International Institute for Applied Systems Analysis
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Using DMDU methods to explore the lifestyle change uncertainty in integrated assessment models

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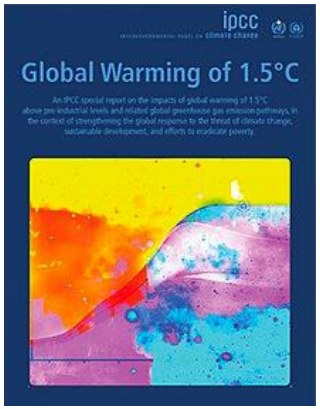
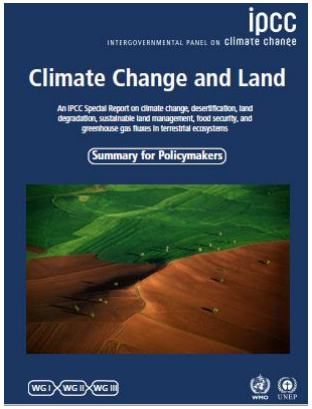
Annual Meeting of the Society for Decision Making under Deep Uncertainty

CLIMATE INTERACTIVE

Lifestyle change





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INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

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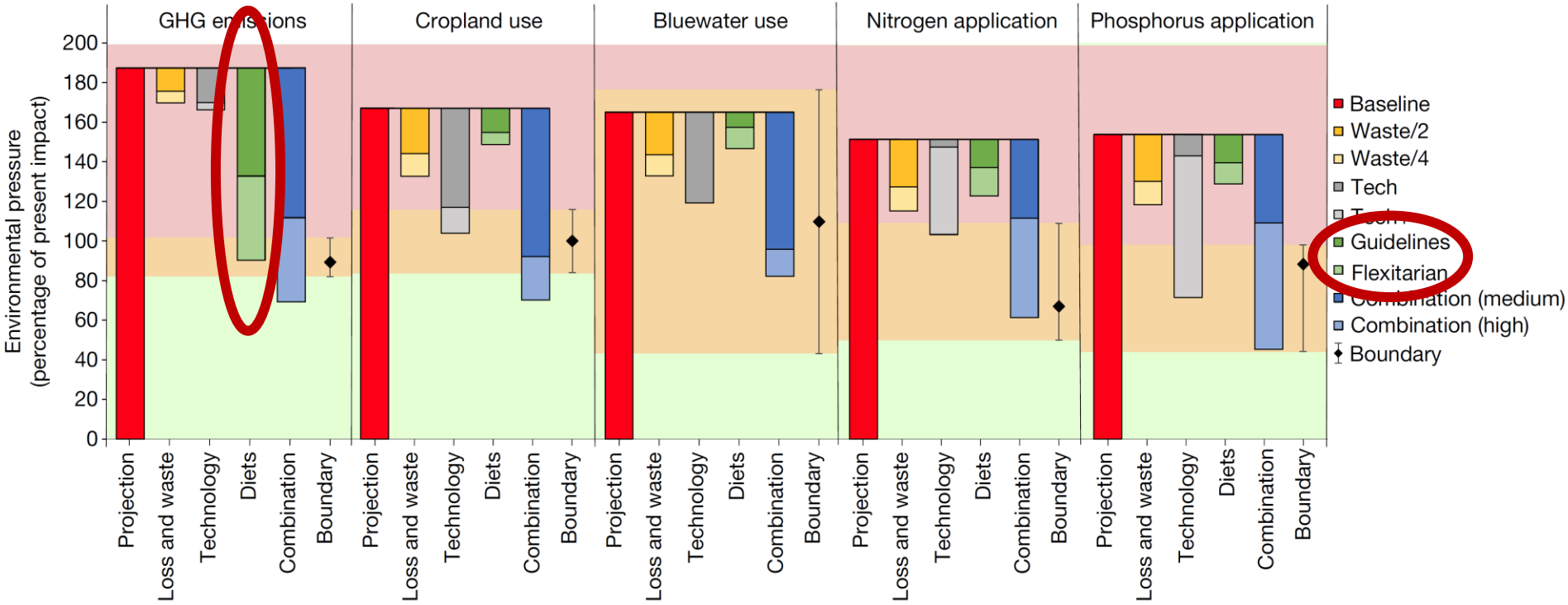
Lifestyles Need to Change Radically, WRF Conference Concludes

