obtain additional information. Vehicle occupancy data are based on the visual observation of approximately 10,000 vehicles entering the rest areas during the periods of data collection. The percentage of out-of-state vehicles ranged from 16.3 to 79.0 and averaged 32.8.

#### Vehicle Occupancy

Occupancy data for all vehicles entering rest areas are summarized in Table 2. This table shows the range of both vehicle occupancy and percent single occupancy for the 13 rest areas studied.

Two percent of all vehicles and 2.3 percent of all passenger cars contained persons with apparent ambulatory handicaps, whereas 5 percent of all passenger cars contained pets. These percentages varied widely between individual rest areas with maximum values of 4.2 and 8.9 percent, respectively.

TABLE 2 VEHICLE OCCUPANCY

Vehicle Type	Avg Vehicle Occupancy (%)			Single Occupancy (%)		
	High	Low	Mean	High	Low	Mean
Passenger car	2.5	1.7	2.3	53.2	12.5	26.6
RV	9.0	2.0	2.8	26.7	0	13.2
Truck	1.5	1.0	1.3	100.0	64.3	77.9
Other	4.4	1.4	2.2	68.8	0	45.5
All	2.4	1.6	2.2	58.9	12.5	32.8

TABLE 3 DISTRIBUTION OF REST AREA USERS BY AGE AND SEX

Age Group	Male	Female	Total
<20	0.2	0.4	0.2
20-29	11.1	15.5	12.4
30-39	21.2	23.5	21.8
40-49	34.2	31.4	33.4
50-59	16.9	15.1	16.4
60-69	13.5	12.3	13.1
>70	3.0	1.8	2.6
<65	91.2	94.2	92.1
>65	8.8	5.8	7.9

**Age and Sex**

Data on the age and sex of rest area users are shown in Table 3. The parameters of the distribution by age are shown below:

	Male	Female	All
Mean	43.7	41.5	43.0
Median	43.5	40.0	40.0
Percent >64	8.8	5.8	7.9

The ratio of male to female rest area users was almost exactly 7:3. NPTS data (9) show that male drivers account for 74 percent of all trips in excess of 75 mi.

Of all cars entering the rest areas, 19.2 percent of all vehicles and 21.5 percent of all passenger cars contained children with an apparent age of 12 years or less. The average number of children in vehicles containing any children was 1.8. NPTS data show that children are present on 21.6 percent of all miles driven on personal trips in excess of 100 miles.

The general agreement of the rest area user population with the long trip driving population is also shown by a comparison of the cumulative distribution by age of rest area users, of licensed drivers, and of the long trip driving population. Some parameters of these distributions are given below:

	Mean	Percent >64
Rest area users	43.0	7.9
Licensed drivers (1985)	43.2	11.9
NPTS data	47.0	5.8

**Trip Characteristics**

The distribution of trip lengths (in miles) on which the interviewed travelers were engaged had the following parameters: mean, 332; standard deviation, 329; standard error, 11.5; median, 260; mode, 280; minimum, 9; and maximum, 2,500.

The number of trips of over 100 mi taken by respondents

ranged from one per year to one per day. The median response was all, 10; cars, 6; RVs, 5; and trucks, 250.

The distribution of trip purpose for trips with known purposes is business, 35 percent; pleasure, 54 percent; and other, 11 percent.

For the 10 rest areas at which this information could be collected from most of the respondents, the proportion of business trips showed considerable spread being highest, as expected, near major urban aggregations.

**USE OF REST AREA FACILITIES**

Observation of rest area users showed that only seven of the possible uses of services and facilities accounted for 5 percent or more of the total, as follows:

Use	Percent
Toilet	85.1
Rest and stretch	50.5
Water fountain	13.6
Eat	8.0
Telephone	7.2
Check or repair car	6.5
Consult map	5.0

Differences in facility use on the basis of sex, age, vehicle types, presence of children, or trip purpose were only significant insofar as telephone use was concerned. This difference could be traced to the high rate (almost 25 percent) of telephone use by business travelers who were mostly male, relatively young, and unaccompanied by children. As the above percentages show, most rest area users take advantage of more than one facility or service during their stop. Insofar as the principal reason for stopping was concerned, two uses, toilet use and resting-stretching, accounted for over 80 percent of all stops. Only three others were cited by more than 2 percent of all rest area users. The exact percentages for these five uses were

