§sas

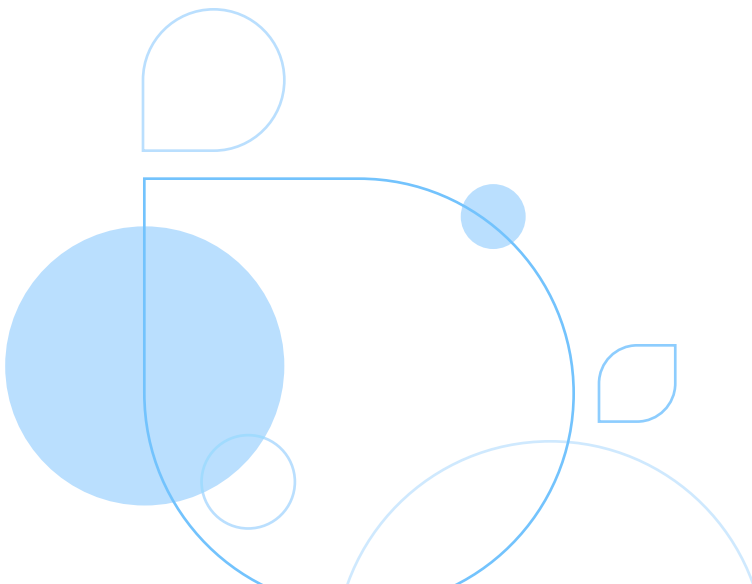# The road to health equity

How data and analytics contribute to improving outcomes for all

Contents

Introduction

Health equity has been on the public health agenda for years and has yet to make significant progress. Many factors, such as affordability, access, ethnicity, race, socioeconomic status or geographical location, affect the quality of care and health outcomes.[1]

While health equality has been a prominent effort measured by access to care, health equity has not gained the same attention due to its more nuanced definition and the challenge of operationalizing equity. Before discussing the current state of equality and equity, let's briefly define both terms for this white paper.

Health equality means everybody has **equal access** to treatments and resources.

Health equity recognizes that each person has **different circumstances and allocates the right resources and opportunities** needed to attain that person's highest level of health, removing both social and economic barriers that foster unequal treatment and poverty.
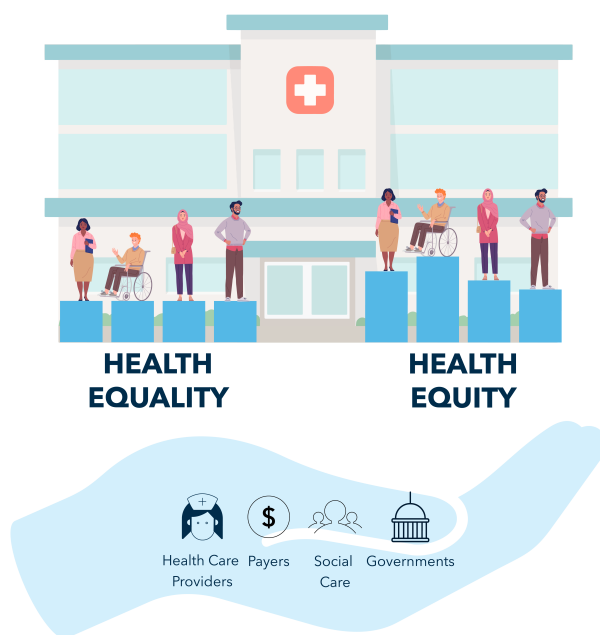

Figure 1: Health equality vs. Health equity

Health equity challenges

Challenge 1: Organizations struggle to define health equity and measure results.

Organizations struggle to pinpoint what health equity means and how it can be measured, making it difficult to find a solution. How can you resolve what is not adequately defined? Most initiatives don't address the root causes of disparities, so the focus remains on equality rather than equity.

---

[1] Williams, J.S., Walker, R.J., Egede, L.E. (2016). Achieving Equity in an Evolving Healthcare System: Opportunities and Challenges. *American Journal of Medical Science*.

Challenge 2: Roles and responsibilities in health equity are unclear.

Payers, providers and governments struggle to clearly outline and coordinate their responsibilities to ensure health equity. Initial incentives have missed a link between these different stakeholders, even though working together toward common goals is crucial for improving health equity. Despite the good intentions of many, an overall lack of coordinated responsibilities has hampered the achievement of equitable outcomes.

Challenge 3: Public trust is lacking.

There is a lack of trust in the government, medical institutions, clinical trials and data, which hinders progress in health equity. During the pandemic, the rise of mistrust of physicians, scientists and other experts was on display. Mistrust and misinformation created new and exacerbated long-standing health inequities in historically disadvantaged populations.