February 28, 2019 In Headline Event, WRF Events

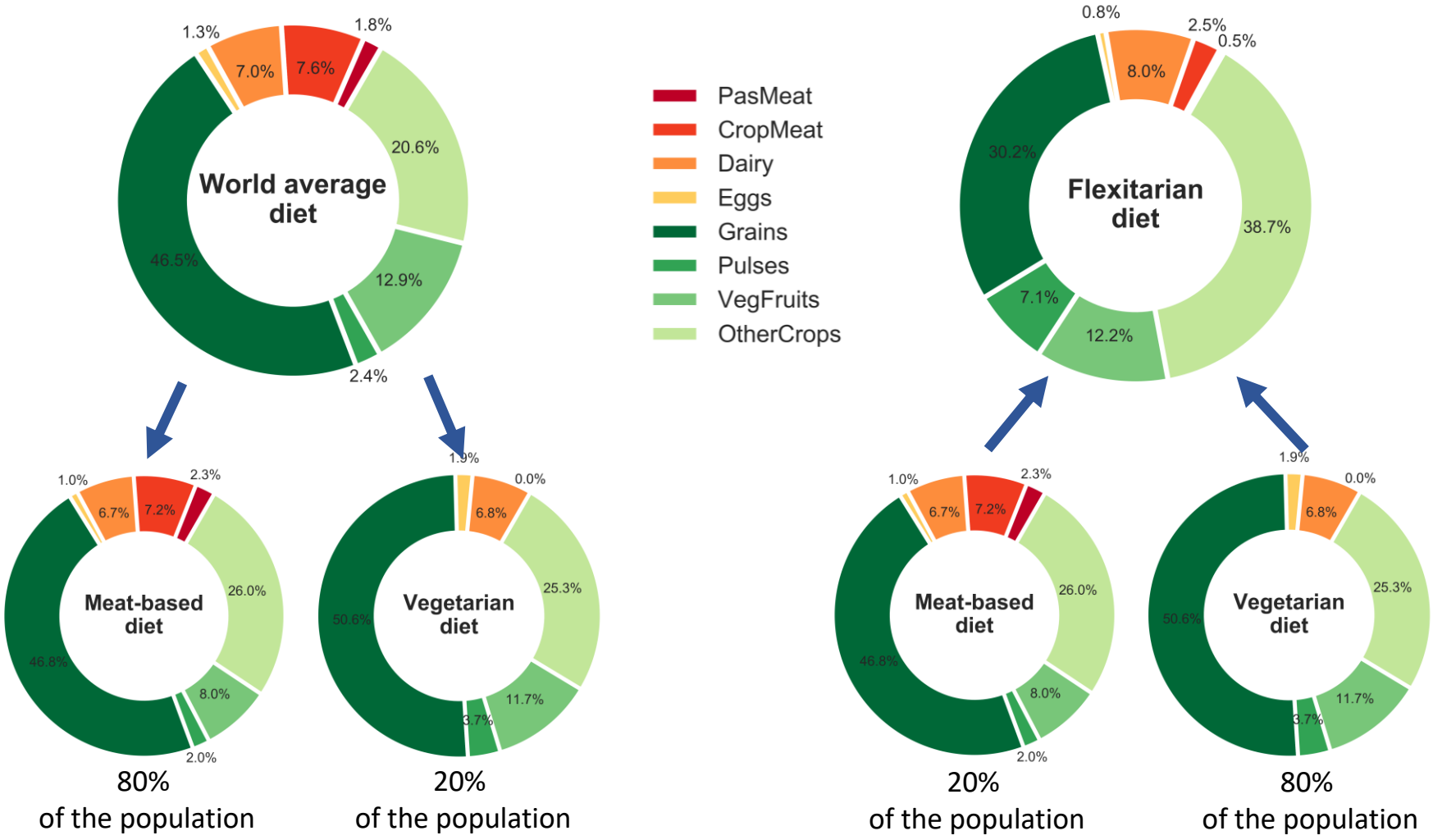
Sustainable diets

Impacts of reductions in food loss and waste, technological change, and dietary changes on global environmental pressures in 2050



