

**Analysis of 2000 Census Transportation Planning Package (CTPP)
Workers by Place of Work Tabulations
and
Cooperative Forecasting Base Year Employment Estimates for 2000**

Robert E. Griffiths
Director, Technical Services
Department of Transportation Planning
Metropolitan Washington Council of Governments

Planning Directors Technical Advisory Committee Meeting
March 12, 2004

Introduction

- The Census Transportation Planning Package (CTPP) is a special tabulation of responses to the U.S. Census long form questionnaire intended to provide data to support a wide range of transportation planning activities. The tables in CTPP relate social and demographic characteristics of persons, households and workers to commuting characteristics, such as travel modes to work and commuting travel times. It is the only source of information that tabulates Census data by MPO defined Transportation Analysis Zones. A CTPP was created for all MPOs and state transportation departments after the 1990 Census and again after the 2000 Census.
- Three types of data tabulations are provided in the CTPP
 - Part 1 – Tabulations by Place of Residence
 - Part 2 – Tabulations by Place of Work
 - Part 3 – Tabulations of Worker Flows from Place of Residence to Place of Work
- The CTPP Tabulations are an extremely useful, comprehensive data source for transportation planning
 - CTPP data are based on a large sample of persons and households (1 in 6 Households)
 - The CTPP data are tabulated by small area Transportation Analysis Zones (TAZs)
- The CTPP Tabulations are useful for checking and updating base year population, household, and employment land activity data (Cooperative Forecasts) by jurisdiction and TAZ.
- The CTPP Tabulations are also useful for checking and validating regional travel demand forecasting models for such things as jurisdiction to jurisdiction commuting flows and commuting modal shares.

Comparison of Cooperative Forecasting Employment Totals with CTPP Tabulations of Workers by Place of Work

- COG/TPB staff received the CTPP 2000 – Part 2 Tabulations by Place of Worker in late January.
- Staff compared the CTPP – Part 2 Tabulations of Workers by Place of Work with COG Cooperative Forecasting 1990 and 2000 Employment Totals for Jurisdictions in the Washington Region and with Baltimore Metropolitan Council (BMC) Cooperative Forecasting 1990 and 2000 Employment Totals for Anne Arundel and Howard Counties.
- Comparison of the 1990 and 2000 CTPP – Part 2 Tabulations with the Cooperative Forecasting Employment Totals showed a substantial increase in the ratio of Cooperative Forecasting Employment Totals to the CTPP – Part 2 Worker Tabulations between 1990 and 2000 (See Table 1 on next page).

Table 1
Comparison of Cooperative Forecasting Total Employment Estimates for 1990 and 2000
with
Census Transportation Planning Package (CTPP) Tabulations of Worker by Place of Work

JURISDICTION	Total Employment Round 6.4 1990	Workers by Place of Work CTPP 1990	Ratio RND 6.4 / CTPP 1990	Total Employment Round 6.4 2000	Workers by Place of Work CTPP 2000	Ratio RND 6.4 / CTPP 2000
District of Columbia	747,300	730,400	1.02	678,000	671,700	1.01
Arlington County	183,100	163,900	1.12	188,400	163,600	1.15
City of Alexandria	93,200	83,700	1.11	91,300	81,400	1.12
Montgomery County	400,800	392,200	1.02	479,800	420,900	1.14
Prince George's County	310,400	295,100	1.05	327,500	295,300	1.11
Fairfax County/Fairfax City/Falls Church	439,800	443,300	0.99	573,000	546,600	1.05
Loudoun County	39,300	39,800	0.99	87,000	79,200	1.10
Prince William County/ Manassas/Manassas Park	88,300	88,000	1.00	114,200	106,300	1.07
Calvert County	18,100	14,800	1.22	25,900	19,700	1.31
Charles County	38,700	31,800	1.22	50,100	36,200	1.38
Frederick County	54,000	63,800	0.85	99,700	84,700	1.18
Stafford County	11,000	15,800	0.70	25,300	27,100	0.93
Regional Total	2,424,000	2,362,600	1.03	2,740,200	2,532,700	1.08
<i>Anne Arundel County</i>	<i>249,400</i>	<i>215,400</i>	<i>1.16</i>	<i>297,000</i>	<i>225,100</i>	<i>1.32</i>
<i>Howard County</i>	<i>106,300</i>	<i>89,000</i>	<i>1.19</i>	<i>160,000</i>	<i>120,000</i>	<i>1.33</i>

Comparison of CTPP Estimated At-Place Employment for 2000 with Cooperative Forecasting Round 6.4 Employment Totals

- CTPP Tabulations of Workers by Place of Work do not equate directly employment total by place of work. Thus, staff had to make two adjustments to the CTPP – Part 2 Worker Tabulations to obtain an estimate of total at place of work employment from the CTPP data.
- The first adjustment was to apply a 1.6% worker absenteeism factor to the CTPP data to account for workers temporarily absent from their jobs the week before the Census was taken. The CTPP – Part 2 Worker Tabulations only include workers who were at work the week prior to the Census.
- The second adjustment was to apply a 10.5% multiple job holding factor to the CTPP data to account for workers who at more than one job. The CTPP Worker Tabulations only count each worker once, regardless of the fact that some workers have more than one job. The 10.5% multiple job holding factor was obtained from the 2000 COG/TPB Household Survey that asked workers a question on multiple job holding.
- Comparison of estimated at-place employment from the CTPP – Part 2 data with Round 6.4 Cooperative Forecasting employment totals matches well for most jurisdictions in the Washington region, but for several local Maryland jurisdictions the Cooperative Forecasting employment totals exceed estimated at-place employment from the CTPP data by almost 20%, even after the adjustments for worker absenteeism and multiple job-holding (See Table 2).
- It appears that one of the reasons why the Cooperative Forecasting employment totals exceed CTPP-derived employment estimates for several Maryland jurisdictions is that these jurisdictions use BEA-based employment estimates for their base year employment totals.