Use	Percent
Toilet	49.3
Rest and stretch	32.3
Telephone	4.7
Water fountain	3.2
Eat	2.3

Detailed, disaggregated analyses of these data showed the following:

- There appears to be no major effect of time since last stop on rank ordering or on usage frequencies. The frequency with which telephone use is mentioned appears to be inversely

correlated with time since last stop probably because business travelers tend to stop with shorter intervals.

- There is no significant difference in the distribution of primary stopping reasons between the sexes except for telephone use.

- Analyses by age group (10-year intervals) and by the over- and under-65 distribution revealed no significant differences except for higher telephone use by younger travelers.

- The presence of children in a vehicle leads to significantly higher percentages of food-related primary stopping reasons but to significantly lower telephone usage.

- Business travelers, as previously indicated, listed telephone use as the primary reason for stopping to a significantly greater degree than did travelers for other purposes. Business travelers also cited toilet use as a significantly less important reason for stopping. This may be because of the shorter interval between stops of this type of traveler.

- Insofar as vehicle class is concerned, truck occupants showed significantly higher percentages for telephone use and significantly lower percentages for toilet use and for the food- and drink-related items.

In interpreting data on the primary reason for stopping and on the other uses of rest area facilities, a number of points must be kept in mind:

1. Data collection, for the most part, was accomplished during daylight hours and under generally good weather conditions. Data collected on the few days with rain and cool weather showed a sharp decrease in the percentage of respondents citing resting and stretching as the primary reason for stopping. However, it should be noted that most travelers will take an opportunity to rest even if stopping for other reasons.

2. No data collection was done under such extreme climatic conditions that weather (extreme heat or heavy precipitation), roadway surface, or visibility conditions would be an impetus for stopping.

3. Data on food and drink bought at rest areas are constrained by the fact that vending machines, the only legally permissible means of dispensing food and drink in Interstate highway rest areas, were available at only 6 of the 13 areas in which data were collected.

## TIME IN REST AREA

Data on time in rest area were collected by a check-in-check-out, license plate-matching procedure. These data were also obtained, by direct questionnaires, as part of a parallel, random-dialing, nationwide telephone survey.

The parameters of the distribution of time in rest areas for the two surveys are shown in Table 4. The cumulative distribution for the rest area data is shown in Figure 1.

The times given by the respondents to the telephone survey are significantly higher than those obtained from actual measurements at rest areas. It is probable that the telephone survey data are less reliable since:

- They involve the memory of the respondents of an event that may be as much as 1 year in the past.

TABLE 4 DISTRIBUTION OF TIME IN REST AREAS

Parameter	Rest Area Interviews	Telephone Survey
No. of rest areas	9	—
No. of data points	2,885	447
Mean (min)	11.4	19.2
Standard deviation (min)	12.87	26.7
Standard error (min)	.24	1.27
Median (min)	8	15
Mode (min)	5	15
Minimum	0 hr 01 min	0 hr 02 min
Maximum	3 hr 31 min	6 hr 0 min
Time in rest area (%)		
> 15 min	19.0	31.8
> 30 min	6.8	8.1
> 60 min	0.9	2.0

- There was a definite tendency to round up to the nearest 5- or 10-minute interval. A total of 94 percent of all replies were even multiples of 5 minutes.

- There is a possible tendency to report the last "substantive visit" to a rest area and suppress quick drive-through stops.

The pattern of extended stays in rest areas is detailed in Table 5. Disaggregate analyses by a number of pertinent variables showed the following:

- The mean time, by rest area, ranged from 9.5 to 14.1 minutes, and the median time ranged from 6 to 9 minutes.

- Analysis by vehicle class shows that RVs stay almost 75 percent longer in rest areas than other vehicle types (19.5 minutes vs. 11.0 minutes) and also have a two- to three-times-higher probability of an extended stay.

