Reviewer Information

What is your name? _____

Questions for Evidence Extraction

Meta-analysis answers a research question of the form: "What is the impact of [some predictor or intervention of interest] on [some outcome of interest]?" Your research questions is,
"What is the impact of a vegetarian diet on the overall mortality rate due to all causes?"

This form guides the process of extracting evidence from written reports of research findings for meta-analysis. It has two parts. The first part documents study-level information which includes details about each written report. The second part documents result-level information which describes the specific nature of each statistical result to be included in your meta-analysis.

Study-Level Information

In this section, you will document information about the written report you are coding. This information should be consistent for all results reported in an article. ***Please feel free to use shorthand or copy and paste blocks of text from the article itself.***

Study Identity

1. What is the title of the report?

2. List the authors of the study.

3. What year was the study published?

General notes:

Study Context

Please use the following items to document the study design and the context of data collection, paying special attention to information that might impact how you interpret the study results.

1. What kind of study is this?
    - ❏ Experimental (i.e., participants randomly assigned to groups)
    - ❏ Observational (i.e., participants' behavior was observed without intervention)
    - ❏ Other kind of study ↓

      Name: _____

      Description: _____

2. In what country was the study conducted?

3. What was the study setting?
    - ❏ Controlled (e.g., clinic, laboratory)
    - ❏ Naturalistic (e.g., home, school, work)
    - ❏ Crowdsourced (e.g., webpage)
    - ❏ Other setting ↓

      Name: _____

      Description: _____

General notes:

Participants

Please use the following items to describe participants in the study and how they were selected.

1. Briefly describe the **final sample of participants** in the study in terms of relevant characteristics (e.g., demographics, occupation, health status), paying attention to how the **recruitment process** and **inclusion or exclusion criteria** impact sample selection.

2. Document anything about the selection of participants in this study that might impact how you interpret the meaning of the results. Is there anything unexpected about the sample or the selection process? Is the the sample representative of the general population?

General notes:

Result-Level Information

In this section, you will document information about each estimate of the effect of interest in the written report you are coding. Please fill out the questions in this section for each reported result you would like to include in your meta-analysis. Be careful not to create duplicate entries if the same results are reported in separate written reports.

Measurement

Please use the following items to describe how the outcome of interest was defined and measured in the study (i.e., how the outcome of interest is operationalized).

1. What units of measurement were reported to quantify the outcome of interest?

2. How did the authors obtain the values of the reported measure? Please document how the author(s) define what counts as an observation of the outcome of interest.

General notes:

3. Was the measure repeated over time for individual participants, or was the measure reported for multiple points in time?
    - ❏ **No** repeated measures or multiple timepoints were reported.
    - ❏ **Repeated measurements** were reported. ↓

      How will you document the repeated measurements for your meta-analysis?

        - ❏ Multiple repeated measurements are relevant to our research question. ↓

          List the times: _____

          What unit of time is reported? _____
        - ❏ Just one repeated measurement is relevant to our research question. ↓

          What is the follow-up duration? _____

          What unit of time is reported? _____
    - ❏ **Multiple timepoints** were reported. ↓

      How will you document the timing of the measure for your meta-analysis?

        - ❏ Multiple timepoints are relevant to our research question. ↓

          List the times: _____

          What unit of time is reported? _____
        - ❏ Just one timepoint is relevant to our research question. ↓

          What is timepoint? _____

          What unit of time is reported? _____

4. Was this measure taken for subgroups of participants, and are these subgroups of relevant to the research question of your meta-analysis?
    - ❏ Subgroups effects were **not reported**.
    - ❏ Subgroup effects were **reported but not relevant** to our research question.
    - ❏ Subgroup effects were **reported and are relevant** to our research question. ↓

      What was the grouping factor? _____

      What levels of the factor were reported? _____

General notes:

Effect Size

Please use the following items to capture, in as much detail as possible, information reported about estimates of effect size. You will almost certainly find this information in the Results section. For each statistic reported about the effect of interest, please fill out the following items.

