Improving Perinatal Health for Colorado Families: Strategies to Advance Evidence-Based Decision-Making in Policymaking

Policy Brief

REPORT HIGHLIGHTS:

Catalyzed by Senate Bill 21-194 (Maternal Health Providers), this **mixed methods study** identified barriers and facilitators to using research evidence in policies that shape the lives of people who are pregnant and parenting.

Four key findings emerged:

1. Policy decision-makers and influencers struggle to balance research evidence with other contextual factors.
2. There is a breakdown in translating research evidence used in policy vision to policy creation and implementation.
3. Policy decision-makers and influencers lack shared goals in using and building evidence, common language, and the skills to critically apply evidence.
4. There are structural barriers to accessing and building high-quality research evidence and persistent evidence gaps on disparities.

Four **data-informed strategies** are recommended to advance evidence-based decision-making and drive equitable opportunities in perinatal health for all Colorado families.

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Acknowledgements

Suggested Citation

Everson, C.L., Gase, L., & Beletic, J. (June 2023). *Improving perinatal health for Colorado families: Strategies to advance evidence-based decision-making in policymaking – Policy brief.* (Report No. 22-02A). Denver, CO: Colorado Evaluation and Action Lab at the University of Denver.

Note on Gender-Inclusive Language

The Colorado Lab affirms our commitment to the use of gender-inclusive language. We are committed to honoring the unique gender identity of each project participant and validate that pregnancy, birth, and family formation are experienced by individuals across the gender continuum. Throughout this report, we follow the guidance of the Associated Press Stylebook and the Chicago Manual of Style and use the gender-neutral, singular "they" when appropriate and use gender-inclusive terms when referring to experiences of childbirth.

CDPHE Statement on Equity

The Colorado Department of Public Health and Environment acknowledges that generations-long social, economic and environmental inequities result in adverse health outcomes. They affect communities differently and have a greater influence on health outcomes than either individual choices or one's ability to access health care. Reducing health disparities through policies, practices and organizational systems can help improve opportunities for all Coloradans.

Introduction

Colorado has made significant progress in using data to inform investments in maternal health; however, there remain missed opportunities at the policy level. In 2021, Colorado passed the landmark Birth Equity Bill Package (Senate Bill [SB] 21-193, SB21-194, SB21-101) to protect human rights, improve well-being outcomes, and decrease health disparities during the perinatal period. SB21-194 (Maternal Health Providers) authorized an innovative project to explore how research evidence is being used in Colorado policies that impact pregnancy, birth, and one year postpartum.

This project is rooted in how policies shape the lives of people who are pregnant and parenting. The goal is to develop and activate cross-system strategies that support evidence-based decision-making and drive equitable opportunities in perinatal health for all families.

The Colorado Department of Public Health and Environment (CDPHE) is the state agency tasked with fulfilling the provision (Section 25-52-104) to "study the use of research evidence in policies related to the perinatal period in Colorado" and report back to the General Assembly results of the study by September 1, 2023. CDPHE partnered with the Colorado Evaluation and Action Lab (Colorado Lab) to fulfill this legislative opportunity.

The study fits within the Department's 2019-2023 strategic plan under:

- Goal #1: Create an equitable Colorado to cultivate an environment where all individuals, families, and communities can thrive; and

- Objective #1: Reduce perinatal health disparities and promote the equitable achievement of perinatal well-being for Coloradans.

Description of the Study

What is Evidence-Based Decision-Making?

Evidence-based decision-making (EBDM) is the intersection of the best available research evidence, professional expertise, and community needs and implementation context (Figure 1). The "best available research evidence" includes both number-based (quantitative) and narrative-based (qualitative) data. EBDM recognizes that research evidence is not the only contributing factor to policy and budget decisions. Other equally important factors include resourcing, cultural values, community voice, and feasibility of implementation.

Figure 1. The Evidence-Based Decision-Making Approach

Research Questions

In alignment with the legislative intent of SB21-194, this study aimed to: a) explicate the barriers, facilitators, and processes that drive—or limit—use of research evidence (URE) during perinatal policymaking; and b) co-create data-informed guidance for how Colorado can advance evidence-based decision-making (EBDM) that drives towards perinatal health and reduces disparities. Specifically, we aimed to answer three research questions:

1. What are the driving barriers and facilitators to URE in the development and implementation of perinatal policies in Colorado?

2. Where are there examples of how research evidence has and has not been used in the development and implementation of perinatal policies in Colorado?

3. What processes and spaces (i.e., levers) can be leveraged to improve URE in the development and implementation of perinatal policies in Colorado?

Prioritized Policy Areas

The study focused on three policy areas: health care coverage, racism in medical practice, and integrated behavioral health and maternity care (Table 1). As described in the Analysis Plan, to select these areas, we considered the major issues impacting perinatal health outcomes and disparities, the potential for actionability and scalability, and opportunities that cross-cut multiple policy areas. We used data from a literature review of the major drivers of perinatal health outcomes and disparities (Appendix A: Ecology of Perinatal Health - Tool), a literature review of URE in policymaking, a series of stakeholder interviews and focus groups, and partnership meetings with CDPHE. Focus areas served to bound the study into concrete areas for exploration. The goal was not to "solve" policy and health issues within each focus area, but rather, to use them as learning cases to unpack important drivers and ensure concrete examples to anchor study activities.

Table 1. Study Focus: Prioritized Policy Areas

Policy Area	Description
Health Care Coverage	**Exclusion of community-based maternity providers** as covered entities or low reimbursement rates, which limits access to patient choice and culturally congruent care. **Insurance access gap for families not eligible for Medicaid,** but also without resources to pay for adequate private insurance (i.e., families between "poverty" and "low income").
Racism in Medical Practice	**Provider bias during care that leads to mistreatment** and not trusting the patient, which can contribute to maternal and infant morbidity and mortality. **Lack of provider and institutional accountability** to non-evidenced-based care, poor care, and mistreatment during care.
Integrated Behavioral Health and Maternity Care	**Barriers to coordinated care**, including closed loop communication systems and data sharing challenges, which reduces effective wraparound support for childbearing families experiencing substance use and/or mental health issues.

Stakeholder interviews and literature reviews also led us to prioritize macro-level (legislative laws or ordinances) and meso-level (regulatory rules, standards, principles, or guidelines created by government agencies with regulatory authority) state policies. Macro- and meso-level policies were prioritized as systemic opportunities to improve EBDM throughout the policy life cycle from policy development, implementation, maintenance, and evaluation (Figure 2).

Figure 2. Evidence-Based Decision-Making throughout the Policy Life Cycle
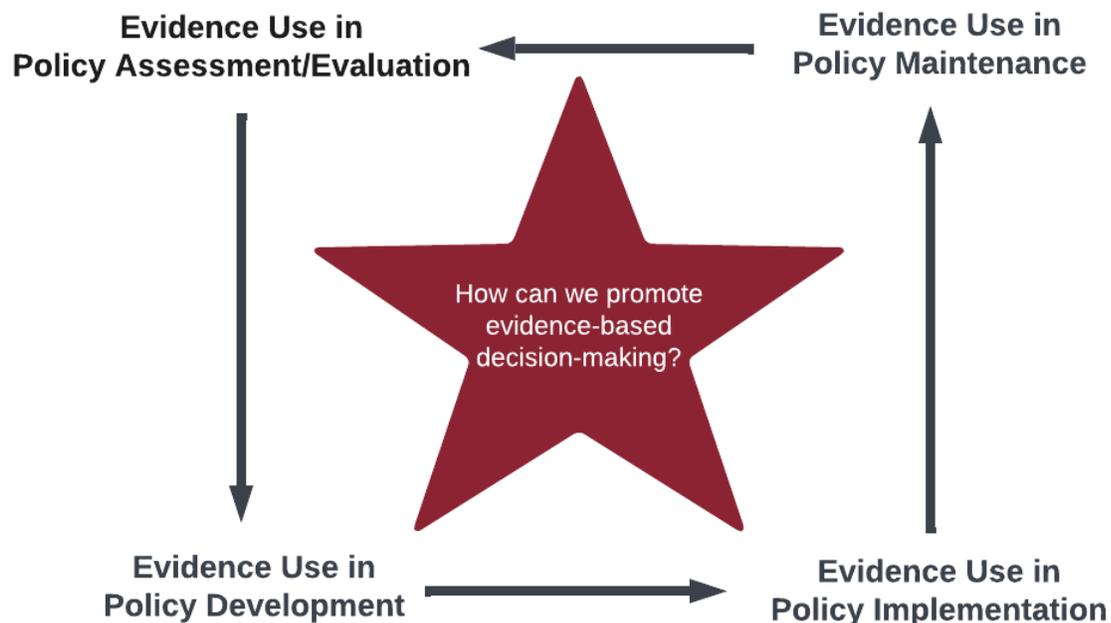
Mixed Methods, Stakeholder Driven Approach

We used a mixed methods approach that combined retrospective activities (i.e., looking back on URE in perinatal policymaking for insights) and prospective activities (i.e., understanding current URE patterns and identifying future opportunities for change). The four primary methods were:

1. Re-analysis of the stakeholder interviews conducted during analysis plan development to identify barriers and facilitators to URE;

2. Document analysis of six macro- and meso-level policies to identify if and how URE was reflected;

3. Survey (Structured Interview for Evidence Use [SIEU]) to assess URE patterns among policy decision-makers and policy influencers; and

4. Facilitated stakeholder convening to make meaning of findings and co-develop guidance on strategies that Colorado can adopt to improve URE.