- The time that a vehicle enters the rest area has a significant effect on the length of stay. There is a pronounced lunchtime peak; almost one-third of all vehicles entering between noon and 1:00 p.m. stay more than 15 minutes.

- There is no difference between weekday and weekend travelers.

- There are significant differences between in-state and out-of-state registered vehicles, with out-of-state vehicles staying longer.

Data from studies of seven rest areas and four welcome centers in Virginia indicate the average length of stay to be as follows:

Vehicle Type	Length of Stay (min)	
	Rest Area	Welcome Center
Automobile	9	10.5
Tractor-trailer	16	13
Bus and RV	18	18

## ATTITUDES AND OPINIONS

Both surveys included questions concerning overall quality ratings of specific rest areas and of rest areas in general. A number of states, as part of rest area surveys, have, in the past, elicited such opinions from motorists. These state surveys generally resulted in favorable ratings, with complaints

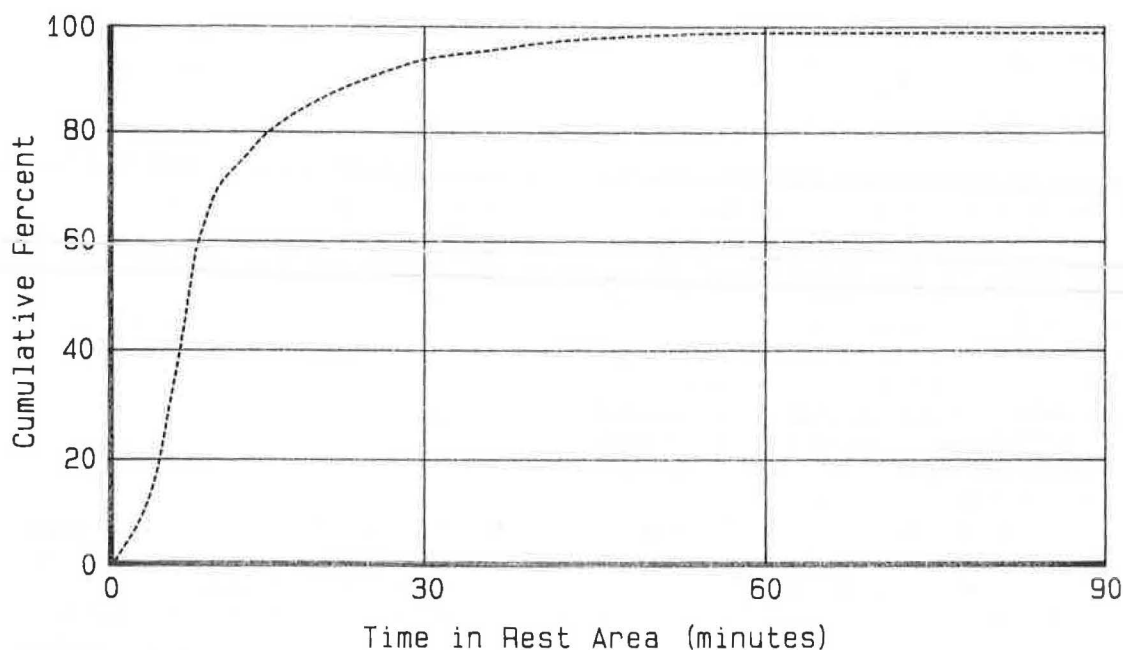


FIGURE 1 Cumulative distribution of time in rest area.

TABLE 5 EXTENDED STAYS IN REST AREAS

Parameter	Percent of Vehicles Exceeding Stated Time (min)		
	15	30	60
Entering hour			
Before 8 a.m.	11.0	3.0	1.0
9 a.m.	16.6	3.7	0.9
10 a.m.	12.4	3.5	0.6
11 a.m.	19.9	6.1	0.7
12 noon	30.2	14.7	2.3
1 p.m.	20.8	8.3	1.2
2 p.m.	21.3	6.3	0.5
3 p.m.	13.5	5.8	—
4 p.m.	18.5	5.6	0.8
5 p.m.	14.4	4.5	—
After 6 p.m.	9.9	2.0	—
Vehicle class			
Car	17.5	6.3	0.8
RV	45.3	21.1	4.2
Truck	25.0	6.7	0.4
Other	21.4	—	—
Day			
Sat., Sun.	17.6	6.3	0.8
Other	19.6	7.0	0.9
Registration			
In state	16.7	5.7	0.8
Out of state	29.2	10.7	0.9

usually limited to specific perceived defects in maintenance or the absence of specific facilities (e.g., vending machines).

