

MEET THE METHODS

Measuring research participants' sexes and genders



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The [Canadian Gender & Sex in Methods and Measurement Research Equity Toolkit](#) was born from frustration with reading peer-reviewed articles about well-funded health research projects written by thoughtful and experienced scholars, but where the gender and sex elements of the research were replete with issues. Some examples include demographic tables that labeled male and female as genders (they are sexes), samples that excluded trans participants for reasons steeped in misunderstandings and studies that conflated gender identity, expression and modality, which has profound implications for analysis and interpretation of findings.

Our team worked together over three years to develop nine, free, open-source tools, detailing practical guidance for researchers in their pursuit of accuracy, precision, and

inclusion when it comes to how sex and gender as concepts – and intersex, trans and Two-Spirit people by extension – show up in their health research.

The purpose of this Meet the Methods is to summarize and expand on the [fourth tool in the Canadian Gender & Sex in Methods and Measurement toolkit](#). That tool, and this resource by extension, provide guidance on whether, when and how to measure facets of study participants' sexes and genders. Rather than prescribing a single “best” approach, this resource encourages a thoughtful and critical interrogation of the advantages and shortcomings of different approaches – where the ‘best’ measure in one respect may have shortcomings in others. We focus on best practices as the process of selecting measures with intentionality, and reporting on those intentions with transparency, humility, and accountability.

The process of designing accurate, precise, and inclusive sex and gender measurements begins by asking ourselves:



1. What facets of sex and/or gender do I want to know about the people who are participating in my study?
2. Why do I want to gather that information?
3. Considering the strengths and drawbacks of the various options, what is the best approach to collecting that information and using that data?
4. How will I balance the autonomies of my participants (e.g., to self-identify) against the demands of my research design and planned analyses?

Adapted from the Gender and Sex Methods and Measures Equity Toolkit #4, this table is designed to support researchers in critically examining different approaches to measuring gender and sex in health research. It aims to facilitate thoughtful decision-making by offering guidance on how to align measurement strategies with research goals while respecting participants' autonomy and lived realities.

- *Facets of Sex/Gender* outlines key facets of sex and gender, providing clear definitions to help clarify what dimensions may be relevant to a given health research question.
- *Sample Measures* presents sample measures for each facet, offering practical examples of how these concepts can be operationalized.
- *Things to Keep in Mind* highlights important considerations for evaluating whether a particular approach is appropriate for the study's aims. This includes assessing the strengths and drawbacks of the various options and ensuring that chosen measures are inclusive, context-sensitive, and ethically sound.

Facets of Sex - Assignment

Assignment - The (often binary) sex someone was assigned at or before birth, typically based on a visual inspection of the genitals of fetuses or neonates.¹ This assignment process involves presumptions about individuals' anatomy and physiology.²

Sample Measures

What sex were you assigned at birth? With open-ended or checkboxes offering male, female, something else (which may include a space to write-in a response), or prefer not to say.

Things to Keep in Mind

Intersex people exist (those people born with a variation in their sex characteristics), most of whom were assigned a binary sex. If you want to ascertain whether your sample includes both intersex and endosex people (those who are not identified as having a difference in their sex development), you will want to ask not only about sex assignment, but also whether participants were born with a variation, difference, or divergence in their physical sex characteristics.³

Acknowledge discomfort, as some participants including some trans participants may find this question distressing and harmful – be prepared to offer why you are asking and how the data will be used. This can be done in writing or verbally in advance of the question being asked. For example, "this question will be used to determine which subsequent sections of the survey you will see," where those sections may only be relevant to people assigned a particular sex (i.e., questions about pregnancy).

Be clear on what isn't being measured, since sex assignment at birth cannot be reliably used to make claims about legal sex, experiential sex, or current anatomy or physiology. All you know from these data is someone's external genital configurations at birth.



Facets of Sex - Legal Status

Sample Measures

Legal Status – The sex that is recognized under the law, which typically appears on identity documents. This is sometimes erroneously called “gender markers.” In some parts of the world, adults can change these markers. Depending on the jurisdiction, the process of changing a legal sex marker may require an application, a medical certificate, being unmarried, being childless, etc.⁴

What is your legal sex? With open-ended or checkboxes offering options available in that country or jurisdiction, prefer to self-describe (which may include a space to write-in a response), or prefer not to say.

Things to Keep in Mind

Amend for jurisdictional specificity, since legal sex markers will need to be appropriate and representative of the geographic location where the study is taking place (e.g., M, F and X in Canada, for adults).

Consider whether the intention of changing legal sex is worth measuring, as some participants in your study may wish they could change their legal marker, and this may be fruitful data.