A stakeholder-driven approach was used to gather input, support meaning making of results, and develop recommendations. Across methods, we collaborated with a range of governmental and non-governmental partners, community organizations, and childbearing people and their families (Table 2).

Who is a Stakeholder?

In this project, we use the term "stakeholder" to mean any policy decision-maker or policy influencer, which includes governmental partners, non-profit agencies, community organizations, and families who advocate for change and are impacted by the results of policy decisions. "Policy decision-makers" are those with responsibility for policy-related decisions, including both policy creation and policy implementation. "Policy influencers" are those who inform creation or implementation of policies.

Table 2. Project Collaborators

Governmental Partners	Statewide Health and Advocacy Organizations, Community Providers, and Family Leadership
Colorado Behavioral Health Administration (BHA)	Colorado Children's Campaign
Colorado Department of Early Childhood (CDEC)	Colorado Consumer Health Initiative (CCHI)
Colorado Department of Health Care Policy and Financing (HCPF)	Colorado Hospital Association (CHA)
Colorado Department of Public Health and Environment (CDPHE)	Colorado Perinatal Care Quality Collaborative (CPCQC)
Colorado Department of Regulatory Agencies (DORA)	Elephant Circle
Governor's Office Staff	Family Leadership / Lived Expertise
Joint Budget Committee (JBC) Staff	Illuminate Colorado

For additional details see Appendix B: Description of Methods and Detailed Results.

Key Findings

Results from all data sources were analyzed separately and then together to identify areas of thematic convergence. In total, we identified four key findings. Below, we synthesize the major barriers and facilitators that contribute to the key finding, with sub-findings in *italicized red bolded text*.

Key Finding #1: Difficulty in Balancing Research Evidence with Other Factors

> **Policy decision-makers and influencers struggle to balance research evidence with other contextual factors, especially community voice and feasibility of implementation. During policymaking, when one factor dominates, it reduces the opportunity for balanced evidence-based decision-making.**

Stakeholders placed value on considering research evidence alongside information from communities and experts during decision-making, but there were breakdowns in applying the balance of information to policy decisions. As evidenced in both stakeholder interviews and the convening, stakeholders see policymaking as an opportunity to place evidence into context, including the value of family voice in data and policy discussions. Considering information from experts (e.g., health care providers) and communities was the most consistent behavior reported on the SIEU, followed closely by using evidence to determine harm of a practice or policy (Figure 3). The SIEU further indicated that stakeholders review research evidence to see if outcomes are matched to their target population needs and strengths. The policy document analysis showed that professional experience was present in bill testimony over a third (37%) of the time, indicating its importance to the policymaking process. However, when it came to making decisions, research evidence still dominated as a driving factor. As evidenced in the SIEU, stakeholders rarely would reconsider research evidence even if implementation factors—such as workforce skills, lack of adaptability, and lack of capacity or resources—showed the evidence-based solution was unlikely to be successful. The stakeholder convening revealed that the over-dominance of research evidence and under-inclusion of implementation factors to be a primary reason why otherwise strong policies fail or fall short as they move from bill passage into execution. At best, this can hinder positive outcomes for Colorado childbearing families and at worst, lack of attention to evidence for whom and under what conditions can widen the disparity gap.

Stakeholders reported a *lack of structural mechanisms to both elicit and apply community voice and professional expertise during discussions of research evidence*. As identified in stakeholder interviews and the convening, there are barriers to including community voice consistently and transparently. Barriers include lack of agency/organizational policies that specify how, when, and why community voice will be included in policy decisions, lack of equitable compensation structures to build and collect evidence in partnership with lived expertise, and lack of multiple mechanisms to ensure that community input is varied and not reliant on the same few representatives. Even when community voice and professional expertise is successfully elicited, ensuring this information is applied to ultimate decisions was reported as a key barrier during the convening. For instance, Colorado has strong evidence-based processes in both the budget instructions by the Office of State Planning and Budgeting as well as in evidence reviews by the Joint Budget Committee (pursuant to SB21-284). However, these processes place heavy emphasis on the best available research evidence, but without a clear way for other context factors to be included in the evidence review and final policy and budget decision. Findings from the convening indicated that evidence requirements in state government can also disadvantage smaller programs and practices who do not have

the resources to rigorously build evidence. As an antidote, stakeholders put forward the opportunity to consider implementation factors when meeting evidence requirements.

Barriers to including community and professional voice were compounded by a *lack of transparency in data,* especially for private entities such as hospitals. Without clear structures to make data visible and accessible, the ability to include communities and experts in meaning-making around the evidence is significantly reduced. This can then create missed opportunities to address health disparities, where data trends may flag an issue and solutions are developed in a silo, treating the surface "symptom" and not the root cause. Only with the inclusion of community and professional voice can root causes be uncovered and systemic solutions to advance equitable opportunities be developed.

Figure 3. Frequency of How Policy Decision-Makers and Influencers are Applying Research Evidence during Decision-Making

Best Available Research Evidence

Use evidence to determine if practice / policy could do harm (4.15 ± .32)

Use evidence to support a policy / practice solution (3.88 ± .49)

Use evidence to eliminate ineffective practice / policy (3.42 ± .40)

Will find money to implement solution if evidence is strong enough (3.42 ± .27)

Professional Expertise

Consider wishes of partner organizations when applying evidence (3.48 ± .43)

Ignore evidence if solution does not match workforce skills (2.34 ± .42)

Ignore evidence if solution is too rigid / not adaptable (2.82 ± .53)

Consider evidence alongside info from experts and communities (4.42 ± .43)

Use evidence to compare strengths & weaknesses of multiple solutions (3.82 ± .45)

Family Needs and Implementation Context

Consider if evidence behind practice / policy matches needs (3.88 ± .33)

Ignore evidence if not feasible to implement due to capacity issues (2.48 ± .57)

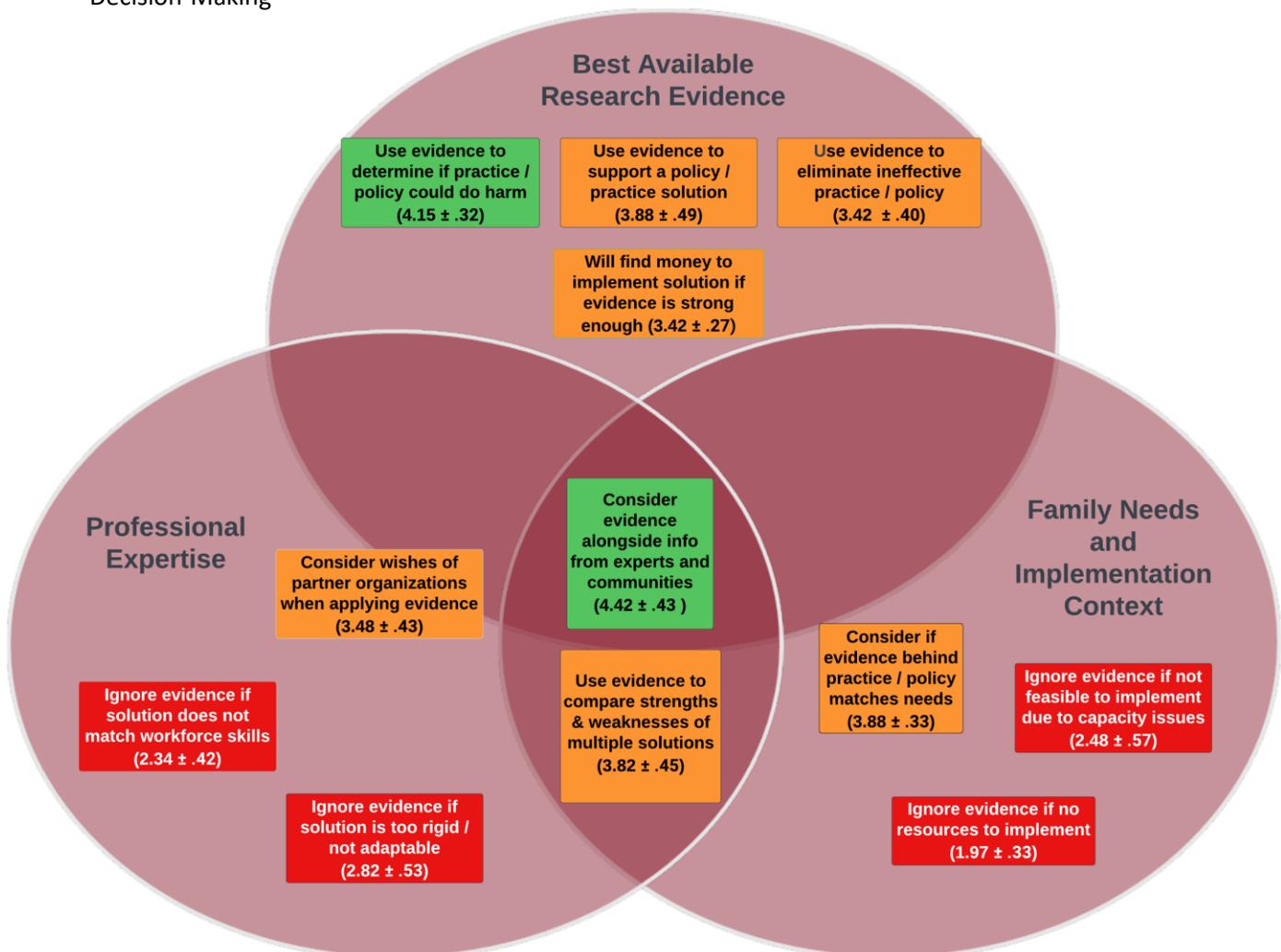Ignore evidence if no resources to implement (1.97 ± .33)

Figure Notes: Weighted average scores from the SIEU on the frequency of considering research evidence in relationship to other factors during decision-making. Scale: 1 (never) to 5 (always). ± indicates weighted standard deviation. Green represents high scores of 4 and above; orange represents mid scores of 3 to 4; and red represents low scores of below three.