#### Comfort and Safety

The present study also elicited generally favorable comments about comfort and safety. Because of the various settings of the two surveys, the format of the information obtained was somewhat different. The interviews included a specific question concerning apparent security and safety as well as requests

for respondents' opinions concerning both the specific rest area and rest areas in general. Since 99 percent of all respondents indicated that they felt safe and secure during the day, this part of the question was not analyzed further.

However, more than one-third of all interviewees expressed reservations about stopping at night. The percentage that definitely feel safe at night ranged from 42 to 62 among the five states. In three rest areas, one each in Michigan, New York, and Virginia, less than half of the respondents felt safe. Particularly low percentages were recorded, as could be expected, by older travelers and by women, whereas high percentages were registered by truck drivers and business travelers.

Further analysis relating vehicle occupancy to perceived insecurity showed the following percentages (eliminating no opinion responses) of respondents who felt unsafe or insecure.

	All Respondents		Women Only	
	N	Percent	N	Percent
Single adult, no children	271	31.4	39	57.1
Single adult with children	16	53.8	5	100.0
More than one adult	530	43.5	160	49.3

In considering these response percentages, it should be realized that the classification single adult, no children included most of the truck drivers interviewed.

In the telephone survey respondents were asked to rate the last rest area visited on an 11-point scale ranging from very bad (0) to excellent (10). Separate responses were requested for in- and out-of-state rest areas. The mean ratings, for all respondents, was 7.4 for in-state rest areas and 7.2 for those out of state. There is no statistical significant difference between these means. When responses were stratified by census regions, respondents from the northeast rated their within-state rest areas significantly lower than did respondents from the other three regions.

However, no conclusions should be drawn from this highly subjective process except to note the general overall approval of rest areas.

