

Labor market effects of sports and exercise: Evidence from Canadian panel data

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Internet appendix

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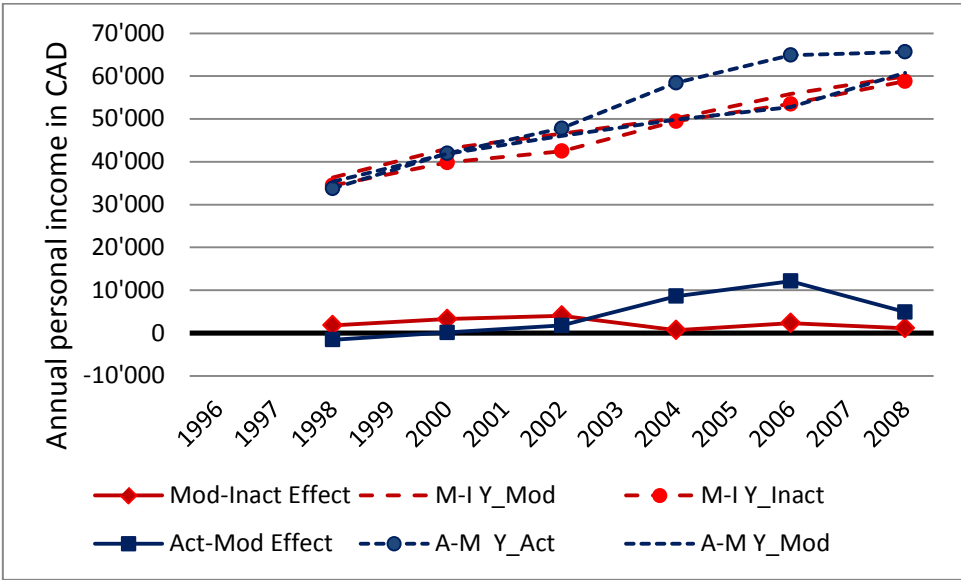
* Michael Lechner is also affiliated with CEPR and PSI, London, CESifo, Munich, IAB, Nuremberg, and IZA, Bonn. Nazmi Sari is also affiliated with the Saskatchewan Population Health Evaluation Research Unit, and the Health Quality Council, Saskatoon. All computations have been performed in the Statistics Canada Research Data Center at the University of Saskatchewan in Saskatoon. We thank the Data Center and Statistics Canada for their support. All computations were implemented with our own programs using Gauss 11 installed in the Data Center. A previous version of the paper was presented at IZA, Bonn, ZEW, Mannheim, the Alpine Labour Seminar, Laax, the annual meeting of the German Economics Association in Hamburg, the annual meeting of the European Sports Economics Association in Antwerp, the EALE meeting in Ljubljana, as well as in seminars of the economic departments of the Universities of Aarhus, Copenhagen, and Southern Denmark at Odense. We thank participants, two referees of this journal as well as Helena Skyt Nielson for helpful comments and suggestions. The usual disclaimer applies.

Internet Appendix D: Further results

Internet Appendix D.1: Level of the personal income variable

To put the size of the results into perspective, Figure D.1 shows the levels of the potential outcomes for the personal income for the respective ATE (corresponding to Figure 4.2 in the main text). Note that in addition to the effects this figure shows the personal income active and moderately active individuals could expect on average when being active (A-M Y_Act) or when being only moderately active (A-M Y_Mod). Furthermore, the figure shows the expected earnings of moderate activity among the population of moderate and inactive individuals (M-I Y_Mod) as well as the expected income for a member of this population of being inactive (M-I Y_Inact). Note that the values of Y_Mod for the two different populations are almost identical. Generally, there is an upward trend for all (potential) outcomes which is due to inflation and the fact that the sample ages over time.

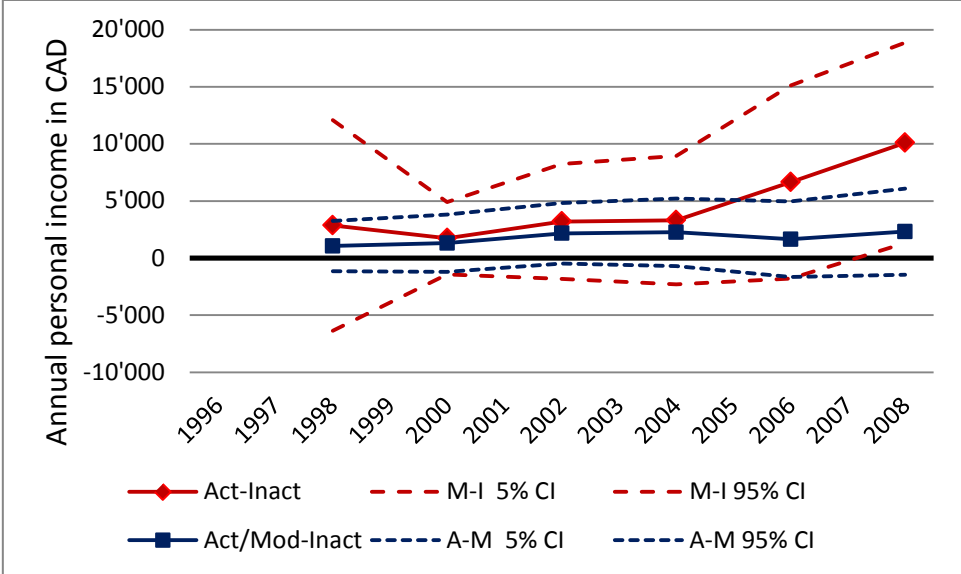
Figure D.1: Estimated potential outcomes and effects for annual personal income



Note: ATE based on subsample of moderately active individuals in 1994.

