Delphi Survey for Health Co-Benefits Modeling

Goals of this process

You have been invited to participate in a modified Delphi process to help the community interested in mitigation health co-benefits modeling arrive at a consensus regarding guidelines for modeling practices and reporting. The process has three goals:

1. To scope and focus the group's efforts prior to the meeting;
2. To evaluate the degree of agreement on central methodological issues; and
3. To move toward consensus regarding these issues where possible through iterative, online, anonymous discussion.

The information from this exercise will be used to inform discussion at the Wellcome Trust / World Health Organization / University of Washington workshop in March 2019. Ultimately, the proceedings from the Delphi process and the workshop will be used to produce a set of guidelines for mitigation health co-benefits estimation, to be published by the participants and organizers as a working group.

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Process overview

The Delphi process is an established approach for moving groups toward consensus. The process involves a series of surveys, in between which group members receive a summary of group responses and anonymized comments; the group members then have a chance to revise their responses in the next survey round.

In this particular process, we have developed a series of online surveys in which you will be asked to rate the extent to which you agree with a series of statements, on a scale of 1-9, with 1 being "complete disagreement" and 9 being "complete agreement". Some statements relate to goals for the modified Delphi process and the workshop, while others relate to proposed consensus statements. The statements have been developed through synthesis of several literature reviews on the topic, review of other relevant guidelines and standardized approaches, and reviews of mitigation health co-benefits modeling studies. Depending on responses to some of the framing questions about the

process, additional consensus statement questions may be introduced in later rounds.

In addition to a numerical response, you will also have the opportunity to log comments on each question, including reasoning for your response, suggested literature supporting your position, relevant resources for the group to review, and/or comments on others' responses. While comments are not required, we encourage you to comment, as your thoughts will be helpful to the group in identifying and working through issues and points of contention. Comments will be anonymized before sharing with the group.

To support your input there is supporting documentation. For the first round, this material is summarized here. In subsequent rounds, statistics related to the group's responses and anonymous comments will be summarized for each question and new materials will be provided. You will have access to the raw, anonymized data and all respondent comments and submitted materials.

In later survey rounds, you will be reminded of your prior responses and asked, in light of the summary findings from the prior round, whether you would like to revise your responses in the next iteration. After the final round, summary statistics and responses will be provided. Items with a median score above 7 and an 1st quartile above 4 will be considered to represent consensus. Items for which consensus has remained elusive will be discussed in person at the Health Co-Benefits Modeling Workshop.

Delphi Survey for Health Co-Benefits Modeling

Mitigation health co-benefits modeling - Round 1 - Scoping and direction

The questions on this page are meant to help scope and focus our discussion. Depending on answers to these questions, we may add additional questions to future survey rounds.

* 1. The primary goal of the workshop should be harmonization of methods in mitigation health co-benefits studies such that multiple studies can be combined in a meta-analysis.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

2. Please provide any comments you may have related to the question above.

* 3. Deciding upon a common approach to conceptualizing mitigation policy scenarios across major areas (e.g., emissions reductions of a certain percent from a defined baseline in a given sector) should be the first step in harmonizing methods.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

4. Please provide any comments you may have related to the question above.

* 5. Please rank the following mitigation areas in terms of priority for developing standardized modeling approaches.

Food production

Electricity production

Transportation

Land use

Buildings

6. Please provide any comments you may have related to the question above.

* 7. Mitigation health co-benefits estimates should incorporate climate change into relevant exposure pathways (e.g. the impact of warming on atmospheric chemistry should be included in co-benefits estimates related to air pollutants).

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

8. Please provide any comments you may have related to the question above.

* 9. How often do you think mitigation health co-benefits estimation guidelines should be updated?

- ○ Every five years
- ○ Every ten years
- ○ On an ad hoc basis

10. Please provide any comments you may have related to the question above.

* 11. Uncertainty analysis in mitigation health co-benefits modeling should map explicitly to the Shared Socioeconomic Pathways (SSP) and related quantitative projections. For example, each SSP might have an associated pre-defined set of parameters related to mitigation policy ambition and uptake, and uncertainty analyses would incorporate available projections for each SSP.

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

12. Please provide any comments you may have related to the question above.

* 13. Please rank the following audiences in terms of their importance for mitigation health co-benefits estimations.

Policy makers at an international scale

Domestic policy makers at a national scale

Domestic policy makers at a regional scale

Environmental scientists

The health sector

Practitioners in sectors other than health (e.g., agriculture)

14. Please provide any comments you may have related to the question above.

Delphi Survey for Health Co-Benefits Modeling

Mitigation health co-benefits modeling - Round 1 - Consensus statements

The questions on this page are potential consensus statements that are phrased as guidelines to be applied to mitigation health co-benefits modeling efforts.

* 15. To facilitate intercomparison of estimates, mitigation health co-benefits studies should adopt a recommended set of practices for model structure, parameterization, metrics, sensitivity testing, and results reporting.