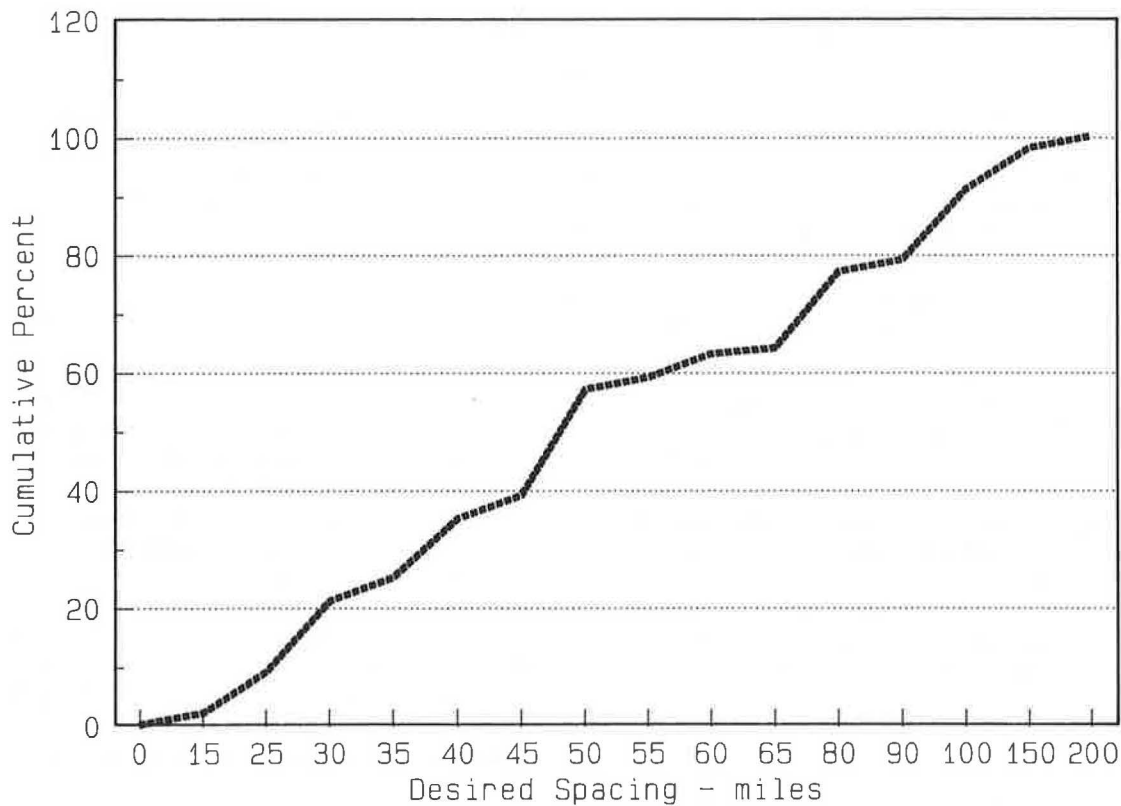


FIGURE 2 Desired rest area spacing.

### Frequency and Spacing of Rest Areas

Respondents to the rest area interviews, asked about the adequacy of the current number of rest areas, responded as follows: too few, 41.9 percent; about right, 54.0 percent; too many, 0.5 percent; and no opinion, 3.7 percent.

In general truck drivers, RV users, business travelers, and older persons would like more rest areas. The preferred rest area spacing, in miles as expressed in the two surveys, is given below.

	<i>Interviews</i>	<i>Telephone</i>
No. of responses	778	460
Mean	63	66
Standard error of the mean	1.31	2.14
Median	50	50
Mode	50	50
Maximum	250	300
Minimum	10	5
Percent $\leq$		
50 mi	56.7	59.1
75 mi	71.0	73.3
100 mi	91.4	91.3

Figure 2 shows the cumulative distribution of the preferred spacing from the rest area interview data.

The degree of agreement between the two data sets is striking. Insofar as defined subgroups of the two samples are concerned, the only significant difference on the interview sample was that RV users were willing to accept a longer rest area spacing. The telephone survey revealed a significant regional difference. Respondents from the northeast preferred a significantly lower spacing, whereas respondents from the west preferred longer spacings. These differences can probably be

attributed to different average trip lengths between these regions.

It would, however, appear to be a mistake to interpret these data as indicating an optimum rest area spacing for the interstate system. The responses were made in terms of individual trip-making behavior and indicated the minimum stopping interval of drivers. At currently prevailing highway speeds, the preferred distance intervals translate into time intervals of slightly more than 1 hour. Any individual driver probably would not like to stop more often.

From another point of view, however, such a spacing would imply a maximum delay of 1 hour or more after a decision to stop has been made. Although the question was not posed in these terms, such a delay is probably not acceptable, especially when the principal reason for rest area stops is considered and in view of the fact that over 80 percent of respondents indicated that decisions on where to stop were made on the basis of convenience.

### Private Business in Rest Areas

Table 6 summarizes the attitudes of respondents to both surveys to six different types of private business activities in highway rest areas. The difference between the two response sets is striking and hard to explain. The only difference was the relative placement of this question within the two surveys. For the interviews the question was asked before the topic of rest area financing was introduced; in the telephone survey this order was reversed. Another possible explanation is that there may have been some confusion in the minds of tele-

TABLE 6 PRIVATE BUSINESS ACTIVITIES IN REST AREAS

Business Type	Percent Response to Interviews			Percent Response to Telephone Survey		
	Yes	No	Uncertain	Yes	No	Uncertain
Restaurant						
Fast food	30.8	61.6	7.6	56.6	42.0	1.4
Sit down	29.9	62.4	7.7	50.8	47.8	1.4
Gas and other automotive services	30.1	61.4	7.8	67.8	31.0	1.2
Shopping						
Travel-related goods	28.0	63.9	8.1	47.5	50.1	2.4
Local handicrafts and souvenirs	27.4	64.8	7.8	41.4	57.5	1.4
Advance hotel reservations	29.3	62.7	8.0	57.3	39.5	3.2

phone survey respondents about the difference between highway rest areas and toll road service plazas.

