



TABLE 2

Recommended Methodology for Estimating Annual Non-Program-Related Rural Passenger Transportation Demand
 (from TRCP Report 3)

$$D = R_e E \left(\frac{1}{1 + k_e e^{-U_e}} \right) + R_m M \left(\frac{1}{1 + k_m e^{-U_m}} \right) + R_p P \left(\frac{1}{1 + k_p e^{-U_p}} \right)$$

where:

D = annual demand for Non-Program-Related passenger transportation.
 (One-Way Trips Per Year)

$$R_e = 1,200$$

$$R_m = 1,200$$

$$R_p = 1,200$$

E = number of persons age sixty or over.

M = number of mobility-limited persons age sixteen to sixty-four.

P = number of persons, age sixty-four or less, in families with incomes below the poverty level.
 The definition of the poverty level is that used for the 1990 U.S. Census.

$$k_e = e^{5.38}$$

$$k_m = e^{5.41}$$

$$k_p = e^{5.53}$$

$$U_e = 0.000510 \times \frac{\text{Annual Vehicle-Miles Available to Elderly Market}}{\text{Area of the County}}$$

$$U_m = 0.000400 \times \frac{\text{Annual Vehicle-Miles Available to Mobility-Limited Market}}{\text{Area of the County}}$$

$$U_p = 0.000490 \times \frac{\text{Annual Vehicle-Miles Available to Low-Income Market}}{\text{Area of the County}}$$



FORM A-1

SERVICE AREA CHARACTERISTICS DATA COLLECTION FORM

Size of Service Area or
 Square Square
 Miles Kilometers

Population Characteristics	Current or Base Year	Forecast Design Year(*)
Total Population	<input type="text"/>	<input type="text"/>
Persons Age 60 or Over	<input type="text"/>	<input type="text"/>
Persons Age 16-64 with a Mobility Limitation	<input type="text"/>	<input type="text"/>
Persons Age 64 or Less Residing in Households with Incomes Below Poverty Level	<input type="text"/>	<input type="text"/>

Data below are needed only if the indicated type of social program operates in the service area AND the number of participants is unknown.

	Current	Forecast	Program Type
Persons Age 16 and Over	<input type="text"/>	<input type="text"/>	Developmental Services: Adult
Total Persons with a Mobility Limitation	<input type="text"/>	<input type="text"/>	Dev. Services: Pre-School OR Group Home OR Mental Health Service
Families in Poverty	<input type="text"/>	<input type="text"/>	Headstart OR Headstart: Homebase
Persons Age 3 and 4	<input type="text"/>	<input type="text"/>	Headstart: Other
Persons Age 16 to 59	<input type="text"/>	<input type="text"/>	Job Training OR Sheltered Workshop
Persons Age 16 to 64	<input type="text"/>	<input type="text"/>	Mental Health Services: Case Management
Persons Age 75 and Over	<input type="text"/>	<input type="text"/>	Nursing Home, Senior Nutrition

*: If only a total population estimate is available for the Forecast Design Year, estimate other population characteristics by multiplying the current year figure by the Forecast Design Year total population and dividing the result by the Current Year total population.



FORM B-2a
ESTIMATION OF NON-PROGRAM DEMAND
COUNTY AND SERVICE SUMMARY DATA -- CURRENT YEAR

BASIC DATA FOR THE COUNTY (or Service Area):

Size of County in square miles (from Form A-1): (H)

PERSONS AGE 60 AND OVER

Number of Persons Age 60 or Over:	Vehicle Miles Available From column (D) total, Form A-5	Vehicle Miles Available Per Square Mile
(I)	(J)	(K) = (J)/(H)
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

PERSONS WITH MOBILITY LIMITATIONS

Number of Persons with Mobility Limitations Age 16-64	Vehicle Miles Available From column (E) total, Form A-5	Vehicle Miles Available Per Square Mile
(L)	(M)	(N) = (M)/(H)
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

PERSONS RESIDING IN FAMILIES WITH INCOMES BELOW THE POVERTY LEVEL

Number of Persons, age 64 or less, residing in households with income below the poverty level	ADJUSTED Vehicle Miles Available From column (G) total, Form A-5	ADJUSTED Vehicle Miles Available Per Square Mile
(O)	(P)	(Q) = (P)/(H)
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>



