NORC at the University of Chicago

FINAL REPORT

February 2023

Environmental Scan
Summary Report

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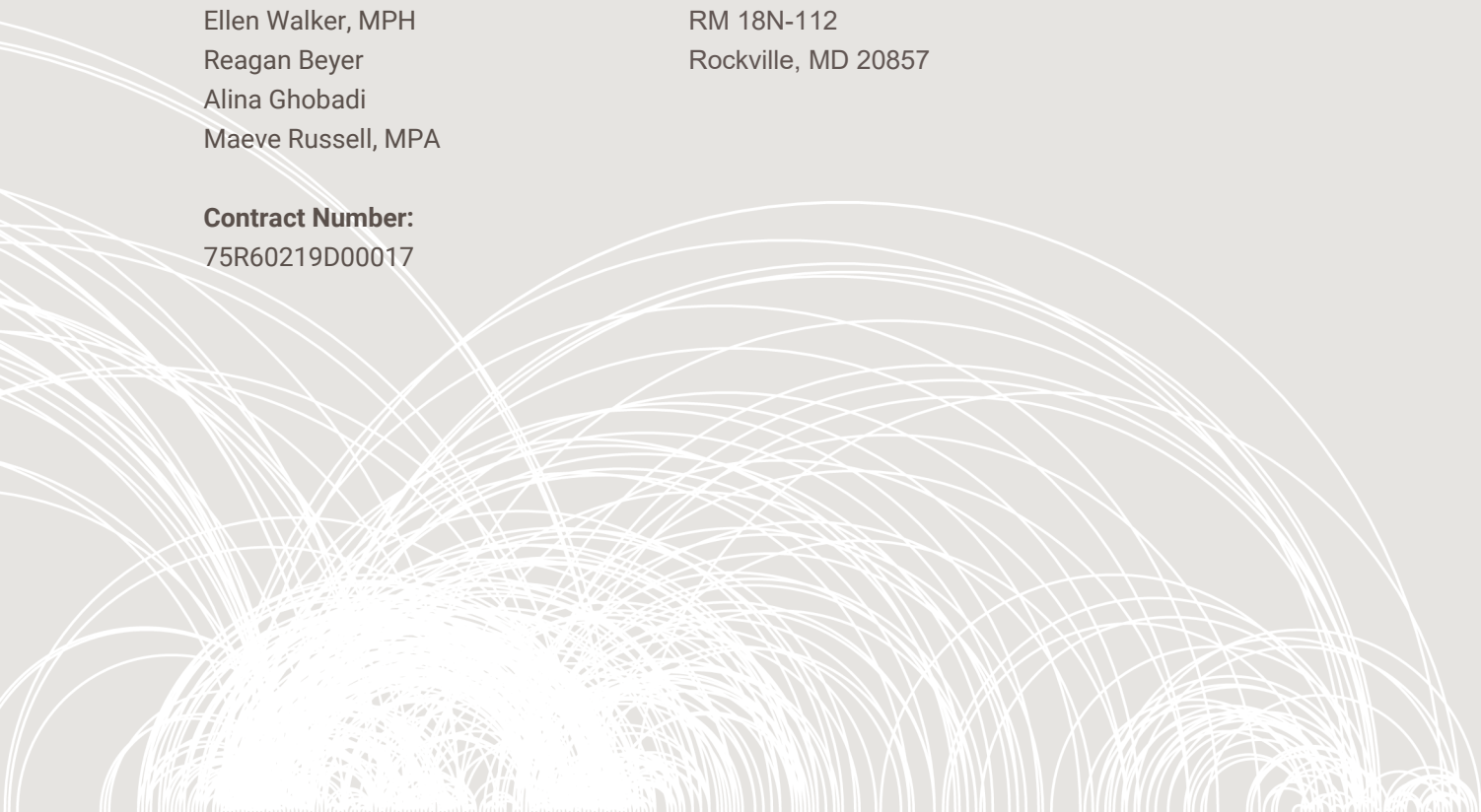Alina Ghobadi
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75R60219D00017

Health Equity Assessment Leveraging Performance Measurement Enhancements
in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

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Executive Summary

Background

NORC at the University of Chicago (NORC), under contract with the Health Resources & Services Administration (HRSA) and the Administration for Children and Families (ACF), is conducting the Health Equity Assessment Leveraging Performance Measurement Enhancements in the MIECHV Program (HEAL-PM) project. The goal of the HEAL-PM project is to examine how the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program and Tribal MIECHV (TMIECHV) performance measurement systems can better monitor and understand how awardees are documenting, assessing, and advancing health equity (i.e., the absence of disparities or avoidable differences among groups in health status and health outcomes)[i] in home visiting.

This project seeks to answer three key questions:

- How can the social and structural determinants of health (SSDOH) be used to provide context to MIECHV/TMIECHV Program performance measures data, using a health equity measurement framework?
- How can performance measures better reflect HRSA's commitment to advancing health equity within the existing statutorily defined benchmark areas?
- What aspects of data collection and technical assistance (TA) must be considered when promoting the collection and assessment of MIECHV/TMIECHV Program data within a health equity framework?

To answer these questions, the study team is conducting the following activities:

- Engaging with key interested parties to identify 1) how awardees are collecting and measuring health disparities and SSDOH among populations served (or would like to collect and measure these constructs) and 2) key areas of interest or concern related to the cultural sensitivity of existing performance measures
- Conducting an environmental scan of peer reviewed and grey literature to assess the current state of practice related to integrating a health equity lens in early childhood systems performance measurement
- Identifying a continuum of recommendations for updates, alternatives, or flexibilities to the existing MIECHV Program performance measurement system, aligned with a health equity framework that integrates SSDOH

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[i] https://www.hrsa.gov/about/organization/bureaus/ohe/index.html#:~:text=What%20is%20health%20equity%3F,disease%2C%20disability%2C%20or%20mortality.

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- Describing key areas for internal and external TA and determine supports needed to carry out actionable steps and address potential barriers for adopting proposed recommendations in the MIECHV Program performance measurement system

This report presents methods, findings, and key recommendations from the HEAL-PM environmental scan.

Methodology

The environmental scan was scoped to achieve four main objectives:

- Objective 1: Describe health equity frameworks that could guide the organization of the MIECHV/TMIECHV Programs performance measurement system
- Objective 2: Identify culturally responsive indicators that could guide the analysis of health equity in home visiting through the MIECHV/TMIECHV Programs performance measurement system[ii]
- Objective 3: Describe existing approaches to assess health disparities within child-serving programs, particularly among rural and underserved communities
- Objective 4: Determine the availability of nationally representative and public data on indicators of SSDOH, including contextual measures and indicators available from similar child-serving programs or organizations

To identify sources that addressed each objective, the study team conducted keyword searches of peer-reviewed and grey literature. To search the peer-reviewed literature, we developed string search terms tailored to each research objective and searched PubMed and Google Scholar.

To identify grey literature, the study team conducted a keyword search using the Google search engine. We also conducted targeted searches of predetermined organizational websites, including organizational websites specializing in maternal and child health populations and administrative data sources. The study team also incorporated sources identified by our technical expert panel (TEP), MIECHV and TMIECHV awardees, and HRSA/ACF staff through our interested party engagement activities. Once identified, the study team included these sources in the title/abstract screening for the environmental scan and proceeded with the full text screening and data extraction process described below.

Sources were included if they were published in English, set in the United States, and the publication year was after 2010. Exceptions to these criteria were foundational articles that described key health equity frameworks or methods. Document types considered in scope for peer-reviewed literature were theoretical articles, primary and secondary data analyses, literature reviews, and systematic reviews. For grey literature, in scope document types included reports, evaluations, white papers, conference

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[ii] While scoping the search term and strategy for Objective 2, the study team, in collaboration with HRSA/ACF, determined that it was not possible to conduct individual searches for culturally responsive indicators across all the performance measure content areas due to time and resource constraints. Instead, our search strategy focused on identifying general methods, approaches, and best practices for developing culturally responsive measures and indicators.

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proceedings, technical assistance resources, and question banks. All sources were also screened for relevance to one or more of the four research objectives of the environmental scan. A multiphase, sequential process was used to screen, sort, and group articles relevant to at least one of the four research objectives of the environmental scan. This process included conducting the searches, removing duplicates, reviewing article titles, screening article abstracts, grouping the literature, and conducting a full text review. The study team used Covidence, a web-based software that streamlines literature and systematic reviews, to conduct a title/abstract screening and full-text review of sources.

The study team used thematic analysis to analyze data extracted from the peer-reviewed and grey literature for each research objective.

Findings

In total,117 sources were included in the final sample for data extraction and analysis of the environmental scan. We present key findings, organized by research objective below.

Objective 1: Existing Health Equity Frameworks That Could Guide Organization of the MIECHV Program Performance Measurement System

Research Objective 1 identifies and summarizes existing health equity frameworks that could guide or inform the MIECHV and TMIECHV performance measurement systems. We identified 27 sources that described or discussed nine health equity frameworks. Health equity frameworks have shifted and evolved from focusing on medical models to incorporating social factors, structural inequities, individual factors, and the complex interaction between these factors over an individual's lifespan and generations. We identified three types of frameworks as part of our review: social determinants of health (SDOH) frameworks, structural determinants of health frameworks, and life course theory frameworks.

Most of the identified frameworks presented in this objective do not provide guidance on implementation. However, two SDOH frameworks (Healthy People 2030 SDOH framework and County Health Rankings Model) include proxy community- and societal-level indicators for improved health equity outcomes. When the MIECHV Demographic, Service Utilization, and Select Clinical Indicators (Form 1), TMIECHV Demographic Service Utilization Data (Form 1), MIECHV Benchmark Performance Measures (Form 2), and TMIECHV Benchmark Performance Measures (Form 2) were mapped to common constructs and levels of health equity frameworks, the existing performance measures map most closely to the individual and relationship levels. There are no measures that capture community-level constructs such as neighborhoods, community safety, or the physical environment. Within the societal level, there are no performance measures that capture quality of services or more upstream determinants of health such as systems of power or social inequities due to demographic factors such as race/ethnicity, class, or immigration status. To more fully apply a health equity perspective, the MIECHV and TMIECHV Programs should examine these gaps and incorporate data and measures that capture upstream social factors such as quality of home-visiting services, the physical and built

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environment, and measures that track disparities in outcomes by root causes of social inequities such as race/ethnicity or other social factors. Although these measures may be more distal to home visits (e.g., health care policy, access to public transportation), the incorporation of these constructs can help inform and contextualize the proximal individual level MIECHV/TMIECHV performance measures. Limitations to the highlighted frameworks include a lack of guidance on implementation, the need for multilevel and long-term data collection activities to capture the full range of framework constructs, and the inability to identify primary drivers of social inequities and health disparities that are consistent across all communities and contexts.

Objective 2: Culturally Responsive Indicators That Could Guide the Analysis of Health Equity in Home Visiting through the MIECHV Program Performance Measurement System

The study team identified 23 sources that discussed culturally responsive approaches to measurement development or research. Information on developing culturally responsive measures was typically embedded within broader sources that highlight general principles and practices for conducting culturally responsive research, training, and analytic methods.

Our environmental scan established community-based participatory research (CBPR) and tribal participatory research (TPR) methods and practices as central to the development of culturally responsive measures. Principles of CBPR include co-learning, identification of mutual benefits, and a long-term commitment to the incorporation of community theories, participation, and practices in research. TPR, a similar methodology, is specific to research involving American Indian/Alaska Native (AI/AN) communities. Specific strategies for engaging community members in the development of culturally responsive measures include concept mapping, talking circles for AI/AN populations, applying the Patient, Intervention, Comparison, Outcome (PICO) approach, and engaging community advisory boards.

Qualitative measures and measures that capture community strengths are two new types of performance measures that could help improve the cultural responsiveness of the MIECHV/TMIECHV performance measurement system. The study team identified challenges to conducting culturally responsive research and measure development, including the potential to overburden historically underserved individuals through repeated engagement and the time, cost, and resources associated with CBPR and TPR strategies. In addition, there was a lack of sources that provided guidance on standardizing measures across diverse communities or engaging communities at a national level. Instead, sources provided guidance for federally supported programs to engage local communities in research and evaluation.

Objective 3: Existing Approaches to Assess Health Disparities within Child-Serving Programs

The study team identified 24 sources that featured approaches to assessing health disparities and health equity within child-serving programs. These sources highlighted factors to consider before

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engaging in assessments of health disparities and health equity, such as the need to understand the definition and operationalization of health disparities and health equity to properly plan analyses, selecting the appropriate operational definitions of factors that drive disparities and inequities (e.g., discrimination, socioeconomic status), and identifying the appropriate reference point. These sources also highlighted analytic methods that inform the interpretation and conclusions made when assessing health disparities, such as using multilevel designs that combine individual- and community-level data to contextualize individual-level health disparities, using stratification or disaggregation to uncover health disparities and proportions or rates to account for differences in the sizes of population subgroups instead of raw numbers. In addition to traditional descriptive, bivariate, or multivariable techniques, other options to identify and contextualize health disparities include using person-centered approaches, such as latent class analysis (LCA) to better understand and measure population subgroups.

Limitations associated with collecting, sourcing, and linking multilevel data include increasing the burden of data collection among partners, grantees, and awardees; having limited access to data sources that align with SDOH, and having the infrastructure to collect, analyze, and interpret data.

Objective 4: Availability of Nationally Representative and Public Data on Indicators of SSDOH

Research Objective 4 revealed more than 13 sources relevant to nationally representative, publicly available data on indicators of SSDOH. The SSDOH indicators fell into four content areas: physical environment (e.g., neighborhood/structural factors, toxic exposures, technology access, crime); economic stability (e.g., poverty, food insecurity, employment, public assistance rates); health insurance coverage (e.g., uninsured rates, adequacy of insurance coverage); and education (e.g., early childhood education centers and enrollment, adult educational attainment). In addition to individual indicators of SSDOH, composite indices (i.e., single measures that are calculated from multiple variables that are typically standardized and weighted for the calculation) that create composite risk or vulnerability scores were identified.

Data sources identified for these SSDOH indicators included the American Community Survey and Decennial Census, the Child Opportunity Index, the County Health Rankings & Roadmaps, and Healthy People, among others. Publicly available data on indicators of SSDOH are primarily available at the national, state, and census-tract levels. No access concerns were identified. A limitation of these data sources is that users may not be able to examine contextual and SDOH factors at the level that is most meaningful to their communities of interest (e.g., neighborhood or service catchment area).

Prioritized Recommendations and Considerations

Based on the findings from the environmental scan, we highlight three overarching recommendations to adapt and organize the MIECHV/TMIECHV Program performance measures using a health equity lens.

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1. **Incorporate SSDOH data into the MIECHV/TMIECHV performance measurement system.** A key finding that cuts across all research objectives is the importance of including data that capture the SSDOH into the MIECHV/TMIECHV Program data. The current MIECHV/TMIECHV indicators focus on individual-level performance measures (i.e., depression screening), systems outcomes (i.e., continuity of insurance coverage), and demographics (i.e., race/ethnicity), yet health equity frameworks highlighted in the findings from Objective 1 have moved beyond the individual medical model to examine SSDOH. The following considerations should be made to incorporate SSDOH data into the MIECHV/TMIECHV performance measurement system:

   - Acknowledge that upstream social factors and structural inequities serve as the root cause of health disparities.
   - Conduct analyses that combine individual-level performance measure data with measures of SSDOH to contextualize differences across groups and identify upstream points of intervention so as to address disparities at the awardee and grantee levels.
   - Leverage publicly available data with indicators of SSDOH identified through this review to conduct community-level and multilevel analyses.
   - When using publicly available data with indicators of SSDOH, it is important to consider the level of data available, years of data available, and the SSDOH that have the greatest impact on families.

2. **Apply a health equity perspective when analyzing MIECHV/TMIECHV Program data.** Another cross-cutting recommendation we identified from the environmental scan is to apply a health equity perspective throughout the entire analytic process when using MIECHV/TMIECHV performance measurement data to document health disparities from the analytic design phase through analysis:

   - Appropriately frame the analytic approach by using thoughtful operational definitions of key drivers of health disparities such as SSDOH (e.g., race/ethnicity, language, socioeconomic status [SES]).
   - Use appropriate comparison groups to contextualize findings. White populations should not always be used as the default reference point.
   - Disaggregate or stratify data by relevant subgroups to uncover health disparities.
   - Consider mixed-method approaches and tracking performance measures over time to better understand the lived experience of MIECHV/TMIECHV families across the life course.

3. **Use CBPR/TPR approaches to revise existing MIECHV/TMIECHV performance measures and develop new ones.** A goal of the HEAL-PM project is to determine strategies to improve the cultural responsiveness of the MIECHV/TMIECHV performance measures. Findings from Objective 2 highlight practices and approaches to develop culturally responsive measures and indicators.

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- Engage MIECHV/TMIECHV community members to revise existing performance measures and/or develop new measures. We recommend that HRSA/ACF engage a community advisory board (CAB) of awardees, local implementing agencies (LIAs), and MIECHV/TMIECHV families to review measures that have been identified as problematic and codesign improvements to make them more culturally responsive. For example, to ensure that diverse perspectives are represented (e.g., best practice and lived experience), the CAB can include safe sleep practitioners/experts and community members.
- Develop MIECHV/TMIECHV performance measures that build on the community's strengths and resources.
- Support the administration of MIECHV/TMIECHV performance measure screening instruments in the primary languages of home-visiting families. In equitable multilingual spaces (i.e., where there is no dominant language), language support is given to all who do not feel comfortable or are not proficient in all of the languages in the space.[1] Equitable multilingual spaces can promote family engagement from families who speak different languages and larger community engagement that builds trust and support. This is a "language justice" concept and is proposed as an alternative to the "language access" approach, which assumes language support is needed for those who do not speak English.

Conclusions and Next Steps

Together, these recommendations and considerations provide high-level guidance for adapting and organizing the MIECHV/TMIECHV Program performance measures using a health equity lens based on the findings from our environmental scan. These recommendations will be further refined and integrated with findings from our other HEAL-PM project activities to develop a continuum of recommendations.

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Background

The Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program is administered by the Health Resources & Services Administration (HRSA) and provides voluntary, evidence-based home visiting services to pregnant people and parents with young children up to kindergarten entry who live in communities that face greater risks and barriers to achieving positive maternal and child health.[2] The Tribal Maternal, Infant, and Early Childhood Home Visiting (TMIECHV) Program is funded through a legislative set-aside of 3 percent of MIECHV program funds. Through the TMIECHV Program, which is administered by the Administration for Children and Families (ACF), grants are provided to tribal communities to support the development, implementation, and evaluation of culturally appropriate home-visiting programs. In FY 2020, the MIECHV Program served approximately 140,000 parents and children in 71,000 families from all 50 states, the District of Columbia, and five U.S. territories.[2] The TMIECHV Program served 3,315 parents and children in 2020.[3]

Home visitors involved in the MIECHV and TMIECHV programs provide essential services to families that include supporting healthy pregnancies; providing information on topics such as nutrition, health, and preventing injuries for infants and young children; encouraging early language development and early learning at home; teaching positive parenting skills; working with caregivers to set goals for the future; and connecting families to other services and resources in their community.[2] Home-visiting programs have been demonstrated to help prevent child abuse and neglect, support positive parenting, improve maternal and child health, and promote child development and school readiness.[3,4]

MIECHV/TMIECHV Program awardees are required to collect and annually report data on their programs' performance. Awardees must also submit quarterly performance reports to assist HRSA in monitoring grants and providing oversight. The MIECHV Program performance measurement system currently includes 19 required and two optional measures across six benchmark areas (Exhibit 1). TMIECHV Program grantees report on 15 core/required and flex/optional standardized performance measures that cover the same six benchmark areas. Appendix A contains a complete list of the MIECHV/TMIECHV performance measures.

Exhibit 1: MIECHV and TMIECHV Performance Measure Topic Areas

Topic Area	Relevant Constructs (MIECHV)	Relevant Constructs (TMIECHV)
Maternal and Newborn Health	Preterm birth, breastfeeding, depression screening, well child visits, postpartum care, tobacco cessation referrals, substance use screening*	Depression screening, substance abuse screening, well child visit, breastfeeding, postpartum care, immunizations
Child Injuries, Maltreatment, and Emergency Department Visits	Safe sleep, child injury, child maltreatment	Safe sleep, child injury prevention, child injury, parenting stress screening

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Topic Area	Relevant Constructs (MIECHV)	Relevant Constructs (TMIECHV)
School Readiness and Achievement	Parent-child interaction, early language and literacy activities, developmental screening, behavioral concern inquiries	Parent-child interaction, developmental screening, early language and literacy activities
Crime or Domestic Violence	Intimate partner violence (IPV) screening	IPV screening
Family Economic Self-Sufficiency	Primary caregiver education, continuity of insurance coverage	Screening for economic strain
Coordination and Referrals	Completed depression referrals, completed developmental referrals, IPV referrals, completed substance use referrals*	Completed depression referrals, completed IPV referrals, completed depression and parenting stress referrals
Implementation		Receipt of home visits, home visit implementation observation, reflective supervision

*Indicates an optional HRSA MIECHV measure effective beginning fiscal year 2022 reporting period.

MIECHV and TMIECHV performance measures are intended to demonstrate program accountability as well as continuously monitor and provide oversight to MIECHV/TMIECHV Program awardees. Although data on demographics and service utilization are currently collected and reported annually, there are no measures or reporting requirements that focus specifically on progress toward health equity or reduction in disparities related to race, ethnicity, social class, gender identity, disability status, or other relevant sociodemographic or geographic factors. This is despite the growing recognition of the need to capture the impact of the structural and social determinants of health (SSDOH) on the health and well-being of populations served by these programs. Social determinants of health (SDOH) are defined as the conditions in which people live, learn, work, and play that affect a wide range of health and quality-of-life outcomes and risks.[5] The structural determinants of health, in contrast, are defined as the root causes of health inequities and include all social and political mechanisms that affect whether the resources necessary for health are distributed equally or unjustly in society according to race, gender, social class, geography, sexual identity, or other socially defined groups of people.[6] Moreover, the cultural sensitivity and responsiveness of the measures should be further examined to ensure that they are appropriately and respectfully assessing outcomes for the diverse populations served by the MIECHV and TMIECHV Programs. In this environmental scan, cultural sensitivity refers to the incorporation of the ethnic/cultural characteristics, experiences, and norms of a target population.[7] Cultural responsiveness involves valuing the lived experiences of others and honoring their cultural context.[8]

It is within this context that HRSA is reconsidering the MIECHV and TMIECHV Programs' approach to performance measurement. Through a contract with NORC at the University of Chicago (NORC), HRSA is conducting the Health Equity Assessment Leveraging Performance Measurement

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Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM) project. The goal of the HEAL-PM project is to examine how the MIECHV/TMIECHV performance measurement system can better integrate strategies to monitor and understand how awardees are documenting, assessing, and advancing health equity in home visiting. To achieve this goal, the project seeks to answer three key questions:

1. How can the SSDOH be used to provide context to MIECHV/TMIECHV Program performance measures data, using a health equity measurement framework?

2. How can performance measures better reflect HRSA's commitment to advancing health equity within the existing statutorily defined benchmark areas?

3. What aspects of data collection and technical assistance (TA) must be considered when promoting the collection and assessment of MIECHV/TMIECHV Program data within a health equity framework?

As part of this work, the study team is conducting the following activities:

- Engaging with key interested parties to identify how awardees are collecting and measuring health disparities and SSDOH among populations served and any key areas of interest or concern related to the cultural sensitivity of existing performance measures

- Identifying a continuum of recommendations for updates, alternatives, or flexibilities to the existing MIECHV/TMIECHV Program performance measurement system, aligned with a health equity framework that integrates SSDOH

- Describing key areas for internal and external TA and determining supports needed to carry out actionable steps and address potential barriers to adopting proposed recommendations in the MIECHV/TMIECHV Program performance measurement system

In addition, the study team conducted an environmental scan to identify foundational articles and best practices related to the integration of a health equity lens in early childhood performance measurement systems and identification of SSDOH measurement approaches. The primary objectives of the environmental scan are listed in Exhibit 2. In this report, we summarize our approach to conducting the environmental scan as well as key findings, recommendations, and considerations for incorporating a health equity framework into the MIECHV/TMIECHV performance measurement systems.

Exhibit 2: Objectives of the HEAL-PM Environmental Scan

Objective and Description	
Objective 1	Description of **existing health equity frameworks** that could guide organization of the MIECHV/TMIECHV Program performance measurement system
Objective 2	Identification of **culturally responsive health and well-being indicators** that may guide the analysis of health equity in home visiting through the MIECHV/TMIECHV Program performance measurement system

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Objective and Description	
Objective 3	Description of **existing approaches to assess health disparities within child-serving programs**, particularly among rural and underserved communities
Objective 4	Determination of the **availability of nationally representative and public data on indicators of SSDOH,** including contextual measures and indicators available from similar child-serving programs or organizations

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Methodology

In this section we describe our peer-reviewed and grey literature search strategy; inclusion and exclusion criteria; process for screening and extracting data from sources; process for incorporating feedback from a technical expert panel (TEP), MIECHV awardees, TMIECHV grantees, and HRSA; and our approach to analyzing and reporting findings.

Overview of Search Process

During our search process, the study team documented search strategies and steps taken via an Excel spreadsheet that included columns to track which staff member conducted the search, the objective number the search addressed, the date the search was conducted, the database/website/search engine used, keywords searched, and number of sources found. The study team then utilized EndNote, a reference management tool, to collect, organize, and cite sources found through our peer-reviewed and grey literature searches. Finally, the study team used Covidence, a web-based software that streamlines literature and systematic reviews, to remove duplicate sources and review and synthesize search results.

Search Process for Peer-Reviewed Literature

The research team utilized PubMed to search for peer-reviewed literature. PubMed allows for advanced search functionality and the capacity to locate high-quality studies from 33 million citations for biomedical literature, including sources in MEDLINE, life science journals, and online books. The study team conducted a title and abstract search of sources identified through the advanced search functions. The research team also utilized Google Scholar to search for peer-reviewed literature. This search engine pulls from a wide variety of disciplines and sources, including journal articles, books, theses, and abstracts. Due to the large volume of sources available in Google Scholar, and the extensive overlap with PubMed, the study team reviewed only the first 10 pages of results.

The string keyword search terms for the peer-reviewed literature and the keyword search terms for the grey literature are listed below in Exhibit 3. It is important to note that while scoping the search term and strategy for Objective 2, the study team, in collaboration with HRSA/ACF, determined that it was not possible to conduct individual searches for culturally responsive indicators across all the performance measure content areas due to time and resource constraints. Instead, our search strategy focused on identifying general methods, approaches, and best practices for developing culturally responsive measures and indicators.

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Exhibit 3:   Environmental Scan Keyword Search Terms

Objectives	String keyword search terms for peer-reviewed literature	Keyword search terms for grey literature
Objective #1: Existing health equity frameworks that could guide organization of the MIECHV Program performance measurement system	"Maternal health" OR "child health" AND inequality* OR racis* OR disparit* AND usa OR "united states" OR America AND (framework or measur* or "social determinant*")	Approaches, Assessment, Child health, Child serving, Cultural competency (cies), Disparit*, Framework(s), Health disparity, Health equity, Health inequity, Health equity framework, Inequality*, Maternal child health, Maternal health, Maternal health program(s), Measur*, Programs, Racis*, Racism and health, Social determinant*, Structural racism and health, Successful program(s)
Objective #2: Culturally responsive health and well-being indicators that may guide the analysis of health equity in home visiting through the MIECHV Program performance measurement system	"Health equity" OR "health disparity" OR "health inequity" OR "race equity" OR "race inequity" OR "social determinants of health" OR "disproportionality" AND "maternal health" OR "child health" AND ("measure" OR "indicator") "Health equity" OR "health disparity" OR "health inequity" OR "race equity" OR "race inequity" OR "social determinants of health" OR "disproportionality" AND "maternal health" OR "child health" AND ("culturally responsive" OR "culturally competent") AND ("indicator" OR "measure")	Approaches, Assessment, Child health, Child health programs, Child serving, Cultural competenc*, Culturally responsive health, Discriminat*, Disproportionality, Health disparit*, Health equity, Health inequity, Home visit, Indicator, Maternal health, Maternal child health, Measure, MIECHV, Programs, Race equity, Race inequity, Racis*, Social determinants of health, RMNCH (Reproductive, Maternal, Newborn and Child Health), Well-being indicators
Objective #3: Existing approaches to assess health disparities within child-serving programs	"Maternal health" OR "child health" AND inequality* OR racis* OR disparit* AND (usa OR "united states") AND (program* OR "evidence based") AND (success* OR outcome*) AND ("child serving" OR children OR adolescent)	Adolescent, Approaches, Assessment(s), Child health, Child serving, Child serving program(s), Children, Cultural competency (cies), Disparit*, Evidence based, Framework(s), Health disparities, Health equity Health Inequity, Inequality*, Maternal child health, Maternal health, Maternal health program(s), Measur*, Outcome, Partnership(s), Program*, Racis*, Racism AND health, Social determinant*, Structural racism AND health, Success*, Successful program(s)
Objective #4: Availability of nationally representative and public data on indicators of SSDOH including contextual measures and indicators available from similar child-serving programs or organizations	"Health equity" OR "health disparity" OR "health inequity" OR "race equity" OR "race inequity" OR "social determinants of health" OR "disproportionality" AND ("measure" OR "indicator" OR "data" OR "dataset") AND ("child program" OR "youth program" OR "child-serving program" OR "child welfare" OR "early childhood system" OR "early childhood education")	Child health, Child-serving program, Child program, Child welfare, Data, Dataset, Disproportionality, Early childhood education, Early childhood system, Health disparity, Health equity, Health inequity, Indicator, Maternal health, Measure, Public data, Race equity, Race inequity, Social determinants of health, Social and structural determinants of health, Youth program

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Search Process for Grey Literature

To identify grey literature—defined as information produced outside of traditional publishing (e.g., organizational reports, policy literature, government documents)—the research team first conducted a keyword search (Exhibit 3) using the Google search engine. Due to the large volume of results, the study team reviewed the first 10 pages of results. We also conducted targeted searches of predetermined organizational websites, including organizational websites specializing in maternal and child health populations and administrative data sources and reviewed the first 10 pages of results. Exhibit 4 provides a list of organizational websites included in our grey literature search. Given the expected variability in search functions for each of the grey literature sources, our search strategy was adjusted to the capabilities of each site, including using a combination of the individual keyword search terms listed in the furthest column to the right (Exhibit 3). When possible, a combination of keyword searches used for the PubMed string keyword searches were conducted on organizational websites and Google. When not possible, variations of the string keyword search terms were tailored to the capability of each site.