1. What statistic is used to report the effect size estimate? This might be the same as the unit of measurement, or it might be derived from that measurement through a statistical model.

   a. What kind of effect size statistic is this?
      - ❏ Mean
      - ❏ Ratio
      - ❏ Correlation

   b. What statistical model was used to produce the effect size estimate?

2. How is the reliability of the effect size estimate reported? Please check all that apply.
   - ❏ Confidence Interval ↓

     What is the confidence level? _____%
   - ❏ Test Statistic (e.g., t-value or F-value) ↓

     What is the test statistic? _____

     How many degrees of freedom (df) are there? _____
   - ❏ p-value

3. What (if any) covariates were adjusted for in the statistical model that produced the result? These are factors which the authors controlled for when calculating effect size.

General notes:

4. Use this table to document the numerical effect size information reported in the written report. **Please only try to fill in numbers which are relevant to your research question**.

Group	Time Point	Sample Size (n)	Effect Size Estimate	Confidence Interval (CI)	Test Statistic	Degrees of Freedom (df)	p-value	Additional info

General notes:

Coding Manual

This manual describes the evidence we are looking for in each question of the evidence extraction form. Reference these descriptions for clarification and consistency as needed.

Study Context

1. What kind of study is this?

   Description: We differentiate kinds of studies depending on the degree of control the authors exert on the situation under study. In experiments, the authors may assign participants to treatment and control groups and attempt to isolate the effect they are measuring through experimental control. In observational studies, the authors measure the situation under study in the real-world without exerting their influence.

   Location: Articles will often explicitly state what kind of study was run, usually in the Method section.

   Importance: When comparing studies, we will want to consider whether different kinds of studies yield different patterns of results.

3. What was the study setting?

   Description: Studies present data gathered in different kinds of settings or environments. A controlled setting is one in which the authors have attempted to isolate the effect of interest by eliminating factors that might exist in real-world situations. In contrast, a naturalistic setting is one in which the authors have exerted no influence and are taking measurements in the real world. A crowdsourced setting is one in which data is collected online.

   Location: Study settings will often align with the kind of study and should be reported in the Method section.

   Importance: When comparing studies, we will want to consider whether different settings yield different patterns of results.

Participants

1. Briefly describe the **final sample of participants** in the study in terms of relevant characteristics (e.g., demographics, occupation, health status), paying attention to how the **recruitment process** and **inclusion or exclusion criteria** impact sample selection.
   Description: We think of participants in studies as being sampled from a particular population. Populations are essentially groups defined by common characteristics. If the recruitment and exclusion processes in a study select for a particular kind of participant, we want to document this information so we can reason about the population in the study.
   Location: Information about selection processes will often be reported in the Method section, but participant characteristics may be reported throughout Methods and Results.
   Importance: The effect we are interested in might be different in different populations, so we will want to consider differences in study populations when choosing whether to aggregate studies in meta-analysis.

2. Document anything about the selection of participants in this study that might impact how you interpret the meaning of the results. Is there anything unexpected about the sample or the selection process? Is the the sample representative of the general population?
   Description: We want to document anything that seems abnormal about the sample or the selection process. In particular, we want to know if the final sample in the study is systematically different from general population. This requires a judgment based on what you know about the participants in this study, the participants in other studies you've reviewed, and the general population.
   Location: Information about selection processes will often be reported in the Method section, but participant characteristics may be reported throughout Methods and Results.
   Importance: If the study participants are too different from the population we are interested in making inferences about, the results from this study may not be applicable or relevant to our meta-analysis.

Measurement

1. What units of measurement were reported to quantify the outcome of interest?
   Description: Units of measurement refer to the way that the outcome of interest is reported in the study. This might be some raw measure such as the number of times an event occured, or it might be some derived measure such as the rate at which an event occured.
   Location: Measurement units should be reported in the Method or Results section.
   Importance: We want to consider units of measurement when appraising the practical importance of the effect size reported in the study. Studies will likely use different units, so we will probably need to standardize the effect estimates from different studies before we can directly compare them.