Source: Springmann et al. (2018) *Nature*

How many people does it take…?



80%
of the population

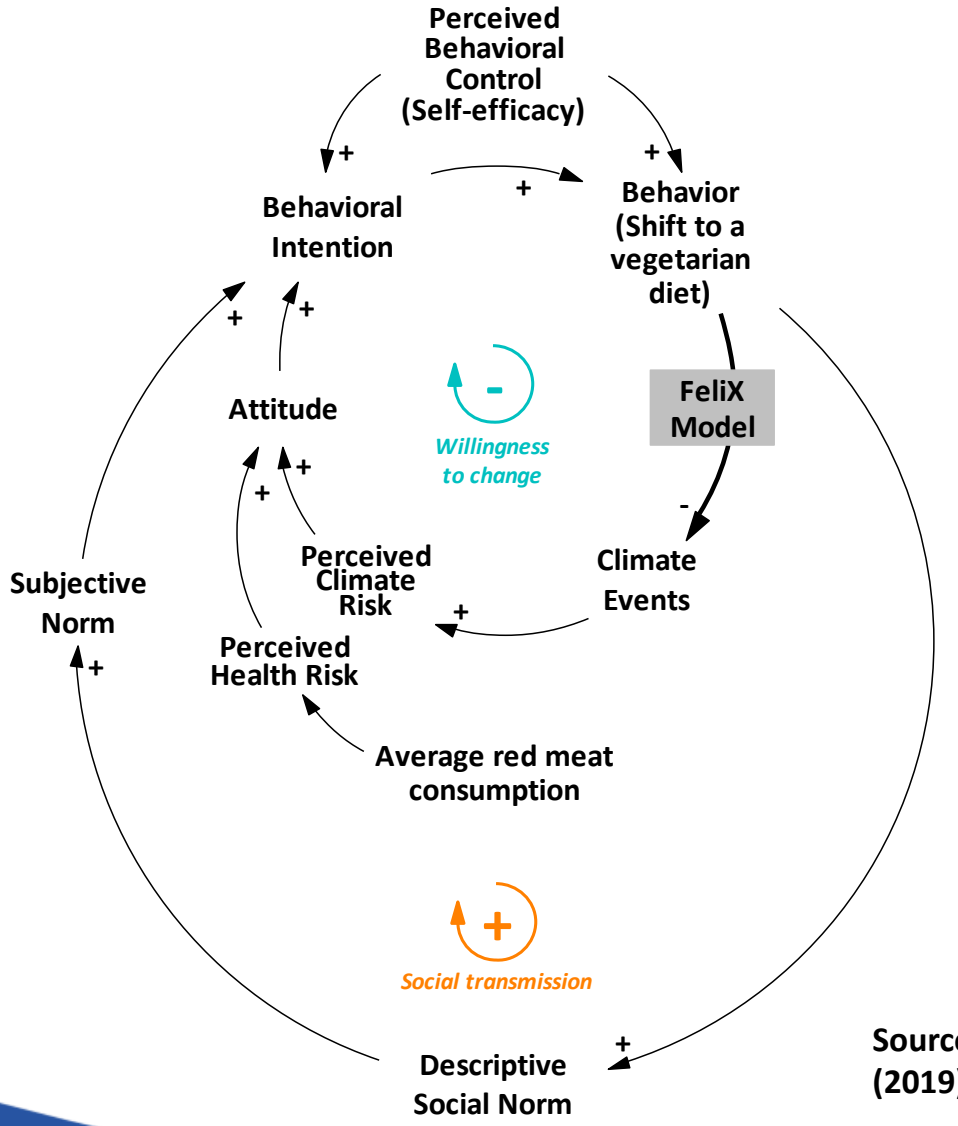
20%
of the population

20%
