

APPENDIX D

METHODOLOGICAL APPROACH TO ESTIMATING THE IMPACT OF TICKET TO WORK

A. OVERVIEW

This appendix provides additional details on the estimates of the impacts of TTW in the program's first two years. The program was rolled out to Phase 1 states in 2002, and to Phase 2 states in 2003.¹ Our impact estimates represent outcomes from the early stages of implementation.

Our preferred approach is based on a model that captures the impacts of TTW over its first two years of implementation. We include longitudinal data for a single cohort of 4.7 million beneficiaries covering the period from the year before the Phase 1 Ticket mailing in 2001 and continuing through the end of 2003. Our model uses temporal variation in the availability of Ticket in two ways. First, it uses pre-post rollout variation within the Phase 1 and 2 states (that is, states in which the rollout occurred in these years). Second, it compares pre-post variation within Phase 1 and 2 states to contemporaneous pre-post variation within states where the rollout had not yet occurred. In both years, the comparison states include the Phase 3 states, and the TTW states include the Phase 1 states. The role of the Phase 2 states in generating impacts changes from 2002 to 2003 because the program was rolled out in these states in 2003. Hence, in 2002, the Phase 2 states are comparison states, but in 2003 they are TTW states.

¹ Phase 1 states include Arizona, Colorado, Delaware, Florida, Illinois, Massachusetts, New York, Oklahoma, Oregon, South Carolina, Vermont, Wisconsin, and Iowa. Phase 2 states include Alaska, Connecticut, New Hampshire, New Jersey, Washington DC, Virginia, Georgia, Kentucky, Mississippi, Montana, Tennessee, Indiana, Michigan, Arkansas, Louisiana, New Mexico, Kansas, Missouri, North Dakota, South Dakota, and Nevada. Phase 3 states include Maine, Rhode Island, Maryland, Pennsylvania, West Virginia, Alabama, North Carolina, Minnesota, Ohio, Texas, Nebraska, Utah, Wyoming, California, Hawaii, Idaho, and Washington.

In Chapter XIII and Appendix D of Thornton et al. (2007), we presented the impact estimates for all of the outcome variables in the year in which Tickets were mailed (“mailing year”), including: SVRA-only service enrollment, total (SVRA and EN) service enrollment, earnings, benefit amount, any annual employment, any annual benefit receipt, and left cash benefits due to work. We also presented estimates for impacts on all of these variables except the two service enrollment variables for the year after Ticket mailing. The latter two variables were omitted from the analysis for that report because complete data on service enrollment at SVRAs were not available, reflecting the fact that the SVRAs report enrollment only after each case is closed, rather than when it is opened.

For this report, we produced second-year impact estimates for the two service enrollment variables. We also replicated the first-year estimates for these variables, to verify that updates to the data did not appreciably affect the first-year enrollment efforts. Finally, we produced estimates of impacts on total service enrollment, mean benefits and mean earnings for 10 individual Phase 1 states that SSA had paired with 10 Phase 3 states on the basis of factors that were expected to predict TTW participation rates (Chapter XII).

All of the estimates are based on the econometric model that is briefly described in Section C of Chapter XII and described in more detail in Appendix D of Thornton et al. (2007). The data sources and files used for this report are updated versions of those described in the Appendix D of the earlier report, based on data available from both SSA and RSA through 2005.

Detailed estimates for total service enrollment appear in Table D.1 and detailed estimates for SVRA service enrollment appear in Table D.2. These estimates are based on updated data for the 2001 beneficiary cohort (i.e., those on the rolls when the TTW rollout began). As in the earlier report, we also present estimates produced by the same method applied to the 1998 and 1999 beneficiary cohorts. These estimates support the Heckman-Hotz test. The purpose of this test is to determine whether the estimates for the 2001 cohort can be interpreted as impacts of TTW, rather than the effects of differential changes in other, unobserved, state factors. If such factors influence the estimates substantially, we should also see evidence of their influence in the estimates based on the earlier cohorts, in the form of significant coefficients; such coefficients must be attributed to such factors, because TTW had not yet been implemented.

We also present detailed results for each of the 10 state pairs, (Tables D.3 and D.4), and compare the estimates for the 2001 cohort to those for the 1998 and 1999 cohorts to illustrate the extent to which the 2001 cohort estimates deviate from estimates for the earlier cohorts.

