

MEMORANDUM

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FROM: Chaushie Chu

DATE: January 29, 1988

SUBJECT: Computation of Annualized Revenue Estimate for Financial Operation Plans

This memo describes the procedure used to estimate the annualized transit revenue for various networks in the financial operation plan. The first part of this memo describes the fundamental assumptions underlying this estimation procedure. The second part shows the steps undertaken to achieve such estimates.

I. Assumptions

1. Home-based-work (HW) trips are charged with AM fares, which can be determined by tracing the walk, PNR, and KNR paths skimmed in AM period. This assumption is consistent with that applied when estimating mode-split for HW trips.
2. Home-to-other, other-to-other, and other-to-work (H0000W) trips are charged with midday fares which can be determined by tracing the walk path in midday period. This assumption is consistent with that applied when estimating mode-split for the trips other than HW.
3. The daily transit revenue on each weekday is the sum of AM revenue from HW trips and MD revenue from H0000W trips.

Put this in UMATRIX form:

$$\begin{aligned} (\text{Weekday Revenue}) = & (\text{Walk Fare}) * (\text{HW Walk Access Trips}) + \\ & (\text{PNR Fare}) * (\text{HW PNR Access Trips}) + \\ & (\text{KNR Fare}) * (\text{HW KNR Access Trips}) \end{aligned}$$

4. The daily transit revenue on Saturday is based on the MD fare to Saturday transit riders. The number of hourly transit riders on Saturday is assumed 1.25 times the number of MD hourly ridership on weekday. And each Saturday is assumed to include 18 hours of Saturday MD hours (i.e. 1.25 weekday MD hours). These assumptions of 18 MD hours/day and 1.25 weekday MD hour equivalent to 1.00 Saturday MD hour are consistent with the assumption in URAP. Put these in UMATRIX form:

$$(\text{Saturday Revenue}) = (\text{MD Fare}) * 18 * 1.25 * (\text{H0000W Walk Access Trips})/12.$$

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5. The daily transit revenue on Sunday is assumed similarly as that for Saturday except that the 1.25 factor is removed. This is also consistent with the assumption applied in URAP. Put this in UMATRIX form:

$$(\text{Sunday Revenue}) = (\text{MU Fare}) * 18 * (\text{H0000W Walk Access Trips})/12.$$

6. In each year, we assume 255 weekdays, 58 Saturdays/Holidays, and 52 Sundays. This is consistent with the assumption applied in URAP. Put this in UMATRIX form:

$$\begin{aligned} (\text{Annual Revenue}) = & 255 * (\text{Weekday Revenue}) + \\ & 58 * (\text{Saturday Revenue}) + \\ & 52 * (\text{Sunday Revenue}). \end{aligned}$$

After a few steps of substitution, we can determine that

$$\begin{aligned} (\text{Annual Revenue}) = & 255 * (\text{Revenue from Walk, PNR, KNR access in HW trip}) + \\ & 441.75 * (\text{Revenue from Walk Access in H0000W trips}) \end{aligned}$$

II. Steps

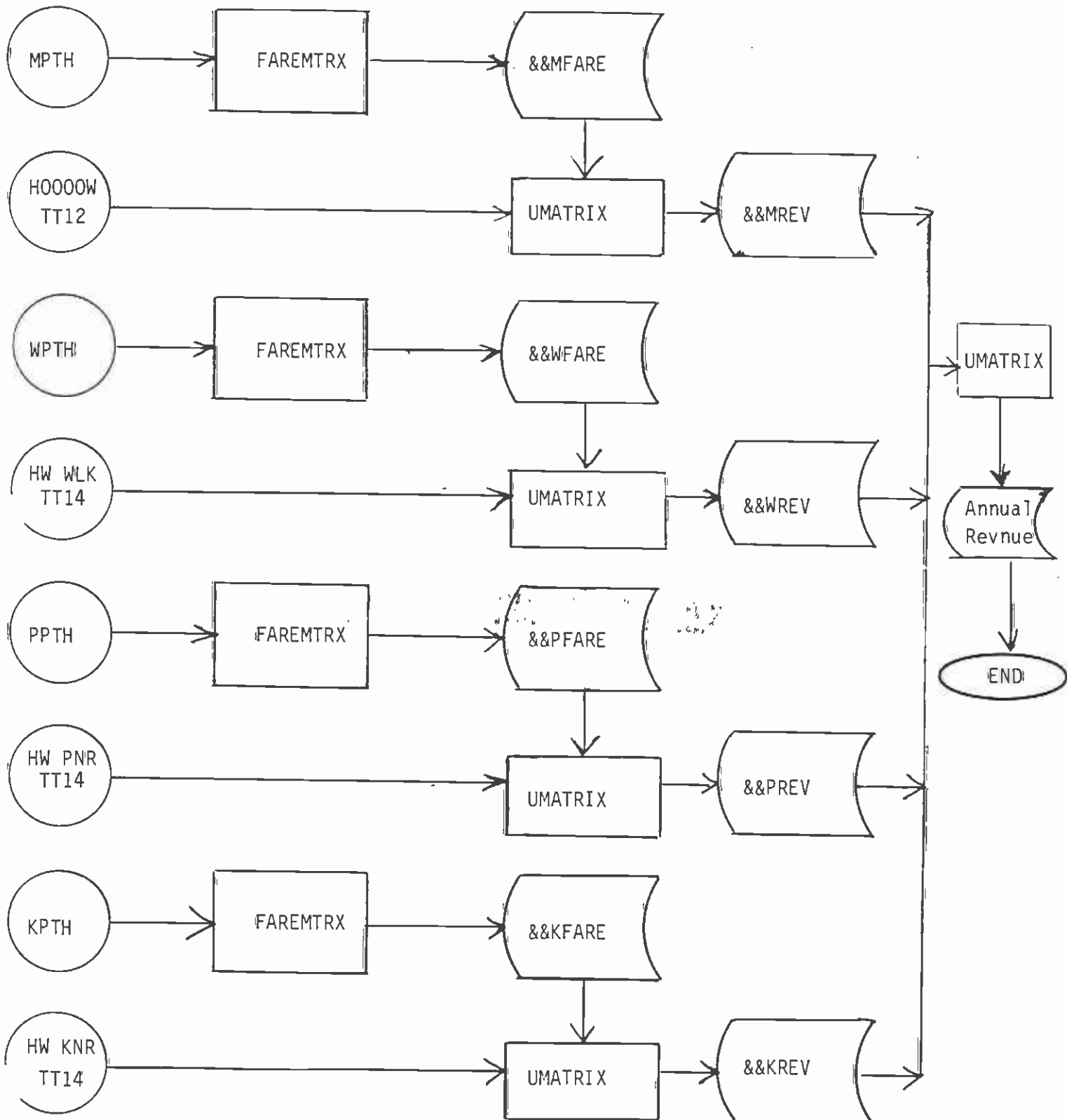
There are only two PROC's needed for estimating annual revenue. The first PROC, FAREMTRX program, skims through the paths and report 8 transit fare tables:

- (1) total fare
- (2) parking cost
- (3) RTD local bus fare
- (4) RTD express bus fare
- (5) Metro Rail fare
- (6) light rail fare
- (7) non-RTD local bus fare
- (8) non-RTD express bus fare.

This PROC will be called 4 times, once for each types of path. The second PROC, UMATRIX, will read the fare tables from FAREMTRX and trip tables from mode-split and compute revenues in each period as well as in the year.

The flowchart is sketched in Figure 1.

Figure 1. Flowchart for Annual Revenue Estimation



SPDTR 10010V