**Analytic Program Directory**

**Publication:** Guo, F., McGee, E. E., Chiu, Y. H., Giovannucci, E., Mucci, L. A., & Dickerman, B. A. (2024). Evaluating recommendation-based dietary and physical activity strategies for prostate cancer prevention: a target trial emulation in the Health Professionals Follow-up Study. *American Journal of Epidemiology*, kwae184.

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| **Table/Figure #** | **Program Name** |
| **Table 1.** Specification and emulation of a target trial of World Cancer Research Fund/American Institute for Cancer Research 2018 physical activity and dietary recommendations and prostate cancer risk using observational data from the Health Professionals Follow-up Study (1990-2016). | N/A |
| **Table 2.** Baseline characteristics of 27,859 eligible individuals when emulating a target trial of recommendation-based physical activity and dietary strategies and prostate cancer risk, Health Professionals Follow-up Study (1990). | table2\_baseline\_characteristics.R |
| **Table 3.** Estimated 26-year risks of prostate cancer outcomes under recommendation-based physical activityb and dietary strategies, Health Professionals Follow-up Study (1990-2016). | main\_analysis\_C\_D\_Y/read\_gformula\_results.R  main\_analysis\_C\_D\_Y/gformula\_tot\_1115.R  main\_analysis\_C\_D\_Y/gformula\_adv\_1115.R  main\_analysis\_C\_D\_Y/gformula\_lethal\_1115.R  main\_analysis\_C\_D\_Y/gformula\_fatal\_1115.R |
| **Figure 1.** A causal directed acyclic graph representing observed data generating assumptions under which competing events may mediate the effect of treatment A on the event of interest Y and exchangeability holds such that a controlled direct effect may be identified. | N/A |
| **Figure 2.** Flowchart for selection of eligible individuals from the Health Professionals Follow-up Study when emulating a target trial of recommendation-based physical activity and dietary strategies and prostate cancer risk. | N/A |
| **Figure 3.** Estimated 26-year risk differences for prostate cancer outcomes, comparing recommendation-based intervention strategies vs. no intervention, Health Professionals Follow-up Study (1990-2016). | gformula\_figure\_RD.R |
| **Table S1.** 2018 World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) Cancer Prevention Recommendations and their operationalization using observational data from the Health Professionals Follow-up Study | N/A |
| **Table S2.** Variables used to model 26-year risk of prostate cancer outcomes, Health Professional Follow-Up Study | N/A |
| **Table S3.** Total number of person-years, events, losses to follow-up, deaths due to other (non-prostate) causes (competing events), and administrative censorings during the 26-year follow-up, Health Professionals Follow-up Study | Number\_Competing\_Censoring\_Events.R |
| **Table S4.** Percentage of men intervened on under the recommendation-based physical activity and dietary strategies in the primary analysis for total prostate cancer, Health Professionals Follow-up Study | check\_%\_to\_be\_intervened\_on.R |
| **Table S5.** Estimated 26-year risk differences for prostate cancer outcomes, comparing specific components of the physical activity and dietary recommendations vs. no intervention, Health Professionals Follow-up Study | main\_analysis\_C\_D\_Y/read\_gformula\_results.R  main\_analysis\_C\_D\_Y/gformula\_tot\_1115.R  main\_analysis\_C\_D\_Y/gformula\_adv\_1115.R  main\_analysis\_C\_D\_Y/gformula\_lethal\_1115.R  main\_analysis\_C\_D\_Y/gformula\_fatal\_1115.R |
| **Table S6.** Secondary analyses to estimate controlled direct effects: Estimated 26-year risk differences for prostate cancer outcomes, comparing specific components of the physical activity and dietary recommendations vs. no intervention, Health Professionals Follow-up Study | controlled\_direct\_effect/read\_gformula\_results.R  controlled\_direct\_effect/gformula\_tot\_1115.R  controlled\_direct\_effect/gformula\_adv\_1115.R  controlled\_direct\_effect/gformula\_lethal\_1115.R  controlled\_direct\_effect/gformula\_fatal\_1115.R |
| **Table S7.** Secondary analyses of “low-adherence” strategies: Estimated 26-year risk differences for prostate cancer outcomes, comparing specific components of the physical activity and dietary recommendations vs. low adherence to the recommendations, Health Professionals Follow-up Study | sens\_low\_adherence\_total\_effects/read\_gformula\_results.R  sens\_low\_adherence\_total\_effects/gformula\_low\_adherence\_tot.R  sens\_low\_adherence\_total\_effects/gformula\_low\_adherence\_adv.R  sens\_low\_adherence\_total\_effects/gformula\_low\_adherence\_lethal.R  sens\_low\_adherence\_total\_effects/gformula\_low\_adherence\_fatal.R |