B. ESTIMATED ENROLLMENT IMPACTS BASED ON DATA FOR ALL STATES

Table D.1 Impact Estimates and Sensitivity Tests for Total (SVRA and EN) Service Enrollment Outcomes For Ticket-Eligible Beneficiaries Age 19 to 58, by Age-Program Group (Upper Bound)

Variables	SSDI-only Beneficiaries			Concurrent Beneficiaries			SSI-only Beneficiaries			Total
	19-39	40-49	50-58	19-39	40-49	50-58	19-39	40-49	50-58	
Impact Estimates (percentage points)										
2001 Cohort										
Ticket mailing year (λ_1)	0.64**	0.47**	0.27**	0.55**	0.47**	0.23**	0.58**	0.51**	0.28**	0.42**
Ticket one year after mailing (λ_2)	1.43**	0.77**	0.39	1.12**	0.71**	0.32	1.27**	0.67**	0.31**	0.73**
Observations (x 1,000)	1,240	2,730	3,936	1,797	1,475	1,363	945	868	673	15,027
Sensitivity Tests Using the Same Model for Earlier Cohorts										
1999 Cohort										
λ_1'	0.09	0.04	0.01	-0.06	0.01	-0.03	-0.05	0.05	0.06	0.01
λ_2'	-0.09	-0.21**	-0.14**	-0.19*	-0.15*	-0.07	-0.39**	0.07	-0.13	-0.15**
Observations (x 1,000)	1,172	2,447	3,344	1,762	1,299	1,160	965	788	599	13,536
1998 Cohort										
λ_1'	-0.01	0.03	0.02	-0.19**	-0.06	0.00	-0.22	-0.07	0.11	-0.04
λ_2'	-0.18	-0.07	-0.07*	-0.53**	-0.08	-0.05	-0.39**	-0.27**	0.18*	-0.17**
Observations (x 1,000)	1,173	2,333	3,073	1,779	1,215	1,057	969	745	565	12,909

Source: Tabulations of econometric estimates are based on linked TRF and RSA-911 longitudinal data files.

Notes: The dependent variable equaled one if the beneficiary was an open SVRA case in at least one month of the year or had an actively assigned Ticket at some time during the year; otherwise, it equaled zero. All models include an intercept and controls for the county unemployment rate, individual fixed effects, state fixed effects, and year fixed effects. The impact estimates are regression coefficients (x 100) from separate econometric analyses for each age-program group. λ_1 represents the impact estimate in the year of Ticket mailing. The sensitivity test results include estimates from earlier cohorts using the same econometric model from the impact analysis. λ_1' represents the estimate of λ_1 applied to an earlier cohort. The sample size for each group is the number of persons in the group times the number of observation years (three). Age and Title categories reflect age and program status at time of Ticket mailing.

*Significant at the 5% level

**Significant at the 1% level

Table D.2 Impact Estimates on SVRA-only Service Enrollment for Ticket-Eligible Beneficiaries Age 18 to 57, by Age-Program Group

Variables	SSDI-only Beneficiaries			Concurrent Beneficiaries			SSI-only Beneficiaries			Total
	19-39	40-49	50-58	19-39	40-49	50-58	19-39	40-49	50-58	
Impact Estimates (percentage points)										
2001 Cohort										
Ticket mailing year(λ_1)	0.17**	0.18**	0.15**	0.17**	0.27**	0.15**	0.10	0.25**	0.15**	0.17**
Ticket one year after mailing (λ_2)	0.29**	0.07	0.11**	0.19*	0.21**	0.10**	-0.05	0.01	0.00	0.12**
Observations (x 1,000)	1,240	2,730	3,936	1,797	1,475	1,363	945	868	673	15,027
Sensitivity Tests Using the Same Model for Earlier Cohorts										
1999 Cohort										
λ_1'	0.09	0.04	0.01	-0.06	0.01	-0.03	-0.05	0.05	0.06	0.01
λ_2'	-0.09	-0.21**	-0.14**	-0.19*	-0.15*	-0.07	-0.39**	0.07	-0.13	-0.15**
Observations (x 1,000)	1,172	2,447	3,344	1,762	1,299	1,160	965	788	599	13,536
1998 Cohort										
λ_1'	-0.01	0.03	0.02	-0.19**	-0.06	0.00	-0.22	-0.07	0.11	-0.04
λ_2'	-0.18	-0.07	-0.07*	-0.53**	-0.08	-0.05	-0.39**	-0.27**	0.18*	-0.17**
Observations (x 1,000)	1,173	2,333	3,073	1,779	1,215	1,057	969	745	565	12,909

Source: Tabulations of econometric estimates are based on linked TRF and RSA-911 longitudinal data files.