of the population

80%
of the population

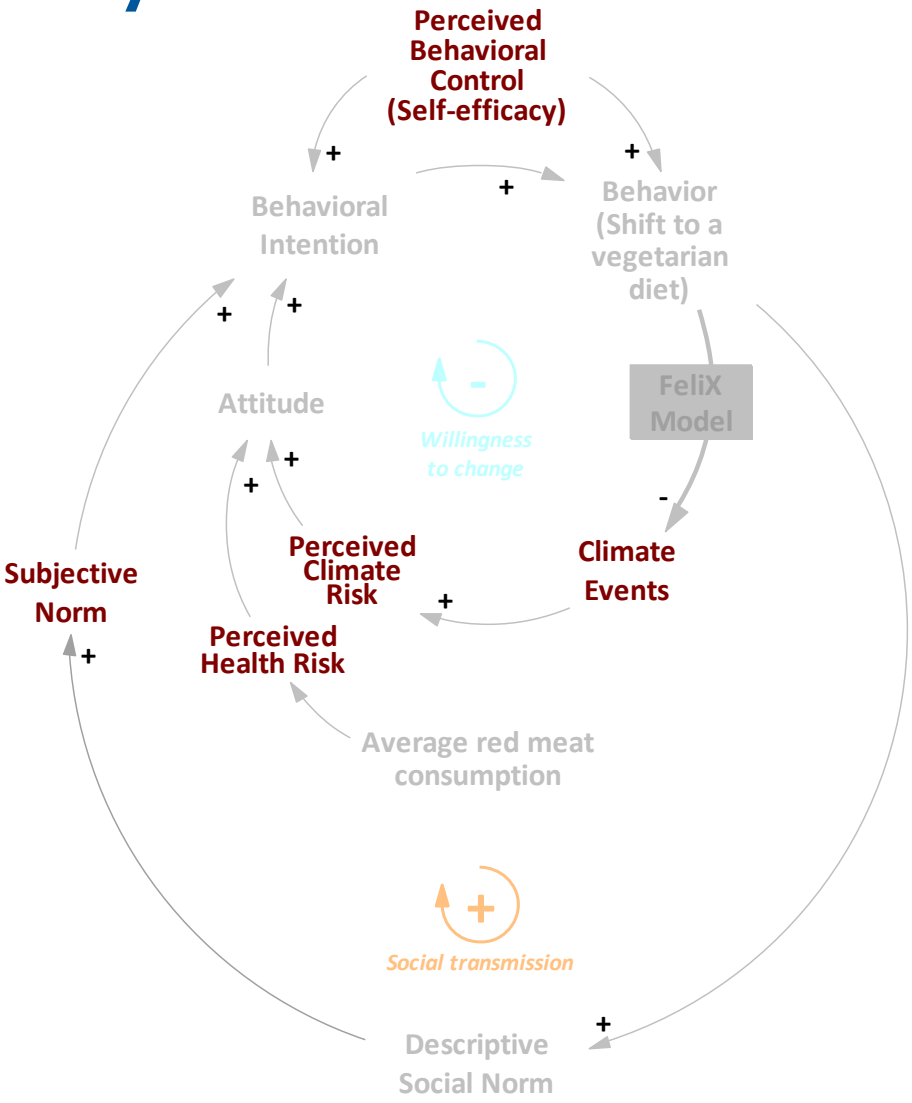
…integrated assessment models should include social and behavioral uncertainty for feasible scenarios!