Key Finding #2: Breakdowns in Translating Research Evidence throughout the Policy Life Cycle

> There is a breakdown in translating research evidence used in policy vision to policy creation (bill passed) to policy implementation (fulfilling provisions). While evidence is commonly used to shape bill content, it is often not made transparent and carried forward, which results in inefficiency and redundancy, as the information has to be "resurfaced" each time and evidence priorities become lost in translation.

As shown in the policy document analysis, *the breakdown from policy vision (e.g., bill draft, testimony) to policy creation (e.g., final bill passed) to policy implementation (e.g., practice being piloted) leads to inefficiency and redundancy*, as evidence behind policy intent can be lost. Evidence is heavily used during bill testimony, present in 81% of testimonies analyzed. Of testimonies with evidence, over half included research evidence (67%) and/or professional, family, or community experience (59%). When then looking at how this translated to the bill text itself, the extent of evidence varied widely (Table 3). Having no or a limited amount of evidence in bill text can cause challenges during implementation. An example was SB21-193 (Protection of Pregnant People in the Perinatal Period). While much evidence was included in the testimonies, the bill contained no specifics on what evidence was or was not used to inform its mandates. There have been subsequent challenges in the bill's implementation, particularly around its data collection provisions.

Table 3: Amount of Use of Evidence Across Policies and Policy Stage

Policy	Testimony	Bill	Implementation
HB19-1122: Maternal Mortality Review Committee	Much	Much	Much
HB21-1232: Standardized Health Benefit Plan Colorado Option	Much	Much	Some
HB22-1278: Behavioral Health Administration	Much	Some	Much
HB22-1302: Health Care Practice Transformation	Much	Much	Some
SB21-193: Protection of Pregnant People in Perinatal Period	Much	Some	None
SB21-194: Maternal Health Providers	Much	None	Much

Table Notes: this is any evidence, whether research evidence, professional experience, practice guidance, or family/community experience. This aligns with the EBDM approach.

Evidence use in bills is most successful when placed in the legislative declarations that subsequently inform policy mandates and implementation provisions. Bills with much use of evidence (House Bill [HB] 19-1122, HB21-1232, and HB22-1302) had detailed or lengthy excerpts of research within the bill's declarations and/or within the policy implementation language. Most successful was HB19-1121 (Maternal Mortality Review Committee), which used evidence in policy visioning, in the bill's text through use of declarations, and in its legislatively mandated report by detailing evidence-based strategies to

achieve equity in maternal health outcomes. Despite promising examples surfaced in the stakeholder convening, there is no common procedure for deciding what evidence gets cited in legislative declarations and elsewhere throughout the policy development process. Further, research evidence often gets dropped in the amendment process; this is a key driver of the breakdown.

Health equity is included in testimony and bill implementation, but explicit attention to health equity is lacking in the bill itself. The policy document analysis found that health equity considerations were included in 44% of the evidence presented in testimonies and 46% of the evidence presented in implementation documents. However, health equity considerations were only included in 18% of the evidence presented in the final bill text itself. Since health equity is less frequently specified in bill texts, it is unclear to what extent these considerations are informing legislative decision-making. The analysis also found that *certain aspects of health equity—including geography, language, gender identity, and sexual orientation—were infrequently considered*.

Bill texts often call for data collection and evidence-building; however, processes and guidance to ensure strategic use of research evidence generated are often missing. The findings from the policy document analysis show that when bills called for building research evidence, it was primarily for reporting or compliance purposes (e.g., meeting reporting requirements), followed by mandates for additional research studies, and then measures to inform implementation (e.g., use of stakeholders to inform decision-making). However, without a mechanism to close the loop from these calls in policy development to evidence-building, new information generated may not be used. Stakeholders at the convening expressed concerns that calls for evidence-building are often included in bill text for accountability purposes or political appeasement, rather than for strategic future use.

Key Finding #3: Lack of Shared Goals, Language, and Skills

> **Policy decision-makers and influencers lack shared goals in using and building evidence, common language, and the skills to critically appraise and apply research evidence. Without these foundations, research evidence may be a shared value, but there are breakdowns in evidence-based decision-making.**

Stakeholders are motivated to use research evidence to inform decision-making. This was identified as a leading facilitator during stakeholder interviews and the convening. As signaled by the level of engagement in this study, stakeholders are willing to come together and engage in crucial conversations around evidence use. The policy document analysis found that research evidence was present at relatively high levels in the policies analyzed, with at least one mention in 54% of testimonies, 83% of bills, and 80% of implementation documents. However, the extent of research evidence varied widely. *Likewise, when looking more broadly, research evidence was used inconsistently.* In the SIEU, policy decision-makers and influencers reported using research evidence only some of the time—and, as noted in the previous finding, there were breakdowns in translating research evidence across the policymaking process.

Stakeholders have different goals for how to use research evidence. This was identified as a barrier during stakeholder interviews. As identified in the policy document analysis and discussed at the stakeholder convening, *research evidence is often used selectively* to support a preconceived idea or to match known priorities, rather than starting with the full *best available research evidence* to inform, support, or oppose an idea. This is underscored by findings from the policy document analysis: first, the infrequent use of research evidence to identify a preferred policy solution (in comparison to using

evidence to identify or describe the problem) and, second, the lack of specified goals or intended use in calls for additional research. Without common goals for using research evidence (the "why") or a cohesive approach (the "how," such as a framework or shared practices), research evidence may be a shared value, but will fail to fully translate into action.

Stakeholders lack shared language and skills for critically appraising and applying research evidence. As surfaced at the stakeholder convening, not all stakeholders have the skills to critically assess research quality and apply research evidence to decision-making. As seen in the SIEU, stakeholders tend to rely on their own assessment of a study's validity/reliability and relevance to their decision-making need, when compared to consulting professional peers or others they know and trust (Figure 4). This represents a missed opportunity: using others can help create "checks and balances," to reduce biases when interpreting data as well as to shore up skills that may be lacking in interpreting statistics or methods. It is also important to work with community experts when assessing research relevance so that culturally and geographically responsive solutions can be identified.

Figure 4. Frequency of Relying on Self Versus Others in Assessing Reliability, Validity, and Relevance of Research Evidence
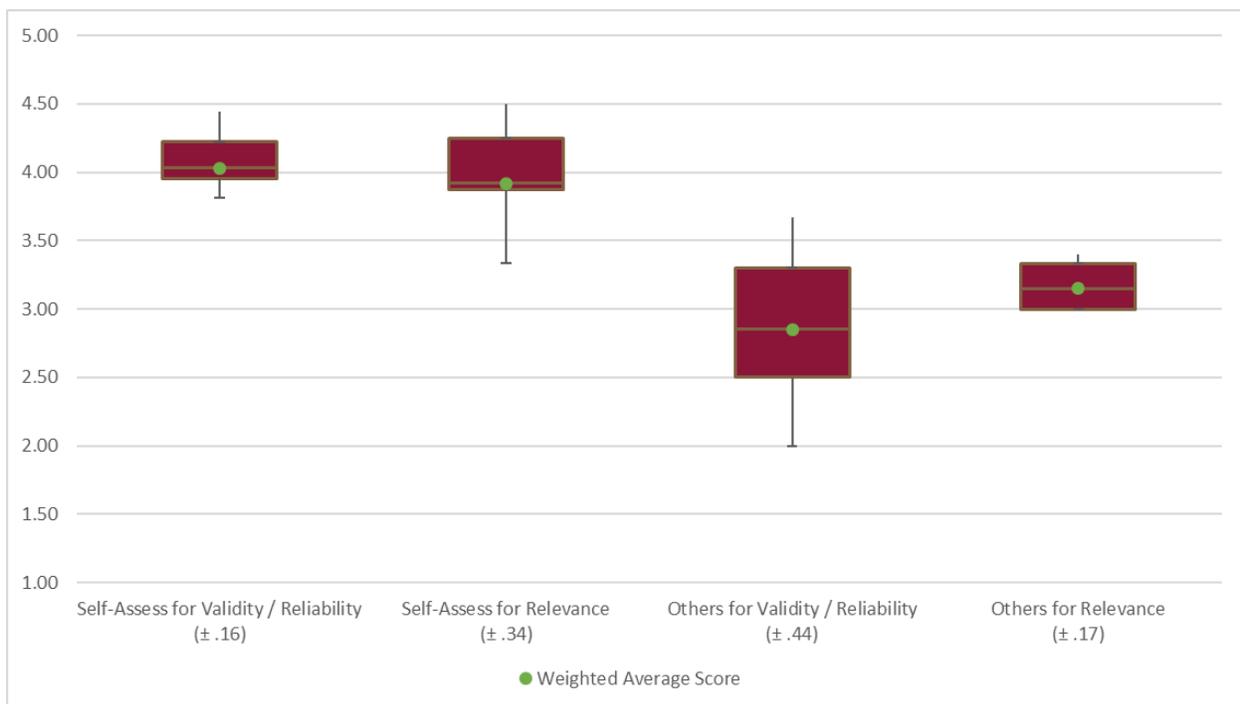
Figure Notes: Weighted average scores from the SIEU on the frequency of interpreting and critically appraising research evidence. Scale: 1 (never) to 5 (always). ± indicates weighted standard deviation.

