

The effect of retirement on biomedical and behavioral risk factors for cardiovascular and metabolic disease

Supplementary material

S. Pedron, W. Maier, A. Peters , B. Linkohr, C. Meisinger, W. Rathmann,
P. Eibich, L.Schwettmann

January 13, 2020

Supplementary Material

Appendix A: Share of retirees by age group, by strata	3
Appendix B: AIC analysis procedure and results	5
Appendix C: Age density plot	6
Appendix C: Graphical inspection of covariates and outcomes	7
Appendix E: Anti-hypertensive medications analysis and robustness checks	12
Appendix F: Specification curves analysis	15
Appendix G: Specification curves analysis: male vs. female	23
Appendix H: Specification curves analysis: high vs. low edu	32
Appendix I: Only employed and retired individuals	41
Appendix J: Inclusion of covariates	44
Appendix K: Panel attrition robustness check	54
Appendix L: Higher order polynomial robustness checks	62
Appendix M: Interactions robustness check	70

Appendix A: Share of retirees by age group, by strata

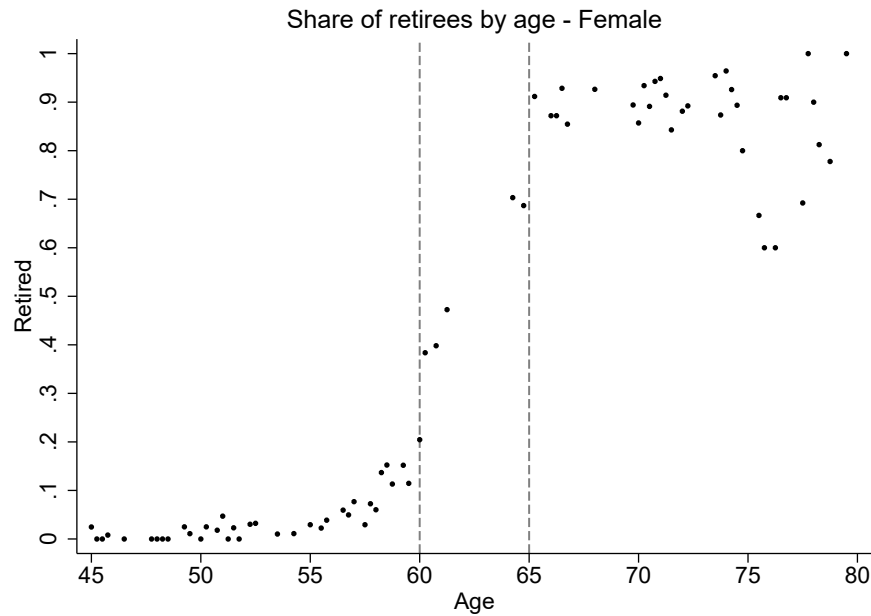


Table A.1: Share of retirees by age group - Female.

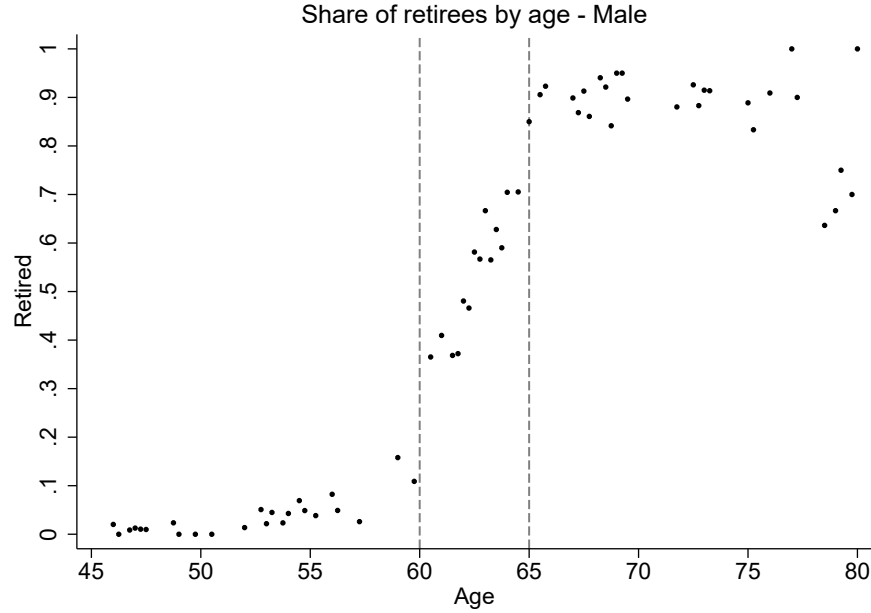


Table A.2: Share of retirees by age group - Male.

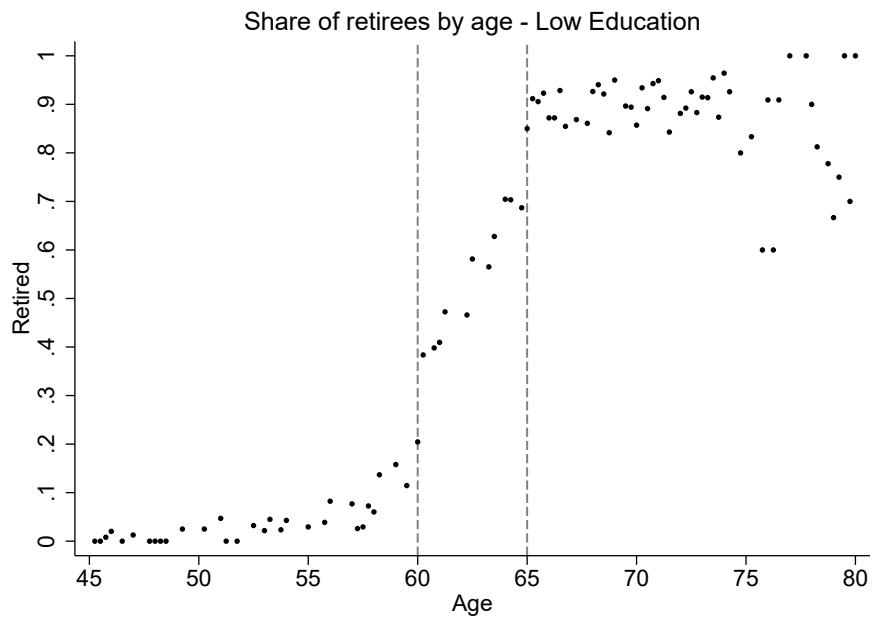


Table A.3: Share of retirees by age group - Low educated.

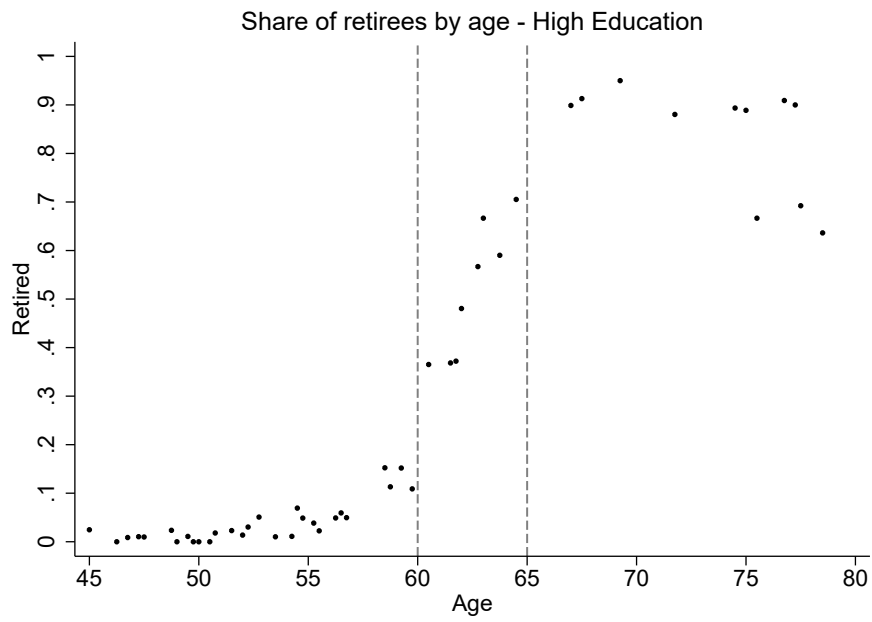


Table A.4: Share of retirees by age group - High educated.

Appendix B: AIC analysis procedure and results

We compared the goodness-of-fit of linear and quadratic models based on the Akaike Information Criterion (AIC). Results of the comparison are reported in eTable 1. In the table the AIC coefficients for each model (Both, ERA, ORA), outcome and polynomial choice (linear or quadratic) are shown. The delta column shows the difference between the more complex model (quadratic) and the less complex model (linear). If the difference is larger or equal than -10, the more complex specification should be preferred, according to Burnham and Anderson (2004). Models and outcomes for which a more complex specification better fits the data are highlighted in bold in the table. For all other models a linear specification actually better fits the data. The corresponding specifications are then adopted for the computation of the main specification results.

	degree of age polynomial	Both		ERA		ORA	
		AIC	ΔAIC_{q-1}	AIC	ΔAIC_{q-1}	AIC	ΔAIC_{q-1}
Alcohol Excess	1	14678.92		14405.27		12181.62	
	2	14680.19	1.27	14403.83	-1.44	12176.07	-5.55
No Alcohol	1	14154.51		13852.55		11867.12	
	2	14157.16	2.65	13854.54	1.99	11866.97	-0.15
Ph. Active	1	16127.18		15845.33		13409.50	
	2	16133.59	6.41	15842.54	-2.79	13409.64	0.14
Smoking	1	9880.97		9809.24		7384.23	
	2	9888.61	7.64	9811.68	2.43	7397.27	13.04
HbA1c	1	23317.25		22885.22		20251.85	
	2	23309.96	-7.29	22882.69	-2.53	20237.05	-14.80
CHO/HDL	1	39176.02		38352.03		32369.58	
	2	39060.55	-115.47	38316.55	-35.48	32341.03	-28.55
BMI	1	64568.36		63248.80		53774.43	
	2	64527.64	-40.72	63210.31	-38.49	53659.79	-114.64
WHR	1	-23488.60		-23040.98		-19364.06	
	2	-23544.80	-56.20	-23073.39	-32.41	-19554.84	-190.78
Diast. BP	1	84980.04		83160.07		70527.83	
	2	84801.34	-178.70	83079.58	-80.49	70532.85	5.02
Syst. BP	1	98321.86		96158.09		82126.59	
	2	98286.10	-35.76	96157.84	-0.25	82200.41	73.82
SF12 mental	1	55268.25		53821.08		45243.82	
	2	55275.48	7.23	53825.51	4.43	45245.51	1.69
SF12 physical	1	54670.89		53189.40		45165.02	
	2	54672.46	1.57	53193.57	4.17	45125.29	-39.73
SAH	1	9135.85		9067.77		8219.67	
	2	9115.00	-20.85	9061.40	-6.38	8070.35	-149.32
Anti-hyper. med.	1	12961.27		12648.05		11666.67	
	2	12957.79	-3.48	12647.26	-0.79	11671.96	5.29

Notes: Akaike-Information-Criterion (AIC) results after fuzzy regression discontinuity design using different polynomial degrees of age. Bold: models in which the quadratic specification should be preferred to the linear specification because of more than 10 points difference (Burnham & Anderson, 2004).

Table B.1: Results of comparison of linear and quadratic models based on the Akaike Information Criterion (AIC). In bold outcomes and models for which a quadratic specification should be preferred to a linear one.

Appendix C: Age density plot

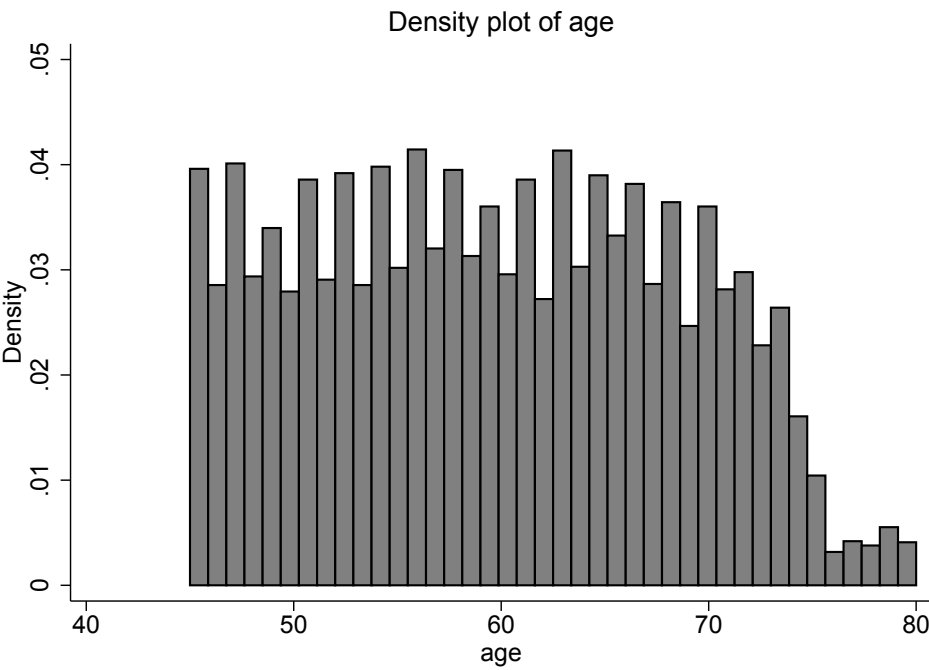


Figure C.1: Age density plot

Appendix D: Graphical inspection of covariates and outcomes

D.1 Covariates

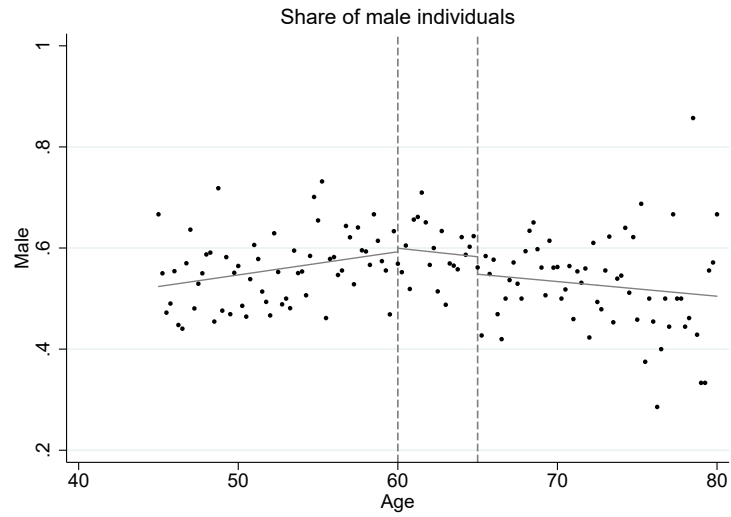


Figure D.1: Share of male individuals per age bin of 3 months.

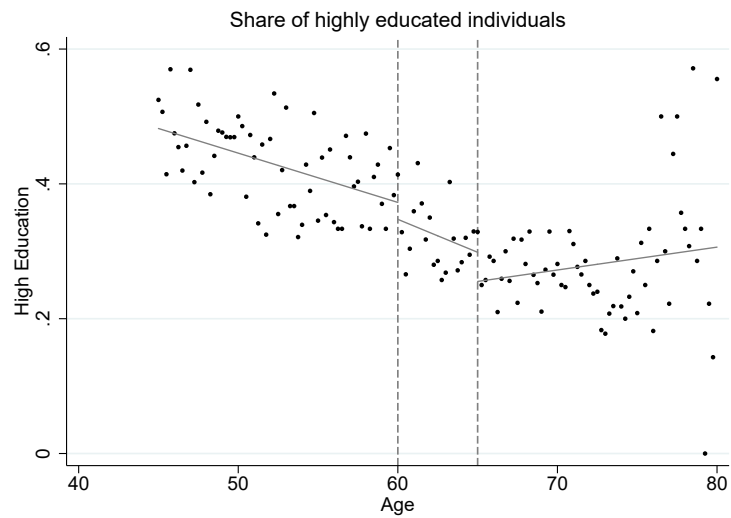


Figure D.2: Share of highly educated individuals per age bin of 3 months.

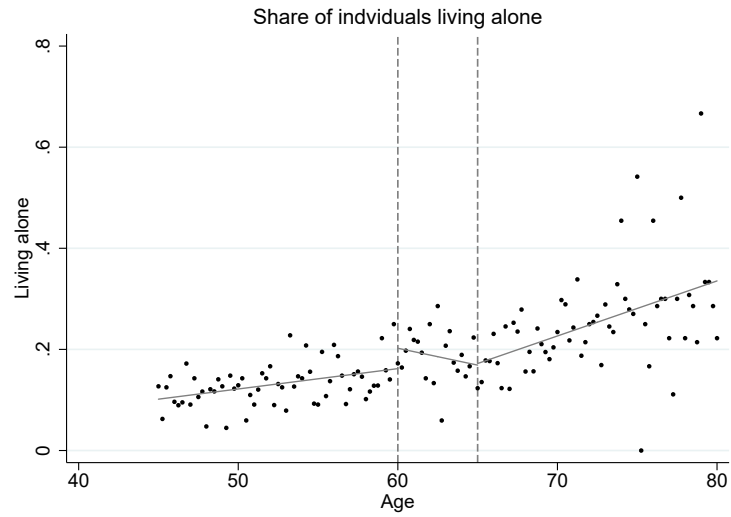


Figure D.3: Share of individuals living alone per age bin of 3 months.

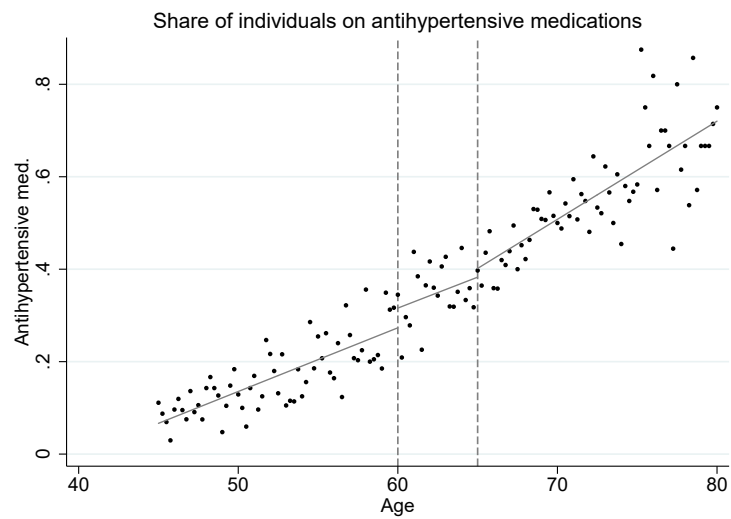
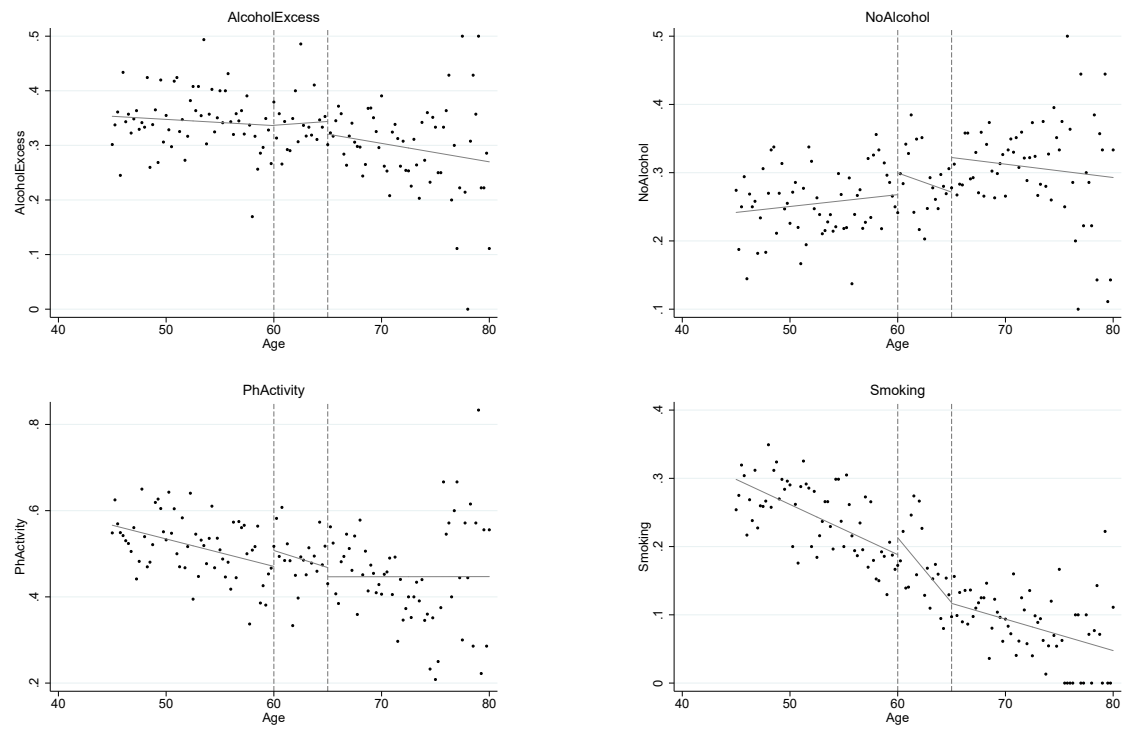
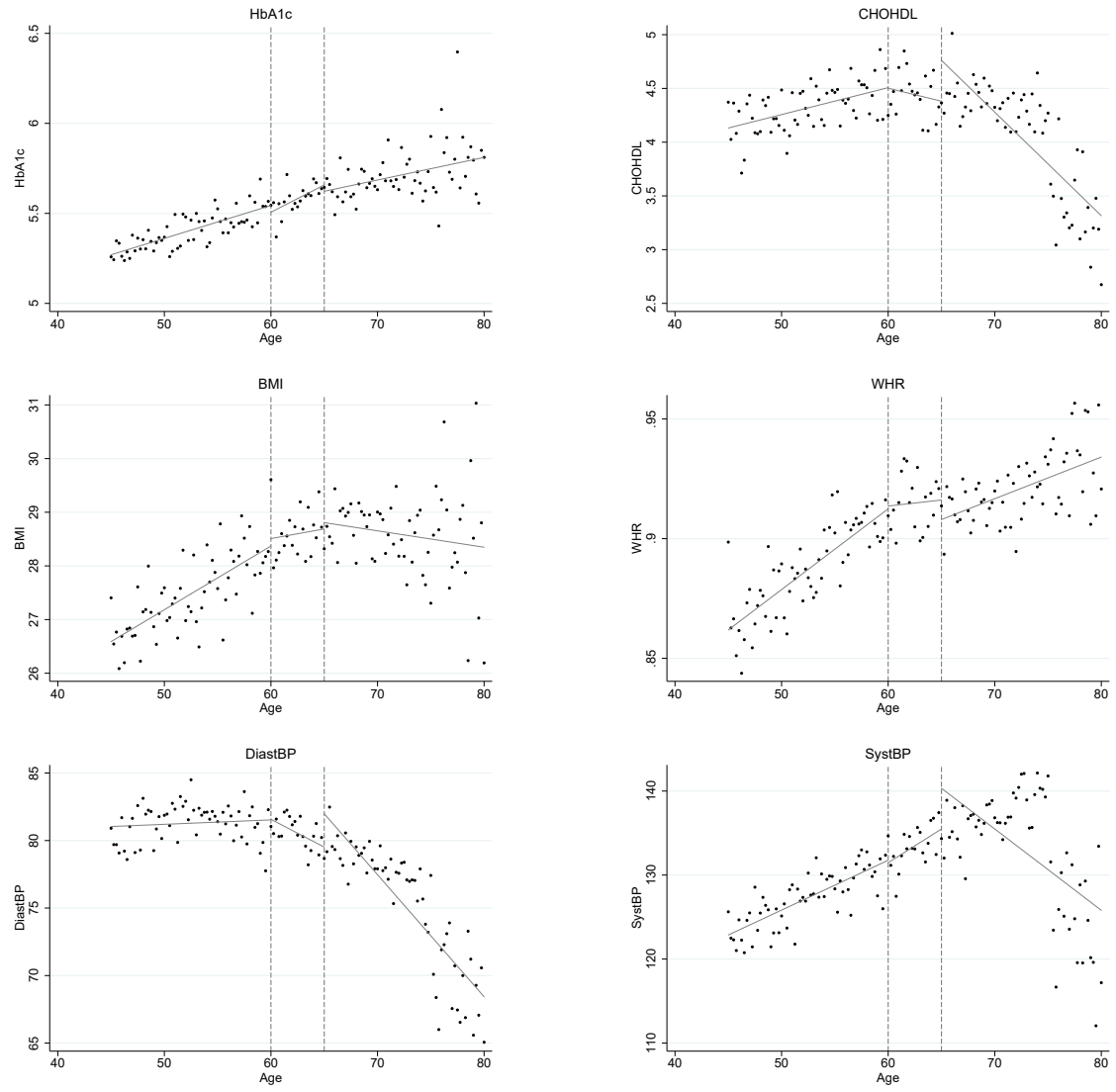


Figure D.4: Share of individuals on antihypertensive medications per age bin of 3 months.

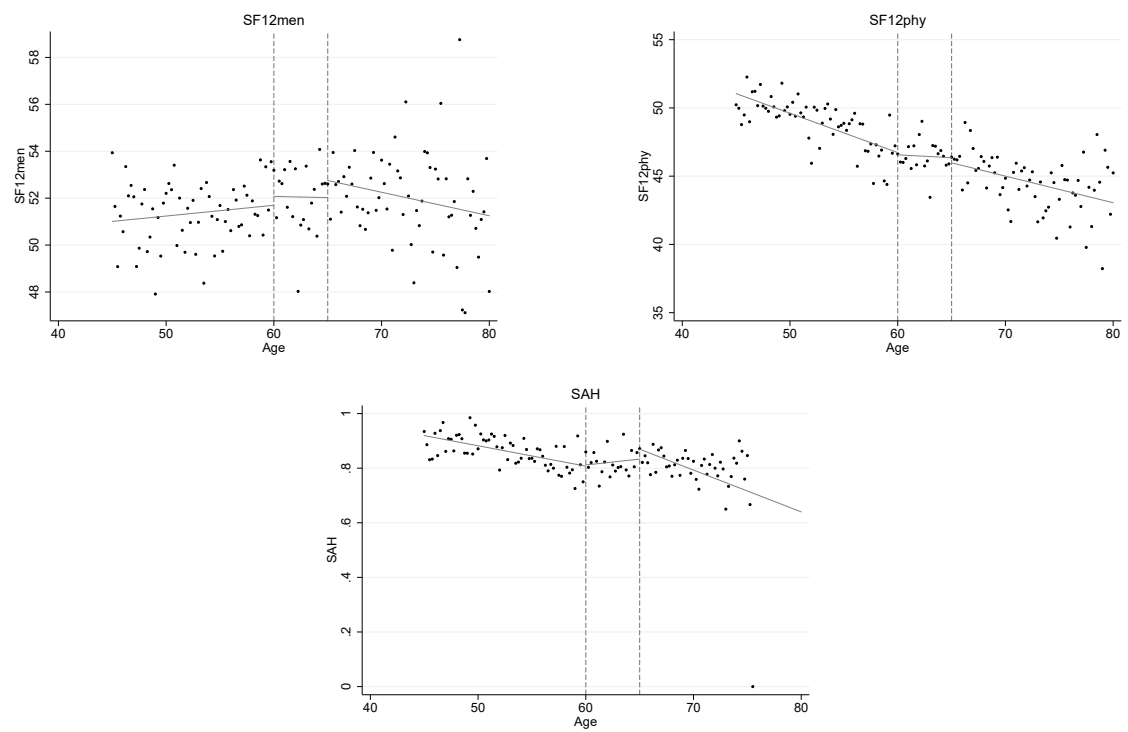
D.2 Outcomes



Figures D.5a-d: Health behaviors per age bin of 3 months



Figures D.6a-f: Risk factors per age bin of 3 months



Figures D.7a-c: Subjective health parameters per age bin of 3 months

Appendix E: Anti-hypertensive medications analysis and robustness checks

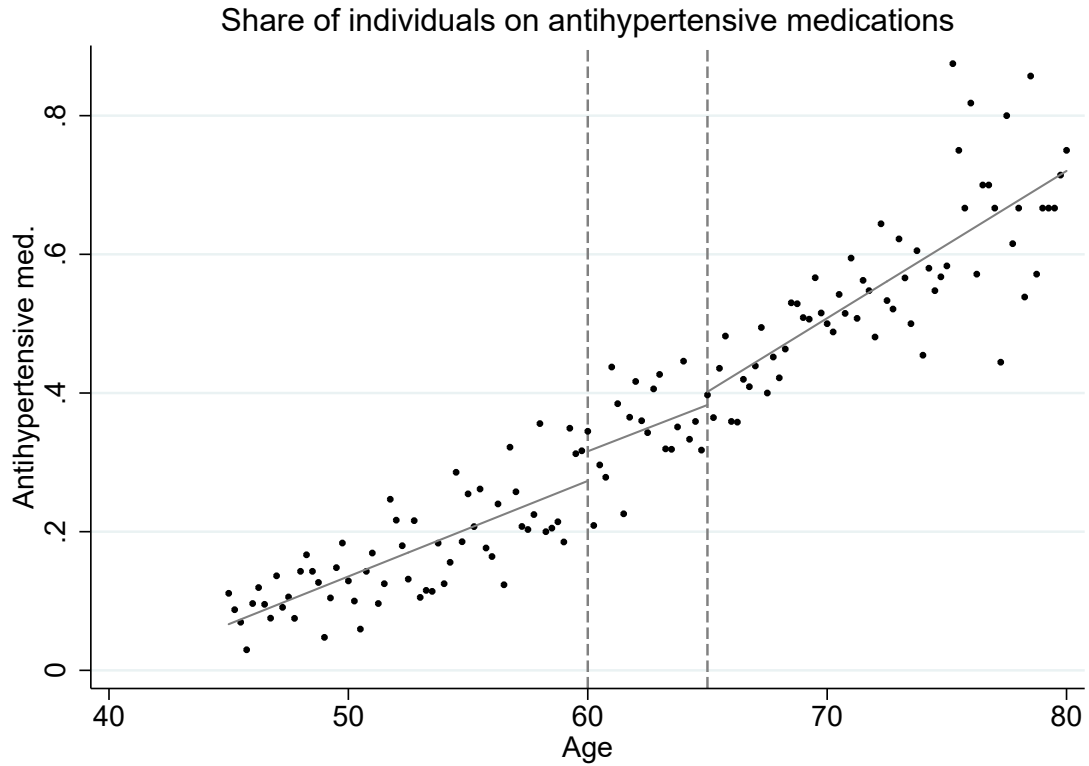


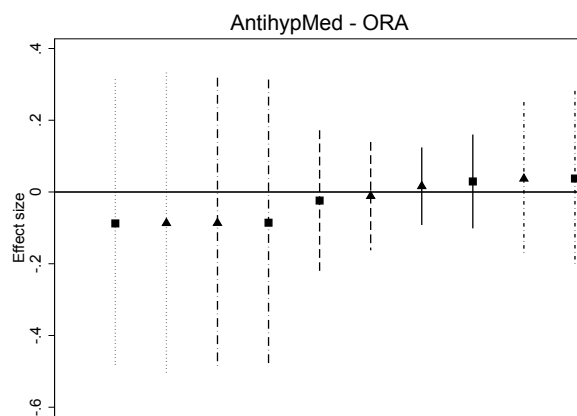
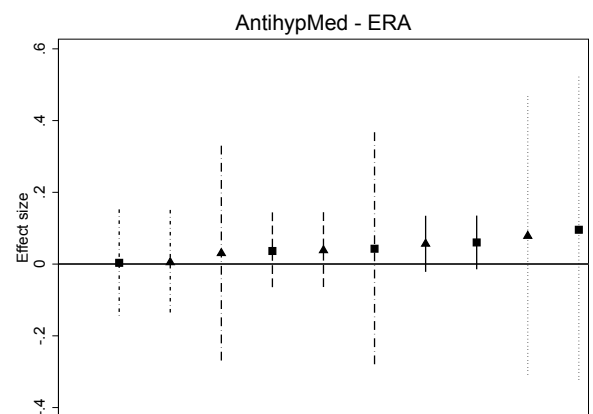
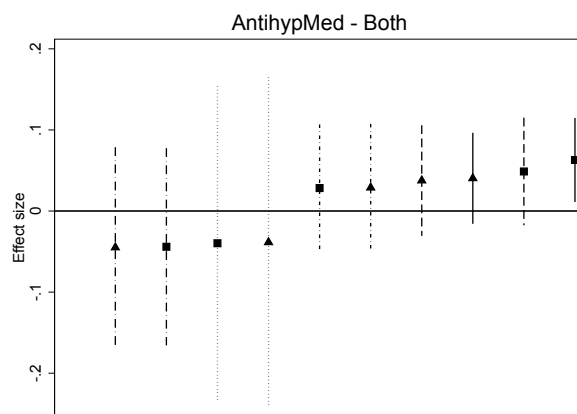
Figure E.1: Graphical test of intake of anti-hypertensive medications.