FORM B-3a ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR CURRENT YEAR																																																	
PERSONS AGE 60 OR OVER Service Factor: Vehicle-Miles Available Per Square Mile Item (K) on Form B-2a	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">(K)</td> <td style="width: 15%; text-align: center;"><input style="width: 80%;" type="text"/></td> <td style="width: 10%; text-align: center;">X</td> <td style="width: 10%; text-align: center;">2,682</td> <td style="width: 10%; text-align: center;">+</td> <td style="width: 10%; text-align: center;">376</td> <td style="width: 10%; text-align: center;">=</td> <td style="width: 10%; text-align: center;">(R) <input style="width: 80%;" type="text"/></td> </tr> <tr> <td style="text-align: center;">If less than 4,000</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">13,693</td> <td style="text-align: center;">-</td> <td style="text-align: center;">43,668</td> <td style="text-align: center;">=</td> <td style="text-align: center;">(R) <input style="width: 80%;" type="text"/></td> </tr> <tr> <td style="text-align: center;">If 4,000 to 7,000</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">50,727</td> <td style="text-align: center;">-</td> <td style="text-align: center;">302,908</td> <td style="text-align: center;">=</td> <td style="text-align: center;">(R) <input style="width: 80%;" type="text"/></td> </tr> <tr> <td style="text-align: center;">If 7,000 to 10,000</td> <td></td> <td style="text-align: center;">X</td> <td style="text-align: center;">113,010</td> <td style="text-align: center;">-</td> <td style="text-align: center;">925,740</td> <td style="text-align: center;">=</td> <td style="text-align: center;">(R) <input style="width: 80%;" type="text"/></td> </tr> <tr> <td style="text-align: center;">If 10,000 to 12,000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">If over 12,000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p style="text-align: right; margin-top: 10px;">Use Exponential Method (See Appendix)</p>	(K)	<input style="width: 80%;" type="text"/>	X	2,682	+	376	=	(R) <input style="width: 80%;" type="text"/>	If less than 4,000		X	13,693	-	43,668	=	(R) <input style="width: 80%;" type="text"/>	If 4,000 to 7,000		X	50,727	-	302,908	=	(R) <input style="width: 80%;" type="text"/>	If 7,000 to 10,000		X	113,010	-	925,740	=	(R) <input style="width: 80%;" type="text"/>	If 10,000 to 12,000								If over 12,000							
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SERVICE FACTOR	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%; text-align: center;">(R) <input style="width: 80%;" type="text"/></td> </tr> <tr> <td style="text-align: center;">(R) / 1,000,000</td> <td style="text-align: center;"><input style="width: 80%;" type="text"/></td> </tr> </table>		(R) <input style="width: 80%;" type="text"/>	(R) / 1,000,000	<input style="width: 80%;" type="text"/>																																												
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FORM B-3b ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR CURRENT YEAR	
PERSONS WITH MOBILITY LIMITATIONS	
Service Factor:	
Vehicle-Miles Available Per Square Mile Item (N) on Form B-2a	
If less than 4,000	<input type="text" value="(N)"/> X 1.570 + 1,010 = <input type="text" value="(T)"/>
If 4,000 to 7,000	<input type="text" value="(N)"/> X 5.823 - 16,003 = <input type="text" value="(T)"/>
If 7,000 to 10,000	<input type="text" value="(N)"/> X 17.700 - 99,140 = <input type="text" value="(T)"/>
If 10,000 to 12,000	<input type="text" value="(N)"/> X 42.590 - 348,040 = <input type="text" value="(T)"/>
If over 12,000	Use Exponential Method (See Appendix)
SERVICE FACTOR	<input type="text" value="(T)/1,000,000"/>



FORM B-3C
ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR
CURRENT YEAR

PERSONS RESIDING IN FAMILIES BELOW POVERTY LEVEL

Service Factor:

Vehicle-Miles Available

Per Square Mile

Item (Q) on Form B-2a

If less than 4,000	(Q) <input type="text"/>	X	2.450	+	525	=	<input type="text"/> (M)
If 4,000 to 7,000	<input type="text"/>	X	8.828	-	24,988	=	<input type="text"/> (M)
If 7,000 to 10,000	<input type="text"/>	X	45.647	-	282,717	=	<input type="text"/> (M)
If 10,000 to 12,000	<input type="text"/>	X	59.520	-	821,450	=	<input type="text"/> (M)

Use Exponential Method (See Appendix)

SERVICE FACTOR

(M)/1,000,000



**FORM C-2
ESTIMATION OF NON-PROGRAM DEMAND
COUNTY AND SERVICE SUMMARY DATA**

BASIC DATA FOR THE COUNTY (or Service Area):

Size of County in square miles (from Form A-1):

(H)

PERSONS AGE 60 AND OVER

Number of Persons Age 60 or Over:

Vehicle-Miles Available *

Vehicle-Miles Available
Per Square Mile

(I)