Notes: The dependent variable equaled one if the beneficiary was an open SVRA case in at least one month of the year; otherwise, it equaled zero. All models include an intercept and controls for the county unemployment rate, individual fixed effects, state fixed effects, and year fixed effects. The impact estimates are regression coefficients (x 100) from separate econometric analyses for each age-program group. The sensitivity test results include estimates from earlier cohorts using the same econometric model from the impact analysis. They are the same as those reported for total enrollment (Table D.1) because prior to Ticket all enrollments were at SVRAs. λ_1' represents the estimate of λ_1 applied to an earlier cohort. The sample size for each group is the number of persons in the group times the number of observation years (three). Age and title categories reflect age and program status at time of Ticket mailing.

*Significant at the 5% level.

**Significant at the 1% level.

C. IMPACT ESTIMATES BASED ON 10 MATCHED PAIRS OF PHASE 1 AND PHASE 3 STATES

In this section we present impact estimates based on the matched state pairs, to support Exhibits XII.9 to XII.12. Table D.3 presents impact estimates for total service enrollment, SVRA-only service enrollment, earnings and benefits based on all 10 matched pairs, by age and Title. Table D.4 presents total service enrollment, SVRA service enrollment, earnings and benefit impact estimates in the year after mailing for the youngest age group, by Title, based on each matched pair.

Table D.3 Impact Estimates for 10 Matched State Pairs, by Title, Age and Beneficiary Cohort

Beneficiary Cohort:	Mailing Year			Year After Mailing		
	Impact Estimate	Earlier Cohorts		Impact Estimate	Earlier Cohorts	
	2001	1999	1998	2001	1999	1998
Total Service Enrollment						
SSDI-only						
19 to 39	1.1**	0.0	-0.1	2.3**	-0.1	-0.2
40 to 49	0.6**	0.0	0.0	1.3**	-0.1*	0.1
50 to 58	0.3**	0.0	0.0	0.7**	-0.1*	0.0
Concurrent						
19 to 39	0.7**	-0.5**	-0.1	1.7**	-1.1**	-0.4**
40 to 49	0.6**	-0.1	-0.1	0.9**	-0.2	-0.4**
50 to 58	0.3**	-0.2	0.1	0.5**	-0.4**	0.1
SSI-only						
19 to 39	0.7**	-0.3**	-0.5**	1.7**	-0.5**	-0.8**
40 to 49	0.6**	-0.1	0.0	1.1**	-0.4**	-0.1
50 to 58	0.3**	-0.2**	0.0	0.5**	-0.3**	-0.2**
SVRA Service Enrollment						
SSDI-only						
19 to 39	0.3*	0.0	-0.1	0.9**	-0.1	-0.2
40 to 49	0.1*	0.0	0.0	0.4**	-0.1	0.1
50 to 58	0.1**	0.0	0.0	0.4**	-0.1	0.0
Concurrent						
19 to 39	-0.1	-0.5**	-0.1	0.2	-1.1	-0.4**
40 to 49	0.1	-0.1	-0.1	0.2	-0.2	-0.4**
50 to 58	0.1	-0.2	0.1	0.2	-0.4	0.1
SSI-only						
19 to 39	0.1	-0.3**	-0.5**	0.6**	-0.5	-0.8**
40 to 49	0.3**	-0.1	0.0	0.5**	-0.4	-0.1
50 to 58	0.1*	-0.2**	0.0	0.2**	-0.3	-0.2**
Mean Annual Earnings						
SSDI-only						
19 to 39	-72**	-30	25	-81**	-31	6
40 to 49	-23*	-22*	16	-25*	5	-1
50 to 58	13	35**	29**	10	46**	44**

	Mailing Year			Year After Mailing		
	Impact Estimate	Earlier Cohorts		Impact Estimate	Earlier Cohorts	
Beneficiary Cohort:	2001	1999	1998	2001	1999	1998
Concurrent						
19 to 39	-41**	-17	15	-42**	-27	14
40 to 49	-41**	-4	-6	-32**	3	9
50 to 58	-24**	14	0	-43**	-10	17
SSI-only						
19 to 39	-25**	3	27**	-37**	-21*	16
40 to 49	-2	5	19**	2	-7	9
50 to 58	-3	5	11	-3	-2	12*
Mean Annual Benefits						
SSDI-only						
19 to 39	2	33**	17*	-12	8	5
40 to 49	-1	11*	5	-13	-22	-9
50 to 58	-12	-1	1	-22	-25	-18
Concurrent						
19 to 39	-77	57**	-45	-91	80	6
40 to 49	-68	50**	-23	-92	73	-19
50 to 58	-14	55**	-68	-103	97	-13
SSI-only						
19 to 39	-86	40**	-61	-97	67	-34
40 to 49	-66	73**	-34	-84	103	-2
50 to 58	-83	99**	8	-96	131	40**

