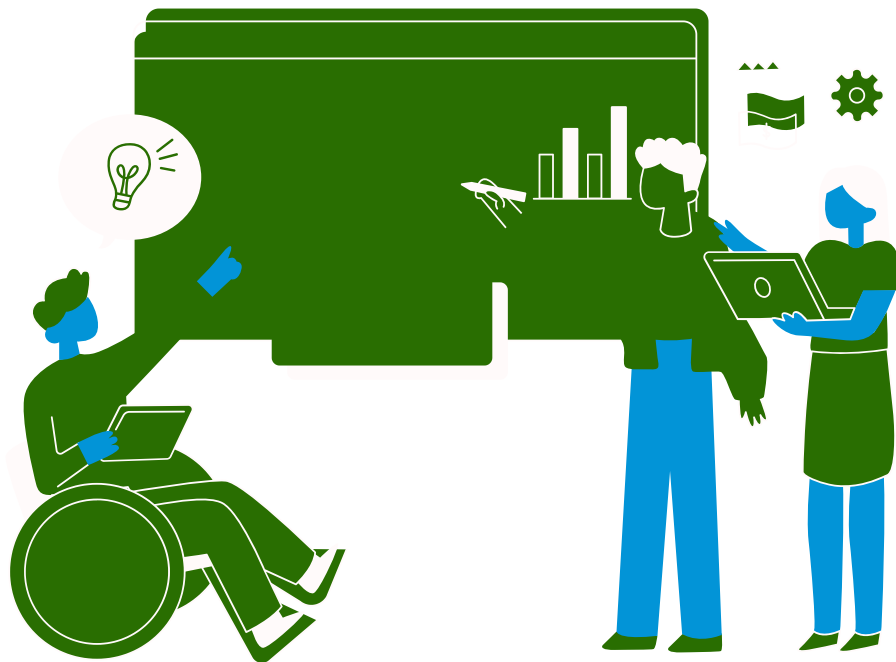


RESEARCH & DATA EQUITY GUIDE

City of Alexandria
Race and Social Equity Office
May 2023



City of Alexandria
Office of Performance
Analytics

FOREWORD

Welcome to the Research & Data Equity Guide!

Data-driven decision-making is a central goal of governments and non-governmental organizations these days and for good reason. Organizations want to steward scarce resources effectively to tackle the serious challenges we face. Data informs our understanding of the problems we seek to solve; it allows us to determine whether our interventions are successful (and for whom); and it can reveal more effective alternatives to address historical marginalization. Data is also an essential tool in an organizations' journey toward racial and social equity - we cannot fix disparities if we cannot diagnose them. Because data is critical to providing public goods and services effectively and equitably, research and data skills (i.e., asking questions, collecting and analyzing data, and telling stories with that data) are essential for those who do this work.

Data is a powerful tool indeed, but neither research nor data is inherently neutral or objective. Research involves numerous subjective design decisions - from the types of questions we ask to the outcomes that we measure to the way that we engage (or fail to engage) communities with lived experience - that often go unrecognized and can perpetuate inequities. Individuals choose what to measure and how. The researcher is often at the center of the process, which can obscure the complex realities that communities experience.

Greater attention has recently been directed to understanding how to conduct equity-driven policy and program research, as well as data collection and analysis. The City of Alexandria's Research & Data Equity Guide synthesizes these discussions and provides a toolkit for an equity-driven approach to investigating policy challenges that are important to our communities.

The foundation for racial equity begins with asking questions, collecting and analyzing data, defining performance outcomes, and presenting the results of your work to your stakeholders. By using an equity-driven research approach, your team will be better positioned to make sustainable and inclusive change.

EQUITY-DRIVEN POLICY & PROGRAM RESEARCH

Equity-driven research requires an intentional consideration of how marginalization influences outcomes (e.g., how institutionalized racism impacts BIPOC homeownership).

While our policies, programs, and initiatives may not always seem directly related to equity on the surface, structural inequities are embedded in the context of nearly every project and are often perpetuated within projects, from conceptualization and implementation. Using the **Racial Equity Toolkit** can help interrupt this cycle. Many existing policies and programs have been executed in an environment of structural racism and institutionalized discrimination. When we fail to name and center race, despite our intentions, we reinforce racial inequities.

No project can address racial inequities without analyzing existing disparities and investigating how they came to be. If you are uncertain about whether your work focuses on racial equity, ask the following questions of your project.

These questions can help us explicitly commit to racial equity in our policy and program research:



What does race-disaggregated data indicate about the problem or issue we aim to address?



How will structural barriers, institutional racism, and/or historical discrimination be evaluated in our investigation?



How will Black, Indigenous, and People of Color (BIPOC) communities be empowered throughout the research process?

TABLE OF CONTENTS

I. Introduction

II. Identifying & Describing Problems

1. Reviewing Existing Literature
2. Using Data to Identify & Describe Problems
 - A. Authentically Centering the Community in Data Usage
 - B. Using Primary Data
 - C. Using Secondary Data
 - D. Bias in Data
3. Structuring Projects to Address Problems

III. Developing an Evaluation Plan

1. Logic Models as an Evaluation Framework
2. Establishing Indicators
3. Selecting an Evaluation Design

IV. Collecting Data for Evaluation

1. Primary Data Collection
 - A. Data Collection Tools
 - B. Representative Sampling
 - C. Accessibility of Data Collection Tools
 - D. Demographic Questions

V. Analyzing Data with Equity

1. Quantitative Analysis
 - A. Disaggregated Data
 - B. Measuring Disparity
 - C. Equity in Statistical Analysis
2. Qualitative Analysis

VI. Communicating Your Project, Design, Evaluation, and Results

1. Data Visualization
2. Equity in Data Visualization
3. Sharing Work with the Community

Appendix A: Demographic Data Collection

Appendix B: Data Visualization Checklist

INTRODUCTION

Eliminating racial inequities requires us not only to identify the extent and impacts of those inequities, but also to use this knowledge to develop policies, programs, and initiatives with racial equity at the core.

The Research & Data Equity Guide supports Alexandria's ability to use data in service of its equity goals, to explore inequities related to City programs and services, and to design and evaluate equitable interventions. This guide provides a framework for applying equity principles in a variety of processes relevant to the policy process. It also provides technical support for users as they work through the **Racial Equity Toolkit** and generate Racial Equity Action Plans. City staff and community partners are invited to use whichever components of the guide are most applicable to their work.

The Research and Data Equity Guide outlines a cohesive set of equity-centered and actionable research practices for the purposes of equipping teams to:

- Equitably and ethically conduct background research to identify social problems,
- Use evidence to design interventions that actively address historical marginalization, and
- Evaluate the results of those interventions in ways that reflect the needs and preferences of directly impacted BIPOC communities.

The Research & Data Equity Guide is organized by the stages in a typical project* design cycle, each of which requires specific tools and practices. While this guide is organized chronologically, we recognize that users may come to this work from different entry points. One user may be identifying and characterizing a public policy problem, while another may be trying to determine how to measure the impact of policies on racial and social inequity. No matter where your team is in the process, the skills and practices presented in this Research & Data Equity Guide are adaptable to a variety of needs and entry points.

Sections **Two** and **Three** outline the skills and practices relevant to project ideation including identifying problems, root cause analysis, and determining the outcomes you want to evaluate. Sections **Four** and **Five** walks through embedding equity in data collection and analysis. Section **Six** describes strategies for communicating your work with a wide variety of audiences, including communities directly impacted by the issue that you are working to address.

*The term "project" is used throughout this guide to denote policies, programs, and initiatives.

IDENTIFYING & DESCRIBING PROBLEMS



An incorrect diagnosis will lead to failed treatment. Even a great cure applied to the wrong problem stands a good chance of making matters worse.

Crystal Hayling
Libra Foundation



What we identify as public policy problems and **the process we use** to identify them inevitably determine how resources are allocated to solve them. Rigorously researched, equity-centered questions and problem statements lay the foundation for effective and meaningful equity-centered projects. Problem statements guide the choices around selecting accurate indicators, data collection and analysis methods, and dissemination strategies. Equity-driven problem identification can ensure that our work prioritizes equitable outcomes for historically marginalized groups.

Equity-driven problem statements should support actionable interventions with measurable outcomes and reflect the community's values and perspectives. Problem statements should be explicitly framed to address inequities (i.e., regarding race, gender, sexual orientation, socioeconomic status, etc.).¹

To explicitly incorporate equity in your research questions/problem statements, ask the following questions:²

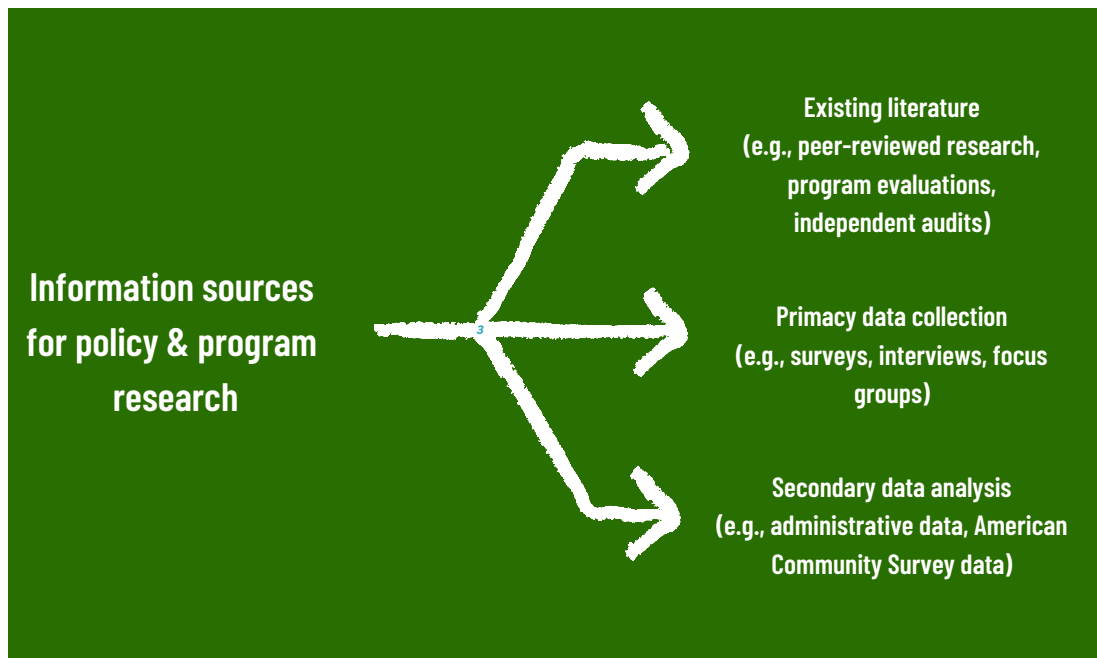
- What specific problem or issue are we addressing?
- Does the problem or issue negatively impact BIPOC communities? A specific gender identity? A specific class? An intersection of identities (e.g., BIPOC women)?
- Does valid* and reliable data exist to show disparities across groups?
- What policies, institutions, actors, or social factors have shaped these inequities, disparities, and/or disparate impacts? Who holds the power to reduce and eliminate these inequities?

When identifying and describing policy problems, your team can make use of several sources of information including existing empirical literature, primary data collection and analysis, and secondary data analysis.

*Validity in research and data analysis takes on several definitions that we discuss later in the Research and Data Equity Guide. In this instance, we use the word valid to mean that the data measures what we think it measures.

IDENTIFYING & DESCRIBING PROBLEMS

Figure 1. Sources of information for policy & program research



REVIEWING EXISTING LITERATURE

Existing literature can be a powerful source of information as your team identifies and defines the scope of the problems you are trying to solve. Examples of existing literature include scholarly research articles, evaluations of programs in other jurisdictions, and independent audit reports. The resources to the right are good options to jumpstart your research when first identifying and describing a problem.

It is important to review existing literature with a critical eye. Consider evaluating existing literature to ensure that it is credible and useful for your project. The following questions can guide your evaluation:³

- Who are the authors? What expertise do they have relative to the issue? Are the authors members of the communities they are studying? Are they impacted by the issues they are studying?
- Who funded the research? Does the funder have a vested interest in the outcomes of the research that could affect their neutrality?
- Can the information be cross-checked with other resources?
- What methods and data are used to draw conclusions? (See [Collecting Data for Evaluation](#) and [Analyzing Data with Equity](#))
 - Is the methodology used to draw conclusions explained in detail?
 - Is the raw data available?

Where to Look for Existing Literature

- **Alexandria Library Research Guides & Databases:** The guides cover a range of topics and related resources and databases researched by librarians
- **Digital Commons Network:** A repository of free, full-text scholarly articles and research curated by university librarians
- **JSTOR:** Archive of primary sources, including academic journals and books across 50 disciplines
- **Mathematica:** Mathematica is a research organization that provides social policy research, evaluation, and data science
- **Congressional Research Service Reports:** Inventory of reports, memos, and briefings on public policy issues
- **Library of Congress Research Guides:** Subject and research guides prepared by library staff.
- **American Institutes for Research:** Inventory of behavioral and social science research and evaluation
- **Center for the Study of Social Policy:** Evaluation and research aimed at a racially, socially, and economically just society
- **RAND Research & Racial Equity Projects:** Think tank and research and analysis covering topics to benefit the public good.
- **Pew Research Center:** Fact tank examining public opinion on social issues.
- **Urban Institute:** Evidence-based research and data on economic and social policy issues and equity.
- **National Bureau of Economic Research:** Research and analysis on economic issues

When reviewing literature, it is important to keep in mind how systems of oppression influence everything, including the research process; equity is not always explicitly considered during the research design and publication process. For instance, historically marginalized populations are often under- or misrepresented in existing research, which has dire consequences on what we can learn about how interventions impact BIPOC communities.⁴ It is important to view research critically and to carefully assess how (if at all) the research considers the concept of equity.⁵

Evaluating Existing Literature with an Equity Lens

The questions below can be used to assess the extent to which existing literature considers equity.⁶

How are race, racism, oppression, power, and privilege described?

- Are these concepts defined or discussed?
- Do the definitions match up with your team's understanding?
- Does the research acknowledge differences in power, lived experience, and perspective? How does it describe those differences?
- Is the research applicable to the communities you are trying to serve?

Do the measured outcomes consider equity?

- How are *effectiveness* and/or *success* defined? What are the ideal outcomes the resource aims to create? What are their goals?
- If something is described as effective, is it equally effective for everyone? Are group-level analyses presented?
- How do the outcomes for BIPOC communities compare to outcomes for white communities?

What assumptions* does the research make?

- What assumptions do the researchers make about groups of people?
- What assumptions are made about relationships between a group of people and other institutions? (e.g., the relationship between the group and law enforcement, healthcare institutions, etc.)
- What assumptions are made about how change happens?
- Are the assumptions evidence-based?

*All research makes assumptions. These assumptions are not inherently problematic when they are evidence-based and transparently communicated. However, researchers may make assumptions based on stereotypes and biases (implicit or explicit).

Utilizing implicit bias tools (like the [City of Alexandria's Racial Equity Tool Self-Assessment](#)) can increase your awareness of personal biases and help you recognize when they show up in the research process.

USING DATA TO IDENTIFY & DESCRIBE PROBLEMS

Sometimes your team will need to collect data to better understand the problem you are trying to solve. Existing literature can tell us a great deal about policy problems and interventions in other jurisdictions or even nationally, but collecting data that describes the specific communities you aim to serve can help you capture the nuances of the problem and potential interventions. There are several places in the data collection and analysis process that can either promote or hinder equity.

While your team should develop policies, programs, and initiatives using the most reliable available data, data collection and analysis will also be critical in terms of evaluating those policies, programs, and initiatives. While this section mainly describes data collection and analysis in the context of identifying and describing policy problems, all the concepts and resources can be applied to evaluation as well. [Developing an Evaluation Plan](#) elaborates on how to utilize data collection and analysis specifically for that purpose.

AUTHENTICALLY CENTERING THE COMMUNITY IN DATA USAGE

To accurately reflect community needs, **the community must be involved in the project research**, including the process of problem identification. Community participation in policy research has often been approached in ways that are extractive, do not represent the lived experiences of marginalized communities, and do not necessarily align with the communities' needs and values.⁸ When community participants feel that their contributions are not being included with fidelity or if there is no immediate value to participation, they may feel exploited and/or may no longer feel safe to engage with your organization (See the [Racial Equity Toolkit](#)).

If the community's lived experience is not represented in your research – that is, if participation is treated as "checking off a box", rather than intentional and inclusive collaboration – your results will be skewed. Commitment to thoughtful engagement can help ensure that the population is accurately and equitably reflected in the research process, including data collection. Community members may face different barriers to participation in civic spaces (e.g., limited time, lack of access to childcare or transportation, institutional distrust), so understanding the barriers and helping community members overcome those barriers is absolutely essential for meaningful community engagement.⁹

Using a participatory or reciprocal research approach to gather information will help your team more respectfully engage communities and better understand the issues you aim to address. **Reciprocal research** creates immediate, concrete benefits for community participants while they are participating in the project research, rather than waiting until the project has finished to see its impacts.¹⁰ Community input and strategies described in the [Collecting Data for Evaluation](#) section can help your team engage communities that consistently face systematic barriers to participation.

USING PRIMARY DATA

Primary data refers to data that is collected firsthand.

For example, your organization might ask residents about an issue in their neighborhood to gain a deeper understanding of their lived experience or send out an opinion survey about an upcoming project.

A few examples of ways to collect primary data from residents are surveys, polls, focus groups, community meetings. Please see [Collecting Data for Evaluation](#) and [Analyzing Data with Equity](#) for guidance on tools that are appropriate to your research.

USING SECONDARY DATA

Secondary data refers to information that may be relevant to your project design and analysis needs, but was not originally collected for that purpose.

Sometimes, existing data sources (e.g., administrative data from the U.S. Census Bureau, the Centers for Disease Control and Prevention, data from your very own department, or the [City's data repository](#)) may be sufficient to guide your understanding of the policy problem and its causes. Secondary data sources range in size, complexity, and accessibility – for example, you can simply download and use American Community Survey (ACS) data, but you might not be able to get access to data a researcher at the University of Virginia collected about a specific neighborhood in Alexandria. Be mindful of names, organizations, and initiatives that come up during your background research. These are good contacts to reach out to who may have existing data relevant to your research question; with a data-sharing agreement, they may be willing to share. Additionally, [Racial Equity Tools](#) maintains a list of secondary data sources that your team may find relevant to your work.

When using secondary data of any kind, use caution - not all data are created equal. In order to be confident in the reliability and validity of the data, we need to have access to **metadata**: *Who collected the data? How was the data collected (methodology)? How complete is the data (any missing data and why)?* Secondary data that excludes this information or offers no access to it should be regarded as suspicious.

Another key issue with secondary data is representation. Because your team will not have control over the sampling method, the degree to which different populations and communities are represented in the data can be uncertain.