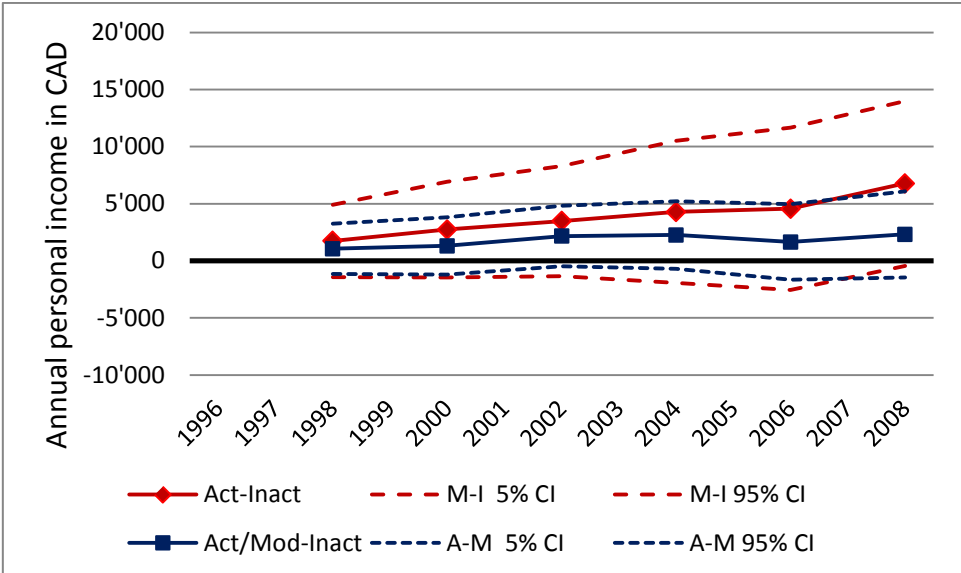
Internet Appendix D.2: Results aggregated over different activity states in period 1

Figure D.2: Annual personal income: Active vs. inactive and active & moderate vs. inactive



Note: ATE based on subsample of moderately active individuals in 1994.

Figure D.3: Average annual personal income: Active vs. inactive and active & moderate vs. inactive



Note: ATE based on subsample of moderately active individuals in 1994.

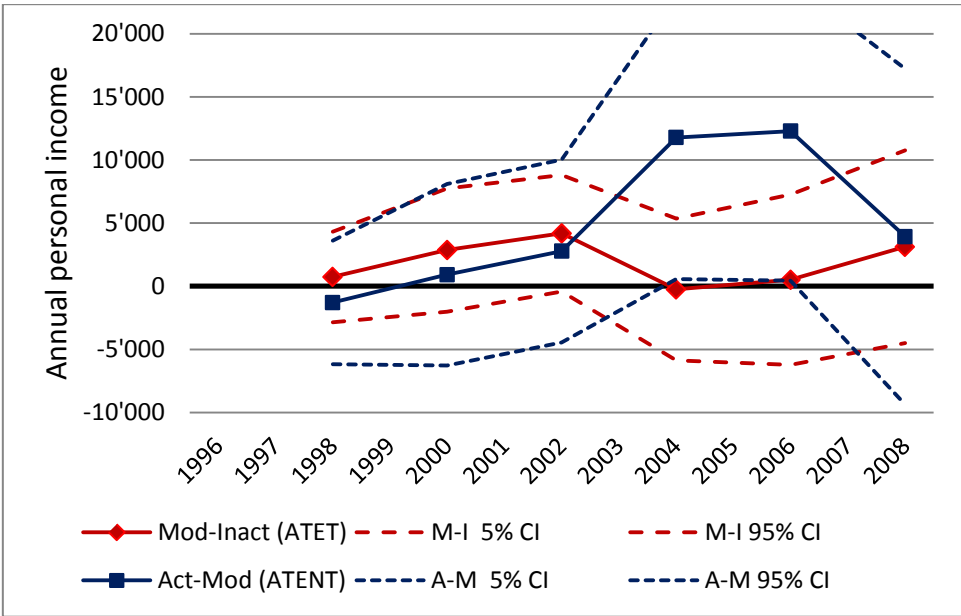
Figure D.2 shows the results for the ATE of personal income when active and moderate activities are compared to inactivity and when being active is directly compared to being inactive. Effects are positive in both cases. However, they are only at the boarder of being sig-

nificant. As expected the effects for the active-inactive comparison are somewhat larger, but also less precisely estimated. The conclusions are confirmed when considering average outcomes over time (Figure D.3).