Exhibit 4: Grey Literature Sources

Foundation and Organization Websites	
• African American Breastfeeding Network • Agency for Healthcare Research & Quality • AMA Center for Health Equity • American Academy of Pediatrics • Anne E. Casey Foundation • Association for State and Territorial Health Officials • Association of Maternal & Child Health Programs (AMCHP) • Bay Area Regional Health Inequities Initiative • The Building & Enhancing Bonding & Attachment (BEBA) • Black Mamas Matter Alliance • Black Maternal Health Caucus • Center for American Progress • Center for Health Equity; Los Angeles County Health Agency • Center for Healthcare Strategies • Center for Urban Population Health • Child and Adolescent Health Measurement Initiative (CAHMI) • Child Trends • Cultureofhealth-leaders.org • Datadiversitykids.org • Every Mother Counts	• Maternal and Child Health Digital Library • National Academies of Science, Engineering, and Medicine • Commonwealth Fund • National Conference of State Legislatures • National Governors Association • National Institute for Children's Health Quality • National Neighborhoods Indicator Partnership • Office of Minority Health • Office of Planning, Research, and Evaluation • PolicyLink • Race Forward • Rural Health Information Hub • Stateofbabies.org • Alliance for Innovation on Maternal Health • Home Visiting Applied Research Collaborative (HARC) • Hope Initiative • National Committee for Quality Assurance • University of Michigan Population Studies Center; Institute for Social Research • University of Wisconsin Population Health Institute • Urban Institute • Trust for America's Health

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Foundation and Organization Websites	
• Georgetown Center for Child and Human Development • Greensborohealth.org • Health Equity Guide • Health Equity Leadership Institute • HealthyPeople.gov • Health Innovation Program • Humana • Kaiser Family Foundation	• University of Arkansas for Medical Sciences Institute for Digital Health and Innovation • USbreastfeeding.org • Urban Indian Health Institute • UW Institute for Clinical and Translational Research • World Health Organization

Inclusion and Exclusion Criteria

Exhibit 5 presents the inclusion and exclusion criteria for the environmental scan. Studies were included if they were published in English, were U.S.-based, and publication year was after 2010 (see Exhibit 5 for minor exceptions to these inclusion criteria). Document types for peer-reviewed literature included theoretical articles, primary and secondary data analyses, literature reviews, and systematic reviews. For grey literature, document types included reports, evaluations, white papers, conference proceedings, TA resources, question banks, and survey instruments.

Exhibit 5: Environmental Scan Inclusion/Exclusion Search Criteria

Category	Inclusion criteria	Exclusion criteria
Language	English	Only available in language other than English
Location	U.S.-based (may include foundational sources[iii] outside of this location)	International studies (may expand for foundational sources)
Publication year	2010 to present (may include foundational papers* outside of this timeframe)	Prior to 2010
Document type	**Peer reviewed:** Theoretical articles, primary and secondary data analyses, literature review, meta-analyses/systematic reviews **Grey literature:** Reports, evaluations, white papers, conference proceedings, TA resources; question banks; survey instruments	**Grey literature:** Opinion pieces, news stories, theses, dissertations **Both peer-reviewed and grey literature:** Cross-national studies (unless there are significant U.S.-based findings)

[iii] Sources published outside of this time frame, or those highlighting frameworks or methods with relevant application to the environmental scan.

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Category	Inclusion criteria	Exclusion criteria
Grey literature trusted sources	Academic, expert, evaluator	Student, news outlet, blog
Relevance	Relevant to environmental scan research objectives: health equity (and relevant models/frameworks), culturally responsive indicators, health disparities in child-serving programs, and indicators of SSDOH from nationally representative data sources	Does not discuss health equity (and relevant models/frameworks), health disparities (and relevant models/frameworks), culturally responsive indicators, health disparities in child-serving programs, and indicators of SSDOH from nationally representative data sources

Screening and Extraction Processes

The following section describes the study team's process for conducting the title/abstract screening and full-text screening of peer-reviewed and grey literature in Covidence. It also describes the data extraction process.

Screening Process

The study team used Covidence, a web-based software that streamlines literature and systematic reviews, to conduct a title/abstract screening and full-text review of sources based on the criteria presented in Exhibit 5. Prior to conducting the title/abstract screening, the task lead led a team training that included an overview of objectives for the environmental scan, search terms, and the process for screening sources in Covidence. Four study team members then reviewed the first 20 percent of titles/abstracts and met regularly to discuss screening results and reconcile differences in screening and categorization.

For the first 20 percent of title/abstract screening, the study team voted "yes," "maybe," or "no" in Covidence. If a source received two affirmative votes, it moved to full text review. If a source received two negative votes, it was excluded. In cases where sources received conflicting votes or two "maybe" votes, it moved to the "resolve conflict" stage. The task lead reviewed sources with conflicting votes to make the final screening decision. Remaining sources were divided among team members and required one vote.

To ensure quality and consistency among reviewers, the task lead randomly reviewed sources that were included or excluded. She also led a second team training on conducting a full-text review of sources, which included reviewing the environmental scan objectives and the process for screening sources. Five study team members then reviewed a minimum of 40 sources each to complete the full-text review. The task lead randomly reviewed included and excluded sources to ensure consistency across reviewers.

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Extraction Process

The study team developed a data extraction form in Covidence to identify key data elements. The form was organized by research objective and allowed staff members to indicate whether sources aligned with any of the MIECHV Demographic, Service Utilization, and Select Clinical Indicators (Form 1); TMIECHV Demographic and Service Utilization Data (Form 1); MIECHV Benchmark Performance Measures (Form 2); and TMIECHV Benchmark Performance Measures (Form 2) (Exhibit 6).

Staff members identified and included descriptions of the following data elements:

- Relevant study documentation (e.g., authors, year published, publication type, study design, aim of publication, major findings)
- Whether sources covered TMIECHV and MIECHV benchmark areas and demographic forms (e.g., maternal and child health, child injuries maltreatment, and emergency department visits; school readiness and achievement; crime or domestic violence; family economic self-sufficiency; coordination and referrals; implementation; and demographic forms)
- Target populations (e.g., women, newborns, children, rural/urban, tribal communities, and racial/ethnic populations)
- Objective 1: Health equity framework, concept, or model, definition, major components, application, measures/indicators, if applicable, level of measurement, and limitations
- Objective 2: Culturally responsive and well-being indicators, approaches or best practices related to developing such measures, and limitations of approach or measures/indicators
- Objective 3: Definition of health disparity, health inequity, or health equity used in the source, measures/indicators described, level of data, approach to data analysis, approach to data dissemination, and limitations of approach
- Objective 4: Name and description of the nationally representative and public health dataset, SSDOH and contextual measures/indicators, level of data, limitations of dataset, data access issues, and data interoperability, if applicable

The environmental scan task lead led a team training on the process for extracting key data elements via the Covidence extraction form. She also reviewed the first 10 extractions by the study team to ensure consistency. Exhibit 6 describes the study team's screening and data extraction process in greater detail.

Exhibit 6:   Source Screening and Data Extraction Process

Step	Description of Process
Step 1: Peer-reviewed literature searches	- Applied keyword searches and used available filters that corresponded with inclusion/exclusion criteria in PubMed and Google Scholar - Reviewed the first 10 pages of relevant sources in Google Scholar - Tracked all searches in Excel - Downloaded search results into EndNote

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Step	Description of Process
Step 2: Grey literature searches	• Used websites' search functions to conduct tailored keyword searches of grey literature sources • Reviewed the first 10 pages of relevant sources in Google and on organizational websites • Tracked all searches in Excel • Downloaded search results into EndNote
Step 3: Searches combined and deduplication	• Peer-reviewed and grey literature saved to EndNote and uploaded to Covidence, where duplicates were removed
Step 4: Title/abstract review	• Four study team members completed an initial review of the first 20% of titles/abstracts to identify sources that were relevant to one of the four research objectives of the environmental scan. • Task lead reviewed discrepancies. • The remaining titles/abstracts were split among four team members and labeled as "yes," "no," or "maybe." • Task lead conducted a quality check for titles/abstracts to ensure that articles were not unintentionally excluded.
Step 5: Full-text review	• Five study team members conducted a full-text review of sources that aligned with one of the four research objectives. • Study team members shared a list of in-scope full-text articles with HRSA/ACF.
Step 6: Extraction	• Team members extracted data pertaining to the objectives. Task lead reviewed discrepancies and conducted a quality check of extracted data.

Incorporating Feedback from Interested Parties

Throughout engagement sessions with the TEP and MIECHV/TMIECHV awardees, as well as communications with HRSA/ACF staff, sources were shared with the study team. These sources included health equity frameworks currently used by awardees and TEP members in their home-visiting work. Once identified, the study team included these sources in the title/abstract screening for the environmental scan and proceeded with the full-text screening and data extraction process described above. Suggested sources that met the inclusion criteria and were deemed appropriate were added to the EndNote and Covidence databases on a weekly basis.

Analytic Approach

The study team used thematic analysis to analyze data extracted from the peer-reviewed and grey literature for each research objective and then exported the Covidence extraction form into an Excel file, which served as an analytic matrix. Using a deductive approach, the study team used the environmental scan objectives and the MIECHV/TMIECHV performance measures or topic areas and

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demographic form to identify themes related to health equity frameworks, concepts, or models (including the name and description of constructs and/or measures/indicators); culturally responsive or well-being methods and indicators (including target population and method used to develop indicators); existing approaches to assessing health disparities (including description of approach in terms of data collection, analysis, and dissemination, and measures/indicators); and availability of nationally representative and public health data on indicators of SDOH (including name and description of data set and measures/indicators).

Exhibit 7 further describes the thematic analysis process. The results of this thematic analysis are summarized in the remainder of this environmental scan report.

Exhibit 7:   Steps for the Thematic Analysis

Step	Description of Process
Step 1: Export extraction form	• The study team exported the extraction form from Covidence to Excel.
Step 2: Identify common themes	• The study team identified themes using a deductive approach. • The study team created a summary row. • For each column in the extraction form (e.g., population, health equity framework), the study team created a bulleted list of common themes reported across sources.
Step 3: Summarize key themes by objectives	• For each objective, the study team summarized the main findings across sources in a final report.

Findings

The following section provides findings from the environmental scan, which identified 707 total sources. After removing 20 duplicate articles, 687 articles underwent a title and abstract screening using criteria listed in Exhibit 5. After title/abstract screening, 325 articles were removed because reviewers determined they did not meet inclusion criteria. Next, 362 articles underwent full-text review, and 245 studies were excluded following the full-text review. The most common reason for exclusion was a focus that did not align with the research objectives of the environmental scan (*n* = 105). Other reasons for exclusion during the full-text review are included in Exhibit 8. Overall, 117 articles were included in the final sample for data extraction.

Exhibit 8: Literature Review Flow Diagram

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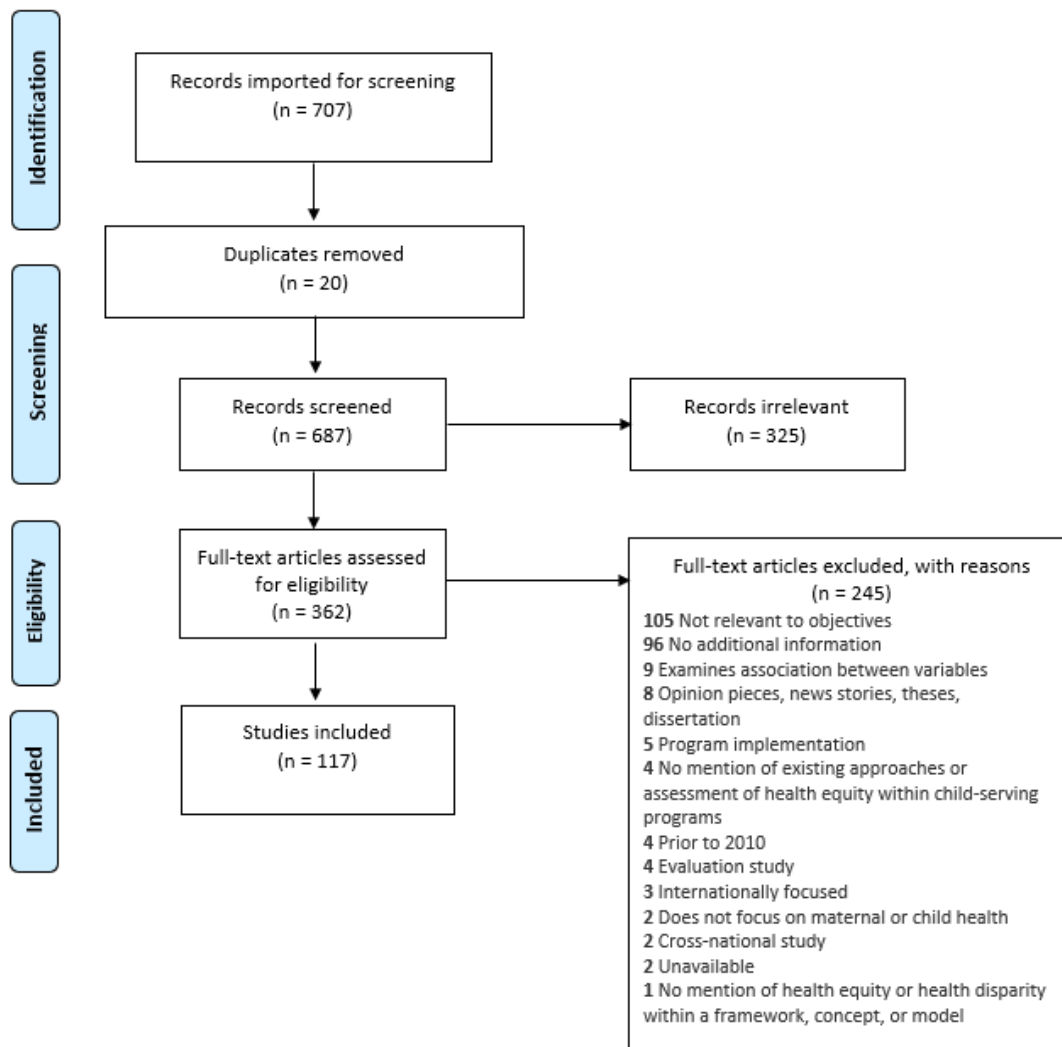
Overview of Findings by Research Objective

This section presents the findings of the environmental scan, organized by research objective.

Objective 1: Existing Health Equity Frameworks That Could Guide Organization of the MIECHV Program Performance Measurement System

Research Objective 1 identifies and summarizes existing health equity frameworks that could guide or inform the MIECHV/TMIECHV performance measurement systems. The environmental scan identified 27 sources that described or discussed health equity frameworks; many were peer reviewed articles, with additional reports from the Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics, among others.

Over time, health equity frameworks have shifted from focusing on an individual-level medical model to frameworks that incorporate social and structural factors as determinants of health and well-being.[9] The frameworks we identified examine the impact of upstream social factors, such as structural inequities and SDOH (e.g., neighborhood conditions, living environments, education, income, social support) on downstream health status, such as morbidity and mortality. Selected frameworks also show how individual-level factors (e.g., a person's health behaviors, risk factors) can improve with increased access to health education and health care and can result in improved health outcomes overall. A final category of frameworks incorporates a life course perspective to explore the complex interactions between biological, behavioral, psychological, social, and environmental factors over time and phases of life.

The following section provides a brief overview of each framework identified through our environmental scan, including the key drivers of health equity in each framework and any associated measures or limitations. More information on these frameworks can be found in Exhibit 18. Key characteristics of these frameworks and models can be grouped into the following categories: SDOH frameworks focused on the impact of social factors on health equity, SSDOH frameworks that incorporate the impact of structural factors on social inequities on health and well-being, and life course theory frameworks that present the interplay between both social and structural determinants and individual experiences and behaviors over time and generations.

Social Determinants of Health (SDOH) Frameworks

The SDOH frameworks acknowledge the impact of nonmedical social factors on individual health—e.g., the conditions in which people are born, grow, learn, work, and age that shape a person's health and health outcomes.[10,11] Some examples of SDOH include socioeconomic status, education and access to education, neighborhood and physical environment, employment, and access to and quality of health care.[10]

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Social-Ecological Model

The social-ecological model is a framework that presents the impact of social structures (e.g., norms, community, family) on individuals. The model categorizes different types of SDOH factors and creates a nested structure in which each factor impacts the next in a downstream linear flow.

The social-ecological model framework was first introduced as a conceptual model by the psychologist Urie Bronfenbrenner in the late 1970s, formalized as a theory in the 1980s, and continually revised by Brofenbrenner until his death in 2005.[12,13,14,15] The model has since been adopted and adapted by other organizations, including the CDC.[16] Although Bronfenbrenner originally drafted the framework in the context of child development, it has been adopted by other authors in other policy spheres.[17] The model uses a multilevel approach to illustrate the interactions among:

- Individual factors (e.g., age, education, income, substance use, or history of abuse)
- Relationship factors (e.g., partners, family members, and close friends)
- Community factors (e.g., schools, places of work, neighborhoods)
- Societal factors (e.g., social or cultural norms, health care policy, economic policy, educational policy)

Exhibit 9 illustrates CDC's adaption of the original model and considers how each factor overlaps and how factors at one level can impact factors lower down (e.g., societal factors can impact the community factors, which in turn can impact relationships). The social-ecological model highlights relationships between health and social inequities in education, income, employment, housing, environment, access to healthy foods, social support, and access to health care to help better understand key SDOH.[18] The model also suggests that meaningful population-level impact and prevention efforts require action across multiple levels.

Exhibit 9: Social-Ecological Model
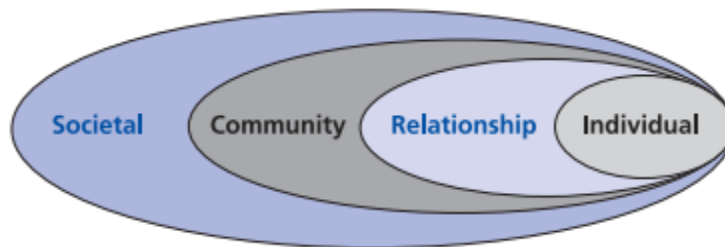
Healthy People 2030 Social Determinants of Health (SDOH) Framework

The Healthy People initiative, coordinated by the Office of Disease Prevention and Health Promotion, Office of the Assistant Secretary for Health, Office of the Secretary, U.S. Department of Health and Human services (HHS) began in 1979. The Healthy People 2030 framework was developed to provide

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context for their approach and to communicate principles that underlie the federal initiative.[19] The place-based organizing SDOH framework categorizes SDOH into five key domains (Exhibit 10):

- Economic stability (e.g., poverty, employment, food insecurity, housing instability)
- Education access and quality (e.g., early childhood education, higher education, high school diploma, language, literacy)
- Social and community context (e.g., social cohesion and networks, discrimination, civic participation)
- Health care access and quality (e.g., health insurance coverage, health literacy)
- Neighborhood and the built environment (e.g., access to goods that support healthy eating patterns, crime and violence, environmental conditions, housing quality)
- Healthy People 2030 includes 358 core objectives and associated measures related to SDOH and organized by the domains presented in their framework[19]

Exhibit 10: The 2030 Healthy People Social Determinants of Health (SDOH) Framework[19]

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County Health Rankings Model

The County Health Rankings Model (Exhibit 11) represents a shift in state health improvement planning from a focus on clinical and health behavior topics to a focus on health equity and overall drivers of health outcomes (e.g., health behaviors, clinical care, social and economic factors, and physical environment).[20] This population health model presents the impact of community health factors on health outcomes (life expectancy and quality of life). The model assigns equal weights (50 percent) to both health outcomes and health factors. Weights are assigned to each health factor as follows: social and economic factors (40 percent), health behaviors (30 percent), clinical care (20 percent), and physical or built environment (10 percent). A guided and iterative process was used to develop these weights. The relative value of social and economic factors and health behaviors compared to clinical care and physical environment presents the increasing historical importance of social and economic determinants on health outcomes.[21] This model is used to rank the health of counties in the nation relative to each other and to help communities pinpoint the health factors that most impact residents and their health. More information about the measures and data associated with the County Health Rankings Models is provided in the findings of Objective 4.

Exhibit 11: County Health Rankings Model

County Health Rankings model © 2014 UWPHI

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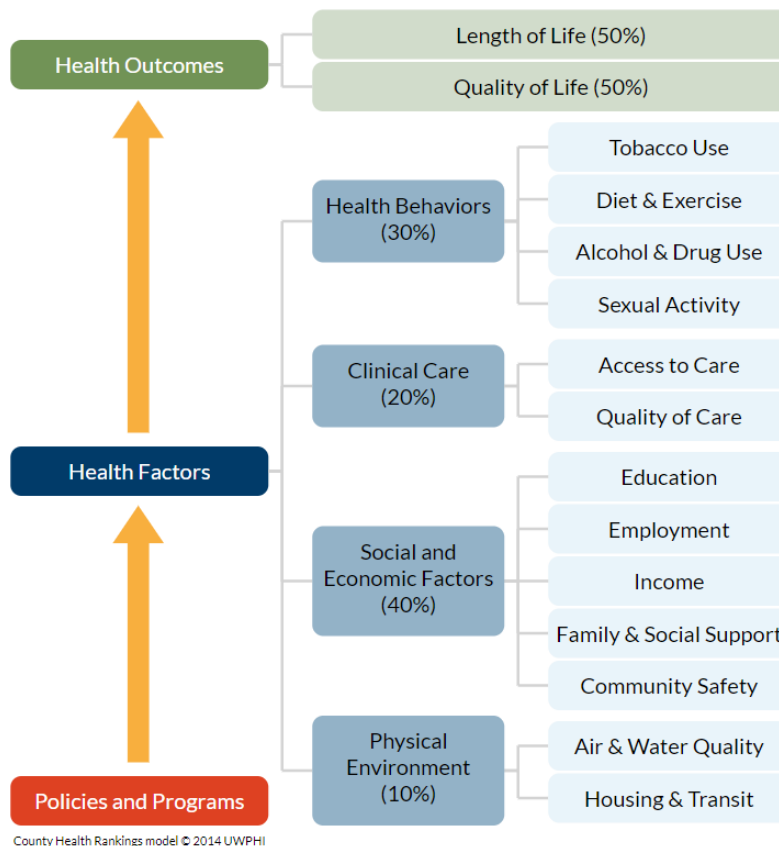
Structural and Social Determinants of Health Frameworks

In recent years, SDOH models have evolved to explicitly acknowledge the systems of power that serve as the root causes of health inequities, including the social and political mechanisms that affect whether the resources necessary for health are distributed equally or unjustly in society. These structural determinants are identified as the root sources of health inequities because they occur upstream of SDOH factors and therefore shape the SDOH experienced by individuals in their communities. As such, SSDOH frameworks add another layer beyond SDOH frameworks to consider the larger initial impact of structural determinants on the SDOH that then shape community health and health outcomes. Structural determinants can include the government and governing process, economic and social policy that impact daily life (e.g., pay, working conditions, housing, education). Structural determinants impact health disparities and health inequity by determining whether the resources required for health are distributed equally in society or are unequally distributed by race, sexual or gender identity, social class, geography, or other socially defined groups.[22]

Revised Social Determinants of Health (SDOH) Framework

Some subject matter experts have recommended revisions to the original SDOH framework (like the Healthy People 2030 framework) to examine the root causes of racial and ethnic disparities created by structural determinants.[23] For example, Yearby (2020) provided a detailed critique of the general SDOH framework and suggested the following revisions to the original model's terms and concepts:

- Referring to key "areas" as "systems" to place the framework within a larger societal context
- Referring to "public health" instead of "health and health care area"
- Moving civic participation from the social and community context to the neighborhood
- Linking incarceration to the built environment
- Deleting the social and community context, separating structural discrimination and law from the key systems domain
- Including individual and institutional discrimination in each of the four key systems

Exhibit 12 provides a visual of Yearby's modifications to the SDOH framework. These modifications emphasize the complex interplay between these systems and the overarching impact of structural discrimination on every system and policy sphere.

Exhibit 12: Yearby (2020) Reconfigured SDOH Framework
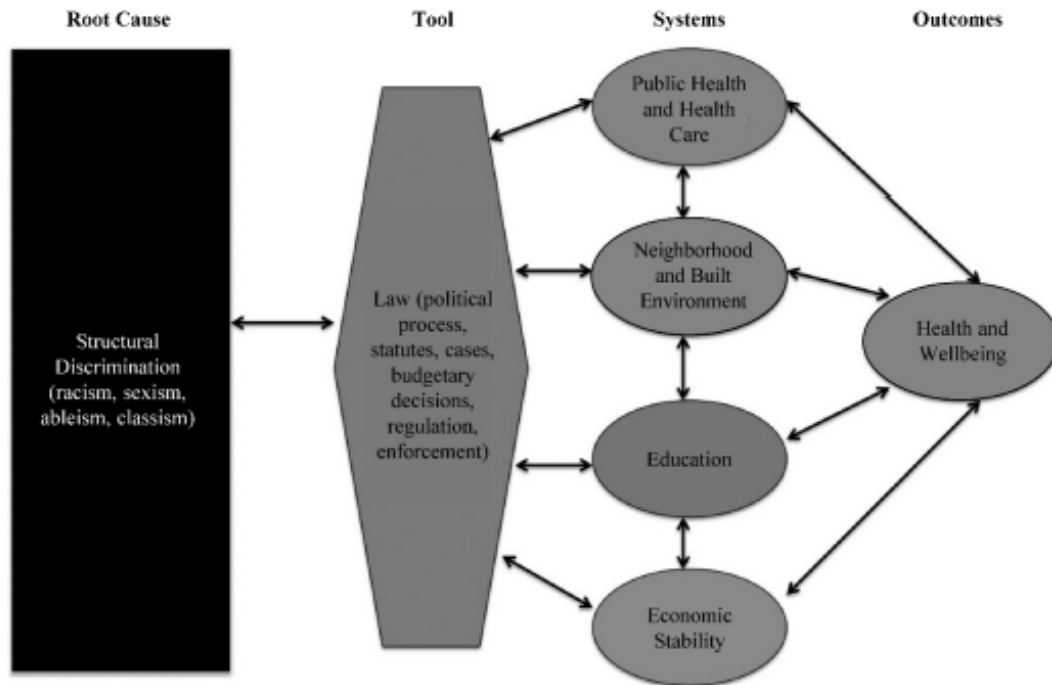
Bay Area Regional Health Inequities Initiatives (BARHII) Framework

The BARHII is a conceptual framework that demonstrates the connection between social inequities and health.[24] The model emphasizes the influence of upstream social and institutional inequities (e.g., residential segregation; media violence; experience of class, racism, gender, and immigration) on risk behaviors, disease and injury, and mortality. The framework is used as a guide for health care departments, including the California Department of Public Health, seeking to address health inequities as part of their decision-making framework. Exhibit 13 provides a brief overview of the framework.