Consider the following questions when evaluating secondary data sources:¹¹

- **Coverage:** how much of the target group is included in the available data? Is a relevant, broader population missing from this data source? Are groups missing due to study design and values?
- **Timeliness:** how recently were the data collected? What else was happening in the context of the time that it was collected?
- **Disaggregation:** for what subgroups can the data be presented? How are data about demographic subgroups collected and decided in the source?
- **Detail:** how specific is the information to your area of interest? Are the measures appropriate for what you're looking at?
- **Bias:** are there factors that might lead to misleading or inaccurate conclusions? How complete is the data? How well was it collected or kept? (see [Bias in Data](#))

We won't be able to eliminate all bias from research but we can do our best to be aware of and mitigate it to allow for more accurate conclusions. Relevant secondary data is an excellent tool but can perpetuate systems of inequity if not viewed and questioned through a critical lens.

BIAS IN DATA COLLECTION AND ANALYSIS

Bias can influence our ability to assess equity in outcomes accurately.¹² This section describes statistical bias in data collection and analysis, which is different than personal bias. While personal and statistical bias can occur simultaneously, statistical bias specifically refers to flaws in data collection and analysis.

Whether you are using data to describe and identify a problem or designing a data collection method to assess a current project, protecting against bias can lead to more equitable outcomes. There are many types of bias, two examples of which are given below. To explore the various types of bias and opportunities to mitigate it, consult these resources:

- [Types of Bias in Research | Definition & Examples](#)
- [Types of Statistical Bias to Avoid](#)
- [Types of Biases in Data](#)
- [Bias in Data Analysis](#)
- [Examples of Bias in Surveys](#)

Bias in Data Collection

While there are several biases that can occur during data collection, one of the most significant threats to equity-driven research, **selection bias**, occurs when participants are selected for data collection in a way that does not accurately represent the community of interest.

Selection Bias Example¹³

Apple just launched a new generation of Apple watches. They send a survey to the first 1,000 people who purchased the watch and receive extremely positive feedback. Since these customers were the first to purchase, they are likely more likely to be excited about the product and review it positively.

Selecting research participants at random in primary data collection can help mitigate this bias and ensure your data is a good representation of reality.

Bias in Data Analysis

In data analysis, bias can influence the interpretation of data; that is, how your team makes sense of the information you collected. Confirmation bias occurs when we unconsciously or consciously interpret results to support original, preexisting assumptions and hypotheses about an outcome.¹⁴ For example, a researcher believes that logic games can help improve memory in older patients. They conduct an experiment and while reviewing data, subconsciously focus on the data that confirms their preexisting belief rather than paying attention to data that might disprove their initial hypothesis. In a laboratory experiment, these biases are much easier to check and avoid, but in the context of public policy, recognizing and avoiding confirmation bias is a very serious concern.

To learn more about building bias checks into the research design process, read [**Everyone is Biased: How Reboot Builds Bias Checks into Design Research.**](#)

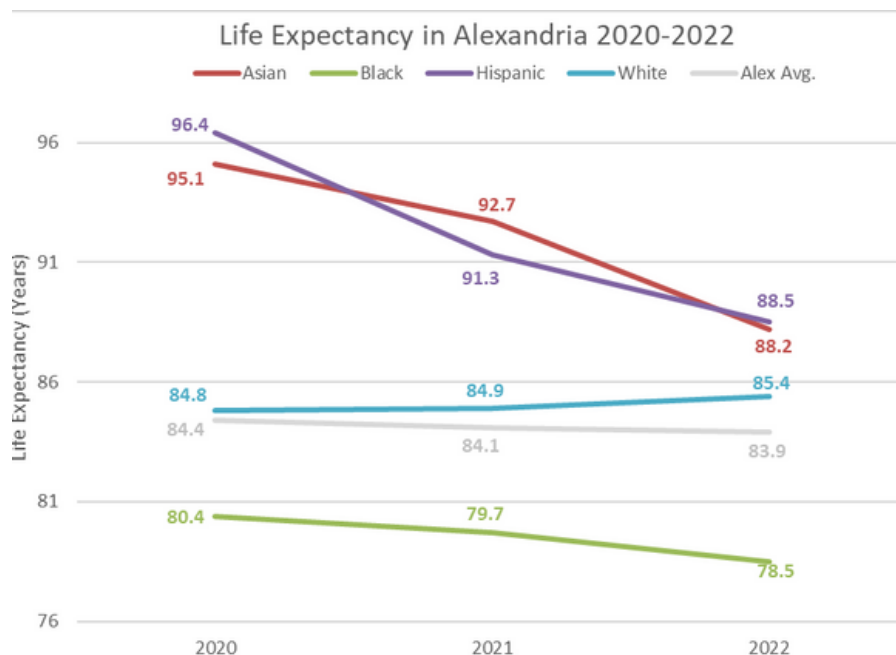
STRUCTURING PROJECTS TO ADDRESS PROBLEMS

As your team identifies the issue or disparity you are trying to address, the next step is to understand why that problem or issue exists. Racial and other social disparities exist due to complicated and intersecting histories of structural oppression. In order to appropriately address those disparities, it is imperative that we understand what those histories are and how they shaped the current landscape.

ROOT CAUSE ANALYSIS

Root cause analysis (RCA) can help you identify the systemic societal factors that cause inequities. Root cause analysis is a data-driven historical exploration. Your team will begin with the issue you have observed and work backwards to determine where to intervene in order to have the greatest impact. Consider, for example, the issue of life expectancy. As service providers, the City and community-based organizations have a compelling interest in ensuring that all Alexandrians lead healthy lives. But, as **Figure 2** shows, there are sizable disparities in life expectancy among Alexandrians, with Black and African American residents having the lowest life expectancy. Additionally, life expectancy among all residents of color has decreased, while life expectancy for white residents has remained largely unchanged. By examining racially-disaggregated data, we can unearth trends that would have been masked by looking exclusively at the average life expectancy in Alexandria. Now two questions remain: Why are there such pronounced differences in life expectancy between white Alexandrians and Black Alexandrians? And, why have life expectancies decreased for BIPOC Alexandrians, but not white Alexandrians? **Table 1** models the process of root cause analysis to address the first question using the Racial Equity Toolkit Root Cause Analysis worksheet.

Figure 2. Life expectancy in Alexandria.¹⁵



ROOT CAUSE ANALYSIS: LIFE EXPECTANCY IN ALEXANDRIA

<p>Describe BIPOC communities' access and resources in this topic area.</p>	<p>BIPOC communities face barriers to accessing healthcare services across all fields of medicine.</p> <p>BIPOC do not receive the same quality of care that white individuals do, even controlling for other demographic characteristics like socioeconomic status, age, and gender.</p> <ul style="list-style-type: none"> • BIPOC individuals are less likely to receive treatment for pain than white individuals.¹⁶ • Black and Native American women have maternal mortality rates several times larger than white women.^{17, 18}
<p>What are the origins of the racial inequity in this topic area? Think about the policies, practices, and social norms.</p>	<p>Race-based segregation Health outcomes – including life expectancy – are closely tied to socioeconomic and environmental conditions.¹⁹ Segregation in housing and education along with restrictions on BIPOC communities’ ability to generate long-term wealth perpetuate socioeconomic inequity and downstream health consequences.²⁰</p> <p>White supremacy in medical science & health care delivery Many medical tests and analytic tools were developed with white persons in mind. This includes technology designed to assist in diagnosis and monitoring, but also includes how medical professionals are trained to assess people of different races and ethnicities.²¹</p>
<p>How do these origins show up today?</p>	<p>Housing & Community Historical de jure segregation has significant consequences for the design of modern medical interventions as well as BIPOC access to medical care.²² The physical conditions within and built environment of neighborhoods can impact health. Neighborhoods with high-quality housings are more likely to be accessible to neighborhood amenities, like bicycle paths, green spaces, which can support physical activity.²³ In addition to recreational opportunities, your neighborhood can also impact the ability to access to fresh, healthy foods. In 2019, the rates of obesity of Hispanic kindergartners and Black kindergartners were 4x and 3x, respectively, higher than that of white kindergartners. ²⁴ Substandard housing conditions, such as water leaks and poor ventilation can lead to increased exposure to allergens and mold, which can trigger asthma flare-ups among other issues. According to a 2019 report, residents in the West End, zip code 22304, experienced the highest rates of adult asthma hospitalizations while central Alexandria had the lowest rates.²⁵</p> <p>Segregation also created persistent socioeconomic disparities. BIPOC today face greater challenges in accessing the healthcare system,²⁶ creating geographic pockets of socioeconomic disadvantage evidenced by lack of access to greenspace and healthy foods,²⁷ both of which have consequences for conditions such as asthma²⁸and Type II diabetes.²⁹</p> <p>Disparities in Medical Technology and Healthcare Quality Medical treatments and technology tend to be developed through testing on white individuals, thus our understanding about what works and what does not tend to be based on work works for white people.³⁰ Modern practices of diagnosis and treatment are largely based on historical ideas about what individuals of different races and ethnicities commonly do.</p> <p>Here are some common examples:</p> <ul style="list-style-type: none"> • Implicit bias in medical practice There was a long-standing diagnostic heuristic that Black individuals had higher pain thresholds than non-Black individuals – an idea that has justified restricting BIPOC access to pain treatments.³¹ • An important diagnostic tool known as pulse oximetry – or, measuring the amount of oxygen in the blood – overestimates blood oxygen in BIPOC individuals due to the technology being less sensitive to darker skin tones.³²This inaccuracy has immediate implications for the urgency with which individuals are treated for a variety of life-threatening conditions. <p>Without tools and interventions that specifically take BIPOC into account, or which rely on falsified notions of BIPOC attributes, the quality of care that BIPOC receive is not as high as the quality of care the white individuals receive.</p>

Figure 3. Map of life expectancy in Alexandria.³³

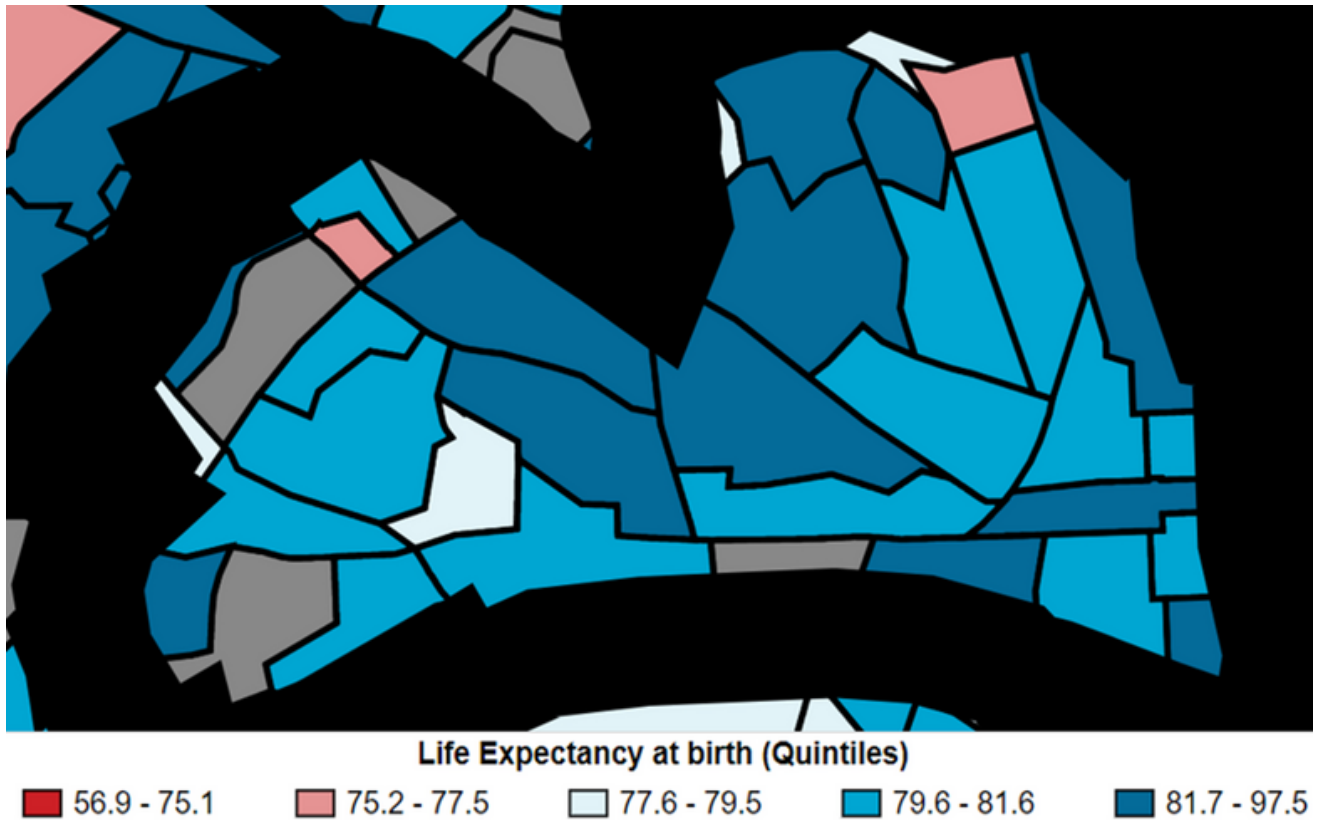


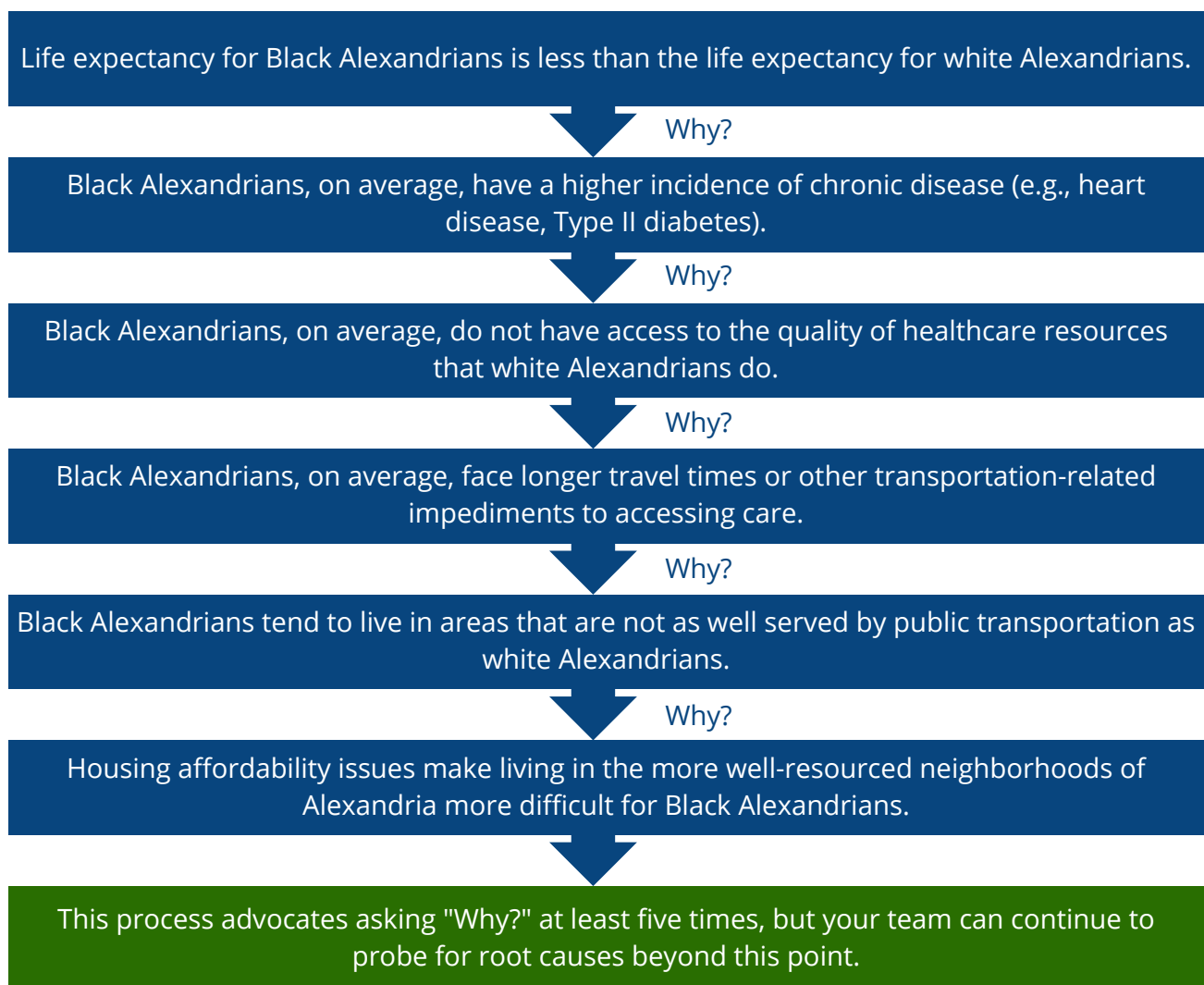
Table 1. Comparing Life Expectancy & Other Indicators in Alexandria.³⁴

OUTCOME	CENSUS TRACT 2002.02 SEMINARY HILL	CENSUS TRACT 2001.05 BEAUREGARD
Life Expectancy ³⁵	83 years	75 years
% Population with Health Insurance	99%	84%
% of City's of Foreign-born Population	0%	28%
% Limited English Proficiency	2%	23%
% Single family Units	77%	0%
% Housing Units That Are Rented	7%	93%
% With a Bachelor's Degree	85%	37%
% BIPOC	19%	75%
% White	81%	25%
Median Household Income	\$217,000	\$60,000

In addition to the [Racial Equity Toolkit Root Cause Analysis worksheet](#), there are a variety of tools available to support root cause analysis. The “5 Whys” is a classic approach in which the team starts with their problem statement and explores the root causes by asking “why?” five times, working from the immediate causes to the deeper causes.

Figure 4 provides a brief illustration of a “5 Whys” approach to root cause analysis. Note that this is a highly simplified example. As your team goes through this process, you may find points at which more than one root cause emerges. In this case, your diagram would begin to branch off, rather than appear linear.

Figure 4. “5 Whys” Root Cause Analysis of Life Expectancy Disparities in Alexandria



A key insight that emerges from this analysis in **Figure 4** is that some of the root causes of the life expectancy disparity between Black and white Alexandrians are not exclusively tied to health, but rather involve social circumstances influenced by historical policies. These are opportunities to develop cross-cutting interventions with other City agencies and community-based organizations. By designing interventions that address the root of these disparities, your team will be better positioned to sustainable impacts.

No matter which framework your team uses for root cause analysis, it is important to remember that this process is data-driven. To the greatest extent possible, make sure that the data available actually validate your hypothesized "whys". Root cause analysis is also iterative; your team may elaborate, add to, or even jettison some of your hypothesized root causes as you continue to accumulate and analysis data. Finally, the goal of root cause analysis is not to "self-censor" at the beginning. Your team should create the space to brainstorm all of the possibility and, using data, either validate or exclude those possibilities.

Using your root cause analysis, your team should assess what is currently being done to address the root causes. Rather than focusing on what the City is currently doing, it is critical to assess what interventions and workarounds BIPOC communities have developed and determine how your team's work can support those efforts. For more guidance on this approach, please see the **Racial Equity Toolkit**.