(J)

(K) = (J)/(H)

PERSONS WITH MOBILITY LIMITATIONS

Number of Persons with
Mobility Limitations
Age 16-64

Vehicle-Miles Available *

Vehicle-Miles Available
Per Square Mile

(L)

(M)

(N) = (M)/(H)

PERSONS RESIDING IN FAMILIES WITH INCOMES BELOW THE POVERTY LEVEL

Number of Persons, age 64 or less,
residing in households with income
below the poverty level

ADJUSTED Vehicle-Miles
Available *

ADJUSTED Vehicle-Miles
Available Per
Square Mile

(O)

(P)

(Q) = (P)/(H)

* From Form A-5, columns (D), (E) and (F) totals or estimates of services to be provided.



FORM C-3a	
ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR	
PERSONS AGE 60 OR OVER	
Service Factor:	
Vehicle-Miles Available Per Square Mile Item (K) on Form C-2	
If less than 4,000	<input type="text"/> (K) X 2.682 + 376 = <input type="text"/> (R)
If 4,000 to 7,000	<input type="text"/> (K) X 13.693 - 43,668 = <input type="text"/> (R)
If 7,000 to 10,000	<input type="text"/> (K) X 50.727 - 302,908 = <input type="text"/> (R)
If 10,000 to 12,000	<input type="text"/> (K) X 113.010 - 925,740 = <input type="text"/> (R)
If over 12,000	Use Exponential Method (See Appendix)
SERVICE FACTOR	<input type="text"/> (R) / 1,000,000



<h2 style="margin: 0;">FORM C-3b</h2> <h3 style="margin: 0;">ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR</h3>	
<p>PERSONS WITH MOBILITY LIMITATIONS</p>	
<p>Service Factor:</p>	
<p>Vehicle-Miles Available Per Square Mile Item (N) on Form C-2</p>	
<p>If less than 4,000</p>	$\frac{(N)}{\boxed{}} \times 1,570 + 1,010 = \boxed{} (T)$
<p>If 4,000 to 7,000</p>	$\frac{(N)}{\boxed{}} \times 5,823 - 16,003 = \boxed{} (T)$
<p>If 7,000 to 10,000</p>	$\frac{(N)}{\boxed{}} \times 17,700 - 99,140 = \boxed{} (T)$
<p>If 10,000 to 12,000</p>	$\frac{(N)}{\boxed{}} \times 42,590 - 348,040 = \boxed{} (T)$
<p>If over 12,000</p>	<p>Use Exponential Method (See Appendix)</p>
<p>SERVICE FACTOR</p>	$\frac{(T)}{1,000,000} = \boxed{}$



FORM C-3c ESTIMATION OF NON-PROGRAM DEMAND SERVICE FACTOR	
PERSONS RESIDING IN FAMILIES BELOW POVERTY LEVEL	
Service Factor:	
Vehicle-Miles Available Per Square Mile Item (Q) on Form C-2	
If less than 4,000	$\frac{(Q)}{\text{[]}} \times 2,450 + 525 = \text{[]}^{(M)}$
If 4,000 to 7,000	$\frac{(Q)}{\text{[]}} \times 8,828 - 24,988 = \text{[]}^{(M)}$
If 7,000 to 10,000	$\frac{(Q)}{\text{[]}} \times 45,647 - 282,717 = \text{[]}^{(M)}$
If 10,000 to 12,000	$\frac{(Q)}{\text{[]}} \times 99,520 - 821,450 = \text{[]}^{(M)}$
If over 12,000	Use Exponential Method (See Appendix)
SERVICE FACTOR	$\frac{(M)}{1,000,000} = \text{[]}$



FORM C-4 COMPUTATION OF FUTURE PASSENGER DEMAND NON-PROGRAM RELATED

POPULATION AGE 60 OR OVER

		From Form C-2 Population		From Form C-3a Service Factor		Forecast Ridership
1,200	X	<input type="text"/>	X	<input type="text"/>	=	<input type="text"/>

POPULATION WITH MOBILITY LIMITATIONS

		From Form C-2 Population		From Form C-3b Service Factor		Forecast Ridership
1,200	X	<input type="text"/>	X	<input type="text"/>	=	<input type="text"/>

POPULATION RESIDING IN FAMILIES WITH INCOME BELOW THE POVERTY LEVEL

		From Form C-2 Population		From Form C-3c Service Factor		Forecast Ridership
1,200	X	<input type="text"/>	X	<input type="text"/>	=	<input type="text"/>

TOTAL FORECAST NON-PROGRAM RIDERSHIP