

Appendix A

Table A1
Propensity Score Estimation Results from the Probit Model

	Group1	Group2	Group3
	Unemployed and Retired	Unemployed	Retired
Age	-0.831	-0.386	0.468
	[0.665]	[0.691]	[1.481]
Age square	0.171**	0.08	0.081
	[0.067]	[0.074]	[0.142]
Gender	0.002	0.218	-0.241
	[0.206]	[0.246]	[0.263]
Education	0.176	0.085	0.365**
	[0.144]	[0.155]	[0.178]
Age*Education	-0.060**	-0.046	-0.090***
	[0.028]	[0.032]	[0.034]
Education*Gender	0.083	0.042	0.118*
	[0.055]	[0.066]	[0.069]
Number of Children in Household	-0.158**	-0.125*	-0.198*
	[0.067]	[0.069]	[0.118]
Rural	-0.436**	-0.291	-0.522**
	[0.176]	[0.234]	[0.220]
Small Town	-0.082	0.199	-0.376*
	[0.139]	[0.164]	[0.194]
Micropolitan	0.018	0.166	-0.199
	[0.157]	[0.192]	[0.197]
Boat Activity	-0.226*	-0.159	-0.288**
	[0.117]	[0.151]	[0.142]
Hunting	-0.251	-0.497	-0.144
	[0.251]	[0.437]	[0.292]
Fishing	0.270**	0.271*	0.281*
	[0.119]	[0.152]	[0.153]
Total Number of Trips	-0.001	-0.014*	0.008
	[0.006]	[0.008]	[0.007]
Take overnight Trips	-0.031	-0.249	0.178
	[0.120]	[0.160]	[0.148]
Constant	-0.841	-1.291	-5.411
	[1.672]	[1.705]	[3.882]
Model Statistics			
<i>Number of observations</i>	971	879	908
<i>Log pseudolikelihood</i>	-353.617	-205.079	-213.674
<i>Wald chi2(15)</i>	127.62	44.27	133.5
<i>Pseudo R2</i>	0.171	0.096	0.283

Note: ***, **, and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. Standard errors are reported in brackets. The propensity score equation incorporates all variables that may be relevant for the outcome equation from our available information set and determines the probability of being in the treatment group. Some interaction terms and polynomials are included in the propensity score estimation process so that matching based on those scores satisfies conditional independence assumption.

Table A2
Difference between Treatment and Control Groups Before Matching

Variable	Group 1 (Unemployed and Retired)				Group 2 (Unemployed)				Group 3 (Retired)			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value	Mean Control	Mean Treated	%bias	P value
Age	5.16	4.43	93.90	0.00	4.75	4.43	39.30	0.00	5.45	4.43	145.80	0.00
Age square	27.28	20.21	95.80	0.00	23.22	20.21	40.90	0.00	30.05	20.21	146.50	0.00
Gender	1.35	1.25	23.80	0.01	1.43	1.25	39.10	0.00	1.30	1.25	13.00	0.23
Education	3.27	3.38	-10.80	0.21	3.17	3.38	-20.60	0.11	3.34	3.38	-4.40	0.68
Age*Education	16.52	14.87	28.90	0.00	14.70	14.87	-3.10	0.81	17.76	14.87	50.30	0.00
Education*Gender	4.31	4.11	9.40	0.27	4.43	4.11	14.70	0.24	4.23	4.11	5.60	0.61
Number of Children in Household	0.31	0.94	-63.30	0.00	0.49	0.94	-42.90	0.00	0.18	0.94	-79.20	0.00
Rural	0.10	0.15	-15.00	0.11	0.10	0.15	-17.60	0.21	0.11	0.15	-13.20	0.26
Small Town	0.21	0.21	0.50	0.95	0.30	0.21	20.80	0.09	0.15	0.21	-15.20	0.19
Micropolitan	0.15	0.13	4.60	0.59	0.17	0.13	11.70	0.35	0.13	0.13	-0.60	0.96
Boat Activity	0.43	0.55	-25.50	0.00	0.43	0.55	-24.90	0.06	0.42	0.55	-25.90	0.02
Hunting	0.04	0.06	-11.80	0.21	0.02	0.06	-25.10	0.12	0.05	0.06	-4.50	0.69
Fishing	0.50	0.51	-1.80	0.84	0.49	0.51	-4.00	0.76	0.51	0.51	-0.30	0.98
Total Number of Trips	7.07	7.35	-2.60	0.76	4.70	7.35	-29.90	0.04	8.70	7.35	11.20	0.25
Take overnight Trips	0.37	0.46	-16.60	0.06	0.27	0.46	-39.30	0.00	0.45	0.46	-2.00	0.85