Additional Root Cause Analysis Resources

[The "5 Whys" and the Lincoln Memorial](#)

[National Implementation Research Network Guide to the "5 Whys"](#)

[Annie E. Casey Foundation Race & Equity Inclusion Guide \(Step 4\)](#)

[6 Sigma Root Cause Analysis](#)



DEVELOPING AN EVALUATION PLAN

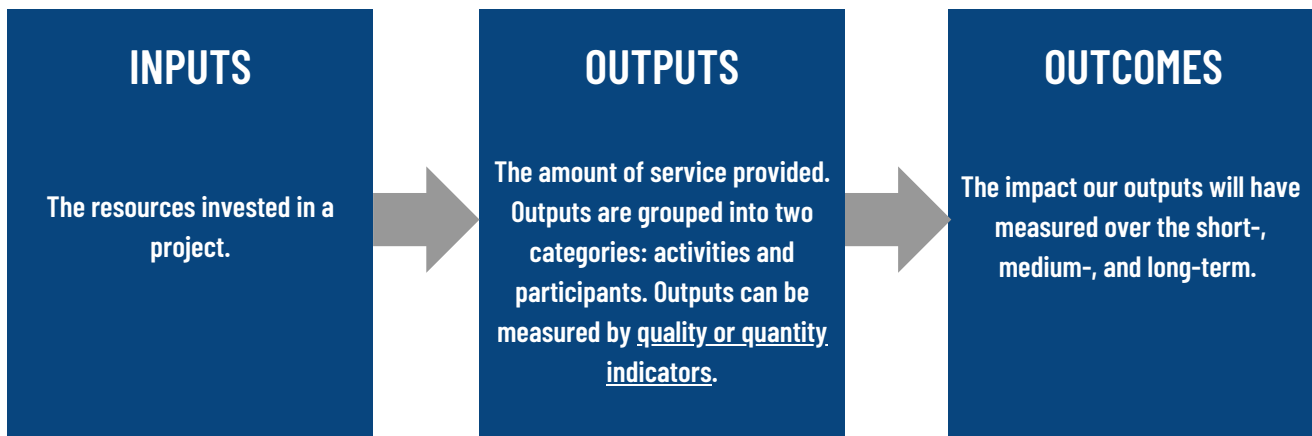
Once you have identified how your project will address the root causes of the issue, your team should develop a plan for evaluating the project. Create an evaluation plan **before** implementing your project to ensure accountability and promote organizational learning. Not all projects necessarily require formal evaluation techniques, like randomized control trials, but all projects should have clearly articulated logic and goals, metrics to assess progress toward those goals, and a right-sized evaluation design relative to the project's goals. The tools in this section will guide your team as you think through these details.

LOGIC MODELS AS AN EVALUATION FRAMEWORK

Logic models are visual representations of a theory of change – a blueprint of how your project is intended to work based on the problem your team identified and its root causes. Logic models can help identify assumptions and biases that creep into a project; communicate the project structure and desired outcomes with stakeholders; and structure the initial stages of project planning. Most importantly, they serve as a framework for evaluating a project.³⁶

Logic models follow a similar structure and can be modified to best fit your needs. **Figure 5** describes three major elements to consider in a logic model:

Figure 5. Components of a logic model.



Your team should also outline any assumptions you are making about the relationship between the problem and proposed solution and characterize any external factors relevant to the project (e.g., stakeholder groups, existing interventions, political or organizational culture, trends).

Figure 6 provides an outline of this structure and an example of how to apply it as your team . Your team can use resources like the [Logic Model Builder](#) and [Metrics for Healthy Communities Logic Model](#) to develop project logic models and explore a database of outcomes, indicators, and related measurement tools. Defining the outputs and outcomes helps us define what will be evaluated. Once your team identifies the desired outcomes of the project, you can develop indicators to measure whether the outcomes have been achieved. For more information about logic models and their functions, review the [Administration for Community Living’s Logic Model Guidance](#).

Figure 6. General logic model framework.³⁷

INPUTS	OUTPUTS		OUTCOMES		
What resources will we invest in the project?	Activities What are we doing (with the resources)? How long are we doing it?	Participants Who do we reach?	Short-term What did participants learn?	Medium-term What action(s) is changed?	Long-term What condition is changed?
Time, funding, volunteers, technology, equipment, materials, expertise/ knowledge base, external partners	Providing a service, workshops/ training, creating something (e.g., a coalition, research paper, etc.)	Individuals, communities, students, families, etc.	Skills, knowledge/ beliefs, attitudes	Behaviors, policies, social action	Social, economic, civic, environmental circumstances

Building the logic model through a series of if/then questions helps to streamline the process (see a basic example about improving student outcomes below):

Figure 7. Logic model example demonstrating "if...then..." approach.

INPUTS	OUTPUTS		OUTCOMES		
Resources	Activities	Participants	Short-term	Medium-term	Long-term
IF we invest money to hire tutors...	THEN we can provide weekly after-school tutoring for one school year to...	50 students who are struggling in math IF we provide tutoring to the students...	THEN they will learn skills to improve in math IF they learn these skills...	THEN their grades will improve and they will be more likely to remain on track to graduate IF they remain on track...	THEN they will be more likely to graduate high school.

Returning to the root cause analysis on life expectancy disparities in Alexandria, the analysis suggested that social determinants of health – housing security, education, transportation, and poverty – strongly influence life expectancy. The logic model in Figure 8 builds on this root cause analysis, focusing on affordable housing as a intervention to eliminate life expectancy disparities and enhance equity.³⁸

Figure 8. Logic model life expectancy example - affordable housing.

INPUTS	OUTPUTS		OUTCOMES		
Resources	Activities	Participants	Short-term	Medium-term	Long-term
Funding Staff Location site Contractor Community input High-quality building materials (materials reduce asthma problems, like wood flooring, washable windows, HEPA ventilation systems, lead-free paint, etc.)	Build affordable housing units with high-quality materials	For residents in cost-burdened zip codes	Housing affordability increases, housing quality improves, exposure to asthma triggers decreases	Disposable income increases, asthma-related hospitalization decreases, self-reports of health improves	Life expectancy increases community-wide, life expectancy disparities decrease

ESTABLISHING INDICATORS

Indicators help evaluate progress toward desired results and equitable outcomes at different levels. Establishing indicators with equity in mind supports disaggregated data collection, analysis, and dissemination centered on equity. One approach to establishing indicators draws from the Results Based Accountability (RBA) framework outlined by the Government Alliance on Race & Equity.³⁹ RBA asks us to identify desired equity conditions we hope to see a result of our product and backwards map indicators to measure them.

Results to Indicators

Results are the desired condition(s) of well-being you hope to achieve because of a project or policy. Results require the recognition that “the whole community cannot experience well-being when communities of color experience it at disproportionately lower rates.”⁴⁰ Results inform the development of indicators to assess a project or policy’s impact and progress toward equity.

Examples: *“People in Alexandria are healthy”, “Latino/a children are ready for school in Alexandria”*

Quantity and quality indicators help measure the implementation of a project. Quantity indicators measure how much of an input we invested (e.g., event flyers made, hours tutors spend working with students) or how much of an output we created (e.g., potential customers reached, students served). **Quantity indicators** are often seen as “counting widgets” but serve an important purpose in determining whether the project was implemented with fidelity. **Quality indicators** measure how well a project was implemented (e.g., stakeholder perceptions of the project).⁴¹

Impact indicators measure the intended results of a project, addressing the question: Is anyone better off? Though measures like life expectancy and poverty rate are the measures we want to change, it is nearly impossible to see movement on these high-level metrics because they are the product of many years of overlapping and mutually reinforcing systems of oppression.⁴² Indicators serve as proxy measures for high-level metrics. For example, unemployment rates can be an indicator to measure the result of equitable economic opportunity.⁴³

Occasionally, a single statistic can be an indicator on more than one level. For example, graduation rates could be a quantity indicator (i.e., How many students graduated?) and an impact indicator (i.e., Are youth in the City better off because more are graduating high school?).⁴⁴

Figure 9. Indicator matrix with example indicators⁴⁵

Quantity: How much did we do/deliver?	Quality: How well did we do/deliver?
<p>Measured by the number of</p> <ul style="list-style-type: none"> • Clients/people served <ul style="list-style-type: none"> ◦ Example: # of children participating in an afterschool program • Services/activities (by type of service/activity) delivered <ul style="list-style-type: none"> ◦ Example: # job training sessions held 	<p>Measured by the percentage of</p> <ul style="list-style-type: none"> • Internal operation outcomes <ul style="list-style-type: none"> ◦ Example: client-staff ratio, workload ratio, turnover rate, % of clients served in their native/preferred language, unit cost • Service/activity-specific outcomes <ul style="list-style-type: none"> ◦ Example: % of services delivered in a timely matter, program attendance rate, % of clients who completed activity/program
Impact: Is anyone better off?	
<p>Measured by the number or percent difference in</p> <ul style="list-style-type: none"> • Skills/Knowledge <ul style="list-style-type: none"> ◦ Example: % of people that participated in activity that gained knowledge of their rights as a tenant • Attitudes/Opinions <ul style="list-style-type: none"> ◦ Example: # of people who feel less stigma about drug addiction • Behavior <ul style="list-style-type: none"> ◦ Example: % change in school attendance rates • Circumstances <ul style="list-style-type: none"> ◦ Example: % of population working in family-sustaining wage bracket, # of people living in stable housing 	

EXAMPLE: LIFE EXPECTANCY IN ALEXANDRIA

Figure 10 below provides an example of indicators to capture the potential effects of affordable housing interventions on life expectancy in Alexandria. The desired result, in this case, is to increase life expectancy across Alexandria, recognizing the historical context that explains disparities in life expectancy. While logic models are certainly not required to develop indicators, it is a good idea to reference a logic model in order to ensure that the indicators your team develops are aligned with how you hypothesize the intervention will work (see **Figure 8**).

Figure 10. Indicator matrix - Affordable housing interventions to improve public health and increase life expectancy for Alexandria residents

Quantity: How much did we do/deliver?	Quality: How well did we do/deliver?
<ul style="list-style-type: none"> • Number of permits issued to develop affordable housing units • Number of individuals directed to affordable housing resources (e.g., down payment assistance) 	<ul style="list-style-type: none"> • Cross-sector partnerships cultivated to support affordable housing • Number of affordable housing units built in areas with access to high quality foods and recreation opportunities • Percent of individuals who obtain stable, affordable housing
Impact: Is anyone better off?	
<p>Short-term: number of affordable housing units increases, percent of individuals gaining access to fresh produce and recreation opportunities.</p> <p>Medium-term: number of individuals number of individuals utilizing recreational resources, changes in individuals' food choices.</p> <p>Long-term: prevalence of health risk factors (e.g., asthma, hypertension, diabetes, obesity), prevalence of chronic disease (e.g., COPD, heart disease, CKD)</p>	

Additional Resources on Indicator Development

- [GARE Racial Equity Scorecard Metrics](#)
- [National Equity Atlas Indicators](#)
- [Initiative for Energy Justice: Justice in 100 Metrics](#)
- [Equity Indicators - CUNY Institute for State and Local Governance](#)
- [Strive Together Guide to Racial and Ethnic Equity Systems Indicators](#)
- [Community Tool Box Community-Level Indicators](#)

SELECTING AN EVALUATION DESIGN

The knowledge that your team can draw about the effectiveness of a project depends on how the evaluation is designed, specifically what data your team chooses to collect, how that data is collected (i.e., at what intervals? from whom?), and how that data is analyzed. Designs can be experimental, observational, case-based, or a combination of these, depending on what you want to know. The most common questions related to public policy and public administration are: **Does the policy/program/initiative work? To what degree? For whom?**

Randomized Control Trials

Randomized control trials (RCTs) are often heralded as the “gold standard” of program evaluation and provide the most convincing evidence of whether a policy, program, or initiative **caused** an outcome. In an RCT, one group is randomly assigned to receive an intervention (treatment group) while the other group does not receive the intervention (control group). In the analysis, the treatment group’s outcomes – the difference is interpreted to be the impact of the intervention. The randomized assignment of the individual participant to either treatment or control is a means of limiting the influence of any factors other than the intervention and, in this sense, they perform very well.

Challenges arise, however, when we consider the fact that we are not strictly concerned with whether the policy/program/initiative works, but for whom it works (or does not). Being careful to collect demographic data from the individuals in the program and using that data to conduct sub-group analysis is one way to ensure that you can leverage the study results to speak to issues of race and social equity.

Another challenge with RCTs, at least in terms of how they have been historically implemented, occurs in defining the outcomes that matter. Researchers may be interested in measuring effectiveness in a way that does not align with the community’s definition of success. Another possibility is that the outcomes of interest may be longer term than can be meaningfully measured in the implementation of the study. These are issues that can be avoided with intentional planning. Consulting with study participants to better understand the outcomes they consider important is one way to avoid this misalignment and to be able to accurately convey how policies, programs, and initiatives impact historically marginalized communities. Another approach would be to incorporate qualitative research about the process of implementation, to characterize how the project was implemented, the degree to which implementation matched the original design, any issues that came up, and a more in-depth assessment of the outcomes.

The point of the preceding discussion is not to do a deep dive into randomized control trials, but rather to illustrate that any study/evaluation methodology is going to do some things well and not going to do other things as well. Ideally, your team should seek to incorporate multiple methods for making sense about your project's impacts.

Other Evaluation Design Options

Evaluation designs should align with your project's established goals and equity considerations. When assessing the merits of different evaluation designs, decision-makers should always **collaborate with the community**.⁴⁶ Consistent collaboration helps:

- Align the evaluation goals with the needs, preferences, and values of the community,
- Ensure that community members are engaged in the research process,
- Develop trust between those who make/implement policy and the communities that they serve, and
- Provide a touch-point to evaluate ethical considerations or potential issues.

The resources to below can support conversations about an appropriate evaluation design relative to your goals and community needs.

Evaluation Design Resources

- [We All Count Methodology Matrix](#) is a tool that matches research question(s) and data to appropriate methodologies. Please note that this is not a comprehensive list of methodologies, and it leans heavily towards western academic methods.
- Child Trends [“How to Embed a Racial and Ethnic Equity Perspective in Research”](#) includes a list of alternative designs when RCTs are inappropriate
- The [Office of Planning, Research, and Evaluation \(OPRE\) report](#) outlines alternative options for assessing program impacts and examples of their application

COLLECTING DATA FOR EVALUATION

PRIMARY DATA COLLECTION

There are several tools that you can use to collect data, such as surveys, questionnaires, interviews, focus groups, and observation. The type of data collection tool used should be tailored to the purpose of data collection and analysis. For instance, if you are hoping to collect rich or expansive feedback from the community on a topic, a focus group may be more appropriate than a closed-question survey. It also should align values of the community participating in data collection.

Community Collaboration

Collaboration with the community can enhance equity by ensuring that data collection considers the lived experience of the participants. It also can lower barriers to participation and build trust between the data collectors and the community. Community input can inform decisions around the best ways to obtain responses and the type of questions that are appropriate to ask – including the wording. The way different communities provide and communicate information is an important consideration when designing or choosing the type of data collection tool to use.⁴⁷ For example, researchers might consider using qualitative data collection tools in communities that prefer narrative and storytelling methods to communicate information. The advantages or disadvantages of a data collection tool may depend on the population of interest.

DATA COLLECTION TOOLS

Incorporating Intent, Confidentiality & Permission Statements in Data Collection Tools

Data collection tools should describe the research intentions and procedures to ensure confidentiality and data protection.⁴⁸ Instruments with disclosure and confidentiality statements establish transparency between the data collection entity and participants. Transparency addresses the researcher-participant power dynamic in a more equitable way and demonstrates respect for participants and their agency. and confidentiality statements establish transparency between the data collection entity and participants. Transparency addresses the researcher-participant power dynamic in a more equitable way and demonstrates respect for participants and their agency.⁴⁹

As participation in data collection is often voluntary, asking permission respects the individual's agency and privacy. It also conveys the data collection entity's commitment to being a trusted steward of **sensitive data**.⁵⁰ To this end, only the data necessary for analysis should be collected. Exemplars and templates are below. They can be modified to suit your data collection needs.

Additional Resources for Intent, Confidentiality, & Permission Statements

- [More Than Numbers Guide toward DEI in Data Collection](#)
- [How to Add Informed Consent to Your Responsible Data Practices](#)
- [Informed Consent Language](#)
- [Privacy Policy Templates](#) (templates at bottom)
- [Consent Template](#)
- The Kentucky Center for Statistics (KYSTATS) "[Data Access and Use Policy](#)"

Responsive Communication & Clarifying Language

It is possible that participants may have a different understanding of the technical language used in data policies or survey tools. Without working to ensure participants can understand data and privacy policies, we risk misleading or exploiting them. To rectify this and increase transparency, consider creating a dictionary for participants (see We All Count's [Data Decoder](#) for examples). The following questions, derived from common participant concerns, can also help your team select what information to include:⁵¹

- **Privacy Communication:** Who all will know I am in the study? Will my name be published anywhere? If I am involved in questionable activity, will it be reported to the police?
- **Benefits of Participation:** How does being part of a study help me?
- **Participant Expectations:** Am I allowed to participate in other programs/employment during the study? Can you still help me if I am not in the treatment group? Who is going to help me if you can't? Can I apply again?

Question & Answer Choice Order

The **order** of questions and answer choices can sometimes imply a hierarchy; the groups shown “first” in an ordered question can influence how readers perceive the relationship or hierarchy between groups.⁵² For example, demographic questions often list “white” or “male” as the first option, which can imply a hierarchy that prioritizes men or white people. To address this, consider ordering alphabetically or randomly.⁵³ Depending on the design, maintaining a specific question/response order may be important to ensure that the data collection instrument follows a logical sequence or that there is consistency when tracking trends over time.⁵⁴

Opportunity to Opt-Out of Data Collection

Participants should always be able to opt out – both on the smaller scale of skipping a survey question to the larger scale of leaving a study entirely. Identifying the reason for opting out can help identify barriers to participation for specific segments of the population.⁵⁵ It can also inform strategies for making future projects inclusive. If relevant, include an “opt-out” section in the data collection instrument and allow participants to explain their reasoning behind opting out. This option should clarify whether their demographic information, or any other information, will be stored and de-identified in conjunction with the opt-out information.

CONSIDERATIONS FOR DIFFERENT DATA COLLECTION TOOLS

The tools below can all be used to collect reliable and representative data. See Racial Equity Tools' [Data Collection Methods](#) and Annie E. Casey Foundation's [handbook of data collection tools](#) for detailed explanations and examples of these tools in practice.



Interviews

Interviewers should be trained in protocols and use of **neutral probes** – questions designed to encourage respondents to give full and detailed answers and/or to choose among provided answer categories, without suggesting any particular response (e.g., “Can you tell me more about that?” “Would you say your opinion is closer to X or to Y?”). See [RAND's guide on Semi-Structured Interviews](#) for more guidance.



Focus Groups

Ensure that all participants have a space to contribute equitably (i.e., one participant does not overpower the conversation). See [RAND's guide on Focus Groups](#) for more guidance.