Internet Appendix D.3: Effects for the same subpopulation

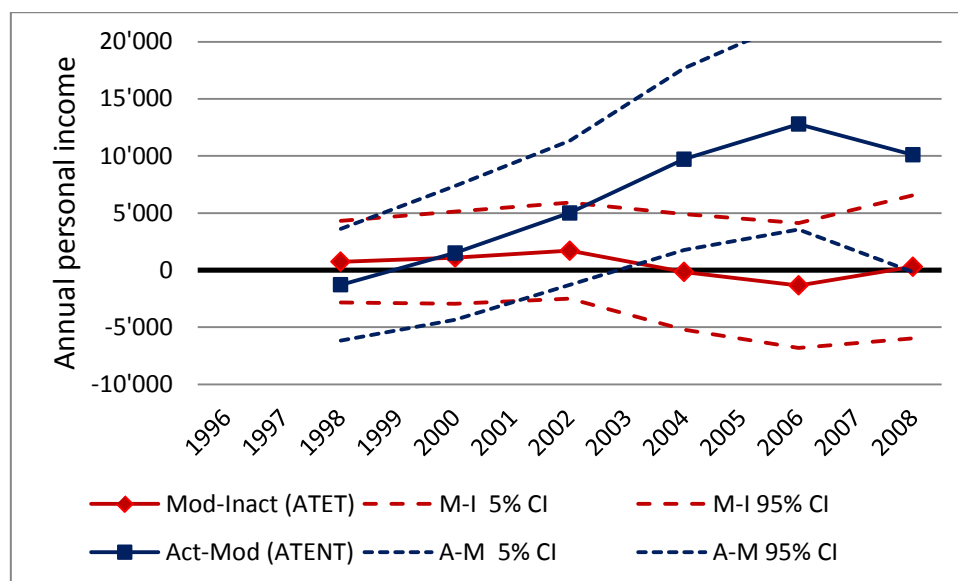
The main text focused on a comparison of the ATE of the active-moderate and moderate-inactive contrasts. If results differ for the two contrasts, then such difference might be due to the fact that those ATEs are computed for different subpopulation (if individual effect heterogeneity is present). Therefore, this subsection presents results for the ATENT of the active-moderate comparison (i.e. the moderately active in 1996) as well as for the ATET of the moderate-inactive comparison (again, the moderately active in 1996). As in the main text, the analysis is based on the subpopulation of moderately active people in 1994.

Figure D.4: Annual personal income for moderates in 1994 that are still moderately active in 1996



Note: ATET / ATENT for the moderate-inactive / active-moderate comparison. Estimation is based on subsample of moderately active individuals in 1994.

Figure D.5: Average annual personal income for moderates in 1994 that are still moderately active in 1996



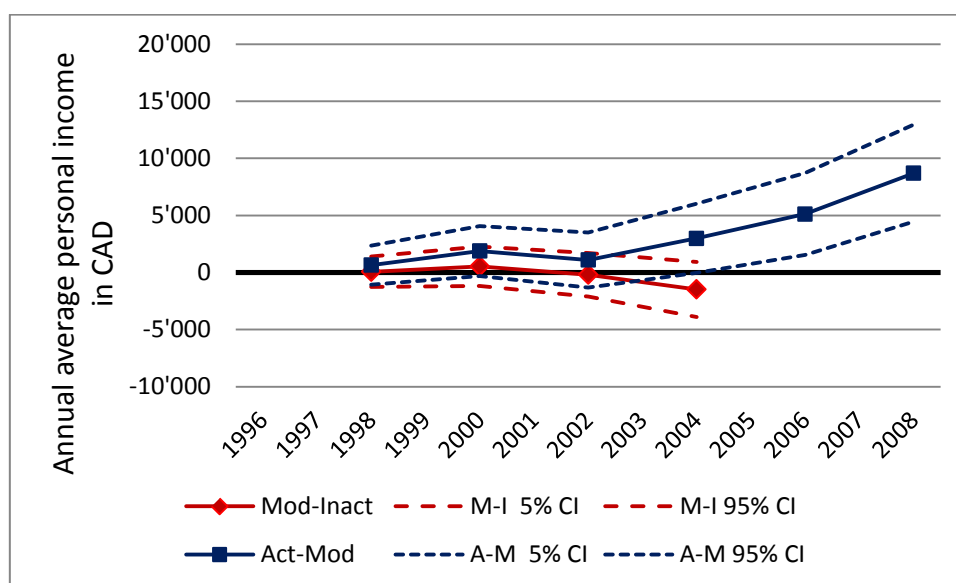
Note: ATET / ATENT for the moderate-inactive / active-moderate comparison. Estimation is based on subsample of moderately active individuals in 1994.

Qualitatively, the results reflect the same patterns as for the ATE shown in the main body of the paper.

Internet Appendix D.4: Averages over all subpopulations

Most of the results presented so far focused on the population with a moderate activity level in 1994. Figure D.6 presents the results aggregated over all 1994 activity levels. It appears that the effects become stronger for the active-moderate comparisons, while no effects are detectable for the moderate-inactive comparison.

Figure D.6: Annual personal income: ATE aggregated over activity states in 1994

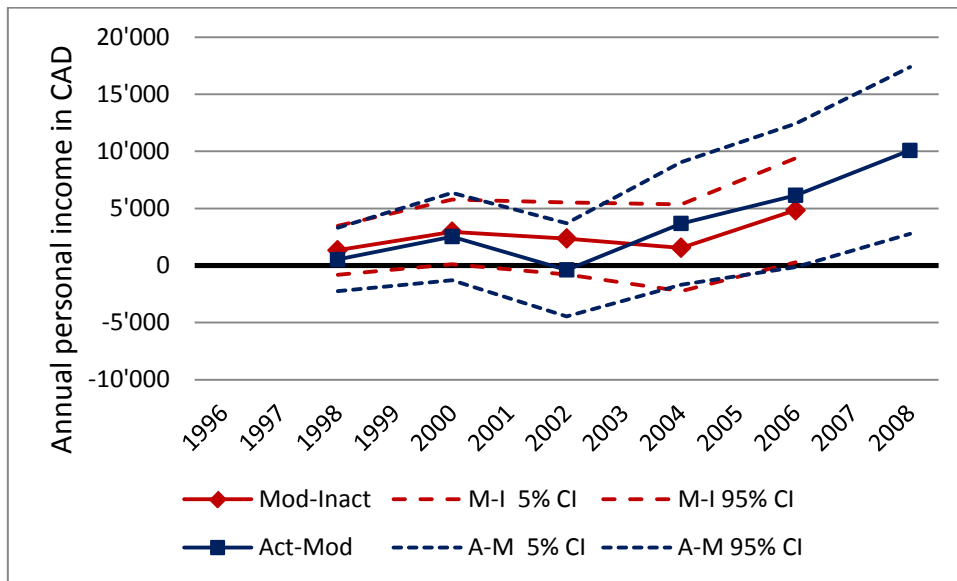


Note: The results for the moderate-inactive comparison extend only to 2004, because the female active (1994) subpopulation responding to this income question and observed to be inactive is too small afterwards.