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Exhibit 13: BARHII Framework

A PUBLIC HEALTH FRAMEWORK FOR REDUCING HEALTH INEQUITIES
BAY AREA REGIONAL HEALTH INEQUITIES INTIATIVE
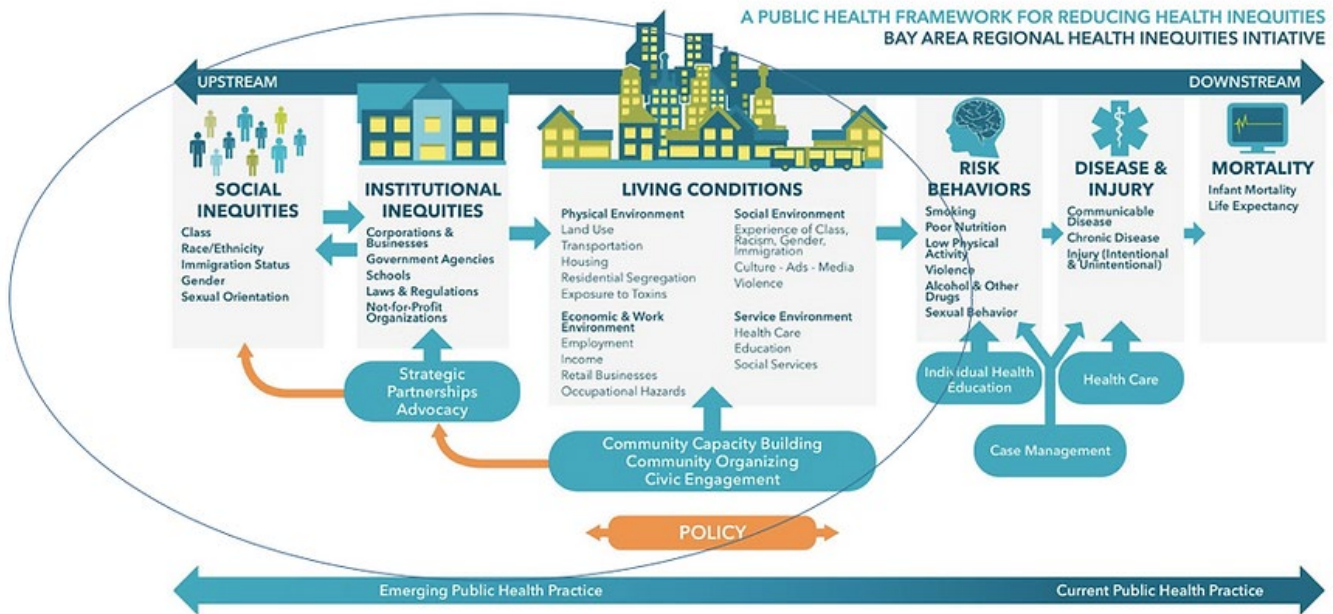
Framework for Health Equity

Similar to the BARHII Framework, the Alameda County (CA) Framework for Health Equity depicts the influence of institutional power and social inequities on risk behaviors, disease and injury, and mortality.[25] In contrast to the BARHII Framework, the Framework for Health Equity explicitly positions discriminatory beliefs across a range of social factors (e.g., race, class, gender, immigration status, national origin, sexual orientation, and disability) as the root cause of unequal distributions of institutional power and social inequities that ultimately impact health. Exhibit 14 demonstrates how the framework visually differentiates between upstream social and structural factors and downstream health status.[25]

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Exhibit 14: Alameda County Public Health Department Framework for Health Equity

The following framework diagram content:

Upstream — **Downstream**

Individual Health Knowledge | Genetics

Discriminatory Beliefs (ISMS)
- Race
- Class
- Gender
- Immigration status
- National origin
- Sexual orientation
- Disability

Institutional Power
- Corporations
- Businesses
- Government agencies
- Schools

Social Inequities
- Neighborhood conditions
  - Social
  - Physical
- Residential segregation
- Workplace conditions

Risk Factors/ Behaviors
- Smoking
- Nutrition
- Physical activity
- Violence
- Chronic stress

Disease and Injury
- Infectious disease
- Chronic disease
- Injury

Mortality
- Infant mortality
- Life expectancy

Social Factors — Health Status

Access to Health Care

Adapted from the Bay Area Regional Health Inequities Initiative

The Groundwater Approach

The groundwater approach targets practitioners and posits that the cause of racial inequity is the reality that we live in a racially structured society.[26] The framework, which describes racial inequity as a "groundwater problem" and therefore emphasizes the need for "groundwater solutions," is based on three main observations: 1) racial inequity looks the same across systems, 2) socioeconomic difference does not explain racial inequity, and 3) inequities are caused by systems, regardless of one's culture or behavior. Understanding these concepts helps those using the framework to confront the idea that all systems, institutions, and outcomes emanate from a racial hierarchy on which the United States was built.

ETR's Health Equity Framework

Created in 2020 by the behavioral nonprofit Education, Training, and Research (ETR), the health equity framework (Exhibit 15) builds on existing models and strategies from public health, education, and social science spheres to demonstrate that the complex interplay between people and their environments impacts health outcomes.[27] It is designed to promote the translation of science into practice and to motivate any preliminary research questions. The model is centered on three foundational concepts: 1) equity at the core of health outcomes, 2) multiple interacting spheres of influence (relationships and networks, systems of power, individual factors, and physiological pathways), and 3) historical and life-course perspective.[27]

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Exhibit 15: ETR's Health Equity Framework

ETR's Health Equity Framework.

Health and education outcomes are influenced by complex interactions between people and their environment.

etr.org

Relationships and Networks
Connections with family, friends, partners, community, school and workplaces that:

+ Promote health equity through support systems that encourage health-promoting choices

– Intensify health inequities through social networks that enable health-harming behaviors

Individual Factors
A person's response to social, economic and environmental conditions that:

+ Promotes health equity through attitudes, skills and behaviors that enable their personal and community's health

– Intensify health inequities through attitudes, skills or behaviors that cause harm to their personal or community's health

Health and Education Outcomes

Systems of Power

Relationships and Networks

Individual Factors

Physiological Pathways

Systems of Power
Policies, processes, practices that:

+ Promote health equity through fair access to resources and opportunities that enable healthy lives

– Intensify health inequities by allowing unfair social, economic or environmental advantages for some groups over others

Physiological Pathways
Factors that:

+ Promote health equity when a person's physical, cognitive and psychological abilities are maximized

– Intensify health inequities when a person's environment or experiences has impaired their physical, cognitive or psychological functions

Health Equity
Having the personal agency and fair access to resources and opportunities needed to achieve the best possible physical, emotional and social well-being.

Health Inequities
The preventable differences in health outcomes closely linked to social, economic and environmental conditions.

advancing health equity **etr.**

Life Course Theory Frameworks

The final category of frameworks we identified through the environmental scan encompassed life course theory. Life course research focuses on both continuity and change; social structures; and interactions between time, place, and lives as backgrounds for developmental processes. Life course frameworks identify and explain how the complex interplay between biological, behavioral, psychological, social, and environmental factors over time and phases of life can shape health across both an entire lifetime and future generations (Exhibit 16). Life course theory includes the following five distinct principles:

- Time and place (e.g., the clinical culture of obstetrics may impact women's experience of high-risk pregnancy and motherhood)

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- Lifespan development (i.e., humans develop in meaningful ways over their entire lifespan, beyond childhood experiences)
- Timing (i.e., how a person contends with an out-of-sequence event like a premature birth)
- Agency (i.e., individuals make decisions that impact the shape of their lives)
- Linked lives (i.e., lives are lived interdependently)[28]

Life Course Theory

Life course theory models attempt to explore the complexities of human lives and consider the impact of interactions with social structures and time, place, and history on an individual life.[29] Key life course theory concepts include the notion that health trajectories are largely shaped by events during critical periods of early development and that the cumulative effect of early experiences and exposures impacts adult health outcomes (Exhibit 16). Life course theory overlaps with health equity frameworks because it acknowledges that biological, physical, and social environments influence the capacity to be healthy by creating risk, strength, and protective factors for children and families.[29]

Exhibit 16: Life Course Theory

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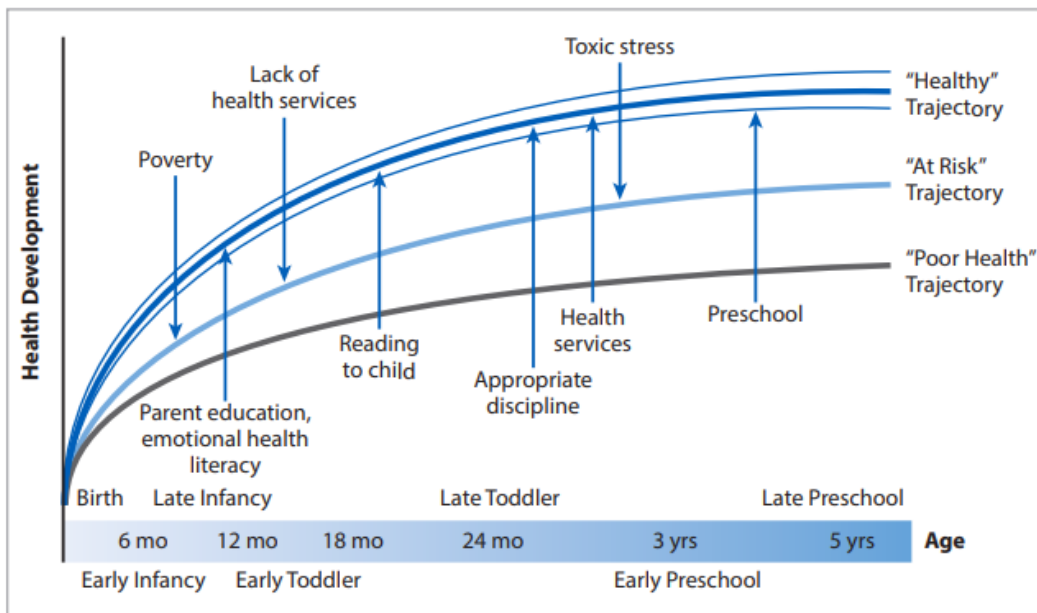
Colorado's Health Equity Model

The Colorado Department of Public Health and Environment developed their own health equity model that incorporates aspects of SDOH frameworks and life course theory frameworks (Exhibit 17).[30] The Association of State and Territorial Health Officials (ASTHO) also promotes this model. Leveraging a life course perspective, the model recognizes that SDOH (e.g., economic development, physical environment, and social factors) vary at every stage of life and have profound impacts on population health. The model illustrates that health outcomes such as life expectancy or quality of life are influenced by a variety of factors, including genetics; the physical, economic, and social environment; health behaviors; and access to quality health care and that these factors are influential across every stage of the life course.[30]

Exhibit 17: Colorado's Health Equity Model
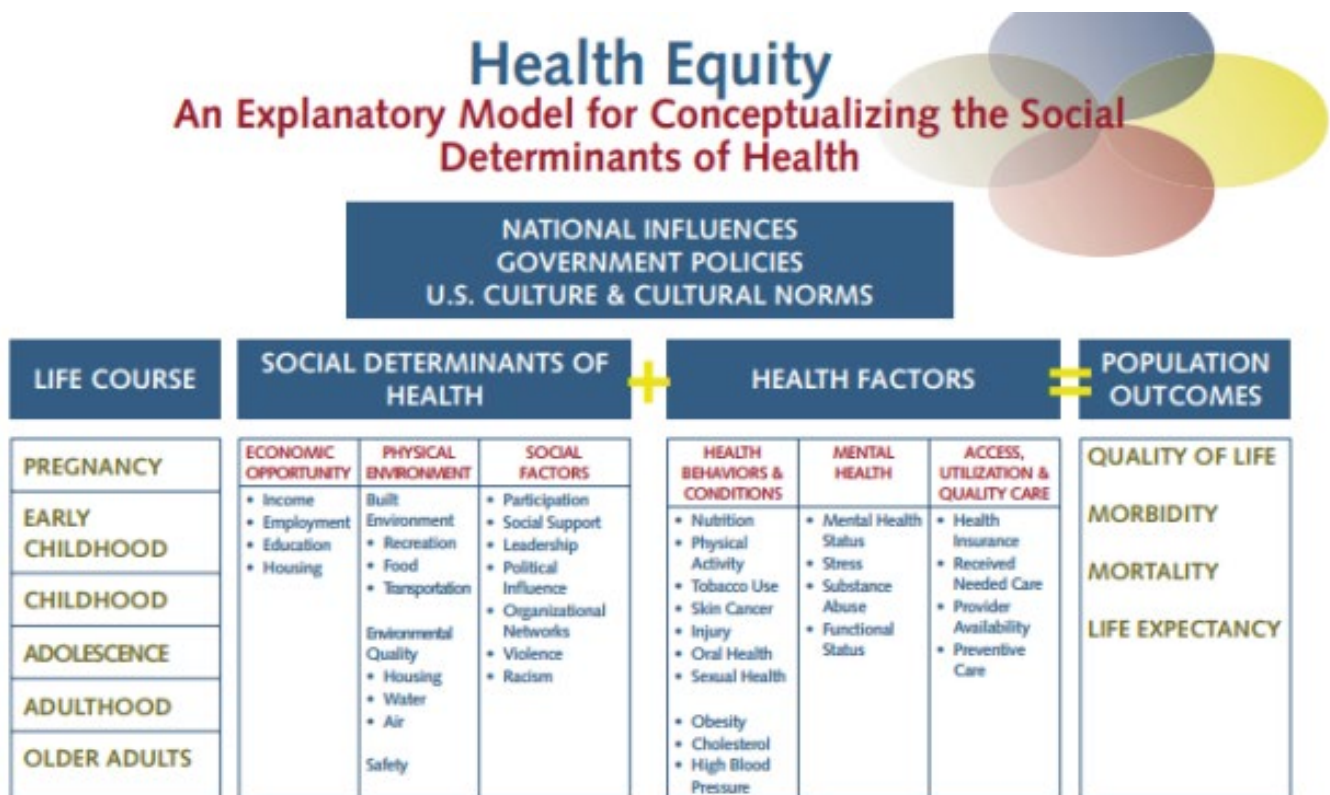
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Framework Comparisons, Measures, and Limitations

To help readers compare and contrast these frameworks, Exhibit 18 provides an overview of each framework, including a brief description of the framework and its key constructs; the primary policy area of focus that the framework's authors constructed it to address (e.g., whether a framework was originally created to address violence prevention or county-level health care systems); any measures and metrics recommended by the framework authors to evaluate health equity programs or interventions; and the limitations associated with each framework.

Measuring Health Equity Frameworks

With the exception of two SDOH frameworks (the Healthy People 2030 SDOH framework and the County Health Rankings model), the authors of the selected frameworks do not prescribe or recommend any predetermined indicators, measures, or constructs associated with their frameworks.[19,20] The two SDOH frameworks with measures include indicators of improved health and social outcomes and access to services that serve as proxies for measuring progress toward achieving health equity. The measures are organized across each framework's domains and are used to determine how effective a policy or intervention is in improving outcomes by assessing changes in trends over time. For example, the CDC has developed objectives across all five areas in the Healthy People 2030 SDOH framework, including health care access and quality (e.g., increased proportion of females who are screened for breast cancer), education access (e.g., increased proportion of high school students who graduate in four years), social and community (e.g., reduced anxiety and depression in family caregivers of people with disabilities), neighborhood and built environment (e.g., reduced proportion of families spending more than 30 percent of income on housing), and economic stability (e.g., reduced proportion of people living in poverty).[19] Similarly, the County Health Rankings model includes both health outcomes and health factors measures.[20] Health factor measures can indicate changes in health behaviors (e.g., adult smoking), clinical care (e.g., proportion uninsured, primary care physicians, preventable hospital stays), social and economic factors (e.g., high school completion, children in poverty, income inequality), and physical environment (e.g., air pollution particular matter, severe housing problems, length of commute).[20] Health outcome measures include improved quality of life and life expectancy; reduced morbidity and mortality; and children's social, emotional, and cognitive development.

Common Constructs and Performance Measures across Frameworks, by Social-Ecological Factor Level

To further illustrate how health and social outcomes can be operationalized, Exhibit 19 summarizes common constructs across the selected health equity frameworks and example measures pulled from the County Health Rankings model and Healthy People 2030 Social Determinants of Health framework. The study team used the social-ecological model to categorize these constructs at the individual (i.e., health behaviors and risk factors), relationship (i.e., social support and networks), community (i.e., neighborhood and built environment), and societal level (i.e., education access and quality). In addition,

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the study team mapped the current MIECHV/TMIECHV performance measures to these constructs and levels. This mapping exercise can identify potential gaps in the MIECHV/TMIECHV performance measure content areas as they relate to health equity frameworks.

As shown in Exhibit 19, the majority of the MIECHV Demographic, Service Utilization, and Select Clinical Indicators (Form 1); TMIECHV Demographic Service Utilization Data (Form 1); MIECHV Benchmark Performance Measures (Form 2); and TMIECHV Benchmark Performance Measures (Form 2) can be mapped to the individual (e.g., health behaviors and risk factors) and relationship (e.g., social support and networks) levels of health equity frameworks. These performance measures cover a range of topics, including maternal and newborn health, child injuries and maltreatment, and school readiness and achievement. There are also measures related to health care access and coordination and referral to services that can be mapped to the societal level (e.g., health care access, economic stability). Exhibit 19 further illustrates levels and constructs of health equity frameworks that are not addressed through the MIECHV/TMIECHV performance measures. Notably, there are no performance measures that capture community-level constructs, such as neighborhoods and the built environment, community safety, or the physical environment. Within the societal level, there also are no performance measures that capture quality of health care services (i.e., home visiting) or more upstream determinants of health, such as systems of power or social inequities due to demographic factors such as race/ethnicity, class, or immigration status. The addition of performance measures that address these content areas would allow the MIECHV/TMIECHV performance measures to more fully operationalize health equity frameworks.

Limitations of Health Equity Frameworks

Although the health equity frameworks identified in our environmental scan provide innovative guiding principles for understanding the intersection between structural powers, SDOH, and health outcomes across the life course, there are limitations to their application:

1. The highlighted frameworks provide limited guidance on how to implement the recommended principles in real-life contexts. For example, only two frameworks specify indicators that can be used to operationalize constructs within the models.

2. The frameworks present complicated interactions between structural systems, societal factors, health behavior, and health outcomes over the life course and even across generations. Full implementation and assessment of these frameworks within the context of the MIECHV and TMIECHV Programs would require access to multilevel data and measures that capture this vast range of constructs. In addition, the life course and intergenerational aspects of these frameworks require long-term data collection (either longitudinal or time series) to document how SSDOH impact maternal and child health outcomes across not only the life of individuals, but also across generations. Multilevel and long-term data collection activities are time, cost, and resource intensive and may be viewed as beyond the scope of the MIECHV and TMIECHV Programs.

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3. The selected frameworks and models highlighted in our environmental scan are not "one size fits all." SSDOH such as demographic factors, quality of public systems and services, and geographical settings all uniquely influence the risks and opportunities experienced by an individual in one setting vs. another. As a result, it is difficult to identify primary drivers of social inequities and health disparities that are consistent across all MIECHV and TMIECHV communities and contexts. Application of these frameworks within the context of MIECHV and TMIECHV would therefore require individual tailoring of frameworks by community and program or limiting the scope of a model to a core group of factors that influence most communities, with the flexibility to add on more specific constructs or measures.

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Exhibit 18: Summary Table of Selected Health Equity Frameworks and Key Characteristics

Framework	Framework Summary and Constructs	Primary Policy Area of Focus	Outcome Measures/Metrics	Limitations
SDOH Frameworks				
Social-ecological model	Presents interactions among four levels: individual, relationships, community, and societal factors	Child Development; Violence Prevention	Framework authors do not specify any measures associated with the framework however the model has been implemented in many different policy spheres to examine a wide breadth of elements	Difficult to empirically test the framework (i.e., cannot establish whether an outcome is a direct cause of any of the systems)[17]
Healthy People 2030 SDOH framework	Presents SDOH into five key areas: economic stability, education, social and community context, health and health care, and neighborhood and the built environment	National Health Care	CDC has developed objectives and measures across all five SDOH areas to determine whether interventions impact health equity factors (e.g., proportion of adolescents who aren't in school or working; proportion of children who participate in high-quality early education programs)	Some subject matter experts consider this model to be outdated; limited evidence on the effectiveness of public health interventions to improve population health while also reducing health inequalities by socioeconomic status[31]
County Health Rankings model	Presents how weighted health factors (e.g., physical environment, socioeconomic factors, clinical care, health behaviors) impact community health and health outcomes	County-level Health Care	Model includes both health outcomes and health factors measures. Health factors measures include tobacco use, diet and exercise (adult obesity, food environment index), access to care (proportion uninsured, number of primary care physicians), and others.	Due to its flexibility and application to different counties, the model lacks specificity and cannot provide a complete picture of everything that impacts health or equity (i.e., cultural setting)[20]

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Framework	Framework Summary and Constructs	Primary Policy Area of Focus	Outcome Measures/Metrics	Limitations
Structural Determinants of Health Frameworks				
Revised SDOH model	Presents a modified version of the general SDOH framework to examine the root causes of racial and ethnic disparities	Health care; law	Framework author does not specify any measures associated with the framework.	Limited evidence on the effectiveness of public health interventions to improve population health while also reducing health inequalities by socioeconomic status[31]
BARHII	Presents the connection between social inequalities and health to inform how emerging public health practice can inform current public health practice	State-level health care	Framework authors do not specify any measures associated with the framework.	High-level model cannot provide a complete picture of everything that impacts health or equity (i.e., cultural setting).
Framework for Health Equity	Presents social factors (e.g., schools, neighborhoods, workplaces, gender, and class) as major contributors to health and health outcomes	County-level health care	Framework authors do not specify any measures associated with the framework.	Framework attempts to build on the BARHII to introduce more specific components (i.e., impact of genetics), but it is difficult to determine interactions among domains.
Groundwater approach	Presents racial inequity as a "groundwater problem" (i.e., racial inequity looks the same across systems, socioeconomic difference does not explain racial inequity, and inequities are caused by systems) to help health care practitioners internalize racial inequity and understand it requires "groundwater solutions"	Health care delivery	Framework authors do not specify any measures associated with the framework.	Framework focuses on teaching practitioners to understand the root causes of racial inequality, but does not expand beyond this sphere.

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Framework	Framework Summary and Constructs	Primary Policy Area of Focus	Outcome Measures/Metrics	Limitations
ETR's Health Equity framework	Presents three foundational concepts: equity at the core of health outcomes; multiple interacting spheres of influence (relationships and networks, systems of power, individual factors, and physiological pathways); and historical and life-course perspective	Health care and health care research	Framework authors do not specify any measures associated with the framework.	Framework is specific to the individual and requires attention to life course trajectories; difficult to link micro world of individuals and families to the larger context of social institutions and organizations; difficult to determine patterns among a diverse population.[32]
Life Course Theory Framework				
Life-course theory	Presents how the complex interplay between biological, behavioral, psychological, social, and environmental factors over time and phases of life can shape health across both an entire lifetime and future generations	Health care and health care research	Framework authors do not specify any measures associated with the framework	Framework is specific to the individual and requires attention to life course trajectories; difficult to link micro world of individuals and families to the larger context of social institutions and organizations; difficult to determine patterns among a diverse population.[32]
Colorado's Health Equity model	Leverages a life course perspective to demonstrate that SDOH vary at every stage of life and have profound impacts on population health	State-level health care	Framework authors do not specify any measures associated with the framework.	Framework is specific to the individual and requires attention to life course trajectories; difficult to link micro world of individuals and families to the larger context of social institutions and organizations; difficult to determine patterns among a diverse population.[32]

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Exhibit 19: Common Constructs and Performance Measures across Model Levels

Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
Individual	Health behaviors and risk factors	Percentage of adults who are current smokers (age adjusted)	County Health Rankings (Behavioral Risk Factor Surveillance System)	Breastfeeding Preterm birth Behavioral concern inquiries Safe Sleep	Breastfeeding Screening for parenting stress Safe sleep
	Employment	Percentage of population age 16 and older unemployed but seeking work	County Health Rankings (Bureau of Labor Statistics)	Adult participants by employment status	Adult participants by employment status (newly enrolled and continuing)
	Income	Proportion of people living in poverty	Healthy People 2030 (Current Population Survey Annual Social and Economic Supplement)	Household income in relation to federal poverty guidelines Priority population characteristics (i.e., low income)	Household income in relation to federal poverty guidelines (newly enrolled and continuing)
	Education	Proportion of 8th graders with reading skills or math skills at or above the proficient level	Healthy People 2030 (National Assessment of Educational Progress)	Primary caregiver education Adult participants by educational attainment	Early language and literacy Adult participants by current educational status (newly enrolled and counting)

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Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
	Chronic disease and injury	Percentage of adults (20 and up) who are diagnosed with diabetes	County Health Rankings (Behavioral Risk Factor Surveillance System)	Child injury	Child injury Child injury prevention
	Mortality and life expectancy	Average number of years a person can expect to live	County Health Rankings (National Center for Health Statistics, Mortality Files)		
	Genetics	None provided in the selected frameworks	N/A		
Relationship	Social support and networks (family, friends, etc.)	Proportion of adolescents who have an adult they can talk to about serious problems	Healthy People 2030 (National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration)	IPV screening Parent-child interaction Child maltreatment	IPV screening Parent-child interaction Early language and literacy
	Social environment (workplace relationships, social neighborhood conditions)	Number of membership associations per 10,000 population	County Health Rankings (County Business Patterns)	Early language and literacy	

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Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
Community	Neighborhood and built environment (housing quality, transportation, etc.)	Percentage of households with at least 1 of 4 housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities	County Health Rankings (Comprehensive Housing Affordability Strategy)		
	Community safety	Number of reported violent crime offenses per 100,000 population	County Health Rankings (Uniform Crime Reporting, FBI)		
	Physical environment (air and water quality, etc.)	Proportion of people whose water supply meets the Safe Drinking Water Act regulations	Healthy People 2030 (Safe Drinking Water Information System)		
Societal	Education access and quality	Proportion of high school graduates in college the October after graduating	Healthy People 2030 (Current Population Survey, Census)		
	Healthcare access and quality	Proportion of adults who get recommended evidence-based preventive health care	Healthy People 2030 (Medical Expenditure Panel Survey, AHRQ)	Developmental screening Depression screening Substance use screening Well-child visit Postpartum care Tobacco cessation referrals Completed substance use referrals	Developmental screening Depression screening Substance abuse screening Well-child visit Postpartum care Immunizations

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Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
				Completed developmental referrals	Completed developmental referrals
				Completed depression referrals	Completed IPV referrals
				Unduplicated count of new and continuing program participants served	Completed depression and parenting stress referrals
				Unduplicated count of households served by MIECHV	Completed substance abuse referrals
				Unduplicated count of participants and households served by state home-visiting programs (non-MIECHV)	Completed economic strain referrals
				Newly enrolled and continuing adult participants by age (pregnant participants and caregivers)	Unduplicated count of adult participants and index children served by TMIECHV home visitors during reporting period
				Newly enrolled and continuing index children by age	Female caregivers in current reporting period who were counted as pregnant women in the prior reporting period
				Number of home visits	
				Family engagement (in MIECHV) by household	

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Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
				Unduplicated count of households by evidence-based home-visiting model or promising approach Participants by type of health insurance coverage Index children by usual source of medical care Index children by usual source of dental care	Unduplicated count of households served by Tribal MIECHV home visitors (newly enrolled and continuing) Index children by age (newly enrolled and continuing) Adult participants and index children by type of health insurance coverage (newly enrolled and continuing)
	Systems of power (policies and practices that impact access to resources and opportunities and intensify health inequities)	Average gap in dollars between actual and required spending per pupil among public school districts	County Health Rankings (School Finance Indicators Database)		
	Social inequities (class, race/ethnicity, sexism, immigration status, sexual identity)	Ratio of women's median earnings to men's median earnings for all full-time, year-round workers, presented as "cents on the dollar"	County Health Rankings (American Community Survey)		

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Level	Common Constructs across Frameworks	Performance Measure Examples (from 2022 Country Health Rankings or Healthy People 2030)	Data Source	MIECHV Performance Measure	TMIECHV Performance Measure
	Economic opportunity	Percentage of population ages 16 and older unemployed but seeking work	County Health Rankings (Bureau of Labor Statistics)		
	Economic stability	Proportion of children living with at least one parent who works full time	Healthy People 2030 (Current Population Survey Annual Social and Economic Supplement Census)	Continuity of Insurance Coverage Adult participants by housing status	Screening for economic strain Adult participants by housing status (newly enrolled and continuing)

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Objective 1: Key Findings

- Health equity frameworks have shifted and evolved from focusing on medical factors to incorporate social factors, structural inequities, individual factors, and the complex interactions among all these factors over an individual's lifespan and generations. Highlighted frameworks are organized by SDOH frameworks, structural determinants of health frameworks, and life course theory frameworks.

- SDOH frameworks acknowledge the impact of nonmedical social factors (e.g., socioeconomic status, education, physician environmental, access to and quality of health care) on individual health outcomes and community health.

- Expanding upon SDOH frameworks, structural determinants of health frameworks present structural factors (e.g., governing process, economic and social policy that impact daily life) as the root cause of social inequities.

- Life course frameworks present the interactions among biological, behavioral, psychological, social, and environmental factors over time and how these forces shape health across a lifetime and generations.

- Most of the frameworks presented in this objective do not provide guidance on implementation; however, two SDOH frameworks (Healthy People 2030 SDOH framework and County Health Rankings model) include proxy indicators for improved health equity outcomes (e.g., changes and trends in measures of SDOH) and health outcomes (e.g., life expectancy and quality of life).

- Limitations include a lack of guidance on implementation, the need for multilevel and long-term data collection activities to capture the full range of framework constructs, and the inability to identify primary drivers of social inequities and health disparities that are consistent across all communities and contexts.

- Incorporation of more distal layers (e.g., community- and societal-level factors) into current measures can help contextualize and inform the individual- and systems-level MIECHV/TMIECHV performance measures.

- Incorporating larger societal-level factors into existing measures can expand the MIECHV and TMIECHV framework to consider referrals that address all SDOH (e.g., access to housing, education, insurance, food, and transportation).

- Application of health equity frameworks within the context of MIECHV and TMIECHV may require individual tailoring of frameworks.

Objective 2: Culturally Responsive Indicators That Could Guide the Analysis of Health Equity in Home Visiting through the MIECHV Program Performance Measurement System

The MIECHV/TMIECHV performance measures cover a wide range of health and well-being outcomes. As a result, the study team, in collaboration with HRSA/ACF, determined that it was not possible to conduct individual searches for culturally responsive indicators across all the performance-measure content areas due to time and resource constraints. Instead, our search strategy focused on identifying general methods, approaches, and best practices for developing culturally responsive measures and indicators.

The study team identified 23 sources that discussed culturally responsive approaches to measure development or research that were most commonly peer-reviewed articles or reports. These sources were primarily review papers, overviews of frameworks and tools, or practical guides for practitioners and public health professionals. Information on developing culturally responsive measures was typically embedded within broader sources that highlighted general principles and practices for conducting

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culturally responsive research, trainings, and analytic methods. Appendix C.2 provides a brief overview of all included sources for Objective 2.