The stakeholder convening surfaced that *qualitative (narrative-based) and quantitative (numbers-based) evidence is not equally valued*. This devalues multiple ways of knowing and is antithetical to an equitable approach to data and policy. The convening also highlighted that some research methods (e.g., randomized controlled trial) are more heavily valued than others (e.g., exploratory designs). To promote rigor, methods should be aligned to the goals and questions being asked. Without shared language and skills, there are different versions of "what counts" as quality evidence.

Key Finding #4: Structural Barriers to Accessing and Building Evidence

> There are structural barriers to policy decision-makers and influencers accessing and building high-quality research evidence, including access to academic journals and clearinghouses, and processes to support data sharing. There are also persistent evidence gaps for communities that have been historically harmed by research practices.

Stakeholders are not always using sources that provide the best available evidence. As illustrated in the SIEU, stakeholders are most frequently accessing evidence from the internet, academic journals, or using their own agency's data (Figure 5). Sources with high quality and accessibility—such as clearinghouses and external evaluators—were less frequently utilized. Moreover, stakeholder interviews and discussion at the convening underscored the structural barriers that governmental and non-governmental stakeholders face in accessing research evidence from credible sources, including lack of consistent access to scientific journals and databases. This lack of access—or lack of use—can result in inefficiencies in considering the best available evidence fully and accurately. SIEU results and convening dialogue also made clear the high variability associated with different sources.

Figure 5. Frequency of Acquiring Evidence from Different Sources, Mapped According to Accessibility and Evidence Quality
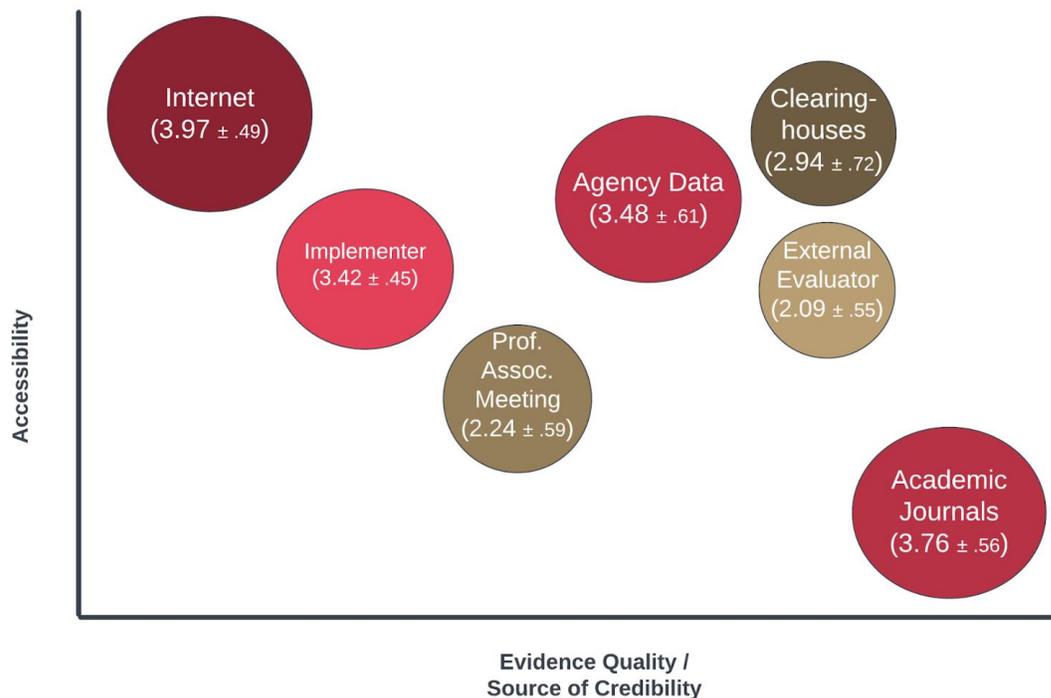
Figure Notes: Weighted average scores from the SIEU on the frequency of acquiring evidence from each source Scale: 1 (never) to 5 (always). ± indicates weighted standard deviation. Red circles indicate scores of three or above, with the darker shades representing higher scores. Tan circles represent scores of below three, with the darker shades representing higher scores. Across all colors/shades, the larger the circle, the higher the score.
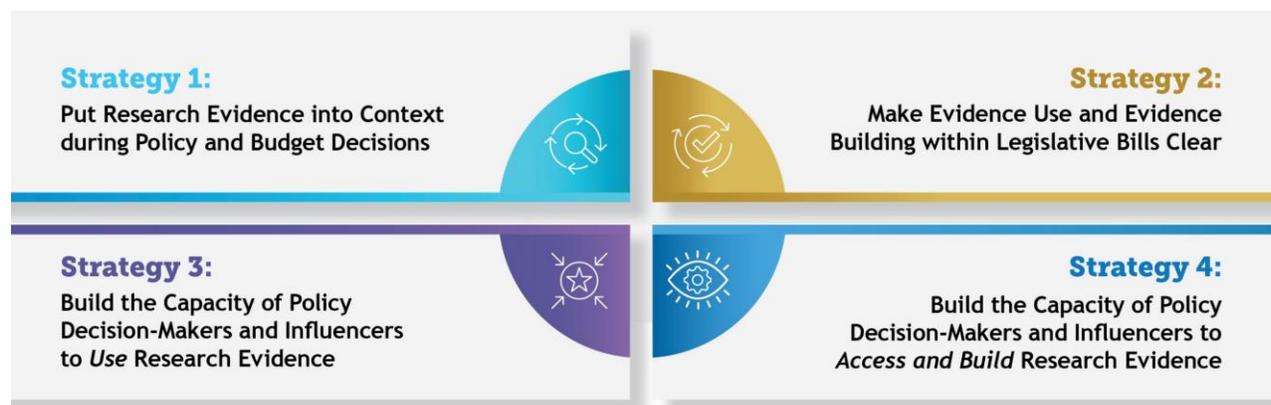
There are challenges to accessing and using agency data. As identified in the stakeholder interviews and the convening, data from government and non-government agencies are not always made transparent and visible, or done so in a timely fashion. There are barriers to data sharing (within and across agencies) and tension around cell suppression. Cell suppression simply means not reporting data when the numbers available are really small, usually less than a five or ten count. Cell suppression is done to make sure people in the data cannot be identified, but it has unintended consequences like exclusion. Stakeholders also felt that it was especially difficult to access data from private entities, such as hospitals. In addition to a lack of within and across agency data sharing, data are similarly not made available or accessible to participants or communities who provided the data.

There are persistent gaps in evidence due to the historical harms of research practices. Stakeholders at the convening noted that not all initiatives—especially those led by communities—are able to build evidence and develop scientific articles; therefore, gaps exist within available research evidence. In building evidence, stakeholders identified the need to consider past historical harms of research and critically assess what information is missing. Evidence gaps are confounded by cell suppression policies that can make some communities—and the disparities they experience—"invisible." To make health disparities transparent and actionable, stakeholders noted the importance of developing systemic solutions to address evidence gaps in historically underserved communities. This includes building or leveraging community-based organizational data, disaggregating data, best practices for addressing cell suppression policies, and obtaining representative qualitative data.

Strategies to Advance Evidence-Based Decision-Making in Perinatal Policies

Based on study findings, project partners co-developed strategies (Figure 6) to reduce identified barriers and promote promising opportunities for evidence-based decision-making.

Figure 6. Project Recommendations: Data-Informed Strategies

Strategy 1:
Put Research Evidence into Context during Policy and Budget Decisions

Strategy 2:
Make Evidence Use and Evidence Building within Legislative Bills Clear

Strategy 3:
Build the Capacity of Policy Decision-Makers and Influencers to *Use* Research Evidence

Strategy 4:
Build the Capacity of Policy Decision-Makers and Influencers to *Access and Build* Research Evidence

How strategies were prioritized: Strategies were prioritized with an eye toward maximizing: a) **actionability** across systems and issues; b) **sustainability** across time, space, and actors; c) **equity** in how data are used and gathered and who benefits from policy solutions; and d) **feasibility** in activating the strategy for systems change.

The strategies are grounded in **shared values** around how data and policy shape the lives of people who are pregnant and parenting people.

- *Value 1: Building and using evidence requires partnerships between state government, private agencies, researchers, community organizations, and families.* To develop meaningful and impactful solutions, lived expertise and implementation experts should be included in defining how and which data are collected, how research evidence is interpreted, and how findings will be applied to policy decisions.
- *Value 2: Data should be used for improvement and learning, not for punishment, and not solely for compliance.* For data to be used, it must be transparent. To support partners in sharing data, there must be a common commitment to use data in ways that support systems and communities in growing better, together.
- *Value 3: Research evidence should include both numbers and narratives to more fully uncover the "what," "why," and "how."* Systematic storytelling (qualitative research) and systematic numeric analysis (quantitative research) serve complementary purposes; both are essential.

A Call to Action

It will take governmental, non-governmental, research, community, and family partners working together to activate these strategies. To support action, each partner should review and map the strategies to their roles and responsibilities. For instance, state agency leaders may want to focus on building infrastructure for accessing peer-reviewed and grey literature, while private entities may want to explore how they can make data more transparent, and families/communities may want to organize around processes that facilitate lived experience participation in policy and data discussions.