Upon retirement there seems to be an increase in the intake of anti-hypertensive medications for people retiring early. Controlling for this factor would therefore bias the results, since part of the effect of retirement could also run through the increased intake of anti-hypertensive medications. In any case, the analysis for blood pressure should be interpreted with caution because we are not able to disentangle the effect of retirement from the effect of anti-hypertension medications on blood pressure.

Furthermore, we formally tested the effect of retirement on the intake of AHM. We run the same analysis described in the Methods section using AHM intake as outcome. Results of polynomial choice following AIC are reported in Appendix 1. Estimation results are reported in eTable 2 below. Specification curves results are reported in eFig. 11a-c below.

Anti-hypertensive med.			
	Both	ERA	ORA
	linear	linear	linear
<i>retirement</i>	0.06 * (0.026)	0.06 (0.038)	0.03 (0.067)
95% CI	[0.011; 0.115]	[-0.015; 0.135]	[-0.101; 0.16]
N	11156	10925	9279
R²	0.12	0.11	0.09
KPWFstat	1591	701	241
<i>Notes</i> : Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. KPWFstat: Kleibergen-Paap Wald F-statistic. <i>Significance</i> : * p<.05; ** p<.01; ***p<.001			

Table E.1: Results for the model with both instruments (Both), early retirement cutoff (ERA) and official retirement cutoff (ORA).



Figures E.2a-c: specification curves analysis for AHM intake.

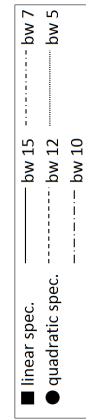
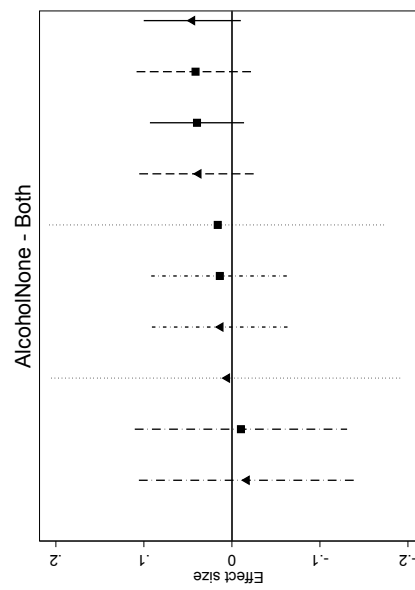
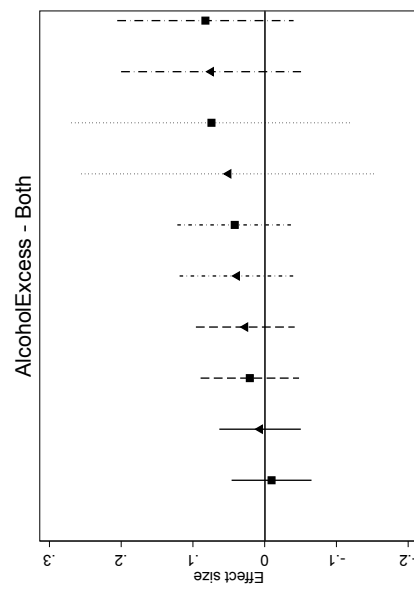
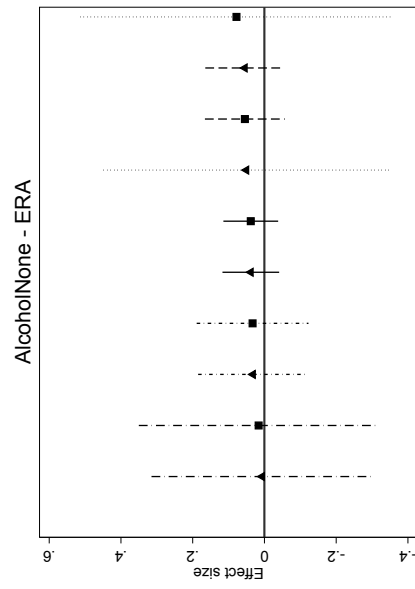
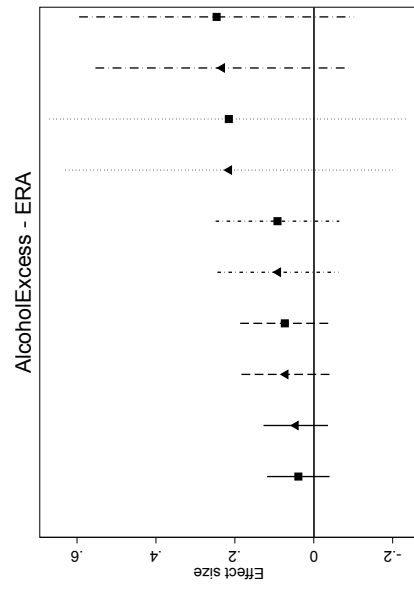
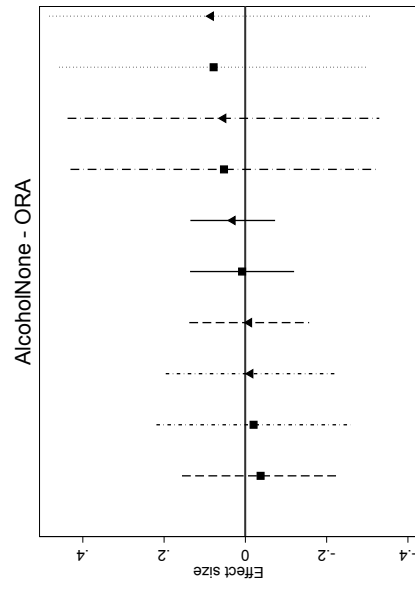
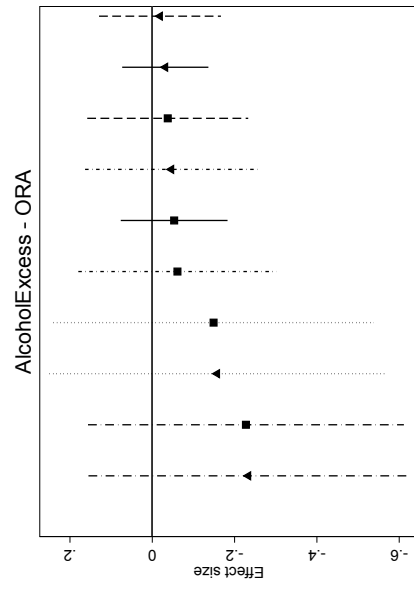
Appendix F: Specification curves analysis

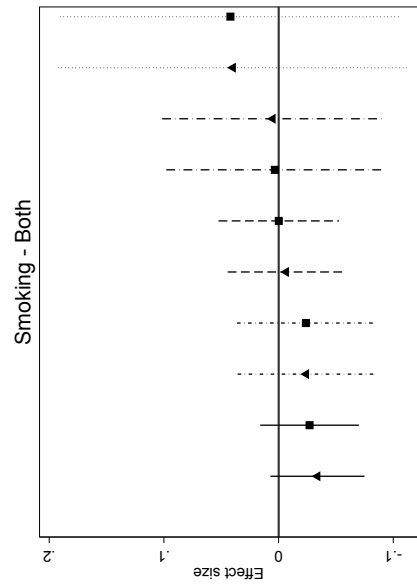
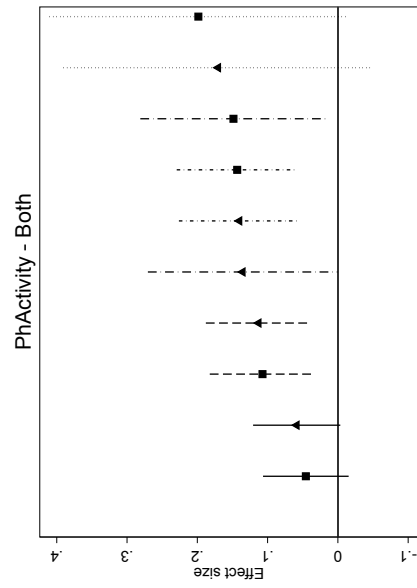
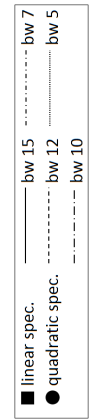
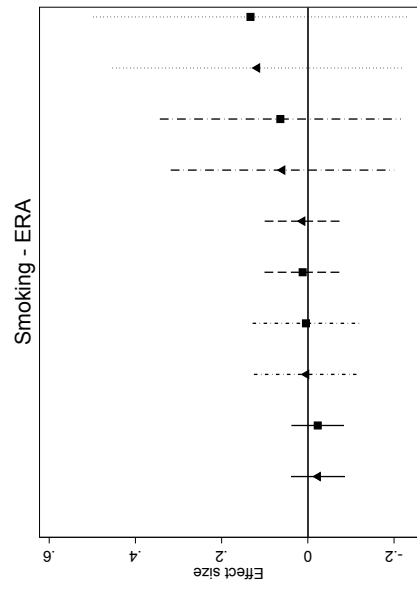
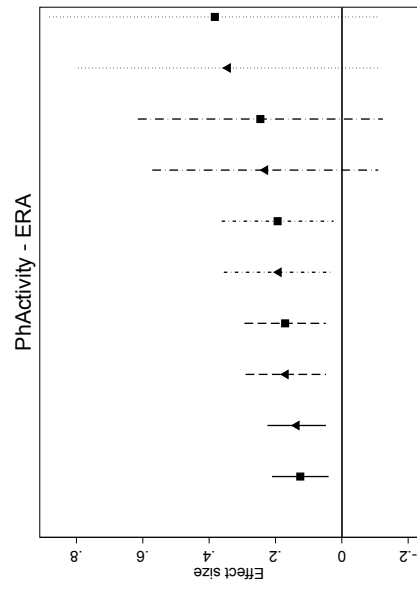
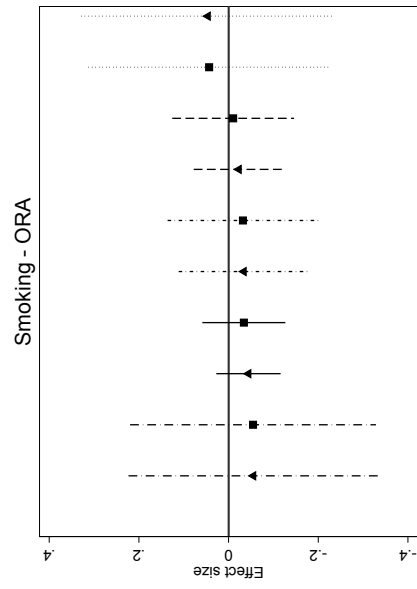
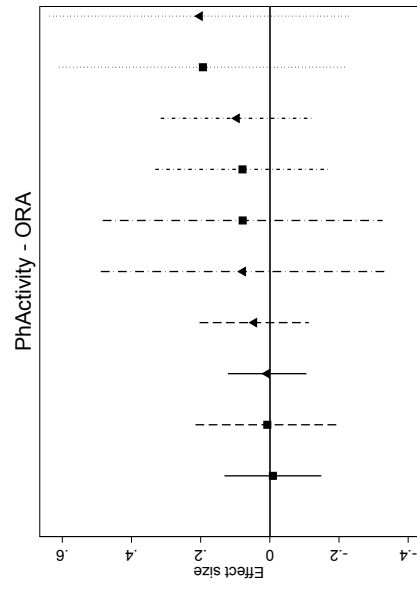
	Both			ERA			ORA		
	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5
<i>Health behavior</i>									
Alcohol Excess	-0.010 (0.028)	0.042 (0.041)	0.050 (0.105)	0.039 (0.04)	0.092 (0.08)	0.215 (0.232)	-0.053 (0.066)	-0.061 (0.123)	-0.149 (0.199)
No Alcohol	0.040 (0.027)	0.014 (0.04)	0.016 (0.098)	0.038 (0.039)	0.033 (0.08)	0.078 (0.222)	0.008 (0.065)	-0.020 (0.122)	0.078 (0.194)
Ph. Activity	0.046 (0.031)	0.143 ** (0.044)	0.170 (0.112)	0.125 ** (0.044)	0.194 * (0.086)	0.343 (0.23)	-0.009 (0.071)	0.079 (0.129)	0.194 (0.212)
Smoking	-0.027 (0.022)	-0.024 (0.031)	0.042 (0.076)	-0.023 (0.031)	0.004 (0.063)	0.117 (0.171)	-0.034 (0.047)	-0.032 (0.086)	0.043 (0.137)
<i>Risk factors</i>									
HbA1c	-0.020 (0.044)	-0.002 (0.067)	-0.073 (0.166)	0.005 (0.064)	-0.034 (0.129)	-0.269 (0.348)	0.001 (0.093)	-0.030 (0.218)	-0.121 (0.352)
CHO/HDL	0.280 *** (0.085)	0.054 (0.122)	0.253 (0.304)	0.014 (0.125)	-0.065 (0.244)	0.681 (0.655)	0.471 ** (0.159)	0.238 (0.366)	0.300 (0.578)
BMI	0.640 ** (0.248)	0.858 * (0.36)	0.862 (0.969)	1.111 ** (0.352)	1.360 (0.695)	2.680 (1.956)	0.125 (0.488)	0.180 (1.007)	0.131 (1.887)
WHR	0.001 (0.005)	0.006 (0.007)	0.025 (0.018)	0.014 * (0.007)	0.024 (0.013)	0.073 (0.039)	-0.015 (0.009)	-0.016 (0.018)	0.005 (0.035)
Diastolic BP	2.102 ** (0.673)	1.758 (0.942)	2.220 (2.39)	0.408 (0.973)	3.063 (1.822)	7.169 (4.964)	0.325 (1.557)	0.189 (2.459)	-0.051 (4.561)
Systolic BP	5.647 *** (1.263)	-0.014 (1.739)	-2.270 (4.256)	-0.513 (1.708)	0.503 (3.368)	-0.067 (9.54)	4.962 (2.948)	-3.176 (4.711)	-9.711 (8.898)
<i>Subjective health</i>									
SF12 mental	1.175 (0.687)	1.054 (0.984)	1.648 (2.323)	1.990 (1.032)	2.661 (2.018)	3.642 (5.046)	-0.078 (1.362)	-0.346 (2.492)	2.897 (4.325)
SF12 physical	1.594 * (0.66)	2.667 ** (0.953)	2.337 (2.365)	1.412 (1.015)	1.798 (2.024)	0.131 (5.945)	2.310 * (1.15)	3.213 (2.5)	2.960 (4.411)
Satisfactory heal	0.079 * (0.031)	0.102 ** (0.036)	0.096 (0.084)	0.064 (0.035)	0.090 (0.068)	0.071 (0.186)	0.108 (0.059)	0.113 (0.091)	0.170 (0.162)

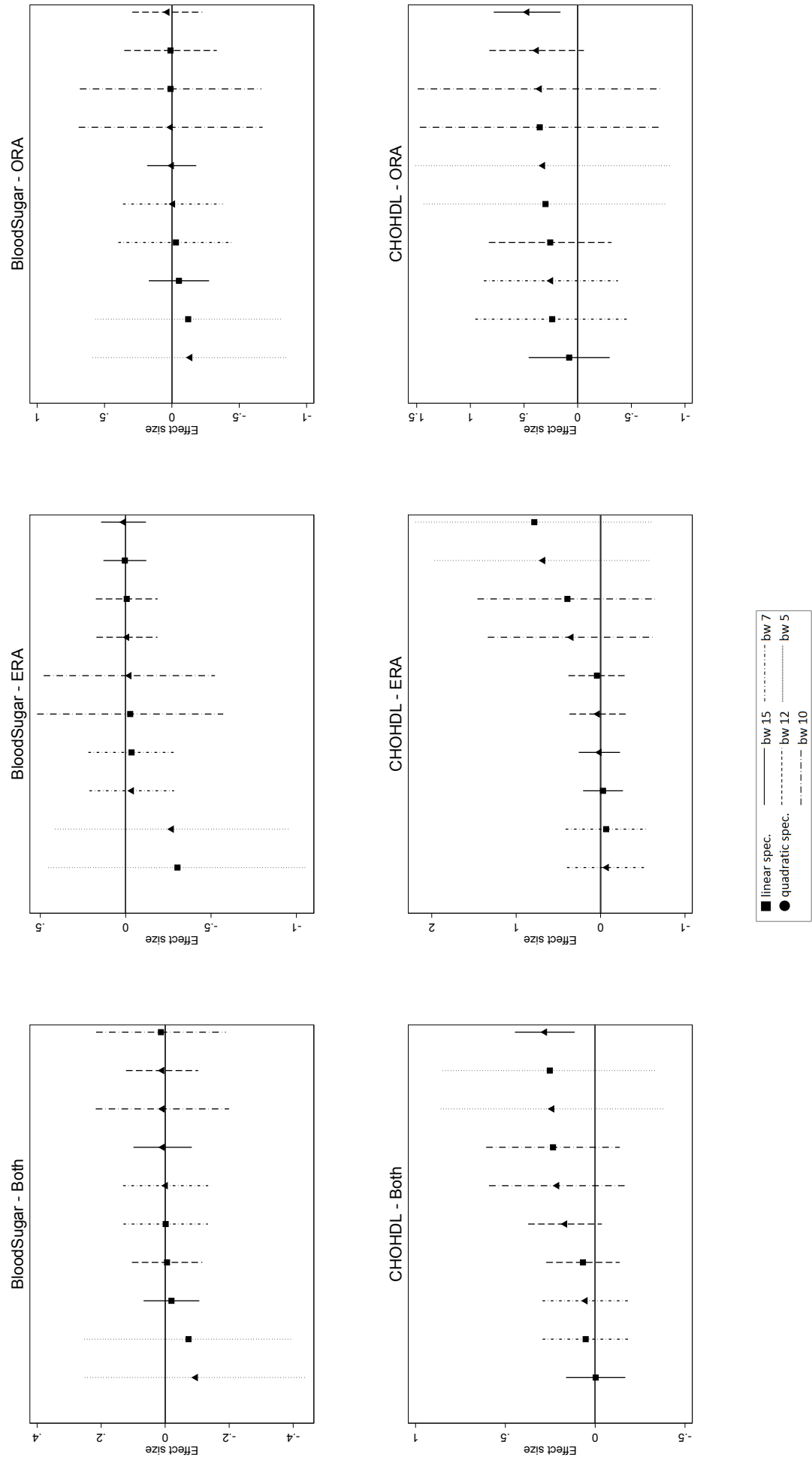
Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC) (Appendix B), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic.

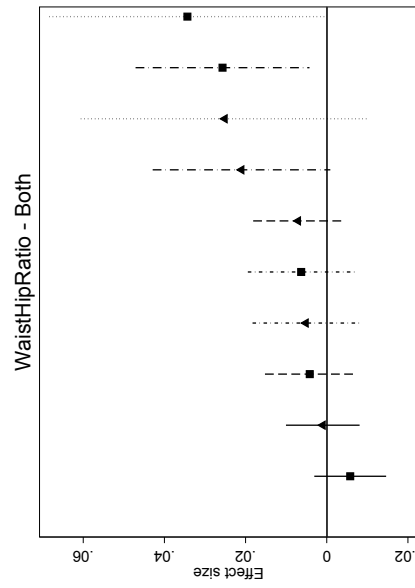
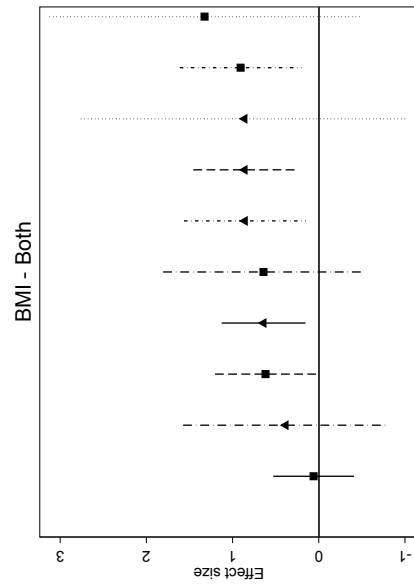
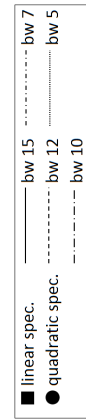
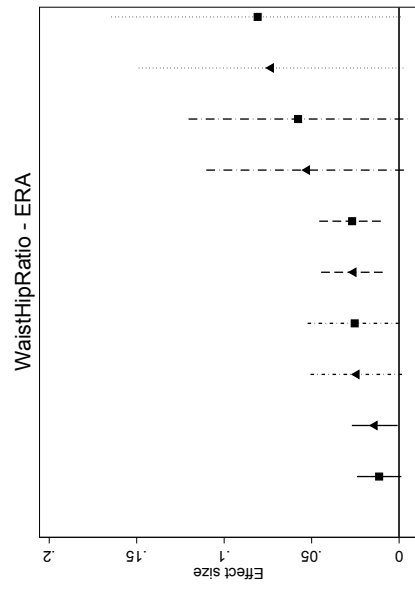
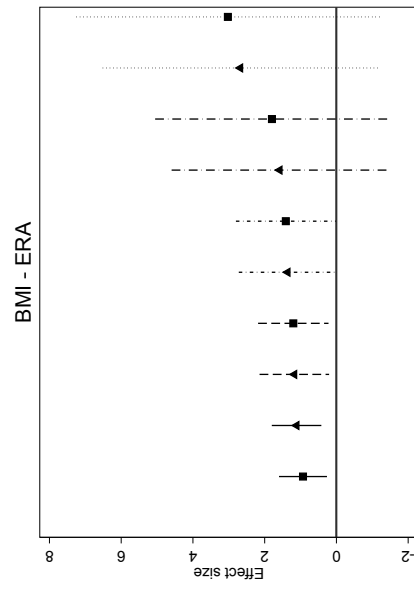
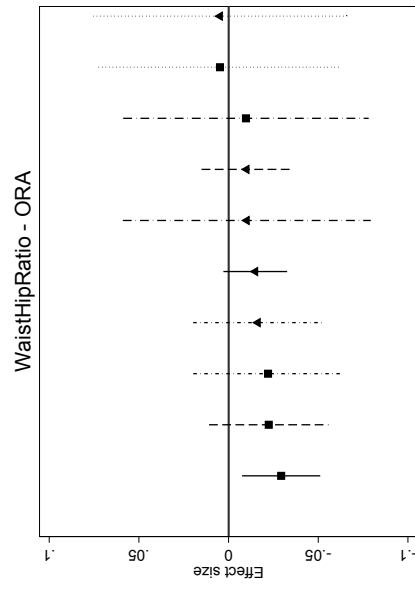
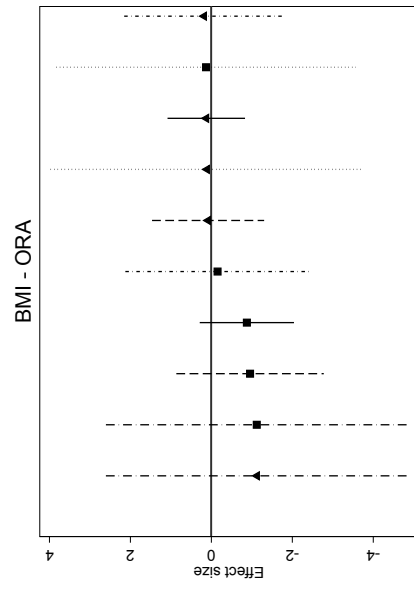
Significance: * p<.05; ** p<.01; ***p<.001

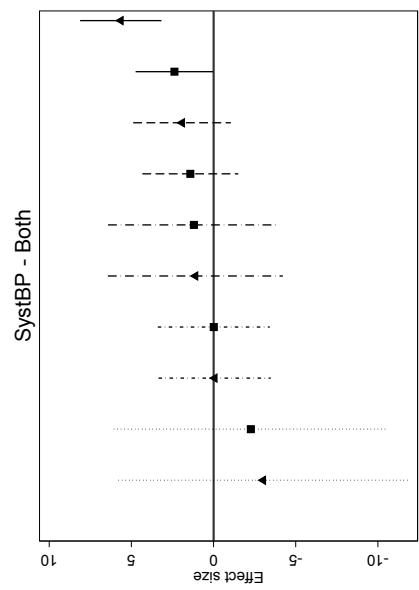
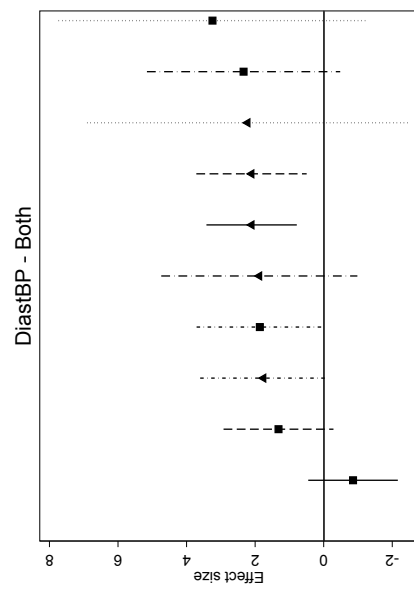
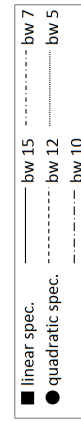
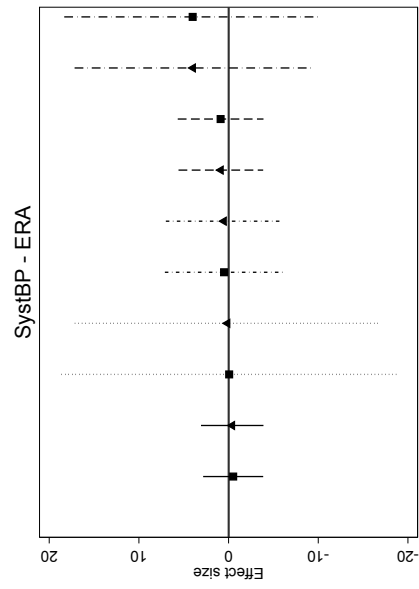
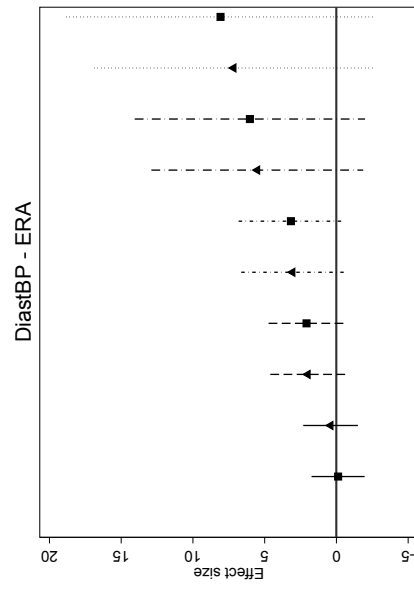
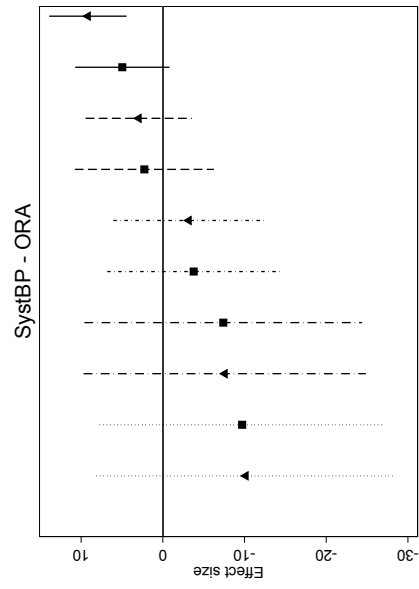
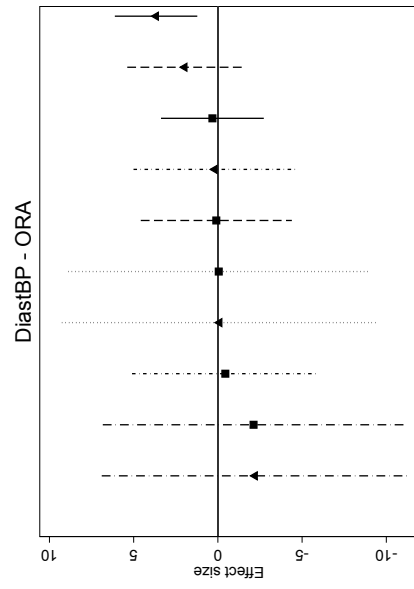
Table F.1: sensitivity analysis for different bandwidths (bw), main analysis results.