Be clear on what isn’t being measured, since legal sex cannot be reliably used to make claims about sex assignment, experiential sex, or current anatomy or physiology. All you know from these data are whether the person has an M, F, X or other marker on their government-issued identity documents.

Facets of Sex - Anatomy and Physiology

Sample Measures

Anatomy and Physiology – since neither sex assignment nor legal sex are consistently predictive of someone’s current anatomy and physiological characteristics, there may be instances where you need to directly understand what body parts someone has, and/or whether they have a certain physiological capacity.

Do you have [insert body part]?

To the best of your knowledge, are you capable of [insert physiological function]?

Things to Keep in Mind

The specific question asked will need to be precise and free of proxies. For example, having a uterus does not necessarily mean that someone is capable of pregnancy; having a penis does not necessarily mean that someone produces sperm.

Explain the purpose as some participants may be surprised or even offended to be asked these questions. Be prepared to offer why you are asking and how the data will be used. This can be done in writing or verbally in advance of the question being asked. For example, “We are asking about whether you have a cervix, so that you will be asked subsequent questions about cervical cancer screening in this survey.”

Gender and facets of sex are entangled. For example, even if you ascertained someone’s hormone levels through blood tests, behaviour affects hormone levels and vice versa. It is impossible to separate sexed variables from the influence of the social environment.

Determine whether the anatomy you are asking about needs to have been present at birth, or whether surgically created anatomy are also being asked about. For example, one person might have a vagina that was present at birth, and another may have a vagina that was constructed via vaginoplasty; one might have a penis that was present at birth, and another might have a penis that was constructed via phalloplasty. You may have good faith reasons for wanting to know this information, or for limiting eligibility for a project to only those with anatomy present at birth or surgically created anatomy.



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Facets of Gender - Gender Identity

Gender Identity – refers to someone’s internal, felt sense of self in relation to culturally available gender identity terms and labels.

Sample Measures

What is your current gender identity? With open-ended or checkboxes offering either a limited number of response options, or a more comprehensive list. This list may include man, woman, nonbinary, agender, genderqueer and other gender identities as appropriate for the study. The list may also include a write-in space for self-described gender identity.

Things to Keep in Mind

Balance inclusive options with data utility, where determining which and how many response options to include will depend on how you intend to use these data. The list may also include cultural and/or regional terminology. A wider range of response options may allow participants to more accurately self-identify but may result in having insufficient statistical power to run analyses. Consider offering two gender identity questions – one where participants can freely describe their gender(s) with nuance and complexity, and a second with fewer response options, where you make clear that they are being asked how they’d like to be categorized for the purposes of stratification or comparison.

Consider the implications of open-ended write-in boxes, as they have the benefit of allowing participants to freely describe themselves. However, they may also require care and expertise when coding or recoding, depending on the complexity of those responses.

Consider the implications of “select one” versus “select all that apply.” For example, “select one” may lend itself to more straightforward analyses, but does not leave room for people who have more than one gender identity. If “select all that apply” is used, consider in advance how you will attend to the complexity of responses – will you overwrite their choices? Will you group each person in each stratum that they selected? Will you differentiate between participants who selected only one gender identity, from those who selected that same gender identity, alongside one or more additional options?

Remember that Two-Spirit is not analogous with many of the Western gender identity labels, and ought to be ascertained after having determined that a participant is Indigenous. Two-Spirit can be used to refer to facets of gender and/or sexuality, but it’s more than that, for many. [Check out the IGH Meet the Methods on Two-Spirit identities for more.](#)

Facets of Gender - Gender Modality

Gender Modality – refers to the relationship between the gender/sex someone was assigned, and their current gender identity. Cisgender means that someone identifies today with the way they were assigned, transgender means that someone does not identify today the way that they were assigned and allogender refers to someone who is neither cisgender nor transgender.⁵

Sample Measures

Are you a person of trans experience? Are you a person with trans history? – or other single measures that ask whether someone is trans outright.

Asking about and then comparing reported sex assignment and current gender identity for concordance or discordance (or branchedness/coincidence)⁶ – called the two-step method.

3x3 method – where participants tell you their gender(s) and place themselves into a 3x3 grid, representing cis, trans, and allogender categories, and then binary, nonbinary and allobinary categories. They then narrate the reasoning behind their selections.