Internet Appendix D.5: Gender heterogeneity

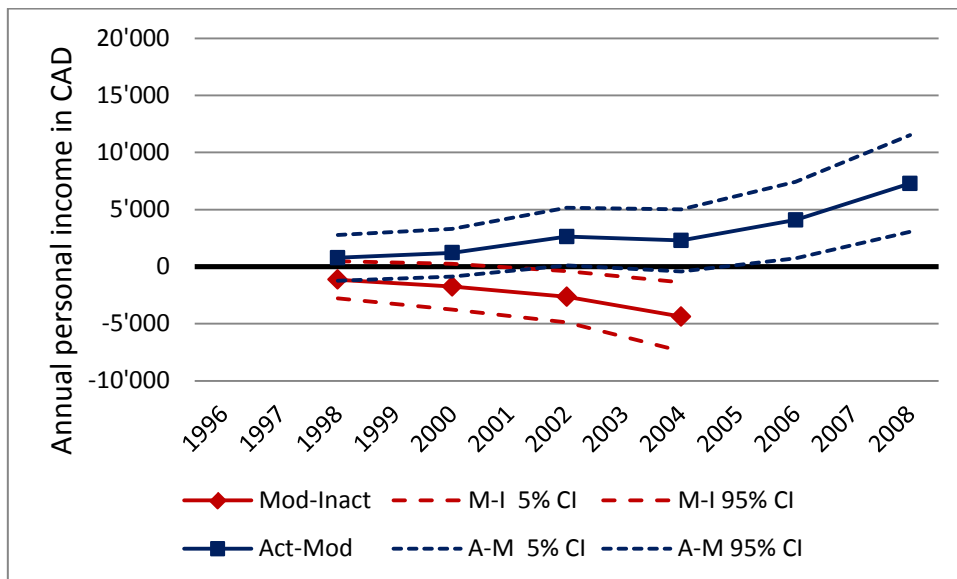
Figure D.7 and D.8 show gender difference based on the ATE aggregated over all 1994 activity populations. The results suggest that the effects for men are somewhat more pronounced than for women, although the differences between the point estimates are hardly significant.

Figure D.7: Annual personal income - men



Note: The results for the moderate-inactive comparison extend only to 2006, because the male active subpopulation responding to this income question became too small afterwards.

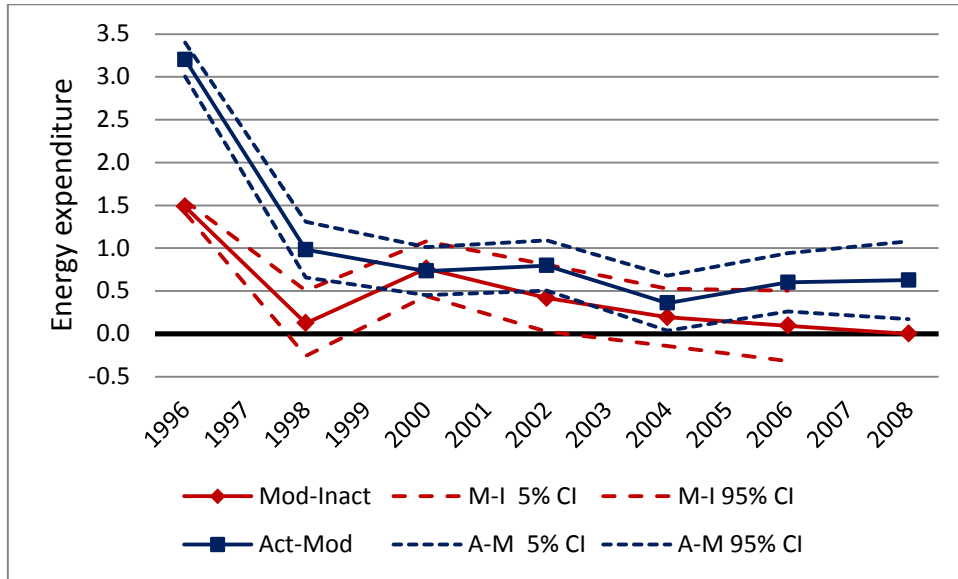
Figure D.8: Annual personal income - women



Note: The results for the moderate-inactive comparison extend only to 2004, because the female active subpopulation responding to this income question became too small afterwards.