Source: Tabulations of econometric estimates based on linked TRF and RSA-911 longitudinal data files for 10 matched state pairs.

Notes: All models include an intercept and controls for the county unemployment rate, individual fixed effects, state fixed effects, and year fixed effects. The impact estimates are based on the 2001 cohort, and represent regression coefficients from separate econometric analyses for each age-program group. The sensitivity test results are estimates based on earlier (1999 and 1998) cohorts using the same econometric model as for the 2001 cohort. Age and Program categories reflect age and program status at time of Ticket mailing.

*Significant at the 5% level.

**Significant at the 1% level.

Table D.4A Service Impact Estimates Based on Matched States for Young Beneficiaries (Age 19 to 39) in the Year After Mailing, by Program and State Pair (%)

Beneficiary Cohort:	Total Service Enrollment			SVRA Service Enrollment		
	Impact Estimate	Earlier Cohorts		Impact Estimate	Earlier Cohorts	
	2001	1999	1998	2001	1999	1998
SSDI-only						
Phase 1 v. Phase 3	2.3**	-0.1	-0.2	0.9**	-0.1	-0.2
Florida v. California	1.4**	0.3	-0.4	0.9**	0.3	-0.4
Illinois v. Pennsylvania	3.4**	-1.4**	0.3	0.2	-1.4	0.3
S. Carolina v. N. Carolina	2.8**	0.7	-0.3	1.9**	0.7	-0.3
Wisconsin v. Minnesota	6.2**	-0.6	0.4	4.7**	-0.6	0.4
Arizona v. Texas	0.7	0.8*	0.5	0.1	0.8	0.5
Oklahoma v. Alabama	1.0*	-1.3**	-1.3*	-0.7	-1.3	-1.3*
Colorado v. Maryland	-0.7	1.2*	0.7	-1.1	1.2	0.7
Oregon v. Idaho	5.3**	2.0	0.5	5.1**	2.0	0.5
Delaware v. Rhode Island	-3.3**	0.6	-4.1**	-4.7**	0.6	-4.1**
Vermont v. Maine	1.4	2.0	0.7	0.3	2.0	0.7
Concurrent						
Phase 1 v. Phase 3	1.7**	-1.1**	-0.4**	0.2	-1.1	-0.4**
Florida v. California	1.2**	-0.4	-0.7**	0.7*	-0.4	-0.7**
Illinois v. Pennsylvania	3.2**	-2.8**	-0.8*	-0.9**	-2.8	-0.8*
S. Carolina v. N. Carolina	3.0**	-0.4	-0.7	2.1**	-0.4	-0.7
Wisconsin v. Minnesota	6.7**	-1.0	1.4*	5.0**	-1.0	1.4*
Arizona v. Texas	-1.5**	-0.9	0.8	-1.9**	-0.9	0.8
Oklahoma v. Alabama	0.0	-0.3	-2.7**	-1.4**	-0.3	-2.7**
Colorado v. Maryland	-0.3	1.3	2.3**	-0.5	1.3	2.3**
Oregon v. Idaho	4.2**	1.9	4.5**	4.0**	1.9	4.5**
Delaware v. Rhode Island	-2.5	1.9	0.5	-4.4**	1.9	0.5
Vermont v. Maine	1.2	-1.2	2.1	-0.4	-1.2	2.1
SSI-only						
Phase 1 v. Phase 3	1.7**	-0.5**	-0.8**	0.6**	-0.5	-0.8**
Florida v. California	1.2**	-0.1	-1.3**	0.8**	-0.1	-1.3**
Illinois v. Pennsylvania	2.9**	-1.8**	-1.2**	0.5**	-1.8	-1.2**
S. Carolina v. N. Carolina	2.8**	1.2**	-0.2	1.8**	1.2	-0.2
Wisconsin v. Minnesota	6.0**	1.4**	2.1**	5.5**	1.4	2.1**
Arizona v. Texas	-1.2**	-0.7*	-1.2**	-1.5**	-0.7	-1.2**
Oklahoma v. Alabama	0.1	-0.4	-1.3**	-1.0**	-0.4	-1.3**
Colorado v. Maryland	-1.8**	0.8	0.3	-2.1**	0.8	0.3
Oregon v. Idaho	6.1**	1.3	2.3**	5.8**	1.3	2.3**
Delaware v. Rhode Island	-1.3	3.0**	-1.1	-3.1**	3.0	-1.1
Vermont v. Maine	1.6	0.9	3.5**	1.1	0.9	3.5**