Table A3
Balancing of Covariates After Matching with All Covariates for Treatment Group 1
(Unemployed and Retired)

	Nearest Neighbor with replacement				Nearest 5 Neighbors with replacement			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	5.14	5.20	-6.70	0.56	5.14	5.15	-1.10	0.93
Age square	27.08	27.58	-6.70	0.57	27.08	27.15	-1.00	0.94
Gender	1.35	1.33	4.30	0.72	1.35	1.36	-1.90	0.87
Education	3.27	3.33	-5.60	0.64	3.27	3.40	-11.60	0.33
Age*Education	16.55	17.28	-12.70	0.31	16.55	17.26	-12.60	0.32
Education*Gender	4.31	4.35	-1.90	0.88	4.31	4.58	-12.70	0.32
No of Children in Household	0.31	0.27	4.60	0.57	0.31	0.31	0.30	0.97
Rural	0.10	0.08	5.90	0.56	0.10	0.10	2.00	0.85
Small Town	0.22	0.20	4.80	0.67	0.22	0.20	4.00	0.72
Micropolitan	0.15	0.16	-3.80	0.75	0.15	0.13	6.50	0.57
Boat Activity	0.43	0.48	-9.20	0.42	0.43	0.42	1.60	0.89
Hunting	0.04	0.04	0.00	1.00	0.04	0.06	-11.20	0.33
Fishing	0.51	0.43	15.70	0.17	0.51	0.46	9.70	0.40
Total Number of Trips	7.15	7.19	-0.40	0.98	7.15	6.14	9.20	0.42
Take overnight Trips	0.38	0.34	8.00	0.48	0.38	0.34	8.40	0.45
	Radius Matching (caliper =0.5*SD)				Kernel Matching (bandwidth =0.06)			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	5.13	5.07	8.30	0.49	5.13	5.10	3.90	0.74
Age square	26.96	26.37	8.00	0.52	26.96	26.69	3.70	0.76
Gender	1.34	1.36	-2.50	0.84	1.34	1.38	-7.40	0.54
Education	3.29	3.36	-6.70	0.58	3.29	3.42	-12.60	0.29
Age*Education	16.61	16.75	-2.50	0.84	16.61	17.23	-10.80	0.39
Education*Gender	4.32	4.49	-8.20	0.52	4.32	4.66	-16.40	0.20
No of Children in Household	0.32	0.40	-7.90	0.38	0.32	0.36	-3.70	0.67
Rural	0.11	0.11	-1.20	0.91	0.11	0.10	0.70	0.95
Small Town	0.22	0.20	5.70	0.62	0.22	0.19	6.00	0.60
Micropolitan	0.15	0.15	-2.50	0.83	0.15	0.16	-3.60	0.77
Boat Activity	0.44	0.45	-2.40	0.83	0.44	0.43	0.60	0.96
Hunting	0.04	0.05	-5.70	0.60	0.04	0.06	-6.90	0.53
Fishing	0.50	0.48	5.60	0.63	0.50	0.47	6.70	0.56
Total Number of Trips	7.17	6.88	2.60	0.82	7.17	6.82	3.10	0.79
Take overnight Trips	0.38	0.38	0.80	0.95	0.38	0.37	1.90	0.87

Note: For each matching algorithm, the balancing of covariates is assessed based on two criteria: (a) the difference between mean of treated and matched control group, and (b) standardized mean difference of the covariates between the treatment and control group. The standardized difference of means is calculated as

$$\frac{Mean_{treated} - Mean_{control}}{\sqrt{\frac{1}{2} * (Variance_{treated} + Variance_{control})}}$$

. A standardized difference of means of 25 is considered large (Rosenbaum and Rubin 1983; Imbens and Woolridge 2009).