There are many reasons that seem to explain why populations often distrust the health care system: culturally incompetent care, limited access to essential services, poor experiences with medical professions, misdiagnosis/underdiagnosis and treatment of conditions, and difficulties navigating health care systems.

The design of public infrastructure and systems historically often resulted in placing disadvantaged populations in health-harming environments that correlate with the presentation of chronic conditions, such as asthma, diabetes and heart disease.

In addition, clinical research conducted during the development of medications or medical devices may have not always included representation from the populations the therapies were intended to serve, contributing to mistrust. If clinical trials do not statistically represent the diversity of patients the therapy is designed for, inequity in health outcomes will likely continue to be observed in health systems.

Challenge 4: There's not enough representative data.

Available data is often not representative of the whole population. Many subpopulations do not have equal access to care or are less likely to access care, such as the uninsured, immigrants not using health care, subjects of human trafficking or those in certain professions. As a result, data on these subpopulations is often lacking.

Even where data is available, it might be collected inconsistently or in different formats, which could make it more challenging to compare. Some subpopulations are not sufficiently represented in the data collected, such as those in the LGBTQ+ community. Survey participants may choose not to disclose their sexual orientation or **unstable estimates are made** due to inconsistent sampling, leading to a knowledge gap about the true size of the community. Not having enough representative data on subpopulations prevents organizations from identifying and understanding health inequities and forecasting trends.

For example, social determinants of health data such as race/ethnicity and income categories are often overly simplified, uncollected or inaccurate. Even though race/ethnicity are often mentioned as factors in studies on health inequities, evidence shows that "socioeconomic position is a stronger determinant of health-related outcomes than race. Several studies have shown that the effect of race/ethnicity on health outcomes tends to diminish significantly when socioeconomic position is controlled for and in some instances the race effect disappears."[2] This presents a challenge of codifying social determinants into standardized data sets that can be useful and trusted for analysis.

[2] Egede, L.E. (2006). Race, Ethnicity, Culture and Disparities in Health Care. *Journal of General Internal Medicine*.

Challenge 5: There's a lack of data and care integration.

Health data is often siloed and comes in different formats (structured/unstructured text, imagery) that are difficult to combine for many organizations. Governments, payers and providers are at different maturity stages when it comes to data integration. Most countries, especially those without universal health care systems, often don't have data or care connections between primary care, secondary care and social care settings.

Most providers, payers and governments need help with data integration and visualization from different sources, preventing them from seeing a holistic picture of all health and social care needs of populations and individuals. Modern data visualization tools can highlight patterns of inequity to flag for intervention. However, without integrated, comprehensive data on the whole person, health care providers and payers will continue to struggle to identify and implement solutions that bend the curve on health equity across populations.

Regional approaches and differences

Defining health equity is different per country, as medical and social care systems are different, and countries have different programs focused on achieving health equity. Variations in how medical care is paid for and reimbursed also influence initiatives toward health equity. Access to care is an essential factor that predetermines equity.

In the US, the White House has **highlighted systemic gaps** in equity across race, gender and underserved populations. In Europe, health equity is often analyzed relative to socioeconomic factors (e.g., income, education, employment, housing).

A few regional or countrywide initiatives have already been kicked off to reduce health disparities.

Health care equity in Europe

In several European countries, governments are trying to integrate health care, social care and wellness for a whole-person care approach. This contributes to more health equity, as stakeholders will better understand what resources and opportunities individuals need to reach a fair outcome.

For example:

- **Finland's central government** has started a wholesale transformation of the health and social care system. A population health dashboard will use aggregated data to identify problem areas in population and individual health. Key stakeholders will be able to use this data to act.
- The **NHS England Core20PLUS5 program** identifies certain disease populations as subgroups for special investigation and initiatives.
- **Joint Action Health Equity Europe (JAHEE)**, a pilot project from 2018-2021, was designed to help European member states achieve greater equity in health outcomes across all groups in society, focusing on social determinants of health and lifestyle-related care inequities.
- **EuroHealthNet**, a European partnership for health, equity and well-being, including 26 European countries (23 European Union member states), established a 2021-2026 strategic plan that includes measures to **reduce health inequities** and consultation with member states.

Health care equity in the United States

Profound **racial and ethnic health and well-being disparities** exist in the United States. A study from the Centers for Disease Control and Prevention (CDC) shows that the **life expectancy** of Hispanic and Black people is lower than that of white people.

Independent authorities, as well as US federal government agencies and state/local agencies, have implemented programs to improve access and equity.