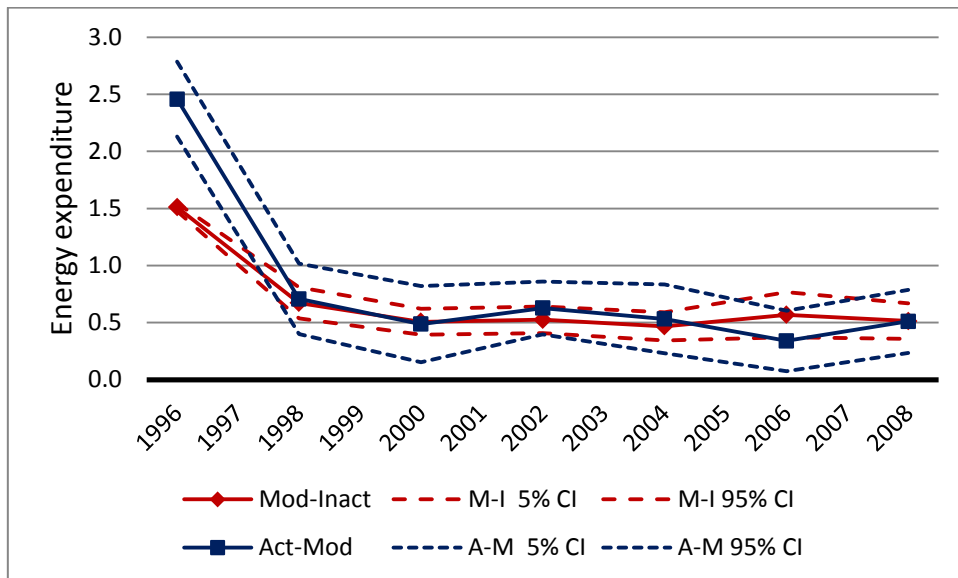
Internet Appendix D.6: Heterogeneity with respect to activity states in 1994

Table D.9: Effects on energy expenditure for individuals active in 1994



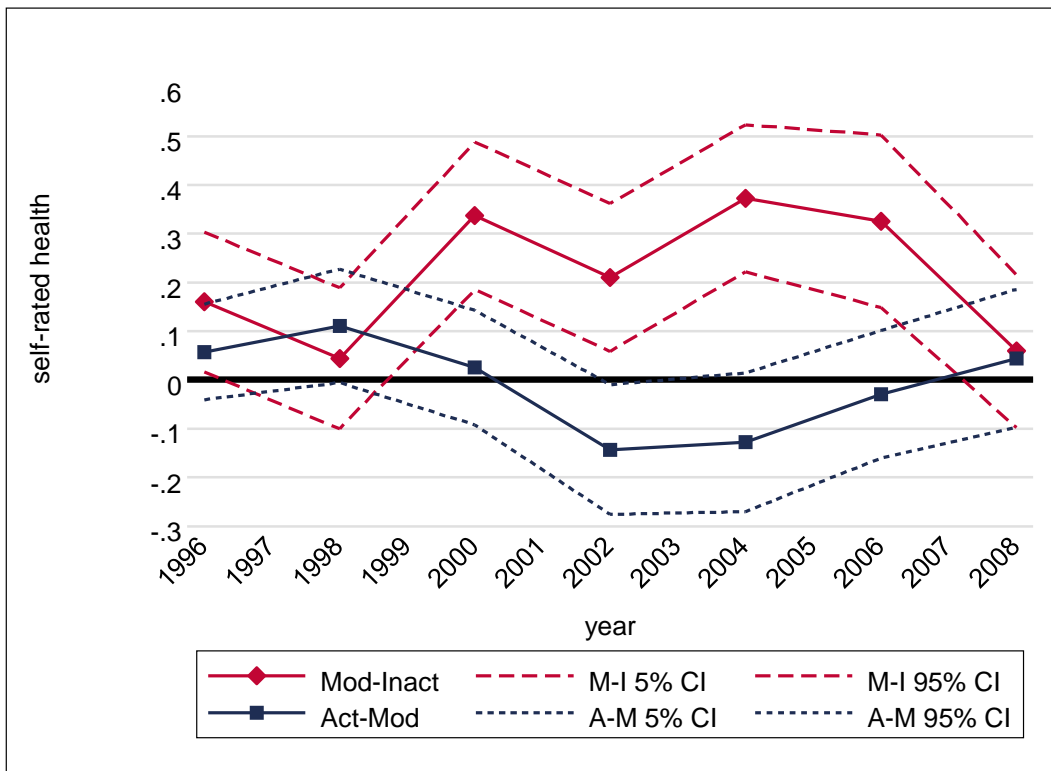
Note: ATE based on subsample of active individuals in 1994.

Table D.10: Effects on energy expenditure for individuals inactive in 1994



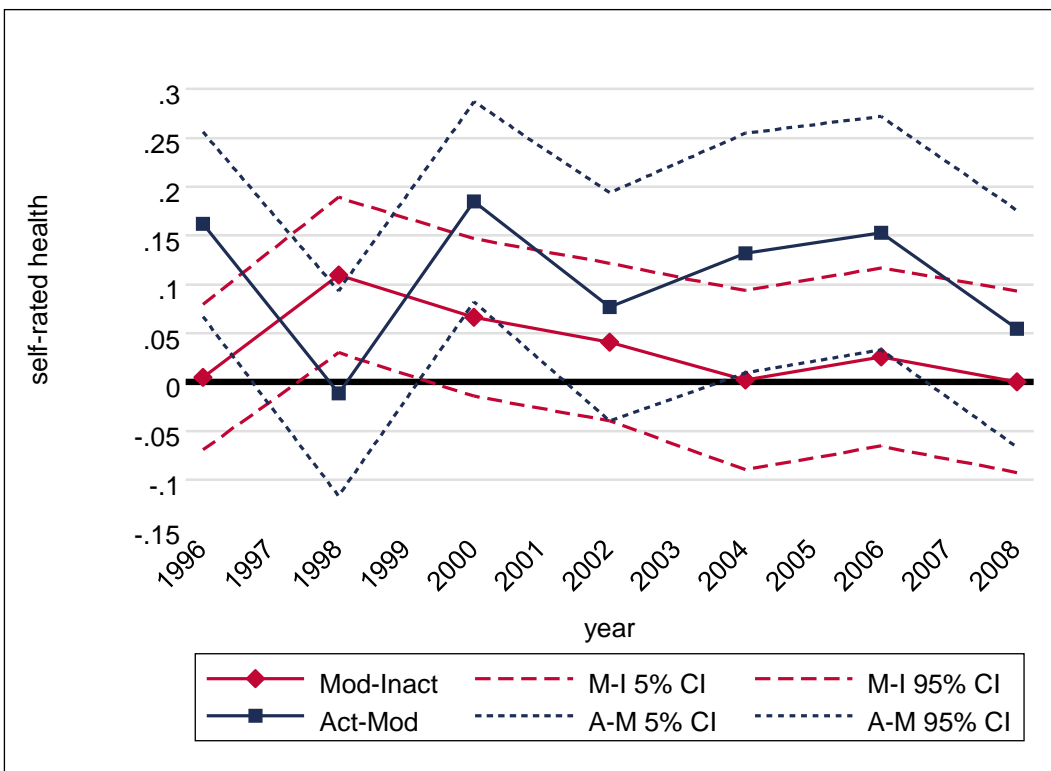
Note: ATE based on subsample of inactive individuals in 1994.