Table A4
Balancing of Covariates After Matching with All Covariates for Treatment Group 2
(Unemployed)

	Nearest Neighbor with replacement				Nearest 5 Neighbors with replacement			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	4.68	4.68	0.00	1.00	4.68	4.67	2.10	0.91
Age square	22.58	22.58	0.00	1.00	22.58	22.41	2.30	0.90
Gender	1.40	1.52	-25.00	0.20	1.40	1.43	-6.40	0.74
Education	3.23	3.28	-4.90	0.77	3.23	3.18	5.30	0.78
Age*Education	14.83	15.30	-8.70	0.65	14.83	14.50	6.10	0.75
Education*Gender	4.45	4.88	-20.10	0.29	4.45	4.45	0.00	1.00
No of Children in Household	0.52	0.48	3.20	0.84	0.52	0.49	2.70	0.86
Rural	0.10	0.10	0.00	1.00	0.10	0.13	-8.10	0.65
Small Town	0.28	0.22	15.30	0.40	0.28	0.22	15.00	0.41
Micropolitan	0.17	0.23	-18.40	0.37	0.17	0.18	-2.80	0.89
Boat Activity	0.42	0.45	-6.70	0.72	0.42	0.44	-4.30	0.81
Hunting	0.02	0.03	-8.50	0.56	0.02	0.02	-3.40	0.80
Fishing	0.48	0.48	0.00	1.00	0.48	0.54	-12.20	0.51
Total Number of Trips	4.78	5.18	-4.50	0.77	4.78	4.92	-1.50	0.92
Take overnight Trips	0.28	0.32	-7.00	0.69	0.28	0.30	-3.10	0.86
	Radius Matching (caliper =0.5*SD)				Kernel Matching (bandwidth =0.06)			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	4.68	4.66	2.50	0.89	4.68	4.63	6.30	0.74
Age square	22.58	22.40	2.40	0.90	22.58	22.10	6.60	0.72
Gender	1.40	1.39	1.90	0.92	1.40	1.38	4.80	0.81
Education	3.23	3.26	-2.30	0.90	3.23	3.26	-2.20	0.90
Age*Education	14.83	15.01	-3.30	0.86	14.83	14.88	-0.90	0.96
Education*Gender	4.45	4.44	0.30	0.99	4.45	4.39	2.80	0.89
No of Children in Household	0.52	0.55	-3.20	0.84	0.52	0.58	-6.50	0.69
Rural	0.10	0.10	1.50	0.93	0.10	0.10	-0.80	0.96
Small Town	0.28	0.28	-0.10	1.00	0.28	0.27	2.60	0.89
Micropolitan	0.17	0.16	0.80	0.97	0.17	0.16	2.00	0.92
Boat Activity	0.42	0.45	-6.20	0.73	0.42	0.46	-8.40	0.65
Hunting	0.02	0.03	-4.50	0.74	0.02	0.03	-6.80	0.63
Fishing	0.48	0.51	-5.10	0.78	0.48	0.50	-4.00	0.83
Total Number of Trips	4.78	4.84	-0.60	0.97	4.78	5.13	-3.90	0.81
Take overnight Trips	0.28	0.31	-5.70	0.75	0.28	0.32	-8.30	0.64

Note: For each matching algorithm, the balancing of covariates is assessed based on two criterions: (a) the difference between mean of treated and matched control group, and (b) standardized mean difference of the covariates between the treatment and control group. The standardized difference of means is calculated as

$$\frac{Mean_{treated} - Mean_{control}}{\sqrt{\frac{1}{2} * (Variance_{treated} + Variance_{control})}}$$

. A standardized difference of means of 25 is considered large (Rosenbaum and Rubin 1983; Imbens and Woolridge 2009).

Table A5
Balancing of Covariates After Matching with All Covariates for Treatment Group 3
(Retired)