For example:

- The White House issued **executive orders on equity, diversity, inclusion and accessibility** to advance equity for disadvantaged individuals and communities. For example, an executive order was issued in 2021 to **advance racial equity and support underserved communities** through the federal government, aiming to advance equity, civil rights, racial justice and equal opportunity, and to redress inequities in policies and programs. After the release of these executive orders, the Centers for Medicare & Medicaid Services (CMS) established health equity as a pillar of their future **work**. The **FDA issued guidance** to enroll more participants from underrepresented racial and ethnic populations in the US into clinical trials. The goal is to improve clinical trial diversity in order to develop better treatments and ensure the efficacy and safety of medical products for diverse populations. The **Consolidated Appropriations Act 2023** requires the FDA to collect diversity action plans from trial sponsors for phase 3 studies.

- The American Hospital Association (AHA) Institute for Diversity and Health Equity has a health pledge, the **#123forEquity campaign**, aiming to ensure that "every person in every community receives high-quality, equitable and safe care." This is a joint effort of the AHA, the American College of Healthcare Executives, Association of American Medical Colleges, Catholic Health Association of the United States and America's Essential Hospitals.

- The Joint Commission, an independent accrediting body for hospitals, has established new **requirements to reduce health disparities** that "will apply to organizations in the Joint Commission's ambulatory health care, behavioral health care and human services, critical access hospital, and hospital accreditation programs." New requirements include such provisions as designating a health equity leader, identifying inequities in populations by "stratifying quality and safety data using sociodemographic characteristics," assessing patients' health-related social needs, providing information about community resources and services, developing a written action plan and taking actions when goals are not achieved.

- The National Committee for Quality Assurance (NCQA) **updated its quality measures** for the 2023 Healthcare Effectiveness Data and Information Set (HEDIS) to focus on health equity (including race/ethnicity and gender) to incentivize health plans to investigate and resolve care gaps and inequities.

While a few pioneering organizations and countries are trying to investigate the root causes of health inequities and put measures in place, projects are at the early stages and often include voluntary participation.

How SAS can help

To overcome the challenges noted above, it is important to meet all stakeholders where they are. While some might be part of a small pioneering group who have already started to investigate gaps in health equity, the majority still struggle to define health equity and their responsibilities. Communities and individuals need to be engaged more to rebuild trust, recognizing that each subpopulation will need something different.

Analytics helps identify and track gaps in health equity. As the market leader in artificial intelligence (AI) and advanced analytics, SAS has the technology and experience to help stakeholders overcome the challenges of data siloes, uncovering bias in data or algorithms, analytical limitations, a lack of data integration and care coordination.

SAS has been at the forefront of helping organizations measure the trustworthiness of data used for analysis for more than 40 years. SAS offers an explainable AI-driven approach to ensure projected outcomes include equity considerations by generating evidence-based insights regarding health equity and inequitable barriers. As technology alone cannot solve equity, a human-centric approach, such as an equity advisory committee, remains important. Recommended areas of expertise include technology experts, policy and subject-matter experts, equity researchers and affected community representatives.

Four Essential Participant Groups to Evaluate Equity

Policy Subject-Matter Experts

Technology and Related Experts

Equity Researchers

Community and Stakeholder Groups
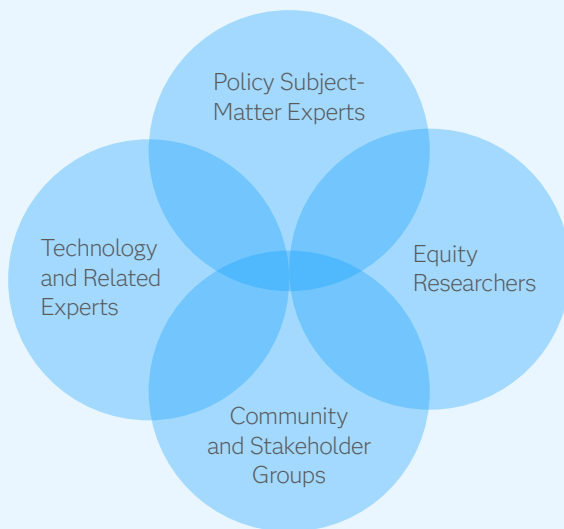
A combination of expertise and SAS® software – along with data, advanced analytics and responsible AI – can be used to assess health equity within initiatives, programs and policies.

Challenge 1: Organizations struggle to define health equity and measure results.

Opportunity to apply analytics

Maps of catchment areas help quantify and visualize if adequate care locations are available for individuals and the community. SAS helps identify gaps, which public health officials can use to inform their health equity policy decisions.

SAS® Viya®

As a cloud-native AI, analytics and data management platform, SAS Viya enables organizations to scale cost-effectively, increase productivity and innovate faster, backed by trust and transparency. SAS Viya makes it possible to integrate teams and technology – enabling all users to work together successfully, connecting all aspects of the analytics life cycle, and helping turn critical questions into trusted decisions.