Although most of the identified sources focused on culturally responsive research among AI/AN populations, the principles can be applied across diverse populations. Other foci were children, Hispanics/Latino/as, rural communities, African Americans, women, Asian/Pacific Islanders, and Native Hawaiians and other Pacific Islanders. The information extracted from Objective 2 provides high-level strategies and practices for engaging in culturally responsive methods that guide the development of culturally responsive indicators and measures. It also highlights the challenges associated with this work.

Utilizing Community-Based Participatory Research and/or Tribal Participatory Research to Develop Culturally Responsive Measures

The findings from our environmental scan establish community-based participatory research (CBPR) and tribal participatory research (TPR) methods and practices as central to the development of culturally responsive measures. The definition of community can include researchers, community members, and organizational representatives. CBPR is a research methodology that integrates education and social action while encouraging researchers to focus on the relationship between academic and community partners. Principles of this research methodology include colearning, identification of mutual benefits, and a long-term commitment to the incorporation of community theories, participation, and practices in research.[33] TPR, a similar methodology, is specific to research involving AI/AN communities. Many sources in this environmental scan emphasize the importance of engaging community representatives on research teams to ensure that community values are included and respected in research design and measure development. In their discussion of common barriers to measuring outcomes in TMIECHV programs, Whitesell et al. (2018) learned that engaging community representatives can ensure that indicators resonate with local culture and are appropriate in content, form, and function.[34] Furthermore, blending Indigenous and western methods within a CBPR framework can enhance trust with tribal populations; however, TPR projects must be informed by an understanding of the issues and dynamics of postcolonial trauma and stress on the community.[35,36,37] Exhibit 20 summarizes CBPR, TPR, and the key principles associated with each research framework.

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Exhibit 20: Description and Key Principles of CBPR and TPR

Name	Description	Key Principles
CBPR	A collaborative approach to research that equitably involves all partners in the research process. CBPR encourages partners to contribute their strengths and expertise, with shared responsibility and ownership. CBPR begins with a research topic that is important to the community and aims to combine knowledge with action to improve health outcomes and achieve social change. Israel and colleagues established key principles of CBPR that are frequently cited in CPBR projects involving Tribal communities.[38]	• Recognizing the community as a unit of identity • Building on the strengths and resources within the community • Facilitating collaborative partnerships in all phases of the research • Integrating knowledge and action for mutual benefit of all partners • Promoting a colearning and empowering process that attends to social inequalities • Involving a cyclical and iterative process • Addressing health from both positive and ecological perspectives • Disseminating findings and knowledge gained to all partners
TPR	Adapts the CBPR framework to fit the needs of Tribal partners. TPR emphasizes full participation of Tribes and Tribal members in the research process and incorporates cultural and historical factors vital to strengthening tribal communities. Laveaux and Christopher (2009) expand on the principles proposed by Israel and colleagues by providing additional considerations for conducting research among Tribal communities.[39]	• Recognizing Tribal sovereignty • Differentiating between Tribal and community membership • Understanding Tribal diversity and its implications • Planning for extended timelines • Recognizing key gatekeepers • Preparing for leadership turnover • Interpreting data within the cultural context • Utilizing Indigenous ways of knowing

In addition to highlighting the importance of CBPR and TPR, the literature included in this environmental scan identified specific principles of these frameworks that are important to consider when developing culturally responsive indicators. We also highlight specific strategies that can be used to engage community members in the development of culturally responsive performance measures.

Cultural Responsiveness and Humility among Measure Developers

Developing culturally responsive measures requires that measure developers display cultural humility and exhibit cultural responsiveness. Balcazar et al. (2009) conducted a systematic literature review to identify conceptual models that generally described cultural responsiveness and how to achieve it.[40] They found 18 unique models and developed an empirically validated synthesis model with three components to determine whether an individual or organization is culturally responsive:

- **Critical awareness and knowledge.** Refers to an appreciation and understanding of different cultures and the acknowledgement of one's potential biases toward these cultures
- **Skills development.** The degree to which an individual possesses the abilities to adjust professional practices to address the needs of multicultural populations

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- **Skills development.** The degree to which an individual possesses the abilities to adjust professional practices to address the needs of multicultural populations
- **Organizational support.** The degree to which an institution or work setting values other cultures and the opportunities to become culturally competent

Before developing culturally responsive measures, it is important that measure developers embrace these perspectives. Ensuring a basic understanding of the local culture and context is also critical before developing measures and collecting data within a community. For example, researchers involved in collecting data from Tribal communities have provided trainings that covered how to practice Tribal etiquette, information on Tribal sovereignty, data ownership, historical harms of research on AI/AN populations, an overview of the complex consent processes based on Tribal jurisdictions, and a discussion of oral traditions/necessary translations.[35,37] Measure developers should have a similar understanding of their communities before engaging in data collection activities. Primary language of the population under study is another key aspect of culture and context that measure developers should understand. Ghanbarpour et al. (2020) advocate for applying a language justice framework (i.e., the right to communicate in the language in which one feels most comfortable) when developing measures to ensure that measure content is developed in the language in which respondents are most comfortable responding.[41]

Investing in Capacity-Building Opportunities

A key component of CBPR/TPR is building research capacity within the populations being studied.[42] Ettinger et al. (2022) highlight how the Pittsburgh Study (TPS)[iv] is developing an infrastructure to enhance community capabilities in research, including trainings in leadership, data literacy, and antiracism.[43] Specifically for Indigenous communities, mentoring and training Tribal leaders throughout the research lifecycle can lead to successful research programs and inform the ongoing development of culturally safe research for Indigenous populations.[35,36] Capacity-building opportunities can also occur as the cultural responsiveness of the MIECHV/TMIECHV performance measures is evaluated by including community members in the review of existing measures, creation of novel measures, translation and back translation of screening protocols, qualitative measurement assessment, pretesting, and psychometric analysis of measurement properties. Strategies that can be used to engage MIECHV families are described in greater detail below.

Data Collection and Storage in Culturally Responsive Research

Another key principle of CPBR is for measure developers and researchers to establish community control of the data prior to any data collection.[35,36,44,45] This community ownership can promote health equity goals in a way that is respectful of cultures, local contexts, and people.[45] For research involving Tribal communities, Brockie et al. (2022) recommend incorporating the First National Principles of


[iv] TPS is a community-partnered, multicohort study designed to understand and promote child and youth thriving, build health equity, and strengthen communities by integrating community partners in study design, implementation, and dissemination.

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Ownership, Control Access, and Possession (OCAP)[v] to reinforce Tribes as the rightful owners of their data and establish direct control of how the data will be collected and where they will be stored.[35,46] Engaging in conversations about community ownership of the MIECHV/TMIECHV performance measure data and what that partnership could look like could improve overall trust and buy-in for the data collection process among home-visiting families and LIAs.

Balancing Burden of Data Collection and Specificity of Measures

Researchers must also balance the trade-off between primary data collection and use of existing administrative data sources. Primary data collection allows for tailoring of measures to specific study populations and for greater specificity in outcome measurement. However, it places a high burden on research populations and is more time and resource intensive. In contrast, using publicly available administrative data sources has lower burden and allows for robust outcome evaluations due to larger sample sizes. However, researchers are limited to the measures present in the datasets, and these common measures are likely to miss cultural nuances. Walls et al. (2019) describe this trade-off in the context of substance abuse research for AI/AN populations; they propose a framework (Exhibit 21) for guiding development of measures within AI/AN populations that incorporates the measure development cycle, tailoring measures to specific AI/AN populations, and community partnerships.[47]

Exhibit 21: Framework for Guiding AI/AN Population Measurement[47]
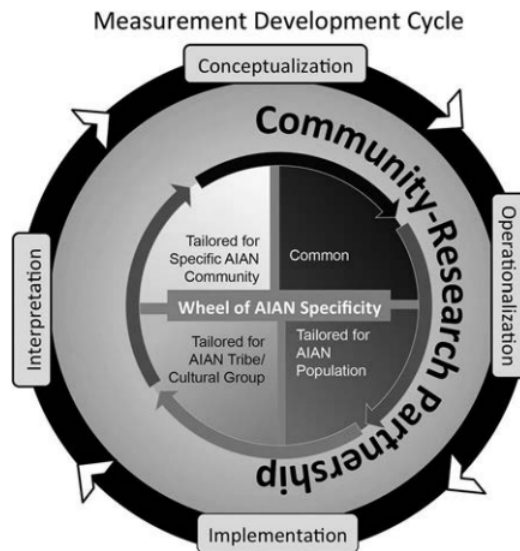
The dynamic components of the framework include the measurement development cycle (the outermost wheel), which involves the conceptualization, operationalization, implementation, and interpretation phases of measure development. As described by Wallis et al. (2019), exploring cultural norms regarding a measure content area during the conceptualization phase is critical as this will likely

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[v] The First Nations Principles of Ownership, Control, Access, and Possession asserts that First Nations have control over data collection processes and that they own and control how this information can be used.

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shape the implementation and interpretation phases of measurement development. As an example, Wallis et al. (2019) note that measures that frame alcohol use as a problem in the AI/AN community may result in findings that do not reflect the diversity of cultural norms concerning alcohol use (i.e., the acceptability of social drinking) and may result in feelings of stigma. Exploring the cultural norms regarding alcohol use in the AI/AN community during the conceptualization phase presents the opportunity to reconceptualize alcohol use to reflect community norms, values, and strengths and to result in more accurate data and findings.

The framework also includes the wheel of AIAN specificity (the innermost wheel), which reflects the level of cultural specificity at each measurement development phase (e.g., common or tailored measures). Common measures are those frequently used and cited, implying some degree of shared meaning and a common approach to measurement. "Tailored for AI/AN Population" measures are broadly inclusive of diverse AI/AN Tribal land-based, rural/semirural, and urban populations. "Tailored for AI/AN Tribe/Cultural Group" measures are created for a group of culturally similar Tribal communities (e.g., Navajo), and the "Tailored for Specific AI/AN Community" measures refer to specific municipalities or villages within the broader Tribal group.[47] Common measures facilitate comparison with other populations and generally have sufficient reliability and validity; however, common measures often fail to capture cultural nuances. Tailored measures for the three levels included in this framework can capture these cultural nuances, but they could also introduce unknown errors due to the unknown reliability of newly established measures. As a result, researchers and practitioners should balance measures across these four categories of specificity; however, the balance should be carefully considered for each study based on the purpose of the research and project activities.[47]

Finally, the Community-Research Partnership layer involves the work of engaging community partners to assist in making measures culturally specific across all phases of the measurement development cycle. Through this layer, partnerships among community members, organizational representatives, and researchers create a shared understanding of constructs that align with community norms and values. These partnerships can enhance measures' cultural responsiveness.

Although specific to developing measures for AI/AN populations, the work of Wallis et al. (2019) can be applied to developing and improving MIECHV/TMIECHV performance measures. First, community engagement is critical in measure development. For MIECHV/TMIECHV, this can include facilitating knowledge sharing among community members, organizational representatives, and program administrators (i.e., through CABs, interviews, concept mapping, talking circles) to conceptualize and operationalize new measure constructs as well as revise existing ones. These methods can help ensure that common cultural norms are reflected in the measures. Second, the Wheel of AIAN Specificity demonstrates that there are varying levels of specificity that can be used to tailor measures to specific cultural groups within the MIECHV and TMIECHV Programs. HRSA/ACF must balance developing common performance measures that facilitate comparison across the diverse populations that comprise the MIECHV and TMIECHV population with more specific measures that are tailored to culturally similar communities (e.g., racial and ethnic subgroups).

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Wallis et al. (2019), however, do not give guidance on how to determine which measures require greater cultural specificity and advise that this determination should be made based on the purpose of the research and project activities. Although tailoring performance measures to all relevant MIECHV/TMIECHV cultural groups is not possible, HRSA/ACF could consider identifying priority groups/communities that are most important to target. Priority communities could be identified in collaboration with awardees/grantees. Alternately, given that the goal of performance measures is to measure performance consistently across populations, HRSA/ACF may prioritize more common measures that can be compared across the diverse communities engaged in home visiting. To achieve greater cultural specificity of the measures, awardees and grantees could be encouraged to tailor their data collection approach to their individual communities so that the operationalization and implementation of the performance measures are tailored to individual cultural groups. Taken together, the sources identified by the study team recommend that measure developers balance using common measures and tailored measures, as well as existing data sources and primary data collection to ensure that measures are culturally responsive and less burdensome to study and program participants.

Concept Mapping

Concept mapping is a rigorous mixed-method, community-based approach that provides a structured process for gaining participant input on a variety of research topics. It is a strategy that can be used to engage community members in the development of culturally responsive performance It results in a visual display of participant views and the relationships between concepts.[43] One example of concept mapping is to identify key biological, psychological, social, community or neighborhood, and environmental factors that influence child well-being for the Tracking Health, Relationships, Identity, EnVironment, and Equity (THRIVE) framework.[43] The process involved engagement with more than 90 community members and health professionals in multiple neighborhoods and validation focus groups with more than 150 community members.[43] Engaging with the community enabled Ettinger et al. (2022) to tailor their research approach (including measure development) so that it builds on positive practices already present in this community and identified intervention strategies that are both relevant to the community and contextually valid (i.e., align with the community expectations).[43]

Talking Circles for AI/AN Populations

Talking circles are a culturally responsive evaluation practice for AI/AN populations that create a safe space for group support and enable participating members to build relationships. Through this process, participants can establish norms and values that allow them to connect intellectually, spiritually, and emotionally with others.[48,49] At least two of the sources identified in this environmental scan used talking circles to engage in the research process. Van Dyke et al. (2015) engaged communities through talking circles to identify the appropriate criteria for aggregating the health data of small tribes.[49] James et al. (2021) used a talking circle approach to explore how the cradleboard classes of the Native American Women's Dialog on Infant Mortality (NAWDIM) informed AI/AN mothers about infant health factors while addressing SDOH.[48] They found that talking circles were a collaborative, conversational

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method that is situated within an Indigenous paradigm that is relational and decolonizes knowledge sharing.

Applying the Patient, Intervention, Comparison, Outcome (PICO) Approach

The PICO approach was first introduced in 1995 by Richardson et al. (1995) as a framework for research question development.[50] This approach connects the population of focus (P), the intervention being evaluated (I), the comparison used to establish efficacy of the intervention (C), and the measured outcomes (O). Its use was required by the TMIECHV Program to promote standardization and ensure scientifically rigorous evaluations of Tribal home-visit programs. Drawing on their experience with conducting TMIECHV evaluations, Kilburn et al. (2018) state that engaging with community members and using the PICO approach can promote cultural rigor by ensuring that research questions are of interest to the Tribal communities and inform evaluation designs (including measure development) that are acceptable to the local community.[37]

Although the PICO approach was originally developed for program evaluation, we can use lessons learned from the evaluation context to refine and apply the PICO approach to the development of performance measures. For example, similar to the design of research questions, for performance measures to promote cultural rigor, they must also acknowledge the cultural assumptions and norms, community history, and reality of structural inequities.[51] Therefore, gathering input from CABs, elders, or Tribal leaders (via focus groups and community meetings)—a common method for engaging community members in research question development via a PICO approach—can also be used in performance measurement development.

Community Advisory Boards

Advisory boards are another method for sustaining community engagement throughout the research process. Published studies commonly described community input in the earlier stages of research, generally before a study begins (i.e., defining research questions or developing measures). Focus groups or panels are often used to engage with community members during the early research stages.[52] Other reported methods include structured or mixed-member forums, ad-hoc meetings that are topic-centered, individual interviews, and surveys.

Successful examples of engagement have clearly described expectations for research staff members and community members. This includes aligning research staff goals with community members' expectations of the research, including a discussion of the history of the project, defining what is or is not relevant, and appropriate community member engagement; establishing a robust and clear communication system for community members is important to maintaining their engagement.[53]

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Additional Considerations for Improving the Cultural Responsiveness of the MIECHV/TMIECHV Performance Measures

Several sources in this environmental scan recommended broad types of data and indicators that could improve the cultural responsiveness of the MIECHV/TMIECHV performance measures. We describe them in greater detail below.

Qualitative Measures

Qualitative data and assessment are essential for research studies and performance evaluations of historically underrepresented populations. These data can be used in multifaceted ways, including to determine the cultural relevance of measures and indicators prior to their use,[47] identify root causes of disparities within a given population (i.e., why clients may not take advantage of services they are eligible to receive),[34] inform researchers' understanding of structural and SDOH that have the most impact on a given community,[44] and provide rich contextual information for quantitative findings.

The importance of qualitative measures and data has been explored in the context of program evaluation for the TMEICHV Program. For example, grantees participating in a review of the TMIECHV Program stated that qualitative performance measures are often more consonant with traditional Indigenous approaches to knowledge generation and provide critical context and enrichment of the quantitative components. Furthermore, grantees stated that quantitative TMIECHV performance measures did not fully capture participant improvements; they described their development of unique qualitative measures and tools to supplement the quantitative TMIECHV performance measures.[34] This learning can be applied when conceptualizing and operationalizing culturally responsive performance measures (e.g., identifying appropriate concepts for measurement, defining indicators, ascertaining if measures are valid, and so forth), given the importance of participatory input and using data collection instruments that are culturally appropriate (e.g., narrative storytelling, focus groups). [44] Therefore, qualitative performance measure data, such as open-ended questions and "other" options with write-in fields for respondents to further contextualize quantitative data, can be used to augment quantitative data. For example, including an open text field after a quantitative measure will help to capture important perspectives and information not otherwise captured by quantitative methods.

Measures That Capture Community Strengths

Caldwell et al. (2005) identified 20 guiding principles for conducting AI/AN research and program evaluation based on the first American Indian Research and Program Evaluation Methodology National Symposium.[36] Based on this work, the authors recommended a strengths-based approach, rather than a deficits model, to acknowledge the strengths and cultural protective factors of AI/AN communities and to honor the resilience that AI/AN communities have demonstrated for generations. A strengths-based approach also ensures that community strengths are properly defined based on prevalent cultural norms. For example, while the dominant-culture narrative views growing up in multiple households as detrimental to a child, this may be considered a strength in AI/AN communities. Therefore,

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incorporating performance measures that correctly interpret and capture community strengths is one potential strategy by which to incorporate a health equity lens in the development of MIECHV/TMIECHV performance measures.

Limitations of Culturally Responsive Research and Measure Development

The literature identified challenges to conducting culturally responsive research and measure development. No sources highlighted engaging communities at a national level. Instead, sources offered guidance for federally supported programs to engage local communities in research. In addition, there was a lack of sources that provided guidance on standardizing measures across diverse communities. As research in the United States evolves to incorporate additional community perspectives more intentionally and to develop additional culturally responsive measures, researchers must be mindful of not overburdening historically underserved individuals. Engaging communities and determining the cultural relevance of new measures is also cost and resource intensive. The literature identified a lack of standard, culturally responsive measures because the development of these indicators involves extensive review of existing measures, creation of novel measurement items, translation and back translation, qualitative measurement assessment, pretesting, and psychometric analysis of measurement properties.

Objective 2: Key Findings

- CBPR and TPR are essential research frameworks for conducting culturally responsive research and developing culturally responsive measures.
- Principles of these frameworks that are important to consider when developing culturally responsive indicators include: cultural responsiveness and humility among measure developers, investing in capacity-building opportunities within the community, and balancing the burden of data collection and specificity of measures.
- Researchers must balance the trade-off between burden of primary data collection, which places burden on the populations being studied, and use of existing administrative data, which are lower burden but likely to miss nuance of individual communities.
- Specific strategies for engaging community members in the development of culturally responsive measures include concept mapping, talking circles, the PICO approach, and community advisory boards.
- The MIECHV/TMIECHV performance measurement systems should consider including qualitative measures and measures that capture community strengths.
- Lessons learned from program evaluation can be applied to the development of culturally responsive performance measures.

Objective 3: Existing Approaches to Assess Health Disparities within Child-Serving Programs

The purpose of Research Objective 3 is to identify existing approaches to assessing health disparities and health equity within child-serving programs. In this section we summarize key considerations for assessing health disparities at different stages in the research process. We begin with an overview of considerations to keep in mind before initiating health disparity assessments. We then describe analytic

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methods that can be applied to child-serving programs. The study team identified 24 sources, including 13 peer-reviewed articles, eight reports, and three websites that outline data collection standards developed by HHS. In alignment with the MIECHV Demographic, Service Utilization, and Select Clinical Indicators (Form 1); TMIECHV Demographic and Service Utilization Data (Form 1); MIECHV Benchmark Performance Measures (Form 2); and TMIECHV Benchmark Performance Measures (Form 2), six sources focused on maternal and newborn health; three sources focused on child injuries, maltreatment, and emergency department visits; three focused on school readiness and achievement; six focused on family and economic self-sufficiency; and 14 focused on demographic information. Most sources also focused on children (n = 7) and women (n = 4).

Considerations for Assessing Health Disparities and Health Equity

The sources we identified for this environmental scan highlighted key factors to consider before engaging in assessments of health disparities and health equity. These considerations include understanding the definition and operationalization of health disparities and health equity to properly plan analyses, identifying the appropriate research question, selecting appropriate operational definitions of factors that drive disparities and inequities (e.g., race, discrimination, socioeconomic status), and using multilevel data to contextualize individual-level findings. We describe these considerations in greater detail below.

Identifying the Appropriate Research Question and Using Appropriate Definitions for Health Disparity and Health Equity

Prior to conducting analyses that assess health disparities, it is important to identify the specific research question that needs to be answered or the health issue that needs to be addressed. Although this is true for all research studies, in equity research, this helps to ensure that the study focuses on the appropriate populations that may be most in need of or benefit from interventions.[54] Hughes et al. (2020) recommends clearly identifying the broader purpose of the study, such as informing an evaluation, informing strategic planning, or shaping policy.[55] This purpose can be used to inform the study design, selection of the most appropriate analytic method, and type of measures used to gather data.

Along with being thoughtful in identifying the appropriate research question, being intentional in the definition and operationalization of the terms health disparity and health equity will also help frame the analytic approach. The terms health disparity and health inequity are often used interchangeably. Sources identified in our review, however, describe how they are distinct both conceptually and operationally. A health disparity is defined as a difference in health outcomes that is closely linked with social, economic, and/or environmental disadvantage and is amendable through interventions,[56,57,58] whereas health equity has a moral dimension describing the absence of unjust and avoidable systematic differences in health outcomes across different population groups.[59] In application, the moral dimension of health equity makes it difficult to operationalize, as what is considered unjust or avoidable varies across societies.[57] This presents challenges, as there are no gold standards for measuring health equity directly. When attempting to operationalize these terms, a reduction in health

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disparities between more and less socially advantaged groups often serves as a proxy for advancing health equity.[57] When planning for analyses that assess health disparities, it is important to be thoughtful of the terminology used and acknowledge what an analytic approach can and cannot achieve.

Measure Specification for Key Drivers of Health Disparities

The health equity frameworks highlighted in the findings from Objective 1 identify SSDOH as key drivers of health disparities and inequities, including race, ethnicity, language, and socioeconomic status (SES), among others. When conducting analyses assessing health disparities, it is important to consider how these factors are measured prior to including them in an analytic plan.[60] Cheng, Goodman, and the Committee on Pediatric Research (2015) offer best practices for measuring and operationalizing race, ethnicity, language, and SES and their use in children's health research.[61] For example, when measuring race, ethnicity, and language, sources included in our scan advocated for using more granular categories to allow respondents to select categories that best reflect their personal identity.[60] Current standards for collecting data on race, ethnicity, and language are offered by the Office of Minority Health.[62] For measures of SES, Cheng et al. (2015) highlight a number of potential indicators that could be used in assessments of health disparities, including wealth, education, and income level, among others.[61] The authors also note the importance of considering measures of SES that go beyond the individual level, including neighborhood SES. Being thoughtful in the selection of measures of SSDOH, such as race, ethnicity, language, and SES is critical prior to conducting assessments of health disparities.

Using Multilevel Data and Indicators to Contextualize Individual-Level Health Outcomes

As noted in the limitations section of Objective 1, health equity and life course frameworks provide limited guidance on how to operationalize constructs within the models such as SSDOH. However, informed by these frameworks, a number of sources we reviewed for Objective 3 provided examples of how to incorporate community-level data that capture the SSDOH in assessments of health disparities. Some studies used multilevel data to showcase larger community-level or structural factors that may drive individual-level disparities in health, whereas others examined differences in health at the community level. The sources summarized below provide examples of how to operationalize health equity models to inform the selection of indicators that capture individual, social, and structural determinants of health. These approaches can be used to further understand drivers of inequities and disparities related to maternal and child health and identify points of intervention to improve these disparities.[55,63] These examples could be used to inform methods to integrate community-level data into the MIECHV/TMIECHV performance measurement system.

Guided by the Social Ecological and Life Course Models, the Michigan Department of Community Health (2013) examined inequities in maternal and child health using 14 indicators across multiple levels, including the individual, relationship, and community levels.[64] Indicators were categorized as psychosocial determinants that capture individual-level (i.e., stress and racism) and relationship-level

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factors (e.g., racism, IPV, partner support). Additional categories of indicators included socioeconomic position (i.e., poverty), basic needs (e.g., affordable housing, neighborhood safety, sleep environment), and health care access (e.g., health care coverage for pregnancy and delivery and barriers to accessing prenatal care). Indicators were stratified by race/ethnicity to identify disparities in outcomes. At the individual level, the report described how 21 percent of non-Hispanic Black women reported being emotionally upset in the 12 months before pregnancy based on how they were treated because of their race. At the relationship level, the report described how 9.8 percent of non-Hispanic Black women reported experiences of IPV before or during pregnancy (the highest percentage compared to women in other racial and ethnic groups). At the community level, 5.6 percent of all women reported often or always feeling unsafe in their neighborhood. In stratifying these data, the researchers found that the percentage of non-Hispanic women Black reporting often or always feeling unsafe in their neighborhood was twice as high as the percentage of non-Hispanic White women who reported often or always feeling unsafe. Data sources for the study included the American Community Survey (ACS) (2006-2010), which captures demographic, social, economic, and housing data to further understand trends in health, and the Michigan Pregnancy Risk Assessment Monitoring System (2010), which gathers data on the behavior and experiences of mothers before, during, and after pregnancy. This study provides an example of how to operationalize constructs from the social-ecological model to identify disparities at the community level. These data can (and are) used to inform strategic planning, identify high-need communities, and provide targeted services to improve the health of mothers and children living in the State of Michigan.

Reno et al. (2018) also used the social-ecological model to emphasize the importance of considering community-level factors when examining individual-level outcomes.[65] The researchers conducted a systematic review of literature that examined the association between SDOH and infant mortality. They identified 29 categories across the five levels of the social-ecological model, most at the individual or public-policy levels, including 1) individual-level factors (e.g., breastfeeding, child abuse, education, maternal health), 2) interpersonal-level factors (e.g., paternal involvement, IPV), 3) organizational-level factors (e.g., hospital facilities, availability of medical providers), 4) community-level factors (e.g., concentrated poverty and racial segregation), and 5) public-policy level factors (e.g., income inequality, women's state, and imprisonment rate, among others). Ultimately, the indicators identified by Reno et al. (2018) can be used to guide the selection of SSDOH factors that have the greatest impact on maternal and child health outcomes at different levels of the social-ecological model.

Wang, Whittaker, Kellom, and colleagues (2020) assessed disparities in maternal and child health through the lens of life course theory.[66] The researchers selected 66 indicators that were grouped into six domains (categories) to assess heterogeneity in economic, structural, and historical drivers of health, along with health outcomes across counties and subcounties or ZIP Codes. These county-level measures were modeled after the County Health Rankings and Roadmaps (see Objective 1), with a focus on maternal and child health. The domains (or categories) into which the 66 indicators were grouped include 1) perinatal, infant, and child outcomes, 2) socioeconomic status, 3) substance use, 4) child safety and maltreatment, 5) environmental and community, and 6) childcare indicators. Examples of indicators in the perinatal, infant, and child outcomes domain include preterm birth, low birth weight,

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and neonatal intensive care unit admission, among others. Examples of indicators in the socioeconomic domain include poverty, child poverty, income inequality, and renters who are cost burdened, among others. Community environment domain indicators include community health centers, public transit in urban counties, and residential segregation, among others.

The researchers analyzed data at the county and ZIP Code levels to evaluate community needs to then inform the allocation of funding by state public health officials. The researchers conducted the following: 1) calculated quartiles for each specific indicator to define counties and ZIP Codes as having an elevated need, 2) calculated a composite need index by county and ZIP Code for each domain (based on indicators and need scores), 3) captured differences at the local level based on population density or income variation, and 4) examined the correlation between elevated need in the perinatal, infant, and child outcomes domain and the other domains (e.g., community and environment, SES, substance use, childcare, and child safety and maltreatment). The researchers found, for example, variation in breastfeeding initiation rates across counties, along with variations in the number of well-child visits. In regard to correlation between domains, Wang et al. (2020) found that among 16 counties at elevated need in the perinatal, infant, and child health domain, 43 percent of the counties were at elevated need in the SES domain. This study provides an example of how multilevel data can be used to showcase larger community-level or structural factors that may drive individual-level disparities.