Table D.4B Mean Annual Earnings and Benefit Impact Estimates Based on Matched States for Young Beneficiaries (Age 19 to 39) in the Year After Mailing, by Program and State Pair (%)

Beneficiary Cohort:	Mean Annual Earnings			Mean Annual Benefits		
	Impact Estimate	Earlier Cohorts		Impact Estimate	Earlier Cohorts	
	2001	1999	1998	2001	1999	1998
SSDI-only						
Phase 1 v. Phase 3	-81**	-31	6	-12	8	5
Florida v. California	-243**	-265**	-154**	-74	-47	-31
Illinois v. Pennsylvania	-185**	-29	116**	-4	-21	15
S. Carolina v. N. Carolina	11	60	-71	39	91	36
Wisconsin v. Minnesota	-70	-182**	-253**	-107	-55	-45
Arizona v. Texas	244**	139*	155**	-39	-19	-16
Oklahoma v. Alabama	-162**	121*	142*	258**	243	205**
Colorado v. Maryland	-126	-42	44	-7	-44	18
Oregon v. Idaho	141	-347**	-135	-56	16	105*
Delaware v. Rhode Island	-473*	250	351*	-151	-39	-91
Vermont v. Maine	122	186	196	-27	41	-69
Concurrent						
Phase 1 v. Phase 3	-42**	-27	14	-91	80	6
Florida v. California	-122**	-165**	-123**	-270	211	-45
Illinois v. Pennsylvania	-40	74*	74*	129**	146	16
S. Carolina v. N. Carolina	43	16	26	-37	68	0
Wisconsin v. Minnesota	-60	-218**	-257**	1	33	88*
Arizona v. Texas	98*	161**	243**	-101	-149	-80
Oklahoma v. Alabama	9	214**	177**	-111	-55	138
Colorado v. Maryland	-350**	-47	3	187*	-140	-19
Oregon v. Idaho	133	-44	70	43	-4	261**
Delaware v. Rhode Island	56	314*	138	-79	-36	-100
Vermont v. Maine	-151	34	54	-192	-428	-132
SSI-only						
Phase 1 v. Phase 3	-37**	-21*	16	-97	67	-34
Florida v. California	-19	-39*	36*	-239	142	-162
Illinois v. Pennsylvania	-38*	-10	-13	37**	79	77**
S. Carolina v. N. Carolina	18	-16	-21	-54	-43	24
Wisconsin v. Minnesota	-126**	-74*	-228**	-26	-27	-8
Arizona v. Texas	-13	-9	83**	-66	44	33
Oklahoma v. Alabama	-63*	133**	28	-32	-21	46
Colorado v. Maryland	-130*	-84	-56	60	49	-13
Oregon v. Idaho	184**	-23	-177**	-41	43	203**
Delaware v. Rhode Island	-59	235*	309**	50	66	13
Vermont v. Maine	-189**	26	218**	26	-104	-235

Source: For Table D.4: Tabulations of econometric estimates for total service enrollment (D.4A), SVRA service enrollment (D.4A), mean annual earnings (D.4B) and mean annual benefits (D.4B) based on TRF longitudinal records, matched RSA-911 records, and matched earnings records.

Notes: All models include an intercept and controls for the county unemployment rate, individual fixed effects, state fixed effects, and year fixed effects. The Phase 1 v. Phase 3 estimates compare all 10 Phase 1 states to their matched Phase 3 states; other estimates are for the Phase 1 state (first state in pair) compared to the matched Phase 3 state (second state in pair). The impact estimates are based on the 2001 cohort, and represent regression coefficients from separate econometric analyses for each age-program group. The sensitivity test results are estimates based on earlier (1999 and 1998) cohorts using the same econometric model as for the 2001 cohort. Age and Program categories reflect age and program status at time of Ticket mailing.

*Significant at the 5% level.

**Significant at the 1% level.