Below, we summarize each strategy, its main components, and concrete examples to support activation.

Strategy 1: Put Research Evidence into Context during Policy and Budget Decision

> Promote use of Colorado's 5-year vision for **Evidence-Based Decision-Making** to systematically integrate best available research evidence, professional expertise, and community needs and implementation context.

Key components include:

- Mechanisms for community and professional partners to inform data collection approaches and co-shape policy priorities.

- Opportunities to make data transparent and engage communities and experts in meaning-making around evidence findings.

- Consistent use of tools and processes that support the EBDM approach, as aligned with roles and responsibilities.

- Structures to align EBDM at major points in the policy and budget cycle, from state agencies developing concept proposals to the Governor's Office budgeting process to evidence use by General Assembly members and staff.

Examples to Support Activation

- Create a cross-system learning community to develop best practices around eliciting and applying family/community voice in generating and using research evidence.

- Leverage existing structures that report efficacy in integrating community and professional voice, such as models like the Maternal Mortality Review Committee.

- Identify opportunities to resource community engagement structures as part of policy and budget concept proposals.

- Leverage the EBDM tools, templates, and resources being developed by the Colorado Lab as part of Colorado's 5-year EBDM vision, such as evidence portfolios for budget decisions.

- Make data transparent (e.g., dashboards) and develop clear structures for communities and professionals to make meaning of the data together with policy decision-makers.

- Use Colorado's Steps to Building Evidence to better match evidence-building investments to where a practice/policy is at in development and ultimate goals.

- Build on the evidence portion of the budgeting instructions by the Governor's Office of State Planning and Budgeting.

- Build on the evidence review process done by Joint Budget Committee Staff.

Strategy 2: Make Evidence Use and Evidence-Building within Legislative Bills Clear

> **Leverage the legislative process to better articulate how evidence is being used and what evidence needs to be gathered to support transparency and continuity in evidence use throughout the policy life cycle.**

Key components include:

- Use of legislative declarations to make explicit the research evidence behind the bill, including drivers of change and expected outcomes, and how the research evidence fits with community needs and implementation context.

- Tools that systematically provide a synthesis of what data, community needs, and implementation factors were considered in bill development, to support translation of evidence across the policy life cycle and make clear any disparities being addressed.

- Templates that provide a starting place when drafting bill language around data collection, data sharing, evaluations, and other evidence-building activities, including how research evidence generated will be applied.

Examples to Support Activation

- Leverage the use of legislative declarations to specify the evidence that has informed the bill's development, including best available research evidence, professional expertise, and community voice and context.

- Develop a reusable "evidence note" template (akin to a fiscal note) to synthesize all evidence considered (from state agencies, local governments, legislative testimony, study committees,

etc.) as well as evidence gaps. Like a fiscal note, it is possible that the evidence note may not always be needed.

- Develop templates for drafting bill language to specify the intention of any provisions calling for new research studies/evaluations or data collection, sharing, or reporting. The template language should identify, at a minimum: a) the goals of new data, b) how new data builds on previous work, c) the intended audience for new data, and d) when results are expected.

Strategy 3: Build the Capacity of Policy Decision-Makers and Policy Influencers to *Use* Research Evidence

Support the development of shared goals, common language, and skills around how to understand and apply research evidence and align policy actions and investments.

Key components include:

- Clarity in how research evidence will be used and aligned within an agency's strategic planning, budgeting, and performance management work.

- A glossary of common terms (such as research evidence, impact evaluation, and best available evidence) with consistent use across partners.

- Training that builds capacity for evidence-based decision-making for diverse audiences.

- Tools that equip policy actors with data fluency skills (such as critically assessing research quality), consistent with their role and responsibilities.

- Mechanisms to onboard and incentivize EBDM across branches of government.

Examples to Support Activation

- Support integrated processes—across performance management, budget development, and policy development—for using research evidence and develop measures that drive towards shared goals.

- Leverage the shared glossary of terms being developed by the Colorado Lab, as part of Colorado's 5-year EBDM vision.

- Use available trainings and resources that build capacity for EBDM for diverse audiences, such as the Colorado Lab's "Effective Leadership through Data" training for state agencies and the Community Engagement Toolkit from the Collective Impact Forum.

- Develop reusable templates (e.g., cue cards) for General Assembly members to quickly unpack the quality of evidence and identify opportunities for evidence-building during legislative hearings.

Strategy 4: Build the Capacity of Policy Decision-Makers and Policy Influencers to *Access and Build* Research Evidence

> Increase access to sources of high-quality research evidence and invest in collective solutions to address evidence gaps for historically underserved communities.

Key components include:

- Access to academic journals and databases for Colorado state agencies.

- A comprehensive list of evidence-based policy and practice clearinghouses that can be shared by government and non-governmental partners.

- Structures that support data linkages and data sharing across systems.

- Opportunities for community-driven and community-partnered research.

- Shared tenants and best practice strategies for centering equity in data, research, and policy.

Examples to Support Activation
- Provide Colorado agencies with access to academic journals and databases, such as EBSCO, to ensure access to peer-reviewed articles and grey literature.   - Develop a comprehensive list of evidence-based clearinghouses, such as Blueprints for Healthy Youth Development, and train policy actors on how to use these free resources.   - Scale and expand structures, such as the Linked Information Network of Colorado and the Social Health Information Exchange to support data linkages, data sharing, and care coordination across systems.   - Support implementation of data recommendations from the CDPHE Maternal Health Task Force.   - Expand opportunities for community engagement and health equity in research projects, such as through the Colorado Clinical and Translational Sciences Institute.   - Create shared tenants and best practice strategies around equity in data and evaluation frameworks, for example, leveraging the work of the Equitable Evaluation Initiative.

From Strategy to Action

Maximizing evidence building and evidence use in policy is a systemic lever to attain sustained solutions in perinatal health. Creating a shared understanding of the work to be done is a critical first step in moving findings of this project into action. To promote a collective approach, we developed a top line summary of the data-informed strategies. The top line summary serves as an anchor to facilitate alignment and coordination across systems and communities, as Colorado invests in evidence-based approaches to improve maternal health and reduce disparities.

Top Line Summary: Improving Perinatal Health for Colorado Families: Strategies to Advance Evidence-Based Decision-Making in Policymaking

Appendix A: Ecology of Perinatal Health (Tool)

The "Ecology" of Perinatal Health: Unlocking Data-Informed Policy Solutions Matched to the Experiences of Childbearing Families

This figure visualizes major drivers of perinatal health at each level of the social-ecological model. Legislative, regulatory, and organizational policies impact and are influenced by drivers in each level, and evidence is needed at each one to unlock sustained solutions.

Society

Racism, classism, citizenship, and gender oppression

Health Care coverage, access, and quality

Economic security and stability

Educational and employment opportunities

Community

Neighborhood and Built Environment

Community-based services and supports

Institutional

Health and Medical Care

Workplace

Child Welfare

Justice (incarceration)

Relationship

Social support, cohesion, connectedness

Interpersonal, family, birth violence

Parenting and childbearing expectations

Individual

Knowledge

Health conditions

Demographics

Stress

Perinatal Health Equity in outcomes and experiences

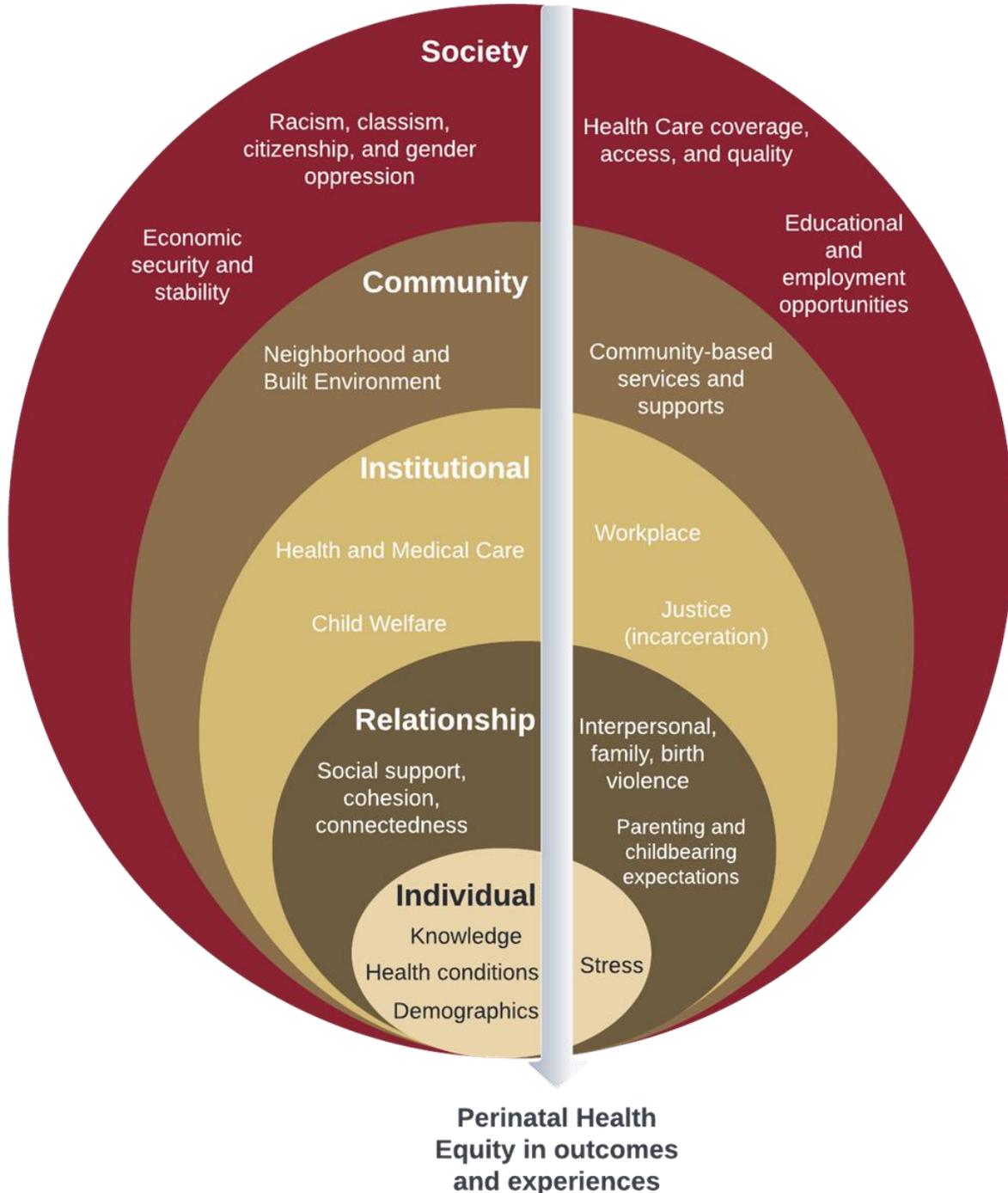# Appendix B: Description of Methods and Detailed Results