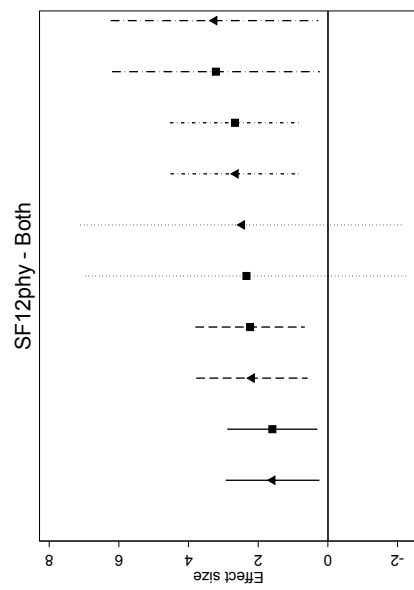
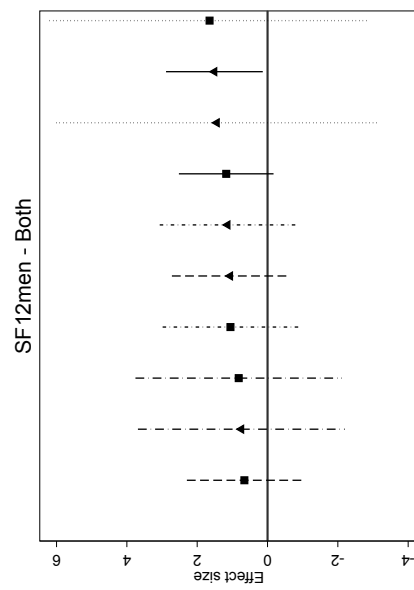
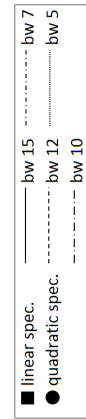
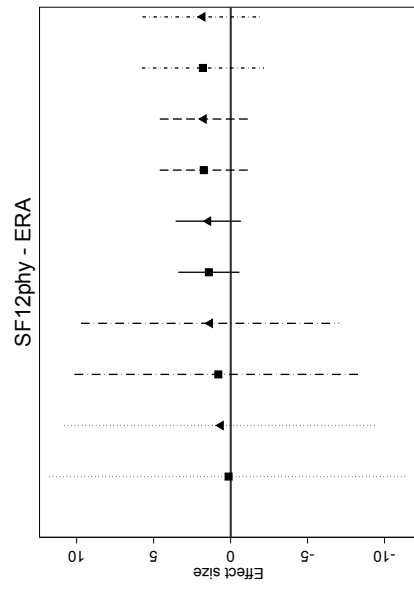
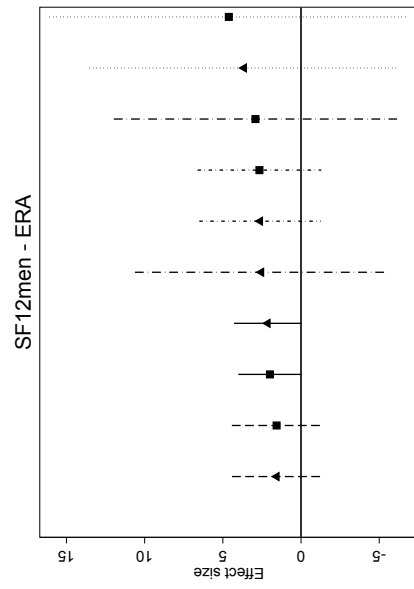
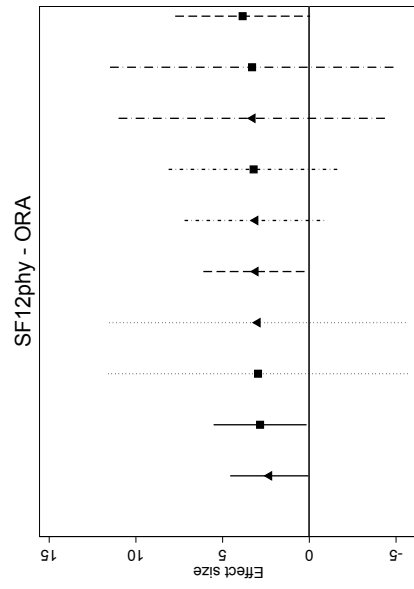
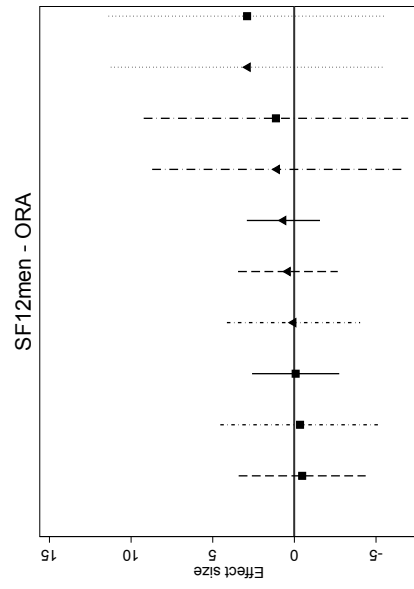


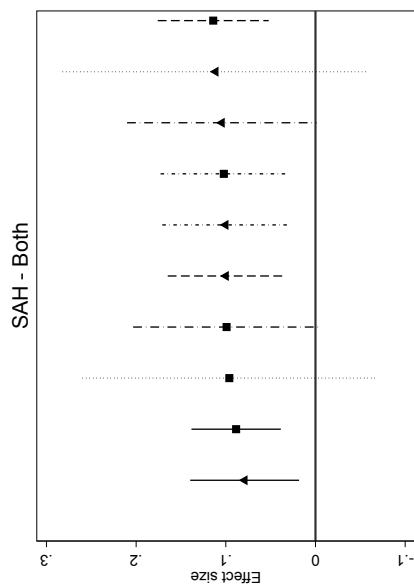
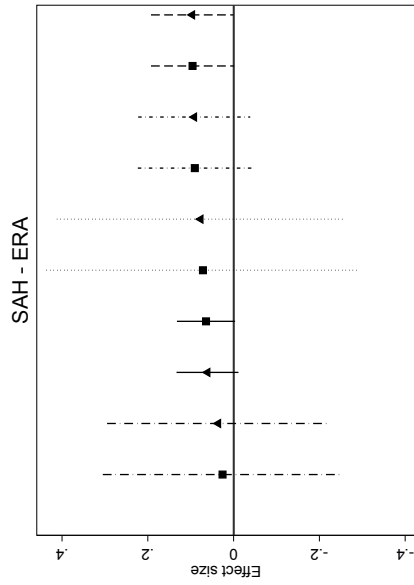
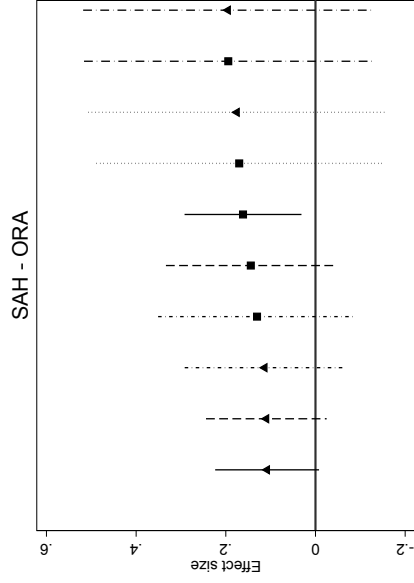












Appendix G: Specification curves analysis: male vs. female

<i>Health behavior</i>	Male								
	Both			ERA			ORA		
	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5
Alcohol Excess	-0.054 (0.043)	0.023 (0.064)	0.000 (0.186)	0.041 (0.06)	0.112 (0.118)	0.178 (0.395)	-0.116 (0.086)	-0.175 (0.184)	-0.381 (0.501)
No Alcohol	0.078 * (0.032)	0.086 (0.048)	-0.016 (0.131)	0.076 (0.046)	0.000 (0.1)	0.103 (0.356)	0.098 (0.086)	0.152 (0.173)	0.213 (0.385)
Ph. Activity	0.086 (0.045)	0.182 ** (0.065)	0.028 (0.173)	0.122 * (0.062)	0.071 (0.128)	-0.247 (0.405)	0.122 (0.115)	0.313 (0.225)	0.092 (0.502)
Smoking	-0.045 (0.034)	-0.037 (0.049)	0.050 (0.133)	-0.053 (0.048)	-0.055 (0.102)	0.106 (0.324)	-0.019 (0.08)	0.072 (0.132)	0.325 (0.373)
<i>Risk factors</i>									
HbA1c	-0.090 (0.067)	-0.118 (0.103)	-0.307 (0.292)	-0.049 (0.099)	-0.206 (0.215)	-0.551 (0.746)	-0.147 (0.145)	-0.140 (0.311)	-0.674 (0.848)
CHO/HDL	0.279 * (0.128)	0.064 (0.19)	0.185 (0.569)	-0.244 (0.182)	-0.750 * (0.378)	-1.057 (1.377)	0.729 * (0.312)	1.348 * (0.549)	2.296 (1.583)
BMI	0.067 (0.306)	0.966 * (0.477)	1.073 (1.449)	0.730 (0.439)	1.307 (0.945)	3.678 (3.166)	-0.330 (0.783)	-0.033 (1.653)	1.802 (3.702)
WHR	-0.007 (0.005)	0.001 (0.007)	0.003 (0.022)	0.000 (0.007)	0.009 (0.014)	0.020 (0.046)	-0.013 (0.01)	-0.016 (0.021)	0.005 (0.057)
Diastolic BP	1.505 (0.976)	2.136 (1.426)	3.671 (4.062)	0.114 (1.391)	3.404 (2.642)	7.920 (9.027)	3.356 (1.919)	-0.345 (4.788)	8.390 (11.202)
Systolic BP	4.933 ** (1.759)	-0.275 (2.515)	1.290 (6.537)	0.512 (2.364)	2.797 (4.841)	-2.416 (17.81)	1.954 (4.586)	-6.146 (7.691)	-3.023 (20.537)
<i>Subjective health</i>									
SF12 mental	1.467 (0.922)	2.267 (1.331)	2.126 (3.462)	1.692 (1.431)	3.172 (3.03)	0.054 (8.52)	2.036 (1.827)	1.741 (3.475)	7.198 (7.861)
SF12 physical	1.490 (0.946)	2.671 * (1.362)	-0.817 (3.543)	0.478 (1.466)	0.237 (3.093)	-7.278 (7.58)	3.117 (1.668)	3.303 (3.665)	-1.533 (7.727)
Satisfactory health	0.076 (0.044)	0.114 * (0.053)	0.028 (0.132)	0.046 (0.052)	0.059 (0.102)	-0.147 (0.284)	0.147 (0.087)	0.153 (0.141)	0.121 (0.346)

Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic. Significance: * $p < .05$; ** $p < .01$; *** $p < .001$

Table G.1: sensitivity analysis for different bandwidths (bw), gender stratified results (male).

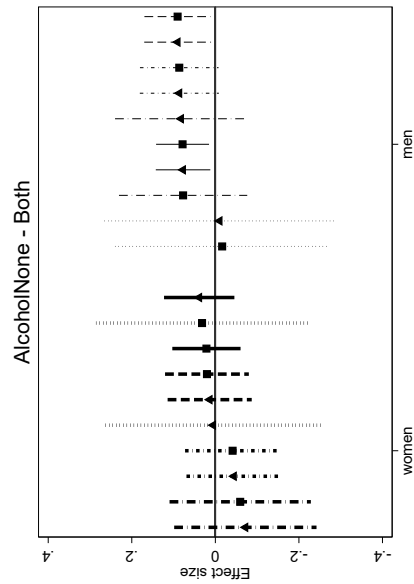
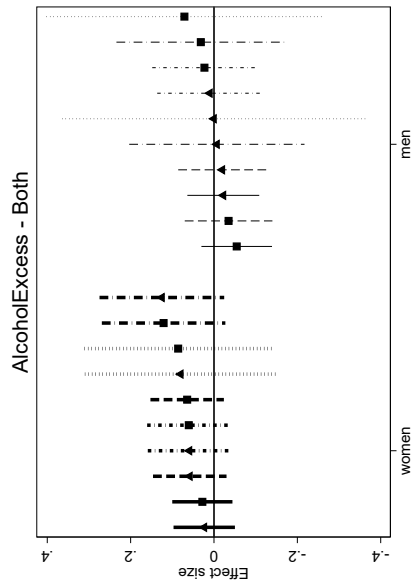
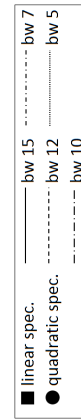
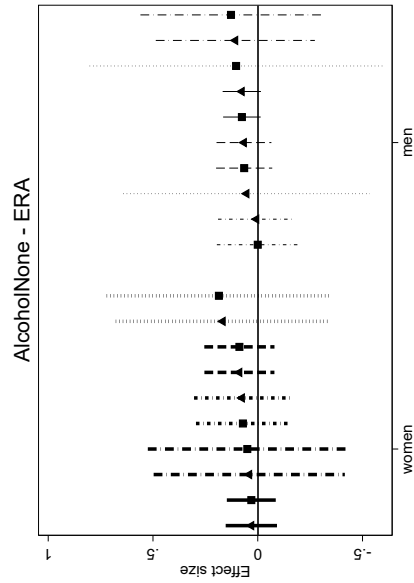
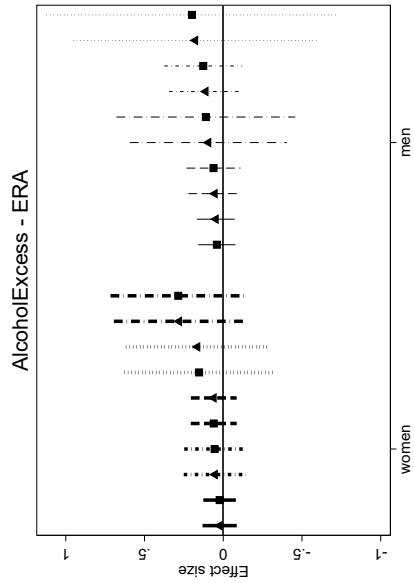
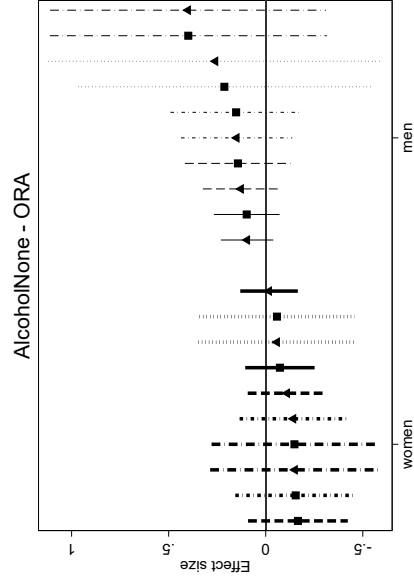
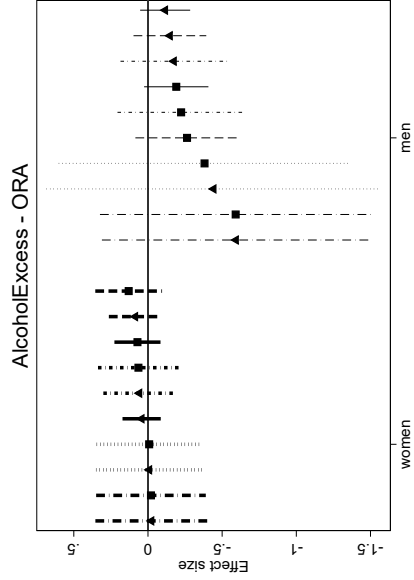
	Female								
	Both			ERA			ORA		
	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5
<i>Health behavior</i>									
Alcohol Excess	0.028 (0.037)	0.060 (0.051)	0.086 (0.115)	0.023 (0.053)	0.055 (0.099)	0.153 (0.242)	0.043 (0.066)	0.064 (0.139)	-0.008 (0.181)
No Alcohol	0.021 (0.042)	-0.041 (0.058)	0.032 (0.13)	0.031 (0.06)	0.071 (0.114)	0.185 (0.273)	-0.017 (0.076)	-0.154 (0.159)	-0.058 (0.204)
Ph. Activity	0.006 (0.043)	0.104 (0.06)	0.245 (0.136)	0.129 * (0.062)	0.300 * (0.117)	0.741 * (0.305)	-0.091 (0.076)	-0.064 (0.138)	0.234 (0.209)
Smoking	-0.014 (0.028)	-0.015 (0.038)	0.009 (0.085)	-0.001 (0.04)	0.053 (0.077)	0.097 (0.2)	-0.040 (0.055)	-0.110 (0.084)	-0.056 (0.124)
<i>Risk factors</i>									
HbA1c	0.053 (0.059)	0.107 (0.089)	0.100 (0.193)	0.061 (0.082)	0.115 (0.155)	-0.103 (0.364)	0.096 (0.143)	0.081 (0.263)	0.105 (0.346)
CHO/HDL	0.232 * (0.107)	0.002 (0.148)	0.287 (0.334)	0.185 (0.158)	0.502 (0.289)	1.382 * (0.697)	0.082 (0.195)	-0.563 (0.375)	-0.370 (0.534)
BMI	0.822 * (0.381)	0.917 (0.534)	0.996 (1.251)	1.514 ** (0.555)	1.479 (1.042)	1.978 (2.671)	0.058 (0.733)	0.154 (1.422)	-0.649 (2.156)
WHR	-0.002 (0.005)	0.006 (0.007)	0.039 * (0.016)	0.014 (0.007)	0.036 * (0.014)	0.057 (0.035)	-0.018 (0.009)	-0.013 (0.017)	0.040 (0.027)
Diastolic BP	2.428 ** (0.914)	1.603 (1.217)	1.375 (2.711)	0.217 (1.317)	2.383 (2.372)	4.849 (5.751)	1.192 (1.946)	-0.257 (3.345)	-2.527 (4.294)
Systolic BP	2.464 (1.705)	0.234 (2.363)	-4.800 (5.296)	-2.237 (2.402)	-1.806 (4.557)	-2.271 (10.825)	8.150 * (3.838)	-0.564 (6.495)	-10.330 (8.514)
<i>Subjective health</i>									
SF12 mental	0.870 (1.008)	0.191 (1.421)	1.605 (3.08)	2.235 (1.474)	2.570 (2.683)	6.131 (7.155)	-1.703 (1.974)	-1.881 (3.469)	1.459 (4.978)
SF12 physical	1.664 (0.922)	2.783 * (1.331)	5.079 (3.174)	2.256 (1.404)	3.298 (2.665)	6.697 (7.531)	1.795 (1.855)	3.326 (3.381)	6.167 (5.282)
Satisfactory health	0.062 (0.036)	0.086 (0.049)	0.149 (0.107)	0.072 (0.048)	0.118 (0.091)	0.238 (0.22)	0.068 (0.085)	0.087 (0.142)	0.201 (0.172)

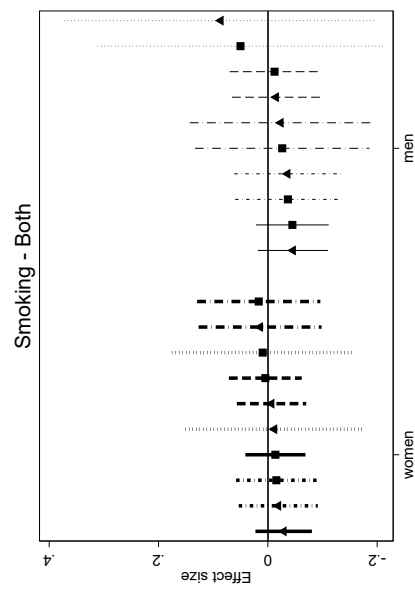
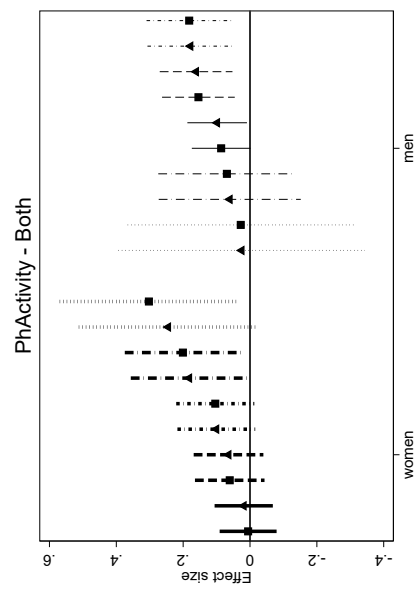
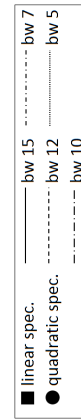
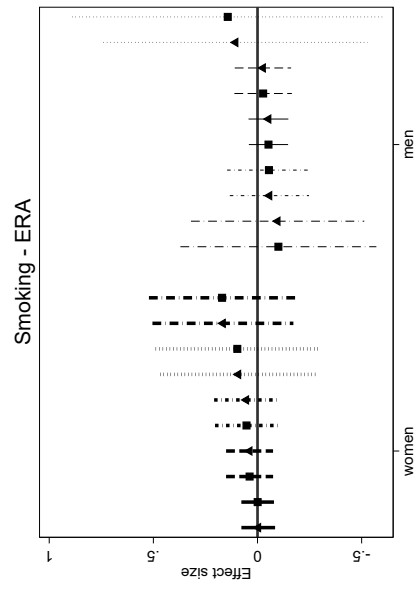
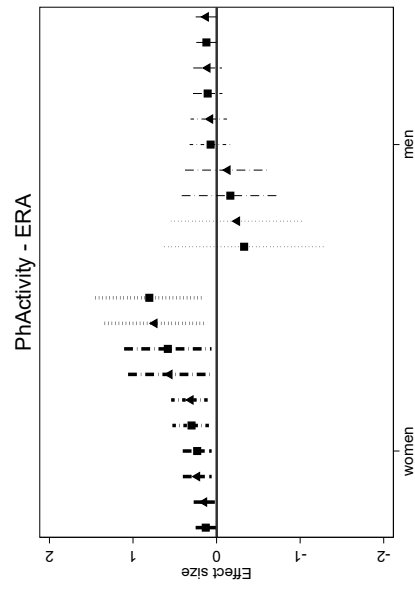
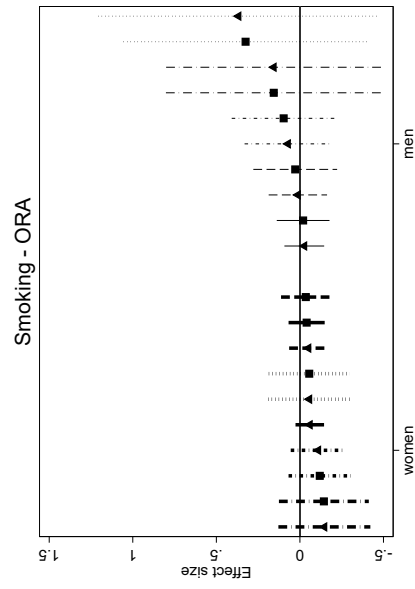
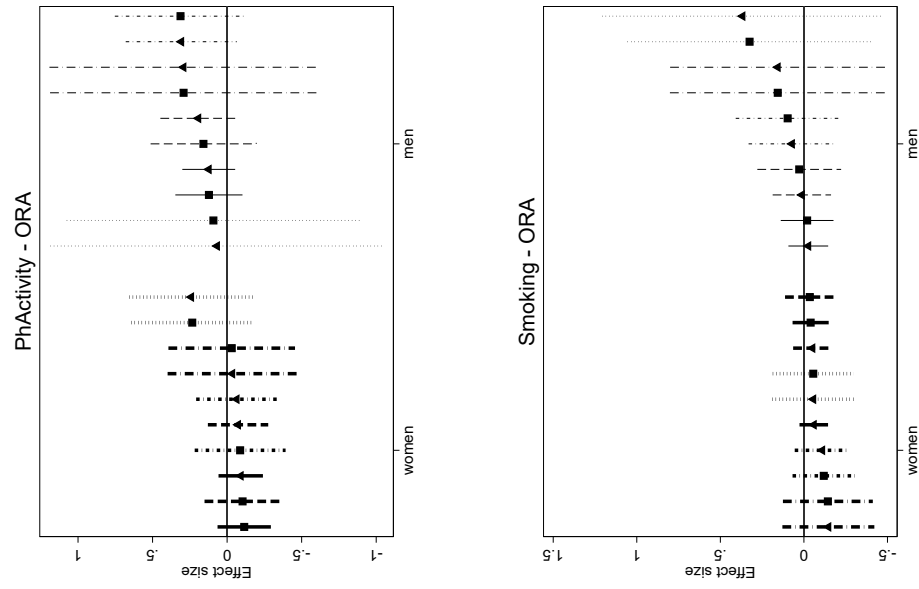
Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses.

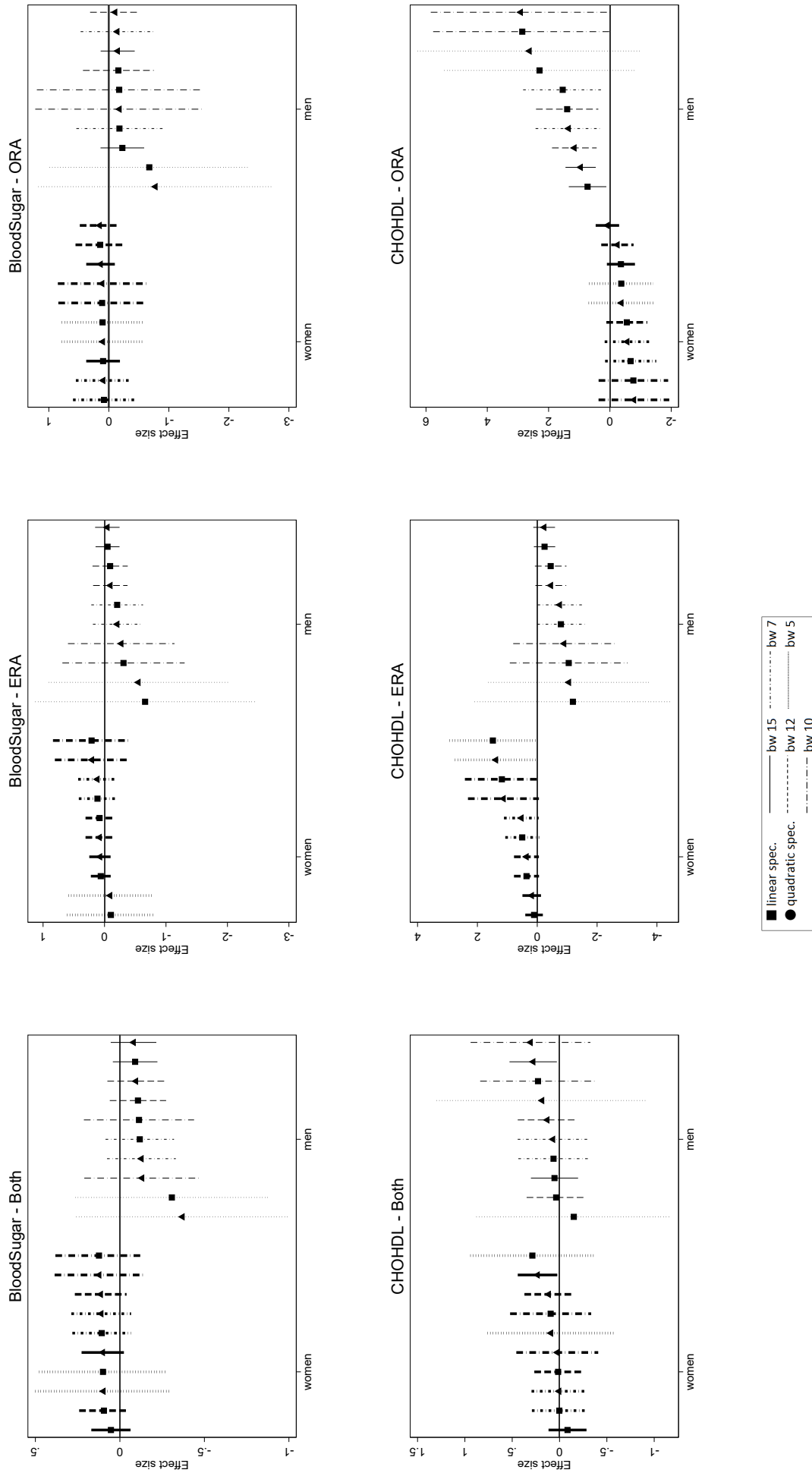
Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic.