Figure D.11: Effects on subjective health for individuals active in 1994



Note: ATE based on subsample of active individuals in 1994.

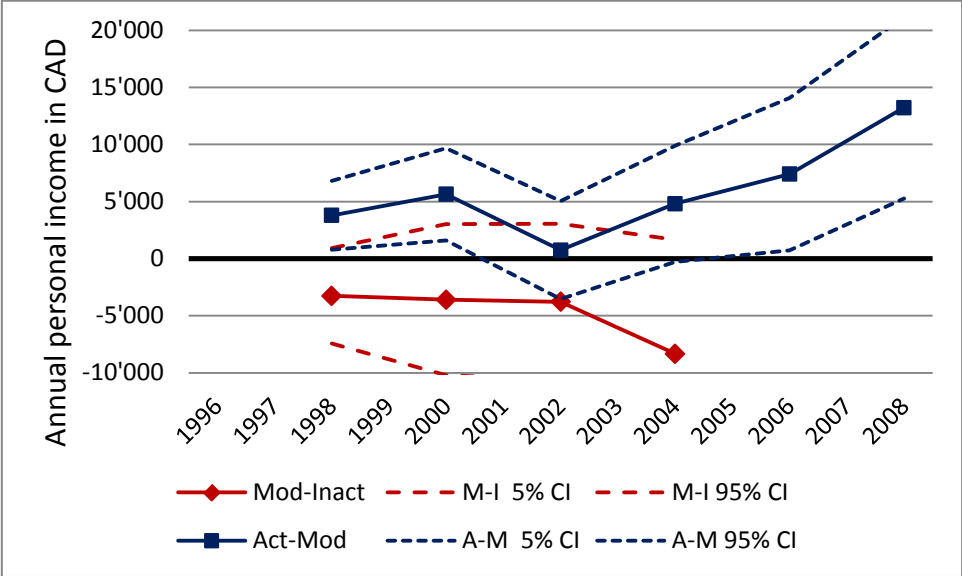
Figure D.12: Effects on subjective health for individuals inactive in 1994



Note: ATE based on subsample of inactive individuals in 1994.

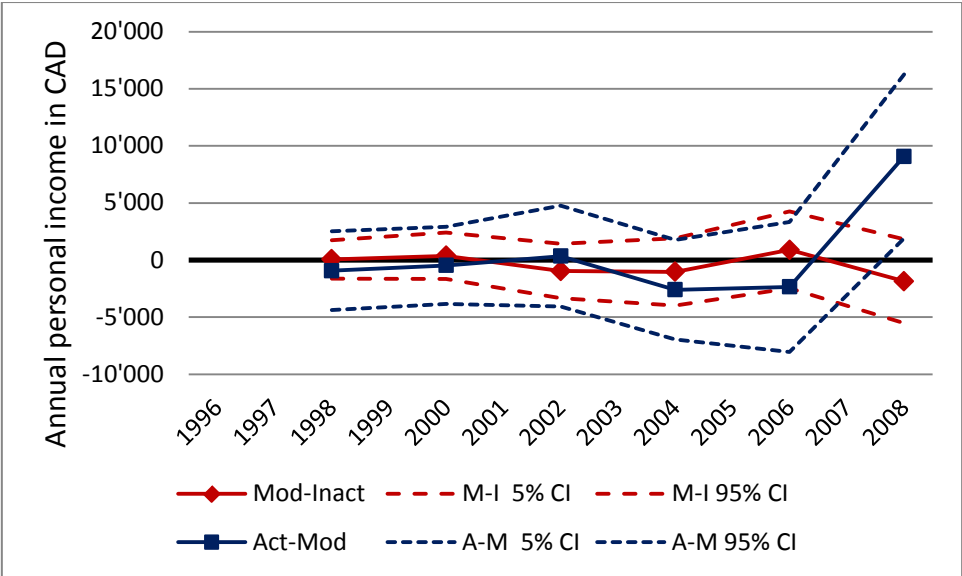
Considering the effects for the different subsamples (Figures D.13, D.14, 5.3) confirms the view that it is difficult to detect any effect from becoming moderately active, but that there is a large gain from changing from being moderately active to being active. However, comparing the effects over the three activity states in 1994 does not reveal much heterogeneity (taking into account sampling uncertainty).