This Appendix accompanies the policy brief entitled *Improving Perinatal Health for Colorado Families: Strategies to Advance Evidence-Based Decision-Making in Policymaking.* The brief can be found [here](#).

This appendix provides additional details on the four primary methods employed in this study:

1. Re-analysis of the stakeholder interviews conducted during analysis plan development to identify barriers and facilitators to URE;

2. Document analysis of six macro- and meso-level policies to identify if and how URE was reflected;

3. Survey (Structured Interview for Evidence Use [SIEU]) to assess URE patterns among policy decision-makers and policy influencers;

4. Facilitated stakeholder convening to make meaning of findings and co-develop guidance on strategies that Colorado can adopt to improve URE.

Alongside methodological details, we present (select) raw results tables. More details on the analytical approach to this project can be found in the [analysis plan](#).

Stakeholder Interviews

In developing the analysis plan we gathered input from stakeholders on factors influencing perinatal health outcomes and disparities, examples of how research evidence was/was not used in policymaking, and upcoming policy opportunities to improve perinatal health in Colorado. In total, we conducted interviews with six system leaders (state decision-makers and community leaders) and held a focus group with eight childbearing people in summer 2022. For additional details on the sample, see analysis plan. In developing the analysis plan, we analyzed interviews with the goal of scoping study priorities, including policy areas, policy documents, and upcoming policy opportunities.

Because interviews provided rich insights beyond the initial goal of co-designing study priorities, we conducted an additional thematic analysis in spring 2023. Two members of the study team independently reviewed interview transcripts and notes to inductively identify barriers and facilitators to URE, which were grouped thematically as "motivation and perceptions" (e.g., goals on how to use data, extent to which data from different sources was valued) and "structures and processes" (e.g., issues related to budgeting, data sharing processes, staffing, incentives, mechanisms to include community voice, etc.).

Policy Document Analysis

For each of the three prioritized policy areas, and associated study priorities, we analyzed written policy documents. The document analysis[1, 2] was conducted to have illustrative examples of how evidence was (or was not) used and the types of evidence used throughout the policy life cycle. Through the policy document analysis, we were able to understand if and how evidence was reflected in or aligned with past policy decision-making.

Policy Document Description

We defined policy documents as written institutional documents, including:

- Documents or oral records produced during the policymaking process (e.g., testimonies);

- Policy language (e.g., final bill text); and

- Associated guidance on policy development or implementation (e.g., administrative memos, program guidelines, user's manual).

Data Sourcing and Sample

Six policies were selected as relevant to the priority areas identified for the study. Only enacted legislation was selected in order to study the full life cycle (from visioning to implementation). For each policy, testimony was used to understand evidence use within policy visioning. These testimonies were identified and sourced through the Colorado General Assembly's online bill search feature. Oral testimony was downloaded from historical legislative audio of relevant committee hearings and transcribed. Each individual testifying was documented along with their position on the bill (in support, in opposition, in an amend or inform position) and the name of their organization (if relevant). Bill texts were similarly identified via the Colorado General Assembly's bill search feature. We selected implementation materials based on each bill's implementation elements that were most aligned with the study's priorities. As needed, we liaised with partners to help source relevant implementation documents.

Across the six policy areas, we coded 81 written and oral testimonies, six bills, and 10 implementation documents (Table B-1). Testimonies were selected randomly and proportionally so that each policy had between 10 and 20 testimonies coded, roughly 10% of written and 10% of oral testimonies coded per bill. Across the six policy areas, 81 of 428 testimonies were coded (19%). Any testimony answering legislators' questions, following the testifier's initial statement, was excluded.

Table B-1: Policy Document Analysis Sample

Policy – Bill Text	Oral and Written Testimony (Count)	Implementation Material(s)
House Bill (HB) 19-1122: Maternal Mortality Review Committee	10*	Colorado Department of Public Health and Environment's (CDPHE) Maternal Mortality Review Committee Report
HB21-1232: Standardized Health Benefit Plan Colorado Option	25	Division of Insurance (DOI) Colorado Option Guidance
HB22-1278: Behavioral Health Administration	14	Colorado Department of Human Services(CDHS)/Behavioral Health Administration (BHA) High Risk Families Cash Fund Legislative Report, Illuminate Child Care Program Update
HB22-1302: Health Care Practice Transformation	11	Department of Health Care Policy and Financing (HCPF) integrated care website and grant overview

Policy – Bill Text	Oral and Written Testimony (Count)	Implementation Material(s)
Senate Bill (SB) 21-193: Protection of Pregnant People in Perinatal Period	11	Department of Regulatory Agencies (DORA) Colorado Civil Rights Commission website and Perinatal Incident Form - Colorado Civil Rights Division (CCRD)/Form on mistreatment
SB21-194: Maternal Health Providers	10	Maternity Alternative Payment Model (APM) alignment report (HCPF DOI, Department of Personnel & Administration [DPA])

Written testimony for HB19-122 was excluded since it was not available on the legislative website

Data Analysis

The document analysis was guided by a structured coding model to identify the extent to which policies were informed by evidence. Two coding guides were developed: one for testimonies and bill text (Table B-2) and a second for implementation materials (Table B-3). Embedded in the structured coding model was a racial, social, and cultural impact analysis to identify policies that explicitly integrated evidence on social and structural determinants of health.

Table B-2: Systematized Coding Guide for Testimonies and Bill Text

Variable	Description
Supplier	Who supplied the evidence (state department, general assembly, system influencer, community/family influencer, researcher).
Position	For testimonies, the position the testimony is being used to advance (support, oppose, amend, inform).
No evidence	No evidence was present (if so, none of the below were applied).
Type	The type of evidence (research evidence, practice guidance, professional experience, family/community experience). Multiple could apply.
Content	How the evidence maps to factors in the social-ecological model (societal, community, institutional, relationship, individual). Multiple could apply.
Focus	The focus of the evidence (problem identification/contextualization, vision/goal outcomes, preferred policy solution, implementation strategy).
Health Equity	Equity issues described (racial, economic, citizenship, gender identity, sexual orientation, language, rurality). Multiple could apply.
Form of URE	For those coded as research evidence, summative purpose of use (instrumental, conceptual, imposed, relational, symbolic/strategic).
Future	Future evidence building or use specified (future study, reporting compliance, measures to inform, data exchange/integration).

Table B-3: Systematized Coding Guide for Implementation Materials

Variable	Description
No Evidence	No evidence was present (if so, none of the below were applied).
Explicit/Implicit Evidence	Whether the evidence was explicit research or implicit research (conclusion drawn from research present in testimonies and/or bill text).
Evidence Type	The type of evidence (research evidence, practice guidance, professional experience, family/community experience). Multiple could apply.
New	Whether the evidence was new or present in previously coded testimony or bill text.
Equity	Whether health equity concerns were present in the evidence (yes/no).
Future	Future evidence building or use specified (future study, reporting compliance, measures to inform, data exchange/integration).

There were two coding levels: 1) document level at which the code was applied to the entire document, and 2) evidence level at which the code was applied to a specific piece of evidence. We completed coding in Dedoose, including a review for quality and consistency of code application. In order to determine how much evidence was new and how much was carried over from testimony and bill text, implementation documents were coded after the testimony and bill coding was completed.

Detailed Results

Code frequency and relationship between codes were examined to answer four questions:

1. How much evidence was used in policy decisions across the stages of policymaking (testimony, bill, implementation) and within each policy identified? How often was evidence used?

2. What type of evidence was used? What was the type, content, and focus of the evidence?

3. What form of research evidence was used?

4. How often were health equity themes present within the use of evidence?

The following two tables detail how much evidence was used across the six policies analyzed by policy stage (Table B-4) and what type of evidence was used by policy stage (Table B-5).