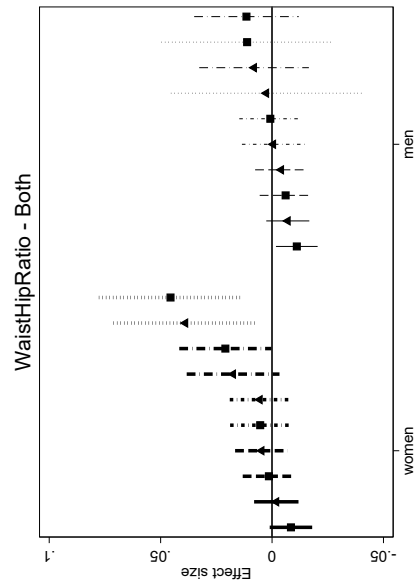
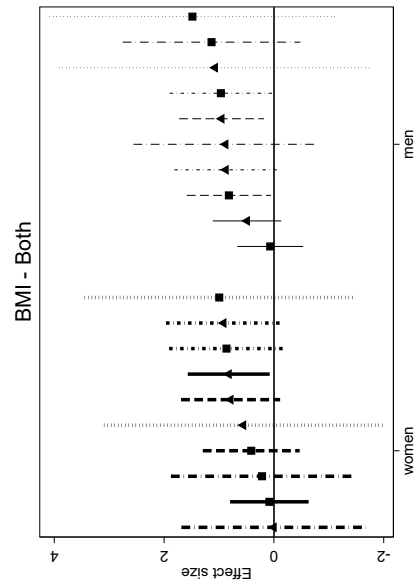
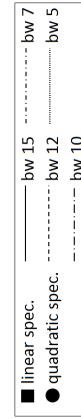
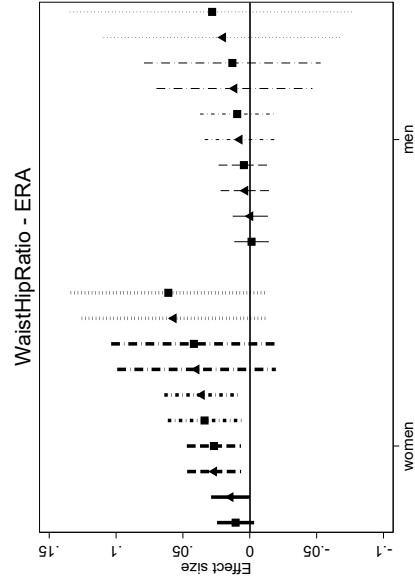
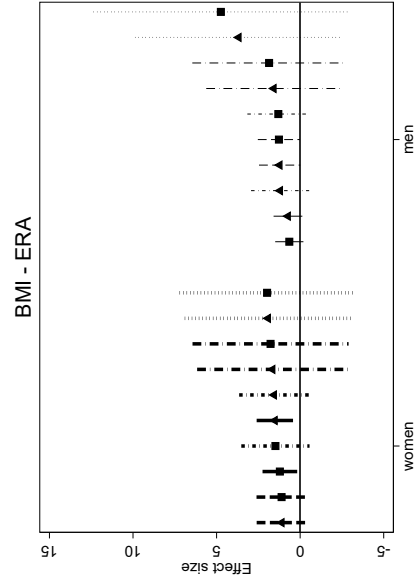
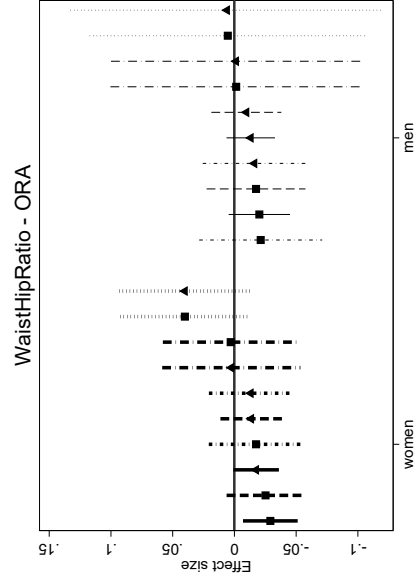
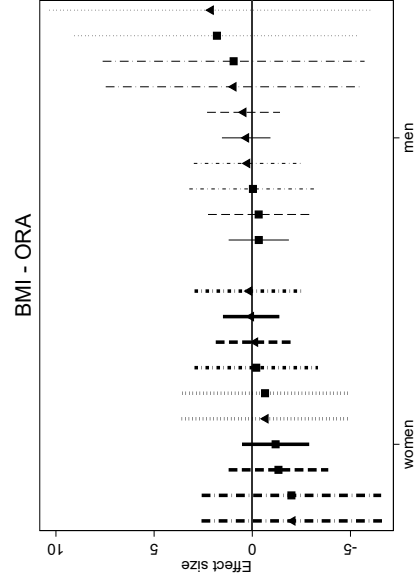
Significance: * p<.05; ** p<.01; ***p<.001

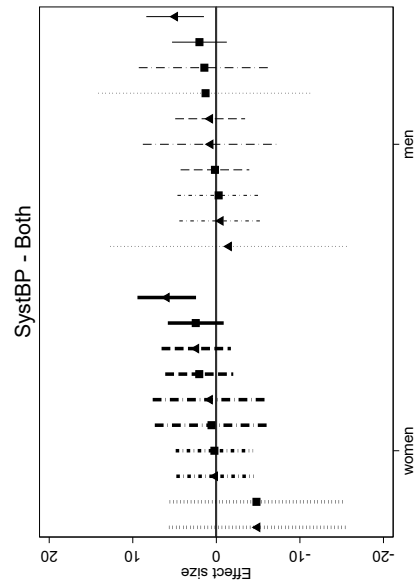
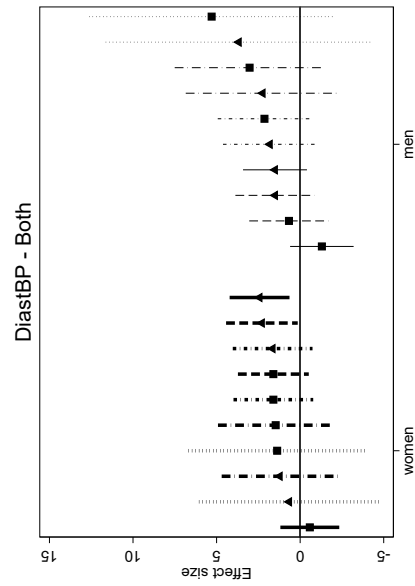
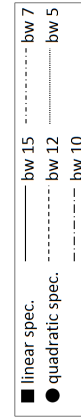
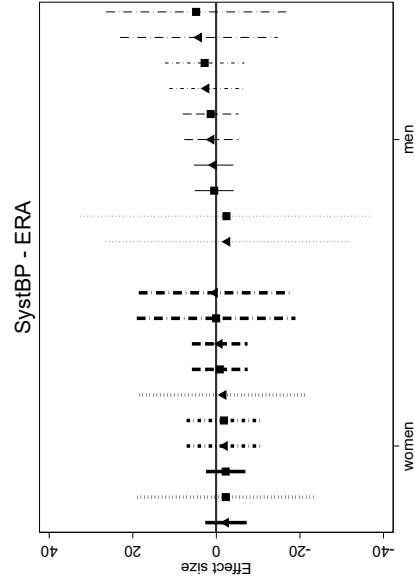
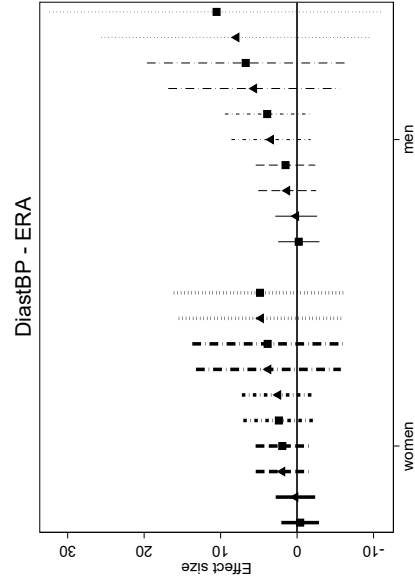
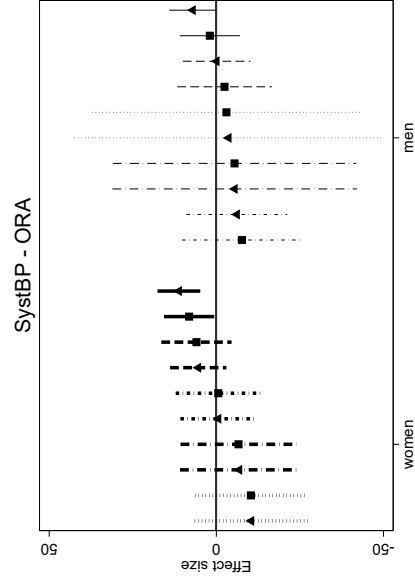
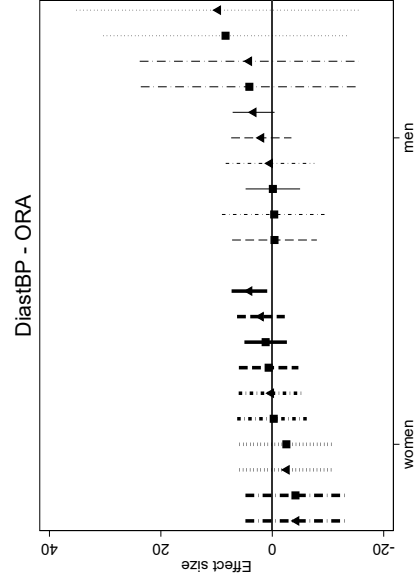
Table G.2: sensitivity analysis for different bandwidths (bw), gender stratified results (female).

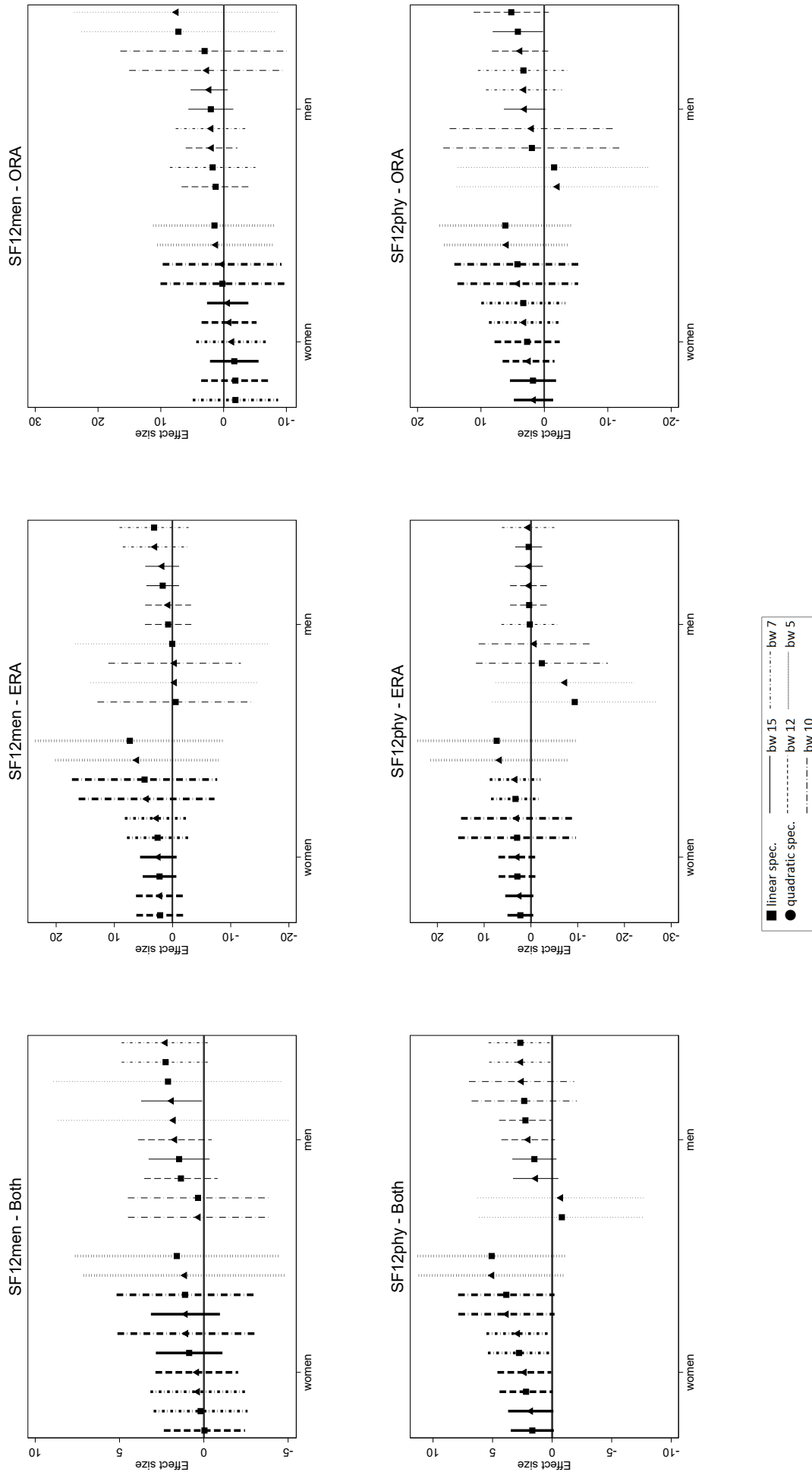


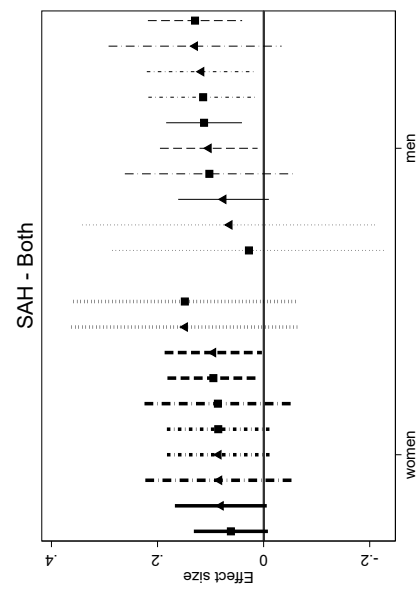
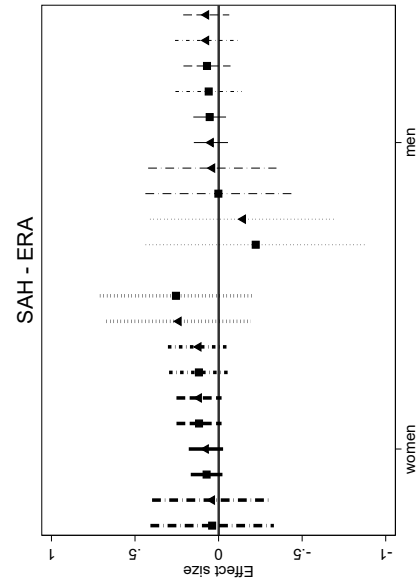
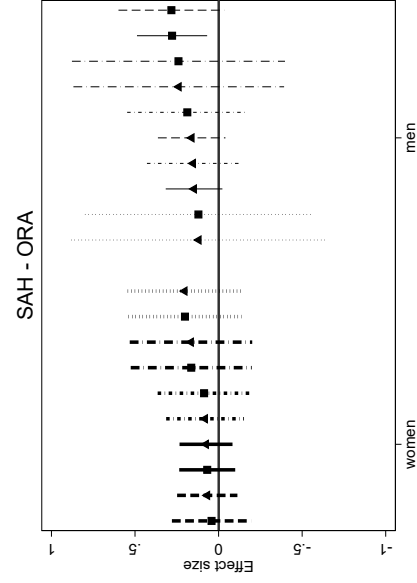












Appendix H: Specification curves analysis: high vs. low edu

	Low education								
	Both			ERA			ORA		
	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5
<i>Health behavior</i>									
Alcohol Excess	0.002 (0.034)	0.044 (0.102)	0.000 (0.186)	0.018 (0.045)	0.142 (0.211)	0.178 (0.395)	-0.013 (0.096)	-0.059 (0.241)	-0.381 (0.501)
No Alcohol	0.033 (0.035)	0.016 (0.105)	-0.016 (0.131)	0.024 (0.046)	0.035 (0.216)	0.103 (0.356)	0.005 (0.1)	-0.005 (0.248)	0.213 (0.385)
Ph. Activity	0.073 (0.038)	0.252 (0.132)	0.028 (0.173)	0.170 *** (0.05)	0.496 * (0.229)	-0.247 (0.405)	-0.044 (0.079)	0.308 (0.263)	0.092 (0.502)
Smoking	-0.020 (0.027)	0.069 (0.081)	0.050 (0.133)	-0.013 (0.036)	0.164 (0.168)	0.106 (0.324)	-0.066 (0.072)	0.087 (0.176)	0.325 (0.373)
<i>Risk factors</i>									
HbA1c	-0.042 (0.058)	-0.060 (0.181)	-0.307 (0.292)	0.002 (0.079)	-0.214 (0.383)	-0.551 (0.746)	-0.080 (0.137)	-0.455 (0.487)	-0.674 (0.848)
CHO/HDL	0.261 ** (0.101)	0.248 (0.314)	0.185 (0.569)	0.043 (0.137)	0.676 (0.667)	-1.057 (1.377)	0.449 * (0.221)	0.141 (0.728)	2.296 (1.583)
BMI	0.665 * (0.295)	0.643 (1.119)	1.073 (1.449)	0.974 * (0.39)	1.750 (1.979)	3.678 (3.166)	0.292 (0.696)	-0.369 (2.411)	1.802 (3.702)
WHR	0.006 (0.006)	0.041 (0.021)	0.003 (0.022)	0.016 * (0.007)	0.073 * (0.037)	0.020 (0.046)	-0.011 (0.013)	0.020 (0.043)	0.005 (0.057)
Diastolic BP	2.074 ** (0.803)	1.243 (2.769)	3.671 (4.062)	0.421 (1.057)	2.457 (4.897)	7.920 (9.027)	1.224 (2.326)	-2.074 (5.724)	8.390 (11.202)
Systolic BP	5.244 *** (1.514)	-4.049 (4.403)	1.290 (6.537)	-0.493 (1.957)	-3.368 (8.997)	-2.416 (17.81)	7.277 (4.466)	-13.242 (11.225)	-3.023 (20.537)
<i>Subjective health</i>									
SF12 mental	1.654 (0.883)	2.584 (2.739)	2.126 (3.462)	2.325 (1.26)	5.200 (5.043)	0.054 (8.52)	-0.193 (2.016)	3.944 (6.398)	7.198 (7.861)
SF12 physical	2.257 ** (0.86)	1.383 (2.76)	-0.817 (3.543)	1.974 (1.247)	0.352 (5.884)	-7.278 (7.58)	3.030 (1.609)	4.684 (6.431)	-1.533 (7.727)
Satisfactory health	0.079 * (0.036)	0.059 (0.089)	0.028 (0.132)	0.053 (0.041)	0.138 (0.185)	-0.147 (0.284)	0.142 (0.081)	0.206 (0.211)	0.121 (0.346)

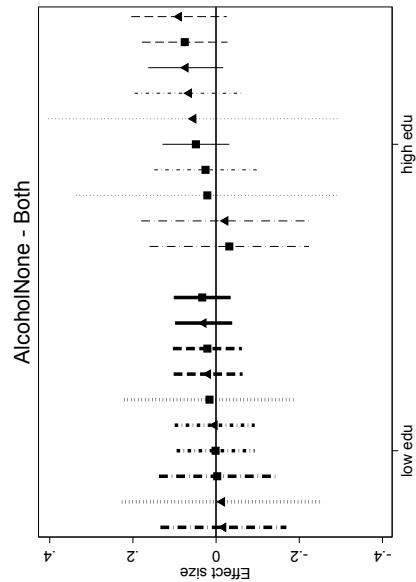
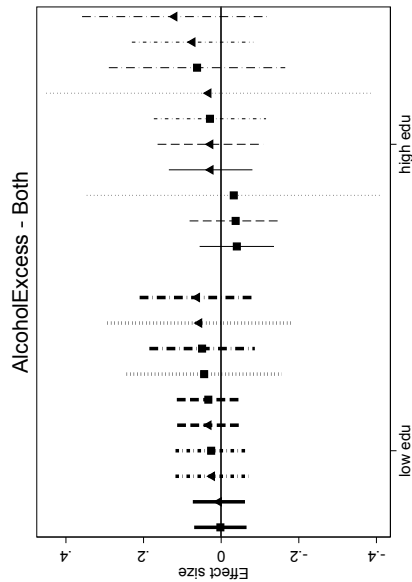
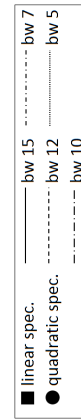
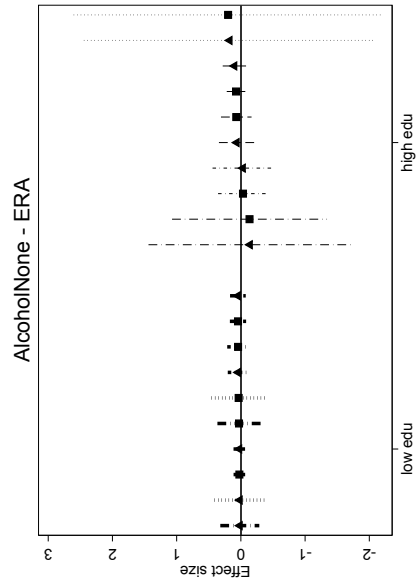
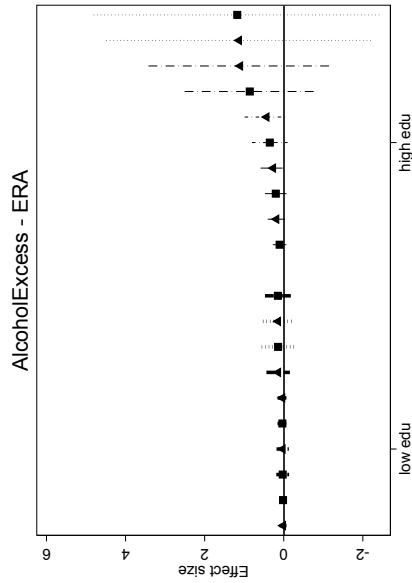
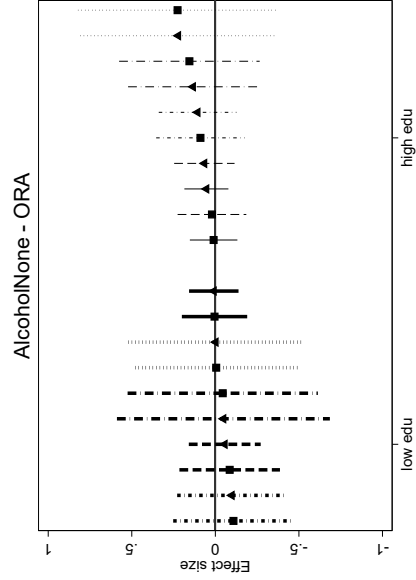
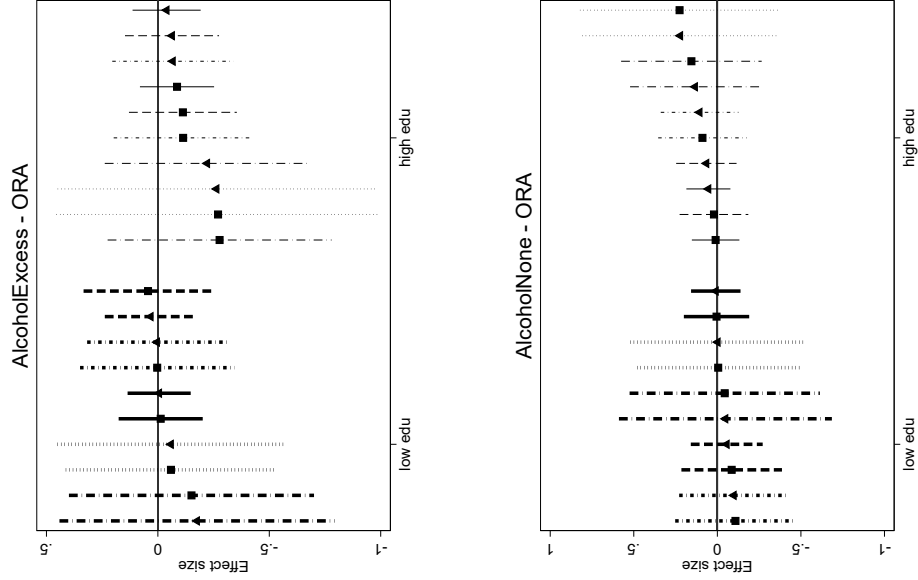
Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic.
Significance: * p<.05; ** p<.01; ***p<.001

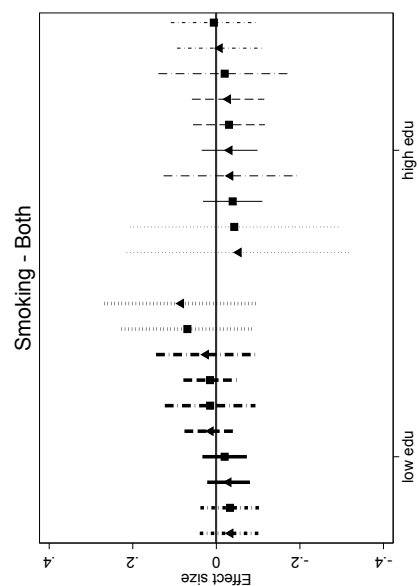
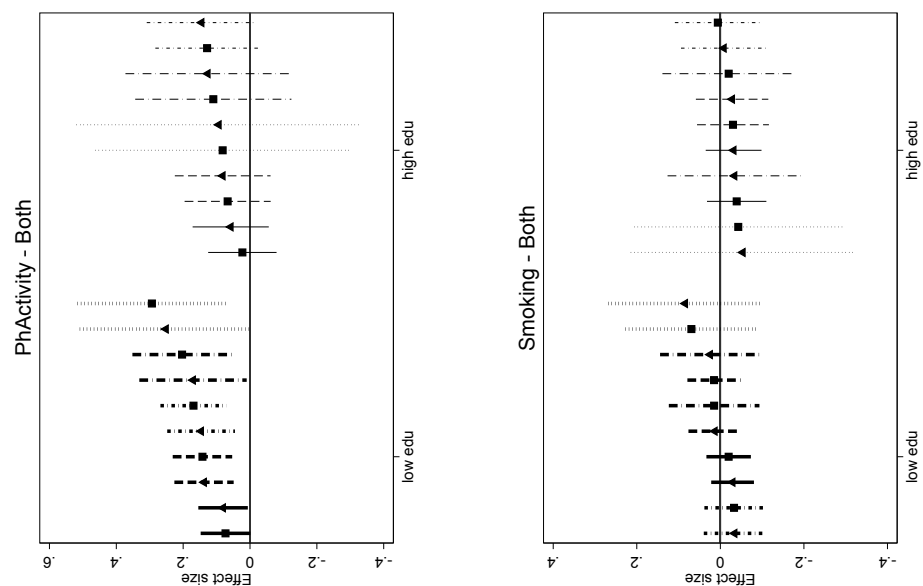
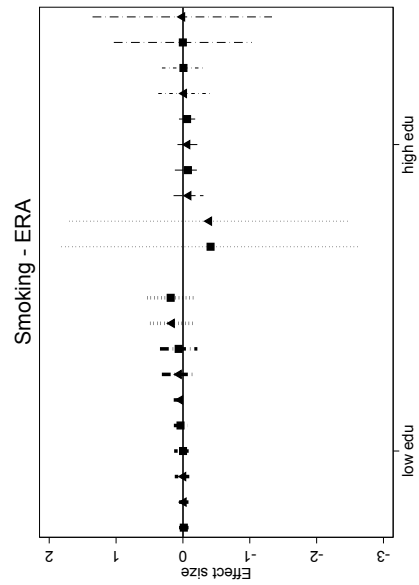
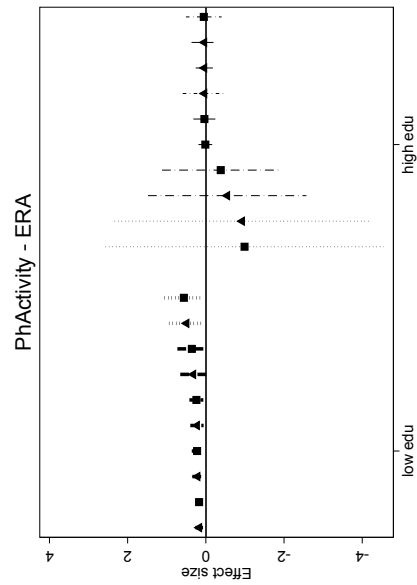
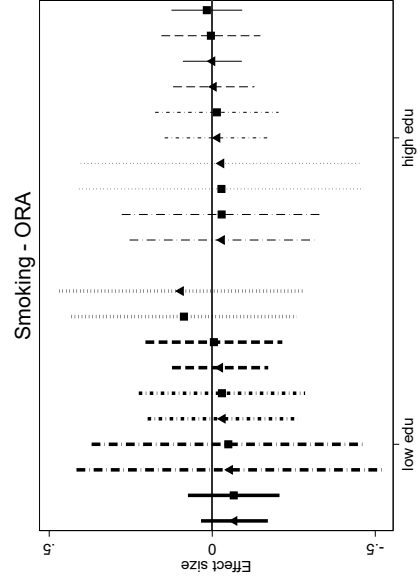
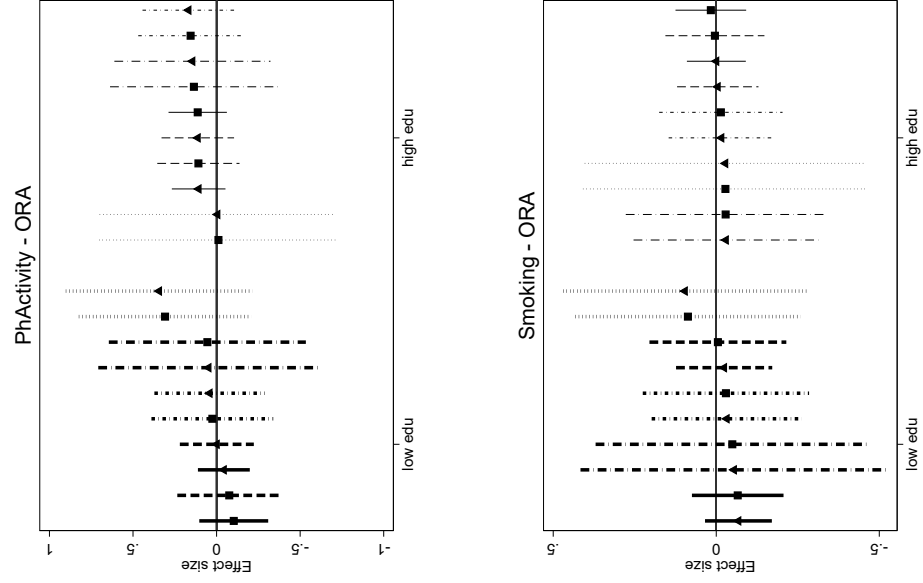
Table H.1: sensitivity analysis for different bandwidths (bw), education stratified results (low education).