	Nearest Neighbor with replacement				Nearest 5 Neighbors with replacement			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	5.42	5.37	6.50	0.61	5.42	5.38	5.10	0.69
Age square	29.71	29.15	8.40	0.54	29.71	29.29	6.30	0.66
Gender	1.29	1.33	-7.50	0.63	1.29	1.27	4.90	0.75
Education	3.34	3.47	-12.60	0.42	3.34	3.52	-17.50	0.27
Age*Education	17.78	18.58	-14.10	0.36	17.78	18.34	-9.80	0.56
Education*Gender	4.19	4.56	-17.90	0.26	4.19	4.37	-8.70	0.60
No of Children in Household	0.19	0.25	-5.90	0.52	0.19	0.24	-4.90	0.61
Rural	0.11	0.06	16.60	0.18	0.11	0.10	3.40	0.80
Small Town	0.16	0.18	-5.80	0.69	0.16	0.17	-4.10	0.78
Micropolitan	0.13	0.11	6.60	0.65	0.13	0.13	2.50	0.87
Boat Activity	0.44	0.42	4.50	0.76	0.44	0.43	1.80	0.90
Hunting	0.06	0.10	-18.90	0.27	0.06	0.05	1.60	0.91
Fishing	0.52	0.57	-11.20	0.46	0.52	0.52	0.00	1.00
Total Number of Trips	8.84	10.72	-15.60	0.36	8.84	9.70	-7.10	0.67
Take overnight Trips	0.45	0.49	-9.00	0.55	0.45	0.45	-0.50	0.98
	Radius Matching (caliper =0.5*SD)				Kernel Matching bandwidth =0.06)			
	Mean Treated	Mean Control	%bias	P value	Mean Treated	Mean Control	%bias	P value
Age	5.42	5.34	10.60	0.46	5.42	5.38	5.40	0.69
Age square	29.71	29.02	10.30	0.50	29.71	29.34	5.50	0.71
Gender	1.29	1.28	3.60	0.81	1.29	1.28	2.60	0.86
Education	3.34	3.50	-15.20	0.33	3.34	3.50	-15.10	0.33
Age*Education	17.78	18.31	-9.30	0.57	17.78	18.45	-11.80	0.47
Education*Gender	4.19	4.36	-8.30	0.60	4.19	4.40	-10.10	0.53
No of Children in Household	0.19	0.26	-7.30	0.47	0.19	0.23	-3.90	0.69
Rural	0.11	0.12	-2.60	0.86	0.11	0.12	-1.20	0.93
Small Town	0.16	0.18	-5.20	0.72	0.16	0.18	-5.50	0.71
Micropolitan	0.13	0.13	2.90	0.85	0.13	0.13	2.20	0.88
Boat Activity	0.44	0.45	-3.30	0.83	0.44	0.44	-0.10	0.99
Hunting	0.06	0.06	-0.50	0.97	0.06	0.07	-3.80	0.80
Fishing	0.52	0.49	4.70	0.76	0.52	0.50	3.10	0.84
Total Number of Trips	8.84	9.12	-2.30	0.89	8.84	9.16	-2.70	0.87
Take overnight Trips	0.45	0.47	-4.00	0.79	0.45	0.48	-5.60	0.71

Note: For each matching algorithm, the balancing of covariates is assessed based on two criteria: (a) the difference between mean of treated and matched control group, and (b) standardized mean difference of the covariates between the treatment and control group. The standardized difference of means is calculated as

$$\frac{Mean_{treated} - Mean_{control}}{\sqrt{\frac{1}{2} * (Variance_{treated} + Variance_{control})}}$$

. A standardized difference of means of 25 is considered large (Rosenbaum and Rubin 1983; Imbens and Woolridge 2009).

Table A6
OLS Estimates on the Relationship between Recreation and Change in Employment Status
between 2005 and 2009

	Participation in 2009	Difference in Participation between 2005 and 2009	Total trip in 2009	Difference in total trip between 2005 and 2009
Group 1: Employed in 2005 and Unemployed/Retired in 2009				
Treatment Indicator (Unemployed or Retired in 2009)	0.048	0.075	0.386	0.386
	[0.043]	[0.050]	[0.687]	[0.687]
Observations	971	971	971	971
R square	0.15	0.04	0.425	0.243
Group 2: Employed in 2005 and Unemployed in 2009				
Treatment Indicator (Unemployed in 2009)	0.159***	0.160**	0.629	0.629
	[0.059]	[0.075]	[0.869]	[0.869]
Observations	879	879	879	879
R square	0.146	0.051	0.415	0.226
Group 3: Employed in 2005 and Retired in 2009				
Treatment Indicator (Retired in 2009)	-0.011	0.03	0.284	0.284
	[0.053]	[0.059]	[0.940]	[0.940]
Observations	908	908	908	908
R square	0.164	0.035	0.429	0.242

Note: ***, **, and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. Standard errors are robust and reported in brackets. For brevity, we only report the estimated coefficient of key explanatory variable- indicator of treatment status (change in employment status in 2009 compared to fulltime employment in 2005). All of the specifications control for all observables used in the matching exercise. Note that the full set of controls includes socioeconomic variables, recreation preference variables, recreation history, and rural-urban-micropolitan-metropolitan locations.