Although the highlighted studies demonstrate innovative methods to operationalize SSDOH data assessments of health disparities, each model contained many SSDOH indicators. Although it is important to capture multiple determinants of health, it is also important to remain parsimonious to avoid burdening partners, grantees, awardees, and more with data collection.[55] One way to minimize the volume of measures is to use summary scores (combining measures that may not be highly related) or composite measures (combining highly related measures).[55] For example, the Annie E. Casey Foundation's (2021) KIDS COUNT index contextualizes the well-being of children by providing a composite score to rank each state, which can be used to identify gaps in health and inform solutions.[67] The index comprises the following categories of well-being: 1) economic well-being, 2) education, 3) health, and 4) family and community. Within each category there are 16 indicators, including level of poverty, birthweight, and number of children in a single-parent household. Wang et al. (2020) noted the benefit of using composite measures as they can simplify interpretation of indicators.[66] Yet, analysts need to be cautious about combining measures, as important disparities may be masked. [54]For example, the Annie E. Casey Foundation reported that overall rankings of states based on their composite score of well-being masked variations within states.[67] In their report, Idaho ranked 11th in the family and community domain, but 46th in economic well-being. The composite score of well-being did not account for the variations across or within domains. Instead, it combined each domain to define well-being within the state. Aggregating data, for example, may mask cultural distinctions that are important to consider when tailoring intervention strategies.[49]

Overall, these sources provided examples of how to examine differences in health and other outcomes according to measures of SSDOH by using multilevel data. These strategies are important for informing analyses examining health disparities because analyses focused only on individual-level differences

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often mask the larger structural factors at play in driving health disparities and inequities. The summarized studies called for measuring a range of SSDOH indicators to understand where differences and disparities are most pronounced. Using composite measures is a way to minimize burden and create more parsimonious models when conducting these analyses. These approaches demonstrate how to operationalize health equity models to further understand drivers of inequities and disparities related to maternal and child health and to identify points of intervention to improve these disparities. The MIECHV and TMIECHV Programs can refer to these exemplar studies to inform methods to integrate community-level data into the MIECHV/TMIECHV performance measurement system.

Analyzing Data

The following section describes analytic considerations to inform the assessment, interpretation, and conclusions made when assessing health disparities across groups within a population. There are several decision points that influence the selection of the analytic method and interpretation of data findings, including identifying a reference point, the use of relative or absolute measures, considering the size of a social group impacted by health disparities, and considering the heterogeneity within a group, among others described below.[57]

Selecting a Reference Point

The reference point is defined as the specific value of a quantitative measure (e.g., rates, proportions, means) from which a disparity is measured. The reference point can include the rate of health among the largest proportion of a population, the group with the best-rated health, or the group with the worst-rated health.[57,68] Asada (2005) describes additional ways to make comparisons, including calculating the differences in health between a group or individual and an established norm, such as assessing shortfalls in achievement based on an established norm.[56] Another approach involves comparing subpopulation outcomes against the population mean or prevalence. Many sources recommend using the groups with the best- or worst-rated health as the reference point for measuring progress toward achieving health equity. Using the group with the best-rated health is recommended because differences in health across groups can be interpreted in the same direction (i.e., the sign of the difference).[57,68]

An important consideration when selecting a reference group is to avoid default comparisons to White populations.[44] This practice assumes that White outcomes are the standard, implies that communities of color should aim to achieve that standard, and applies positive values to cultural norms associated with Whiteness while negatively measuring people of color against these standards. Making comparisons to White populations neglects the structural factors and root causes that may lead to disparities. Alternatives to defaulting to a White reference group include comparing to groups with the best or worst outcomes, the group mean, or other established benchmarks (e.g., state or national benchmarks).[57]

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Absolute or Relative Differences

The use of absolute or relative differences in health can shape the interpretation of data when assessing health disparities.[56,57,60,65] An absolute difference is computed by subtracting the rate of a health problem in one group from the rate of a health problem in another group.[68] A relative difference is computed by dividing the rate of a health problem in one group by the rate of a health problem in another group.[68] Using the same data, the calculation of relative and absolute differences in health over time can give conflicting information, such as the perception of increasing and decreasing inequality between groups.[68]

In the literature, there is no consensus for using one scale over the other, and both can be useful.[57] The absolute scale accounts for total population health as well as health within each social group and is best used to assess a reduction in disparities (e.g., a simple difference in infant mortality rates between racial and ethnic groups and a reference point).[68] The relative scale is best used to assess the elimination of a disparity and is often used to compare a group with the worst rate of health to a group with the best rate of health (or the reference point).[68] An example of a relative measure of disparity is calculating a percentage difference in infant mortality rates between Hispanic mothers and African American mothers where the reference group serves as the denominator.

Disaggregating Data

Aggregate data across all groups summarizes overall health outcomes in a population. Disaggregating (or stratifying) data breaks down data into smaller groupings so that they can be analyzed in smaller units (e.g., race, ethnicity, ZIP Code). Disaggregation is important because it reveals patterns that can be concealed when data remain aggregated. Methods to disaggregate and stratify data can identify health disparities or differences in health outcomes between subgroups in a population that may differ from health distributions presented at the population level.[56,60] In health disparities research, data are typically stratified by social and demographic factors, including race and ethnicity, urbanicity, geographic region, and language.[54,61,66,67,69]

Some of the sources included in our environmental scan provided examples of disaggregating data through stratification. Owens-Young and Bell (2020) utilized data from the County Health Rankings (CHR) and the ACS to examine the role of place (i.e., urban-rural classification) in the association between structural racism and race-specific infant mortality rates at the county level.[69] The researchers found that the Black-White median income ratio, college graduation, unemployment, and infant mortality rates varied by urban-rural classification. Specifically, the highest Black-White infant mortality rates were found in small metro counties. The researchers used four measures of structural racism, including 1) median income, 2) percentage who completed a four-year college degree, 3) percentage who were unemployed, and 4) percentage who were homeowners (among non-Hispanic Black and White residents per county). Higher Black-White ratios at the county level represented higher racial inequality in SES. The researchers stratified indicators of structural racism, race-specific infant mortality rates, and covariates (e.g., population size, percentage of African Americans living in the county) by urban-rural classification to elucidate health disparities by urban-rural status.

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Halfon, Aguilar, Stanley, and colleagues (2020) examined the association between race and ethnicity and child health and development among kindergartners (four to six years of age) by neighborhood median income quintiles.[70] The researchers assessed vulnerability in health using the Early Development Index (EDI), which gathers individual-level data related to the following five categories: 1) physical health and well-being, 2) social competence, 3) emotional maturity, 4) language and cognitive development, and 5) communication skills and general knowledge. Data were then combined and geocoded by ZIP Code and mapped to neighborhood, school districts, and city levels. Children were defined as vulnerable if they were below the tenth-percentile cutoff on any of the EDI categories using previously established norms for each category. The researchers first stratified vulnerability in each EDI category by neighborhood median income quintile. The researchers also found that children reporting a higher level of vulnerability lived in the lowest quintile (or lowest neighborhood median household income). The researchers further stratified vulnerability in one or more EDI categories by race and ethnicity, finding that African American children had the highest level of vulnerability followed by Latinx children, White children, and Asian children.

Together these examples demonstrate the value in disaggregating data to identify health disparities that would otherwise be masked within aggregated populations. The Massachusetts Health Equity Roadmap provides further guidance on disaggregating data using a racial equity lens.[60] It presents the following best practices for disaggregating data by race/ethnicity:

- Engage with community members to identify racial/ethnic subgroups that are most reflective of the community under study as well as the health outcomes that are most salient.
- Identify sources used to collect race/ethnicity data, including method for data collection (e.g., self-reported race or third-party observation), and consider how data collection method may influence data responses.
- Break down race and ethnicity into as fine categories as data allow (e.g., Mexican, Cuban, Puerto Rican) to avoid masking detailed and specific information about the community that occurs if all ethnicities are grouped together (i.e., Latino ethnicities).

Small sample sizes are often a challenge encountered when disaggregating and stratifying data. If data are disaggregated too finely, subgroups will not be sufficiently powered to conduct analyses, and issues with the confidentiality of individual data also arise.[60] Strategies to address small sample sizes can occur in the design phase of a study or during analysis once data are already collected. Although not always feasible, planning for ways to gather a large enough sample size to power disaggregated subgroup analyses in the data collection phase is a key consideration when conducting health disparities research. "Snowball" sampling, i.e., engaging with a respondent's network, and intentional oversampling are potential strategies to build sample sizes. However, limitations to snowball samples include lack of generalizability and introduction of unknown errors due to oversampling.[45] Additional methods identified by Rubin et al. (2018) as appropriate for bolstering small "n" populations are field research methods, ethno-racial sampling frames or stratified sampling, use of in-language surveys, and pooled datasets.[45] For data that are already collected, aggregating data across years and groups is also a common strategy to deal with small numbers. However, it is not always necessary for there to be

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statistically significant differences in outcomes to determine that a meaningful difference exists between groups.[60] Patterns or noticeable differences can stand out and warrant further investigation even with small numbers. For example, if no cases are expected, small numbers may signal a serious concern.

Finally, if aggregation of data is necessary to address small sample sizes, special considerations should be taken to ensure that this process is conducted in a culturally responsive way. If collapsing race or ethnicity data is necessary to create population estimates (although the preferred method is breaking down race/ethnicity into as fine categories as data allow), the Massachusetts Department of Public Health (MDPH) recommends using the race and ethnicity categories developed as a collaborative postcensal population estimate between the University of Massachusetts Donahue Institute and the MDPH Bureau of Environmental Health.[60] In addition, Van Dyke et al. (2015) describe guiding principles for aggregating data for tribal communities.[49] These criteria include 1) geographic proximity; 2) community type as defined by the local population density, land forms, and natural resources; 3) environmental exposures; 4) access to resources and services; and 5) economic development. Consulting with the populations whose data are being aggregated prior to any action is also recommended.

Statistical Methods for Analyzing Quantitative Data

Sources identified for this environmental scan utilized several analytic methods to assess health disparities. The MDPH advocates for using proportions (ratios in which the numerator is a subset of the denominator) or rates (frequency of events during a certain time period divided by the number of people at risk for the event during that time) to account for differences in the sizes of population subgroups instead of raw numbers.[60] Other examples of analytic approaches used in the literature include: univariate descriptive statistic;[64] bivariate analyses, such as chi-square tests[70] or analysis of variance (ANOVA);[69] multivariable techniques, such as generalized estimating equation (GEE)[70] or linear regression;[69] and person-centered approaches, such as latent class analysis (LCA).[71,72] These approaches are discussed below.

Univariate descriptive statistics summarize individual variables and can describe the characteristics of a sample based on the distribution of each variable, including median and average values. Researchers can also examine subgroup differences for a single variable, including the calculation of rates or ratios. The Michigan Department of Community Health (2013) used univariate descriptive statistics to describe social and structural determinants contributing to disparities in maternal and child health,[64] with the goal of documenting disparities and supporting the development of effective policies.

Bivariate analyses examine the association between two variables, such as determining if a statistically significant association between an attribute (e.g., race/ethnicity, income, level of education) and a health disparity exists. Examples include the use of chi-square tests (for categorical variables) and analysis of variance (for categorical and continuous outcomes). For example, Halfon et al. (2020) used chi-square analyses to identify statistically significant variations in vulnerability by race and ethnicity.[70] Owens-Young et al. (2020) used analysis of variance tests to examine differences in infant mortality rates, measures of structural determinants, and covariates by urban-rural classification.[69]

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These analyses can help to establish associations between variables of interest before including them in more complex analyses, such as multivariate analyses.

Multivariable analyses examine associations between more than two variables. Examples include the use of generalized estimating equations (GEE) and linear regressions. Halfon et al. (2020) used generalized estimating equation-exchangeable logistic regression models (as opposed to a generalized estimating equation-independent) to examine the association among race and ethnicity, median household income, and vulnerability in each EDI category and across more than one EDI category (as previously described).[70] The researchers used generalized estimating equation-exchangeable because it is efficient in calculating within-cluster covariates. The researchers found racial and ethnic differences in levels of vulnerability across most categories. For example, after controlling for income, the odds of vulnerability among White children were 40 percent lower in one or more categories of EDI (compared to Black children). As previously mentioned, EDI categories include physical health, emotional maturity, and social competence, among others. Owens-Young et al. (2020) used linear regressions to examine the association between racial inequities in SES and infant mortality rates among African Americans and White persons.[69] Researchers were able to control for contextual factors, such as county population size and racial segregation. In addition, Owen-Young et al. (2020) also used interaction terms to examine the moderating role of urban-rural classification in the association between racial inequity in SES and infant mortality rates. While adjusting for covariates, the researchers found that racial inequity in homeownership was associated with higher infant mortality rates among African Americans. The researchers also found that the association between racial inequities in homeownership and infant mortality rates among African Americans was moderated by urban-rural classification.

Using **latent class analysis** (LCA), a person-centered approach that uses common response patterns to binary questions or indicators to group together individuals with similar response patterns, Hillemeier, Lanza, and Oropesa (2013) captured the multidimensional nature of early childhood health at 48 months.[72] To create classes of response patterns, the researchers used 12 indicators across three domains: 1) health conditions (i.e., asthma), 2) functioning, or the manifestation of health in daily life (i.e., parent reported diagnosis by professionals), and 3) health potential (i.e., positive aspects of health). The researchers identified eight classes that described variability in early-childhood health status across their sample, labeled as 1) healthy, 2) asthma, 3) functional problems, 4) low cognitive achievement, 5) externalizing behavior and approaches to learning difficulties, 6) low social skills, 7) cluster, and 8) cluster plus chronic conditions. The researchers examined disparities in class membership by gender, poverty status, race/ethnicity, and birthweight and found, for example, that African American children were most likely to be in the cluster plus chronic conditions latent class characterized by multiple health issues, low early math skills, low empathy, and low fine motor skills.

Limitations

Taken together, findings from Objective 3 focused on different considerations for assessing health disparities and inequities in child-serving programs. They begin with identifying appropriate research

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questions guided by the overarching purpose for collecting data and the identification of focus areas. Establishing an understanding of health disparities and health inequities is also key, as the terms represent distinct phenomena. Although disparities can be measured by looking at differences between two groups, inequities examine reasons for such disparities. In application, reductions in health disparities often serve as proxies for advancing equity. Establishing a clear understanding of health disparities and inequities can determine how health disparities will be assessed.

To further understand disparities and inequities, it is necessary to incorporate data that capture the SSDOH. These data help to showcase larger community-level or structural factors that may drive disparities. That means identifying systematic differences in health outcomes according to community-level factors that, e.g., inform potential causes and solutions for the differences. A limitation of collecting, sourcing, and linking multilevel data is the burden of data collection among partners, grantees, and awardees. One solution is to utilize existing data sources, such as the ACS or the County Health Rankings and Roadmaps (CHR&R) as demonstrated by the Michigan Department of Community Health (2013), Owens-Young et al. (2020), and Wang et al. (2020) to further contextualize health inequities. Another solution is to utilize composite or summary scores to minimize the volume of measures while also capturing multiple determinants of health in a parsimonious way. The challenge of selecting indicators that are tailored to the varying goals and objectives of home-visiting models presents an opportunity to engage community members throughout the research process, including data collection and interpretation of data to reflect community needs and areas of strength (see Objective 2).

In addition, a range of analytic considerations come into play when examining health disparities or inequities, including selecting the appropriate reference point, identifying a target population, and defining when a health disparity exists. Another important consideration is how to stratify or disaggregate the data to uncover disparities among subpopulations. Considerations related to analytic decision-making include having sufficiently powered analyses to understand patterns among hard-to-reach or smaller subpopulations. Limited access to data sources that align with social determinants of health can also present challenges, as existing data sources may not reflect community needs or may not be gathered at a granular enough level to support primary data collection. Another limitation is having the infrastructure to collect, analyze, and interpret data, which may require additional funding to hire staff. Infrastructure can also include the limitations presented by data collection systems that are used to collect and synthesize data findings.

Although univariate analyses are helpful in describing patterns in health disparities and inequities, researchers are unable to consider the relationship between variables in explaining health outcomes. Bivariate analyses offer another layer of complexity by examining associations between two variables. Like univariate analyses, it is highly descriptive. Yet, bivariate analyses do not account for confounding variables, which consider how an outcome can be influenced by more than one factor. Multivariate analyses allow researchers to consider the association between more than one explanatory variable and an outcome. Ultimately, analytic choices are shaped by the broader purpose for the research and appropriate research questions. These decisions determine a range of analytic strategies to select from

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to identify the predictors of health disparities or inequities, including simple descriptive approaches to
more complex multivariable approaches.

Objective 3: Key Findings

- Guidance for identifying appropriate research questions include identifying the broader purpose for data collection, identifying areas of focus, and using a racial equity lens to identify subpopulations that can most benefit from interventions.

- Although distinct phenomena, a reduction in health disparities often serves as a proxy for advancing health equity.

- Incorporating data that capture the SSDOH can contextualize individual-level health disparities, identify communities in need, and inform solutions and interventions to address disparities.

- The reference point represents the specific value of a quantitative measure from which a disparity is measured. Options include selecting the group with the best-rated health, worst-rated health, or comparing all to an established norm. Important considerations for choosing a reference point are to avoid default comparisons to White populations.

- Consider the purpose of measurement when calculating absolute and relative measures. Absolute differences in health disparities capture a reduction in health disparities, and relative differences capture the elimination of health disparities.

- Stratifying or disaggregating data can uncover health disparities or differences in health outcomes between subgroups. When disaggregating by race/ethnicity, break down into as fine categories as data allow.

- Small sample sizes can present analytic challenges. Solutions for addressing a small "n" include oversampling and aggregating data across years and groups. However, it is not always necessary for there to be statistically significant differences in outcomes to determine that a meaningful difference exists between groups

- Analytic decisions determine a range of analytic strategies, ranging from simple descriptive statistics to more complex multivariate approaches.

- Limitations associated with collecting, sources, and linking multilevel data include increasing the burden of data collection among partners, grantees, and awardees; having limited access to data sources that align with social determinants of health; and having the infrastructure to collect, analyze, and interpret data.

Objective 4: Availability of Nationally Representative and Public Data on Indicators of SSDOH

The environmental scan for Research Objective 4 (availability of nationally representative and public data on indicators of SSDOH including contextual measures and indicators available from similar child-serving programs or organizations) revealed more than 13 sources relevant to nationally representative, publicly available data on indicators of SSDOH. This section describes the types of sources identified and highlights some of the major datasets, including the specific SSDOH indicators available in each. Appendix C.4 contains a complete list of sources identified for this environmental scan that informed Objective 4. Appendix B provides a crosswalk of specific SSDOH indicators to the datasets described in this section. We identified SSDOH indicators that fell into five categories: physical environment (e.g., neighborhood/structural factors, toxic exposures, technology access, crime), economic stability (e.g., poverty, food insecurity, employment, public assistance rates), health insurance coverage (e.g., uninsured rates, adequacy of insurance coverage), education (e.g., early-childhood education centers and enrollment, adult educational attainment), and composite indices (i.e.,

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single measures that are calculated from multiple variables, which are typically standardized and weighted for the calculation). The indicators we identified overlap with many of the SSDOH constructs identified in Objective 1 frameworks and multilevel analyses highlighted in Objective 3, which can be used to contextualize MIECHV/TMIECHV performance measurement data.

Publicly available data on indicators of SSDOH are primarily available at the national, census tract, and state levels. This environmental scan did not identify access concerns for any of the data sources described below. Some data (e.g., Urban Indian Health Institute Community Health Profile and Healthy People, described in greater detail below) are only available on the specific web platform where they were originally posted; however, the remainder of these data can be exported as numerous formats, including as a comma-separated value (CSV) file in Microsoft Excel. Each source has a unique web platform with filter fields that allow for easy comparison between population groups or specific years for which data are available.

Most of the identified sources for this Objective will inform the current family economic self-sufficiency and maternal and newborn health MIECHV/TMIECHV benchmark performance measures, as well as the demographic performance measures form development; however, these data sources could potentially inform a new MIECHV/TMIECHV benchmark performance measure or demographic performance measure focused on SSDOH indicators. The remainder of this section outlines the key datasets identified for this environmental scan, data access concerns, and interoperability of these data. Datasets are presented in alphabetical order.

American Community Survey (ACS) and Decennial Census

The ACS is an annual nationwide survey administered by the U.S. Census Bureau that compliments the Decennial Census.[73] It focuses on providing timely housing, social, and economic data that can be compared across states, communities, and population groups. Data are available at numerous levels (e.g., national, state, county, census tract, ZIP Code) for 10 unique topic areas: business and economy, education, employment, families and living arrangements, government, health, housing, income and poverty, populations and people, and race and ethnicity. The Census Bureau also produces one-year and five-year trending data profiles based on ACS collections. Specific domains within these topic areas that are relevant to the HEAL-PM project include school enrollment, family and household characteristics, and children.

Child Opportunity Index (COI)

In collaboration with the Kirwan Institute for the Study of Race and Ethnicity at the Ohio State University, diversitydatakids.org developed the original COI 1.0.[74] An updated dataset (COI 2.0) released in 2020 included additional indicators and a revised methodology for calculating the composite measure of child opportunity.[75] The COI provides a single composite measure of child opportunity[vi]

[vi] diversitydatakids.org defines "child opportunity" as quality access to the conditions and resources that are necessary for children to grow up healthy and become productive adults (e.g., quality schools, clean air, access to healthy food, health care.

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based on census tract–level data from 29 neighborhood-level indicators across three domains: education indicators (11), health and environment indicators (10), and social and economic indicators (eight). The associated subdomains are outlined in Exhibit 22. Indicators were selected following a comprehensive cross-disciplinary literature review and analysis of feedback from COI 1.0 users. Researchers then analyzed the predictive validity of each domain and indicator to determine the weight that each is given when calculating the composite index after Z-score standardization; indicators that more strongly predict long-term economic and health outcomes are weighted more heavily. COI 2.0 includes indicator data for more than 72,000 census tracts, using information from national sources (e.g., ACS, CDC indices). A full list of the 29 indicators is available online, and Appendix 1 of the COI 2.0 technical documentation report contains a complete list of the description, definition, data range, scale, data source, source geography, and relevant notes for all indicators.[75,76]

Exhibit 22: Child Opportunity Index Domains and Subdomains

Domain	Subdomains
Education	Early childhood education (ECE)
	Elementary education
	Secondary and postsecondary education
	Educational and social resources
Health and environment	Healthy environments
	Toxic exposures
	Health resources
Social and economic	Economic opportunities
	Economic and social resources

County Health Rankings & Roadmaps (CHR&R)

The CHR&R is a program of the University of Wisconsin Population Health Institute that is supported by funding from the Robert Wood Johnson Foundation (RWJF).[20] CHR&R collects, organizes, and communicates county-level data according to the County Health Rankings model (Exhibit 12) described in the findings section for Objective 1. Data are pulled from the National Center for Health Statistics, the Behavioral Risk Factor Surveillance System, the United States Department of Agriculture (USDA) Food Environment Atlas, and the ACS, among others. CHR&R uses these data to measure the health of nearly every county in the United States and provide users with guidance, tools, and resources designed to accelerate learning and action. Z-scores are calculated for 35 indicators (five health outcomes; nine health behaviors; seven clinical care; nine social and economic; and five physical

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environment), which are then assigned a weighting value and summed to create a composite measure of county health. CHR&R reports these composite scores as a best-to-worst health ranking for each county in a state. Data for 39 additional indicators (nine health outcomes; five health behaviors; three clinical care; 18 social and economic; and four physical environment) are available for review, but do not inform the county rankings. A complete list of the indicators, their weighting for the ranking system, and the data sources for each indicator is publicly available.[20] CHR&R uses data from the National Center for Health Statistics, the Behavioral Risk Factor Surveillance System, the USDA Food Environment Atlas, and the ACS, among others.

Health of Women and Children Report

The Health of Women and Children Report is an annual compilation of data produced by America's Health Rankings of the United Health Foundation.[77] Researchers use 35 data sources, including the ACS and CDC Pregnancy Risk Assessment Monitoring System, to produce 118 measures at the state level. These measures are specific to either women or children and are organized into the five categories that comprise the America's Health Rankings model (Exhibit 23); social and economic factors (11 women, 14 children), clinical care (14 women, 10 children), behaviors (10 women, 10 children), physical environment (10 women/children), and health outcomes (13 women, 14 children). Data from 84 measures are used to calculate an overall composite measure for each state and a composite measure for each model category. America's Health Rankings also compares each state against the national average for the 118 measures and ranks them based on this performance.

Exhibit 23: America's Health Rankings Model[77]

Healthy People

HealthyPeople.gov is an initiative in the Office of Disease Prevention and Health Promotion under the HHS that started in 1980. Every decade Healthy People identifies new science-based objectives with benchmarks to monitor progress and focus action. Data are collected for individual variables and

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subsequently compared to these benchmarks to inform national health improvement priorities.[5] Healthy People 2020, the most recent complete dataset, organized individual variable data from 2010 to 2018 into discrete objectives related to 42 public health topic areas, including SDOH and maternal, infant, and child health. Thirty-six SDOH objectives were identified under five broad categories: economic stability (nine), education (five), health and health care (six), neighborhood and built environment (10), and social and community context (six). Seventy-four separate objectives related to maternal, infant, and child health objectives were identified and can be organized into seven categories: morbidity and mortality (25), pregnancy health and behaviors (eight), preconception health and behaviors (10), postpartum health and behavior (three), infant care (nine), disability and other impairments (11), and health services (eight).[5] Healthy People 2020 was archived in the fall of 2021 and is no longer being updated.[5] The Office of Disease Prevention and Health Promotion now works on Healthy People 2030, which monitors individual variables for more than 350 public health objectives across similar topic areas. Data for Healthy People 2030 objectives are currently available for the 2018 to 2020 performance years.[19]

Social Vulnerability Index (SVI)

SVI is a product of the CDC created in collaboration with the federal Agency for Toxic Substances and Disease Registry's (ATSDR) Geospatial Research, Analysis, and Services Program (GRASP).[78] GRASP produces databases to help emergency response planners and public health officials identify communities that may need additional support before, during, and after a hazardous event. The SVI is a GRASP database that uses U.S. Census data from 15 specific social factors to create a composite measure and national ranking of social vulnerability[vii] for every census tract. The factors are organized into four themes: socioeconomic status (four factors), household composition (four factors), race/ethnicity/language (two factors), and housing/transportation (five factors). ATSDR/CDC maintain an interactive map of social vulnerability, prepared maps for each county, and downloadable data for the entire United States.[78]

Urban Indian Health Institute (UIHI) Community Health Profiles (CHPs)

The UIHI produced CHPs as an aggregate source of relevant data for service providers caring for an urban AI/AN population.[79] UIHI collects data for 49 indicators across six domains: socio-demographics (11), infectious diseases (four), maternal and child health (14), mortality (six), mental health (6), and substance use (eight). Data from national sources are disaggregated to the UIHI service area level, which are traditionally organized by major metropolitan areas. Each indicator has a unique data dashboard with the functionality to view AI/AN data for a given service area compared with the average for all services areas and available data for non-Hispanic white populations.

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vii Social vulnerability is defined as the number of factors (e.g., poverty, lack of access to transportation, crowded housing) that may weaken a community's ability to prevent human suffering and financial loss in a disaster.

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Additional Grey Literature Sources

In addition to each primary dataset described above, the environmental scan identified grey literature and government reports that provide links to more public data sources. The Maternal and Child Health Digital Library is a grey literature source that provides annual compilations and websites that present datasets, data tools, and statistics about infants, children, adolescents, pregnant women, and their families.[80] Each website is accompanied by a brief description of its purpose and any useful tips for navigating the site. One of the annual compilations named in the Maternal and Child Health Digital Library was also identified by this environmental scan: America's Children: Key National Indicators of Well-Being from the Federal Interagency on Child and Family Statistics.[81] The purposes of this report are to: 1) improve the reporting of federal data on children and families; 2) make the most relevant data available in easy-to-use, nontechnical formats; 3) stimulate discussions among policy-makers, data providers, and the public; and 4) cultivate relationships between the statistical and policy communities. All data and statistics in the report are derived from federal surveys and reporting systems (e.g., National Immunization Surveys, Air Quality System). Appendix B of the Key National Indicators Report provides a brief history, description, and contact information for all these sources.[81]

The environmental scan also identified protocols for calculating specific indicators from the more comprehensive national datasets previously described. The PhenX project selected high-priority, well-established, and broadly applicable measures for general research.[82] Although the PhenX toolkit was designed for use in large-scale genomic studies, it includes links to standards and resources that facilitate harmonization to preexisting data from the ACS and other national data sources. For example, the toolkit describes how to calculate the unbiased separation index (S)[viii] and the dissimilarity index (D)[ix] from ACS data. It also describes how to calculate the retail foot environmental index (RFEI)[x] from the USDA's Food Environment Atlas and provides instructions for navigating the SVI.[82]

Limitations

One limitation to consider is the level for which these administrative data are available. The sources we identified are primarily available at the national, state, and census tract levels, which precludes more granular community-level analyses (e.g., census block, neighborhood level, or service catchment area). As a result, users may not be able to examine contextual and SDOH factors at the level that is most meaningful to their communities of interest.

Another limitation is that users of these data sources must acknowledge the structural inequities and problematic history that often led to their creation and continued administration. Black, Indigenous, and other people of color represented in these sources are rarely included in the governance of these data

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[viii] The unbiased separation index indicates how much contact one group has, or multiple groups have, with the selected reference group.

[ix] The dissimilarity index is related to evenness, which refers to the differential distribution of the subject population across neighborhoods in a large area (i.e., the percentage of a group's population that would have to change location of residence for each neighborhood to have the same percentage of that group as the larger metropolitan area).

[x] The RFEI indicates how many times greater the number of unhealthy food retailers is compared to healthy food retailers in a given radius.

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or consulted regarding the interests and needs these data could support.[83] Due to the use of traditional sampling methods and data collection practices that are not culturally responsive, communities of color are often undercounted or excluded from these data sources. Although the data sources we cited are often leveraged to understand and intervene on the social and structural determinants of health that cause health disparities, it is important to acknowledge that they were developed in the same system that created these inequities in the first place.

Objective 4: Key Findings

- SSDOH indicators fell into five categories: physical environment; economic stability; health insurance coverage; education; and composite indices.