Modelling behavioral drivers

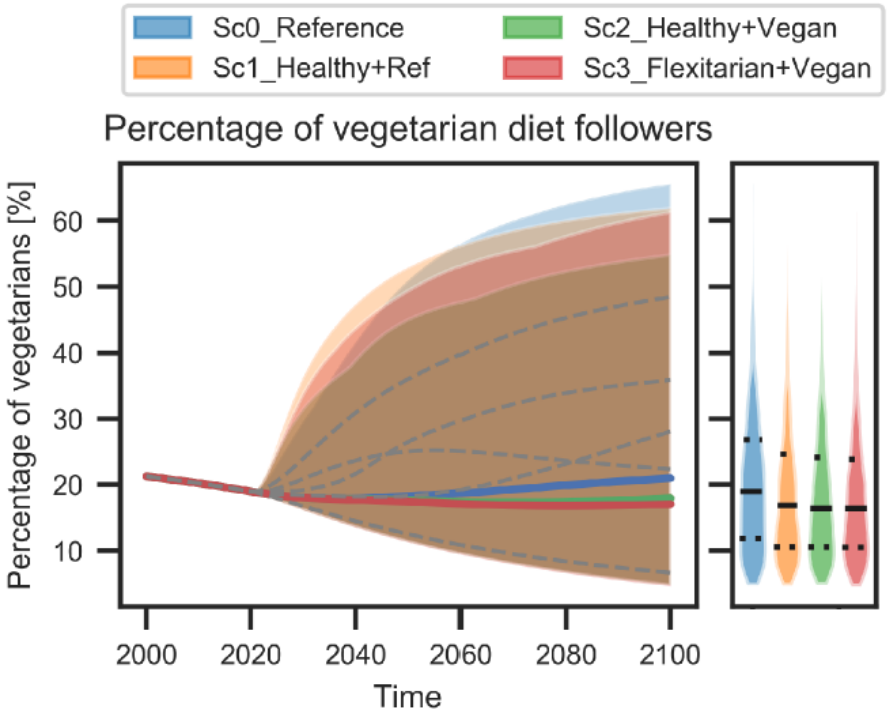


Source: Eker S, Reese G, Obersteiner M. (2019) *Nature Sustainability*.