Surveys and Questionnaires

Surveys and questionnaires should also be wary of individual's tendency to choose socially acceptable answers (social desirability bias). For instance, asking participants, "Do you agree that guaranteed basic income is important?", will not yield reliable data because the wording signals to participants that they ought to value guaranteed basic income. One way to overcome social desirability bias is to change the way that the question is asked. A more appropriate way to assess the degree to which the individual values equity would be, "Indicate the extent to which you agree or disagree with the following statement: Guaranteed basic income should be provided to all citizens."

For more examples and survey-specific considerations, see [Duke University's Social Science Research Institute's survey process tip sheet](#).



Observation

It is important to be aware of how our individual experiences and biases shape the way we interpret others' actions. Examining implicit bias via trainings or exercises before engaging in observation can enhance equity and data collection procedures. See [University of Washington's guide on observational field research](#).

REPRESENTATIVE SAMPLING

The sample selected for data collection should be representative of Alexandria's whole population, but systemic barriers impact the extent to which marginalized groups are able to participate in the research process. Underrepresented groups tend to include youth, residents without documentation, residents who are low-income, racial and ethnic minorities, linguistically diverse residents, individuals with disabilities, and seniors.⁵⁶ Without the perspectives of historically marginalized groups, it is impossible to design interventions that honor their needs, values, and lived experiences. The following strategies can be applied to engage historically marginalized groups in the data collection process.

- **Oversampling:** Researchers may consider oversampling in neighborhoods with resident or housing characteristics that have been historically underrepresented (e.g., affordable housing, senior housing, immigrant communities). Your team may also choose to oversample multifamily housing units, as larger proportions of families with income less than twice the federal poverty threshold and youth tend to reside in attached unit housing.⁵⁷
- **Stratified Sampling:** To conduct stratified sampling, we divide the entire population into subgroups that differ along our selected characteristics of interest (i.e., age, race, gender, etc.). Then, a random sample is drawn from each subgroup. This is particularly useful when subgroups vary or when the characteristic is known to be related to the outcome of interest.⁵⁸
- **Build Trust:** Building trust within the community is an effective way to engage populations that have historically been marginalized and/or disadvantaged. Partnering with leaders and organizations that already have trusted relationships with community members is one way to build this trust.⁵⁹
- **Communicate Purpose of Data Collection:** Communicating how your team intends to utilize data can help build trust with the community. In turn, residents may feel more motivated to engage when they understand why/how their engagement will impact their community.⁶⁰
- **Diversify Engagement Platforms:** Providing the data collection platform in multiple formats can encourage community engagement. Some examples include providing a survey in multiple languages, providing a survey online, in the mail, and over the phone.⁶¹

ACCESSIBILITY OF DATA COLLECTION TOOLS

When developing or selecting data collection tools we need to be sure that they are accessible to entire participant population. Accessibility considerations range from word choices and the language(s) offered to whether data collection occurs online or in-person. It is good practice to ensure that survey language is jargon-free and written at about an 8th grade/middle school reading level. Translating the survey into the native languages of the communities your team aims to serve is also critical to ensure that the data you obtain is representative. The following sections explain the key accessibility considerations in data collection.

DATA COLLECTION PLATFORMS

Centering equity requires thoughtful consideration about how and on which platform data will be collected. Different approaches have varying accessibility barriers – such as online-only data collection being inaccessible to people without reliable internet connections or private spaces where they can share their data.⁶² Having multiple modes of data collection can increase the chances that participants will respond (i.e., make available online, via text, phone call survey, mail-in survey, interviews in multiple locations).⁶³ The built environment should also be physically accessible if data collection requires participants meet in-person. For example, the space should be accessible to wheelchair use and held in a location that has access to public transportation. The resources below expand on the considerations and tradeoffs of the accessibility of different platforms.

Resources on Platform Tradeoffs

- [CDC Data Collection Methods](#)
- [Data Collection Methods – Survey Design](#)
- [Urban Institute: Principles for Advancing Equitable Data Practice](#)
- [Pell Institute Evaluation Toolkit: Determine Data Collection Method](#)

LANGUAGE ACCESSIBILITY & CULTURAL RESPONSIVENESS

The way concepts are framed in data collection instruments can lead to variability in how individuals interpret the meaning of our questions. For example, “feeling blue” can be interpreted as “feeling sad” or taken more literally depending on the cultural background of participants. Your team should avoid colloquialisms or euphemisms. Consider the following questions when reviewing project materials:⁶⁴

- Is the language easy to understand?
For example:
 - **AVOID:** Consider your geographic area within a range of 20 miles. Which of these hiking trails is closest in proximity to your residence?
 - **INSTEAD, USE:** Which of these hiking trails is closest to where you live?
- Are data tables and charts legible to those without research and statistics backgrounds?
- Are technical terms defined in plain language?

Data collection tools should incorporate neutrality, asset-based and whole-person language. The word "illegal" should only be used to refer an action, not a person. When known, use language that is culturally appropriate and reflects the words used by your community of interest.⁶⁵ few examples are listed below (see the [ADA’s Guidelines](#) and [RaceForward’s Race Reporting Guide](#) for more examples):

Table 2. Examples of preferred language to talk about people.

Preferred Language	Problematic Language
People in jail, people who are incarcerated	Inmates, prisoners
People experiencing poverty	The poor
A formerly incarcerated person	Ex-felon
Person who has a stroke	Stroke victim
Asian people	Asians
Illegal immigration	Illegal immigrant

TRANSLATION & INTERPRETATION

When feasible, data collection tools should be available in all languages spoken by the population being surveyed. Similarly, accommodations should be available for participants who require braille, signing, or audio assistance.

COLLECTING DEMOGRAPHIC DATA

There are various types of demographic information that can be collected: race, ethnicity, gender, sexual orientation, ability, religious background, housing status, and more. Collect demographic information that is relevant to your analytic goals. For example, you may need to ask about sex assigned at birth for a medical project, but otherwise it may not be relevant. Demographic data is an important component for advancing equity as it allows for **disaggregated data analysis**, which allows us to quantify disparities in key outcomes.

Designing questions to collect demographic information can be a complex process. Demographic questions often inquire about deeply held identities and experiences. The way people describe their races, ethnicity, gender, and more can be expansive and dynamic. As analysts, we're often required to make these dynamic, expansive identities fit into more defined boxes for analysis, which can be a complex and convoluted process. As such, we should strive to be as specific as possible when asking demographic questions. However – we also must be realistic about our research goals, analytic capacity, and timeframe. Allowing every participant to self-describe their race and ethnicity in a text box may yield the most authentic results. However, it would also pose challenges on the analytic side and require big assumptions and dozens of hours of coding if we wanted to report on aggregate data.

When selecting a question, it is helpful to opt for rigorously tested items with large comparison data sets. For that reason, especially in government contexts, using Census measures is common. Many data projects in the City use demographic measures from the Census. The table in Appendix A helps users draw comparisons with Census demographic measures.

RACE & ETHNICITY

Identity can be described in myriad ways. Some may self-describe identities at the intersection of race and ethnicity, while others may use nationality. Multi-selection and open-ended questions allow for the greatest level of inclusion and respect autonomy when asking questions about race and ethnicity.⁶⁶

Decisions about the level of detail in the demographic questions will need to balance the importance of collecting detailed information with the survey length and participant fatigue. The sample of questions below are the least detailed option and are based on the **2020 Decennial Census**. Of course, this formulation effectively erases the specific racial identity of individuals of Middle Eastern and North African (MENA) descent, grouping them with White individuals. Questions with higher levels of detail and a summary of current discussions about Census demographic measures can be found in **Appendix A**.

Please respond to Question 1 about Hispanic origin and Question 2 about race.

1. Are you of Hispanic, Latino, or Spanish origin?

- No, not of Hispanic, Latino, or Spanish Origin
- Yes, Mexican, Mexican Am., Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, another Hispanic, Latino, or Spanish origin - *Print, for example, Salvadoran, Dominican, Colombian, Guatemalan, etc.* _____

2. What is your race?

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Pacific Islander
- White
- Another race (please specify): _____

SEX, GENDER, & SEXUAL ORIENTATION

We commonly collect information related to gender or sex. Although some tend to use the words interchangeably, gender and sex refer to two distinct concepts. Gender often refers to one's identity and sense of self (i.e., as a man, woman, non-binary person, etc.) and sex refers to a distinction made (typically at birth) based on biological markers (i.e., male, female, intersex, etc.) In some cases, a person's gender is congruent with what is typically expected of their sex (a female who identifies as a woman). In other cases, especially when considering transgender and non-binary populations, a respondent's sex and gender are not aligned.

The words used to describe genders are diverse and dynamic. As researchers, it is important to affirm each person's distinct identity. However, we also must balance this duty with our obligation to conduct rigorous analysis. When studying LGBTQ+ populations, gender identity questions often provide many categorical choices, and these may be the best fit for your project.⁶⁷ However, if we are collecting data from a more general population, even a small number of erroneous gender selections will dramatically bias your population numbers and resulting conclusions.⁶⁸ For this reason, we suggest a two-step question that, while limited, has been rigorously tested and is in use in many large-scale surveys across the country.⁶⁹

What sex were you assigned at birth* on your original birth certificate?

- Male
- Female

How do you currently describe yourself?

- Male
- Female
- Transgender** or non-binary
- Prefer to self-describe: _____

Which of the following best represents how you think about yourself?

- Bisexual
- Gay or Lesbian
- Straight
- Something else
- Prefer not to answer
- I don't know

**Including intersex as an option depends on the relevancy to your research. Population-based surveys often struggle to accurately capture the population of intersex respondents for a variety of reasons (click [here](#) to learn more). If research is centered on sex or gender-based discrimination, disparities based on sex, or other related topics, it might be appropriate to include intersex as an option in this question. Please note that the United States of America currently does not provide an intersex designation on birth certificates, so the original wording of the question would need to be modified.*

***Transgender is an adjective to describe a person whose gender identity differs from the sex they were assigned at birth.*

ADDITIONAL DEMOGRAPHIC CATEGORIES & CONSIDERATIONS

Other demographic data that may be useful in identifying and addressing disparity include employment status, housing security and tenure, educational attainment, and disability status. Please see the [Demographic Question Categories Supplement in Appendix A](#) for guidance on additional demographic questions.

Communicating your team's intentions to participants can be helpful in navigating challenges related to collecting demographic data. When appropriate, you could include language on your survey or forms that explain why you're collecting information and/or how you plan to analyze it. This is especially important if you intend to combine categories that participants did not name themselves into – such as combining distinct racial identities into a larger group of people of color.⁷⁰ See [Incorporating Intent](#) for further guidance.

Communicating Intent of Demographic Data Collection Example

Here is an example of language to use to communicate how demographic data will be used to your participants:

The following demographic questions are intended to assess how members of various communities are participating in our programming. The responses, which will be kept fully confidential, will help us make decisions about our outreach, engagement and programming efforts to ensure we are effectively serving our diverse membership. We plan to analyze the data in a variety of ways, which may include further aggregating data underneath larger identity-based umbrella terms.

EQUITY-DRIVEN DATA ANALYSIS

A variety of statistical methods can be used to analyze data. Ultimately, your approach depends on (1) the question you are asking/goal of your research and (2) the way that you decide to measure the outcomes. Sometimes, we want to know the landscape of a particular social or policy issue. For this purpose, we would use descriptive statistics (i.e., the average number of Guaranteed Income Pilot applications completed in the past month, the proportion of BIPOC Alexandrians who live within walking distance of a DASH stop). Descriptive statistics are handy for environmental scans but cannot reliably allow us to determine whether there are meaningful differences between groups or the extent to which an intervention changed an outcome. If the goal of your research process is to make inferences, you are going to need inferential statistics, which can be as straightforward as estimating a mean difference using confidence intervals or as complex as multivariate regression and time series analysis. [The University of Chicago's Data-Society Interface](#) report provides a more nuanced explanation of the differences between descriptive and inferential (sometimes referred to as causal) statistical approaches.

The information and resources in this section can help you and your team determine which analytic approach suits your needs. Additionally, your team can consult with the [Race and Social Equity Team](#) and the [Office of Performance Analytics](#) to develop a data analysis plan.

QUANTITATIVE ANALYSIS

Quantitative is often used to describe any data that are represented numerically. Quantitative analysis allows us to examine large amounts of data and capture past and present trends and predict future events. This type of work can help us determine the extent to which inequities exist and where they are located. When possible, quantitative data should be used in conjunction with *qualitative data* to reveal complexity and the “why” that may be driving the quantitative outcomes and people’s lived experience.⁷¹ For example, we could conduct a quantitative analysis of American Community Survey data to analyze the breadth on trends within a certain topics, like the disparities in internet accessibility or commuting behaviors. We would pair this with a qualitative analysis of in-depth interviews with residents to get a better understanding of *why* we observed certain trends in the quantitative data.

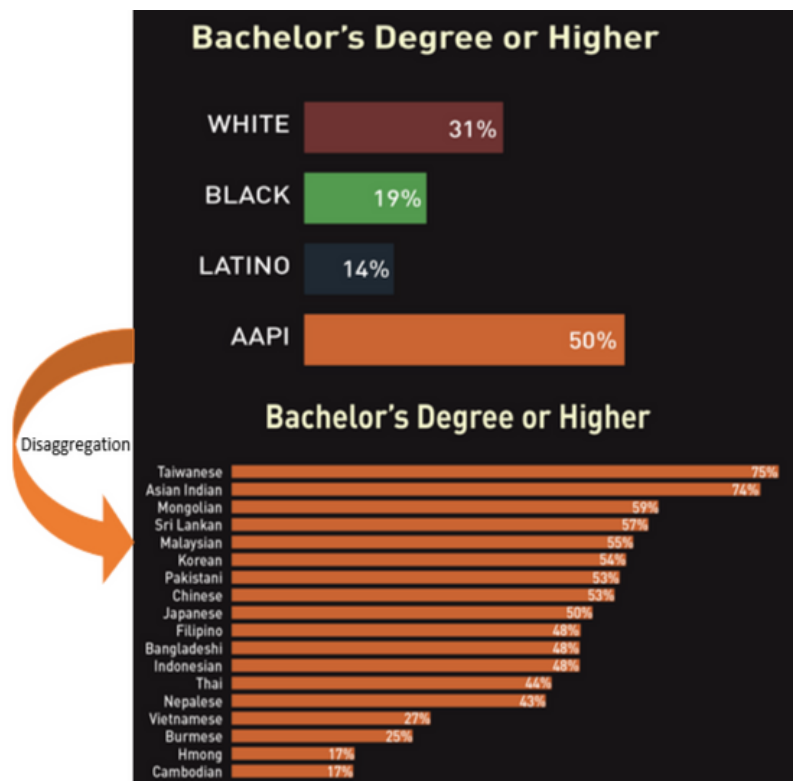
DISAGGREGATED DATA ANALYSIS

When possible, data should be disaggregated for analysis. Disaggregation allows us to analyze variables by different demographic characteristics and the distribution of the variables for the population.⁷² Read Annie E. Casey Foundation's guide, [Using Disaggregated Data to Inform Policies, Practices, and Decision-Making](#), for further guidance on disaggregation.

Level of Disaggregation

Data can be disaggregated by demographic variables (i.e., race, ethnicity, SOGI), as well as social and structural dimensions of identity (i.e., education status, income level, proximity to public transportation). When possible and ethical to do so, we should strive for the most granular level of disaggregation. For example, racial disaggregation is an important part of data analysis – but it ignores the non-homogeneous nature of all who share a racial identity. The figure below from AAPI Data demonstrates the disparities among a single racial group in Census data and the importance of more granular disaggregation. If we just analyzed this Census data by racial category and collapsed all ethnic groups under an Asian American umbrella, we'd conclude that 50% of Asian Americans have attained a bachelor's degree or higher, which ignores the many ethnic groups within the larger group who have drastically different educational outcomes (i.e. the difference between Taiwanese and Bhutanese degree accreditation).⁷³

Figure 11. The analytic value of disaggregating race/ethnicity data



Intersectionality*

Examining subgroups in conjunction with other dimensions of identity is one way we can analyze quantitative data more deeply. Intersectional analysis can reveal how the multifaceted aspects of identity and the inequities linked to them interact and compound.⁷⁴ For example, members of the same racial group may have very different outcomes across gender. The extent to which additional dimensions of identity are included in analysis will depend on your team's question(s) and goals.

- **Intersection with Place:** Another way that intersections can be examined is by connecting the role of *place* in analysis. An example is correlating place to analysis by overlaying or connecting redlining data to outcomes.⁷⁵

Inclusive Analysis with Disaggregated Data

Combining demographic groups can mask important variation between groups, obscure the experiences of specific communities and result in misleading analyses. However, small sample sizes can limit rigorous and reliable analysis. This is one reason why researchers may combine groups to conduct analysis in a statistically meaningful way.⁷⁶

Options for Inclusive Disaggregated Data Analysis ⁷⁷

- **Determine whether aggregating groups is an appropriate approach:** Ask the questions below. If the answer to any question is “no”, then aggregation may be inappropriate.
 - Do the data show groups of people are experiencing similar affects?
 - Do these groups have a shared history?
 - Do the members of the community and/or experts on that community confirm that analyzing and representing these populations in combination is reasonable?
- **Alternatives to aggregation (Inclusive options for aggregation)**
 - **Present data about groups with smaller sample size in addition to the data that has been aggregated:** This alternative is inclusive approach that displays statistically significant results without marginalizing groups with smaller sample sizes. Data about groups with smaller sample sizes should be accompanied by a note communicating uncertainty about the statistical significance of the estimates.
 - **Show blank charts or messages to represent how data are missing:** This can support inclusion and highlights areas where data is lacking. It also allows analysts to avoid presenting analyses that may not be statistically significant.

Privacy Protections

Datasets can include personally identifiable information (PII) that is protected by law or City administrative procedure. Examples of PII are names, agency-issued identification number, social security numbers, home addresses, etc. Datasets with PII can only be used with approval from the City Attorney's Office and the department data owner, or approval from the City Manager's Office. Please note that data on the [City's data repository](#) has been approved for use. Any data with PII that has five or fewer records (e.g., employee demographic data where fewer than five people are female) cannot be displayed.

MEASURING DISPARITY

Disaggregated data allows us to quantitatively examine disparity. There are several ways to think about disparity, but this section will focus on developing equity indicators.

Equity Indicators allow us to:⁷⁸

- Compare how two groups are doing
- Determine whether disparities between groups are growing or shrinking: While equity indicators can show us the extent to which the range of disparity is changing, they might not be as useful for showing changes within an individual group
- Identify specific inequities: Equity indicators can reveal the type of inequities that exist, but they will not reveal the root causes.