- In addition to individual indicators of SSDOH, composite indices that create composite risk or vulnerability scores were identified.

- Publicly available data on indicators of SSDOH are primarily available at the national, state, and census tract levels.

- No access concerns were identified.

- A limitation of these data sources is that users may not be able to examine contextual and SDOH factors at the level that is most meaningful to their communities of interest (e.g., neighborhood or service catchment area).

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Prioritized Recommendations and Considerations

The goal of the HEAL-PM project is to examine how the MIECHV/TMIECHV Program performance measurement system can better integrate strategies to monitor and understand how awardees and grantees are documenting, assessing, and advancing health equity in home visiting. As part of this work, the study team conducted an environmental scan of peer-reviewed and grey literature to identify foundational articles and best practices to help guide the integration of a health equity lens in early childhood performance measurement systems and the identification of SSDOH measurement approaches. Through this scan, the study team identified existing health equity frameworks that could guide organization of the MIECHV/TMIECHV performance measurement systems (Objective 1), identified strategies and best practices to develop culturally responsive measures and collect culturally responsive data (Objective 2), described approaches to assess health disparities in child-serving programs (Objective 3), and identified nationally representative and public data on indicators of the SSDOH (Objective 4). The findings from this scan will inform our continuum of recommendations by providing strategies and approaches to incorporate a health equity framework into the MIECHV/TMIECHV performance measurement systems. In this section, we summarize key considerations and recommendations to adapt and organize the MIECHV/TMIECHV Program performance measures using a health equity lens. In an effort to summarize the disparate collection of literature/sources we reviewed; we highlight three overarching recommendations that integrate the most salient themes found across the four objectives.

1. Incorporate SSDOH data into the MIECHV/TMIECHV performance measurement system

A key finding that cuts across all research objectives is the importance of including data that captures the SSDOH into the MIECHV/TMIECHV Program data. The current MIECHV/TMIECHV performance measures focus on individual-level performance measures (i.e., depression screening), systems outcomes (i.e., continuity of insurance coverage), and demographics (i.e., race/ethnicity). Yet, health equity frameworks highlighted in Objective 1 have moved beyond the individual medical model to examine structural and social factors as determinants of health. The following considerations should be made to incorporate SSDOH data into the MIECHV/TMIECHV performance measurement system.

Acknowledge that upstream social factors and structural inequities serve as the root cause of health disparities

As highlighted in the findings from Objective 1, health equity frameworks—like the social-ecological model,[16] the County Health Rankings model,[20] and the Healthy People Social Determinants of Health framework[19]—acknowledge the role upstream community (e.g., schools, places, of work,

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neighborhoods) and societal factors (e.g., social or cultural norms, policies) play in downstream individual health, behavior, and quality-of-life outcomes. In recent years, these models have evolved further to explicitly acknowledge the systems of power that serve as the root causes of health inequities, including the social and political mechanisms that affect whether the resources necessary for health are distributed equally or unjustly in society according to race, gender, social class, geography, sexual identity, or other socially defined groups of people. As a result, frameworks such as ETR's Health Equity framework,[27] the BARHII framework,[24] and Yearby's Reconfigured SDOH framework[23] incorporate social and institutional inequities, such as structural discrimination, racism, sexism, ableism, and classism as the root causes of inequities. When the study team mapped the MIECHV demographic, service utilization, and select clinical indicators (Form 1), TMIECHV demographic service utilization data (Form 1), MIECHV benchmark performance measures (Form 2), and TMIECHV benchmark performance measures (Form 2) to common constructs and levels of health equity frameworks, the existing performance measures map most closely to the individual and relationship levels. There are no measures that capture community-level constructs such as neighborhoods, community safety, or the physical environment. Within the societal level, there are no performance measures that capture quality of services or more upstream determinants of health such as systems of power or social inequities due to demographic factors such as race/ethnicity, class, or immigration status.

To more fully apply a health equity perspective, the MIECHV and TMIECHV Programs should examine these gaps and incorporate data and measures that capture upstream social factors such as quality of home-visiting services, the physical and built environment, and measures that track disparities in outcomes by root causes of social inequities such as race/ethnicity or other social factors. These SSDOH data and measures could be incorporated into MIECHV/TMIECHV awardee reporting in a number of ways, including as outcome measures, through continuous quality improvement (CQI) activities, and as part of needs assessment reporting process. However, because MIECHV and TMIECHV are individual-level interventions that target a small proportion of a community, it may be unrealistic to expect to see changes in SSDOH outcome measures as a result of MIECHV and TMIECHV activities. Therefore, a better application for these data may be to contextualize downstream health status indicators that are being captured through the MIECHV/TMIECHV performance measures. Together these data could be used to identify new or emerging communities in need of services, explain disparities in outcomes, and identify potential points of intervention.

Conduct analyses that combine individual-level performance measure outcome data with measures of SSDOH to contextualize differences found across groups and to identify upstream points of intervention at the awardee and grantee levels

Results from our findings for Objective 3 provide insight into how data that capture social and structural determinants could be incorporated into the analysis of MIECHV/TMIECHV performance measure data. Reflective of the health equity frameworks highlighted in Objective 1, a number of sources we reviewed for Objective 3 incorporated contextual data to assess health disparities, such as the Michigan Department of Community Health's (2013) report on factors that shape maternal and child health disparities and Wang and colleagues' (2020) assessment of disparities in maternal and child health.[64,66]

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These studies used multilevel data to showcase larger community-level or structural factors that may drive individual-level disparities. Structural and community-level indicators included transportation, affordable housing, neighborhood safety, socioeconomic status, environmental quality, residential segregation, and children's blood lead level, among others. In these examples, the researchers identified systematic differences in health outcomes according to community-level factors such as SDOH and used this information to better understand potential causes of health disparities as well as identify points of intervention to improve these disparities. Multilevel data also apply a health equity perspective by removing the focus from individual-level explanations of differences in health outcomes and acknowledging the complex interplay between the individual, community-, societal-, and structural-level factors that impact health.

Following this strategy, the MIECHV and TMIECHV Programs should consider systematically conducting analyses that combine individual-level performance measure outcome data with measures of SSDOH to contextualize differences found across groups and identify upstream points of intervention (e.g., screening for housing insecurity and partnering with community service providers to provide referrals and/or advocate for housing zoning law reforms). Analyses can be modeled after the Michigan Department of Community Health (2013), which used data to describe the individual-, relationship-, and community-level factors that contribute to disparities in maternal and child health. The analyses were used to inform strategic planning. Another example is provided by Owens-Young et al. (2020), who considered urban-rural classification in the association between structural racism (measured with multiple indicators) and infant mortality rates at the county level. Another example is provided by Halfon et al. (2020), who examined the association between race and ethnicity and child health and development across five individual-level categories (e.g., physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and knowledge) and mapped data to ZIP Codes to analyze differences in vulnerability by neighborhood, school districts, and city levels. Another example is provided by Hillemeier et al. (2013), who combined multiple measures across health conditions, functioning, and health potential to capture the multidimensional nature of early-childhood health. The researchers combined individual-level indicators, such as health conditions and functioning, with community- and structural-level factors, such as poverty status, to create "classes" or categories of early-childhood health.

Leverage publicly available data with indicators of SSDOH to conduct community-level and multilevel analyses

Implementing multilevel analyses using indicators of SSDOH has it challenges. The cited health equity frameworks give little guidance on how to operationalize or measure these complex constructs. Only the HHS's SDOH framework includes exemplar measure indicators for five SDOH areas incorporated in the model: healthcare access and quality, education access, social and community, neighborhood and built environment, and economic stability.[19] Measures of social and institutional inequities were not identified in our review. However, our findings for Objective 4 can inform an approach to incorporate SSDOH data into the MIECHV/TMIECHV performance measurement system. Objective 4 identified nationally representative, publicly available data on indicators of SSDOH. Appendix B provides a

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complete overview of each SSDOH indicator and its availability. Given this wide array of available measures, determining which indicators and data sources are most appropriate to complement the existing MIECHV/TMIECHV performance measures is challenging. When selecting publicly available indicators the following may be considered:

- Level of data available. Because MIECHV and TMIECHV Programs operate at the local level, data sources that are only available at the state or national level are unlikely to provide useful contextual information about families and communities served. Unfortunately, one key limitation of the sources we identified through this review is that the lowest level of data available for many of these sources is the county or census tract level. This may not be granular enough to be useful for individual MIECHV and TMIECHV Programs. Continued engagement is needed with MIECHV/TMIECHV-interested parties to better understand the level of data that is most useful for programs.

- Year(s) of data available. Data lags are often a challenge with administrative datasets. To be most informative for MIECHV and TMIECHV Programs, data must align with the timeline of available program data, be recent enough to be able to inform program activities, and be updated and available at regular intervals to track trends over time.

- SSDOH that have the greatest impact on MIECHV/TMIECHV families. To provide the most informative contextual information, data sources should capture SSDOH that have the greatest impact on the health and well-being of MIECHV and TMIECHV families. To identify these factors, continued engagement is needed with MIECHV/TMIECHV-interested parties. CBPR/TPR methods (described in greater detail below and in Objective 2) can also be used to identify SSDOH indicators that are most meaningful to families, LIAs, and awardees and to determine whether these indicators vary by program or community.

Together, our environmental scan findings suggest that to adapt and organize MIECHV/TMIECHV Program performance measures using a health equity lens, data that capture the SSDOH should be used to contextualize downstream health status indicators that are being captured through the MIECHV performance measures.

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2. Apply a health equity perspective when analyzing MIECHV/TMIECHV Program data

Another cross-cutting recommendation we identified from the environmental scan is to apply a health equity perspective throughout the entire analytic process when using MIECHV/TMIECHV performance measure data to document health disparities from the analytic design phase through analysis. A key goal of the HEAL-PM project is to examine how the MIECHV/TMIECHV Program performance measurement system can better integrate strategies to monitor and understand how awardees are documenting, assessing, and advancing health equity in home visiting. Findings from the literature sourced for Objectives 2 and 3 provide considerations for incorporating a health equity perspective when analyzing MIECHV/TMIECHV performance measure data from the analytic design phase through analysis. HRSA/ACF could use these considerations to conduct analyses that examine health disparities across the MIECHV and TMIECHV portfolio and to develop TA materials to guide awardees to conduct program-level analyses.

Appropriately frame the analytic approach by using thoughtful operational definitions of key drivers of health disparities

As discussed in the findings from Objective 3, the terms health disparity and health equity are often used interchangeably in the literature. Assessing progress toward achieving health equity is challenging to operationalize, however. As a result, a reduction in health disparities between subpopulations often serves as a proxy for measuring advances in health equity.[57] To properly frame analyses that identify and assess health disparities using MIECHV/TMIECHV Program data, it is important to thoughtfully operationalize definitions of key drivers of disparities and inequities. Key drivers highlighted in the literature include SSDOH such as race, ethnicity, language, and SES.[61] Sources included for Objectives 2 and 3 further recommend allowing for more granular racial/ethnic and language data categories (among others) to ensure that these measures are most reflective of the populations studied.[61] Analyses of MIECHV/TMIECHV program data should thoughtfully define key drivers and allow for more granular categories before conducting analyses assessing health disparities. Utilizing CBPR/TPR methods described in Objective 2 to engage MIECHV/TMIECHV-interested parties, such as awardees, LIAs, and families receiving home-visiting services in both identifying key drivers and operationalizing the definitions (e.g., racial/ethnic categories that are most appropriate for families served by MIECHV and TMIECHV) of health disparities can ensure that planned analyses are most relevant to the local context.

Use appropriate comparison groups to contextualize findings

As described in the Objective 3 findings, a reference point is defined as the specific value of a quantitative measure (e.g., rates, proportions, means) from which a disparity is measured. To apply a health equity perspective when analyzing MIECHV/TMIECHV performance measure data, the reference point should be thoughtfully selected. White populations should not always be used as the

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default reference point. Defaulting to White populations as the reference point assumes that White outcomes are normative and implies that communities of color should aim to achieve that standard.[44] Alternative reference points that could be used to guide MIECHV/TMIECHV analyses include groups with the best or worst outcomes, the group mean, or other established benchmarks (e.g., state or national benchmarks).[57,68]

Disaggregate or stratify data by relevant subgroups to uncover health disparities

While our first recommendation focuses on using aggregated community level data to contextualize individual-level data, other sources identified through our environmental scan noted the importance of exploring individual-level data at a more granular level. Some findings we highlighted stratified or disaggregated health outcome data by social and demographic factors, such as race/ethnicity, urbanicity, geographic region, and language, to uncover health disparities or differences in health outcomes between subgroups in a population.[54,61,69,66,67] In addition to conducting multilevel analyses, MIECHV and TMIECHV Programs should prioritize analyses that disaggregate data by these characteristics to explore systematic differences between subgroups. Although they may seem contradictory, both approaches can be used to incorporate a health equity lens into data analyses. Disaggregating data allows for exploration of meaningful and perhaps systematic differences in individual-level outcomes.[60] As previously described, examining community-level differences can contextualize individual-level findings and identify root causes for these disparities by identifying structural factors that may drive these differences. As noted above and described in greater detail in Objective 2 and below, engagement with community members through CBPR and TPR methods to identify which social and demographic factors and granular categories in those domains are most salient to families served by the MIECHV and TMIECHV Programs will ensure that the data model used is appropriate to examine the research questions in local context.

Consider mixed-method approaches and tracking performance measures over time to better understand the lived experience of MIECHV/TMIECHV families across the life course

The findings from Objective 3 highlight a range of analytic strategies that can be used to assess health disparities using the MIECHV/TMIECHV performance measure data. These methods include simple descriptive approaches to more complex multivariable techniques. The choice of analytic strategy depends on sample sizes, complexity of the research question, available data, timeframe for the study, and resources and technical capacity of the analytic team. When developing analytic plans for assessing health disparities in the MIECHV/TMIECHV populations, utilizing mixed-method approaches (i.e., combining quantitative and qualitative methods) and tracking performance over time will allow for greater contextualization of findings and capture outcomes across phases of development in line with a life course perspective.

Although Objective 3 findings highlight quantitative methods to assess health disparities, Objective 2 findings advocate for the importance of collecting qualitative data to complement and contextualize

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quantitative findings. Incorporating mixed-methods approaches will allow the MIECHV and TIMIECHV Programs to explain and provide meaning behind quantitative findings that is couched in the lived experiences of families and home visitors. Mixed-method approaches may be particularly relevant for TMIECHV grantees given that TMIECHV Programs have stated that qualitative methods are more consonant with traditional Indigenous approaches to knowledge generation and provide critical context and enrichment of the quantitative components.[34] Some TMIECHV grantees have even developed and piloted qualitative measures and tools to supplement the quantitative TMIECHV performance measures.[34] The MIECHV and TMIECHV Programs should explore this innovative model and engage these grantees to understand their process, types of qualitative measures they developed, and best practices for implementation.

Another methodological consideration that surfaced in our scan is the importance of tracking the MIECHV/TMIECHV performance measure data over time and across generations. Our Objective 1 findings highlighted health equity frameworks that incorporated a life course perspective. These frameworks explain how the complex interplay between biological, behavioral, psychological, social, and environmental factors over time and developmental phases can shape health across an entire lifetime and across generations. In many ways, a life course perspective is integral to MIECHV and TMIECHV Programs since they serve both children and their caregivers during critical developmental periods. To incorporate a life course perspective and health equity lens into the performance measurement systems, the MIECHV and TMIECHV Programs should continue many of their current practices. In particular, the MIECHV and TMIECHV Programs should continue collecting intergenerational data on the health and well-being of children and their caregivers and continue to track performance measure data over time. Additional tracking of home-visiting families after their participation in the program ends could also more fully embrace a life course perspective.

3. Use CBPR/TPR approaches to revise existing MIECHV/TMIECHV performance measures and develop new ones

A goal of the HEAL-PM project is to determine strategies to improve the cultural responsiveness of the MIECHV/TMIECHV performance measures. Findings from Objective 2 highlighted practices and approaches to develop culturally responsive measures and indicators. The sources included in this objective recommended the use of CBPR and TPR methods to guide the development of culturally responsive measures and indicators. Core principles of CBPR/TPR include collaborative and equitable partnerships, building on strengths and resources within the community, integrating knowledge and action for the mutual benefit of all partners, and promoting colearning and empowerment. By applying CPBR/TPR approaches, HRSA/ACF will ensure that the MIECHV/TMIECHV indicators resonate with local culture and are appropriate in content, form, and function.

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Engage MIECHV/TMIECHV community members to revise existing performance measures and/or develop new measures

In our scan, Whitesell and colleagues (2018) and others raised concerns about the cultural responsiveness of the MIECHV/TMIECHV performance measures.[34] This is consistent with feedback the study team received during facilitated discussions with awardees where the safe sleep, breastfeeding, and substance use performance measures (among others) were identified as not being aligned with cultural practices and norms of some home-visiting families. To address these concerns, we recommend that HRSA/ACF engage a CAB of awardees, LIAs, and MIECHV/TMIECHV families to review these measures and codesign improvements to make them more culturally responsive. Culturally bound methods such as concept mapping and talking circles have proven effective in engaging AI/AN populations and can be used to guide the engagement sessions. For example, concept mapping provides a structured process through which to gain participatory input and honors the indigenous ideologies of representing ideas in pictures or maps and decision-making based on consensus. This strategy was used by Ettinger et al. (2022) to conceptualize child and youth thriving across socioecological levels and developmental domains and resulted in a conceptual framework that reflected the input from more than 150 stakeholders. Furthermore, talking circles have been successfully employed in clinical, behavioral health, and health education settings to elicit insight and promote information sharing from tribal members through connection, dialogue, and shared meaning-making that honors the indigenous principle of power sharing (vs. having power over one another). Ensuring that community engagement strategies draw on the preferences and experiences of the community served is crucial to contextualizing and enriching performance measures. In addition, these strategies are relevant beyond the federal level, and community engagement should be incorporated into all aspects of measure revision and development.

In addition to revising existing measures, a CAB can be engaged (using CBPR/TPR strategies and techniques) to formalize the process by which community members have representation in measurement development, improve the cultural responsiveness of the performance measures overall, and infuse a health equity perspective. For example, the CAB could be used to develop qualitative measures that better contextualize the current quantitative measures (i.e., further qualitative probing of safe sleep or breastfeeding practices). For example, to ensure that diverse perspectives are represented (e.g., best practices and lived experiences), the CAB can include safe sleep practitioners/experts and community members.

Develop MIECHV/TMIECHV performance measures that build on community strengths and resources

Our review also found that the cultural responsiveness of the MIECHV/TMIECHV performance measures could be improved by adding measures that capture community strengths rather than just focusing on deficits. Caldwell and colleagues (2005) and Doane and colleagues (2018) emphasized the importance of measuring strengths and cultural protective factors for AI/AN and Latino populations in particular.[36,84] The aforementioned community engagement strategies could be used to identify

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community strengths that are most salient to MIECHV/TMIECHV families and develop these constructs into performance measures.

Support the administration of MIECHV/TMIECHV performance measure screening instruments in primary languages of home-visiting families

In equitable multilingual spaces, or where there is no dominant language, language support is given to all those who do not feel comfortable or are not proficient in all of the languages in the space. Equitable multilingual spaces can promote family engagement from families who speak different languages and larger community engagement that build trust and support. This is a "language justice" concept and is proposed as an alternative to the "language access" approach, which assumes that language support is needed for those who do not speak English.

Conclusion and Next Steps

Together, these recommendations and considerations provide high-level guidance for adapting and organizing the MIECHV/TMIECHV Program performance measures using a health equity lens based on the findings from our environmental scan. By incorporating SSDOH data into the performance measurement system, applying a health equity perspective when analyzing program data, and using CBPR/TPR approaches to revise existing performance measures and develop new ones, the MIECHV and TMIECHV Programs will be able to monitor and understand how awardees are documenting, assessing, and advancing health equity in home visiting. We look forward to working with HRSA/ACF to further refine these recommendations and integrate them with findings from our other HEAL-PM project activities to develop a continuum of recommendations. The continuum will incorporate a range of recommendations for how home-visiting performance measurement can be enhanced and updated with considerations of the complex, integrated, and overlapping structures and systems that contribute to health inequity and to describe the pros and cons of these different approaches. We look forward to continued engagement and collaboration with the HRSA/ACF team as we refine and finalize these project activities and recommendations.

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Appendix A: MIECHV/TMIECHV Performance Measures

MIECHV Performance Measures

Benchmark Area	Construct		Measure Description
Maternal and newborn health	1	Preterm birth	• Percent of infants who are born preterm
	2	Breastfeeding	• Percent of infants who are breastfed at six months of age
	3	Depression screening	• Percent of primary caregivers who are screened for depression
	4	Well-child visit	• Percent of children who received the last American Academy of Pediatrics (AAP) recommended visit
	5	Postpartum care	• Percent of individuals who received a postpartum care visit within eight weeks of giving birth
	6	Tobacco cessation referrals	• Percent of primary caregivers who reported using tobacco and were referred to tobacco-cessation counseling or services
	1*	Substance use screening	• Percent of primary caregivers enrolled in home visiting who are screened for unhealthy alcohol use using a validated tool within six months of enrollment
Child injuries, maltreatment, and emergency department visits	7	Safe sleep	• Percent of infants who are always placed to sleep on their backs
	8	Child injury	• Rate of injury-related visits to the emergency department
	9	Child maltreatment	• Percent of children with at least one investigated case of maltreatment
School readiness and achievement	10	Parent-child interaction	• Percent of primary caregivers who receive an observation of caregiver-child interaction using a validated tool
	11	Early language and literacy activities	• Percent of children with a family member who reported that they read, told stories, and/or sang songs with their child daily
	12	Developmental screening	• Percent of children with a timely screen for developmental delays using a validated tool

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Benchmark Area	Construct	Measure Description
	13 Behavioral concern inquiries	• Percent of home visits in which primary caregivers were asked if they had any behavioral concerns about their child
Crime or domestic violence	14 IPV screening	• Percent of primary caregivers who are screened for IPV within six months of enrollment using a validated tool
Family economic self-sufficiency	15 Primary caregiver education	• Percent of primary caregivers without a high school degree or equivalent who subsequently enrolled in or completed high school or equivalent
	16 Continuity of insurance coverage	• Percent of primary caregivers who had continuous health insurance coverage for at least six consecutive months
Coordination and referrals	17 Completed depression referrals	• Percent of primary caregivers referred to services for a positive screen for depression who receive one or more service contacts
	18 Completed developmental referrals	• Percent of children with positive screens for developmental delays who receive services in a timely manner
	19 IPV referrals	• Percent of primary caregivers with positive screens for IPV who receive referral for information for IPV
	2* Completed substance use referrals	• Percent of primary caregivers referred to services for a positive screen for substance use who receive more service contacts

Note: * indicates an optional measure included in Fiscal Year 2022

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TMIECHV Performance Measures

Benchmark Area	Construct		Measure Description
Implementation	1	Receipt of home visits	• Percentage of recommended home visits received by families enrolled in the home-visiting program during the reporting period
	2	Home visit implementation observation	• Percentage of recommended home visits during which home visitors are observed for implementation quality and receive feedback from their supervisors during the reporting period
	3	Reflective supervision	• Percentage of recommended individual and/or group reflective supervision sessions received by home visitors and supervisors during the reporting period
I - Maternal and newborn health	4	Depression screening	• Percent of primary caregivers enrolled in home visiting who are screened for depression using a validated tool within three months of enrollment
	5	Substance abuse screening	• Percent of primary caregivers enrolled in home visiting who are screened for substance abuse using a validated tool within three months of enrollment and at least annually thereafter
	6	Well-child visit	• Percent of the AAP-recommended number of well-child visits received by children enrolled in home visiting during the reporting period
	1*	Breastfeeding	• Percentage of women enrolled prior to child's birth who initiate breastfeeding
	2*	Postpartum care	• Percent of mothers enrolled in home visiting prenatally or within 30 days after delivery who received a postpartum visit with a health care provider within eight weeks (56 days) of delivery
	3*	Immunizations	• Percent of children enrolled in home visiting who receive all AAP-recommended immunizations during the reporting period
II - Child injuries, maltreatment, and emergency department visits	7	Child injury prevention	• Percentage of primary caregivers enrolled in home visiting who are provided with training on prevention of child injuries
	4*	Screening for parenting stress	• Percentage of primary caregivers who are screened for parenting stress using a validated tool within three months of enrollment and at least annually thereafter

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Benchmark Area	Construct		Measure Description
	5*	Safe sleep	• Percentage of primary caregivers educated about the importance of putting infants to sleep on their backs, without bed-sharing and soft bedding
	6*	Child injury	• Rate of injury-related visits to the emergency department or urgent care since enrollment among children enrolled in home visiting
III - School readiness and achievement	8	Parent-child interaction	• Percent of primary caregivers enrolled in home visiting who receive an observation of caregiver-child interaction by the home visitor using a validated tool
	9	Developmental screening	• Percentage of children enrolled in home visiting screened at least annually for developmental delays using a validated parent-completed tool
	7*	Early language and literacy activities	• Percent of children enrolled in home visiting with a family member who reported that during a typical week s/he read, told stories, and/or sang songs with their child daily.
IV - Crime or domestic violence	10	IPV screening	• Percentage of primary caregivers enrolled in home visiting who are screened for IPV using a validated tool within six months of enrollment and at least annually thereafter
V - Family economic self-sufficiency	11	Screening for economic strain	• Percentage of primary caregivers who are screened for unmet basic needs (poverty, food insecurity, housing insecurity, etc.) within three months of enrollment and at least annually thereafter
VI - Coordination and referrals	12	Completed developmental referrals	• Percentage of children enrolled in home visiting with positive screens for developmental delays (measured using a validated tool) who receive timely services and a follow-up
	8*	Completed IPV referrals	• Percentage of primary caregivers screening positive for IPV who receive a timely referral for services and a follow-up
	9*	Completed depression and parenting stress referrals	• Percent of primary caregivers screening positive for depression or parenting stress using a validated tool who receive a timely referral for services and a follow-up
	10*	Completed substance abuse referrals	• Percent of primary caregivers screening positive for substance abuse using a validated tool who receive a timely referral for services and a follow-up
	11*	Completed economic strain referrals	• Percent of primary caregivers with unmet basic needs who receive a timely referral for services and a follow-up

Note: * indicates a Flex measure

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Appendix B: SSDOH Indicators in Publicly Available Data Sources

Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Physical Environment Indicators				
Neighborhood/Structural Factors				
Residential segregation (America's Health Rankings)	Index of dissimilarity, with higher values indicating greater segregation between Black and non-Hispanic White households, ranging from zero (complete integration) to 100 (complete segregation)	ACS Protocol for calculation is included in the PhenX Toolkit.	Census tract	2016-2020
Severe housing problems (CHR&R)	Percentage of households with at least one of four housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities	Comprehensive Housing Affordability Strategy (CHAS) data	County	2014-2018
Neighborhood amenities (America's Health Rankings)	Percentage of children ages 0-17 with access to a park or playground; recreation center, community center or boys' and girls' club; library or bookmobile; and sidewalks or walking paths	HHS, HRSA, MCHB, National Survey of Children's Health	Census tract	2019-2020
Access to healthy food (COI)	Percent households without a car located further than a half-mile from the nearest supermarket	USDA Food Access Research Atlas	Census tract	2019

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Food environment index (CHR&R)	The Food Environment Index ranges from a scale of 0 (worst) to 10 (best) and equally weights two indicators of the food environment: 1) Limited access to healthy foods estimates the percentage of the population that is low-income and does not live close to a grocery store. Low income is defined as having an annual family income ≤ 200 percent of the federal poverty threshold for the family size. Living close to a grocery store is defined differently in rural and nonrural areas; in rural areas, it means living less than 10 miles from a grocery store, whereas in nonrural areas, it means less than one mile. 2) Food insecurity estimates the percentage of the population that did not have access to a reliable source of food during the past year.	Created by CHR&R using data from the Community Population Survey, Bureau of Labor Statistics, and the ACS	County	2019
Toxic Exposures				
Air pollution (America's Health Rankings)	Average exposure of the public to particulate matter ≤ 2.5 microns or less measured in micrograms per cubic meter	Environmental Protection Agency (EPA)	-	2021
Hazardous waste dump sites (COI)	Average number of Superfund sites within a two-mile radius, reversed	EPA	Point	2021
Drinking water violations (CHR&R)	Presence of health-related drinking water violations	Safe Drinking Water Information System	County	2020

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Risk-screening environmental indicator score (America's Health Rankings)	Estimated human health-related risk from exposure to toxic chemicals based on emission data of more than 600 chemicals, with higher scores denoting elevated risk	EPA, Toxic Release Inventory National Analysis	State	2019
Technology Access				
Computer access in the home (ACS)	Percentage of households in which a desktop or laptop, a smartphone, a tablet or other portable wireless computer, or some other type of computer is available	ACS	Census tract	2020
Broadband access (Healthy People)	Proportion of adults with broadband access to the internet	Health Information National Trends Survey (HINTS), ACS	Census tract	2020
Crime				
Violent crime (CHR&R)	Number of reported violent crime offenses per 100,000 population	Uniform Crime Reporting - FBI	County	2016
Injury-related eaths (CHR&R)	Number of deaths due to injury per 100,000 population	National Center for Health Statistics - Mortality Files	County	2016-2020
IPV before pregnancy (America's Health Rankings)	Percentage of women with a recent live birth who experienced violence by husband or partner (current or former) in the 12 months before pregnancy	CDC, Pregnancy Risk Assessment Monitoring System	State	2019