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

16. Please provide any comments you may have related to the question above.

* 17. Guidelines should acknowledge that modelers may choose to provide additional estimates in response to stakeholder interest and other considerations.

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

18. Please provide any comments you may have related to the question above.

* 19. Mitigation health co-benefits estimation studies should use a comparative risk assessment framework.

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

20. Please provide any comments you have related to the question above.

* 21. Health co-benefits modeling studies generate health estimates and, as such, the GATHER (Guidelines for Accurate and Transparent Health Estimates Reporting) statement and checklist pertain to mitigation health co-benefit estimation. (N.B.: These guidelines can be used in conjunction with others that may be relevant.)

Complete disagreement									Complete agreement
○	○	○	○	○	○	○	○	○	○

22. Please provide any comments you may have related to the question above.

* 23. Health co-benefits modeling studies are a form of health impact assessment (HIA) and, as such, the HIA professional practice standards pertain to mitigation health health co-benefits estimation. (N.B.: These guidelines can be used in conjunction with others that may be relevant.)

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

24. Please provide any comments you may have related to the question above.

* 25. Based on the total forcing resulting from the combination of global warming potential, residence time in the atmosphere, and current atmospheric concentration, modeling efforts should focus on activities with substantial carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), black carbon (BC), and ozone (O_3) emissions.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

26. Please provide any comments you may have related to the question above.

* 27. The default health metric for modeling studies should be Disability Adjusted Life Years (DALYs).

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

28. Please provide any comments you may have related to the question above.

* 29. The default geopolitical metric for modeling studies should be the country.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

30. Please provide any comments you may have related to the question above.

* 31. The default time metric for modeling studies should be the year.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

32. Please provide any comments you may have related to the question above.

* 33. The default metric of mitigation potential for modeling studies should be tons of CO_2 equivalent (tons of CO_2e).

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

34. Please provide any comments you may have related to the question above.

* 35. The default financial metric for modeling studies should be the US dollar.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

36. Please provide any comments you may have related to the question above.

* 37. Health impacts should be valued at a rate of twice the local gross domestic income per capita per DALY.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

38. Please provide any comments you may have related to the question above.

* 39. Causal pathways for each mitigation pathway being examined, principal linkages with health, and the criteria for identifying relevant risk-outcome pairs should all be explicitly stated.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

40. Please provide any comments you may have related to the question above.

* 41. Risk-outcome pair associations should, whenever possible, be taken from meta-analyses of peer-reviewed literature.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

42. Please provide any comments you may have related to the question above.

* 43. Assumptions regarding mitigation policy uptake should be explicitly stated and alternatives to full uptake should be incorporated into sensitivity testing.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

44. Please provide any comments you may have related to the question above.

* 45. Mitigation health co-benefits modeling analyses should use random effects.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

46. Please provide any comments you may have related to the question above.

* 47. Mitigation policies resulting in chronic disease reductions should be discounted to net present value using standardized, accepted approaches (as outlined in the WHO Guide to Cost Effectiveness Analysis).

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

48. Please provide any comments you may have related to the question above.

* 49. There should be core scenarios for each major area of mitigation policy (transport, energy production, land use, buildings, and food production) stipulating emissions pathways expressed as proportional reductions from standardized baselines.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

50. Please provide any comments you may have related to the question above.

* 51. There should be standardized estimates of the linkages between specific mitigation activities and associated emissions reductions.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

52. Please provide any comments you may have related to the question above.

* 53. Models should allow for phasing in of mitigation policies and accrual of health benefits, and assumptions regarding rates of policy phase-in and health benefit accrual should be explicitly stated and alternatives included in sensitivity testing.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

54. Please provide any comments you may have related to the question above.

* 55. Costs and benefits should be discounted at a 3% rate.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

56. Please provide any comments you may have related to the question above.

* 57. Sensitivity testing for cost and benefit discounting should include rates of 1%, 2%, and 6%, and may include variable discounting rates as well.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

58. Please provide any comments you may have related to the question above.

* 59. Population and demographic projections should be incorporated into modeling studies.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

60. Please provide any comments you may have related to the question above.

* 61. Standard time horizons for modeling studies should be in 15 year increments including 2035, 2050, 2065, and 2080.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

62. Please provide any comments you may have related to the question above.

* 63. Baselines for emissions and population health status should be set at calendar year 2015.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

* 64. Meta-analyses of health co-benefits studies should conform to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and checklist and the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) guidelines and checklist.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

65. Please provide any comments you may have related to the question above.

* 66. Authors should use the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach when making recommendations regarding mitigation health co-benefits.

Complete disagreement								Complete agreement
○	○	○	○	○	○	○	○	○

67. Please provide any comments you may have related to the question above.

68. Are there any questions that you wish had been posed to the group? If so, please suggest them here.