ISLG Equity Indicators

The CUNY Institute for State and Local Governance (ISLG) developed a framework to measure the extent of disparate outcomes as they relate to gender, race, sexual orientation, and other dimensions of identity.⁷⁹ The Equity Indicator Framework can be adapted to department and project-level analysis to determine the extent of disparities between two groups. Click the following links to learn more about how to apply the Equity Indicator [methodology](#) and use the Equity Indicator [scoring system](#) to measure disparity, along with [examples from other cities](#). Data used to establish and track equity indicators should measure outcomes as a comparison across groups and track changes over time. For example, an equity indicator could use data to measure the ratio of unemployment rates between people with disabilities and those without disabilities over time

Equity Indicators Criteria Checklist ⁸⁰

- The data is available (or will be available due to your data collection efforts), comes from a reliable source, and is high-quality.
- Longitudinal data is accessible and updated, at minimum, on an annual basis. Longitudinal data will allow us to calculate how disparities change over time.
- There is a strong causal model for why the indicators matter (i.e., we understand the context behind the indicator and how disparities affect people).
- The data accurately represents the impact of inequity on people's lives (e.g., not measuring quantity when quality matters).

CITY OF ALEXANDRIA'S EQUITY INDEX MAP

The **City of Alexandria's Equity Index Map** aims to systematically quantify racial disparities in outcomes that are critical to individual well-being, economic stability, and socioeconomic inclusion. It features a measure of disparity called the Racial Equity Index, which quantifies differences in key outcomes between individual racial and ethnic groups and the population overall. The Racial Equity Index monitors the magnitude of disparities in social inclusion at the census tract level and the measure itself can be used to compare outcomes within and between different neighborhoods and over time.

Additionally, the Equity Index Map illustrates the geographic distribution of social opportunity throughout Alexandria, including indicators related to neighborhood composition, accessibility and mobility, neighborhood quality and livability, economic opportunity, household resources, and health. For example, to show variation in neighborhood quality and livability throughout Alexandria, the Equity Index Map shows the percent of tree canopy coverage, the density of crime and nuisance reports, and the percent of vacant homes.

Figure 12. City of Alexandria's Equity Index Map Web Application

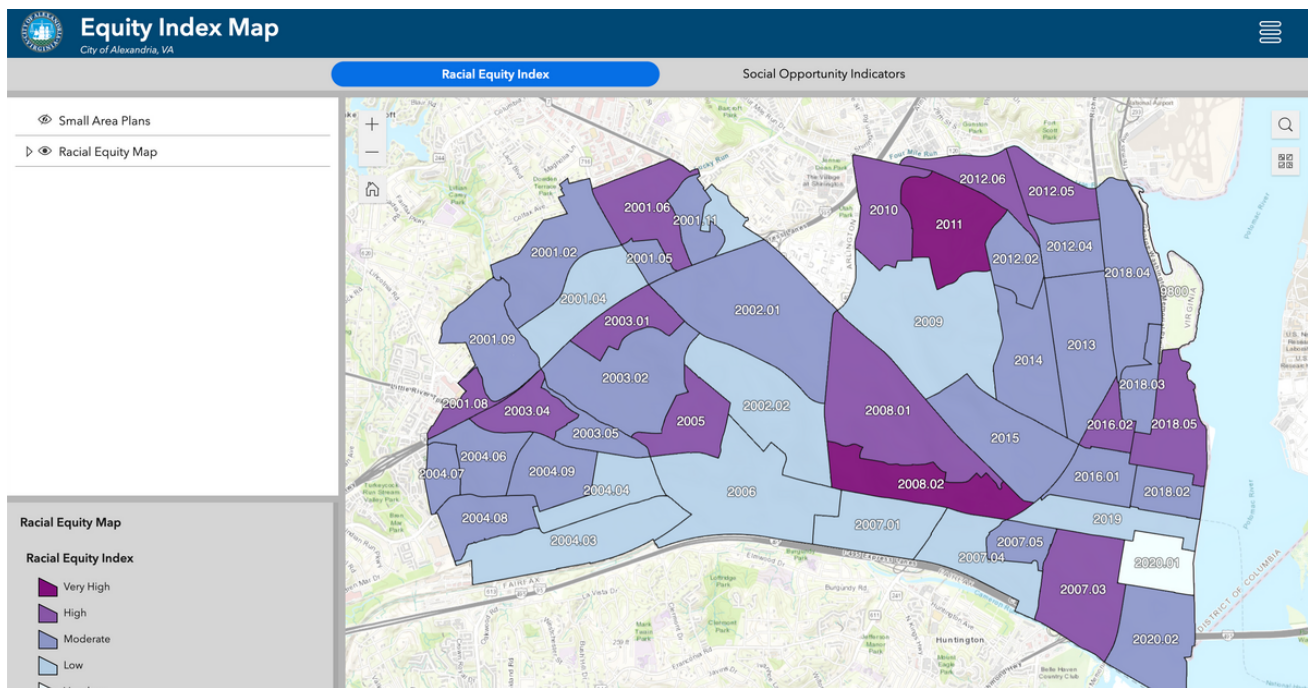


Table 3. Indicators used to calculate the Racial Equity Index

DIMENSIONS		INDICATOR
Measures of Socioeconomic Inclusion in the Racial Equity Index	Housing Security	Homeownership rate
	Economic Stability	Median household income Poverty rate Employment-Population Ratio
	Educational Opportunity	Percent of residents having attained a Bachelors degree or higher

EQUITY IN STATISTICAL ANALYSIS

There are many ways to analyze quantitative data – your methodology will largely depend on the questions you are asking and the type of data being collected. Selecting an appropriate **unit of analysis** and considering the nuances of **statistical significance** will help data analysis be more equitable.

Unit of Analysis⁸¹

The unit of analysis refers to the entity being analyzed (i.e., a household, a person, a city, etc.). Descriptive statistics are often applied to find the rate or average for a given entity (i.e., median income per household, average test score per student, etc.). The unit of analysis has important consequences for equity. Please note that one unit (i.e., per household or per person) is not inherently "better" or more equitable than the other. What does enhance equity is considering context and asking why the unit of measurement may or may not be appropriate for analysis. These questions could involve findings that arose during an environmental scan and/or root cause analysis.

Unit of Analysis Example

A city wants to encourage residents to reduce their water use during a drought. The mayor asks departments to identify neighborhoods that consume the most water in order to target reduction efforts. The departments collect data on the average gallons of water consumed per household. They find that high-income households use less water than low-income households. Subsequently, the city decides to target water use reduction efforts in low-income neighborhoods. However, the findings are based on the **average use per household**. Low-income households have a higher number of people living in one household than high-income households on average. When the analysis is conducted with a **per person** unit of analysis, rather than **per household**, the results show that the average number of gallons consumed per person is much higher in high-income neighborhoods than low-income neighborhoods.

P-Values & Statistical Significance⁸²

P-values tell us the probability of observing the outcome values (i.e., means, proportions, differences between groups) that we observe based on chance alone. While p-values are valuable, there can be limits to the way we should interpret them. The statistical significance of differences (i.e., the p-value) depends on the sample size being analyzed. The example from We All Count below demonstrates the effect of sample size and the limits of statistical significance.

P-Value & statistical Significance Example

A city wants to determine whether a company is violating pay equity protections. City analysts find that there is a \$900 pay gap between men and women that is statistically significant (i.e., p-value <0.05). The analysts continue to dig deeper and analyze the pay gap across gender and race (i.e., white men, Latino women, etc.). They find a statistically significant pay gap between white men and white women. They also find a \$1,200 pay gap between black men and black women; however, the data for the pay gap between black men and black women is **not** statistically significant. Even though the \$1,200 pay gap between black men and black women is larger than the \$900 pay gap identified between men and women of all races, the results are not statistically significant because the sample size of black women is small. The pay disparity black women face exists but is obscured by the small sample size.

Algorithms & Algorithmic Equity

Governments have increasingly utilized algorithms to automate processes like identifying patterns, determining public assistance receipt, conducting policing activities, and allocating resources decisions.⁸³ Simply stated, algorithms are prediction tools. They use large amounts of (usually individual-level) data to learn about human behavior or characteristics – we say that algorithms are trained on this data in a process of machine learning. These algorithms gained popularity because they automate decisions that would have otherwise required human resources and minimized the subjectivity in decision-making that was thought to be at the root of inequity. But algorithms are not impartial, they reflect their creators' biases and the biases inherent in the data used to train them.

Examples of Algorithmic Inequity

"Risk assessment" in criminal sentencing, or the prediction of the likelihood of individual re-offense, is just one of the many examples of how predictive algorithms have reinforced racial biases in governance and led to disproportionate punishment for people of color.⁸⁴

Facial recognition algorithms, which have historically been trained on white individuals and, therefore, have massive error rates when trying to positively identify people of color.

Algorithms will never be race-neutral, but measures can be taken to maximize equity such as ensuring algorithmic transparency,⁸⁵ assessing algorithmic bias, and determining the potential consequences of applying an algorithm in practice. The following guidelines,⁸⁶ tools, and frameworks can help inform this process.

Resources to Inform Algorithmic Equity

- [Principles for Accountable Algorithms and a Social Impact Statement for Algorithms](#)
- [Algorithmic Fairness: A Code-based Primer for Public-sector Data Scientists](#)
- [The Ethics & Algorithms Toolkit](#)
- [The Data Nutrition Project prototype and white paper](#)
- [Model Cards](#)

QUALITATIVE ANALYSIS

Qualitative data refers to descriptive and contextual data (often in the form of words) that cannot be quantified via numerical techniques. Qualitative analysis is a valuable tool that provides depth, context, and richness to research initiatives. A racial equity lens should prompt us to think critically about what we consider to be data and to center the lived experience and insights of our research participants through qualitative exploration.⁸⁷

Qualitative analysis allows policy researchers and administrators to embrace, rather than flatten differing perspectives on the same concept, such as "middle class" or "empowerment." Using a qualitative or mixed methods approach as part of your research provides participants the opportunity to engage critically with and speak directly to root causes of inequality in their lives.

Consider consulting [Harvard Mixed Methods Research](#) and [Learning to Do Qualitative Data Analysis: A Starting Point](#) when undertaking qualitative analysis.

Qualitative Analysis Considerations

- Strive for depth and saturation over large sample sizes. Unlike quantitative research, most qualitative studies have sample sizes of 15-20 participants.⁸⁸ Especially when studying inequity, efforts should be focused on diving deep into sources and finding the point where further research fails to produce new themes instead of collecting more data. However, if new sources are still producing novel themes and ideas, you may need to suggest additional data collection.
- Be mindful of how power dynamics in interviews and data collection may influence responses. Power dynamics may exist because of racial/ethnic identities, City employment statuses, or for many other reasons. Understand how this differential may impact the data you collect and the experience of the interviewee. Whenever possible, incorporate trauma-informed interviewing tactics into your methodology (Read the [Urban Institute's Guide to Trauma-informed Care in Qualitative Research](#) for more guidance).
- Address how your experience and personal bias may influence interpretation of data. When interviewers do not share demographic or experience-based backgrounds with those they are interviewing, they may interpret cultural nuances incorrectly (such as gestures, word meaning, neighborhood characteristics, etc.).⁸⁹ It may be helpful to complete this [Implicit Association Test](#) prior to beginning your analysis.

Qualitative Analysis Considerations (continued)

- If possible, have multiple team members interpreting the same data and discuss where team members differ in their interpretations,⁹⁰ this is formally called inter-rater reliability. The important piece is having some point to compare how two people interpreted the same source data. Having a lower inter-rater reliability score is not necessarily problematic but rather exists to provide us the opportunity to address spots where bias may be influencing one's interpretation of data.

COMMUNICATING WITH YOUR STAKEHOLDERS

Data analysis is a powerful tool – but despite our beliefs, it does not speak for itself. Data must be communicated about and interpreted by others. As analysts, we know that the framing and context in which findings are presented can drastically alter what someone takes away from our analysis. As we strive to be more equitable data analysts, we must also consider how our data communication and framing may perpetuate inequity and harm.

First and foremost, our findings should be linked to actions whenever possible. Researchers can perpetuate harmful dynamics if they study inequity, discrimination, and harm – but the people they’re studying never see the direct impact or value of this research in their communities. As GARE details in their [toolkit](#), we must hold ourselves accountable to focusing on our desired end conditions/goals and understand how our data serve as performance indicators of that goal.

When crafting language to explain your research findings, be wary of how your own personal biases or language can change how people interpret your conclusions. Some may speculate based on their own misconceptions and biases about marginalized communities when they see between-group differences in your work. To use an example from the Center for Assessment and Policy Development, a relatively low rate of Hispanic-owned businesses could be interpreted because of lending policies that do not value the commitment of family labor as an asset, or it could be viewed as a disinterest in entrepreneurship among Hispanic communities.⁹¹ While we can’t control people’s misplaced speculation upon viewing our data, we can control our framing and contextualization. In this example, it may be helpful to provide additional data about lending policies and how assets/costs are considered in making loans alongside the previously mentioned data. It is imperative to push back against the idea that marginalized communities are somehow responsible for the conditions they experience in our data communication.

It may also be helpful to test your ultimate presentation of data among diverse audiences. Running your conclusions and materials by people with varying identities is a good way to test how people will interpret (or misinterpret) your analysis.

DATA VISUALIZATION

The primary goal in data visualization is to communicate findings clearly and accessibly to wide variety of audiences. Our visual design choices can either enhance or undermine equity. When developing data visualizations, it is imperative to use an equity lens when choosing colors, icons & shapes, ordering, and text features.⁹²

Tableau is the City's primary platform for data visualization. Visit [OPA's Performance Dashboard Resources Hub](#) for Tableau trainings and access to the City's data repository.

[Contact OPA](#) to request a Tableau license or if you'd like support creating data visualizations and dashboards.

DATA VISUALIZATION BEST PRACTICES

1. Create a visualization that appeals to your target audience. Identify the intended audience and purpose of the visualization. The following questions can help guide this process:

- WHO is our audience?
- WHY are we communicating? What is the desired effect? What action(s) do we want our audience to take after seeing this visualization?
- WHAT should the audience learn/understand from this? What is the best possible result?
- The following exercises can help us hone in on these answers in this stage:
 - What would we say if we had to communicate our message in 1 sentence?
 - Complete this sentence: We want people to walk away knowing _____ .

2. Strive for simplicity. The visualization should communicate your message as succinctly as possible.

- Select the appropriate chart or graph for your data.
 - **Visual Vocabulary:** This graphic can help you identify which graphs and charts are most applicable to your data and message (e.g., to visualize data showing change over time it recommends using line charts).⁹³
 - **Tableau Chart Builder:** Once you've decided which chart are graph to communicate your data, this step-by-step guide explains how to create them in Tableau.
- Include essential context so the audience fully understands the situation and our message. Ideally, use only the existing text features to add context (axis, titles, labels, captions, etc.).⁹⁴ Too many words can overwhelm the audience and overshadow our message.
- Use color strategically and sparingly. An array of colors that lack purpose can overwhelm the audience.⁹⁵
- Use a "Z" layout, which has the most essential information in the top right corner, then top left, then center right, center left, bottom right, and bottom left.⁹⁶

Data Visualization Resources

- **Tableau Visual Best Practices**: This is a comprehensive overview of the best practices to apply in data visualization. It has a link to Tableau's Visual Analysis Guidebook, which explains the nuances of practices in greater detail.
- **National Equity Atlas - Data Visualization Basics**: This resources outlines the basics in data visualization best practices.
- For inspiration, explore **Tableau's Viz of the Day**, which highlights quality visualizations creators have uploaded to Tableau Public. You can also explore visualizations in **Tableau Discover**, which groups visualizations and dashboards by topics like **public sector**, **business**, **healthcare**, **environment**, and **social impact**.
- **Rate My Data Visualization Checklist**: This resource has a brief training and related checklist to strengthen data visualizations.

EQUITY IN DATA VISUALIZATION

The sections below outline equity considerations about color choice, data order, the use of shapes and icons, and adding context in data visualization. These considerations are compiled in the [Equity in Data Visualization Checklist in Appendix B](#).

Color choice

Colors are relevant to every level of data visualization, from the overall theme to uniquely color-coded performance indicators (i.e., do the color choices clearly communicate your data, or are there too many colors of the same shade to see difference between groups?). Choices about color can reinforce or hinder equity.⁹⁷

Using Color to Differentiate Groups: The choice to use distinct colors or the same color to differentiate groups will ultimately depend on the chart type (e.g., bar chart, line chart, etc.) and your communication goals. Always avoid color ramps and graduated color palette to differentiate **between** groups as they can suggest a hierarchy.⁹⁸

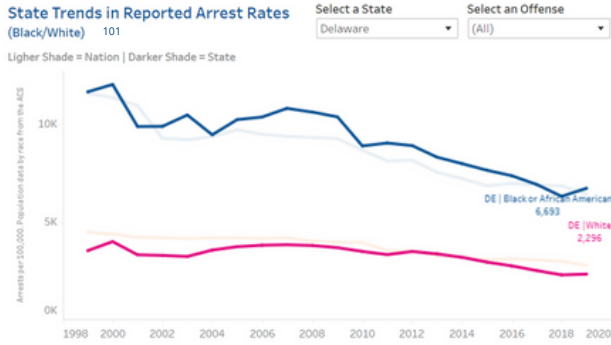
The following guidelines can enhance equity when visualizing data on different demographic groups.^{99,100}

Color Guidelines for Equity in Data Visualization

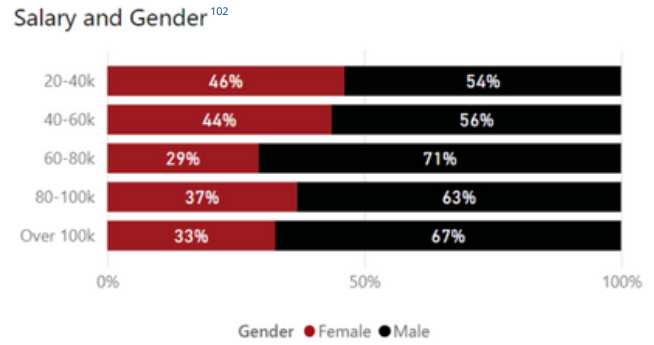
- Use distinct colors to differentiate **between groups** in visualizations where the data intersects (e.g., line chart, stacked bar chart, etc.)
- Use *either* distinct colors or a single color for groups in charts where data does not intersect and when there is enough room to add clarifying labels (e.g., bar chart).
- Graduated color palettes or color ramps can be used when demonstrating the rate, prevalence, or density of a phenomenon **within a group**, such as on a heat map. Avoid these when differentiating between groups.

1. Use distinct colors to differentiate *between* groups in visualizations where the data intersects (e.g., line chart, stacked bar chart, etc.)