2. How did the authors obtain the values of the reported measure? Please document how the author(s) define what counts as an observation of the outcome of interest.
   Description: The first part of this question asks what was actually done to get the measurements reported in the paper? For example, the authors may have administered a survey, brought participants into the lab for data collection, or perhaps they retrieved data that had already been collected for another study. The second part of this question asks about the set of conditions that must be met in order for the authors to measure the outcome of interest. For example, the authors may choose to qualify what will count as an instance of the outcome of interest in order to scope their research. Otherwise, there may be limitations of the method of measurement.
   Location: This information should be reported in the Method or Results section.
   Importance: In order to compare results across studies, we want to know where the data came from and whether or not studies differ in their methods of measurement.

3. Was the measure repeated over time for individual participants, or was the measure reported for multiple points in time?
   Description: Some studies involve repeated measurements from individual participants over time. For example, authors may administer a survey at multiple points in time. When authors take repeated measurements, it is often to compare outcomes before and after an intervention. Alternatively, authors may stratify their data based on time, reporting a measure over different durations. When authors stratify their data by time, it is often because the timing of events is important to their research question or the domain of study.
   Location: The timing of measurements will be reported in the Method or Results section.
   Importance: To the extent that the time course of measurements vary across studies, this may be important to consider when deciding whether to aggregate studies in meta-analysis. It is best practice not to combine studies that use repeated measures within individual participants with studies that make comparisons between individuals.

4. Was this measure taken for subgroups of participants, and are these subgroups of relevant to the research question of your meta-analysis?
   Description: Studies may break up effects by subgroups of participants (e.g., presenting data in contingency tables). When authors present outcomes in subgroups, it is often because those grouping factors are thought to influence the effect of interest.
   Location: Subgroups should be reported in the Results section, but the rationale for their importance may be located elsewhere.
   Importance: We need to decide whether these grouping factors are of interest for meta-analysis, or if we prefer to only document the overall effect. Even if we are interested in subgroup effects, we will only be able to include them in our meta-analysis if they are reported across multiple studies.

Effect Size

Please use the following items to capture, in as much detail as possible, information reported about estimates of effect size. You will almost certainly find this information in the Results section. For each statistic reported about the effect of interest, please fill out the following items.

1. What statistic is used to report the effect size estimate? This might be the same as the unit of measurement, or it might be derived from that measurement through a statistical model.
   Description: Effect size might be reported in any of the following ways:
   - *An average measurement in each group*
   - *An average difference between groups*
   - *A ratio describing the relative probability of the outcome of interest*
   - *A correlation coefficient or R-squared value*
   - *A regression coefficient*

   Location: Effect size should be reported in the Results section.
   Importance: All of these different ways of reporting effect size represent the empirical results of a scientific study. They are estimates of the impact of the predictor or intervention of interest on the outcome of interest. These numbers are the primary information required for meta-analysis.

2. How is the reliability of the effect size estimate reported? Please check all that apply.
   Description: Reliability is an indicator of how repeatable the estimation process is. Reliability statistics answer the question: How likely is it that if we repeated the same analysis process, it would produce a similar effect size estimate? Reliability might be reported as a test statistic such as a t-test or an ANOVA F-test. Alternatively, it might be a p-value, a standard error, or a confidence interval.
   Location: Reliability should be reported in the Results section alongside the effect size estimate.
   Importance: We want to document reliability information so that we know how uncertain the results from the study are. We need to incorporate this error into our meta-analysis.

3. What (if any) covariates were adjusted for in the statistical model that produced the result? These are factors which the authors controlled for when calculating effect size.
   Description: Covariates are variables other than the predictor and outcome of interest which are included in a statistical model. Including these other variables in the model adjusts the effect size estimate for the influence of these covariates. Specifically, the model splits the data into subgroups for each level of the covariates, calculates the effect of interest in each subgroup, and takes a weighted average of the effect size across these subgroups. Covariates might be demographic variables like age or characteristics like health status which impact both the predictor and the outcome of interest. Most regression models in particular will have covariates, but other kinds of models may not.
   Location: The authors should report covariates for each model in their Methods or Results.

Importance: Studies adjusting for different sets of covariates will estimate different effect sizes. It is best practice not to combine effects which are adjusted for different sets of covariates.