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Economic Indicators				
Concentrated disadvantage (America's Health Rankings)	Percentage of households located in census tracts whose averaged Z-scores of family households below the poverty line, individuals receiving public assistance, female-headed households, unemployed ages 16 and older, and population younger than 18 falling within the 75th percentile.	ACS	State	2016-2020
Poverty (America's Health Rankings)	Percentage of females ages 18-44 who live below the poverty level	ACS	Census tract	2020
Child poverty (America's Health Rankings)	Percentage of children younger than 18 years who live in households below the poverty threshold	ACS	Census tract	2020
Children in poverty racial disparity (America's Health Rankings)	Ratio of the racial/ethnic group with the highest childhood poverty rate (varies by state) to the non-Hispanic White rate	ACS	Census tract	2020
School poverty (COI)	Percent students in elementary schools eligible for free or reduced-price lunches (FRPL)	National Center for Education Statistics (NCES) Common Core of Data (CCD)	Point	2015-2016
Food insecurity (multiple)	Percentage of households unable to provide adequate food for one or more household members due to lack of resources	USDA, Household Food Security in the United States in 2019	Census tract	2019
Employment (multiple)	Percentage of individuals aged 16 years or older with a paid job	ACS	Census tract	2020

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Public assistance rate (COI)	Percent households receiving cash public assistance or Food Stamps/Supplemental Nutrition Assistance Program, reversed	ACS	Census tract	2020
WIC coverage (America's Health Rankings)	Percentage of children ages 1-4 eligible for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) who received WIC benefits in an average month.	USDA, WIC Eligibility and Coverage Rates	State	2021
Health Insurance				
Uninsured Women (multiple)	Percentage of women ages 19-44 not covered by private or public health insurance	ACS	Census tract	2019
Uninsured Children (multiple)	Percentage of children younger than 19 years not covered by private or public health insurance	ACS	Census tract	2020
Adequate Insurance (multiple)	Percentage of children ages 0-17 who were continuously insured in the past year with adequate coverage based on the following criteria: benefits meet the child's needs, insurance allows the child to see needed providers, and insurance either has no or reasonable out-of-pocket expenses	HHS, HRSA, MCHB, National Survey of Children's Health	Census tract	2020

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Education Indicators				
Early Childhood Education Centers (COI)	Number of ECE centers within a five-mile radius	This indicator is calculated by COI based on three sources: Childcare licensing agency of each U.S. state; NCES CCD; National Association for the Education of Young Children (NAEYC) Accredited Program Database* *Can be used to determine the number of high-quality early childhood education centers	Point	Various
Early Childhood Education Enrollment (COI)	Percent 3- and 4-year-olds enrolled in nursery school, preschool, or kindergarten	ACS	Census tract	2016-2020
Adult Educational Attainment (COI)	Percent adults age 25 and over with a college degree or higher	ACS	Census tract	2016-2020
School Segregation (CHR&R)	Extent to which students within different race/ethnicity groups are unevenly distributed across schools when compared with the racial and ethnic composition of the local population. The index ranges from 0 to 1, with lower values representing a school composition that approximates race and ethnicity distributions in the student populations within the county and higher values representing more segregation.	NCES	County	2020-2021

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
Composite Indices				
Economic Resource Index (COI)	Index combining poverty rate, public assistance rate, homeownership rate, high-skill employment, and median household income	ACS	Census tract	2016-2020
Retail Food Environment Index (PhenX Toolkit)	Number of fast-food restaurants and convenience stores divided by number of grocery stores and supermarkets	USDA Food Environment Atlas	Census tract	2019
Food Environment Index (CHR&R)	The Food Environment Index ranges from a scale of 0 (worst) to 10 (best) and equally weights two indicators of the food environment: 1) Limited access to healthy foods estimates the percentage of the population that is low-income and does not live close to a grocery store. Low income is defined as having an annual family income ≤ 200 percent of the federal poverty threshold for the family size. Living close to a grocery store is defined differently in rural and nonrural areas; in rural areas, it means living less than 10 miles from a grocery store, whereas in nonrural areas, it means less than one mile. 2) Food insecurity estimates the percentage of the population that did not have access to a reliable source of food during the past year.	Created by CHR&R using data from the Community Population Survey, Bureau of Labor Statistics, and ACS	County	Various
Child Opportunity Index (COI)	Weighted composite classification of child opportunity (very low, low, moderate, high, and very high) based on the 29 measures selected by COI	Numerous	Census tract	Various

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Proxy SSDOH Indicators	Description	Publicly Available Data Source	Level of Data	Year(s) Available
County Health Rankings	1 (best) through 50 (worst) ranking of states based on a weighted composite of Z-scores for 35 measures selected by the University of Wisconsin Population Health Institute Each county within a state is also ranked against the other counties in that state based on the same measures.	Numerous	County; state	Various
Social Vulnerability Index	Index score ranging from 0 (lowest vulnerability) to 1 (highest vulnerability) of social vulnerability based on 15 specific social factors from the Census.	Census; ACS	County; census tract	2018

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Appendix C: Annotated Bibliography of Included Peer-Reviewed and Grey Literature Sources

Appendix C.1: Annotated Bibliography of Peer-Reviewed and Grey Literature Sources Relevant to Objective 1

Alameda County Public Health Department. (2008). *Life and Death from Unnatural Causes: Health and Social Inequity in Alameda County.* https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/social-health-equity/docs/unnatcs2008.pdf

> This report describes the Framework for Health Equity, created by the Alameda County Public Health Department and adapted from the Bay Area Regional Health Inequities Initiative Framework for Reducing Health Inequities. This is a foundational article that is included in the environmental scan despite being outside the date range established for inclusion (i.e., published after 2010).

Artiga, S. & Hinton, E. (2018). *Beyond Healthcare: The Role of Social Determinants in Promoting Health and Health Equity*. Kaiser Family Foundation. https://www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

> The brief provides a definition and overview of SDOH and the emerging initiatives to address them both within and outside health care systems.

Bay Area Regional Health Inequities Initiative. (2020). *A Public Health Framework for Reducing Health Inequities*. https://www.barhii.org/barhii-framework

> This framework has been used as a guide to health departments undertaking work to address health inequities, including the California Department of Public Health, which has incorporated it as part of their decision-making framework. Components of the framework include social inequities (e.g., class, race/ethnicity, immigration status), institutional inequities (e.g., corporations and businesses, government agencies, schools), living conditions (e.g., physical environment, social environment, economic and work environment, and service environment), risk behaviors, disease and injury, and mortality, among others.

Black, B., Holditch-Davis, D., & Miles, M. (2009). Life course theory as a framework to examine becoming a mother of a medically fragile preterm infant. *Research in Nursing & Health, 32*(1), 38-49.

> The journal article provides a brief overview of life course theory and the history of the sociological framework. The article also highlights the advantages and limitations of the framework, as well as its historical application.

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Booske, B., Athen, J., Kindig, D., Park, H., & Remington, P. (2010). *County Health Rankings working paper: Different perspectives for assigning weights to determinants of* health. University of Wisconsin Public Health Institute.
https://www.countyhealthrankings.org/sites/default/files/differentPerspectivesForAssigningWeightsToDeterminantsOfHealth.pdf

> This working paper provides an overiew of the County Health Rankings and the calculations used to assign weights to population health outcomes and health factors. The paper details the methods and considerations that guided these weights, including the historical perspective, literature review, weighting schemes from similar models, analytic approach, and pragmatic approach.

Brofenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Harvard University Press.

> This book offers an initial introduction to Brofenbrenner's theoretical perspective for research in human development (social-ecological model).

Brofenbrenner, U. (1986). Ecology of the family as context for human development: research perspectives. *Developmental Psychology*, *22*(6), 723-742.

> Building on Brofenbrenner's previous work, this article reviews research on the influence of external environments on families as context for human development. The article provides additional updates to the social-ecological model.

Brofenbrenner, U. (2005). *Making Human Beings Human: Bioecological Perspectives on Human Development*. Sage Publication Ltd.

> Brofenbrenner's book continues to update and redesign his social-ecological model within the larger scientific study of human development.

Centers for Disease Control and Prevention. (n.d.). *The Social-Ecological Model: A Framework for Prevention.* https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html

> This webpage provides a brief overview of the CDC's use of the social-ecological model as a framework for violence prevention. The site details the different levels of factors, including individual, relationship, community, and societal.

County Health Rankings & Roadmaps. (2022). *Key Activities: Review Your County Health Rankings Data.* https://www.countyhealthrankings.org/key-activities/2

> This webpage summarizes the different types of measures included in the County Health Rankings model. The model also guides counties in how to understand and leverage the model to improve population health.

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Colorado Department of Public Health. (2015). *Health Equity: An Explanatory Model for Conceptualizing the Social Determinants of Health.* https://www.cohealthdata.dphe.state.co.us/chd/Documents/Resources/Social%20Determinants%20of%20Health%20Packet.pdf

> This source describes the Colorado Department of Public Health's health equity model, which demonstrates how social determinants, health factors, national policies, and the life course can impact population health outcomes.

Frank, J., Abel T., Campostrini S., Cook S., Lin V.K., McQueen D.V. (2020). The social determinants of health: time to re-think? *Int J Environ Res Public Health*,*17*(16), 5856.

> This journal article is the product of a 2019 meeting between international public health scholars and stakeholders to review the legacy of the SDOH framework and any associated advantages, limitations, and challenges in implementation. Four primary challenges were identified: the emerging exogenous challenges to global health equity, challenges related to weak policy and practice implementation, challenges related to theory and research, and larger issues concerning modern research as a field.

Ghanbarpour, S., Noguez Mercado, A.P., & Palotai, A. (2020). A language justice framework for culturally responsive and equitable evaluation. *New Directions for Evaluation*, *2020*(166), 37-47. https://doi.org/10.1002/ev.20412

> This article discusses the language justice framework. The authors define and discuss principles of language justice and detail guidance on how to best integrate a language justice framework into evaluation practices.

Guy-Evans, O. (2020, November 20). Bronfenbrenner's ecological systems theory. *Psychology Today*. https://www.simplypsychology.org/Bronfenbrenner.html

> This webpage provides a brief overview of Brofenbrenner's ecological systems theory in the context of child development.

Hagan, J.F., Shaw, J.S., Duncan, P.M. (2017); eds. Promoting lifelong health for families and communities. In: *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, 4*, 15-40. American Academy of Pediatrics. https://publications.aap.org/aapbooks/monograph/478/Bright-Futures-Guidelines-for-Health-Supervision?autologincheck=redirected

> The Bright Futures Guidelines discuss the life course framework as it applies to child development and health. The chapter outlines the family, neighborhood, and community determinants that may influence children's health, which can guide the organization of the MIECHV program performance measure system.

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Halfon, N., Larson, K., Lu, M., Tullis, E., & Russ, S. (2014). Lifecourse health development: past, present and future. *Maternal and Child Health Journal, 18*(2), 344-365. https://link.springer.com/article/10.1007/s10995-013-1346-2

> The paper outlines the evolution of the life course theory framework development in health care. It also details the potential for the framework to transform maternal and child health care systems and outcomes.

Love, B. & Hayes Greene, D. (2018). *The Groundwater Approach: building a practical understanding of structural racism*. The Racial Equity Institute. https://www.isbe.net/Documents/Groundwater-Approach.pdf

> This paper provides an overview of the Groundwater Approach metaphor and the accompanying analytical framework.

Hutchison, E. (2007). A life course perspective; pp. 1-38. In E. Hutchison (ed), *Dimensions of Human Behavior: the Changing Life Course*, (3rd ed.). Sage Publications.

> A chapter from Hutchinson's larger book on the dimensions of human behavior introduces life course theory and perspective. This includes a definition of life course perspective, theoretical roots, basic concepts of the perspective, major themes, and strengths and limitations associated with the life course perspective.

Illinois Department of Public Health. (n.d.). *Understanding social determinants of health*. https://dph.illinois.gov/topics-services/life-stages-populations/infant-mortality/toolkit/understanding-sdoh.html

> This state department of health webpage provides a brief overview of both social and structural determinants of health, within the context of infant mortality.

Kilanowski, J.F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine, 22*(4), 295-297. https://www.tandfonline.com/doi/full/10.1080/1059924X.2017.1358971

> This guest editorial provides an overview of the socio-ecological model as a conceptual model and an initial and developing theory. It also discusses the advantages and limitations of the model.

Krug, E.G., Dahlberg, L.L., Mercy, J.A., Zwi, A.B., Lozano, R. (2002). *World Report on Violence and Health.* World Health Organization. http://apps.who.int/iris/bitstream/handle/10665/42495/9241545615_eng.pdf?sequence=1

> This article describes the social-ecological model, which is a framework for equity and injury prevention. It considers the complex interplay between individuals, relationships, community, and other societal factors. This is a foundational article that is included in the environmental scan despite being outside of the date range established for inclusion.

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Peterson, A., Charles, V., Yeung, D., Coyle, K. (2020, August). The health equity framework: A science- and justice-based model for public health researchers and practitioners. *Health Promotion Practice, 22*(6), 741-746. https://doi.org/10.1177/1524839920950730

> This article describes Education, Training, and Research's (ETR's) health equity framework, which identifies four spheres of influence on individual health outcomes.

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health, Office of Disease Prevention and Health Promotion. (2022). Health equity and health disparities environmental scan. https://health.gov/sites/default/files/2022-04/HP2030-HealthEquityEnvironmentalScan.pdf

> The report describes an environmental scan of how health equity and health disparities are defined and communicated in the field of public health. Research and measurement frameworks include the social-ecological model, the social determinants of health framework, the framework for health equity, the Bay Area Regional Health Inequities Initiative (BARHII) Framework for Reducing Health Inequities, among others.

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (n.d.). Healthy People 2030. https://health.gov/healthypeople/priority-areas/social-determinants-health

> This federal government webpage provides an overview of the Healthy People 2030 SDOH framework, the SDOH domains, and the history of the Healthy People initiative. The webpage also details the measures associated with each SDOH domain.

World Health Organization. (2022). Social determinants of health. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

> This webpage provides an overview of how the WHO defines SDOH and how SDOH can impact health equity. The site also details fact sheets, data, guidelines, and WHO resolutions associated with SDOH.

Yearby, R. (2020). Structural racism and health disparities. *Journal of Law, Medicine & Ethics, 48*(3), 518-526.

> This journal article provides a brief overview of an updated version of the typical SDOH framework. The article discusses key updates to acknowledge the root cause of racial inequalities (structural racism).

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Appendix C.2: Annotated Bibliography for Peer-Reviewed and Grey Literature Sources Relevant to Objective 2

Andrews, K., Parekh, J., Peckoo, S. (2019, August). How to embed a racial and ethnic equity perspective in research: practical guidance for the research process. Child Trends. https://www.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf

> This technical report combines information from a literature review and subject matter experts to provide guidance on embedding a racial and ethnic equity perspective into the various stages of research and evaluation.

Balcazar, F.E., Suarez-Balcazar, Y., & Taylor-Ritzler, T. (2009). Cultural competence: development of a conceptual framework. *Disability and Rehabilitation*, 31(14), 1153-1160. file:///C:/Users/HP/Downloads/Culturalcompetencedevelopmentofaconceptualframework2009balcazarsuarez-balcazarandTaylor.pdf

> Balcazar and colleagues describe the development of a conceptual framework for cultural competence based on a systematic review of previously published conceptual models. They identified 18 unique conceptual models and created their own, empirically validated framework for training researchers.

Brockie, T.N., Hill, K., Davidson, P.M., et al. (2022). Strategies for culturally safe research with Native American communities: an integrative review. *Contemporary Nurse*, 1-25. https://doi.org/10.1080/10376178.2021.2015414

> In this literature review, Brockie et al. identify strategies for promoting cultural safety, accountability, and sustainability when conducting research in Native communities.

Caldwell, J.Y., Davis, J.D., Du Bois, B., et al. (2005). Culturally competent research with American Indians and Alaska Natives: findings and recommendations of the first symposium of the work group on American Indian Research and Program Evaluation Methodology. *American Indian and Alaska Native Mental Health Research*, *12*(1), 1-21. https://coloradosph.cuanschutz.edu/docs/librariesprovider205/journal_files/vol12/12_1_2005_1_caldwell.pdf?sfvrsn=3962e2b9_2

> Caldwell and colleagues emphasize the importance of culture in conducting research with diverse populations of American Indians and Alaska Natives and provide 20 guiding principles for conducting research and program evaluation.

Doane, L.D., Sladek, M.R., Breitenstein, R.S., Park, H., Castro, S.A., Kennedy, J.L. (2018). Cultural neurobiology and the family: Evidence from the daily lives of Latino adolescents. *Developmental Psychopathology, 30*(5), 1779-1796. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6242738/

> The methods section of this evaluation study includes a discussion of the measurement of several indicators that are relevant to Hispanic and Latino culture. The authors include

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background information and literature review of these indicators to describe how they were incorporated into the study.

Domecq, J., Prutsky, G., Elraiyah, T., et al. (2014). Patient engagement in research: a systematic review. *BMC Health Services Research, 14*(89). https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/1472-6963-14-89.pdf

> This peer-reviewed article is a systematic review of literature published before 2014 on community engagement. The authors found that patient engagement in health care research is feasible, but there is no literature supporting one method over another.

Ettinger, A.K., Landsittle, D., Abebe, K.Z., et al. (2021). THRIVE conceptual framework and study protocol: A community-partnered longitudinal multi-cohort study to promote child and youth thriving, health equity, and community strength. *Frontiers in Pediatrics, 9*, 797526. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8856106/

> Researchers developed a framework of child thriving and identified eight key domains for child thriving based on the review of existing frameworks and the input of community partners. The article also includes a discussion of methods for using these domains to generally assess health disparities.

Falkenburger, E., & Harrison, E. (2021, October 28). Community engagement methods. tools and supports for implementing community-engaged research and evaluation approaches. Virtual.

> This presentation by Falkenburger and Harrison at the OPRE Methods Meeting describes the Urban Institute's community engagement methods. It specifically includes descriptions of best practices for community advisory boards.

First Nations Information Governance Centre. (n.d.) *The First Nations Principles of OCAP®.* https://fnigc.ca/ocap-training/

> This grey literature source describes the First Nations Principles of OCAP, which are intended to return control of research data to First Nations tribes.

Ghanbarpour, S., Noguez Mercado, A.P., & Palotai, A. (2020). A language justice framework for culturally responsive and equitable evaluation. *New Directions for Evaluation*, *2020*(166), 37-47. https://doi.org/10.1002/ev.20412

> This peer-reviewed report describes a research framework rooted in language justice, which is defined as the right to communicate in the language in which one feels most comfortable. The authors provide an overview of the language justice framework and describe three core principles: language justice is integral to social justice, language is a tool for transforming thinking and empowering action, and multilingual spaces embrace every perspective.

Israel, B.A., Schulz, A.J., Parker, E.A., & Becker, A.B. (1998). Review of community-based research: assessing partnership approaches to improve public health. *Annual Review of Public Health*, *19*, 173-202. https://www.annualreviews.org/doi/pdf/10.1146/annurev.publhealth.19.1.173

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This foundational article presents eight key principles for CBPR: recognize community as a unit of identity, build on strengths and resources of the community, facilitate collaborative partnerships in all phases of research, integrate knowledge and action for the mutual benefit of all partners, promote a colearning and empowering process that attends to social inequalities, involve a cyclical and iterative process, address health from both a positive and ecological perspective, and disseminate findings/knowledge gained to all partners.

James, R., Hesketh, M.A., Benally, T.R., et al. (2021). Assessing social determinants of health in a prenatal and perinatal cultural intervention for American Indians and Alaska Natives. *International Journal of Environmental Research and Public Health*, *18*(21), 11079. https://doi.org/10.3390/ijerph182111079

The authors provide a case study of a culturally based intervention on maternal and child health in American Indian and Alaska Native communities.

Kilburn, M.R., Lyon, K., Anderson, C., Gutman, P., & Whitesell, N.R. (2018). Methodological considerations for home-visiting research in tribal communities. *Infant Mental Health Journal*, 39(3), 303-311. https://doi.org/10.1002/imhj.21709

This article discusses methodological approaches to conducting research related to home visiting in tribal communities. Areas of discussion include measurement and data collection and conducting community-oriented research.

Laveaux, D., & Christopher, S. (2009). Contextualizing CBPR: key principles of CBPR meet the Indigenous research context. *Pimatisiwin*, 7(1):1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2818123/

This peer reviewed article builds on the principles of CBPR first published by Israel et al. (1998) to match the tribal context. The information has a direct application for conducting research with tribal communities and confirms the importance of using CBPR approaches in this setting.

Morgan, J., Schwartz, C., Ferlatte, O., et al. (2021). Community-based participatory approaches to knowledge translation: HIV Prevention Case Study of the Investigaytors Program. *Archives of Sexual Behavior, 50*(1), 105-117. https://doi.org/10.1007/s10508-020-01789-6

This peer-reviewed article discusses a model of CBPR for knowledge translation that is highly participatory, driven by community members, and centered on capacity building. It presents findings from a focus group with eight volunteer coresearchers to capture the perspectives of community members involved in the CBPR process and to evaluate the strengths and challenges associated with the use of this framework for knowledge translation.

Richardson, W.S., Wilson, M.C., Nishikawa, J., & Hayward, R.S. (1995). The well-built clinical question: a key to evidence-based decisions. *ACP Journal Club*, *123*(3), A12-A13.

This peer-reviewed article outlines the patient (P), intervention (I), comparison (C), and outcome (O) approach (PICO) for research question development.

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Roberts, E., Morales, J., Salvador, M., Lyon, K., Geary, E., Buckless, B. (2018, September). Grantee-led evaluations in the tribal maternal, infant, and early childhood home visiting program: A compilation of grantee evaluation plan profiles. James Bell Associates. https://www.tribaleval.org/wp-content/uploads/tmiechv_evaluation_plan_profile_report_sept_2018_508b3.pdf

> This report introduces and describes the evaluation studies developed by the Tribal MIECHV grantees for evaluators, program implementors, and federal staff looking to assess program impact in complex community contexts. The evaluations may be most useful for individuals thinking about evaluating tribal home visiting and/or early education initiatives.

Rubin, V., Ngo, D., Ross, A., Butler, D., Balaram, N. (2018). Counting a diverse nation: disaggregating data on race and ethnicity to advance a culture of health. PolicyLink. https://www.policylink.org/sites/default/files/Counting_a_Diverse_Nation_08_15_18.pdf

> This report analyzes the key focus areas in data disaggregation to advance a culture of health. The authors also recommend changes and improvements to the conduct of research, data collection, and the policies that define research priorities and allocate resources.

Van Dyke, E.R., Blacksher, E., Echo-Hawk, A.L., Bassett, D., Harris, R.M., & Buchwald, D.S. (2016). Health disparities research among small tribal populations: describing appropriate criteria for aggregating tribal health data. *American Journal of Epidemiology*, *184*(1), 1-6. https://doi.org/10.1093/aje/kwv334

> The authors discuss appropriate criteria for aggregating health data on small tribes, including geographic proximity, community type, environmental exposures, access to resources and services, and economic development.

Wallerstein, N., Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice, 7*(3), 312-323. https://journals.sagepub.com/doi/epdf/10.1177/1524839906289376

> Wallerstein and Duran describe the challenges of CBPR as a dynamic and ever-changing context of the researcher-community relationship, provide examples of these paradoxes from work in tribal communities, discuss the evidence that CBPR reduces disparities, and recommend transforming the culture of academia to strengthen collaborative research relationships.

Walls, M.L., Rumbaugh Whitesell, N., Barlow, A., Sarche, M. (2019). Research with American Indian and Alaska Native populations: Measurement matters. *Journal of Ethnicity in Substance Abuse, 18*(1), 129-149. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7670846/

> This article begins with a socio-historical, cultural, and modern-day contextual background about the American Indian and Alaska Native (AI/AN) population to understand why common measures for substance abuse may not perform as expected in this population. The authors then present a framework for approaching the measuring of health outcomes, risk, and protective factors in the AI/AN population.

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Whitesell, N.R., Bolan, M., Chomos, J.C., Heath, D., Miles, J., Salvador, M., Whitmore, C., & Barlow, A. (2018). Measurement issues in home-visiting research within tribal communities: challenges and strategies. *Infant Mental Health Journal*, *39*(3), 326-334. https://doi.org/10.1002/imhj.21713

> The authors discuss common barriers to measuring outcomes in TMIECHV Programs and provide strategies that address challenges in American Indian and Alaska Native settings.

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Appendix C.3: Annotated Bibliography for Peer-Reviewed and Grey Literature Sources Relevant to Objective 3

Andrews, K., Parekh, J., Peckoo, S. (2019, August). How to embed a racial and ethnic equity perspective in research: practical guidance for the research process. Child Trends. https://www.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf

> This technical report combines information from a literature review and subject matter experts to provide guidance on embedding a racial and ethnic equity perspective into the various stages of research and evaluation.

Annie E. Casey Foundation. (2021). *2021 Kids Count Data Book: State Trends in Child Well-Being.* https://www.aecf.org/resources/2021-kids-count-data-book

> The foundation derives a composite index of overall child well-being for each U.S. state and territory by combining data across economic well-being, education, health, and family/community domains. The report includes analyses of racial inequities in child well-being and state data profiles.

Asada Y. (2005). A framework for measuring health inequity. *Journal of Epidemiology and Community Health*, *59*(8), 700-705. https://doi.org/10.1136/jech.2004.031054

> Asada provides a three-step framework for measuring health inequity, including defining health inequity, deciding on measurement strategies (e.g., issues about health, unit of time, unit of analysis), and quantifying health inequity information (e.g., using the concentration index, using the Gini coefficient, absolute vs. relative differences, sensitivity to population size, and sensitivity to the mean). This is a foundational article that is included in the environmental scan despite being outside the date range established for inclusion (published after 2010).

Califf, R.M. (2018). The ubiquity of data and communication: A double-edged sword for disparities. *Behavioral Science & Policy, 4*(1), 27-37. https://behavioralpolicy.org/wp-content/uploads/2018/12/The-ubiquity-of-data-26-communication-AC2A0double-edged-sword-for-disparities-.pdf

> This article discusses the use of data and communication strategies to reduce health disparities. Although it is not limited to child-serving programs, it includes a focused section on asthma, which is a common pediatric condition.

Chantarat, T., Van Riper, D.C., Hardeman, R.R. (2021, October). The intricacy of structural racism measurement: A pilot development of a latent-class multidimensional measure. *eClinicalMedicine, 40*, 101092. https://doi.org/10.1016/j.eclinm.2021.101092

> This report describes the creation of a multidimensional measure of structural racism through a latent class model. The authors used measures of Black-White residential segregation, inequities in education, employment, income, and homeownership from Public Use Microdata Areas (PUMAs) in the United States.

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Cheng, T.L., Goodman, E., & Committee on Pediatric Research (2015). Race, ethnicity, and socioeconomic status in research on child health. *Pediatrics*, *135*(1), e225-e237. https://publications.aap.org/pediatrics/article/135/1/e225/52883/Race-Ethnicity-and-Socioeconomic-Status-in

> The article provides a discussion of the recommendations from the American Academy of Pediatrics' Committee on Pediatric Research outcomes. They argue that researchers should consider both biological and social mechanisms of action of race, ethnicity, and socioeconomic status (SES) as they relate to the aims and hypothesis of the specific area of investigation. These factors do not act only through biological mechanisms, but have social mechanisms, which interplay with cultural differences as well.

County Health Rankings & Roadmaps. (2022). Key activities: review your county health rankings data. https://www.countyhealthrankings.org/key-activities/2

> This web page is a national county-level health database that provides a snapshot of community health and "a starting point for improving health and increasing health equity." Users can view both aggregated and disaggregated data, including by race/ethnicity for many of the reported measures.

Halfon, N., Aguilar, E., Stanley, L., Hotez, E., Block, E., Janus, M. (2020, October). Measuring equity from the start: disparities in the health development of US kindergartners. *Health Affairs, 39*(10), 1702-1709. 10.1377/hlthaff.2020.00920

> This article describes health inequities in children using data from the Early Development Instrument, a population-level early childhood health measure. The authors describe inequities with regard to neighborhood income and race/ethnicity in a convenience sample of 183,717 kindergartners in 98 U.S. school districts from 2010 to 2017.

Hillemeier, M.M., Lanza, S.T., Landale, N.S., Oropesa, R.S. (2013, December). Measuring early childhood health and health disparities: A new approach. *Maternal and Child Health Journal, 17*(10), 1852-1861. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3615056/

> This article describes the use of a novel latent class analysis to create a multidimensional measure of health status in children. The authors then applied the measure to nationally representative data from the Early Childhood Longitudinal Study, Birth Cohort to evaluate disparities by gender, poverty status, race/ethnicity, and birth weight.

Hughes, D., Levi, J., Heinrich, J., Mittmann, H. (2020, July). Developing a framework to measure the health equity impact of accountable communities for health. Funders Forum on Accountable Health. https://accountablehealth.gwu.edu/sites/accountablehealth.gwu.edu/files/Funders%20Forum%20ACH%20Health%20Equity%20Impact%20July%202020%20(1)_0.pdf

> This report proposes a new health equity assessment framework for accountable communities for health (ACHs) that highlights the main pathways and opportunities to address health equity. The authors included child-serving programs as some of the sources for the analysis of health equity measures and outcomes.

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Keppel, K., Pamuk, E., Lynch, J., et al. (2005). Methodological issues in measuring health disparities. *Vital and Health Statistics. Series 2, Data Evaluation and Methods Research*, (141), 1-16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3681823/

> This source outlines six methodological challenges in measuring health disparities, including: selecting a reference point, using absolute vs. relative measures, framing measures in adverse or favorable events, among others relevant to the assessment of health disparities.