The telephone survey added vending machines to the list of potential private business involvement with the following results: vending machines dispensing food and drink, 86.0 percent approval; and vending machines dispensing other items, 58.8 percent approval.

This question was not asked during the interviews since the presence of existing vending machines in some, but not all, of the rest areas would have biased the results.

### Financing Rest Areas

A number of questions, on both surveys, explored attitudes concerning financing the construction and operation of rest areas. A general question whether rest area construction and operations should be paid for by tax revenues, asked on the telephone survey only, received a positive response of over 95 percent.

All respondents were asked to indicate the amount they would be willing to pay as a user fee for each visit. The wording of the question was slightly different on the two surveys:

- In the rest area interviews, respondents were asked to indicate the maximum amount that they would pay from a preselected list (ranging from \$0.25 to more than \$3.00).

- In the telephone survey, respondents were asked to name an amount without any guidance or constraint.

Although only 39 and 50 percent, respectively, of the respondents had indicated that they were willing to pay a user fee to prevent rest area closings, 46 and 84 percent, respectively, indicated that they would pay some fee if such a fee were actually imposed. The average maximum amount that respondents would be willing to pay, together with the standard error of that average, is shown below. Omitted from the computations of these parameters are respondents who did not answer, who indicated that they were not sure, or who stated that the amount would depend on the services offered, or on other factors. These parameters were computed in two separate ways: once for all respondents and once for only those who gave a definite non-zero response.

Type of Survey	No.	Mean (\$)	Standard Error (\$)
Telephone			
All responses	440	0.82	0.047
Non-zero amount only	368	0.98	0.052
Rest area interview			
All responses	587	0.36	0.026
Non-zero amount only	269	0.78	0.044

There were some differences in these amounts between demographically defined subgroups; however, these were relatively small and not consistent between the two surveys. It is, however, worth noting that there were no significant differences, in the rest area interviews, when these data were stratified on the basis of the principal reason for stopping.

The differences between the surveys in both the proportion that would pay a user fee and in the amount of that fee is probably correlated with the difference between the two samples in the willingness to pay taxes. It is possible that the rest area users, who were in a facility clearly identified as a governmental function, believed that the user fees would be imposed as an addition, and not as an alternate, to taxes.

### SUMMARY PROFILE

The data summarized in the preceding sections indicate that the following generalizations can be made about rest area users:

- Almost every rural freeway user on a long trip (i.e., in excess of 100 miles) is a potential user of highway rest areas.
- Drivers, who stop at an average interval of about 130 mi or somewhat more than 2 hours would prefer rest areas to be spaced about 50 mi apart.
- Demographically, the rest area user population closely approximates the driving population, especially that engaged in longer trips, with possibly a higher participation by older drivers.
- The proportion of mainline traffic that enters a given rest area is highly variable depending on traffic stream, driver, trip, and area characteristics and on competing stopping opportunities. This proportion may range from less than 1 percent to almost 50 percent. The overall average is about 10 to 12 percent, with the proportion of trucks and RVs entering the rest area generally significantly higher. There appears to be a longterm secular upward trend in this proportion.
- Approximately 20 percent of all vehicles entering rest areas contain children; 2 percent include visibly ambulatory handicapped occupants; and 4 percent of all travelers are accompanied by pets. The average occupancy of passenger vehicles entering rest areas is 2.3.
- The average time spent in rest areas ranges from 10 to 12 minutes per vehicle with a significant increase at lunchtime. Except at lunchtime, less than 20 percent of travelers remain in a rest area for more than 15 minutes. RVs remain for significantly longer times.
- Use of toilet facilities and resting, stretching, and exercising are, by far, the most significant reasons for stopping at

rest areas. Considerably smaller but still significant proportions of entering traffic do so to eat or drink, use the telephones (primarily business travelers), check or repair their vehicles, or consult a map. No other rest area service or facility is used by more than 5 percent of entering traffic.

• An overwhelming majority of all rest area users believe that these facilities represent a valid public service that should be financed by public funds. There was, however, considerable ambiguity whether private business, even if travel related, should be allowed in rest areas.

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