Things to Keep in Mind

Avoid othering, which happens when we add 'trans woman' and 'trans man' as gender identity response options, alongside 'woman' and 'man.' This suggests that there are 'wo/men' and then 'trans wo/men' as separate categories. If 'trans woman' and 'trans man' are listed, they should appear alongside 'cis woman' and 'cis man' - with a note that this question is therefore ascertaining gender identity and gender modality simultaneously. Remember that not everyone claims 'cis' or 'trans' as aspects of their gender identities.

When using the two-step method, consider how you will categorize participants who claim multiple gender identities, both concordant and discordant (or branched and coincident). For example, a participant may indicate being assigned female, and that they identify as both a man and nonbinary. Is this person to be categorized as trans, cis or allogender?⁷

When using the two-step method, consider the ordering of questions, as research has found that asking gender identity first, and sex assignment second is preferable to many trans participants. The reverse puts sex assignment into a place of primacy within a survey.⁸

Facets of Gender - Gender Expression

Gender Expression - refers to an individual's external presentation or display, including dress, hair, mannerisms and behaviour.

Sample Measures

How would you describe your gender expression?
With open-ended write-in space, or checkboxes offering androgynous, masculine and feminine options, including check one or check all options.⁹

Things to Keep in Mind

Do not assume gender identity and expression will match. Without asking explicitly, you cannot reasonably assume that all women in your sample are also feminine, and where you therefore theorize about how societal perceptions of femininity impacted the outcomes in your data. Some people's gender expressions will align with what is typically expected (e.g., a man who is masculine), but some people's gender expressions are not neat, linear, expressions of their 'corresponding' identities.

Self-perception matters but may not always map onto how others perceive any given person. Consider whether you need to be additionally asking your participants how they think others see, perceive and experience them. If a nonbinary person perceives themselves as androgynous but anticipates that the world is receiving them as a masculine (cis or trans) woman - this misrecognition in terms of both gender identity, modality and expression may be useful in explaining some of how this person is treated and thus, their experiences in the world.

Congratulations! You've generated your data in ways that allow you to accurately and precisely describe your sample, and where you've built intentionality and transparency into the data generation process. The participants also have clarity on why you needed to know about different facets of their sexes and genders, and how those data will be used... Now what? How do you approach data analysis with the same level of care and thoughtfulness? [Check out Tool #5 of the GSMM for more.](#)

The views expressed in this document are those of the researcher(s) and do not necessarily reflect those of the CIHR Institute of Gender and Health or the Government of Canada.

You can access this report and others in the Meet the Methods series at <https://cihr-irsc.gc.ca/e/49629.html>

If you have any questions, you can email us at IGH-ISFH@cihr-irsc.gc.ca.



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References

1. Costello, C. G. (2020). Beyond Binary Sex and Gender Ideology. In N. Boero & K. Mason (Eds.), *The Oxford Handbook of the Sociology of Body and Embodiment*, pp. 199-220. Oxford University Press.
2. Blackless, M., Charuvastra, A., Derryc, A., Fausto-Sterling, A., Lauzanne, K., & Lee, E. (2000). How Sexually Dimorphic Are We: Review and Synthesis. *American Journal of Human Biology*, 12(2), 151-166.
3. Intersex Human Rights Australia. (2022). Forms and data collection. <https://ihra.org.au/forms/>
4. Lowik, A. (2018). Reproducing Eugenics, Reproducing while Trans: The State Sterilization of Trans People. *Journal of GLBT Family Studies*, 14(5), 425-445.
5. Beischel, W. J., Schudson, Z. C., Hoskin, R. A., & van Anders, S. M. (2023). The gender/sex 3×3: Measuring and categorizing gender/sex beyond binaries. *Psychology of Sexual Orientation and Gender Diversity*, 10(3), 355-372.
6. van Anders, S. M. (2015). Beyond sexual orientation: Integrating gender/sex and diverse sexualities via sexual configurations theory. *Archives of Sexual Behavior*, 44(5), 1177-1213.
7. Lowik, A., Delgado-Ron, J. A., Khonina, M., & Salway, T. (2025). Measuring gender modality: Comparing strategies and methods from the "Understanding Affirming Communities, Relationships, & Networks" youth survey. *Psychology of Sexual Orientation and Gender Diversity*. Advance online publication.
8. Kronk CA, Everhart AR, Ashley F, Thompson HM, Schall TE, Goetz TG, Hiatt L, Derrick Z, Queen R, Ram A, Guthman EM, Danforth OM, Lett E, Potter E, Sun SD, Marshall Z, Karnoski R. Transgender data collection in the electronic health record: Current concepts and issues. *J Am Med Inform Assoc*. 2022;29(2):271-284.
9. Garbarski, D. (2023). The measurement of gender expression in survey research. *Social Science Research*, 110, 102845.

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