

Moderate low-cost modifications in diet prevent a substantial number of deaths and mitigate environmental impacts in Brazil



Eliseu Verly Junior¹, Olivier Jolliet²

¹Rio de Janeiro State University, Rio de Janeiro, Brazil; ²Technical University of Denmark, Hovedstaden, Denmark.

Moderate changes in diet would reduce all-cause deaths by up to 4% in Brazil, with diet cost increases by up to 8%. Interventions to reduce red and processed meat would mitigate cost increment and environmental impacts.

BACKGROUND

Dietary risks are among the leading risk factors for all-cause mortality. In addition, environmental impacts as a consequence of food production, such as climate change, have been linked to human health damage (e.g., cardiovascular diseases, diarrhea) which is also linked to death risk. This study aimed to estimate the health, economic, environmental, and environmentally-mediated health impacts of simulated moderate interventions on the frequency of intake and serving size of target foods in Brazil.

METHODS

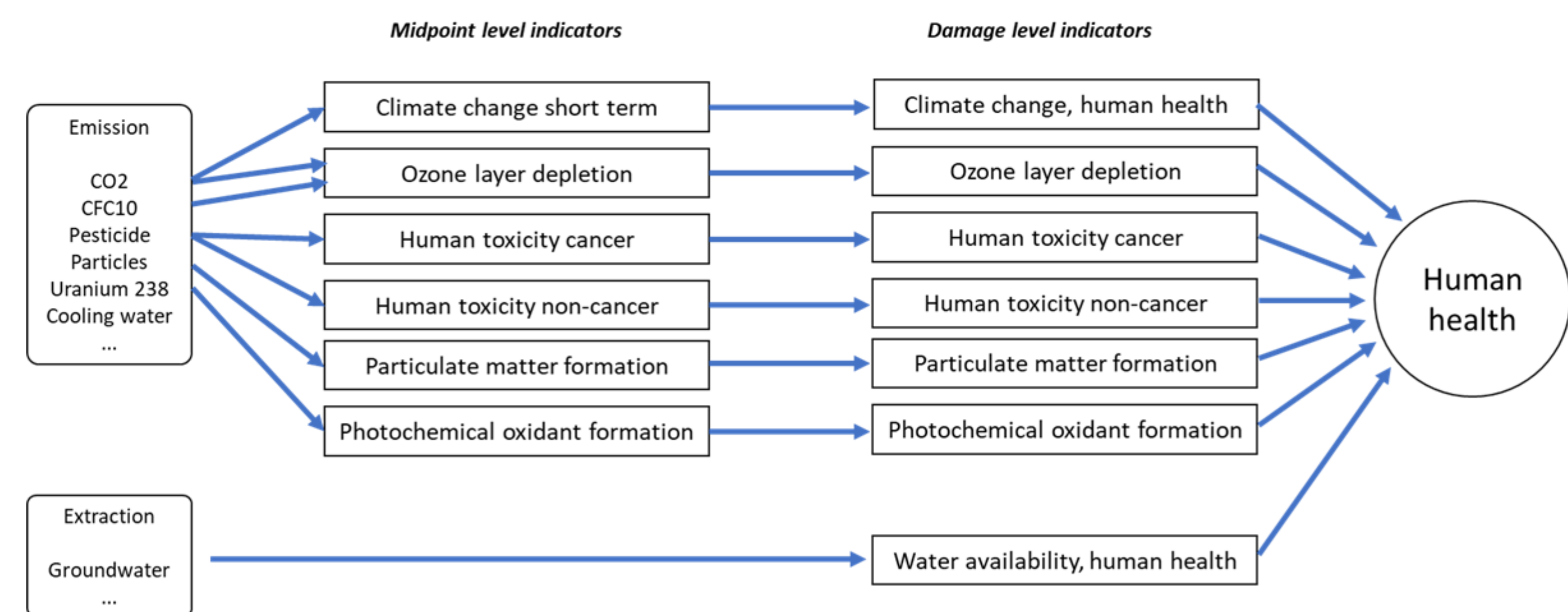
- Food price and consumption from nationwide surveys
- Counterfactual intakes were based on six hypothetical intervention scenarios, by changing the weekly frequency and serving size in low or high consumers of fruit and vegetables (FV), milk, whole grains, red and processed meats, and sugar-sweetened beverages.
- Attributable number of deaths
- Monetary diet cost
- Environmental impacts and environmentally-mediated health impacts