Figure D.13: Effects on annual personal income for individuals active in 1994



Note: ATE based on subsample of active individuals in 1994.

Figure D.14: Effects on annual personal income for individuals inactive in 1994

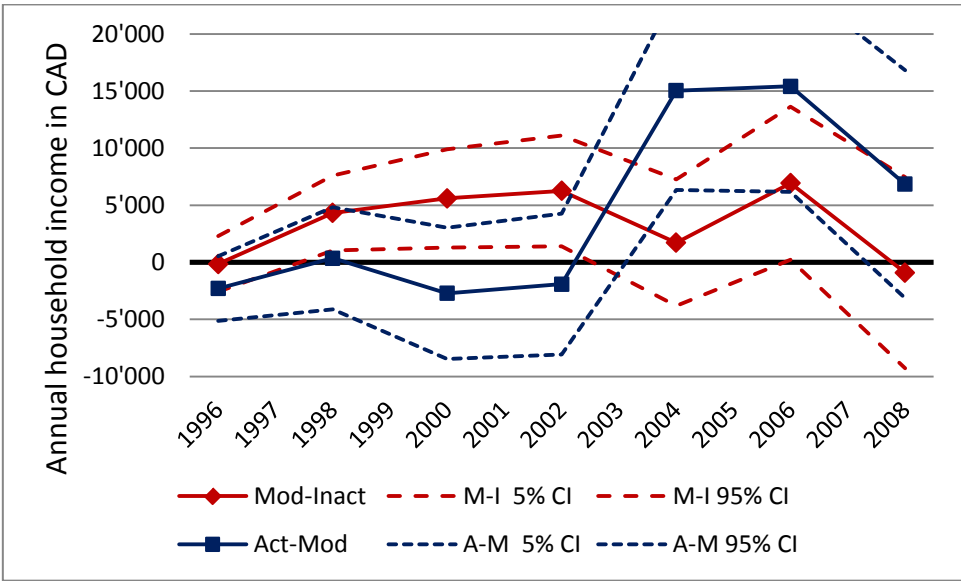


Note: ATE based on subsample of inactive individuals in 1994.

Internet Appendix D.7: Annual household income

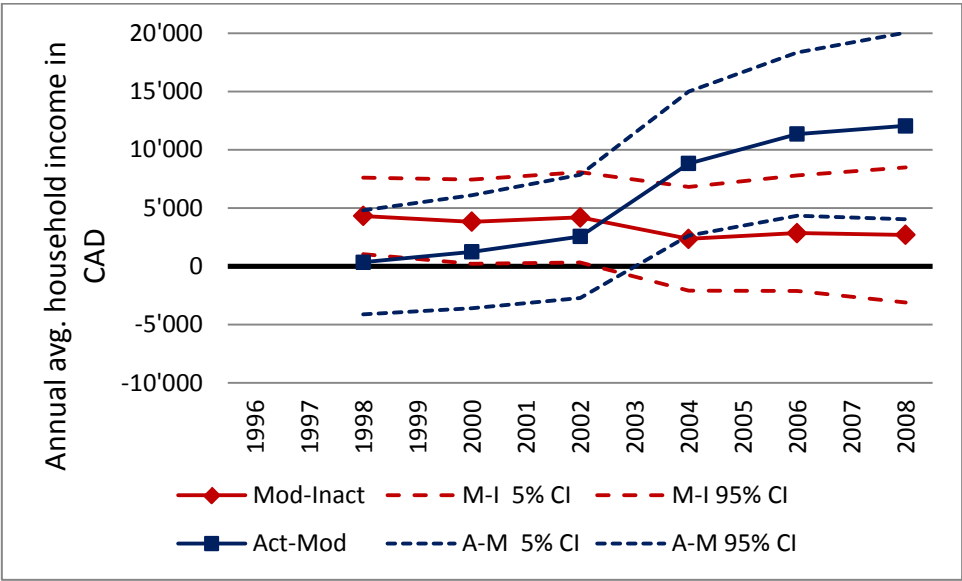
This section presents ATEs for the subsample of moderately active in 1996 using a broader income concept, namely annual household income. We provide the ATEs for annual household income and average annual household income computed over the years from 1996 to the corresponding year. Although the results below are somewhat larger than for annual personal income, the qualitative conclusions remain the same.

Figure D.15: Annual household income



Note: Average treatment effects for individuals who were moderately active in 1994.

Figure D.16: Annual average household income

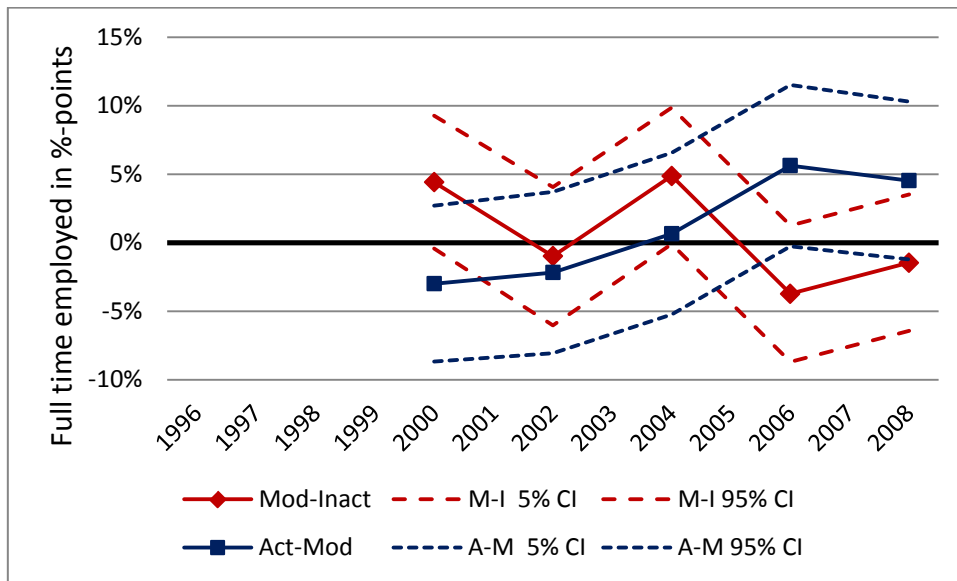


Note: Numbers shown in year x are the average effects for the outcomes over the years from 1996 to year x. Average treatment effects for individuals who were moderately active in 1994.