Table 2
Comparison of Census Transportation Planning Package (CTPP) Estimated At-Place Employment
with
Round 6.4 Total Employment

JURISDICTION	Workers by Place of Work CTPP 2000	Worker Absenteeism Adjustment	Multiple Job Holding Adjustment	Estimated At Place Employment from CTPP 2000	Total Employment Round 6.4 2000	Ratio RND 6.4 / CTPP Estimated At-Place Employment 2000
District of Columbia	671,700	10,747	71,657	754,104	678,000	0.90
Arlington County	163,600	2,618	17,453	183,670	188,400	1.03
City of Alexandria	81,400	1,302	8,684	91,386	91,300	1.00
Montgomery County	420,900	6,734	44,902	472,536	479,800	1.02
Prince George's County	295,300	4,725	31,503	331,527	327,500	0.99
Fairfax County/Fairfax City/Falls Church	546,600	8,746	58,311	613,657	573,000	0.93
Loudoun County	79,200	1,267	8,449	88,916	87,000	0.98
Prince William County/Manassas/Manassas Park	106,300	1,701	11,340	119,341	114,200	0.96
Calvert County	19,700	315	2,102	22,117	25,900	1.17
Charles County	36,200	579	3,862	40,641	50,100	1.23
Frederick County	84,700	1,355	9,036	95,091	99,700	1.05
Stafford County	27,100	434	2,891	30,425	25,300	0.83
Regional Total	2,532,700	40,523	270,188	2,843,412	2,740,200	0.96
Anne Arundel County	225,100	3,602	24,014	252,715	297,000	1.18
Howard County	120,000	1,920	12,802	134,722	160,000	1.19

Comparison of Combined ESA-202 Wage & Salary Payroll, Census Self-Employed and Military Employment with Round 6.4 Employment Totals

- Historically, most jurisdictions in the Washington region have developed their Cooperative Forecasting base year employment total from a combination of ESA-202 wage and salary payroll employment data, Decennial Census data on self-employed workers and an independent estimate of Federal government employment (including military) received from the National Capital Planning Commission (NCPC).
- Table 3 shows that estimated 2000 employment totals obtained by adding CTPP-derived estimates of at place self-employed and military employment to year 2000 1st quarter ESA-202 wage and salary employment matches very well with Cooperative Forecasting Round 6.4 employment totals for 2000.
- Table 3 also shows that the Maryland jurisdictions using BEA-based employment estimates to develop their base year employment totals are approximately 20% to 40% higher than would be estimated from a combination of ESA-202 payroll employment and Census data for self-employed and military workers.
- Further, it would appear that to reconcile 2000 employment totals for those Maryland jurisdictions using BEA-based employment estimates to develop their base year employment totals with the CTPP – Part 2 Worker Tabulations, one would have to assume that approximately one in three workers held multiple jobs or that most multiple job holder held more than 3 jobs.

Table 3
Comparison of ESA-202 Payroll, Census Self-Employed and Military Employment
with
Round 6.4 Total Employment

JURISDICTION	ESA 202 Payroll Employment 2000	CTPP 2000 At-Place Self- Employed	CTPP 2000 At-Place Military Employment	Estimated Employment from ESA-202 & Census 2000	Total Employment Round 6.4 2000	Ratio RND 6.4 / Estimated Employment from ESA-202 & Census 2000
District of Columbia	650,200	26,002	10,540	686,742	678,000	0.99
Arlington County	157,700	5,872	13,990	177,562	188,400	1.06
City of Alexandria	91,200	4,741	1,045	96,986	91,300	0.94
Montgomery County	447,700	27,743	2,460	477,903	479,800	1.00
Prince George's County	303,100	14,856	5,840	323,796	327,500	1.01
Fairfax County/Fairfax City/Falls Church	563,600	29,419	4,785	597,804	573,000	0.96
Loudoun County	85,200	5,163	236	90,599	87,000	0.96
Prince William County/ Manassas/Manassas Park	100,200	6,604	6,460	113,264	114,200	1.01
Calvert County	16,900	1,871	35	18,806	25,900	1.38
Charles County	36,200	2,931	155	39,286	50,100	1.28
Frederick County	77,100	5,626	1,085	83,811	99,700	1.19
Stafford County	24,000	2,008	1,095	27,103	25,300	0.93
Regional Total	2,553,100	132,836	47,726	2,733,662	2,740,200	1.00
<i>Anne Arundel County</i>	190,567	12,795	9,105	212,467	297,000	1.40
<i>Howard County</i>	125,887	7,773	160	133,820	160,000	1.20

Recommendation

- This analysis suggests that, because all jurisdictions in the Baltimore region develop their base year Cooperative Forecasting employment totals using BEA-based employment estimates, a technical adjustment should be made to the Cooperative Forecasting employment forecasts we receive from BMC before using them in our transportation modeling. This technical adjustment would make the employment data received for BMC jurisdictions more consistent with our non-BEA-based definition of employment.
- Similarly, BMC should make a technical adjustment to the Cooperative Forecasting employment totals they receive from us for DC, Montgomery County, and Prince George's County to make these employment totals more consistent with their BEA-based definition of employment before using them in their transportation modeling work.