Scenario	Targets
1 - Fruit and vegetables (fruit juices and starchy vegetables are not included)	Everyone in the population will eat fruit at least five times a week; everyone in the population will eat vegetables at least two serving sizes per day.
2 - Milk	Among consumers, the frequency of those consuming less than four times per week will increase to four times per week. Usual non-consumers remain non-consumers.
3 - Whole grains	Among the people who eat white rice on a given day, 30% will replace it with brown rice.
4 - Red and processed meats	Among red meat consumers, those consuming ≥ 4 times/week will not consume more than 4 times/week. Among processed meat consumers, those consuming ≥ 3 times/week will not consume more than 3 times/week. For both red and processed meats, non-usual consumers will remain non-consumers, and consumers will not eat more than one serving size per day.
5 - SSB	Among consumers, those consuming ≥ 4 times/week will not consume more than 4 times/week. Usual non-consumers will remain non-consumers, and consumers will not consume more than one serving size per day.
7- Combined interventions	All the interventions combined.

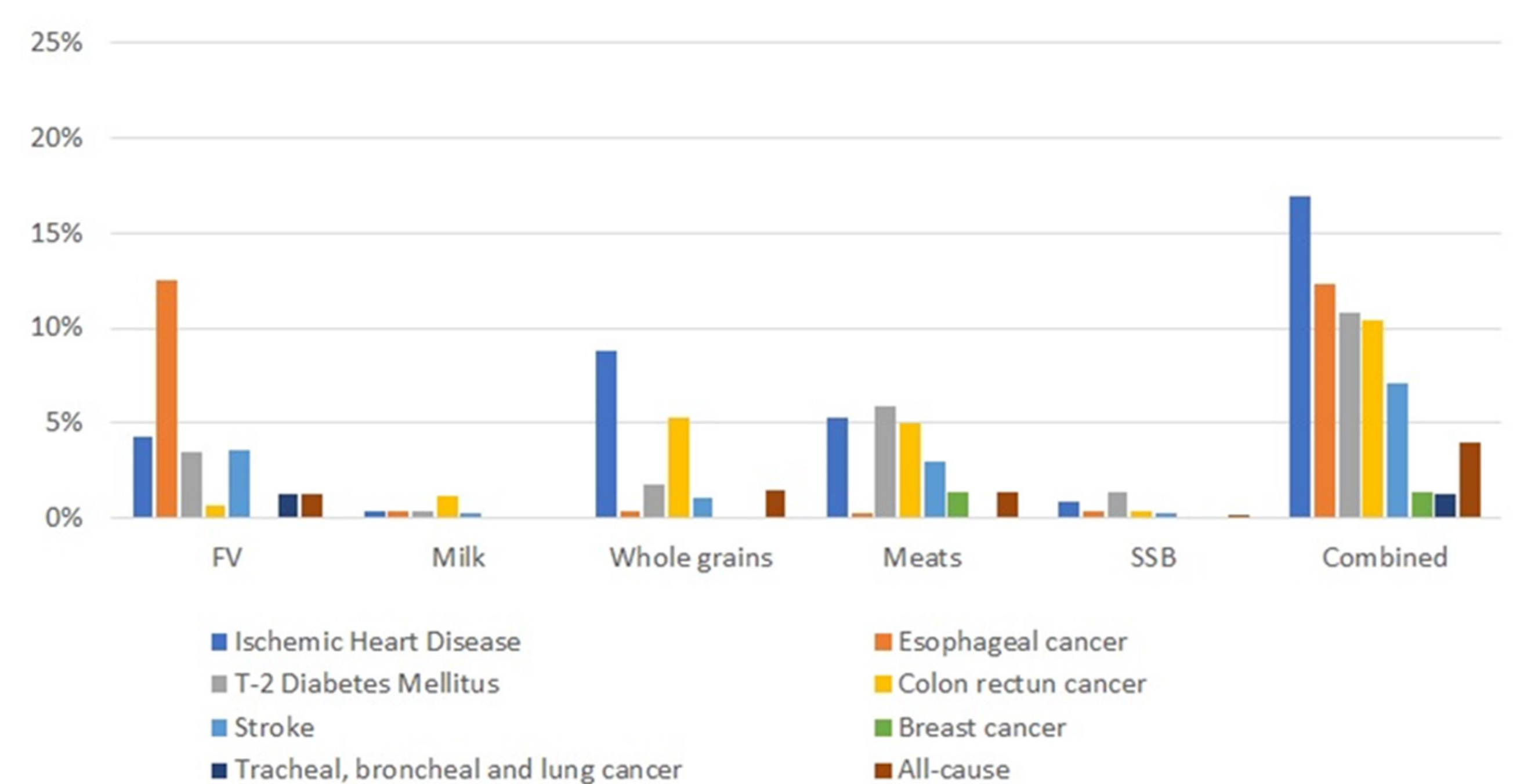
RESULTS

- the most expensive intervention (+8.3%) was to increase FV intake (+125g), resulting in a 1.2% reduction in all-cause mortality (16,307 deaths/year).
- The cheapest (-9.9%) was to reduce red and processed meat intake (-40g), resulting in a 1.1% reduction in all-cause mortality (14,272 deaths/year)
- The combined intervention was, on average, 3.7% cheaper than the baseline cost, resulting in an increase in diet cost for 30% of the population (45% to 22% in the lower- and higher-income groups); all-cause mortality would be reduced by 3.8% (49,488 deaths/year).

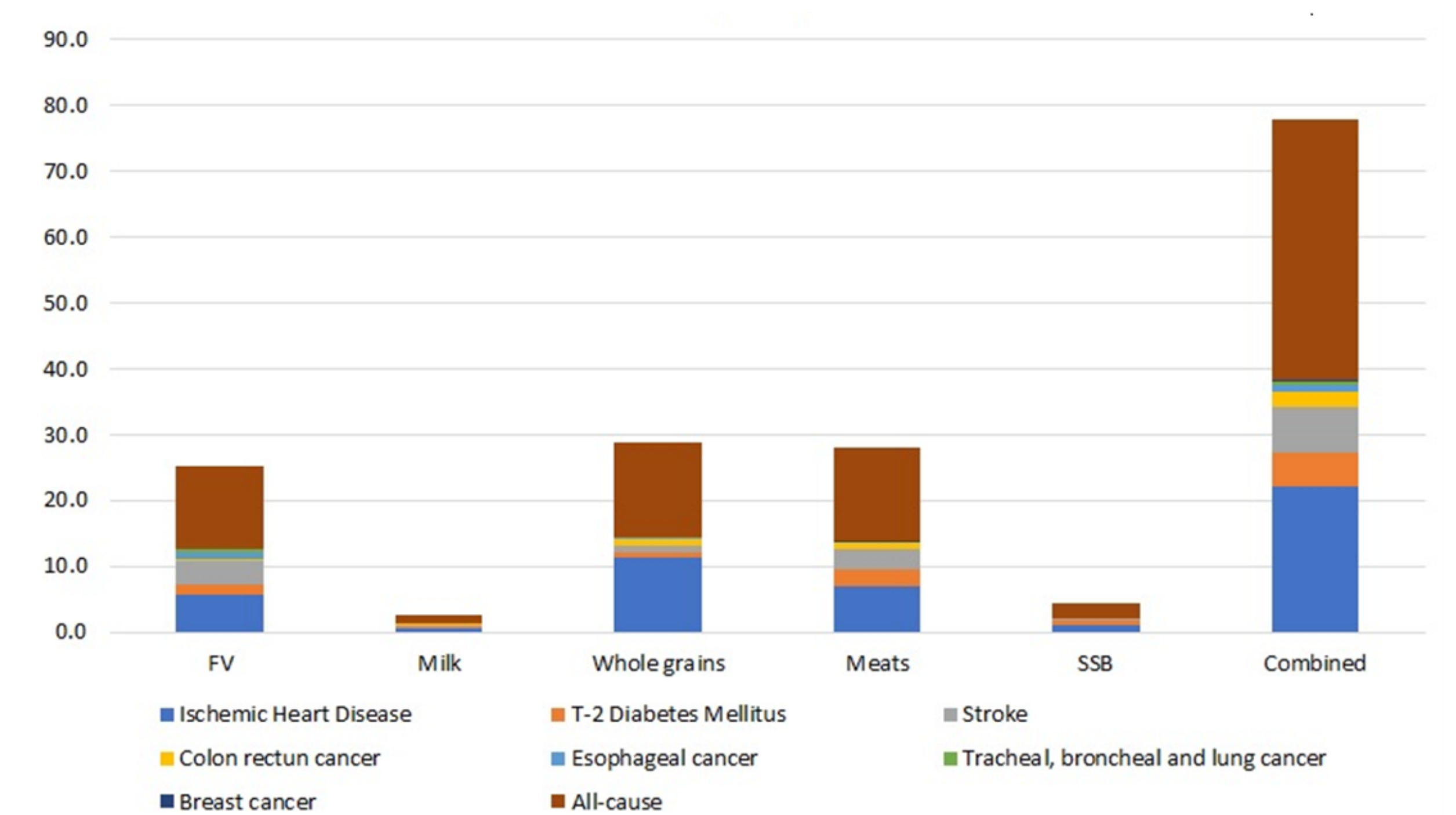
Midpoint and damage levels indicators for impacts on human health