Internet Appendix D.8: Full time employment and working hours

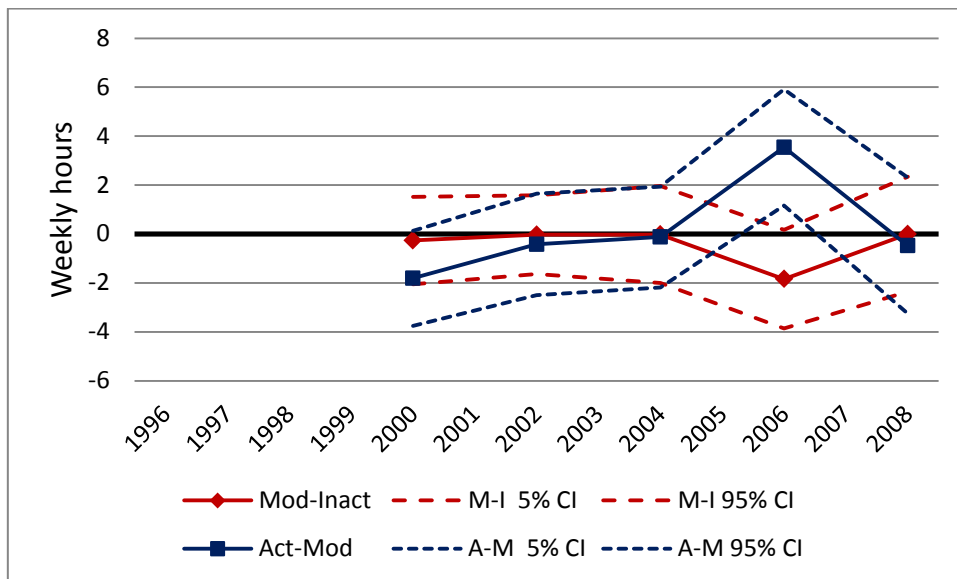
This section presents ATEs for the subsample of moderately active in 1994 for full time employment (defined as annual hours / 52 larger than 35; Figure D.17). The information on annual working hours is not available before 2000. For 2000 and later, the patterns roughly coincide with those observed for employment, which are discussed in the main body of text.

Figure D.17: Full time employment



Note: Full time employment is defined as working more than 35 hours. Information on annual hours is available from 2000 onwards. Average treatment effects for individuals who were moderately active in 1994.

Figure D.18: Working hours

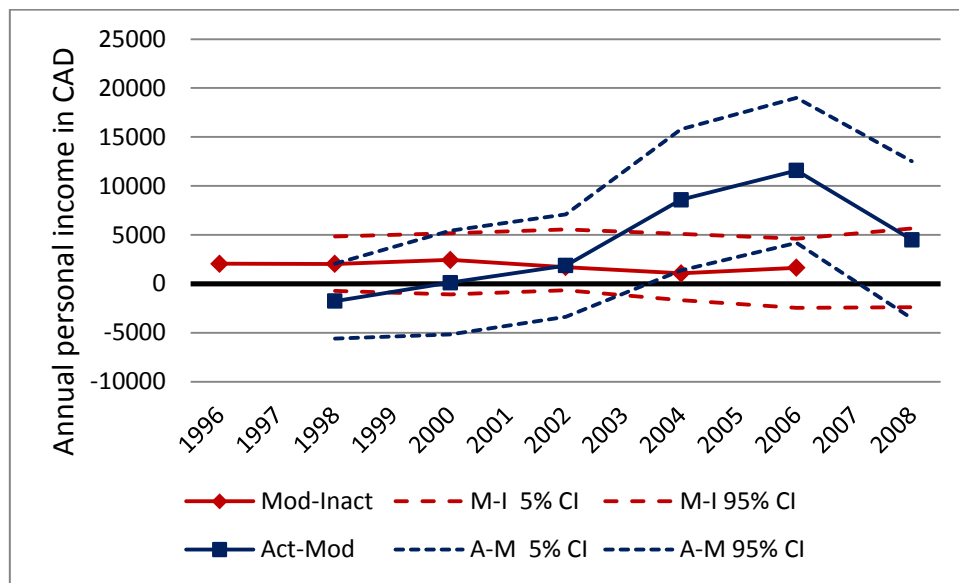


Note: Working hours are computed as annual hours / 52. Hours of non-employed workers are set to 0. Information on annual hours is available from 2000 onwards. Average treatment effects of changing activity levels from inactive to moderately active and from moderately active to active in 1996 for individuals who were moderately active in 1994.

Internet Appendix D.9: Deflated earnings

Figure D.19 corresponds the figures in the main text but earnings deflated to the year 2002 instead.

Figure D.19: Annual personal income in 2002 CAD



Note: Deflated using the GDP price deflator with base year 2002. Average treatment effects for individuals who were moderately active in 1994.