Example 1



Example 2



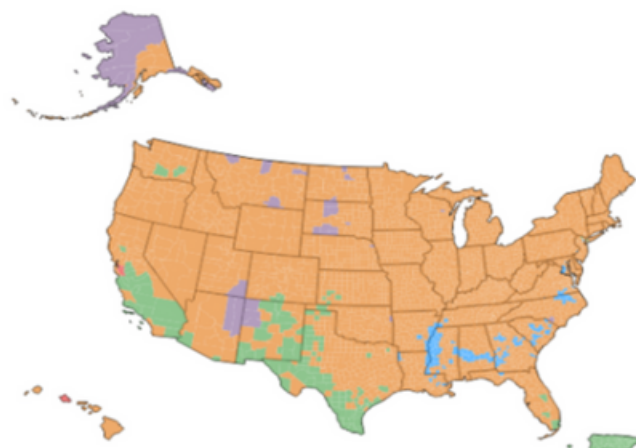
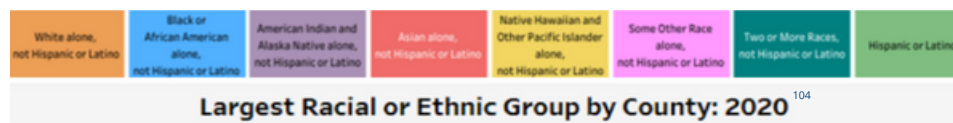
Example 3

Employment by Ethnicity ¹⁰³

Ethnicity: ● American Indian ● Asian ● Black ● Hispanic ● Not Specified ● White

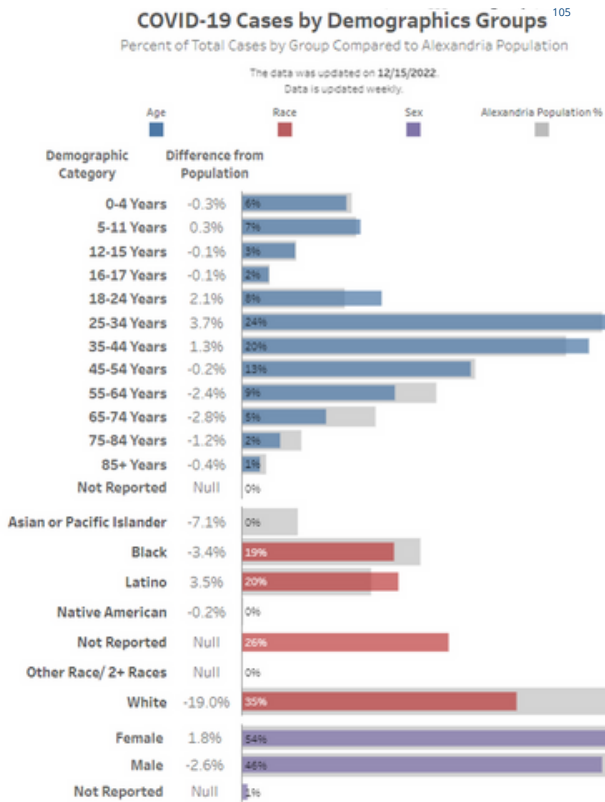


Example 4

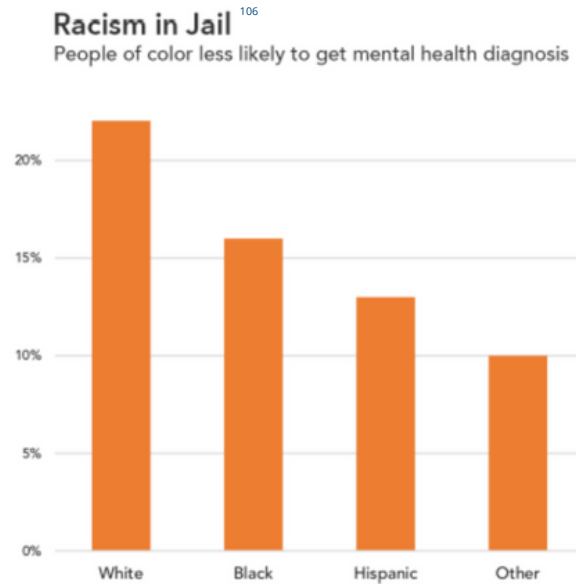


2. Use *either* distinct colors or a single color for groups in charts where the data does not intersect and labels are included for clarity (e.g., bar chart).

Example 1

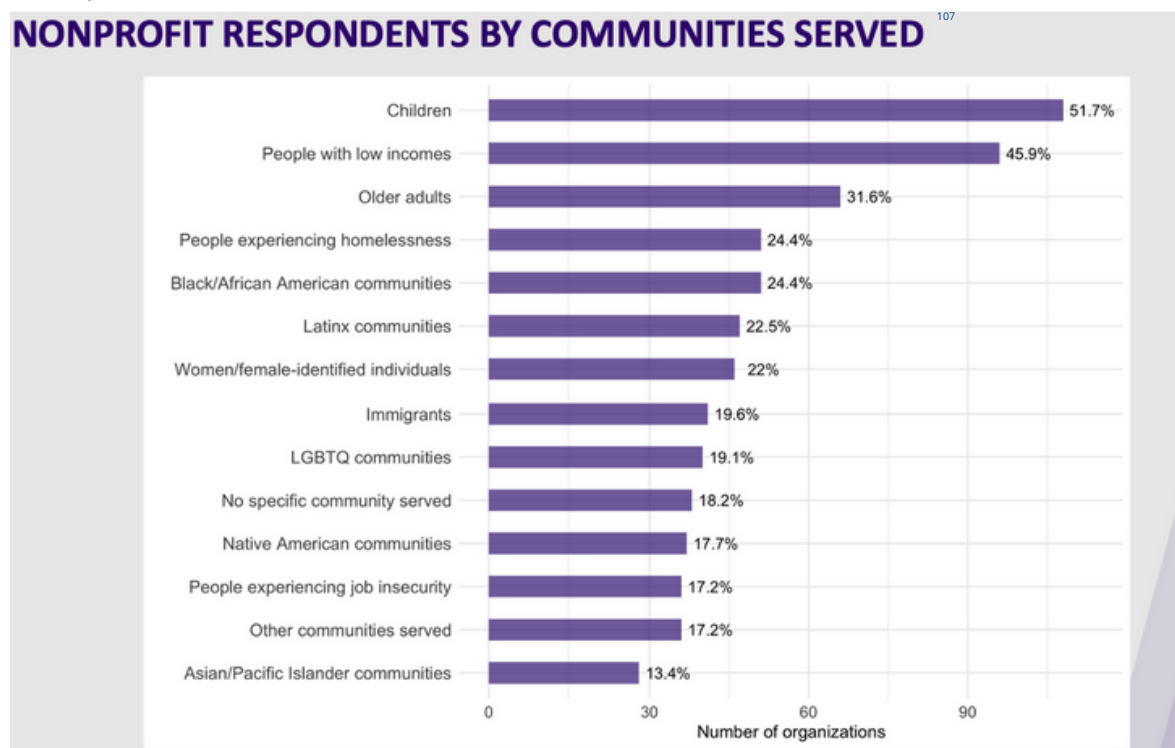


Example 2



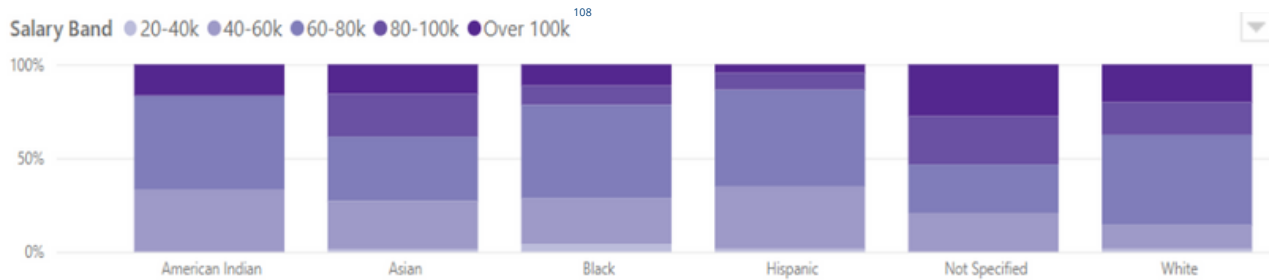
The chart in Example 2 contextualizes the impact of racism on mental health diagnoses in the title and subtitle. The importance of text features in data visualization are described in Appendix B.

Example 3



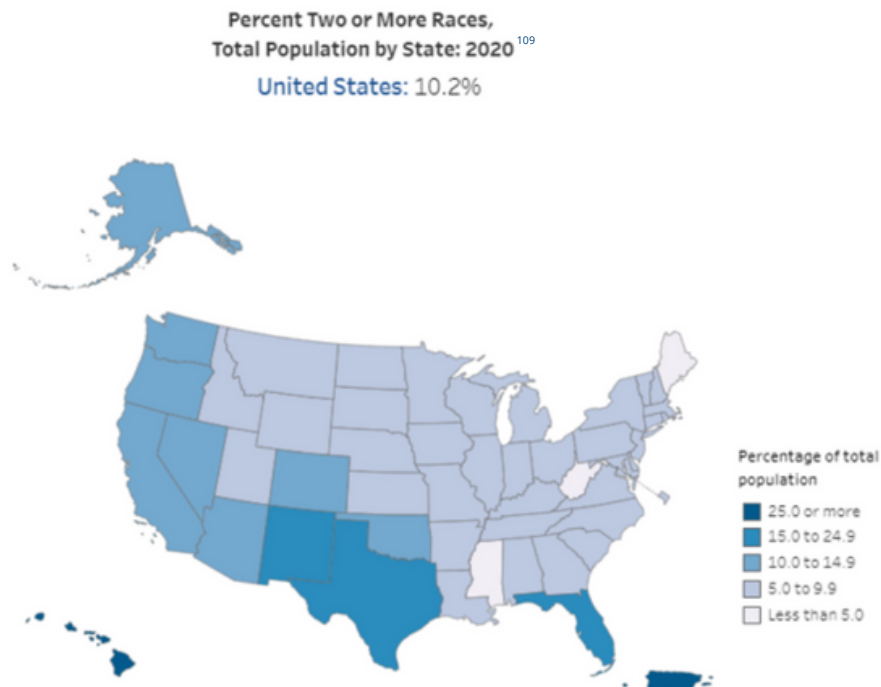
3. Graduated color palettes or color ramps can be used when demonstrating the rate, prevalence, or density of a phenomenon *within* a group, such as on a heat map. As mentioned previously, avoid these when differentiating *between* groups.

Example 1



The figure in Example 1 depicts an appropriate use of a graduated color palette to demonstrate the distribution of salary bands **within a group**.

Example 2



The map in Example 2 above uses a graduated color palette to demonstrate increases percent of the population with two or more races across the country. Again, this is demonstrating a distribution **within a distinct group**.

EXAMPLES OF PROBLEMATIC DATA VISUALIZATION

The visualizations below are examples of color choices that are problematic. They imply a hierarchy between groups of people or make negative value associations.¹¹⁰



Additional Considerations for Color Choice

Color-related stereotypes: Color choices should be objective and avoid identity stereotypes. For example, representing the category “female” as pink and “male” as blue reinforces gender stereotypes associated with color.¹¹¹

Emotional Connotations of Color: Consider the emotional response that color may evoke. For example, in some culture's red could be associated with anger and danger. Let's say we want to use color to visualize the population distribution of different racial groups in a geographic area. If we assign red to one of the race categories, the red group in the subsequent visualization could be perceived as invasive or threatening. Furthermore, distinct cultures may have different interpretations of color, whereas certain groups of people may view red as a “negative” color, others might consider it to be lucky in certain contexts.¹¹²

Accessibility and Color: When we select colors, especially when we're using them to distinguish between different values, the distinction should be accessible.¹¹³ See [Tableau's tips for designing colorblind-friendly visualizations](#) and [Urban Institute's Centering Accessibility in Data Visualization Guide](#) and [list of accessibility tools](#) for guidance.

Icons & Shapes

Stereotypes may be associated with the icons and shapes used to visualize data. Equity-centered data visualization requires us to select icons and shapes that reinforce dignity and do not reinforce stereotypes. For example, using an icon representing doctors that only shows a man can reinforce harmful gender-based stereotypes about professional qualifications.¹¹⁴

Ordering Data

An equity-centered approach requires sensitivity to the way data is ordered in our visualizations, as the order can imply hierarchy between groups. In general, quantitative ordering (i.e., ascending or descending order) is a best practice for data visualization. However, to avoid harm and enhance equity quantitative ordering should be paired with appropriate contextualization and consideration around the message the visualization is trying to communicate (see section below). Without context and consideration of the central message, quantitative ordering could continue to center more privileged groups.¹¹⁵

The following questions can help guide decisions about the order of data.¹¹⁶

Guidance for Ordering Data

- 1. Does the project focus on a particular community?** If so, that group should be presented first *or* highlighted in a certain way.
- 2. Is there a specific argument or story you want to tell?** If so order or present the results to reflect that argument/story. If not, consider options in #3.
- 3. Other options for equity-centered data ordering.**
 - Alphabetically
 - By sample size
 - By population size
 - Magnitude of outcome

Contextualize Findings Using Text Features

Text features (i.e., titles, labels, axis) help the audience interpret data through an equity-centered lens. Consider the strategies below when using equity-centered text in data visualizations. Text in data visualizations should place findings within the context of historic and systemic oppression and inequities.¹¹⁷

Inclusive & People-Centered Language: The text used in the data visualization should center on the person and refer to situation they experience (i.e., people experiencing unemployment), rather than static states of being (i.e., unemployed people). This practice reinforces individual agency and respect for dignity. Examples of inclusive and people-centered language can be found in section on [Accessibility of Data Collection Tools](#).¹¹⁸

STAKEHOLDER FEEDBACK ON DATA PRESENTATION

When applicable, visualizations should be shared with community members for feedback, before being released to the public. This continues to build trust and acknowledge the community's agency. Below are some questions to guide conversations and elicit community feedback:¹¹⁹

- Is the visualization using language consistent with how community members refer to themselves/others?
- In what ways might the visuals be inconsistent with what you expect equity should look like?
- Is the visualization communicating what you intend to have it communicate?
- How does the community typically prefer to have information visualized?

Additional Data Equity Visualization Resources

- [Sample Data Visualizations for Equity-Centered Data](#)
- [Tableau Racial Equity Hub](#)
 - [Data Story Examples](#)
- [Urban Institute: Do No Harm Guide](#)
- [How Not to Visualize Like a Racist](#)

SHARING YOUR WORK WITH THE COMMUNITY

Achieving equity will require collective impact from all members of a community. Engaging with communities by sharing the impact of an equity-centered effort will strengthen movement towards collective impact. Enabling the community can also help disrupt the power dynamics that exist in data governance and accessibility.¹²⁰ Enabling the community to access data collected about them, while simultaneously protecting confidential data, fosters transparency. It also reduces the burden that some communities may experience when accessing siloed data. Sharing non-confidential data, when it is unlikely that it could lead to harm or add risks, may reduce the burden that individuals and communities experience from data collection.¹²¹

Forming dissemination strategy advances equity by ensuring that dissemination is of value to the community.¹²² [King County's Community Engagement Continuum and Worksheet](#) can be used a template to guide dissemination strategy development.

DISSEMINATION STRATEGY STEPS¹²³

1

Gather Dissemination Team: The dissemination team will identify and develop strategies that engage the community. The team should include members of the internal project team, community members, and other external stakeholders. Integrating community perspectives into the dissemination strategy advances equity by ensuring that the community gains value from the project/research.¹²⁴ The value to the community may come in the form of research reports, or it may create more value in the form of a co-authored blog post. The following questions can help you identify the other community partners to include on the dissemination team.

- Who are the community members most affected by this project/research? Which organizations are related to these community members?¹²⁵
- Do stakeholders include grassroots communities of color and/or marginalized communities?¹²⁶

2

Develop Dissemination Strategy: In collaboration with the dissemination team determine the intended audience and the platforms/mediums that will allow the most transparent communication. The dissemination strategy should be. The following questions can help guide strategy development with the dissemination team.

- What would the community like to gain from the findings?¹²⁷
- How do you plan to attract the community?
- How will you ensure every community member who wants to review or discuss the findings has the opportunity?¹²⁸
 - Can community organizations disseminate the report through their program participants and list serves?
 - Will you create alternative products that might be more accessible or effective for the community?
- Will the community be involved in drafting reports and materials? If yes, how so?¹²⁹
 - How will the community receive credit or recognition for their role in the project/research?

3

Evaluate Impact of Dissemination: After dissemination, the team can reflect on whether they effectively executed this strategy and reached the dissemination goal. This will create pathways for more effective dissemination in the future.

ENGAGEMENT ACTIVITIES TO SHARE FINDINGS

In addition to traditional dissemination methods (reports, published project, etc.), the list of engagement/outreach activities below has additional options that the dissemination team can consider when crafting their dissemination plan.¹³⁰

Data Walks

Data Walk are a way to share data and research findings with the community. Data walks can be conducted in-person or virtually. The Data Walk offers researchers and/or community organizations an accessible and meaningful way to analyze data in partnership with community residents and other stakeholders. See the [Urban Institute's guide on Data Walks](#) to learn more.

- Example: [Durham Neighborhood Compass](#) from [DataWorks NC](#)

Storytelling/mapping

Stories can illustrate and provide context to the data in a way that helps viewers better understand the connections between systems and outcomes. Access [this resource](#) to learn more about leveraging storytelling.

- Examples: [Flood Action Alexandria Story Map](#), [Mapping Equity in Asheville](#), [Metriarch Data Stories](#)

Multimedia (photos, videos, podcasts)

Visualizing and vocalizing findings can help bring results to a large audience and communicate the emotional impact of findings. Learn more about using multimedia and photovoice processes through [this resource](#).

- Examples: [The New Orleans Youth Index: Video Series](#), [The Community Voice: A Photovoice Project Identifying Barriers and Facilitators to Health and Health Care](#)

APPENDIX

Appendix A: Demographic Data Collection

- Comparing Census Demographic Data to RDEG Recommendations
- Additional Demographic Questions

Appendix B: Data Visualization Checklist

APPENDIX A: DEMOGRAPHIC DATA COLLECTION

COMPARING CENSUS DATA TO RDEG RECOMMENDATIONS

The section on [Demographic Data Collection](#) recommends the current Census format for questions about race and ethnicity. However, it is important to note that the format may shift toward a combined race and ethnicity question format and the inclusion of a MENA (Middle Eastern or North African).¹³¹ This potential shift is reflected in with current research on demographic data collection and recommendations from the Biden Administration. In 2016 the Census Bureau recommended that race and ethnicity questions include the MENA category. They also recommended replacing the two-pronged race and ethnicity question about Hispanic origin with a combined question.

The Census Bureau determined that the combined question format/using a dedicated MENA response category is best for minimizing item non-response and collecting more reliable demographic data.¹³² However, the 2016 recommendations were not incorporated after the Trump Administration announced that the 2020 Census would use with the same dual-question format and demographic categories as the 2010 Census. The demographic question format on page 31 is the optimal question format recommended by the [Census National Content Test Race & Ethnicity Analysis Report](#). The Census Bureau is continues research to optimize demographic question formats for the 2030 Census and [the Biden Administration proposed](#) to include this question format in the 2030 Census. Census researchers and **other entities** have also advocated for inclusion of [dual-question format](#) and a [MENA category](#) on future questionnaires, including the 2030 census.

At present, the Census Bureau and federal Office of Management and Budget (OMB) currently categorize people with origins in Middle Eastern or North African (MENA) countries as as white and uses a dual-question format for race and ethnicity.

As a proactive measure in anticipation of this shift, we've created a strategy to help reconcile the the current format and dual-question and MENA category format for Census demographic questions on the following page.