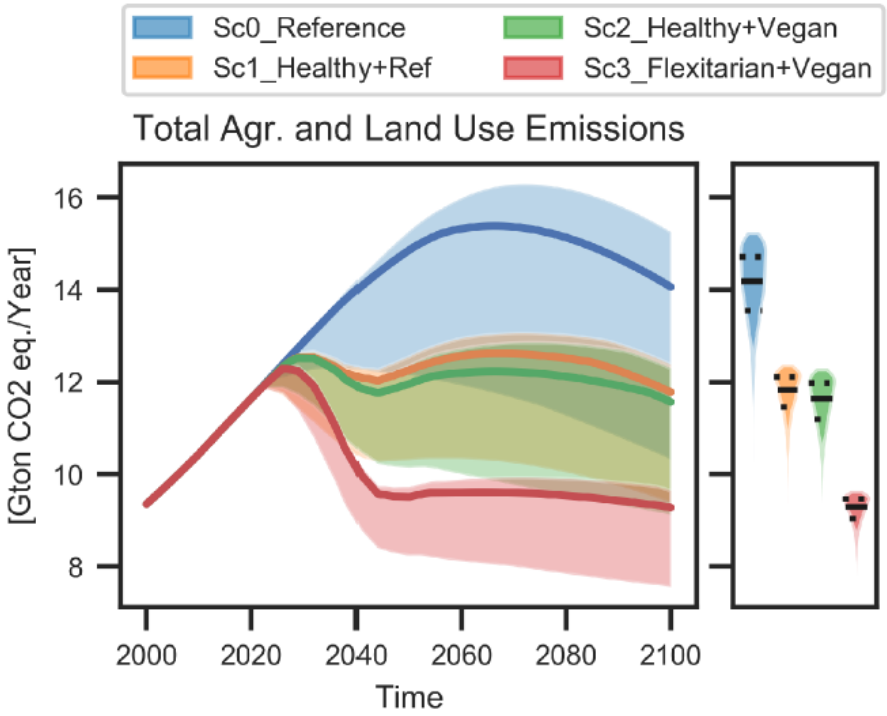
Uncertainty



Scenario exploration



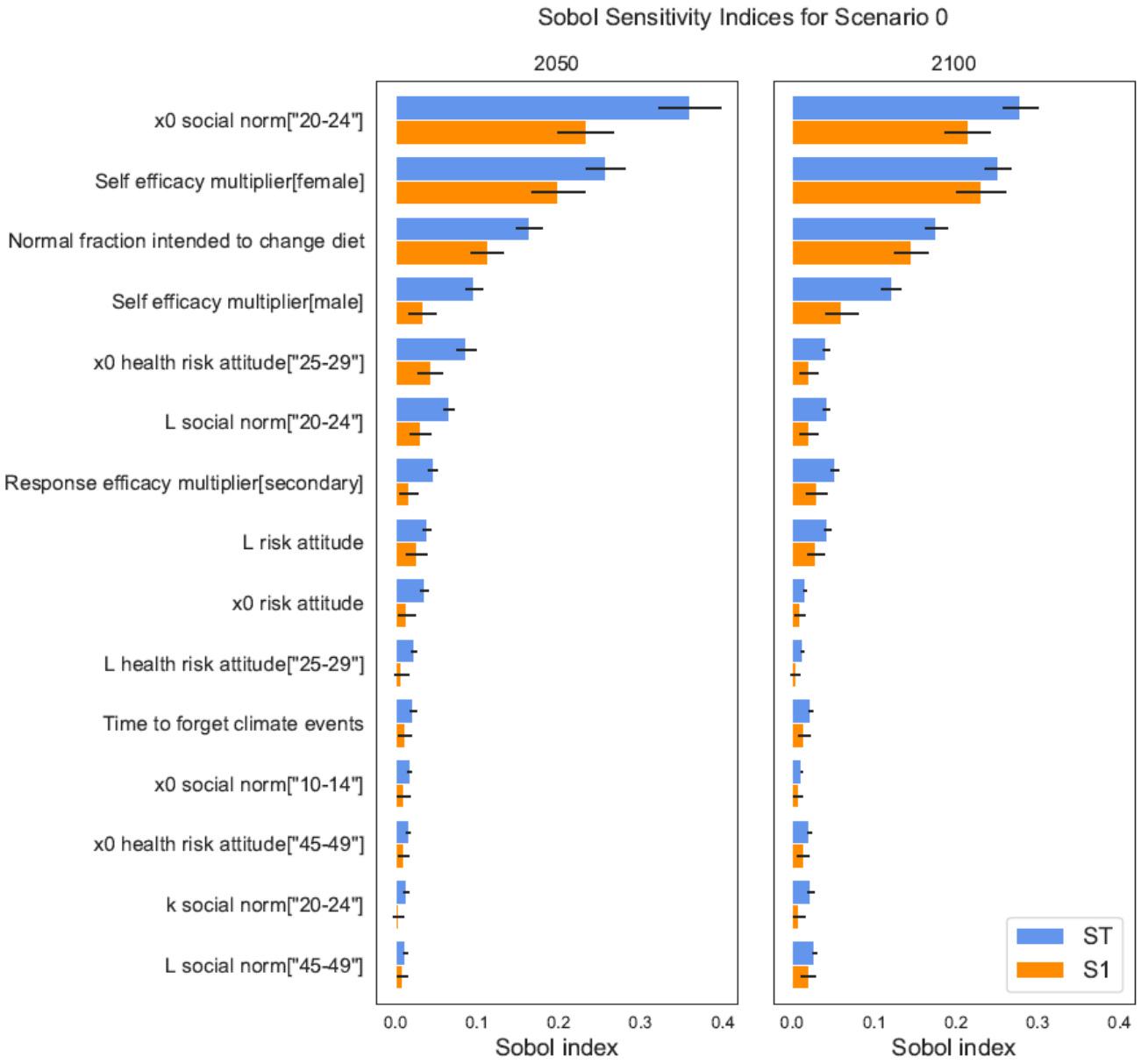
(a)