Table B-4: Amount of Evidence Across Policies and Policy Stage

Policy	Testimony	Bill	Implementation
HB19-1122: Maternal Mortality Review Committee	Much	Much	Much
HB21-1232: Standardized Health Benefit Plan Colorado Option	Much	Much	Some
HB22-1278: Behavioral Health Administration	Much	Some	Much
HB22-1302: Health Care Practice Transformation	Much	Much	Some
SB21-193: Protection of Pregnant People in Perinatal Period	Much	Some	None
SB21-194: Maternal Health Providers	Much	None	Much

Table B-4 Notes/Limitations

- *Excludes calls for future evidence building or use*
- *HB22-1278 changed amendments generated in previous legislation (HB19-1193) to be housed within the BHA. The implementation documents used for HB22-1278 were for programs generated in HB19-1193.*
- *No written testimony was coded for HB19-1122 (not available on legislative website).*

Decision Rules

- *For testimonies:*
  - *None. (0): 0% of testimonies have evidence excerpts.*
  - *Some, <50%: Less than half of testimonies contain evidence excerpts.*
  - *Much, >50%: At least half or more than half of testimonies contain evidence excerpts.*
- *Considerations for bills and implementation documents:*
  - *Quantity of evidence (excluding future evidence), quality, and the length of document (excerpts/pages).*

Supplemental Analyses

- *For health equity: supplemental analyses were used to determine extent of health equity within total evidence coded for testimonies, bills, and implementation documents.*

Table B-5: Presence of Evidence, by detailed code

Code	Testimony (n=81)	Bill (n=6)	Implementation document (n=10)
Supplier	81	-	-
system influencer	50	-	-
community/family influencer	23	-	-
state department	6	-	-

Code	Testimony (n=81)	Bill (n=6)	Implementation document (n=10)
researcher	2	-	-
general assembly	0	-	-
Position	81	-	-
oppose	15	-	-
inform	2	-	-
amend	12	-	-
support	52	-	-
No Evidence	15	1	2
Type	66	5	8
research evidence	44	5	8
professional experience	30	0	5
practice guidance	8	1	4
family/community experience	9	1	1
Explicit research	-	-	8
new	-	-	7
Implicit research	-	-	3
Content	66	5	-
individual factors	32	3	-
relationship factors	15	1	-
institutional factors	40	3	-
community factors	15	2	-
societal factors	50	4	-
Focus	66	5	-
problem identification/contextualization	62	3	-
preferred policy solution	48	1	-
implementation strategy	0	4	-

Code	Testimony (n=81)	Bill (n=6)	Implementation document (n=10)
vision/goal outcomes	4	0	-
Health Equity	34	3	5
race	24	2	-
economic	16	2	-
rural	7	2	-
language	2	0	-
gender identity & sexual orientation	1	1	-
citizenship	0	0	-
Form of URE *(only for research evidence)*	44	5	-
instrumental	34	4	-
conceptual	17	0	-
imposed	0	4	-
relational	1	0	-
symbolic/strategic	8	0	-
Future	-	6	2
data exchange/integration	-	2	1
future study	-	4	1
measures to inform	-	2	1
reporting compliance	-	4	1

Table B-5 Notes/Limitations

- *Darker shades of red correspond to a higher presence of evidence within the associated code. "Presence" is indicated by at least one inclusion of that code, within each testimony, bill, or implementation document.*
- *For implementation documents, the type of evidence and health equity coded have been collapsed into the codes used for testimonies and bills.*
- *In implementation documents, implicit evidence is taking into consideration evidence discussed in coded testimonies and bills. Testimonies not coded are not taken into consideration.*
- *In implementation documents, evidence is coded as "new" thematically since the source of the evidence is not always clear.*

Structured Interview on Evidence Use (SIEU)

We used the SIEU to help understand areas of strength and gaps in how policy decision-makers and influencers find and generate research evidence, critically appraise and make sense of research evidence, and apply research evidence to decision-making.

Survey Description

The SIEU is a 45-item validated instrument[3, 4] that measures engagement with research evidence in the areas of evidence acquisition (17 items, three subscales), evidence processing (16 items, three subscales), and evidence application (12 items, two subscales) when deciding on whether or not to adopt a particular policy or practice (Table B-6).

Table B-6. SIEU Instrument Scales and Sub-Scales

Scale	Number of Items	Sub-Scales
Evidence Acquisition (acquire)	17	• Local network • Global experts • Global documents
Evidence Processing (process)	16	• Self-assessment of validity/reliability • Reliance on others • Self-assessment of relevance
Evidence Application (apply)	12	• Use evidence • Ignore/reconsider evidence

Reliability of the total scale and subscales was assessed using Cronbach's α internal consistency (overall α score of .88), while convergent validity and discriminant validity was assessed using Pearson's product-moment correlations with two other instruments, the Evidence-Based Practice Attitudes Scale and the Organizational Social Context scale.

Data Collection and Sampling

We worked with our primary contacts at each state agency or statewide health/policy organization to identify staff and leadership that inform perinatal policymaking or help to make policy decisions. We administered the assessment via an electronic survey platform (Qualtrics) in December 2022 to selected representatives from each entity. To complete the SIEU, survey participants responded to statements on a scale of 1 to 5, with 1 meaning "never" do they engage in this behavior, 2 meaning "rarely," 3 meaning "sometimes," 4 meaning "often," and 5 meaning "always."

In total, 33 individuals completed the survey across nine entities (Table B-7), for a response rate of 89%.

Table B-7. SIEU Sample

Department/Agency	Number of Participants
Colorado Behavioral Health Administration	n=6
Colorado Consumer Health Initiative	n=3
Colorado Department of Public Health and Environment	n=6
Colorado Hospital Association	n=2
Colorado Perinatal Care Quality Collaborative	n=5
DORA (includes both the Division of Insurance and Division of Professions and Occupations)	n=4
Colorado Health Care Policy and Financing	n=4
Joint Budget Committee Staff	n=3
Total	**n=33**

Data Analysis

As a validated tool, analysis is prescribed as part of the survey methodology. SIEU analysis is descriptive and follows an item, sub-scale, and scale tiered approach. First, each item received an average score. Then, sub-scale scores are generated by taking the average of the average item scores for that subscale. Next, scale scores are generated by taking the average of the average item scores across all sub-scales for that scale. Finally, a total SIEU score is produced by taking the average of the average item scores across all scales. Using this approach, we analyzed the SIEU for the entire sample and for each agency/organization. Because sample sizes within each agency/organization varied, we used weighted averages and standard deviations in reporting.

Detailed Results

To protect the confidentiality of participants and their organizations, results tables below report findings for the full sample only.

Table B-8. Scores by SIEU Total and by Scale

Total SIEU Scale	Acquire Scale	Process Scale	Apply Scale
3.42 ± .09	3.11 ± .16	3.80 ± .17	3.34 ± .17

Table B-9. Scores by SIEU Sub-Scales

Scale	Sub-Scale	Score
Acquire	Local networks	2.93 ± .19
	Global exports	2.98 ± .33
	Global documents	3.37 ± .32
Process	Self-assess for validity/reliability	4.03 ± .16
	Self-assess for relevance	3.92 ± .34
	Reliance on others	2.95 ± .32
Apply	Use evidence	3.81 ± .20
	Ignore / reconsider evidence	2.40 ± .39

Facilitated Stakeholder Convening

The facilitated stakeholder convening was used as a "meaning-making and action" opportunity to co-develop guidance on concrete strategies that Colorado can adopt to improve use of research evidence in perinatal polies.

Participants

In line with the aim to generate cross-system strategies, the convening invited representatives from state agencies, executive and legislative branch staff, health and policy organizations, non-profit organizations, and community/family representatives with lived expertise. Representatives with leadership and direct policy influence were prioritized, as well as a mix of stakeholders who participated in previous project activities with new stakeholders. We worked with CDPHE to construct the final convening sample (Table B-10). In total, there were 23 participants plus three facilitators from the Colorado Lab.

Participants received light reading materials ahead of time regarding the project, alongside a participant packet during the convening to support an inclusive environment. Participants were provided a post-convening packet of tools and materials as well, to catalyze their data and policy work.

Table B-10. List of Participating Organizations and Perspectives

Organization/Perspective	Abbreviation
State Departments	
Colorado Department of Public Health & Environment	CDPHE
Colorado Department of Health Care Policy and Financing	HCPF
Colorado Behavioral Health Administration	BHA
Colorado Department of Early Childhood	CDEC
Legislative and Executive Branch	
Governor's Office staff	Gov Office
Joint Budget Committee staff	JBC
Statewide, Community, and Family Leadership	
Colorado Children's Campaign	—
Colorado Consumer Health Initiative	CCHI
Colorado Hospital Association	CHA
Colorado Perinatal Care Quality Collaborative	CPCQC
Elephant Circle	—
Illuminate Colorado	—
Family Leadership / Lived Experience	—

Convening Approach

A deliberative engagement model[5, 6] was used to facilitate the stakeholder convening. Deliberative engagement methods are intentional approaches to involving people in decision-making. Deliberative engagement convenings create an opportunity for diverse participants to come together to examine relevant evidence about an issue, program, or policy and then to discuss this evidence with other participants to arrive at a more comprehensive view. The model has been used in a variety of health and human service sectors with demonstrable success.

Nine principles guide deliberative engagement:

1. The process makes a difference.
2. The process is transparent.
3. The process has integrity.
4. The process is tailored to circumstances.
5. The process involves the right number and types of people.

6. The process treats participants with respect.

7. The process gives priority to participant discussions.

8. The process is reviewed and evaluated to improve practice.

9. Participants are kept informed.

Deliberative engagement is context-driven and depends on a number of context factors, as seen in Figure B-1.

Figure B-1.