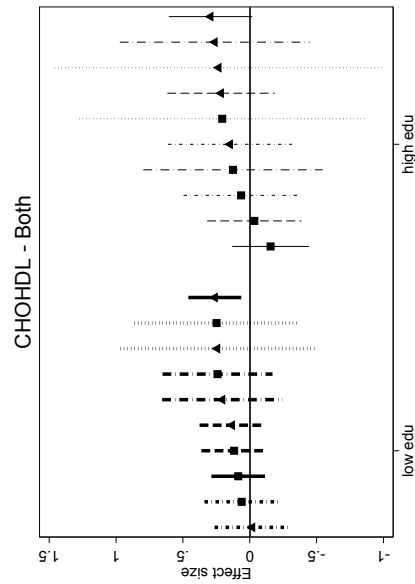
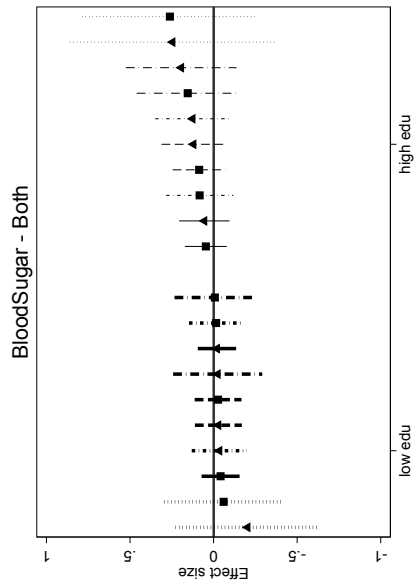
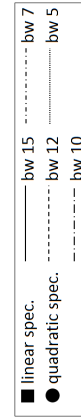
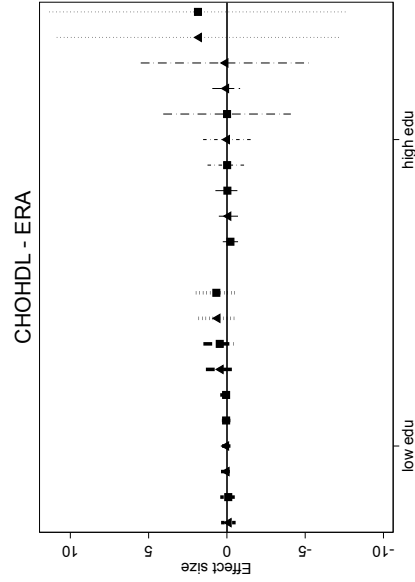
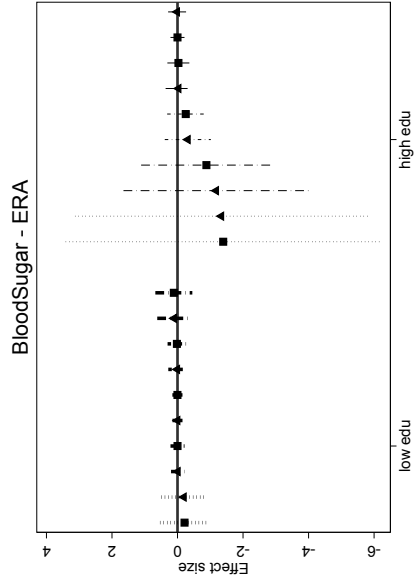
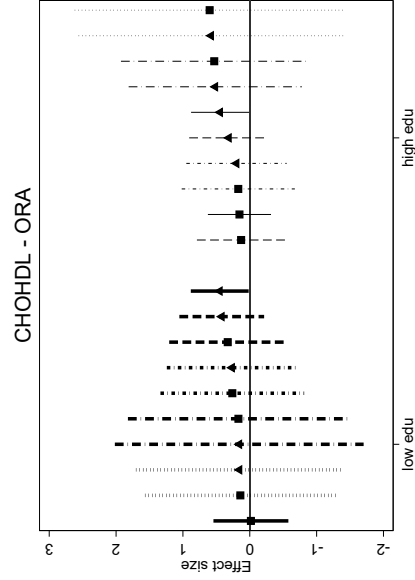
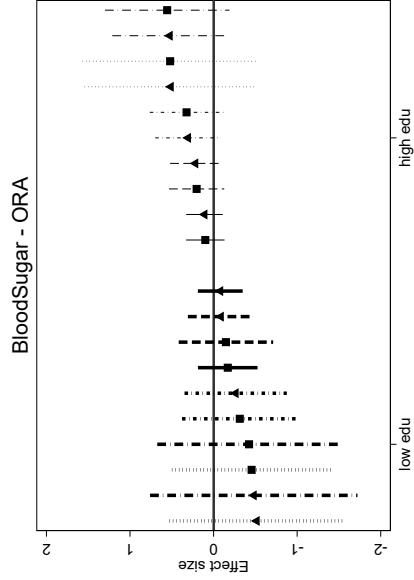
	High education								
	Both			ERA			ORA		
	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5	bw 15	bw 10	bw 5
<i>Health behavior</i>									
Alcohol Excess	-0.040 (0.049)	0.029 (0.074)	-0.032 (0.193)	0.104 (0.088)	0.352 (0.23)	1.130 (1.713)	-0.086 (0.085)	-0.067 (0.139)	-0.270 (0.37)
No Alcohol	0.049 (0.041)	0.025 (0.063)	0.021 (0.161)	0.076 (0.074)	-0.033 (0.198)	0.175 (1.158)	0.010 (0.073)	0.089 (0.135)	0.226 (0.304)
Ph. Activity	0.023 (0.052)	0.128 (0.079)	0.082 (0.195)	0.013 (0.09)	0.053 (0.233)	-0.926 (1.663)	0.113 (0.089)	0.155 (0.16)	-0.011 (0.365)
Smoking	-0.039 (0.036)	0.006 (0.052)	-0.043 (0.127)	-0.062 (0.062)	-0.008 (0.164)	-0.393 (1.069)	0.017 (0.055)	-0.014 (0.097)	-0.028 (0.223)
<i>Risk factors</i>									
HbA1c	0.046 (0.064)	0.083 (0.103)	0.262 (0.268)	0.001 (0.109)	-0.251 (0.289)	-1.336 (2.278)	0.099 (0.117)	0.324 (0.225)	0.520 (0.535)
CHO/HDL	0.294 (0.159)	0.065 (0.22)	0.206 (0.546)	-0.097 (0.312)	-0.014 (0.639)	1.779 (4.635)	0.154 (0.241)	0.172 (0.432)	0.600 (1.03)
BMI	0.366 (0.454)	-0.007 (0.617)	-0.234 (1.666)	0.709 (0.677)	2.528 (1.862)	12.426 (16.344)	-0.233 (0.629)	-0.384 (1.124)	0.828 (3.172)
WHR	-0.005 (0.008)	-0.012 (0.011)	-0.017 (0.03)	0.002 (0.013)	0.024 (0.036)	0.161 (0.268)	-0.015 (0.012)	-0.023 (0.021)	-0.013 (0.058)
Diastolic BP	2.291 (1.234)	0.017 (1.657)	1.074 (4.192)	1.002 (2.546)	6.247 (5.249)	59.400 (64.28)	2.466 (1.709)	-1.076 (3.396)	4.221 (7.988)
Systolic BP	5.581 (2.285)	* -0.932 (3.025)	-0.944 (7.811)	-0.334 (3.545)	5.564 (9.056)	20.987 (56.764)	5.723 (3.208)	-3.820 (6.463)	-3.872 (15.114)
<i>Subjective health</i>									
SF12 mental	0.896 (1.059)	0.855 (1.516)	-0.475 (3.296)	1.715 (1.874)	3.628 (4.863)	-11.706 (27.164)	0.464 (1.676)	-0.260 (2.853)	1.814 (5.787)
SF12 physical	0.529 (1.008)	1.950 (1.526)	2.224 (3.41)	1.207 (1.769)	5.536 (4.911)	9.203 (29.327)	1.214 (1.741)	0.513 (2.874)	2.130 (6.2)
Satisfactory health	0.064 (0.038)	0.113 (0.057)	* 0.019 (0.135)	0.104 (0.066)	0.344 (0.178)	-0.250 (0.968)	0.030 (0.082)	-0.041 (0.117)	0.127 (0.253)

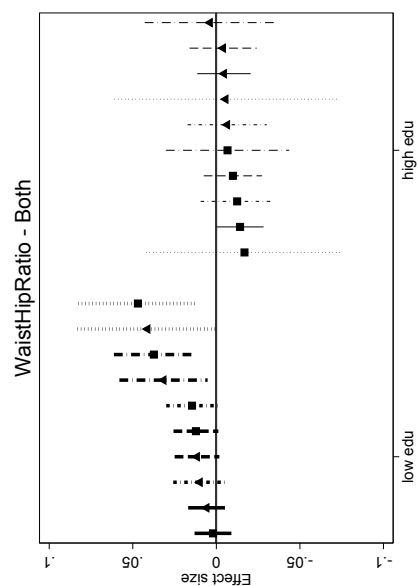
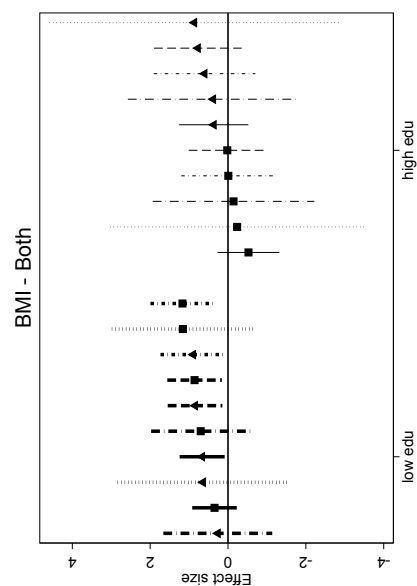
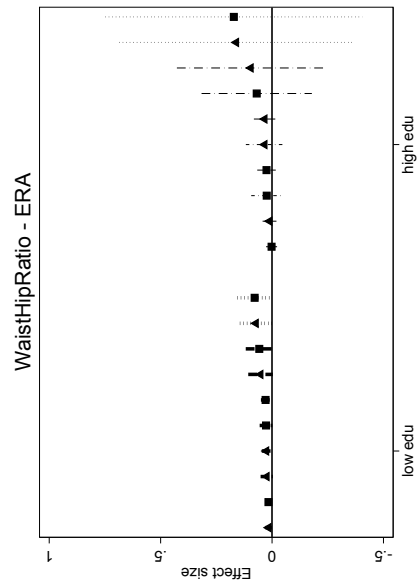
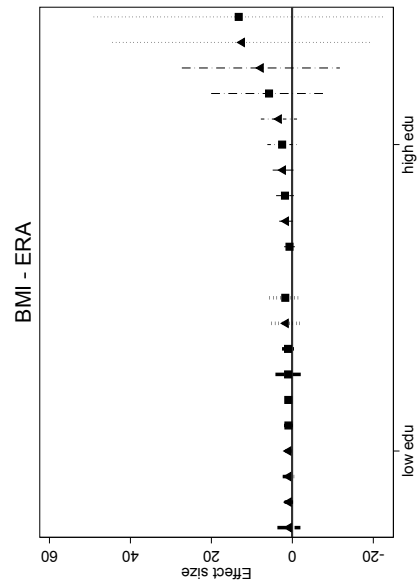
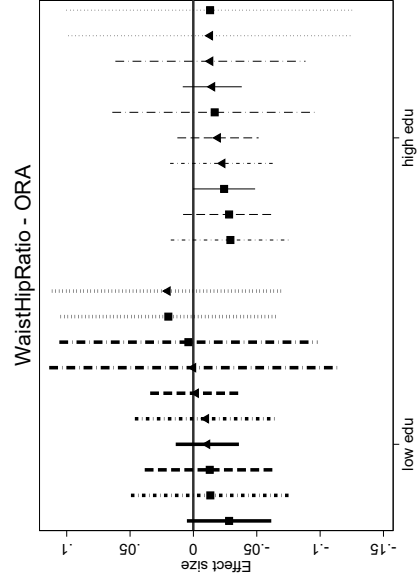
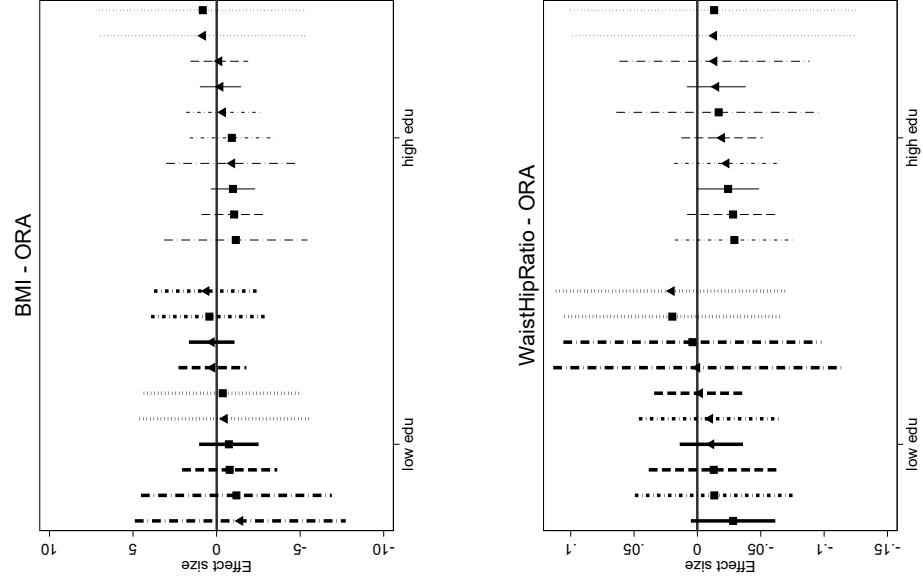
Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic. Significance: * p<.05; ** p<.01; ***p<.001

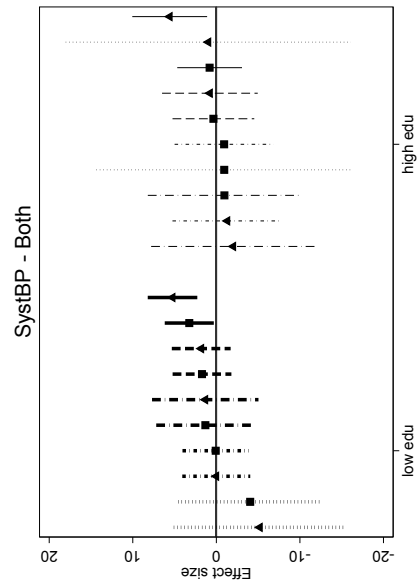
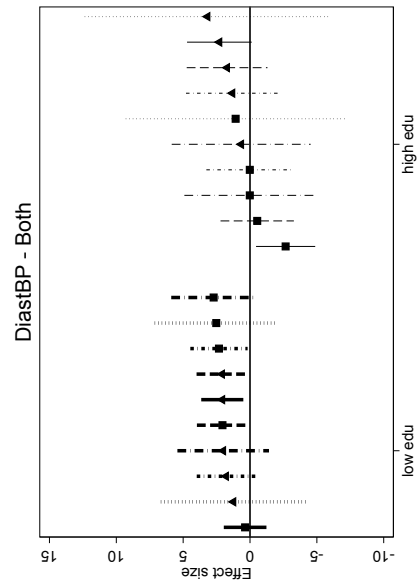
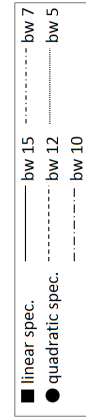
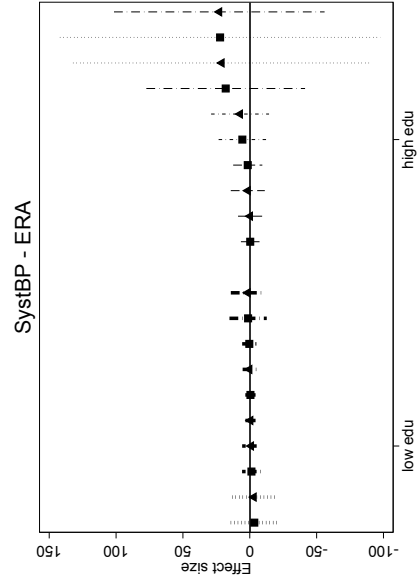
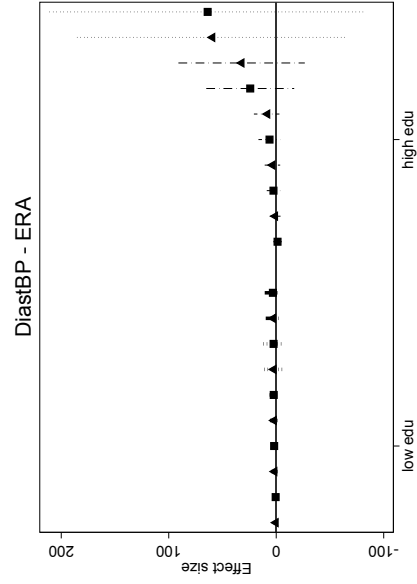
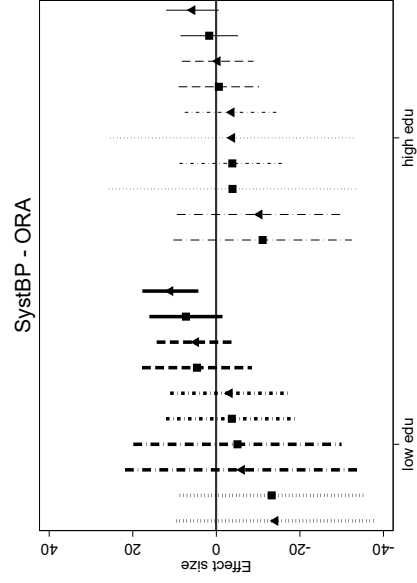
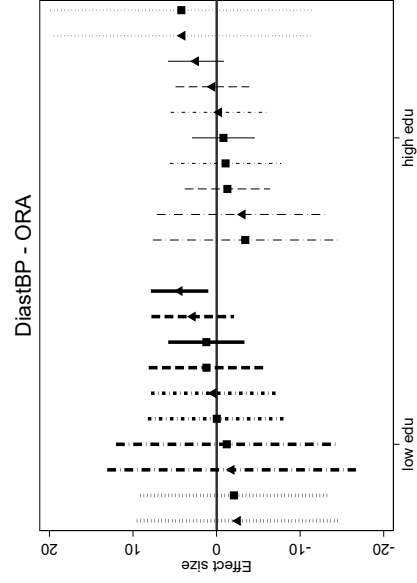
Table H.2: sensitivity analysis for different bandwidths (bw), education stratified results (high education).

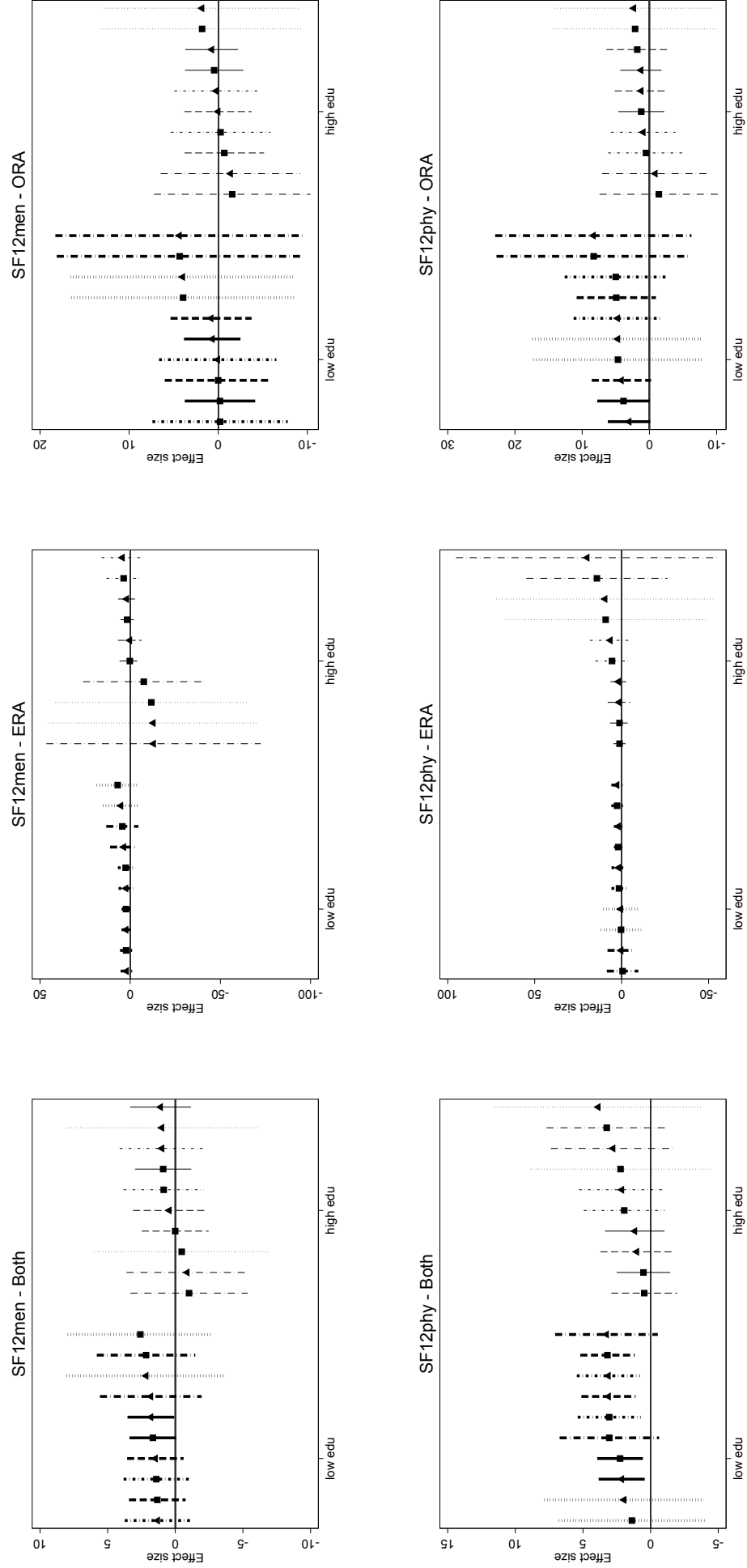


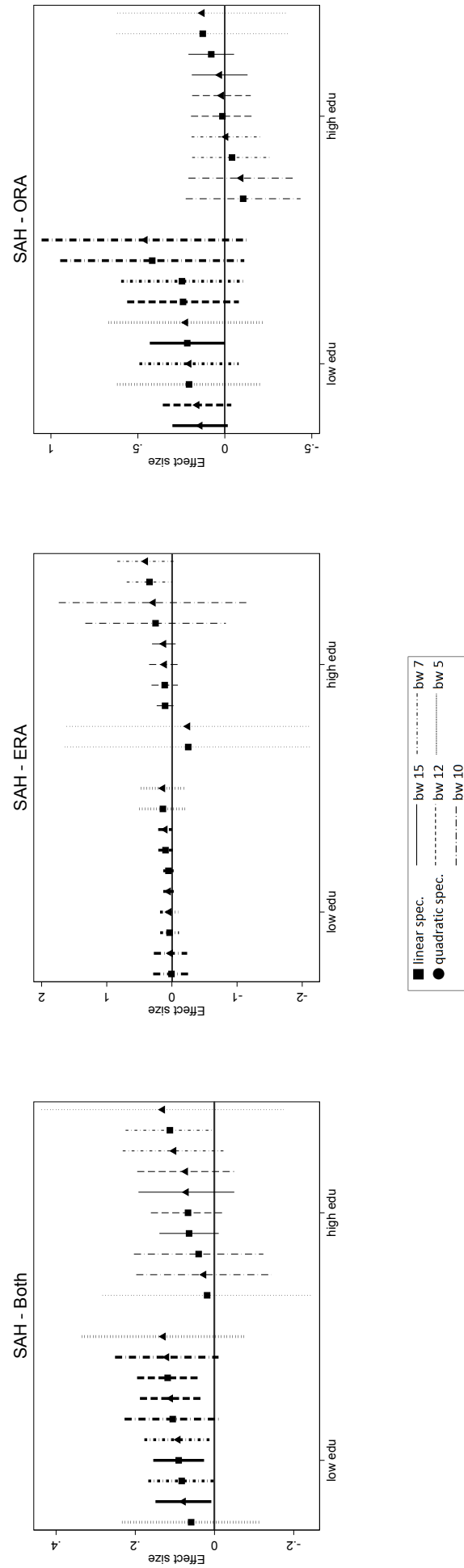












Appendix I: Only employed and retired individuals

	Both				ERA			ORA		
	<i>Effect (SE)</i>	N	Fstat	Hansen	<i>Effect (SE)</i>	N	Fstat	<i>Effect (SE)</i>	N	Fstat
<i>Health behavior</i>										
Alcohol Excess	0.001 (0.031)	9257	1390	0.055	0.026 (0.036)	9064	885	-0.087 (0.148)	7679	64
No Alcohol	0.047 (0.029)	9246	1390	0.509	0.029 (0.034)	9053	884	0.108 (0.142)	7669	65
Ph. Activity	0.075 * (0.034)	9246	1386	0.467	0.117 ** (0.039)	9053	881	0.074 (0.159)	7670	65
Smoking	-0.036 (0.024)	9254	1390	0.251	-0.019 (0.028)	9061	884	-0.104 (0.069)	7676	193
<i>Risk factors</i>										
HbA1c	-0.005 (0.047)	9053	1374	0.486	0.005 (0.057)	8861	870	-0.017 (0.169)	7490	191
CHO/HDL	0.148 (0.092)	9137	1350	0.032	-0.082 (0.11)	8945	867	0.627 * (0.286)	7575	197
BMI	0.641 * (0.26)	9187	1370	0.472	0.844 ** (0.303)	8995	894	-0.042 (0.894)	7613	191
WHR	-0.013 * (0.005)	9228	1364	0.001	-0.002 (0.006)	9037	891	-0.066 *** (0.017)	7651	193
Diastolic BP	1.411 * (0.709)	9230	1360	0.099	0.080 (0.833)	9040	884	1.802 (3.431)	7653	64
Systolic BP	4.825 *** (1.315)	9239	1363	0.071	0.577 (1.511)	9047	882	7.900 (6.559)	7661	64
<i>Subjective health</i>										
SF12 mental	1.310 (0.721)	6315	1114	0.847	1.044 (0.857)	6151	637	2.276 (2.638)	5133	76
SF12 physical	0.971 (0.713)	6315	1114	0.254	0.932 (0.858)	6151	637	3.120 (2.003)	5133	177
Satisfactory health	0.064 * (0.03)	8753	1152	0.176	0.050 (0.031)	8746	853	0.182 (0.099)	7201	142

Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC) (Appendix 2), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic. Hansen: Sargan-Hansen test of overidentifying restrictions, p-value.
Significance: * p<.05; ** p<.01; ***p<.001; in bold: significant coefficients after Romano-Wolf (2016) correction for multiple testing.

Table I.1: Results of estimation focusing only on employed and retired individuals

	Male			Female		
	Both	ERA	ORA	Both	ERA	ORA
<i>Health behavior</i>						
Alcohol Excess	-0.010 (0.046)	0.058 (0.056)	-0.102 (0.122)	0.012 (0.039)	0.000 (0.043)	0.186 (0.168)
No Alcohol	0.062 (0.034)	0.060 (0.043)	0.096 (0.135)	0.011 (0.046)	-0.008 (0.05)	-0.123 (0.196)
Ph. Activity	0.075 (0.047)	0.067 (0.057)	0.246 (0.129)	0.102 * (0.047)	0.170 ** (0.052)	-0.275 (0.198)
Smoking	-0.044 (0.035)	-0.040 (0.044)	-0.039 (0.127)	-0.015 (0.031)	0.005 (0.034)	-0.191 (0.122)
<i>Risk factors</i>						
HbA1c	-0.086 (0.072)	-0.035 (0.092)	-0.239 (0.207)	0.074 (0.059)	0.047 (0.067)	0.337 (0.307)
CHO/HDL	0.228 (0.136)	-0.198 (0.17)	0.831 (0.488)	0.243 * (0.11)	0.102 (0.125)	0.421 (0.495)
BMI	0.420 (0.328)	0.514 (0.401)	0.243 (0.892)	1.053 ** (0.404)	1.300 ** (0.453)	-0.409 (1.974)
WHR	-0.008 (0.005)	-0.002 (0.006)	-0.023 (0.014)	-0.003 (0.006)	0.004 (0.006)	-0.046 (0.025)
Diastolic BP	1.031 (1.019)	-0.092 (1.272)	3.695 (2.693)	2.387 ** (0.924)	0.656 (1.011)	13.288 ** (4.249)
Systolic BP	4.432 * (1.839)	1.130 (2.213)	5.963 (5.061)	5.652 ** (1.78)	0.649 (1.942)	30.362 *** (8.598)
<i>Subjective health</i>						
SF12 mental	1.373 (0.942)	0.604 (1.222)	4.730 (2.806)	1.778 (1.074)	1.719 (1.189)	1.311 (5.675)
SF12 physical	0.762 (0.982)	0.009 (1.276)	4.211 (2.399)	1.670 (1.022)	2.027 (1.149)	3.096 (3.669)
Satisfactory health	0.048 (0.042)	0.010 (0.047)	0.238 * (0.113)	0.090 * (0.04)	0.084 * (0.041)	0.122 (0.2)

Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC) (eAppendix 2), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic.

Significance: * p<.05; ** p<.01; ***p<.001; in bold: significant coefficients after Romano-Wolf (2016) correction for multiple testing.