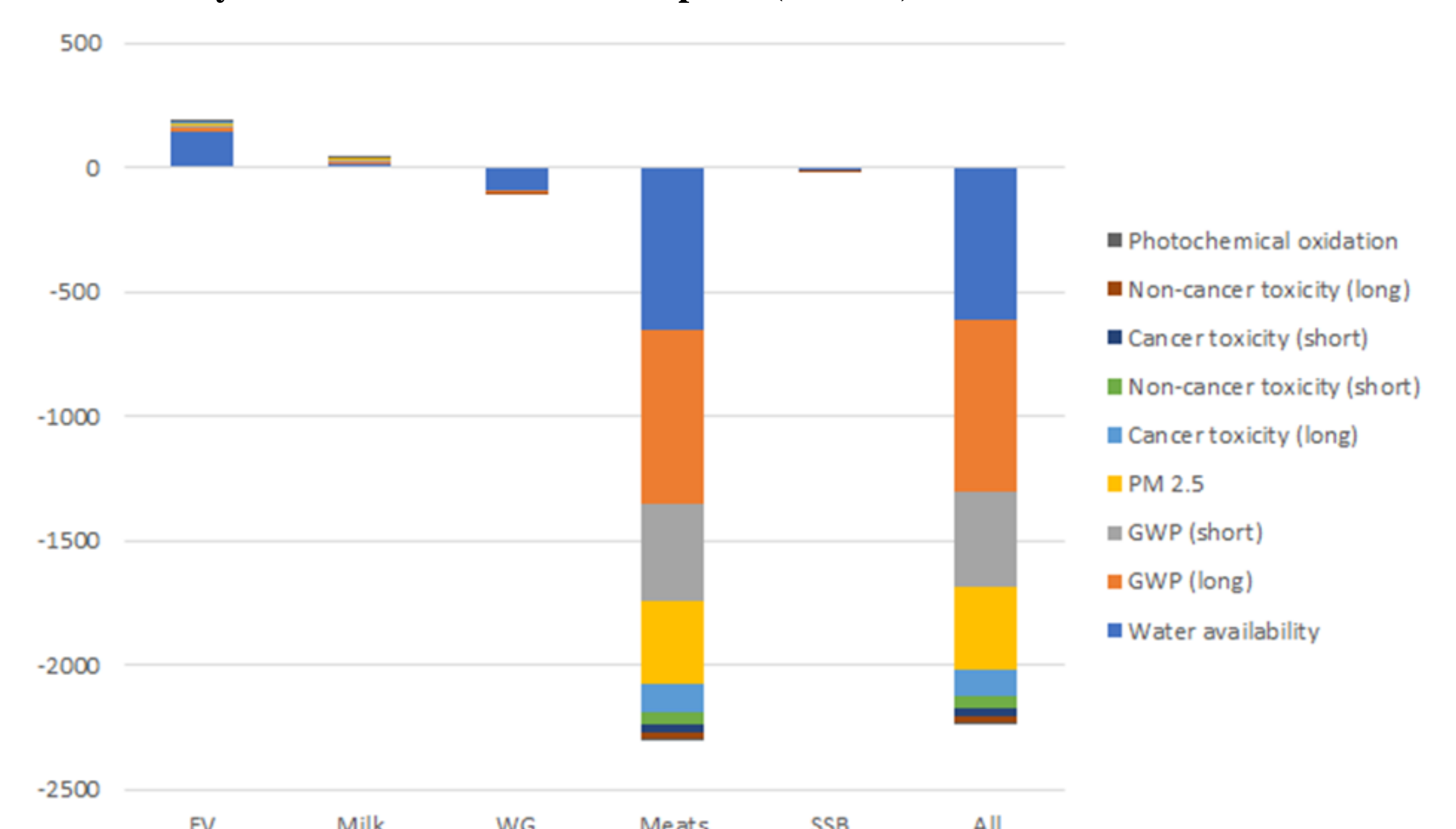
Potential Impact Fractions (PIFs) for DALYs and deaths according to the intervention scenario



Deaths and DALY per 100,000 individuals avoidable for each disease according to the intervention



Environmentally-mediated human health impacts (DALYs) in each intervention scenario



For more information, please contact: eliseujunior@gmail.com