Using this model, the convening elicited insights from 23 different individuals representing a broad base of stakeholders that contribute to policy creation and implementation that shapes the lives of people who are pregnant and parenting. Each stakeholder brought to the space different insights into evidence-based decision-making for perinatal health, based on past experiences, identities, positions, and roles. Through deliberative engagement, those insights were shared within and across stakeholder sectors to produce a more comprehensive understanding of gaps and strengths. The aim was not to arrive at consensus or a final decision. Rather, the focus was on rich dialogue and generative insights that could inform systemic opportunities to improve use of research evidence in perinatal policies.

Convening Activities

In advance of the convening, we completed preliminary analyses from all methods used in the study to date (stakeholder interviews, SIEU, policy document analysis), to identify gaps and strengths in using research evidence during perinatal policymaking. Key findings were then presented during the stakeholder convening, followed by interactive meaning-making activities aimed at unpacking the "why" (barriers, facilitators) behind observed URE trends. In advance of the convening, we prepared a table of major barriers and facilitators identified in study results (Table B-11); this table was then updated real time during the convening as dialogue unfolded. The table was used as the basis for a set of final convening activities, where participants worked to brainstorm strategies that could mitigate identified barriers and promote identified facilitators.

Table B-11. Major Barriers and Facilitators to URE Identified in the Project

Barriers	Facilitators
Barriers and Facilitators Related to <u>Motivation and Perceptions</u>	
(Lack of) Consistent Use of Data: Decision-makers and influencers *are using* research evidence some of the time, but not always with consistency.	**Valuing Data:** Governmental and non-governmental stakeholders both show high motivation in *wanting* to use research evidence to inform decision-making. They are willing to come together and engage in crucial conversations and recognize there is a problem.
How to Balance Community Voice and Data: Mechanisms to balance research evidence with community voice in data and policy discussions are lacking or not transparent. This is especially true with private entities.	**Aligning Data with Target Population Needs:** Decision-makers are thinking about research evidence in light of their target population's needs and strengths.
Need to Expand Health Equity Data: Evidence related to rurality, language, citizenship, gender identity, and sexual orientation is lacking in policy decision-making.	**Focus on Racial and Economic Equity:** Racial and economic equity has been an explicit focus across policy areas studied.
Need for Health Equity Focus Across Policymaking Process: Health equity is often strongly represented in testimony (policy visioning), but then explicit attention to health equity is lacking in the bill itself, which impedes implementation.	
Different Goals for Data Use: Stakeholders have different goals on how to use data to drive change and lack agreed upon ways of resolving differences.	**Value of Bringing Together Data, Community, and Experts:** Policymaking is seen by stakeholders as an opportunity to bring together research evidence, professional experience, and community priorities.
Lack of Evidence in Informing Solutions: Evidence is often used to identify and frame the problem, but is less likely to be used in informing solutions.	
Data Being Used to Justify Preconceived Ideas: Research evidence is often used selectively to support a preconceived idea, rather than starting with the full *best available evidence* to inform, support, or oppose.	
Lack of Data Transparency: Data from government and non-government agencies are not always made transparent and visible. Private entities are especially hard to seek data transparency with. This then shows up in lack of evidence transparency behind bills.	**Progress in Using Own Agency Data:** Decision-makers are using their own agency data to inform and make policy/practice decisions about half the time.
Lack of Consistency in Data Use and Resources to Do this: Stakeholders are using research evidence some of the time, but not always with consistency, which can impede progress on health outcome goals. This is often due to lack of staffing, time, and incentives.	**Dedicated Staff, Time, and Structures for Data Use:** Some government and non-governmental partners have dedicated staff, time, and structures to gather and share evidence.

Barriers	Facilitators
Hard to Access/Adopt Evidence-Based Practices (EBPs): Even when EBPs are available, they can be difficult to access, adopt, and scale.	**Incentivizing EBP Use:** Providing incentives to providers for using EBPs can help accelerate uptake and drive positive outcomes.
Lack of Evidence Use Skills/Confidence: Not all decision-makers have the same level of confidence and skills in finding the best available research evidence and assessing research quality.	**Provide Evidence Use Tools, Trainings, and Supports:** Governmental and non-governmental partners can be provided consistent training, tools, and supports to improve skills and confidence.
Barriers and Facilitators Related to Structures and Processes	
No Clear Mechanisms for Using Data Named in Bills: Data collection or new studies are often called for in legislation, but without clear mechanisms to then use new evidence to inform change.	**Use Standard Bill Template Language for "Future Use" Data Provisions:** Standard bill template language for "future data" provisions can promote a consistent and transparent focus on gathering <u>and</u> using data.
State Budgeting Done in a Silo: State budgeting process is done in a silo, which can limit opportunities to use external partners in integrating the *best available evidence* alongside experiential data.	
Under-use of Clearinghouses and Evaluators: Stakeholders are under-utilizing clearinghouses and external evaluators, which can result in inefficiencies in using *best available evidence* easily and accurately.	
Barriers to Data Sharing/Cell Suppression Tension: Governmental and non-governmental stakeholders are experiencing barriers to data sharing (within and across agencies) and tension around cell suppression (i.e., not reporting data when counts are small).	
Breakdown in Translating Evidence Across the Policymaking Process: Breakdowns in translating evidence from policy vision to policy creation to policy implementation leads to inefficiency and redundancy. Often, evidence is cut during the amendment process.	**Use Legislative Declarations to Summarize Evidence:** Legislative declarations can be used to synthesize evidence behind the bill and lay the groundwork for policy implementation.
Lack of Structures in JBC to Consider Lived Experience	**JBC Processes strongly consider Research Evidence**
Lack of Access to Research Evidence: lack of access to scientific articles (journals, databases)	
Different Definitions and Mental Models/Processes for Critically Appraising Quality of Evidence: Not all evidence is of high quality. What and how is evidence being valued? Qualitative and quantitative evidence is not equally valued.	
Lack of Evidence/Data: Not all initiatives are able to build evidence and develop scientific articles. Need to consider past historical harms of research. Disaggregated data is often not available.	

Barriers	Facilitators
Lack of Funding to Build and Collect Evidence with Lived Experience, especially for those who are best positioned in community to provide expertise.	
Data Being Used to Punish versus for Learning. How to foster a learning culture with hospitals and other key sources of data? Need to highlight the structural drivers of the results.	
Lack of Structures for Early Input/Partnership with State Agencies. State agencies are often involved at the last minute in the legislative process by advocacy organizations. State agencies have constraints in what position they can take on bills**.**	**Incorporating a Process of Data Use in Policy Development.** Taking into account technical expertise and leveraging legislative liaisons to understand data use feasibility and secure appropriate funding at point of policy creation.
Lack of Shared Measures: what are we driving toward that research evidence can inform (front end) and evaluate (back end)? How will we measure success?	**Naming Outcomes and Goals in Legislations; Connecting to Wildly Important Goals and Strategic Planning of state agencies**

Data Analysis

Detailed field notes were taken throughout the convening and completed participant worksheets were collected. We applied thematic analysis to convening results and cross-walked major themes to the capability-motivation-and-opportunity behavioral framework (CMO-B) to understand: a) capability: internal capacity related to knowledge and skills in URE; b) motivation: internal and external motivation to use data, often acts as a mediating factor between capability and opportunity; and c) opportunity: external factors that make URE possible or not. We then analyzed the recommendations brainstormed by participants to identify alignment between barriers/facilitators and concrete solutions. We cross-walked results from the convening with results from other methods used in the project, to arrive at a final set of data-informed strategies.

Study Strengths and Limitations

Study Limitations

All methods used in this study involved voluntary samples and are not intended to be representative of all policy decision-makers, policy influencers, or policies across Colorado. Likewise, identified barriers and facilitators to URE are likely not an exhaustive list.

Study Strengths

The high success in securing cross-system participation from governmental and non-governmental partners, researchers, communities, and families is a clear strength. The mixed methods approach enabled a more comprehensive understanding of URE trends. Leveraging validated assessments and methods from the growing field of evidence-based decision-making proved valuable in obtaining rich insights. Collectively, this study provides a rigorous foundation for continuing to explore URE in Colorado policymaking.

Endnotes

[1] Hodder, I. (2000). The interpretation of documents and material culture. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (2nd ed., pp. 110–129). Sage Publications.

[2] Yanovitzky, I. & Weber, M. (2020). Analysing use of evidence in public policymaking processes: A theory-grounded content analysis methodology. *Evidence & Policy, 16*(1), 65–82. https://doi.org/10.1332/174426418X15378680726175

[3] Palinkas, L.A., Garcia, A. R., Aarons, G. A., Finno-Velasquez, M., Holloway, I. W., Mackie, T. I., Leslie, L. K., & Chamberlain, P. (2016). Measuring use of research evidence: The structured interview for evidence use. *Research on Social Work Practice, 26*(5), 550–564. https://doi.org/10.1177/1049731514560413

[4] Palinkas, L.A., Saldana, L., Chou, C-P., & Chamberlain, P. (2017). Use of research evidence and implementation of evidence-based practices in youth-serving systems. *Children & Youth Services Review, 83*, 242-247. https://doi.org/10.1016/j.childyouth.2017.11.005

[5] National Consumer Council. (2008). *Deliberative public engagement*. UK National Consumer Council. https://www.involve.org.uk/sites/default/files/field/attachemnt/Deliberative-public-engagement-nine-principles.pdf

[6] Involve. (2011). *Deliberative public engagement – Nine principles.* https://www.involve.org.uk/resources/publications/practical-guidance/deliberative-public-engagement-nine-principles