Table I.2: Results of estimation focusing only on employed and retired individuals, sex stratified

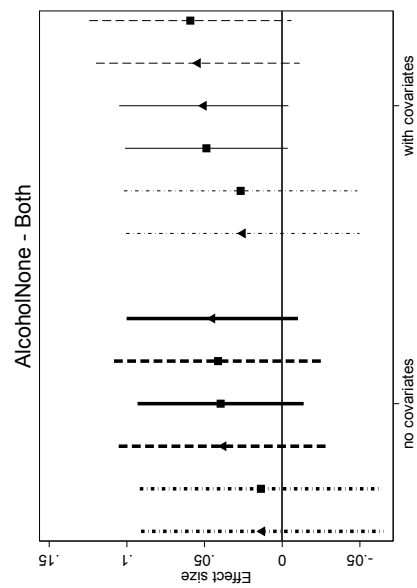
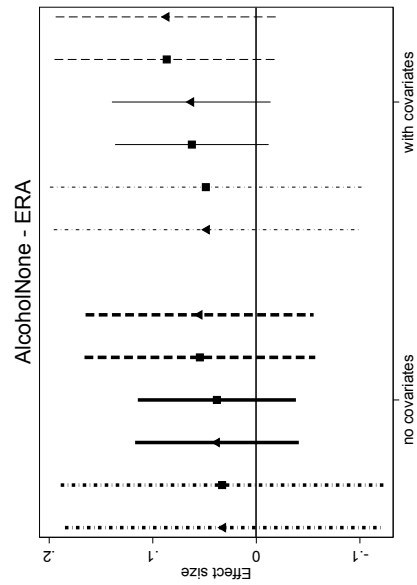
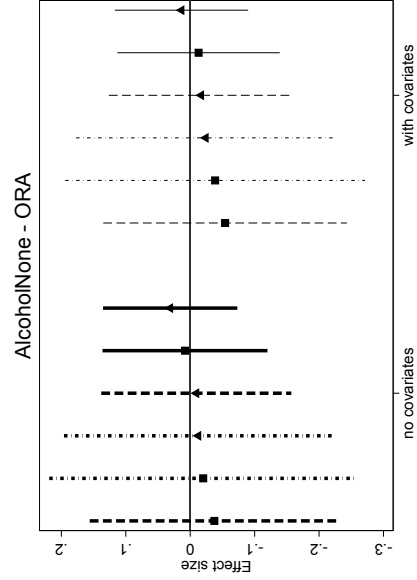
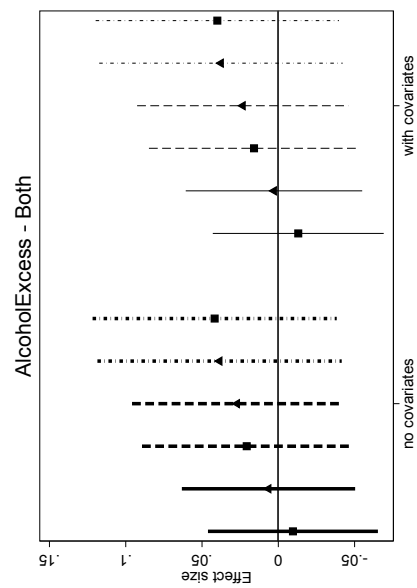
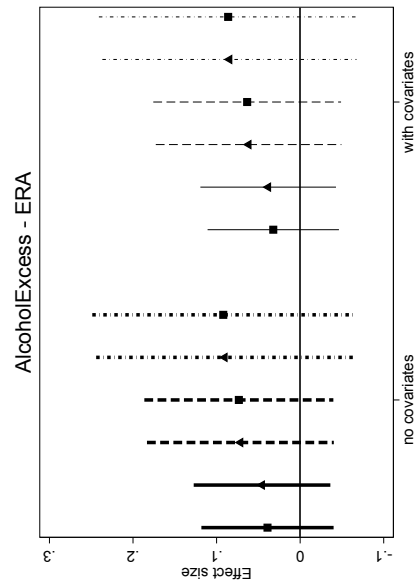
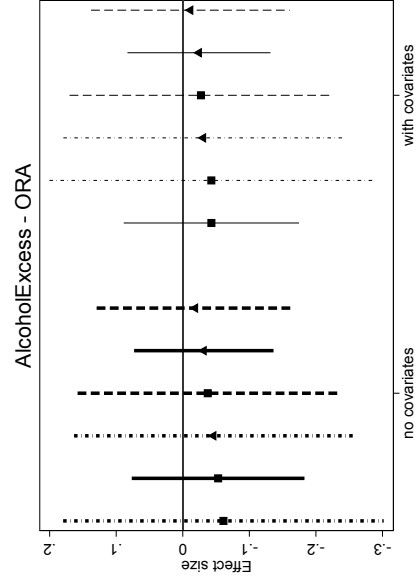
	Low edu			High edu		
	Both	ERA	ORA	Both	ERA	ORA
<i>Health behavior</i>						
Alcohol Excess	0.000 (0.036)	0.007 (0.04)	-0.072 (0.434)	-0.005 (0.055)	0.094 (0.04)	-0.047 (0.434)
No Alcohol	0.020 (0.036)	0.003 (0.04)	0.096 (0.434)	0.066 (0.046)	0.067 (0.04)	0.049 (0.434)
Ph. Activity	0.146 *** (0.04)	0.190 *** (0.04)	-0.027 (0.434)	0.018 (0.058)	-0.021 (0.04)	0.156 (0.434)
Smoking	-0.019 (0.029)	-0.003 (0.04)	-0.200 (0.434)	-0.075 (0.041)	-0.084 (0.04)	-0.009 (0.434)
<i>Risk factors</i>						
HbA1c	-0.016 (0.061)	-0.002 (0.04)	-0.296 (0.434)	0.054 (0.071)	-0.006 (0.04)	0.174 (0.434)
CHO/HDL	0.082 (0.111)	-0.092 (0.04)	0.001 (0.434)	0.245 (0.182)	-0.215 (0.04)	-0.038 (0.434)
BMI	0.602 * (0.307)	0.783 * (0.04)	-0.506 (0.434)	-0.312 (0.454)	0.279 (0.04)	0.144 (0.434)
WHR	-0.008 (0.006)	-0.001 (0.04)	-0.099 ** (0.434)	-0.016 (0.009)	-0.010 (0.04)	-0.037 * (0.434)
Diastolic BP	0.973 (0.828)	-0.331 (0.04)	11.184 * (0.434)	2.052 (1.413)	1.818 (0.04)	1.112 (0.434)
Systolic BP	3.733 * (1.553)	-0.149 (0.04)	21.938 * (0.434)	1.219 (2.223)	2.092 (0.04)	2.706 (0.434)
<i>Subjective health</i>						
SF12 mental	1.436 (0.897)	0.857 (0.04)	4.472 (0.434)	1.434 (1.149)	1.992 (0.04)	0.776 (0.434)
SF12 physical	1.373 (0.907)	1.358 (0.04)	6.063 (0.434)	0.358 (1.101)	1.222 (0.04)	1.054 (0.434)
Satisfactory health	0.073 * (0.035)	0.049 (0.04)	0.304 (0.434)	0.067 (0.043)	0.076 (0.04)	0.062 (0.434)

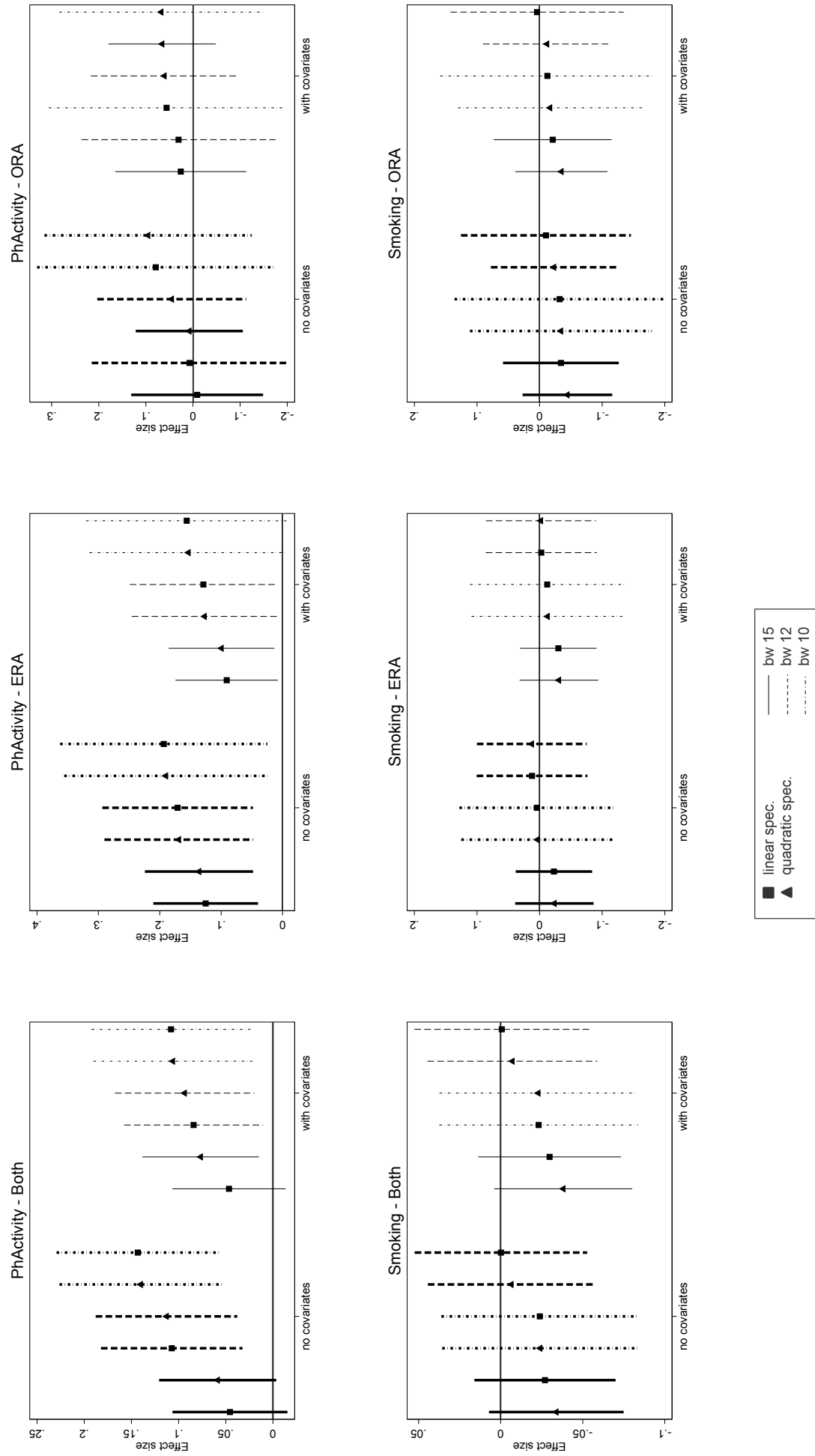
Notes: Fuzzy regression discontinuity design second stage coefficients. Cluster-robust standard errors in parentheses. Both: model including both cutoffs as instruments; ERA: model including only the early retirement cutoff (60) as instrument; ORA: model including only the regular retirement cutoff (65) as instrument. Choice of the age polynomial (linear or quadratic) was based on the Akaike-Information Criterion (AIC) (eAppendix 2), only the results of the preferred specification are reported here. Fstat: Kleibergen-Paap Wald F-statistic.

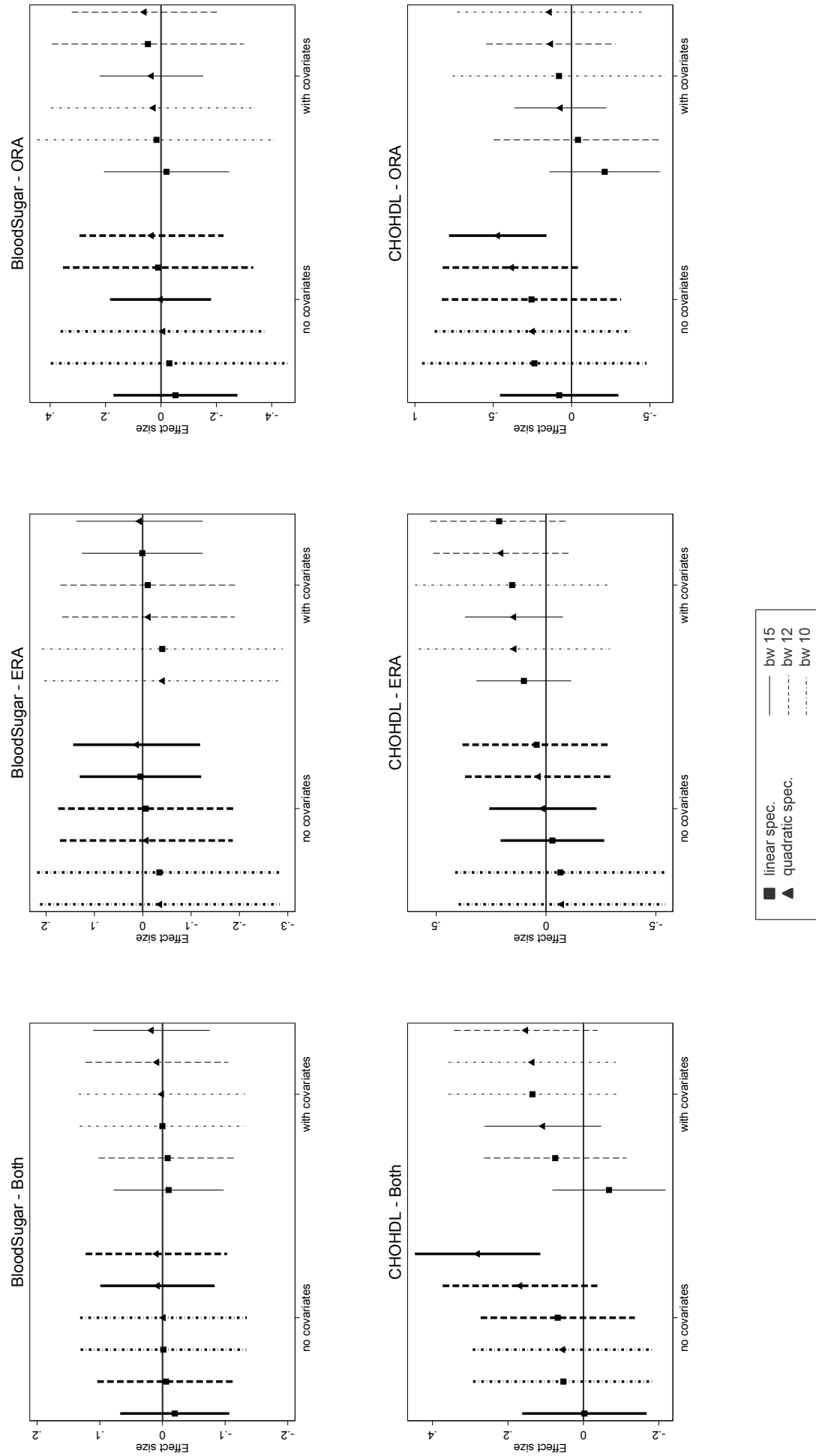
Significance: * $p < .05$; ** $p < .01$; *** $p < .001$; in bold: significant coefficients after Romano-Wolf (2016) correction for multiple testing.

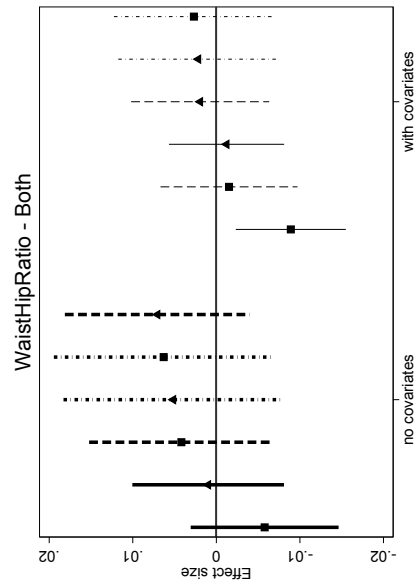
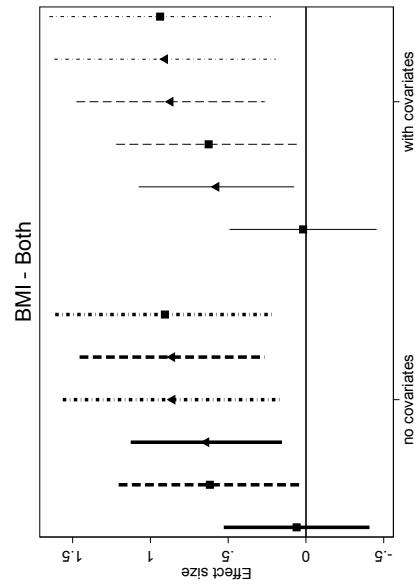
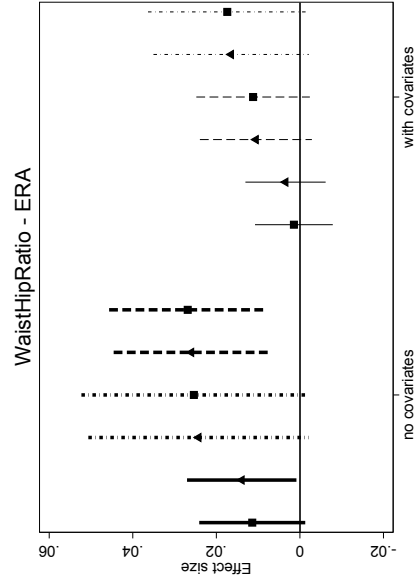
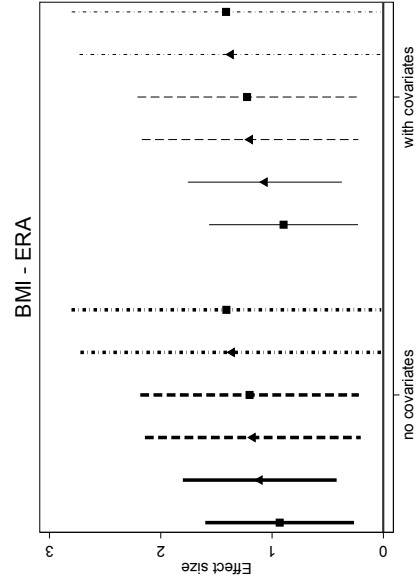
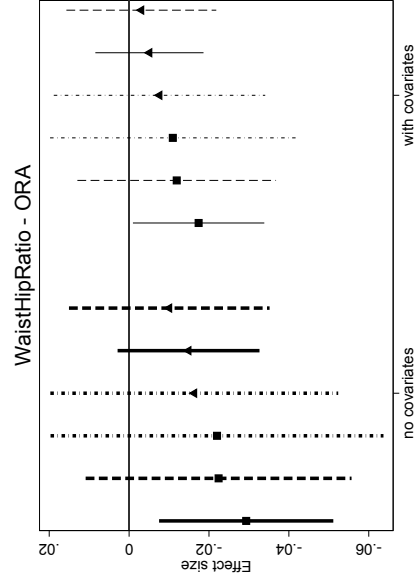
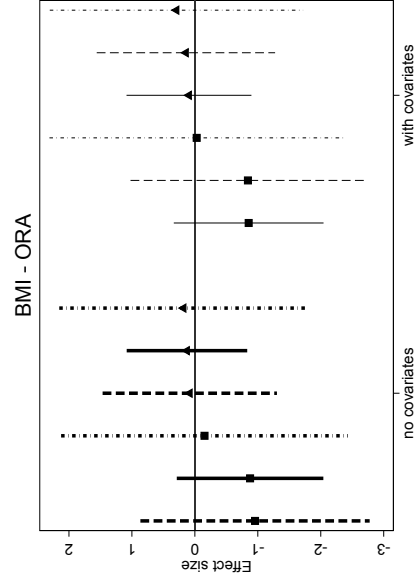
Table I.3: Results of estimation focusing only on employed and retired individuals, education stratified

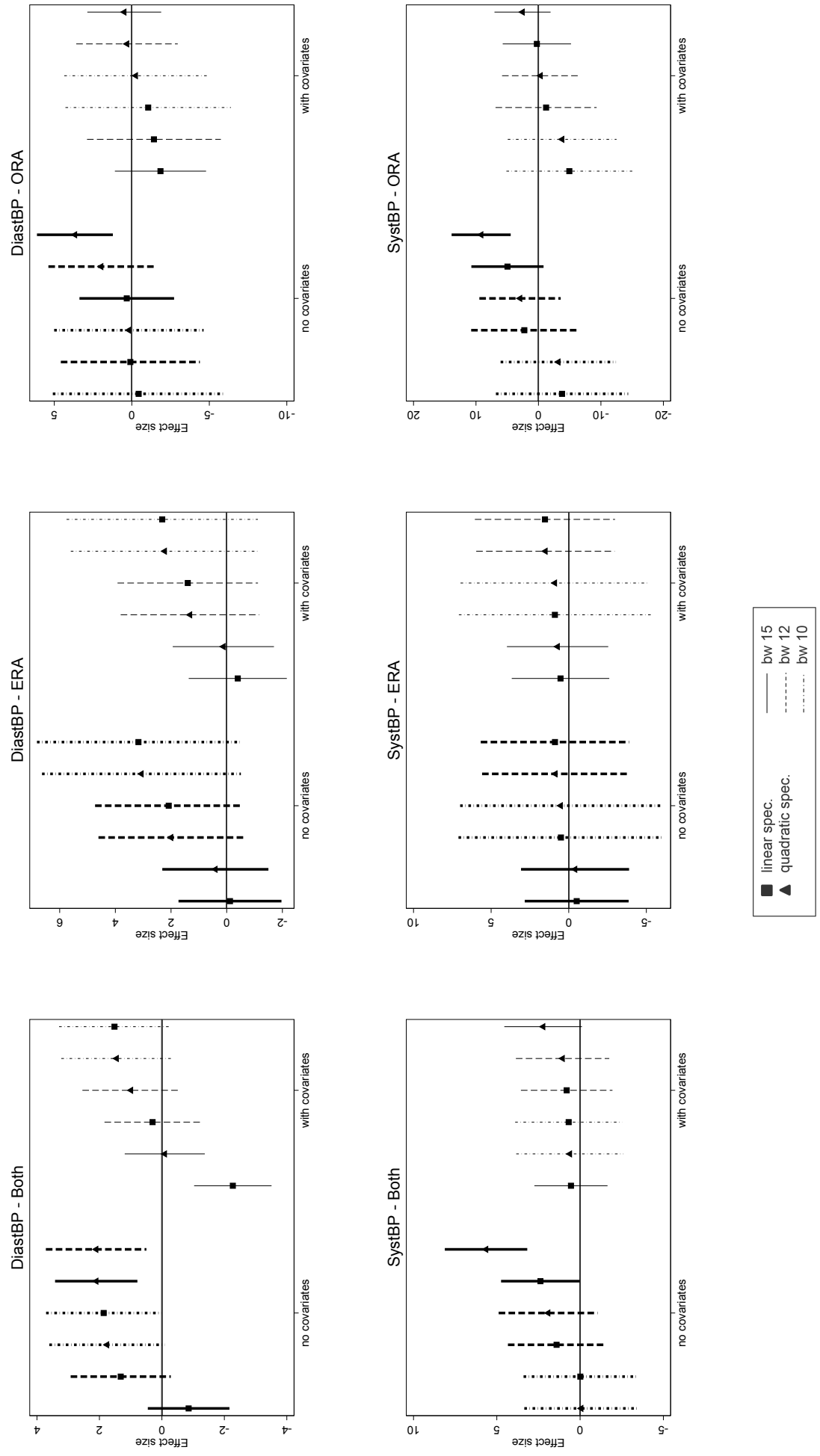
Appendix J: Inclusion of covariates

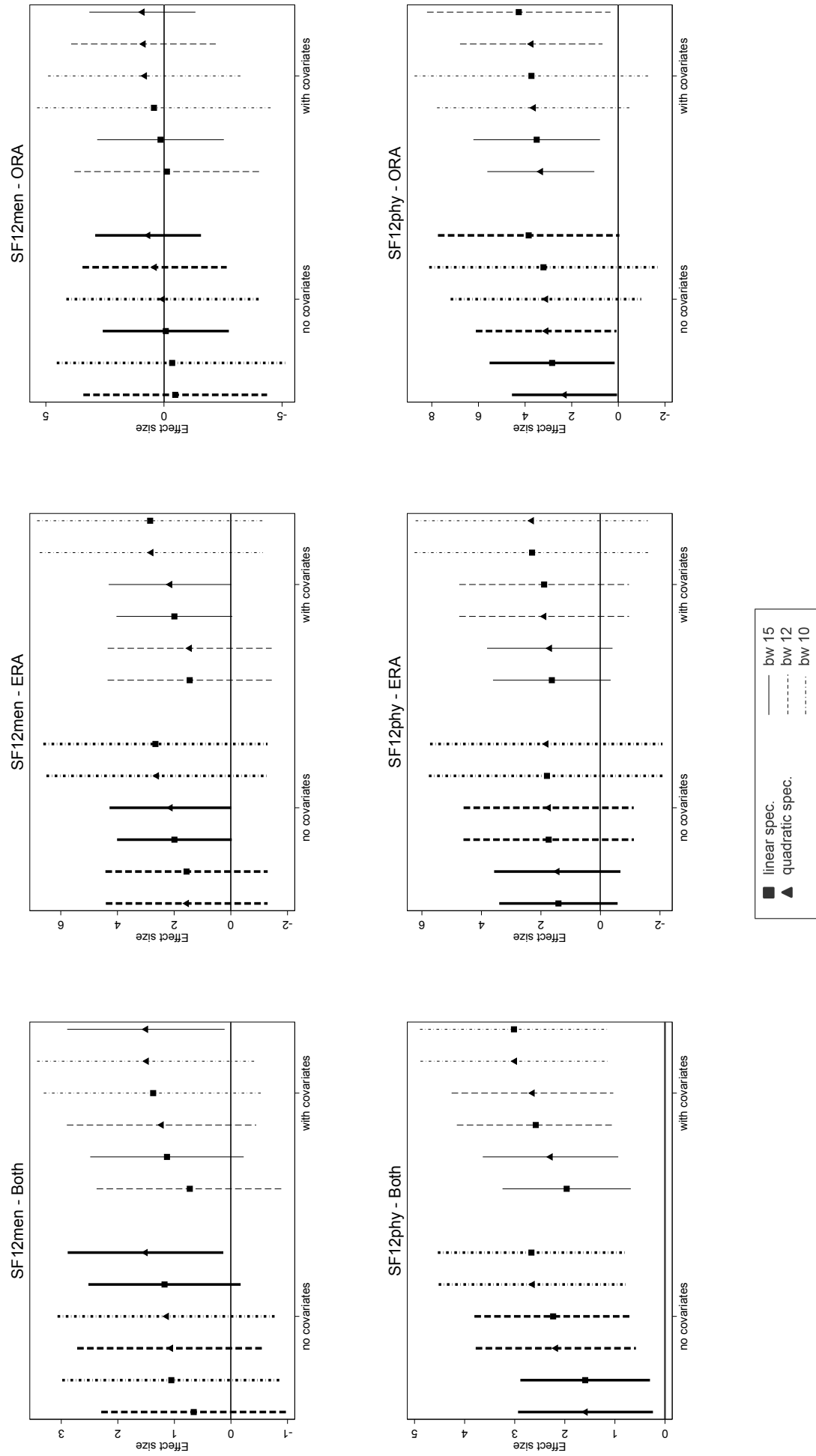


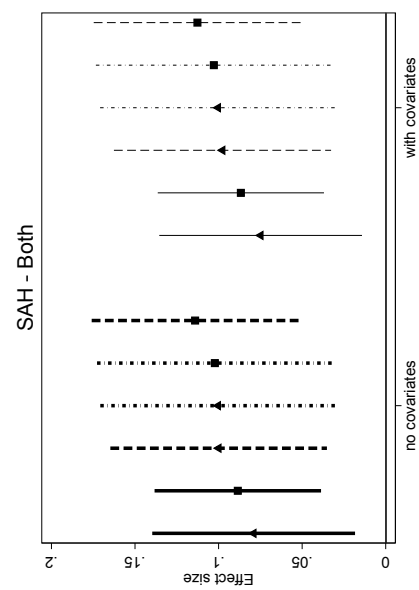
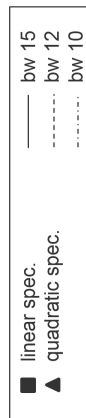
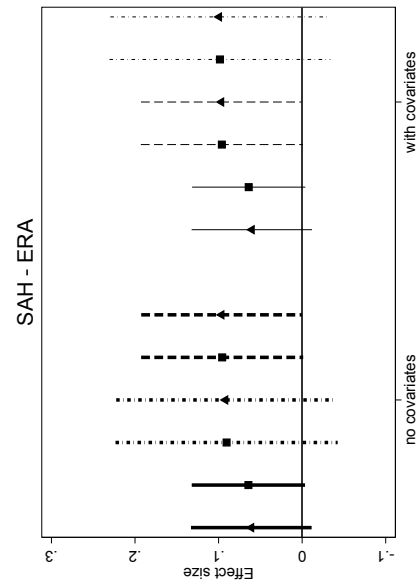
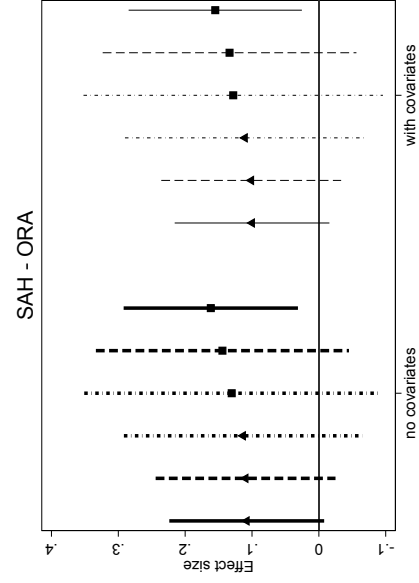




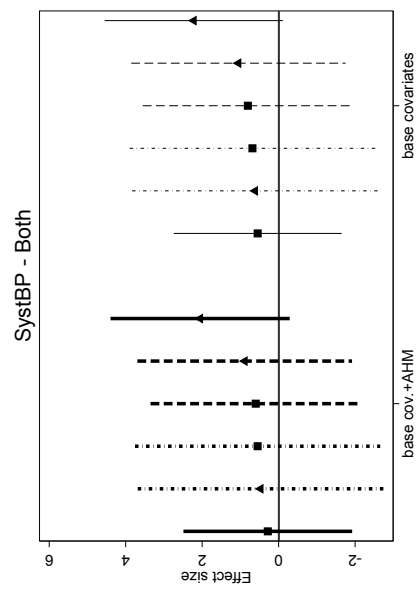
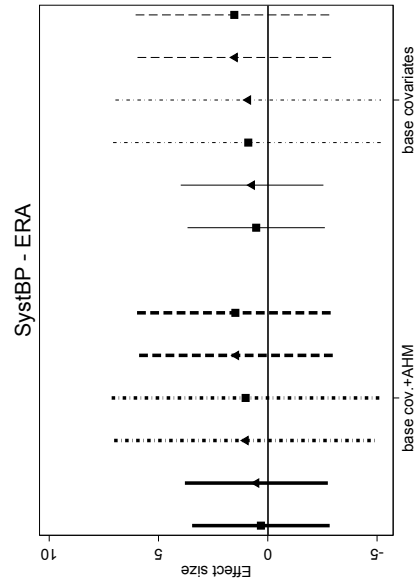
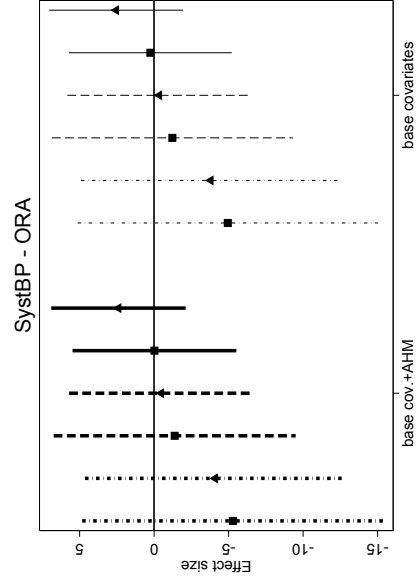
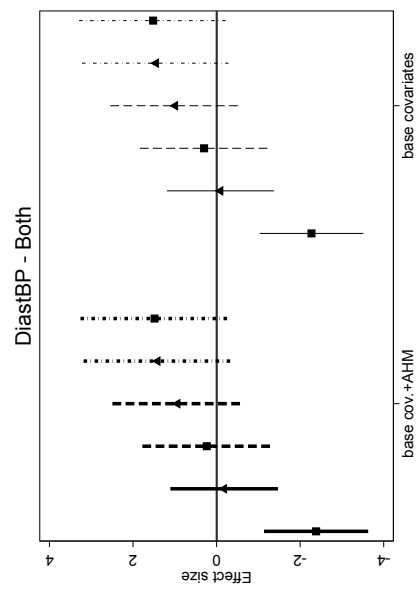
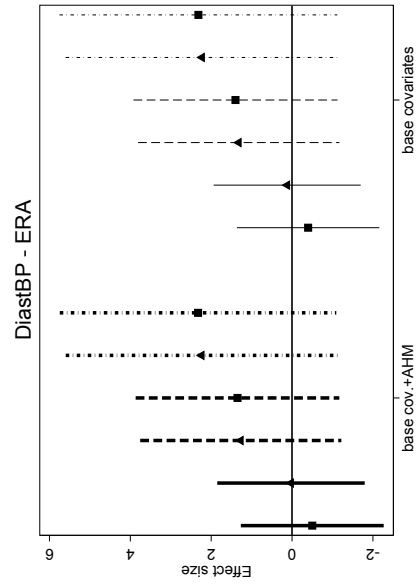
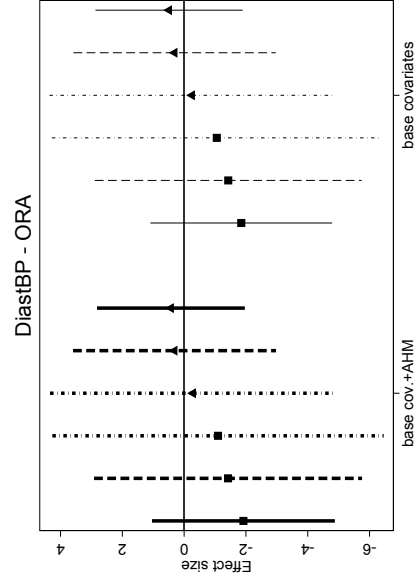