COMPARING CENSUS DATA TO RDEG RECOMMENDATIONS

How to use this table: The updated category (left column) corresponds to the categories for race and ethnicity on current Census surveys. For example, if you survey Alexandria residents using RDEG categories and one of the respondents selects "MENA" alone, then this would be comparable to the "Not Hispanic, Latino, or Spanish Origin" ethnicity and the "White" race category on the Census.

UPDATED RACE/ETHNICITY CATEGORY	CENSUS ETHNICITY	CENSUS RACE
Hispanic, Latino, or Spanish only	Hispanic, Latino, or Spanish	*Some Other Race
Hispanic, Latino, or Spanish + White and/or MENA	Hispanic, Latino, or Spanish	White
Hispanic, Latino, or Spanish + Any 1 of the following: American Indian & Alaskan Native, Asian, Black, Native Hawaiian & Other Pacific Islander	Hispanic, Latino, or Spanish	Any 1 of the following: American Indian & Alaskan Native, Asian, Black, Native Hawaiian & Other Pacific Islander
Hispanic, Latino, or Spanish + 2 or more of the following: American Indian & Alaskan Native, Asian, Black, Native Hawaiian and Other Pacific Islander, **White or MENA <i>**If respondent selects both White and MENA, but none of the other categories, use the interpretation in box #2</i>	Hispanic, Latino, or Spanish	Two or More Races
2 or more of the following: American Indian & Alaskan Native, Asian, Black, Native Hawaiian and Other Pacific Islander, ***White or MENA <i>***If respondent selects both White and MENA, but none of the other categories, use the interpretation in box #2</i>	Not Hispanic, Latino, or Spanish	Two or More Races
MENA alone	Not Hispanic, Latino, or Spanish	White
MENA and/or White alone	Not Hispanic, Latino, or Spanish	White
Any 1 of the following categories alone: American Indian & Alaskan Native, Asian, Black, Native Hawaiian & Other Pacific Islander	Not Hispanic, Latino, or Spanish	Any 1 of the following categories alone: American Indian & Alaskan Native, Asian, Black, Native Hawaiian & Other Pacific Islander

**Some other Race: When respondents report a Hispanic, Latino, or Spanish origin in the race question, responses in the Hispanic, Latino, or Spanish code range are tabulated as Some Other Race.*

ADDITIONAL DEMOGRAPHIC CATEGORIES

Depending on your project and analytical goals, you may wish to collect additional demographic data to identify and address equity. This could include data about employment status, housing security and tenure, educational attainment, and disability status. The Census Bureau questions have been tested as effective measures and are recommended as reference points for any additional demographic question you may wish to include. Please note that the questions below are modified to accommodate potential limitations, such as having limited resources to code write-in survey responses and reduce survey fatigue on the respondents.¹³³ Surveys that are shorter in length can help reduce respondent survey fatigue. The references for each question, unless otherwise noted, are from the [U.S. Census Bureau](#).

EMPLOYMENT STATUS

Which best describes your current employment status?

- Full-time (35 or more hours a week) for pay
- Part-time (less than 35 hours a week) for pay
- Unemployed, looking for work
- Unemployed, unable to work or not looking for work
- Retired
- Prefer to self-describe: _____

DISABILITY STATUS

Questions on disability status are tested measures included on a variety of [Census surveys](#) (follow this [link](#) for information on how the Census defines and categorizes disability status).

Are you deaf or do you have serious difficult hearing?

- Yes
- No

Are you blind or have serious difficulty seeing even when wearing eyeglasses?

- Yes
- No

Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?

- Yes
- No

Do you have serious difficulty walking or climbing stairs?

- Yes
- No

Do you have difficulty dressing or bathing?

- Yes
- No

DISABILITY STATUS

Because of physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor’s office or shopping?

- Yes
- No
- Prefer not to answer

Shortened Alternative ¹³⁴

Do you have a long-lasting or chronic condition (such as physical, visual, auditory, cognitive, emotional, or other) that requires ongoing accommodations for you to conduct daily life activities (such as your ability to see, hear or speak, to learn, remember or concentrate)?

- Yes
- No
- Prefer not to answer

HOUSEHOLD RELATIONSHIPS

Questions about the makeup of households will vary in structure depending on the purpose of the survey. For example, it is unlikely that a survey for school-aged children would ask about the number of dependents in their household. Regardless of the question structure, the guidance below helps to build more inclusive questions about households. ¹³⁵

Examples of Inclusive Terminology

- “Parent/guardian” instead of “mother” or “father”
- “Spouse” instead of “wife” or “husband”
- “Siblings” instead of “brother” or “sister”
- “Adopted child” instead of “adopted daughter” or “adopted son”

HOUSING SECURITY & TENURE

Please note, the questions about housing assume that the survey is being administered to a designated address. To be more inclusive of people who are at risk of or currently experiencing homelessness, consider the starting with question(s) about housing security and apply skip logic for follow-up questions about housing tenure. ¹³⁶

In the past two months, have you been living in stable housing that you own, rent, or stay in as part of a household?

- Yes
- No

HOUSING SECURITY & TENURE

Where did you sleep last night?

- In an emergency shelter, haven, or transitional housing project
- In an institution (hospital, jail, prison, juvenile detention facility, long-term care facility)
- In a place not meant for human habitation (including in a car, unsheltered on a street or under a bridge, etc.)
- In housing you rented
- In housing you owned

Are you worried or concerned that in the next two months you may NOT have stable housing that you own, rent, or stay in as part of the household?

- Yes
- No

Is the building (house, apartment, etc.) you live in... (Mark one box)

- Owned by you or someone in this household with a mortgage or loan
- Owned by your or someone in this household free and clear (without mortgage or loan)
- Rented

Which best describes the building you live in? (Mark one box)

- One-family house detached from other houses
- Building with two or more homes
- Another

EDUCATION

What is the highest degree or level of school you have completed? If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed
- Less than high school
- High school graduate (High school diploma, GED or alternative credential)
- Some college, no degree
- Associates degree
- Bachelor's degree
- Graduate degree or higher (Master's, Professional, Doctoral degrees)

TRANSPORTATION

How do you get to work most days?

- Car, truck, van
- Public transportation (bus, subway, etc.)
- Taxicab
- Walk
- Bike
- I work from my home
- I travel to work another way (Please describe: _____)

COMPUTER & INTERNET ACCESS

In your household, do you own or use any of the following devices? (Check the box)

	YES	NO
Desktop or Laptop		
Smartphone		
Tablet or other portable wireless computer		
Some other type of computer (specify): _____		

In your household, do you have access to the internet? (Check the box)

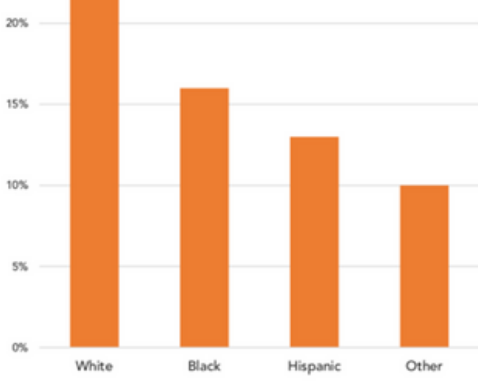
- Yes, by paying a cell phone company or internet service provider
- Yes, without paying cell phone company or internet service provider
- No access to the internet

Do you have access to the internet using a... (Check the box)

	YES	NO
A cellular data plan for a smartphone or mobile device		
Broadband (high speed) internet service in the household		
Satellite Internet service in the household		
Dial-up internet service in the household		
Some other service (please specify): _____		

APPENDIX B: DATA VISUALIZATION CHECKLIST

The Data Visualization Checklist reflects the best practices described in the Data Visualization section. It can be used to evaluate your data visualizations. Unless otherwise noted, the references are from the Urban Institute's [Do No Harm Guide](#).

Visualization Component	Equity-Centered Practice	Problematic Practice
<p>Color</p> <ul style="list-style-type: none"> The visualization avoids color ramps or graduated color palettes to distinguish between groups Color choices do not reinforce stereotypes Graduated color palettes are only used to differentiate within groups 	 <p>Color palette avoids gradients and implied hierarchies</p>  <p>Graduated color palette is appropriate when differentiating outcomes <i>within</i> a group, rather than between groups.</p>	 <p>Color palette suggests value differences between race and ethnic groups.</p>
<p>Contextualize Findings (Text Features)</p> <ul style="list-style-type: none"> Text features, such as titles and subtitles contextualize findings Racism, sexism, or other forms of discrimination are explicitly called out when present in the data The visualization uses person-first language 	<p>Racism in Jail People of color less likely to get mental health diagnosis</p>  <p>The title reflects research findings & identifies system of oppression (racism in jail). The subtitle uses person-first language..</p>	<p>Mental Health in Jail Rate of mental health diagnosis of inmates</p>  <p>The title ignores context of systemic racism in research findings. The subtitle uses dehumanizing language (e.g., inmates).</p>

Visualization Component	Equity-Centered Practice	Problematic Practice
-------------------------	--------------------------	----------------------

Icons & Shapes

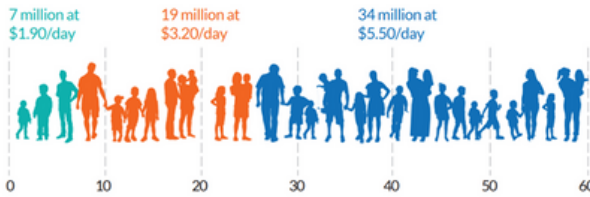
The visualization uses icons and shapes in an intentional and thoughtful way.

FIGURE 02
A comparison of a standard stacked bar chart and a unit chart with icons.

Millions of people in poverty

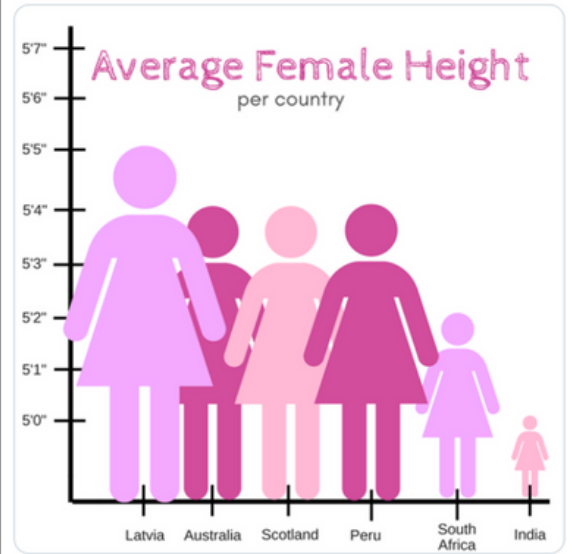


Millions of people in poverty



The icons in the unit chart are paired with a stacked bar chart. The scaling is appropriate and consistent across the chart.

Problematic Practice



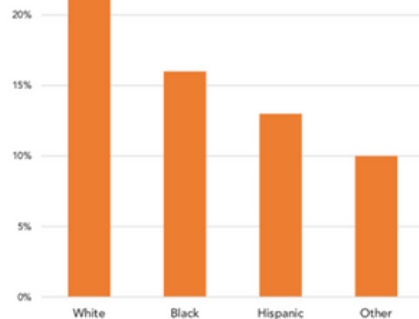
The icons are not scaled appropriately. The color pink also reinforces gender stereotypes.

Order

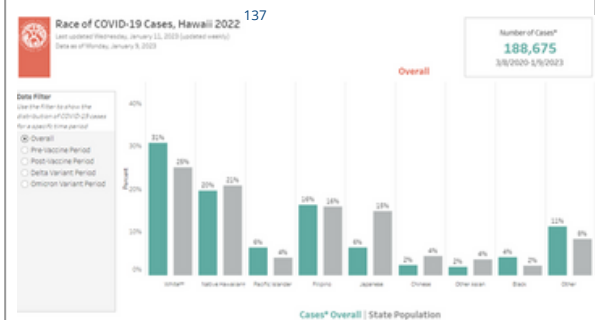
The order avoids centering the privileged group without prior consideration of alternatives.*
**It may be the case that the privileged group appears first*

Racism in Jail

People of color less likely to get mental health diagnosis



The data uses quantitative ordering (descending order). Though the privileged group (white) is ordered first, the text features explicitly name the role of racism and contextualize the issue.



The chart appears to arbitrarily order data and places the presumed privileged population, the white population, first.

REFERENCES

1. Racial Equity: Getting to Results. (2017). Government Alliance on Race & Equity. https://www.raciaequityalliance.org/wp-content/uploads/2017/09/GARE_GettingtoEquity_July2017_PUBLISH.pdf
2. Urban Institute Guide for Racial Equity in the Research Process. (2020). Urban Institute. https://www.urban.org/sites/default/files/publication/103102/urban_institute_guide_for_racial_equity_in_research_process_0.pdf
3. Research Guides, The Literature Review: Evaluating Sources (2023). University of Southern California. <https://libguides.usc.edu/writingguide/evaluatesources>; Evaluating Resources (2023). University of California, Berkley Library. <https://guides.lib.berkeley.edu/evaluating-resources>; Technical Writing Essentials: Finding and Evaluating Research Sources. (2023). British Columbia/Yukon Open Authoring Platform. <https://pressbooks.bccampus.ca/technicalwriting/chapter/findingevaluating/>.
4. Palmer, N. & Burchard, E. "Diversity in Research Participation: Why It's Important?" University of California at San Francisco. <https://recruit.ucsf.edu/diversity-research-participation-why-its-important>.
5. Reviewing Resources. (2013). Racial Equity Tools. <https://drive.google.com/file/d/1xEcziRKw4tlw7qdT8iZNP5UH45dM3Zlb/view> .
6. Ibid.; How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
7. Staats et. Al. (2017). State of Science: Implicit Bias Review. The Ohio State University, Kirwan Institute for the Study of Race and Ethnicity. <https://kirwaninstitute.osu.edu/sites/default/files/pdf/2017-implicit-bias-review.pdf>.; How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
8. Why am I always being researched? A guidebook for community organizations, researchers, and funders to help us get from insufficient understanding to more authentic truth. (2018). Chicago Beyond. <https://chicagobeyond.org/researchequity/>.
9. Ibid. ; How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
10. Benjamin V. Hanrahan, Ning F. Ma, Eber Betanzos, and Saiph Savage. (2020). Reciprocal Research: Providing Value in Design Research from the Outset in the Rural United States. Information and Communication Technologies and Development.15 <https://doi.org/10.1145/3392561.3397585>.
11. What are Possible Concerns About Using Available Information? (2013). Center for Assessment and Policy. <https://drive.google.com/file/d/1keEDNSE-sZ31e7PRo59jEtF3xfrebrT0/view>
12. Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf.
13. Swapnil Kangralkar. (2021). Types of Biases in Data. <https://towardsdatascience.com/types-of-biases-in-data-cafc4f2634fb>
14. Kassiani Nikolopoulou. (2023). What is Confirmation Bias? <https://www.scribbr.com/research-bias/confirmation-bias/#:~:text=Example%3A%20Confirmation%20bias%20During%20presidential,them%20in%20a%20negative%20light>.
15. County Health Rankings (2022). County Health Rankings Model – Life Expectancy. <https://www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-outcomes/length-of-life/life-expectancy?year=2022&county=51510>
16. Todd KH, Samaroo N, Hoffman JR. Ethnicity as a Risk Factor for Inadequate Emergency Department Analgesia. Journal of the American Medical Association. 1993;269(12):1537-9.
17. Hill, L., Artiga, S., and Ranji, U.. (2022). "Racial Disparities in Maternal and Infant Health: Current Status and Efforts to Address Them." <https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-maternal-and-infant-health-current-status-and-efforts-to-address-them/>.

REFERENCES

18. Centers for Disease Control and Prevention. (2022). "Working together to reduce Black maternal mortality." <https://www.cdc.gov/healthequity/features/maternal-mortality/index.html>.
19. Woolf, S. et. Al. (2016). A Study in Contrasts: Why Life Expectancy Varies In Northern Virginia. Northern Virginia Health Foundation. <https://novahealthfdn.org/storage/csh-nova-report-v10.pdf> ; Steven Woolf. Deeply Rooted: History's Lessons for Equity in Northern Virginia. The Virginia Commonwealth University (VCU) Center on Society and Health. <https://novahealthfdn.org/resources/deeply-rooted-report>.
20. National Academies of Sciences, Engineering, and Medicine. (2017). Communities in action: Pathways to health equity. Washington, DC: The National Academies Press. <https://nap.nationalacademies.org/catalog/24624/communities-in-action-pathways-to-health-equity>; Steven Woolf. Deeply Rooted: History's Lessons for Equity in Northern Virginia. The Virginia Commonwealth University (VCU) Center on Society and Health. <https://novahealthfdn.org/resources/deeply-rooted-report>.
21. Fawzy A, Wu TD, Wang K, et al. Racial and Ethnic Discrepancy in Pulse Oximetry and Delayed Identification of Treatment Eligibility Among Patients With COVID-19. JAMA Intern Med. 2022;182(7):730–738. doi:10.1001/jamainternmed.2022.1906
22. Perry, A. & Rothwell, J. (2022). The Black Progress Index: Examining the social factors that influence Black well-being. Brookings Institute. <https://www.brookings.edu/essay/the-black-progress-index/> ; National Academies of Sciences, Engineering, and Medicine. (2017). Communities in action: Pathways to health equity. Washington, DC: The National Academies Press. <https://nap.nationalacademies.org/catalog/24624/communities-in-action-pathways-to-health-equity>.
23. National Academies of Sciences, Engineering, and Medicine. (2017). Communities in action: Pathways to health equity. Washington, DC: The National Academies Press. <https://nap.nationalacademies.org/catalog/24624/communities-in-action-pathways-to-health-equity>; Woolf, S. et. al. (2017). Getting Ahead: The Uneven Opportunity Landscape in Northern Virginia. The Virginia Commonwealth University (VCU) Center on Society and Health. <https://novahealthfdn.org/resources/getting-ahead-the-uneven-opportunity-landscape-in-northern-virginia> ; 2022 Alexandria Community Health Needs Assessment. INOVA. https://www.inova.org/sites/default/files/about-inova/community/Inova_CHNA_Alexandria_2022.pdf.
24. 2019 Alexandria Community Health Needs Assessment. INOVA. https://www.inova.org/sites/default/files/about-inova/Inova%20in%20the%20Community/CHNA/2019_rev/2019_Alexandria_Community_Health_Assessment_rev_09.30.21.pdf.
25. Ibid.
26. Williams, D R, and T D Rucker. "Understanding and addressing racial disparities in health care." *Health care financing review* vol. 21,4 (2000): 75-90.
27. Kurtz, Hilda. "Linking food deserts and racial segregation: Challenges and limitations." *Geographies of race and food: Fields, bodies, markets* (2013): 247-264.
28. U.S. Department of Health and Human Services, Office of Minority Health. (2022). "Asthma and African Americans." <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=15#:~:text=Non%2DHispanic%20African%20Americans%20were,the%20non%2DHispanic%20white%20population>.
29. Rodríguez, José E, and Kendall M Campbell. "Racial and Ethnic Disparities in Prevalence and Care of Patients With Type 2 Diabetes." *Clinical diabetes : a publication of the American Diabetes Association* vol. 35,1 (2017): 66-70. doi:10.2337/cd15-0048
30. Fawzy A, Wu TD, Wang K, et al. Racial and Ethnic Discrepancy in Pulse Oximetry and Delayed Identification of Treatment Eligibility Among Patients With COVID-19. JAMA Intern Med. 2022;182(7):730–738. doi:10.1001/jamainternmed.2022.1906
31. Morales, Mary E., and R. Jason Yong. "Racial and ethnic disparities in the treatment of chronic pain." *Pain Medicine* 22.1 (2021): 75-90.
32. Fawzy A, Wu TD, Wang K, et al. Racial and Ethnic Discrepancy in Pulse Oximetry and Delayed Identification of Treatment Eligibility Among Patients With COVID-19. JAMA Intern Med. 2022;182(7):730–738. doi:10.1001/jamainternmed.2022.1906