| **Table S8.** Sensitivity analyses for potential confounding: Estimated 26-year risks of prostate cancer outcomes under recommendation-based physical activity and dietary strategies, Health Professionals Follow-up Study | 1. sens\_dynamic\_strategy/read\_gformula\_results.R  * sens\_dynamic\_strategy/gformula\_dynamic\_tot\_adv.R * sens\_dynamic\_strategy/gformula\_dynamic\_lethal\_fatal.R  1. sens\_xcond3/read\_gformula\_results.R  * sens\_xcond3/gformula\_xcond3\_tot\_adv.R * sens\_xcond3/gformula\_xcond3\_lethal\_fatal.R  1. sens\_lag1\_term/read\_gformula\_results.R  * sens\_lag1\_term/gformula\_lag1\_term\_tot\_adv.R * sens\_lag1\_term/gformula\_lag1\_term\_lethal\_fatal.R  1. sens\_never\_smoking/read\_gformula\_results.R  * sens\_never\_smoking/gformula\_nonsmk\_tot\_adv.R * sens\_never\_smoking/gformula\_nonsmk\_lethal\_fatal.R  1. sens\_age\_80/read\_gformula\_results.R  * sens\_age\_80/gformula\_age\_80\_tot\_adv.R * sens\_age\_80/gformula\_age\_80\_lethal\_fatal.R |
| **Table S9.** Sensitivity analyses additionally adjusting for prostate-specific antigen testing: Estimated 26-year risk differences for prostate cancer outcomes, comparing specific components of the physical activity and dietary recommendations vs. no intervention, Health Professionals Follow-up Study | sens\_psa/read\_gformula\_results.R  sens\_psa/gformula\_tot\_1115.R  sens\_psa/gformula\_adv\_1115.R  sens\_psa/gformula\_lethal\_1115.R  sens\_psa/gformula\_fatal\_1115.R |
| **Table S10.** Sensitivity analyses additionally adjusting for time since prostate cancer diagnosis: Estimated 26-year risk differences for lethal and fatal prostate cancer, comparing specific components of the physical activity and dietary recommendations vs. no intervention, Health Professionals Follow-up Study | sens\_adjust\_total\_pca/read\_gformula\_results.R  sens\_adjust\_total\_pca/gformula\_lethal\_1115.R  sens\_adjust\_total\_pca/gformula\_fatal\_1115.R |
| **Table S11.** Other sensitivity analyses: Estimated 26-year risks of prostate cancer outcomes under recommendation-based physical activity and dietary strategies, Health Professionals Follow-up Study | 1. sens\_no\_adjusting\_energy/read\_gformula\_results.R  * sens\_no\_adjusting\_energy/gformula\_no\_adjusting\_energy\_tot\_adv.R * sens\_no\_adjusting\_energy/gformula\_no\_adjusting\_energy\_tot\_adv.R  1. sens\_covprior/read\_gformula\_results.R  * sens\_covprior/gformula\_covprior\_tot\_adv.R * sens\_covprior/ gformula\_covprior\_lethal\_fatal.R  1. sens\_functional\_form/read\_gformula\_results.R  * sens\_functional\_form/gformula\_functional\_form\_tot\_adv.R * sens\_functional\_form/gformula\_functional\_form\_lethal\_fatal.R  1. sens\_alter\_sequence/read\_gformula\_results.R  * sens\_alter\_sequence/gformula\_alter\_sequence\_tot\_adv.R * sens\_alter\_sequence/gformula\_alter\_sequence\_lethal\_fatal.R |
| **Table S12.** Negative and positive outcome controls: Estimated 26-year risk differences for accidental or injury-related death and cardiovascular disease death, comparing specific components of the physical activity and dietary recommendations vs. no intervention, Health Professionals Follow-up Study | control\_analysis/read\_gformula\_results.R  control\_analysis/gformula\_acd\_1115.R  control\_analysis/gformula\_cvd\_1115.R |
| **Figure S1.** Extension of the causal directed acyclic graph depicted in Figure 1 to additionally show the structure of treatment-confounder feedback | N/A |
| **Figure S2.** Standardized survival curves for total, advanced, lethal, and fatal prostate cancer under recommendation-based physical activity and dietary strategies, Health Professionals Follow-up Study | main\_analysis\_C\_D\_Y/survival\_plot.R |
| **Figure S3.** Comparisons of means of time-varying body-mass index under no intervention (natural course) and the joint recommendation-based physical activity and dietary strategy, Health Professionals Follow-up Study | check\_BMI/gformula\_tot\_1115.R |
| **Figure S4.** Comparisons of means of time-varying variables and risk of total prostate cancer between IP-weighted estimates and parametric g-formula estimates under the natural course | main\_analysis\_C\_D\_Y/fitness\_figure.R |
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