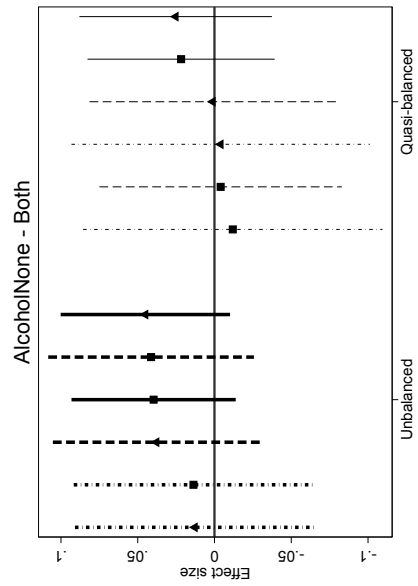
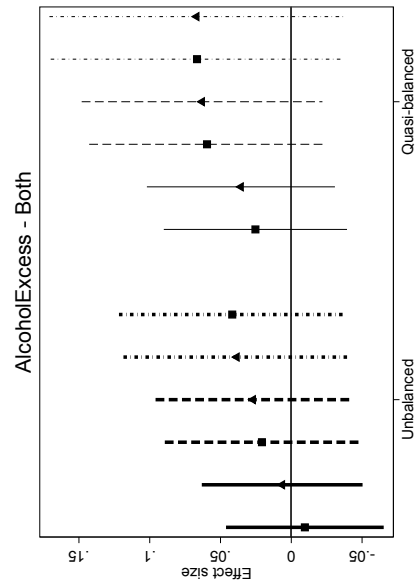
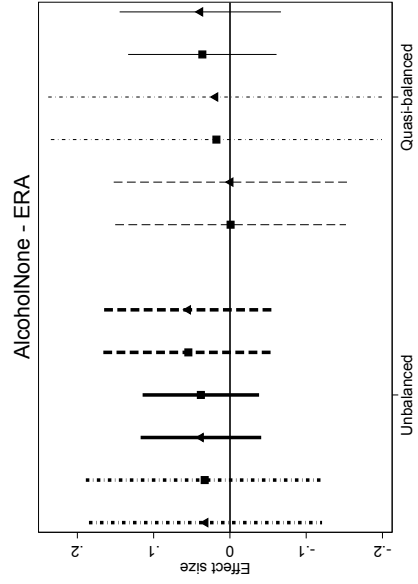
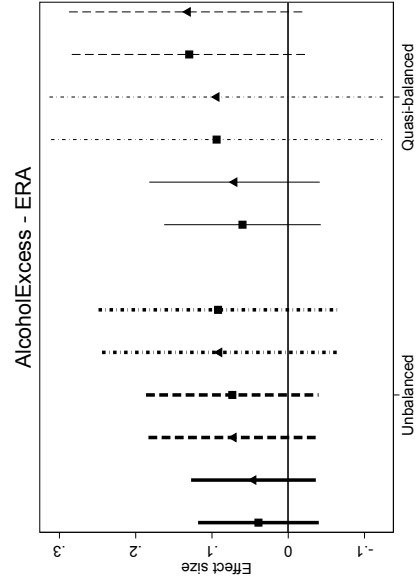
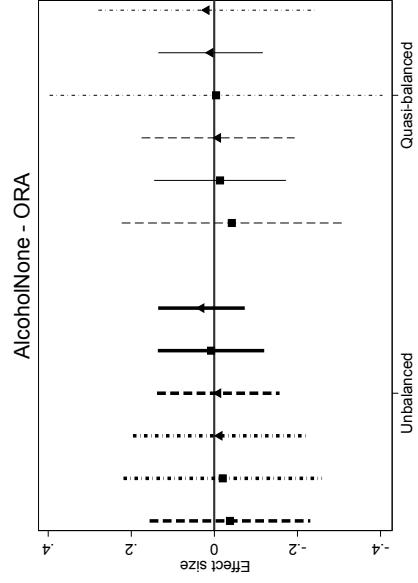
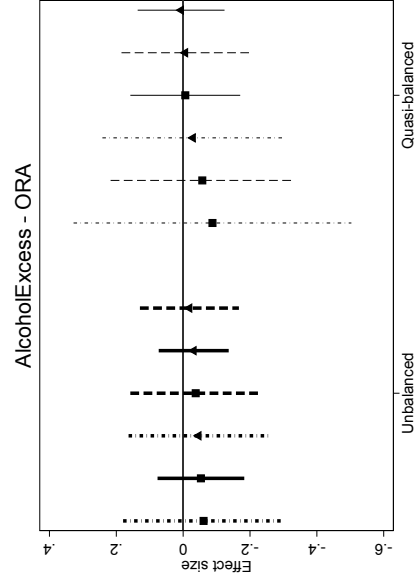


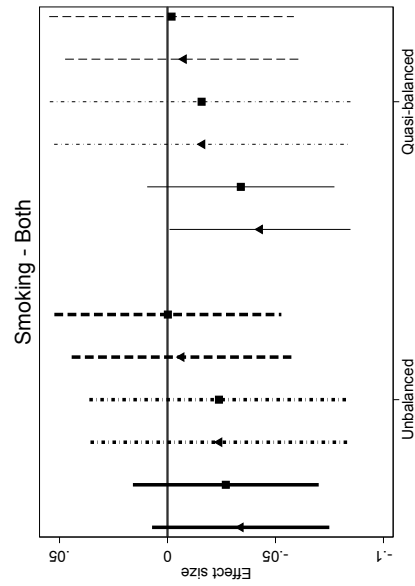
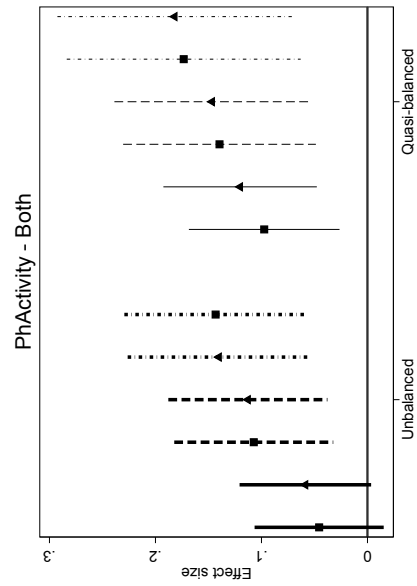
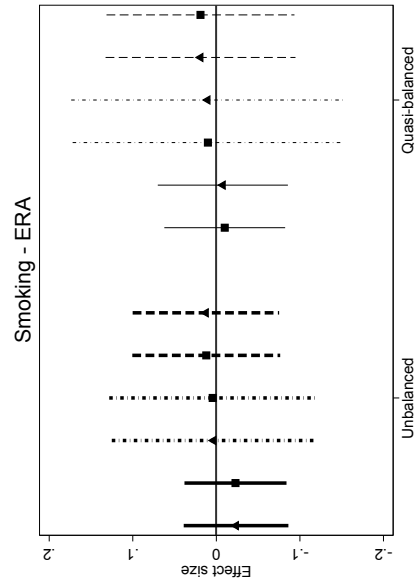
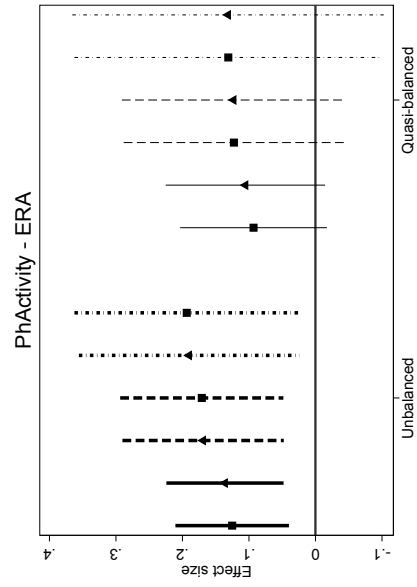
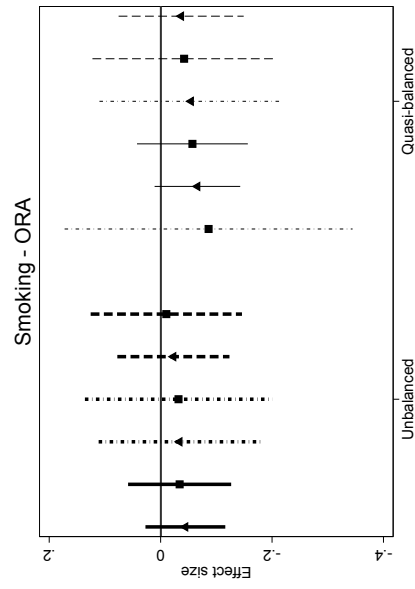
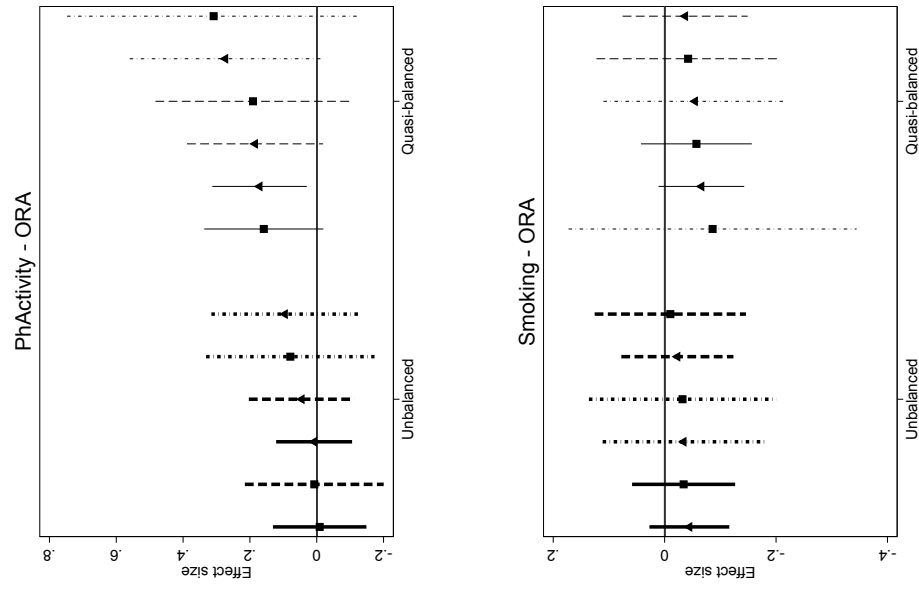


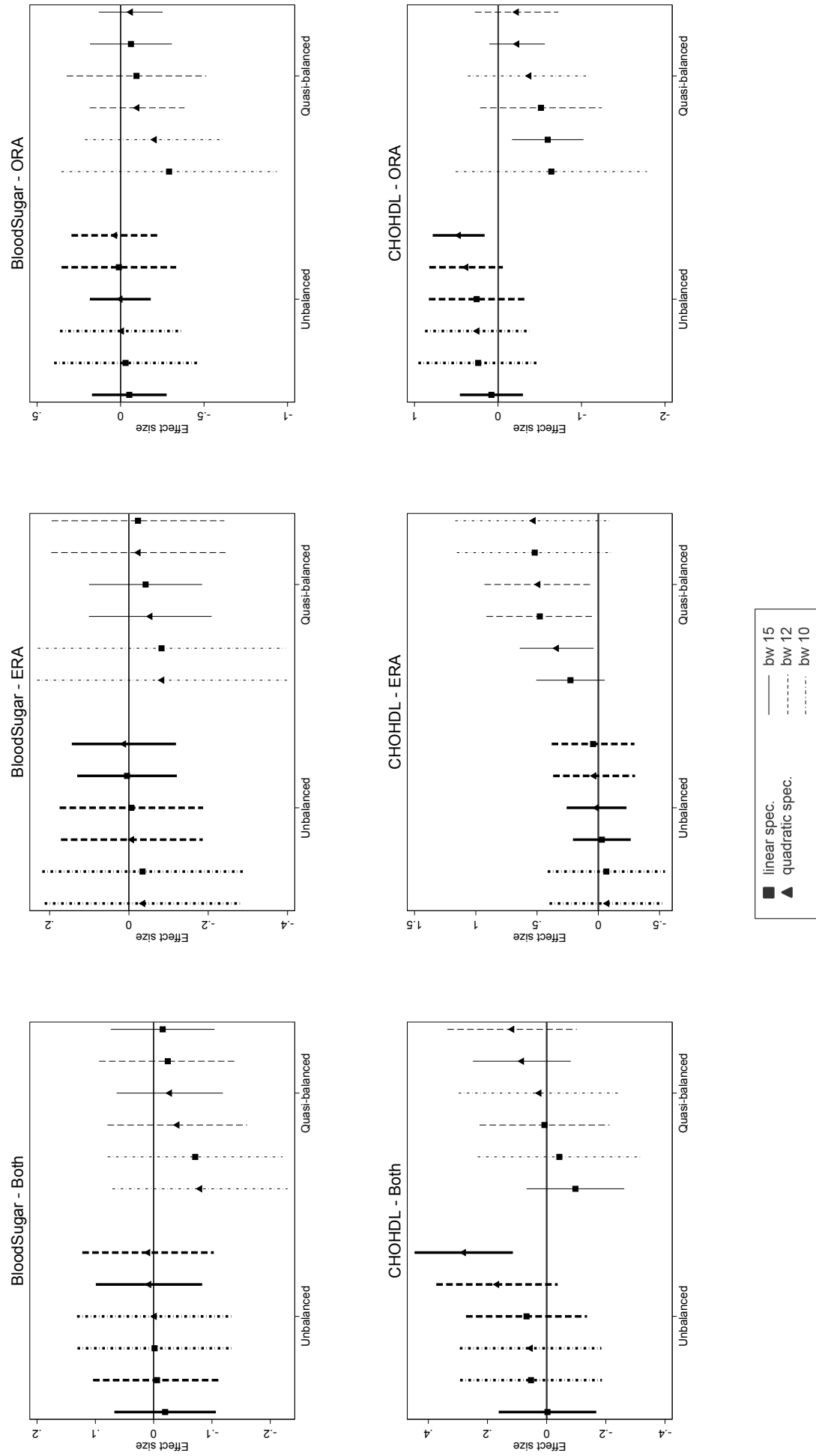
H.1 Blood pressure: additional control for AHM

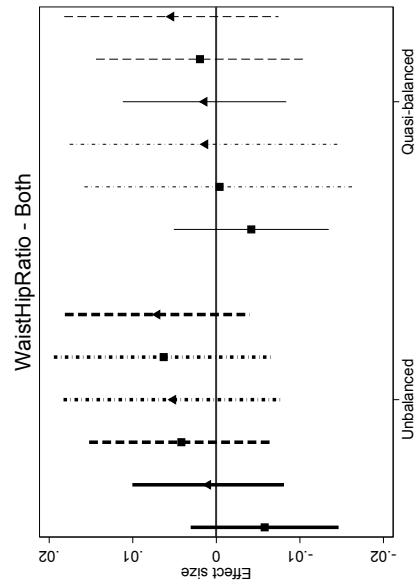
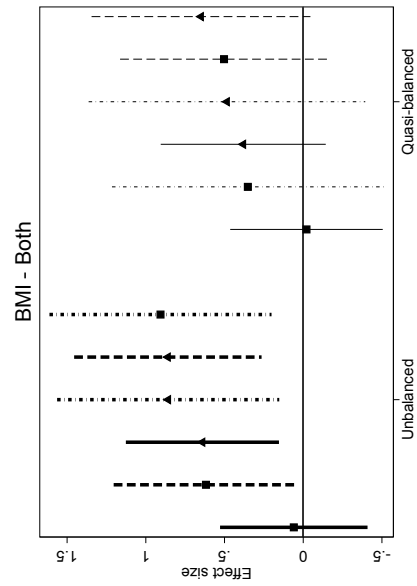
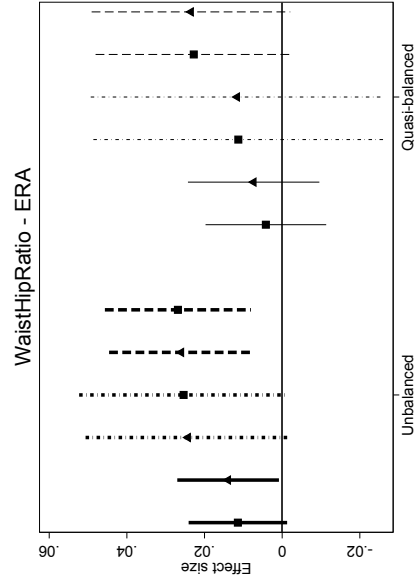
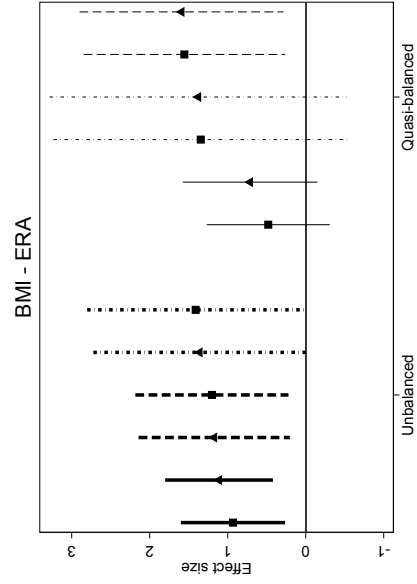
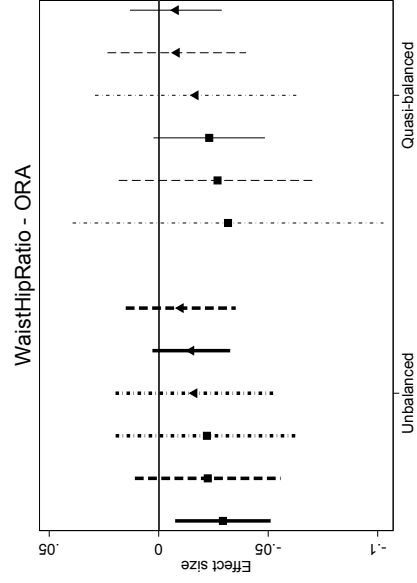
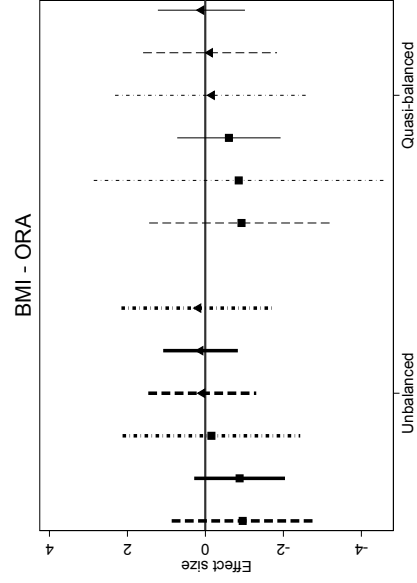


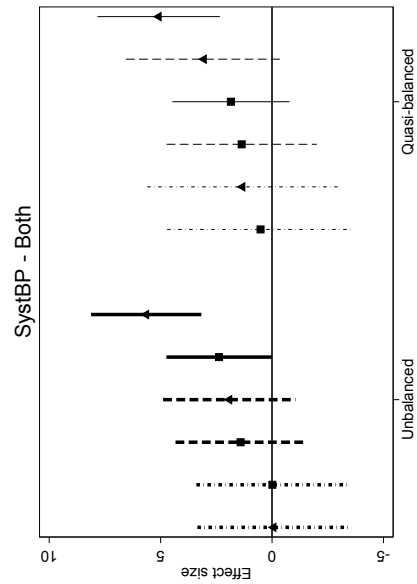
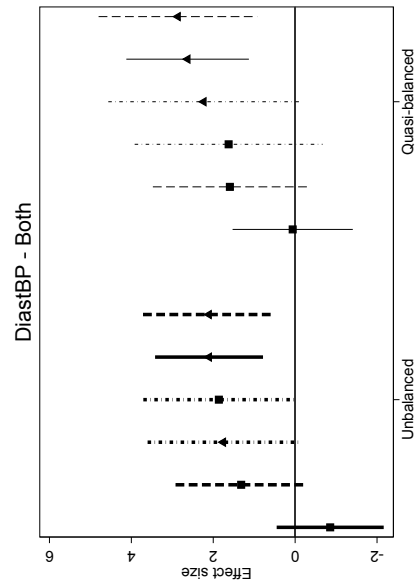
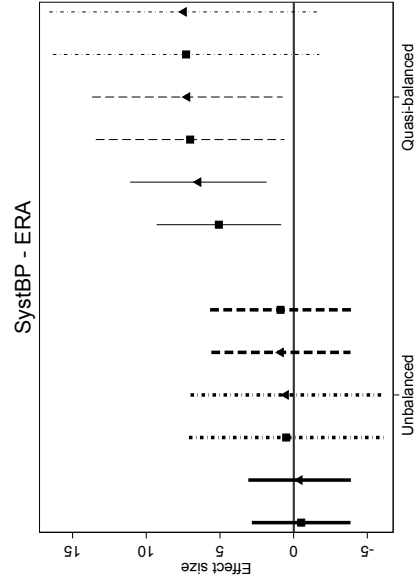
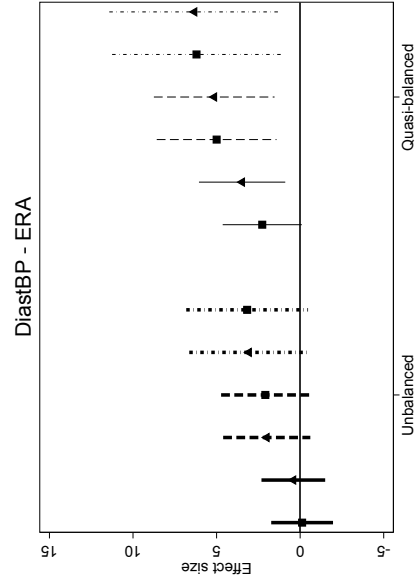
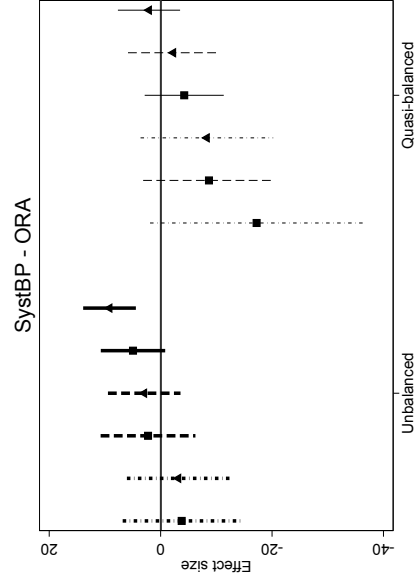
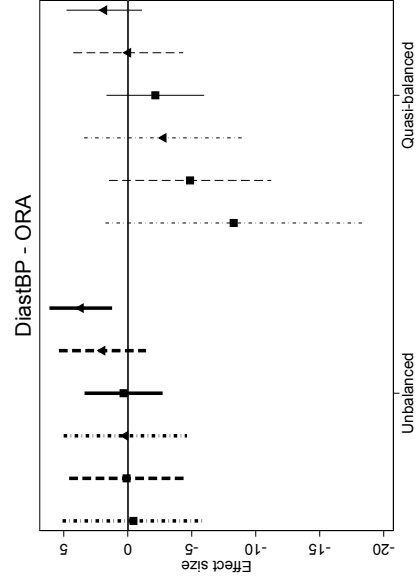
Appendix K: Panel attrition robustness check

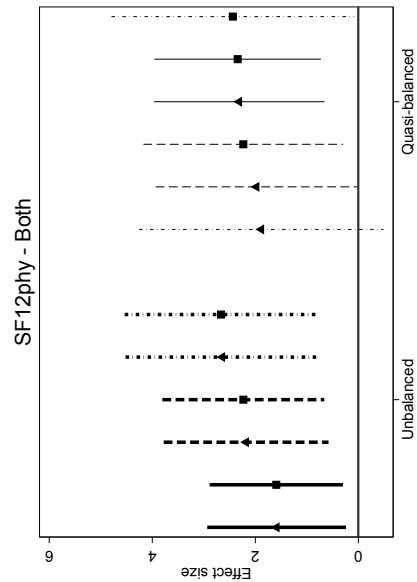
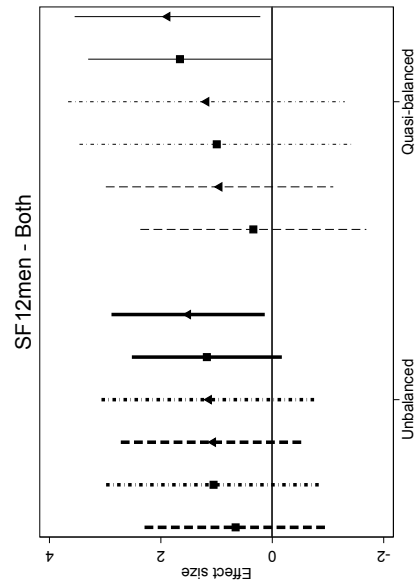
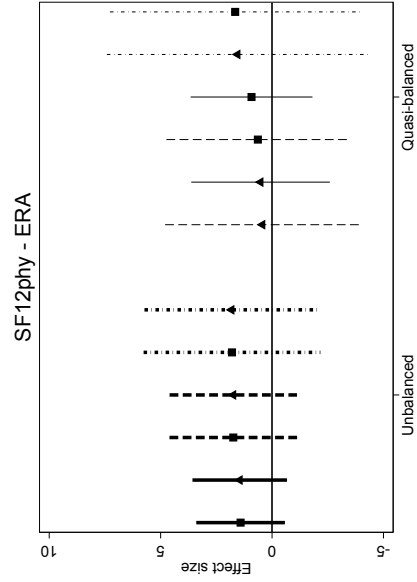
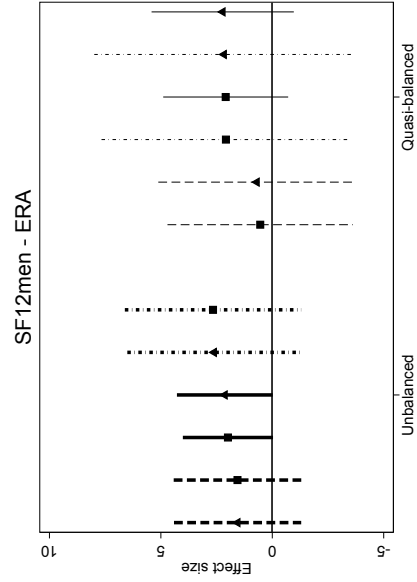
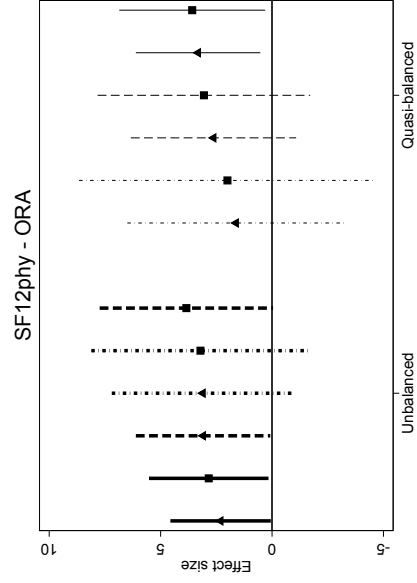
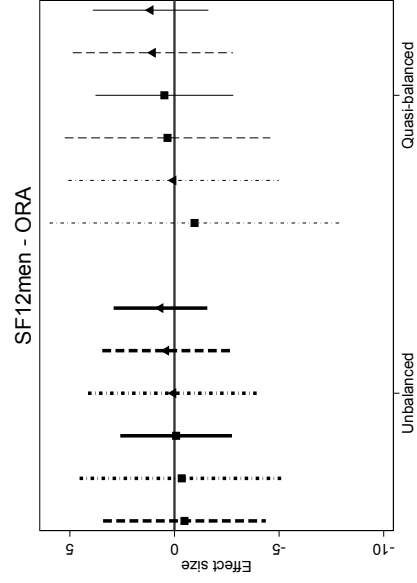


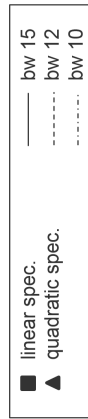
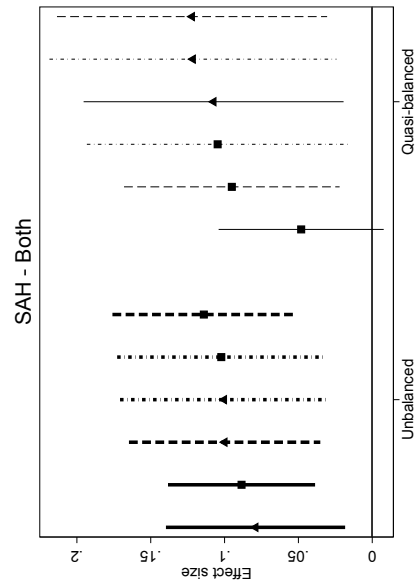
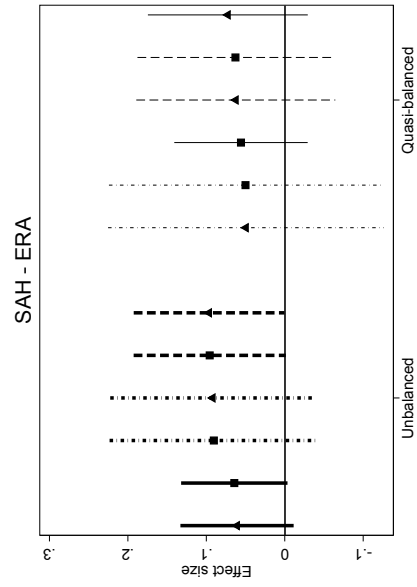
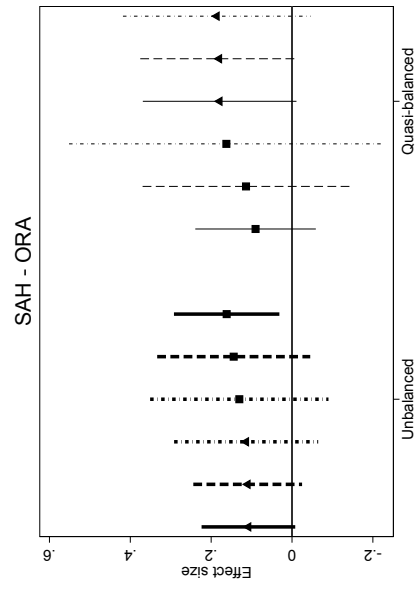