REFERENCES

33. Life Expectancy at Birth for U.S. States and Census Tracts, 2010-2015. Centers for Disease Control and Prevention, National Center for Health Statistics. <https://www.cdc.gov/nchs/data-visualization/life-expectancy/index.html#>.
34. Unless otherwise noted, data comes from; Alexandria Demographics & Statistics. <https://geoportal.alexandriava.gov/portal/apps/opsdashboard/index.html#/e6025ff2ffed43fa8517286c4b75b30c> ; <https://geoportal.alexandriava.gov/portal/apps/opsdashboard/index.html#/54c53d47e0854df1a53abe2f1e317b98>
35. Life Expectancy at Birth for U.S. States and Census Tracts, 2010-2015. Centers for Disease Control and Prevention, National Center for Health Statistics. <https://www.cdc.gov/nchs/data-visualization/life-expectancy/index.html#>.
36. W.K. Kellogg Foundation. (2004). W.K. Kellogg Foundation Logic Model Development Guide. https://www.naccho.org/uploads/downloadable-resources/Programs/Public-Health-Infrastructure/KelloggLogicModelGuide_161122_162808.pdf
37. ACL's Logic Model Guidance. (2020). Administration for Community Living Office of Performance Evaluation. <https://acl.gov/sites/default/files/programs/2020-10/ACL%20Logic%20Model%20Guidance.pdf>.
38. Metrics for healthy communities. Affordable Housing. Robert Wood Johnson Foundation. <https://metricsforhealthycommunities.org/logic-models/affordable-housing>.
39. Eika Bernabei. (2017). Racial Equity: Getting to Results. Government Alliance on Race & Equity. https://www.racialequityalliance.org/wp-content/uploads/2017/09/GARE_GettingtoEquity_July2017_PUBLISH.pdf.
40. Ibid.
41. Ibid.
42. Ibid.
43. Equity indicators. Institute for State and Local Governments. <https://equityindicators.org/>
44. Mark Friedman. Results-Based Accountability: How do we get people to understand the difference between population results and program performance accountability?<https://clearimpact.com/3-2-how-do-we-get-people-to-understand-the-difference-between-population-results-and-program-performance-accountability-reprise/>
45. Eika Bernabei. (2017). Racial Equity: Getting to Results. Government Alliance on Race & Equity. https://www.racialequityalliance.org/wp-content/uploads/2017/09/GARE_GettingtoEquity_July2017_PUBLISH.pdf#page=16
46. How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
47. Ibid.
48. Best Practices for Survey Research. American Association of Public Opinion Research. <https://aapor.org/standards-and-ethics/best-practices/> ; Kaplowitz, R. & Laroche, J. (2021). More Than Numbers: A Guide Toward Diversity, Equity, and Inclusion (DEI) in Data Collection. <https://friendsnrc.org/wp-content/uploads/2021/05/More-Than-Numbers.pdf>
49. Heather Krause. (2020). Keeping Data Inclusivity Without Diluting your Results. <https://weallcount.com/2020/01/17/keeping-data-inclusivity-without-diluting-your-results/>
50. Digital Data - Four Principles. Digital Impact. <https://digitalimpact.io/toolkit/digital-data/four-principles/>
51. Chicago Beyond. Why am I always being researched? A guidebook for community organizations, researchers, and funders to help us get from insufficient understanding to more authentic truth. (2018). <https://chicagobeyond.org/researchequity/>.

REFERENCES

52. Center for Assessment and Policy Development. (2013). How Can We Design Survey Interviews and Questionnaires to Give use the Best Information Possible? <https://drive.google.com/file/d/15Xxf2ymsvyTKMo117uk3jtdvqEmxQXS7/view> ; Center for Assessment and Policy Development. (2013). Reviewing Resources. <https://drive.google.com/file/d/1xEcziRKw4tlw7qdT8iZNP5UH45dM3Zlb/view> ; Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>.
53. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>
54. Writing Survey Questions. Pew Research Center. <https://www.pewresearch.org/our-methods/u-s-surveys/writing-survey-questions/>
55. Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf.
56. Tom Miller. (2018). Gathering the Opinions of Hard-to-Reach Residents. International City/County Management Association. <https://icma.org/blog-posts/gathering-opinions-hard-reach-residents>
57. Ibid.
58. Ellen Taylor-Powell. (1998). Program Development and Evaluation: Sampling. University of Wisconsin. https://drive.google.com/file/d/1akruuiU2_5MAWhKujXFkH09oxJQZRoE7/view.
59. Pooja Bachani Di Giovanna. (2021). Engaging Marginalized Communities: Challenges and Best Practices. International City/County Management Association. <https://icma.org/articles/pm-magazine/engaging-marginalized-communities-challenges-and-best-practices>
60. Tom Miller. (2018). Gathering the Opinions of Hard-to-Reach Residents. International City/County Management Association. <https://icma.org/blog-posts/gathering-opinions-hard-reach-residents>
61. Ibid.
62. Stuart Andrews. (2021). How digital accessibility can drive diversity and inclusion. <https://abilitynet.org.uk/news-blogs/how-digital-accessibility-can-drive-diversity-and-inclusion>
63. The, W. & Lee, A. Increasing response rates of mail surveys and mailings. (2021). Poverty Action Labl. <https://www.povertyactionlab.org/resource/increasing-response-rates-mail-surveys-and-mailings>
64. Chicago Beyond. Why am I always being researched? A guidebook for community organizations, researchers, and funders to help us get from insufficient understanding to more authentic truth. (2018). <https://chicagobeyond.org/researchequity/> .
65. Race Reporting Guide. (2015). Race Forward: Center For Racial Justice Innovation. https://www.raceforward.org/sites/default/files/Race%20Reporting%20Guide%20by%20Race%20Forward_V1.1.pdf.
66. Kaplowitz, R. & Laroche, J. (2021). More Than Numbers: A Guide Toward Diversity, Equity, and Inclusion (DEI) in Data Collection. <https://friendsnrc.org/wp-content/uploads/2021/05/More-Than-Numbers.pdf>.
67. James, S. E., et. Al. (2016). The Report of the 2015 U.S. Transgender Survey. Washington, DC: National Center for Transgender Equality. <https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf> ; see measure 2.2 (p.254)
68. Williams Institue Scholars. (2020). Sexual Orientation and Gender Identity (SOGI) Adult Measures Recommendations. <http://williamsinstitute.law.ucla.edu/wp-content/uploads/SOGI-Measures-FAQ-Mar-2020.pdf>

REFERENCES

69. Federal Interagency Working Group on Improving Measurement of Sexual Orientation and Gender Identity in Federal Surveys. (2016). Evaluations of Sexual Orientation and Gender Identity Survey Measures: What Have We Learned?. https://dpcpsi.nih.gov/sites/default/files/Evaluations_of_SOGI_Questions_20160923_508.pdf#page=41&style=.pdf; File, T. & Lee, J. (2021). Phase 3.2 of Census Bureau Survey Questions Now Include SOGI, Child Tax Credit, COVID Vaccination of Children. United States Census Bureau. <https://www.census.gov/library/stories/2021/08/household-pulse-survey-updates-sex-question-now-asks-sexual-orientation-and-gender-identity.html>.
70. Heather Krause. (2020). Keeping Data Inclusivity Without Diluting Results. WeAllCount. <https://weallcount.com/2020/01/17/keeping-data-inclusivity-without-diluting-your-results/>.
71. Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf.
72. How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
73. Shah, S. & Ramakrishnan, K. (2017). Why Disaggregate? Big Differences in AAPI Education. Data Bits. <http://aapidata.com/blog/countmein-aapi-education/>
74. How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf.
75. Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf.
76. Heather Krause. (2020). Keeping Data Inclusivity Without Diluting Results. WeAllCount. <https://weallcount.com/2020/01/17/keeping-data-inclusivity-without-diluting-your-results/>.
77. Schwabish, J. & Feng, A. (2022). Considerations for Ensuring Data Aggregation is Inclusive as Possible. Urban Institute. <https://www.urban.org/urban-wire/considerations-ensuring-data-aggregation-inclusive-possible>; Schwabish, J. & Feng, A. (2021). Combining Racial Groups in Data Analysis Can Mask Important Differences in Communities. <https://www.urban.org/urban-wire/combining-racial-groups-data-analysis-can-mask-important-differences-communities>
78. Equity Indicators Methodology. Institute for State and Local Government. <https://equityindicators.org/methodology/>.
79. Ibid.
80. Ibid.
81. Heather Krause. (2022). The Privilege Embedded in Your Unit of Analysis. WeAllCount. <https://weallcount.com/2022/02/18/the-privilege-embedded-in-your-unit-of-analysis/>.
82. Heather Krause. (2022). Don't Let the P in P-Value Stand for Privilege. WeAllCount. <https://weallcount.com/2022/07/29/dont-let-the-p-in-p-value-stand-for-privilege/>.
83. Eubanks, V. (2018). *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. St. Martin's Press.
84. Angwin, J., Larson, J., Mattu, S., & Kirchner, L. (2016). "Machine bias." *ProPublica*. <https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>.
85. Merrick, A. (2019). "How making algorithms transparent can promote equity." *Chicago Booth Review*. <https://www.chicagobooth.edu/review/how-making-algorithms-transparent-can-promote-equity>.

REFERENCES

86. Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf#page=27.
87. Counterpart Consulting. Preschool Development Grant Birth through Five Initiative Report on Centering Racial Equity in Early Childhood Data and Stakeholder Engagement Work. North Carolina Early Childhood Foundation. <https://buildthefoundation.org/wp-content/uploads/2020/01/Racial-Equity-Report-for-PDG.pdf>.
88. Mark Mason. (2010). Sample Size and Saturation in PhD Studies Using Qualitative Interviews. Forum Qualitative Social Research. <https://www.qualitative-research.net/index.php/fqs/article/view/1428/3027>.
89. How to Embed How to Embed a Racial and Ethnic Equity Perspective in Research. (2019). Child Trends. https://cms.childtrends.org/wp-content/uploads/2019/09/RacialEthnicEquityPerspective_ChildTrends_October2019.pdf#page=10.
90. O'Connor, C. & Joffe, H. (2020). Intercoder Reliability in Qualitative Research: Debates and Practical Guidelines. <https://journals.sagepub.com/doi/10.1177/1609406919899220>.
91. Center for Assessment and Policy Development. (2013). How can we avoid “blaming the victim” when we present information on poor outcomes for different racial, ethnic, language, or immigrant groups in our community? Racial Equity Tools. https://drive.google.com/file/d/1KNn_iuGDGi5Nn2tSneBRuJ7ExGBIrlcP/view.
92. The Racial Equity in Data Visualization Checklist. Urban Institute. <https://www.urban.org/sites/default/files/2021/06/08/do-no-harm-guide-checklist.pdf>.
93. Chart Doctor – Visual Vocabulary. (2020). Financial Times. <https://github.com/Financial-Times/chart-doctor/tree/main/visual-vocabulary>.
94. Visual Best Practices. Tableau. https://help.tableau.com/current/blueprint/en-us/bp_visual_best_practices.htm
95. Ibid.
96. Ibid.
97. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>; Schwabish, J. & Feng, A. (2021). Are your data visualizations racist? Stanford Social Innovation Review. https://ssir.org/articles/entry/are_your_data_visualizations_racist.
98. Ibid.
99. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>
100. UNC Health’s Equity & Inclusion Analytics Workgroup. (2022). An Analyst’s Guide to Advancing Equity in Data Visualization. UNC Health Standards. <https://ncstoragemlunchealthcare.blob.core.windows.net/public/pdf-system-data-visualization-standards.pdf>.
101. USAFacts: Racial Disparities in Policing. Tableau Data Equity Hub. <https://www.tableau.com/foundation/data-equity/equitable-justice/policing-disparities>
102. Interactive Equity & Inclusion Dashboard. City of Cambridge, Equity & Inclusion. <https://www.cambridgema.gov/departments/equityandinclusion/interactiveequityandinclusiondashboard>
103. Ibid.
104. U.S. Census Bureau (2021). Race and Ethnic Diversity in the United States: 2010 Census and 2020 Census. <https://www.census.gov/library/visualizations/interactive/racial-and-ethnic-diversity-in-the-united-states-2010-and-2020-census.html>.

REFERENCES

105. COVID-19 Demographic Dashboard. City of Alexandria, Performance Analytics. <https://www.alexandriava.gov/performance-analytics/covid-19-demographic-dashboard>
106. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>
107. Finchum-Mason, E.A., Husted, K. , Gugerty, M.K., & Barnhart-Mills, E. (2020). Local Impacts of a Global Crisis. <https://evans.uw.edu/wp-content/uploads/2020/08/NBEC-Local-Impacts-of-a-Global-Crisis-How-Washington-state-nonprofits-are-responding-to-COVID-19-1.pdf>
108. Interactive Equity & Inclusion Dashboard. City of Cambridge, Equity & Inclusion. <https://www.cambridgema.gov/departments/equityandinclusion/interactiveequityandinclusiondashboard>.
109. U.S. Census Bureau (2021). Race and Ethnic Diversity in the United States: 2010 Census and 2020 Census. <https://www.census.gov/library/visualizations/interactive/race-and-ethnicity-in-the-united-state-2010-and-2020-census.html>.
110. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf> ; Schwabish, J. & Feng, A. (2021). Are your data visualizations racist? Stanford Social Innovation Review. https://ssir.org/articles/entry/are_your_data_visualizations_racist.
111. Ibid.
112. Ibid.
113. Schwabish, J. et al. (2022). Do No Harm Guide: Centering Accessibility in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/2022-12/Do%20No%20Harm%20Guide%20Centering%20Accessibility%20in%20Data%20Visualization.pdf>.
114. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>.
115. Ibid; An Analyst's Guide to Advancing Equity in Data Visualization. UNC Health Standards. <https://ncstorageemlunhealthcare.blob.core.windows.net/public/pdf-system-data-visualization-standards.pdf#page=15> .
116. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>.
117. Ibid.; Schwabish, J. & Feng, A. (2021). Are your data visualizations racist? Stanford Social Innovation Review. https://ssir.org/articles/entry/are_your_data_visualizations_racist
118. Ibid.
119. Schwabish, J. & Feng, A. (2021). Do No Harm Guide: Applying Equity Awareness in Data Visualization. Urban Institute. <https://www.urban.org/sites/default/files/publication/104296/do-no-harm-guide.pdf>.
120. Walker, F., Torres Rodriguez, S., & O'Brien, M. (2021). Local Data as an Equity Tool. Urban Institute. <https://www.urban.org/sites/default/files/publication/105011/local-data-as-an-equity-tool.pdf>.
121. Gaddy, M. & Scott, K. (2020). Principles for Advancing Equitable Data Practice. Urban Institute. https://www.urban.org/sites/default/files/publication/102346/principles-for-advancing-equitable-data-practice_0.pdf.
122. Community-Centered Dissemination Toolkit. Program in Health Disparities Research, University of Minnesota. <https://med.umn.edu/healthdisparities/community-engagement/dissemination-toolkit>.

REFERENCES

123. Ibid.
124. Shakesprere, J. et al. (2021). Fostering Partnerships for Community Engagement. Urban Institute. https://www.urban.org/sites/default/files/publication/104935/fostering-partnerships-for-community-engagement_0.pdf.
125. Nelson, J. et al. (2015). Advancing Racial Equity and Transforming Government. Government Alliance on Race & Equity. https://racialequityalliance.org/wp-content/uploads/2015/02/GARE-Resource_Guide.pdf
126. Ibid.
127. Shakesprere, J. et al. (2021). Fostering Partnerships for Community Engagement. Urban Institute. https://www.urban.org/sites/default/files/publication/104935/fostering-partnerships-for-community-engagement_0.pdf
128. Harrison, E. et al. (2021). Community-Engaged Surveys: From Research Design to Analysis and Dissemination. Urban Institute. https://www.urban.org/sites/default/files/publication/104934/community-engaged-surveys-from-research-design-to-analysis-and-dissemination_0.pdf
129. Ibid.
130. Harrison, E. et al. (2021). Community-Engaged Surveys: From Research Design to Analysis and Dissemination. Urban Institute. https://www.urban.org/sites/default/files/publication/104934/community-engaged-surveys-from-research-design-to-analysis-and-dissemination_0.pdf ; Centering Racial Equity Throughout Data Integration. Actionable Intelligence for Social Policy, University of Pennsylvania. https://aisp.upenn.edu/wp-content/uploads/2022/07/AISP-Toolkit_5.27.20.pdf
131. Hansi Lo Wang. (2022). The U.S. Census sees Middle Eastern and North African people as white. Many don't. NPR. <https://www.npr.org/2022/02/17/1079181478/us-census-middle-eastern-white-north-african-mena> ; Information Nation: The Need for Improved Federal Civil Rights Data Collection. (2022). <https://civilrights.org/resource/information-nation-the-need-for-improved-federal-civil-rights-data-collection/>.
132. Matthews, P. et al. (2017). 2015 National Content Test Race and Ethnicity Analysis Report. United States Census Bureau. <https://apps.npr.org/documents/document.html?id=4316468-2015nct-Race-Ethnicity-Analysis#page=94>
133. Core Demographic Questions Explained. (2022). National Alliance on Mental Illness. <https://www.nami.org/getmedia/5adbaa46-26ff-4704-b9ac-f5c01ad3f8ed/Core-Demographic-Questions-Explainer-Field>.
135. Kaplowitz, R. & Laroche, J. (2021). More Than Numbers: A Guide Toward Diversity, Equity, and Inclusion (DEI) in Data Collection. <https://friendsnrc.org/wp-content/uploads/2021/05/More-Than-Numbers.pdf>.
136. Creating Inclusive Surveys. Penn Libraries, University of Pennsylvania. <https://guides.library.upenn.edu/inclusive-surveys/demographics>.
137. Sample Housing and Homelessness Status Assessment Questions. United States Interagency Council on Homelessness. https://www.usich.gov/resources/uploads/asset_library/CE_Sample_Housing_Status_Questions.pdf
138. Interactive Equity & Inclusion Dashboard. City of Cambridge, Equity & Inclusion. <https://www.cambridgema.gov/departments/equityandinclusion/interactiveequityandinclusiondashboard>.
139. Race of COVID-19 Cases, Hawaii 2022. State of Hawaii Health Department. https://health.hawaii.gov/coronavirusdisease2019/tableau_dashboard/race-ethnicity-data/