Lanza S.T. (2016). Latent class analysis for developmental research. *Child Development Perspectives, 10(*1), 59-64. https://doi.org/10.1111/cdep.12163

> This source provides a description of latent class analysis, which is discussed in the environmental scan as an innovative, person-centered analytic approach for examining the multidimensionality of health.

Massachusetts Department of Public Health. (2020, October). Racial equity data road map. https://www.mass.gov/service-details/racial-equity-data-road-map

> This technical report is a living document that outlines a number of steps for using data that have been piloted and tested in the Massachusetts Department of Public Health as part of the organization's journey to achieving racial equity. It includes sections on understanding how data demonstrate differences in health outcomes by race and ethnicity and using various data sources to uncover the causes of these differences.

Michigan Department of Community Health. (2013). Michigan health equity status report: Focus on maternal and child health. https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder3/Folder1/Folder2/Folder101/Folder1/Folder201/HE_Status_Report.pdf?rev=ed725cc5b0cb4beaa4d5cc00c02f31e2

> This status report was created as part of the PRIME Project to use data for describing the current state of equity as it relates to the social experience of pregnant women, new mothers, and infants in Michigan. It presents data for 14 indicators related to the social context in which women and children live and provides a snapshot of the nonbiological factors that contribute to Michigan's inequities in maternal and child health.

National Committee for Quality Assurance. (2021, December 13). Health equity measurement in Medicaid: White paper examines state of the field. https://www.ncqa.org/blog/health-equity-measurement-in-medicaid-white-paper-examines-state-of-the-field/

> This white paper used information from peer-reviewed and grey literature, state contracts, public policy statements, and interviews with representatives of state Medicaid agencies to inform five key themes: state Medicaid approaches to overall equity strategy, priority populations and areas of focus, use of measurement, health plan accountability and evaluating performance, and stakeholder and community engagement. NCQA argues that equity and quality measurement are intrinsically connected.

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Owens-Young, J., Bell, C.N. (2020). Structural racial inequities in socioeconomic status, urban-rural classification, and infant mortality in US counties. *Ethnicity & Disease, 30*(3), 389-398. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7360185/

> This study evaluates the relationship between county-level structural racism and race-specific infant mortality rates (IMR) and the role of urban-rural classification on IMR. The authors use county-level data to capture social conditions and variation in the distribution of resources that may be masked in state-level analyses.

Penman-Aguilar, A., Talih, M., Huang, D., Moonesinghe, R., Bouye, K., Beckles, G. (2016). Measurement of health disparities, health inequities, and social determinants of health to support the advancement of health equity. *Journal of Public Health Management & Practice, 22*(Suppl 1), S33-S42. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5845853/

> The article lays a foundation of recommended practices for measuring health disparities, health inequities, and SDOH at the national level to support the advancement of health equity. The recommendations highlight that differences in health and its determinants associated with social position are important to assess, that these should be assessed at multiple levels, and that stakeholder communications need to be considered when developing the assessment strategies.

Reno, R., Hyder, A. (2018). The Evidence Base for Social Determinants of Health as Risk Factors for Infant Mortality: A Systematic Scoping Review. *Journal of Health Care for the Poor and Underserved, 29*(4), 1188-1208. 10.1353/hpu.2018.0091

> This review paper identifies social determinants of health as risk factors for infant mortality and highlights the extent to which research has demonstrated an association between each social determinant and infant mortality. The authors found that of the 89 included studies, the majority failed to account for the complexity of social determinants that impact infant mortality.

Rubin, V., Ngo, D., Ross, A., Butler, D., Balaram, N. (2018). Counting a diverse nation: Disaggregating data on race and ethnicity to advance a culture of health. PolicyLink. https://www.policylink.org/sites/default/files/Counting_a_Diverse_Nation_08_15_18.pdf

> This article describes methodological approaches for bolstering small "n" populations, including using ethno-racial sampling frames or stratified sampling, in-language surveys, and pooled data sets.

U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2008). Healthy People 2020. https://wayback.archive-it.org/5774/20220415232534/https://www.healthypeople.gov/sites/default/files/PhaseI_0.pdf

> This report describes the Healthy People 2020 objectives developed by the U.S. Department of Health and Human Services, along with their approach for measuring health equity and health disparities.

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U.S. Department of Health and Human Services Office of Minority Health (n.d.). Data collection standards for race, ethnicity, sex, primary language, and disability status. https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=23

> Developed by the Office of Minority Health, this source offers a list of current standards for collecting data on race, ethnicity, and language, among other demographic characteristics.

Van Dyke, E.R., Blacksher, E., Echo-Hawk, A.L., Bassett, D., Harris, R.M., & Buchwald, D.S. (2016). Health disparities research among small tribal populations: Describing appropriate criteria for aggregating tribal health data. *American Journal of Epidemiology*, *184*(1), 1-6. https://doi.org/10.1093/aje/kwv334

> The authors discuss appropriate criteria for aggregating health data on small tribes, which include geographic proximity, community type, environmental exposures, access to resources and services, and economic development.

Wang, X., Whittaker, J., Kellom, K., Garcia, S., Marshall, D., Dechert, T., Matone, M. (2020, December). Integrating the built and social environment into health assessments for maternal and child health: Creating a planning-friendly index. *International Journal of Environmental Research and Public Health, 17*(24), 9224. https://www.mdpi.com/1660-4601/17/24/9224

> This article describes the development of a methodology for assessing community risk in maternal and child health (MCH) based on six domains and the integration of 66 indicators across community, environment, socioeconomics, and MCH outcomes. It provides information on a pilot of the methodology conducted in Pennsylvania.

World Health Organization. (n.d.). Health equity. https://www.who.int/health-topics/health-equity#tab=tab_1

> This source provides an overview of health equity, including considerations for the social and structural determinants of health.

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Appendix C.4: Annotated Bibliography for Peer-Reviewed and Grey Literature Sources Relevant to Objective 4

Acevedo-Garcia D, McArdle N, Hardy E., et al. (2014). The child opportunity index: improving collaboration between community development and public health. *Health Aff (Millwood)*, *33*(11), 1948-57.

> This source describes the Child Opportunity Index 1.0, which was developed to measure children's neighborhood opportunity and examine its association with child health outcomes.

Agency for Toxic Substances and Disease Registry. (2021). What is social vulnerability? https://www.atsdr.cdc.gov/placeandhealth/svi/fact_sheet/fact_sheet.html

> This data source is an interactive map of social vulnerability at the census tract level. Social vulnerability (range, 0 to 1) is calculated according to 15 social factors (e.g., poverty, lack of vehicle access, crowded housing) from the U.S. Census that are subsequently organized into four themes: socioeconomic status, household composition, race/ethnicity/language, and housing/transportation.

America's Health Rankings (2021). Health of women and children report; 2021. https://assets.americashealthrankings.org/app/uploads/hwc2021-report.pdf

> This is an annual compilation of data produced by America's Health Rankings of the United Health Foundation. Researchers use 35 data sources, including the ACS and CDC Pregnancy Risk Assessment Monitoring System, to produce 118 measures at the state level. These measures are specific to either women or children and are organized into the five categories that comprise the America's Health Rankings model.

County Health Rankings & Roadmaps. (2022). Key activities: Review your county health rankings data. https://www.countyhealthrankings.org/key-activities/2

> This webpage is a national county-level health database that provides a snapshot of community health and "a starting point for improving health and increasing health equity." Users can view both aggregated and disaggregated data, including data by race and ethnicity for many of the reported measures.

diversitydatakids.org. (2019). What is child opportunity? http://new.diversitydatakids.org/research-library/research-brief/what-child-opportunity?_ga=2.49137572.360675071.1656026623-227280843.1648567133

> This data source measures and maps the quality of resources and conditions that matter for children to develop in a healthy way in the neighborhoods where they live. It provides data at the census tract level and ZIP Code level estimates.

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Federal Interagency Forum on Child and Family Statistics. (2021). America's children: Key national indicators of well-being, 2021. Forum on Child and Family Statistics. https://www.childstats.gov/pdf/ac2021/ac_21.pdf

> This report describes indicators for well-being in children related to their family and social environment, economic circumstances, health care, physical environment and safety, behavior, education, and health.

Hamilton, C.M., Strader, L.C., Pratt, J.G., et al. (2011). The PhenX toolkit: get the most from your measures. *American Journal of Epidemiology, 174*(3), 253-260. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3141081/

> The Phenotypes and eXposures (PhenX) project provides a core set of high-quality, well-established, low-burden measures intended for use in large-scale genomic studies. The toolkit includes links to standards and resources to facilitate data harmonization to legacy data. SDOH collections include current employment status; discrimination; health numeracy; access to health services; access to health technology; disparate health care quality; English proficiency; food insecurity; health literacy; job insecurity; occupational prestige; spirituality; wealth; access to health services; annual family income; biological sex assigned at birth; birthplace; current address and age; race and ethnicity; and educational attainment.

Office of Disease Prevention and Health Promotion. Healthy People 2020. (2022). Maternal, infant, and child health. https://wayback.archive-it.org/5774/20220413183832/https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health

> This grey literature source identifies nationally representative measures for maternal, infant, and child health. It includes baseline levels, target levels, and data sources for each objective.

Hendey, L & Pettit, K. (2021). Envisioning a new future: building trust for data use. Urban Institute. https://www.urban.org/research/publication/envisioning-new-future-building-trust-data-use#:~:text=It%20also%20outlines%20four%20broad,for%20data%20and%20data%20systems

> The report focuses on data collection and open data and frameworks concerning building trust to collect data in communities. Approaches include increasing awareness and skills of people represented in the data to give them more influence and power and building the capacity of people in public health agencies and other organizations to ethically collect, manage, and use data.

MCH Digital Library. (2022). Maternal and child health data and statistics. https://www.mchlibrary.org/professionals/datadbs.php

> This grey literature source is a compilation of sources and websites that present datasets, data tools, and statistics about infants, children, adolescents, pregnant women, and their families.

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Noelke, C., McArdle, N., Baek, M., et al. (2020). Child Opportunity Index 2.0 technical documentation. https://www.diversitydatakids.org/sites/default/files/2020-02/ddk_coi2.0_technical_documentation_20200212.pdf

> This source is the technical documentation report for the Child Opportunity Index. It describes the methods for indicator selection, the data sources for each indicator, and the methodology for calculating the composite score of child opportunity.

Urban Indian Health Institute. (2022). Urban Indian Health Institute community health profiles. https://www.uihi.org/urban-indian-health/data-dashboard/

> The Urban Indian Health Institute (UIHI) provides a data dashboard for an aggregate community health profile and 44 individual community health profiles to support program planning, funding, identification of gaps, and research to support urban Indian and Native American health.

U.S. Census Bureau. (n.d.). American Community Survey (ACS). https://www.census.gov/programs-surveys/acs

> This source describes the American Community Survey as an example of a nationally representative, publicly available data source.

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✳NORC

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Appendix D: References

[1] Ghanbarpour, S., Noguez Mercado, A.P., & Palotai, A. (2020). A language justice framework for culturally responsive and equitable evaluation. *New Directions for Evaluation*, *2020*(166), 37-47. https://doi.org/10.1002/ev.20412

[2] Health Resources and Services Administration, Maternal and Child Health Bureau (2022 June). The Maternal, Infant, and Early Childhood Home Visiting Program. https://mchb.hrsa.gov/maternal-child-health-initiatives/home-visiting-overview

[3] U.S. Department of Health and Human Services, Administration for Children and Families (n.d.). Tribal home visiting in action 2020. https://www.acf.hhs.gov/sites/default/files/documents/occ/thv-2020-infographic-single%20frame.pdf

[4] U.S. Department of Health and Human Services, Administration for Children and Families (n.d.). Home visiting evidence of effectiveness (HomVEE). http://homvee.acf.hhs.gov/

[5] Healthy People 2020. (2022). Social determinants of health. https://wayback.archive-it.org/5774/20220413203948/https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health

[6] Solar O. & Irwin A. (2010); World Health Organization. A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice). file:///C:/Users/HP/Downloads/9789241500852_eng.pdf

[7] Resnicow, K., Baranowski, T., Ahluwalia, J.S., & Braithwaite, R.L. (1999). Cultural sensitivity in public health: defined and demystified. *Ethnicity & Disease, 9*(1), 10-21.

[8] Cerna, O., Condliffe, B., and Wilson, A. (2021) Guiding questions for supporting culturally responsive evaluation practices and an equity-based perspective. https://www.mdrc.org/sites/default/files/Equity-Guiding_Questions.pdf

[9] U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health, Office of Disease Prevention and Health Promotion. (2022). Health equity and health disparities environmental scan. https://health.gov/sites/default/files/2022-04/HP2030-HealthEquityEnvironmentalScan.pdf

[10] Artiga, S. & Hinton, E. (2018). Beyond healthcare: the role of social determinants in promoting health and health equity. Kaiser Family Foundation. https://www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✱NORC

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11 World Health Organization. (2022). Social determinants of health. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

12 Brofenbrenner, U. (1979). The Ecology of Human Development: Experiments by Nature and Design. Harvard University Press.

13 Brofenbrenner, U. (1986). Ecology of the family as context for human development: research perspectives. *Developmental Psychology*, *22*(6), 723-742.

14 Brofenbrenner, U. (2005). Making Human Beings Human: Bioecological Perspectives on Human Development. Sage Publications.

15 Kilanowski, J.F. (2017). Breadth of the socio-ecological model. *Journal of Agromedicine, 22*(4), 295-297.

16 Centers for Disease Control and Prevention. (n.d.). The social-ecological model: A framework for prevention. https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html

17 Guy-Evans, O. (2020, November 20). Bronfenbrenner's ecological systems theory. *Psychology Today*. https://www.simplypsychology.org/Bronfenbrenner.html

18 Krug, E.G., Dahlberg, L.L., Mercy, J.A., Zwi, A.B., Lozano, R. (2002). World report on violence and health. World Health Organization. http://apps.who.int/iris/bitstream/handle/10665/42495/9241545615_eng.pdf?sequence=1

19 U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (n.d.). Healthy People 2030. https://health.gov/healthypeople/priority-areas/social-determinants-health

20 County Health Rankings & Roadmaps. (2022). Key activities: review your county health rankings data. https://www.countyhealthrankings.org/key-activities/2

21 Booske, B., Athen, J., Kindig, D., Park, H., & Remington, P. (2010). County Health Rankings working paper: Different perspectives for assigning weights to determinants of health. University of Wisconsin Public Health Institute. https://www.countyhealthrankings.org/sites/default/files/differentPerspectivesForAssigningWeightsToDeterminantsOfHealth.pdf

22 Illinois Department of Public Health. (n.d.). Understanding social determinants of health. https://dph.illinois.gov/topics-services/life-stages-populations/infant-mortality/toolkit/understanding-sdoh.html

Health Equity Assessment Leveraging Performance Measurement Enhancements in the
Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✴NORC

105

[23] Yearby, R. (2020). Structural racism and health disparities. *Journal of Law, Medicine & Ethics, 48*(3), 518-526. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4306458/

[24] Bay Area Regional Health Inequities Initiative. (2020). A public health framework for reducing health inequities. https://www.barhii.org/barhii-framework

[25] Alameda County Public Health Department. (2008). Life and death from unnatural causes: health and social inequity in Alameda County. https://acphd-web-media.s3-us-west-2.amazonaws.com/media/data-reports/social-health-equity/docs/unnatcs2008.pdf

[26] Love B. & Hayes Greene, D. (2018). The Groundwater Approach: building a practical understanding of structural racism. The Racial Equity Institute. https://www.isbe.net/Documents/Groundwater-Approach.pdf

[27] Peterson, A., Charles, V., Yeung, D., Coyle, K. (2020, August). The Health Equity Framework: A science- and justice-based model for public health researchers and practitioners. *Health Promotion Practice, 22*(6), 741-746. https://doi.org/10.1177/1524839920950730

[28] Black, B., Holditch-Davis, D., & Miles, M. (2009). Life course theory as a framework to examine becoming a mother of a medically fragile preterm infant. *Research in Nursing & Health, 32*(1), 38-49. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2645702/

[29] Hagan, J.F., Shaw, J.S., Duncan, P.M. (eds.) (2017). Promoting lifelong health for families and communities. In: *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, 4*, 15-40. https://downloads.aap.org/AAP/PDF/Bright%20Futures/BF4_LifelongHealth.pdf?_ga=2.268230030.1236819861.1654476607-929400881.1619626826&_gac=1.229642574.1651085941.cj0kcqjw06otbhc_arisaau1yovdcxkc8cjmzqntgqmfsj0_flej6v7e95sxi3exmdjyivnt1vv9rxoaamnzealw_wcb

[30] Colorado Department of Public Health. (2015). Health equity: An explanatory model for conceptualizing the social determinants of health. https://www.cohealthdata.dphe.state.co.us/chd/Documents/Resources/Social%20Determinants%20of%20Health%20Packet.pdf

[31] Frank J, Abel T, Campostrini S, Cook S, Lin VK, McQueen DV. (2020). The social determinants of health: time to re-think? *Int J Environ Res Public Health*,*17*(16), 5856. https://www.mdpi.com/1660-4601/17/16/5856

[32] Hutchison, E. (2007). A life course perspective. In E. Hutchison (ed), *Dimensions of Human Behavior: The Changing Life Course*, (3rd ed., pp. 1-38). Sage Publications.

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✦NORC   106

[33] Wallerstein, N., Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice, 7*(3), 312-323.

[34] Whitesell, N.R., Bolan, M., Chomos, J.C., et al. (2018). Measurement issues in home-visiting research within tribal communities: Challenges and strategies. *Infant Mental Health Journal*, *39*(3), 326–334. https://doi.org/10.1002/imhj.21713

[35] Brockie, T.N., Hill, K., Davidson, P.M., et al. (2022). Strategies for culturally safe research with Native American communities: an integrative review. *Contemporary Nurse*, 1-25. https://www.tandfonline.com/doi/full/10.1080/10376178.2021.2015414

[36] Caldwell, J.Y., Davis, J.D., Du Bois, B., et al. (2005). Culturally competent research with American Indians and Alaska Natives: findings and recommendations of the first symposium of the Work Group on American Indian Research and Program Evaluation Methodology. *American Indian and Alaska Native Mental Health Research*, *12*(1), 1-21. https://coloradosph.cuanschutz.edu/docs/librariesprovider205/journal_files/vol12/12_1_2005_1_caldwell.pdf?sfvrsn=3962e2b9_2

[37] Kilburn, M.R., Lyon, K., Anderson, C., Gutman, P., & Whitesell, N.R. (2018). Methodological considerations for home-visiting research in tribal communities. *Infant Mental Health Journal*, 39(3), 303-311. https://doi.org/10.1002/imhj.21709

[38] Israel, B.A., Schulz, A.J., Parker, E.A., & Becker, A.B. (1998). Review of community-based research: assessing partnership approaches to improve public health. *Annual Review of Public Health*, *19*, 173-202. https://www.annualreviews.org/doi/10.1146/annurev.publhealth.19.1.173?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed

[39] Laveaux, D., & Christopher, S. (2009). Contextualizing CBPR: Key principles of CBPR meet the Indigenous research context. *Pimatisiwin*, 7(1). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2818123/

[40] Balcazar, F.E., Suarez-Balcazar, Y., & Taylor-Ritzler, T. (2009). Cultural competence: development of a conceptual framework. *Disability and Rehabilitation*, 31(14), 1153-1160. https://doi.org/10.1080/09638280902773752

[41] Ghanbarpour, S., Noguez Mercado, A.P., & Palotai, A. (2020). A language justice framework for culturally responsive and equitable evaluation. *New Directions for Evaluation*, *2020*(166), 37-47. https://doi.org/10.1002/ev.20412

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✳NORC

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42 Morgan, J., Schwartz, C., Ferlatte, O., et al. (2021). Community-based participatory approaches to knowledge translation: HIV prevention case study of the Investigaytors Program. *Archives of Sexual Behavior, 50*(1), 105-117. https://doi.org/10.1007/s10508-020-01789-6

43 Ettinger, A.K., Landsittle, D., Abebe, K.Z., et al. (2021). THRIVE conceptual framework and study protocol: A community-partnered longitudinal multi-cohort study to promote child and youth thriving, health equity, and community strength. *Frontiers in Pediatrics, 9*, 797526. https://www.frontiersin.org/articles/10.3389/fped.2021.797526/full

44 Andrews, K., Parekh, J., Peckoo, S. (2019, August). How to embed a racial and ethnic equity perspective in research: Practical guidance for the research process. Child Trends. https://www.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf

45 Rubin, V., Ngo, D., Ross, A., Butler, D., Balaram, N. (2018). Counting a diverse nation: Disaggregating data on race and ethnicity to advance a culture of health. PolicyLink. https://www.policylink.org/sites/default/files/Counting_a_Diverse_Nation_08_15_18.pdf

46 First Nations Information Governance Centre. (n.d.) The First Nations Principles of OCAP®. https://fnigc.ca/ocap-training/

47 Walls, M.L., Rumbaugh Whitesell, N., Barlow, A., Sarche, M. (2019). Research with American Indian and Alaska Native populations: Measurement matters. *Journal of Ethnicity in Substance Abuse, 18*(1), 129-149. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7670846/

48 James, R., Hesketh, M.A., Benally, T.R., Johnson, S.S., Tanner, L.R., & Means, S.V. (2021). Assessing social determinants of health in a prenatal and perinatal cultural intervention for American Indians and Alaska Natives. *International Journal of Environmental Research and Public Health*, *18*(21), 11079. https://www.mdpi.com/1660-4601/18/21/11079

49 Van Dyke, E.R., Blacksher, E., Echo-Hawk, A.L., Bassett, D., Harris, R.M., & Buchwald, D.S. (2016). Health disparities research among small tribal populations: Describing appropriate criteria for aggregating tribal health data. *American Journal of Epidemiology*, *184*(1), 1-6. https://doi.org/10.1093/aje/kwv334

50 Richardson, W.S., Wilson, M.C., Nishikawa, J., & Hayward, R.S. (1995). The well-built clinical question: a key to evidence-based decisions. *ACP Journal Club*, *123*(3), A12-A13.

51 Walls, M.L., Rumbaugh Whitesell, N., Barlow, A., Sarche, M. (2019). Research with American Indian and Alaska Native populations: Measurement matters. *Journal of Ethnicity in Substance Abuse, 18*(1), 129-149. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7670846/

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✳NORC | 108

[52] Domecq, J., Prutsky, G., Elraiyah, T., et al. (2014). Patient engagement in research: a systematic review. *BMC Health Services Research, 14*(89). https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/1472-6963-14-89.pdf

[53] Falkenburger, E., & Harrison, E. (2021, October 28). Community engagement methods. Tools and supports for implementing community-engaged research and evaluation approaches. *Virtual.*

[54] National Committee for Quality Assurance. (2021). Health equity measurement in Medicaid: White paper examines state of the field. https://www.ncqa.org/blog/health-equity-measurement-in-medicaid-white-paper-examines-state-of-the-field/

[55] Hughes, D., Levi, J., Heinrich, J., Mittmann, H. (2020, July). Developing a framework to measure the health equity impact of accountable communities for health. Funders Forum on Accountable Health. https://accountablehealth.gwu.edu/sites/accountablehealth.gwu.edu/files/Funders%20Forum%20ACH%20Health%20Equity%20Impact%20July%202020%20(1)_0.pdf

[56] Asada Y. (2005). A framework for measuring health inequity. *Journal of Epidemiology and Community Health*, *59*(8), 700-705. https://jech.bmj.com/content/jech/59/8/700.full.pdf

[57] Penman-Aguilar, A., Talih, M., Huang, D., Moonesinghe, R., Bouye, K., Beckles, G. (2016). Measurement of health disparities, health inequities, and social determinants of health to support the advancement of health equity. *Journal of Public Health Management & Practice, 22*(Suppl 1), S33-S42. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5845853/

[58] U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2008). Healthy People 2020. https://wayback.archive-it.org/5774/20220415232534/https://www.healthypeople.gov/sites/default/files/PhaseI_0.pdf

[59] World Health Organization. (n.d.). Health equity. https://www.who.int/health-topics/health-equity#tab=tab_1

[60] Massachusetts Department of Public Health. (2020). Racial equity data road map. https://www.mass.gov/service-details/racial-equity-data-road-map

[61] Cheng, T., Goodman, E., & Committee on Pediatric Research (2015). Race, ethnicity, and socioeconomic status in research on child health. *Pediatrics*, *135*(1), e225-e237. https://publications.aap.org/pediatrics/article/135/1/e225/52883/Race-Ethnicity-and-Socioeconomic-Status-in

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✳NORC | 109

[62] U.S. Department of Health and Human Services; Office of Minority Health (n.d.). Data collection standards for race, ethnicity, sex, primary language, and disability status. https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=2&lvlid=23

[63] Califf, R.M. (2018). The ubiquity of data and communication: A double-edged sword for disparities. *Behavioral Science & Policy, 4*(1), 27-37. https://behavioralpolicy.org/wp-content/uploads/2018/12/The-ubiquity-of-data-26-communication-AC2A0double-edged-sword-for-disparities-.pdf

[64] Michigan Department of Community Health. (2013). Michigan health equity status report: Focus on maternal and child health. https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder3/Folder1/Folder2/Folder101/Folder1/Folder201/HE_Status_Report.pdf?rev=ed725cc5b0cb4beaa4d5cc00c02f31e2

[65] Reno, R. & Hyder, A. (2018). The evidence base for social determinants of health as risk factors for infant mortality: A systematic scoping review. *Journal of Health Care for the Poor and Underserved, 29*(4), 1188-1208. 10.1353/hpu.2018.0091

[66] Wang, X., Whittaker, J., Kellom, K., et al. (2020). Integrating the built and social environment into health assessments for maternal and child health: Creating a planning-friendly index. *International Journal of Environmental Research and Public Health, 17*(24), 9224. https://www.mdpi.com/1660-4601/17/24/9224

[67] Annie E. Casey Foundation. (2021). Kids count data book: State trends in child well-being. https://www.aecf.org/resources/2021-kids-count-data-book

[68] Keppel, K., Pamuk, E., Lynch, J., et al. (2005). Methodological issues in measuring health disparities. *Vital and Health Statistics. Series 2, Data Evaluation and Methods Research*, (141), 1-16. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3681823/

[69] Owens-Young, J. & Bell, C. (2020). Structural racial inequities in socioeconomic status, urban-rural classification, and infant mortality in US counties. *Ethnicity & Disease, 30*(3), 389-398. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7360185/

[70] Halfon, N., Aguilar, E., Stanley, L., Hotez, E., Block, E., & Janus, M. (2020). Measuring equity from the start: Disparities in the health development of US kindergartners. *Health Affairs, 39*(10), 1702-1709. 10.1377/hlthaff.2020.00920

[71] Chantarat, T., Van Riper, D., Hardeman, R. (2021). The intricacy of structural racism measurement: A pilot development of a latent-class multidimensional measure. *eClinicalMedicine, 40*, 101092. https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00372-2/fulltext

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✳NORC

110

[72] Hillemeier, M., Lanza, S., Landale, N., & Oropesa, R. (2013). Measuring early childhood health and health disparities: A new approach. *Maternal and Child Health Journal, 17*(10), 1852-1861. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3615056/

[73] U.S. Census Bureau. (n.d.). American Community Survey (ACS). https://www.census.gov/programs-surveys/acs

[74] Acevedo-Garcia D, McArdle N, Hardy E., et al. (2014). The child opportunity index: improving collaboration between community development and public health. *Health Aff (Millwood)*, *33*(11), 1948-57. 10.1377/hlthaff.2014.0679

[75] diversitydatakids.org. (2019). What is child opportunity? http://new.diversitydatakids.org/research-library/research-brief/what-child-opportunity?_ga=2.49137572.360675071.1656026623-227280843.1648567133

[76] Noelke, C., McArdle, N., Baek, M., et al. (2020). Child Opportunity Index 2.0 technical documentation. http://new.diversitydatakids.org/sites/default/files/2020-01/ddk_coi2.0_technical_documentation_20200115_1.pdf

[77] America's Health Rankings (2021). Health of women and children report. https://assets.americashealthrankings.org/app/uploads/hwc2021-report.pdf

[78] Agency for Toxic Substances and Disease Registry. (2021). What is social vulnerability? https://www.atsdr.cdc.gov/placeandhealth/svi/fact_sheet/fact_sheet.html

[79] Urban Indian Health Institute. (2022). Urban Indian Health Institute community health profiles. https://www.uihi.org/urban-indian-health/data-dashboard/

[80] MCH Digital Library. (2022). Maternal and child health data and statistics. https://www.mchlibrary.org/professionals/datadbs.php

[81] Federal Interagency Forum on Child and Family Statistics. (2021). America's children: Key national indicators of well-being; 2021. Forum on Child and Family Statistics. https://www.childstats.gov/pdf/ac2021/ac_21.pdf

[82] Hamilton, C.M., Strader, L.C., Pratt, J.G., et al. (2011). The PhenX Toolkit: get the most from your measures. *American Journal of Epidemiology,* 174(3), 253-260. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3141081/

Health Equity Assessment Leveraging Performance Measurement Enhancements in the Maternal, Infant, and Early Childhood Home Visiting Program (HEAL-PM)

✳NORC

111

83 Hendey, L. & Pettit, K. (2021). Envisioning a new future: Building trust for data use. https://www.urban.org/sites/default/files/publication/105144/envisioning-a-new-future-building-trust-for-data-use.pdf

84 Doane, L.D., Sladek, M.R., Breitenstein, R.S., Park, H., Castro, S.A., Kennedy, J.L. (2018). Cultural neurobiology and the family: Evidence from the daily lives of Latino adolescents. *Developmental Psychopathology, 30*(5), 1779-1796. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6242738/