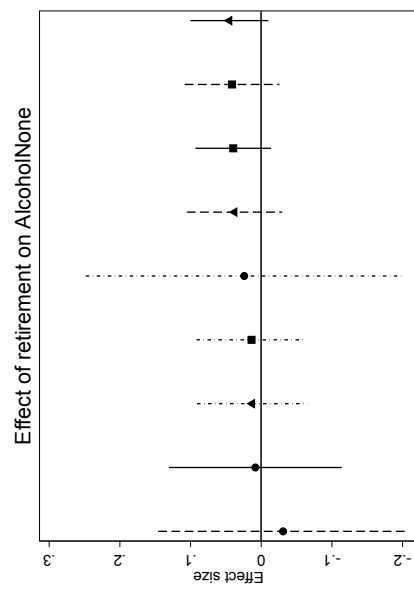
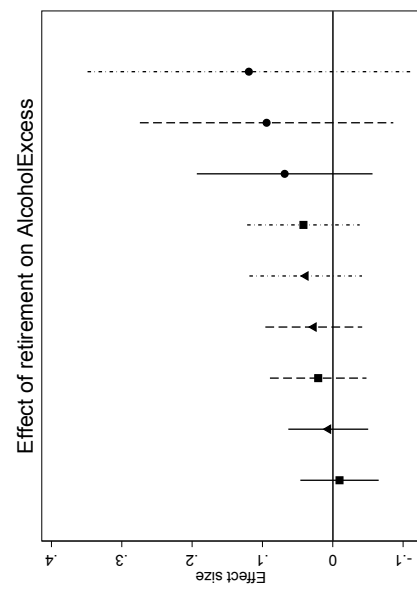
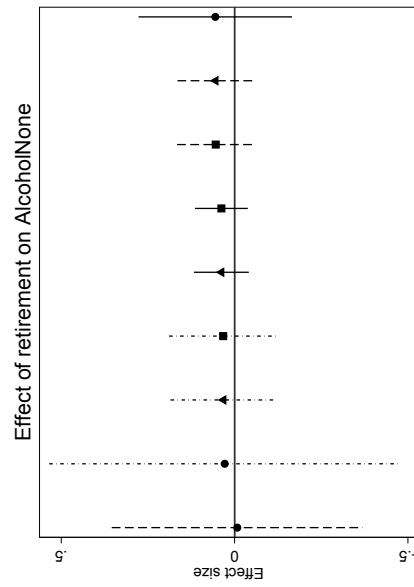
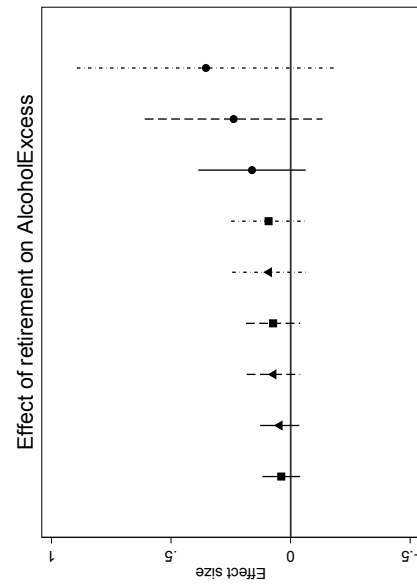
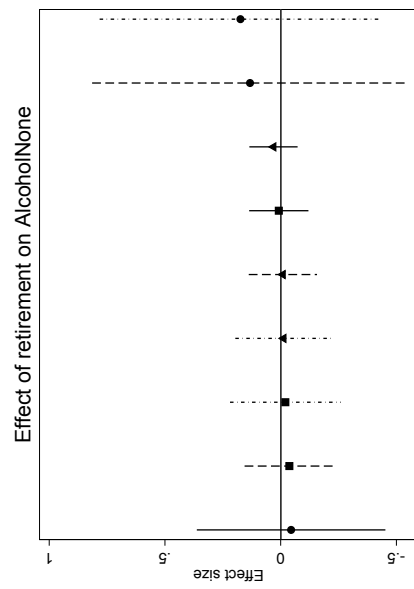
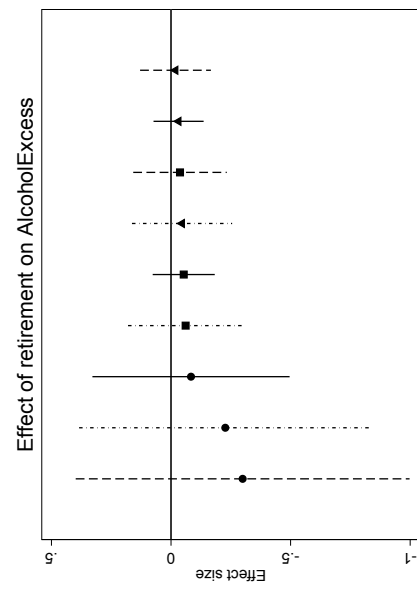


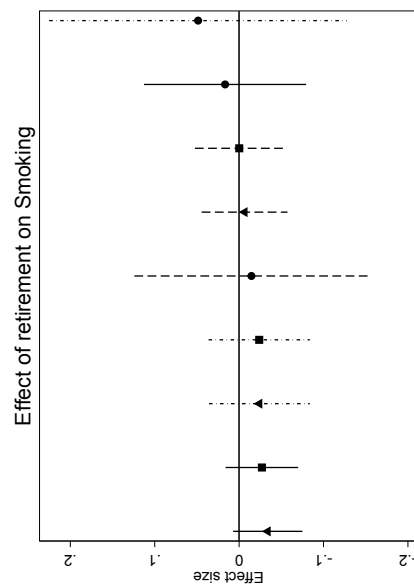
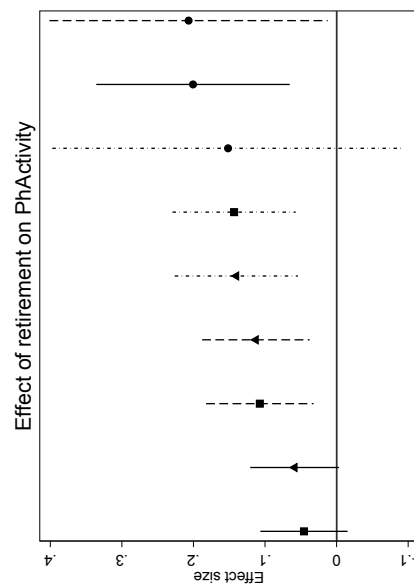
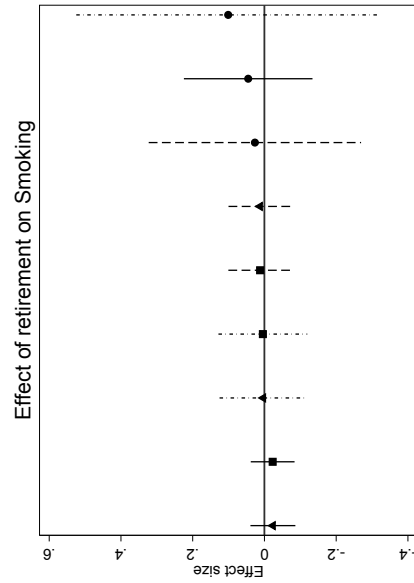
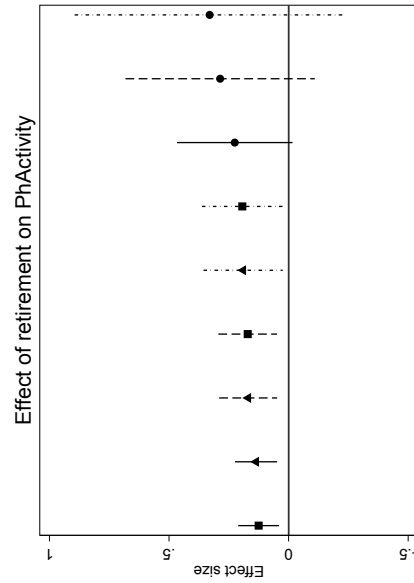
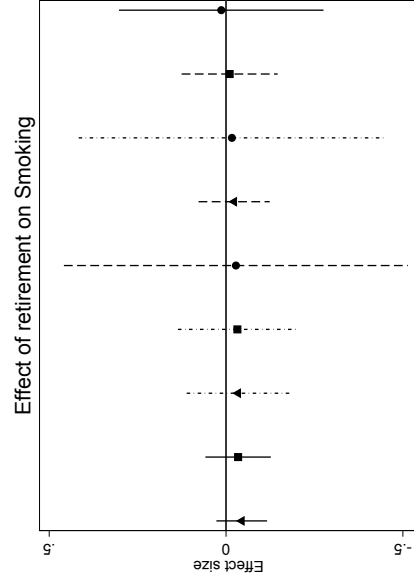
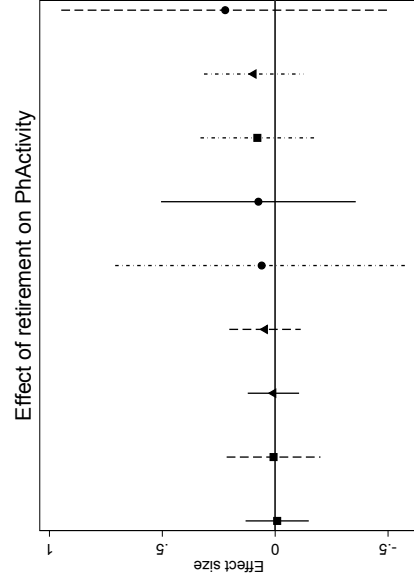


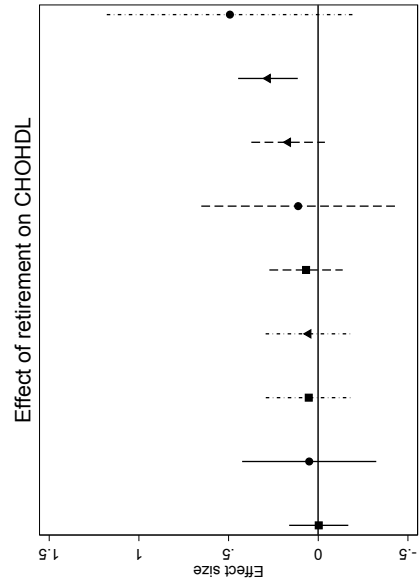
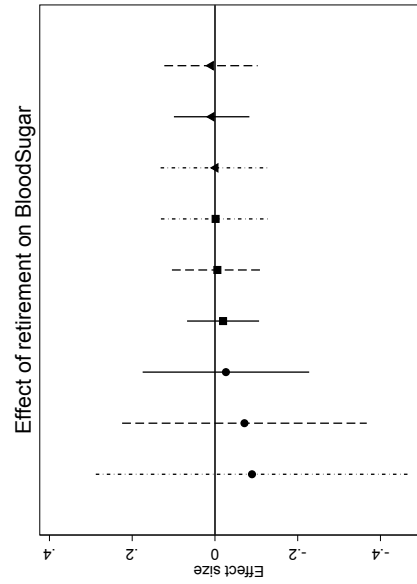
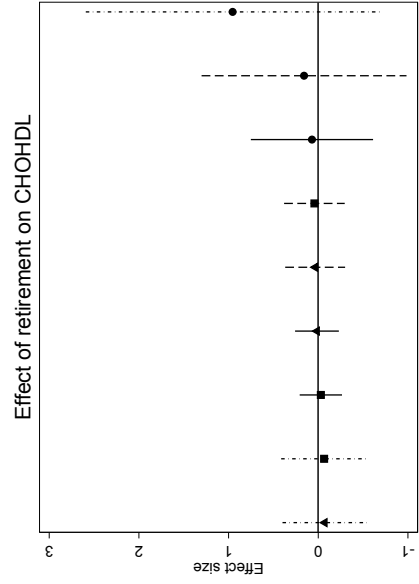
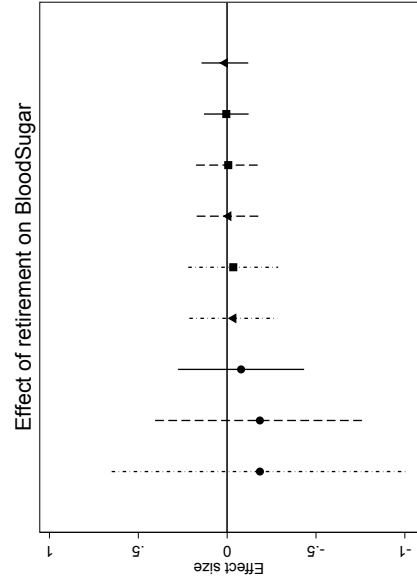
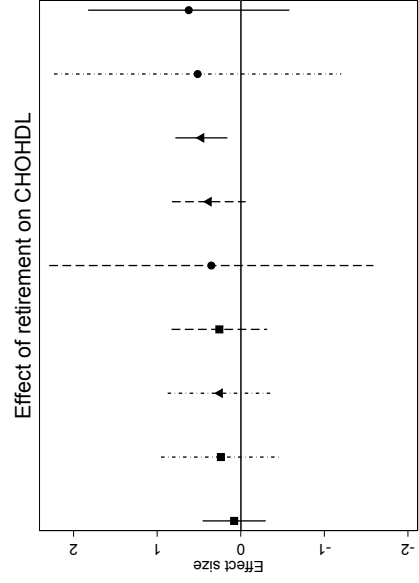
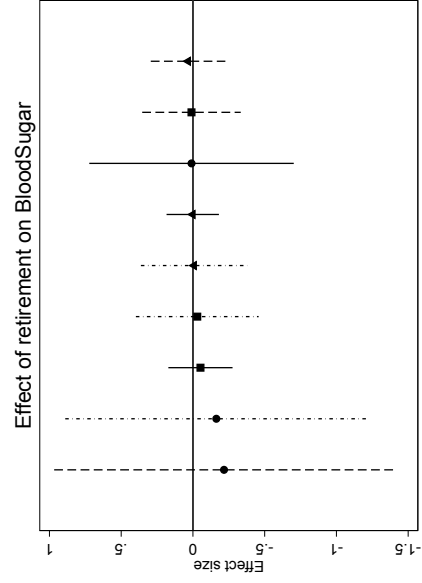


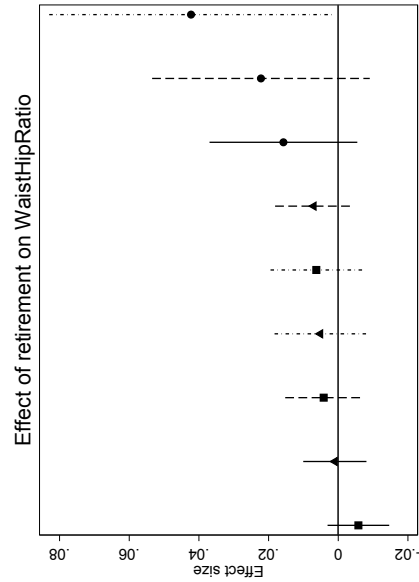
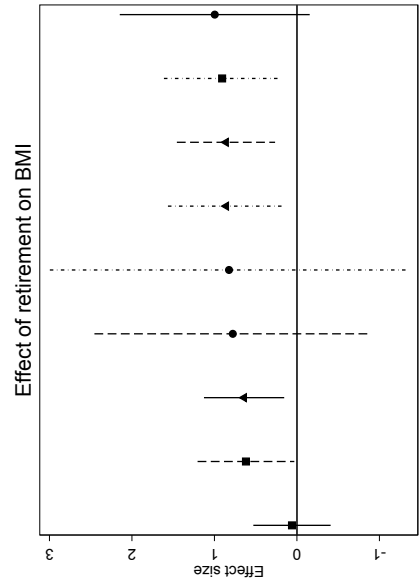
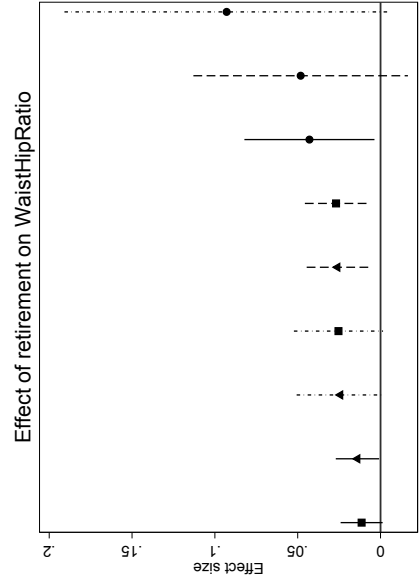
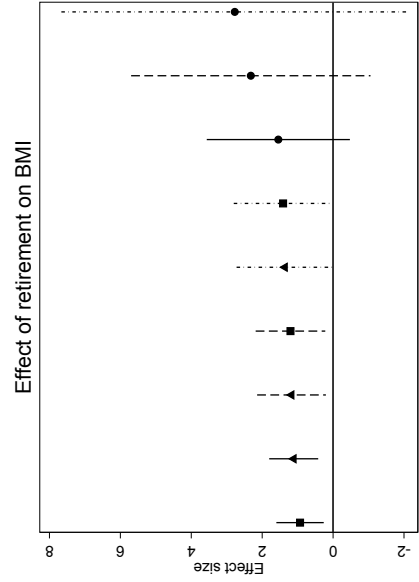
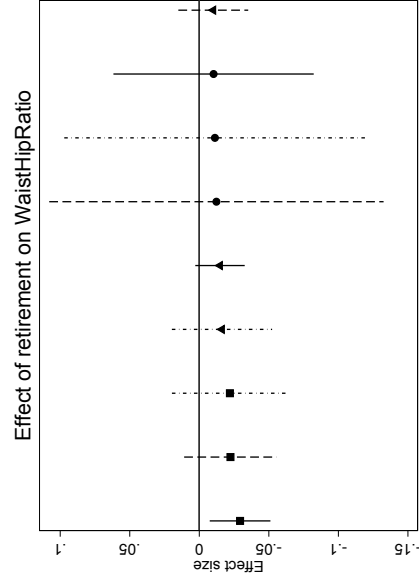
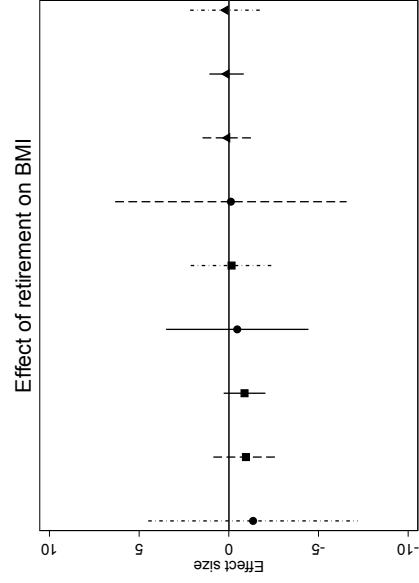


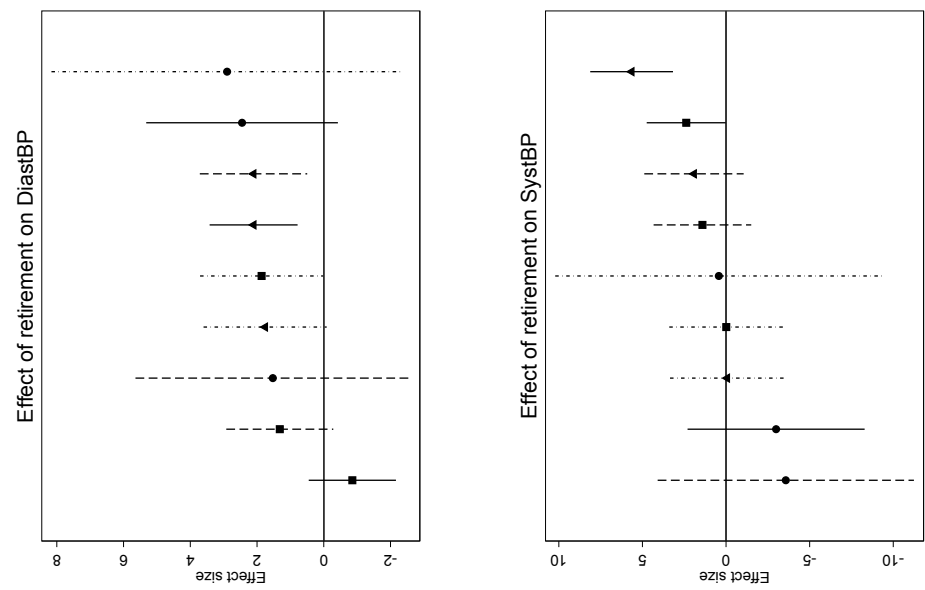
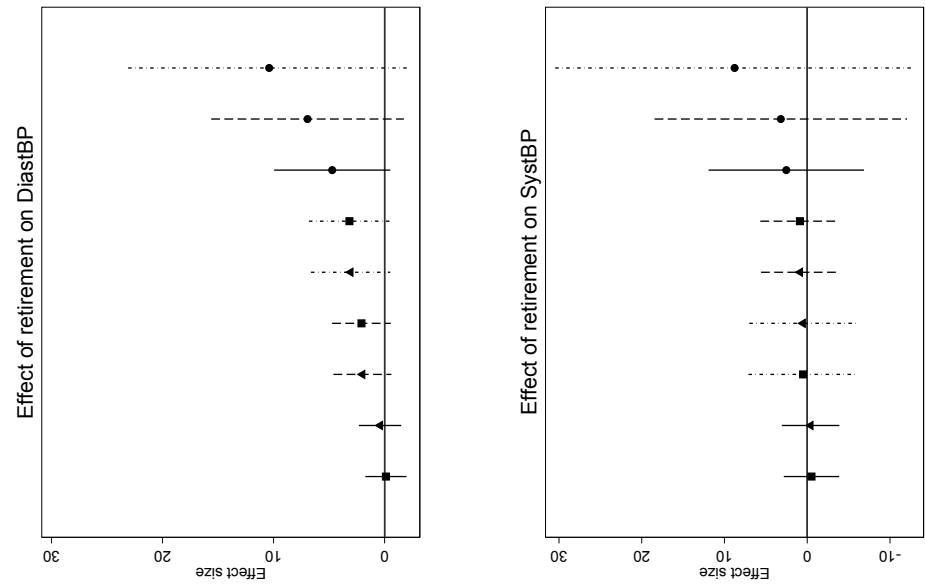
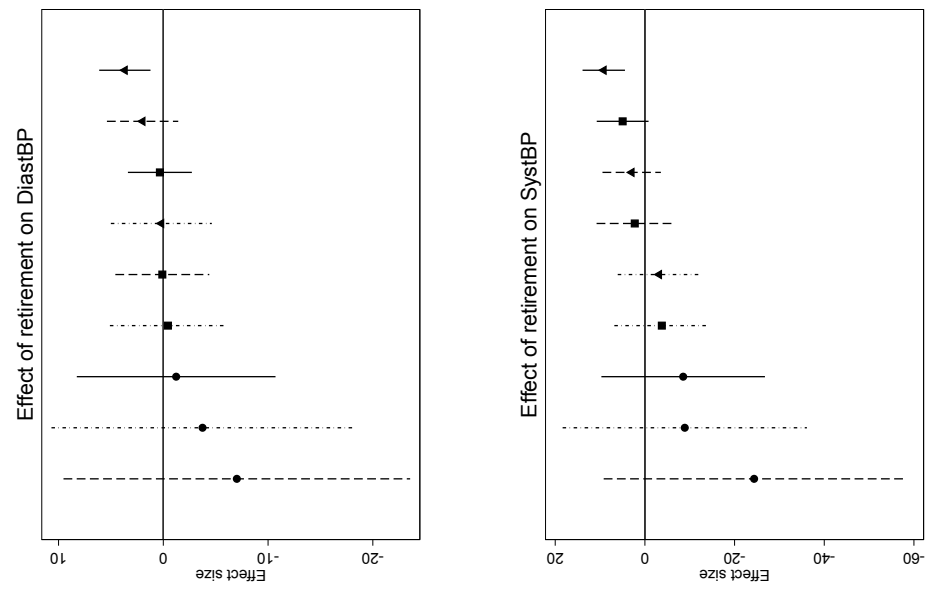
Appendix L: Higher order polynomial robustness checks

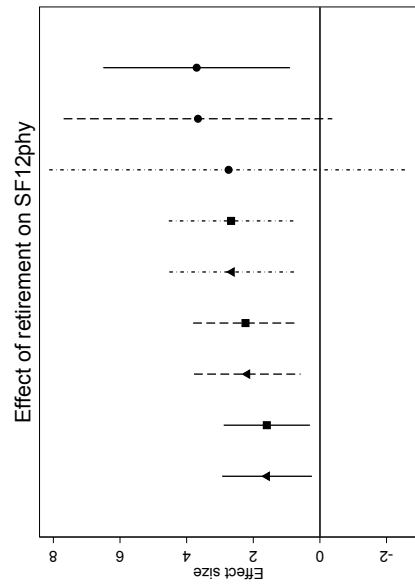
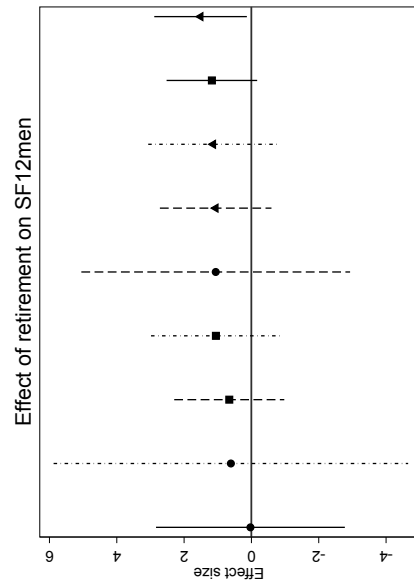
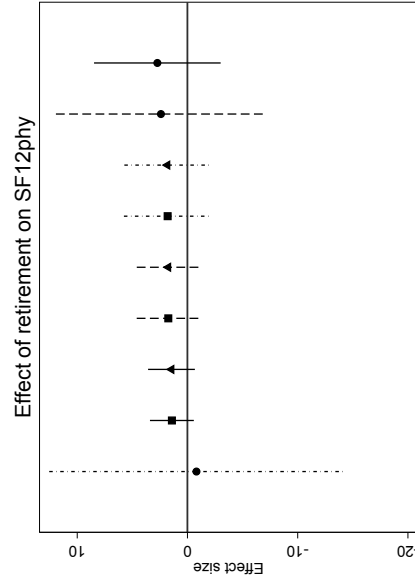
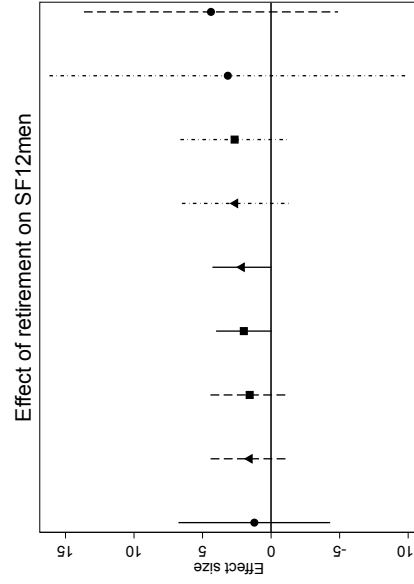
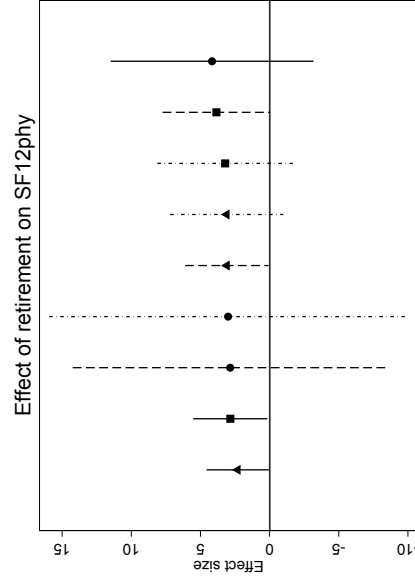
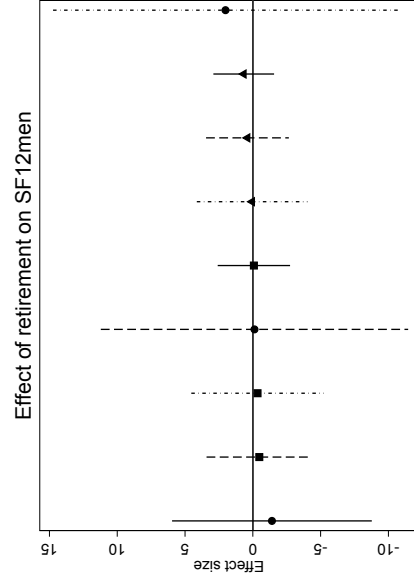


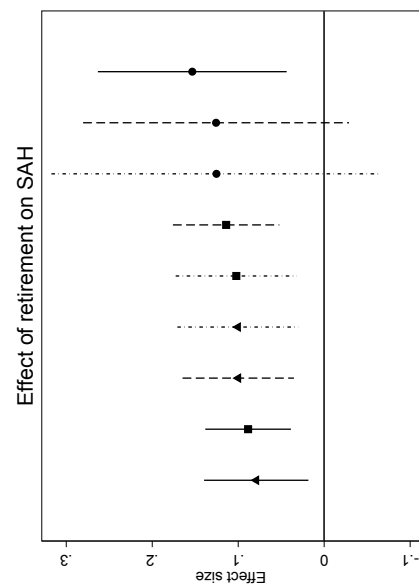
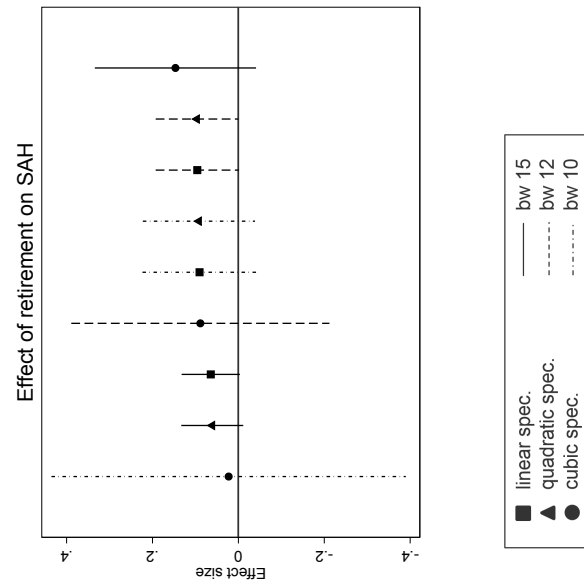
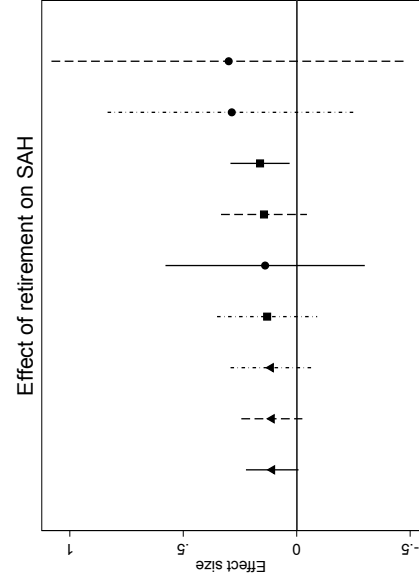












Appendix M: Interactions robustness check