(b)

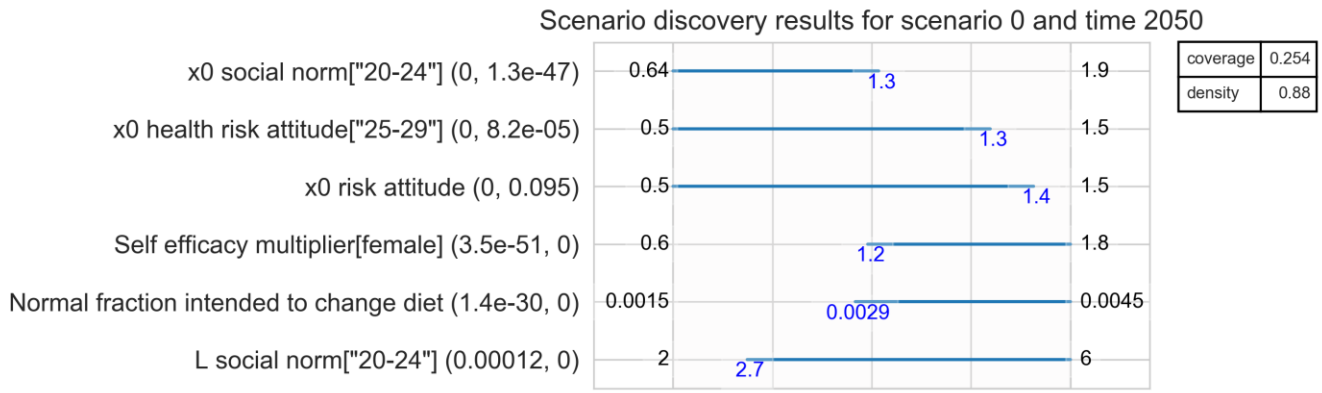
Global Sensitivity Analysis and Sobol Indices

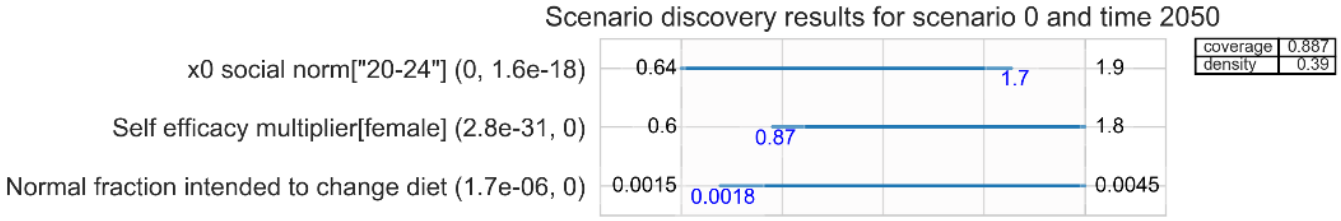
Which behavioural factors cause the highest sensitivity?



Scenario discovery using PRIM

Which factors are associated with a wide spread of vegetarians in the global population?

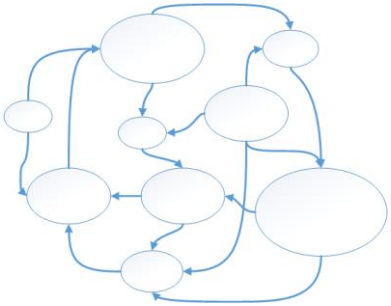




Conclusions

Social norms and self-efficacy (identity) are the most prominent drivers, not the climate or health risk.

The groups who already have a high tendency, e.g. young and female, are the low-hanging fruits.



The modelling framework is generalizable and transferrable.

DMDU methods help to enhance the feasibility of mitigation scenarios, and set research priorities for uncertainties!