Visual analytics capabilities provide visual exploration, data discovery and reporting. Visualize care gaps and important connections in data. Use machine learning and natural language explanations to discover why something happened and uncover hidden insights in data. The SAS self-service environment offers low-code/no-code functionality, so anyone can create or consume insights that lead to better decision making. SAS location analysis lets users visualize insights from geographical areas to make data understandable quickly.
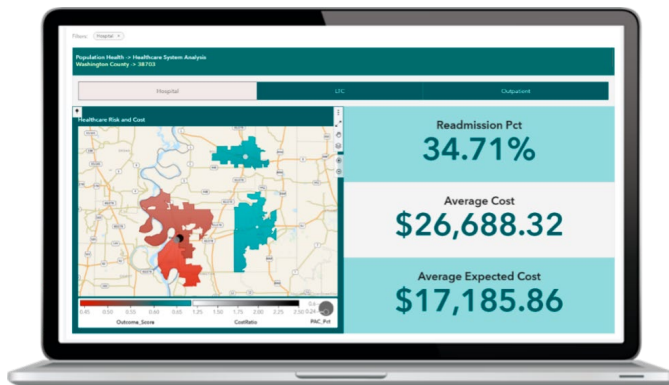

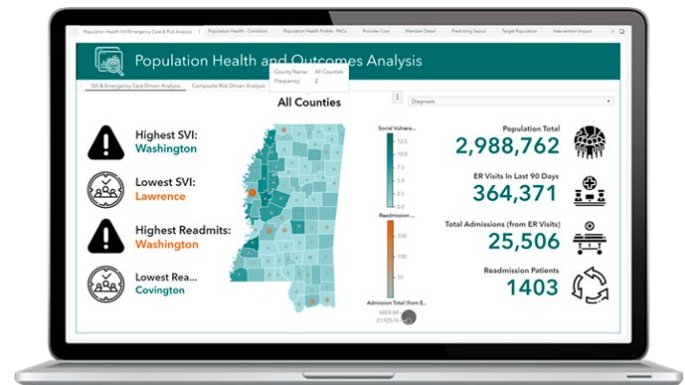**Figure 2:** Population health and outcomes analysis

Figure 3: Health care risk and cost in selected ZIP code
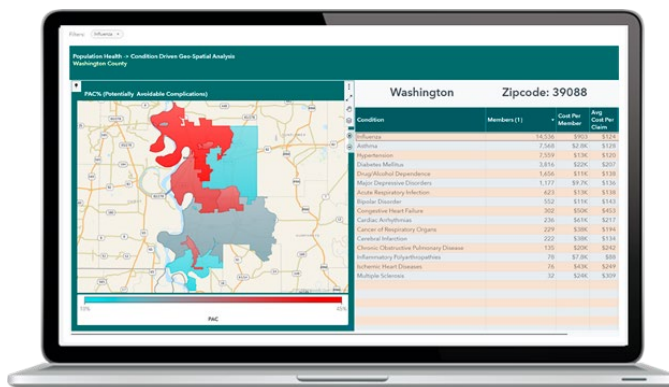

Figure 4: Conditions by ZIP code with high rates of potentially avoidable complications

With visual statistical capabilities, multiple users can explore data, then interactively create and refine predictive models to target specific groups or segments. Models can be easily adapted so multiple users can interact with data visually. Users can add or change variables and identify outliers.

Challenge 2: Roles and responsibilities in health equity are unclear.

Opportunity to apply analytics

Reducing health inequities requires governments, providers and payers to work closely. Governments must establish tangible, actionable policies and initiatives that payers and providers can respond to and act upon. Moreover, governments need to find ways to measure these policies and initiatives to identify the efficacy of these initiatives. For those not meeting those goals, it is incumbent upon governments to reduce spending and concentrate resources on policies and initiatives that actually work.

Showing payers and providers that health equity initiatives are cost-efficient and how they can benefit them financially and operationally will be key to getting their full support.

SAS helps organizations of all sizes and shapes – including pharmaceutical companies, health care providers, health care payers, the public health sector and consulting firms – to characterize populations, identify disparate populations, and measure the effects of initiatives on these populations based on a variety of factors.

SAS® Health

With SAS Health, users can integrate real-world data, rapidly create patient cohorts, detect and visualize clinical events over time, gain valuable insights on quality and cost of care, and drive enhanced clinical care and patient outcomes.

SAS® Health Cohort Builder

Build, visualize and analyze patient cohorts and the effect of inclusion/exclusion criteria on patient populations in an interactive, drag-and-drop interface with no coding required. Easily identify population subsets, clinical events and associations to better understand the differences in health outcomes within a specific subpopulation.
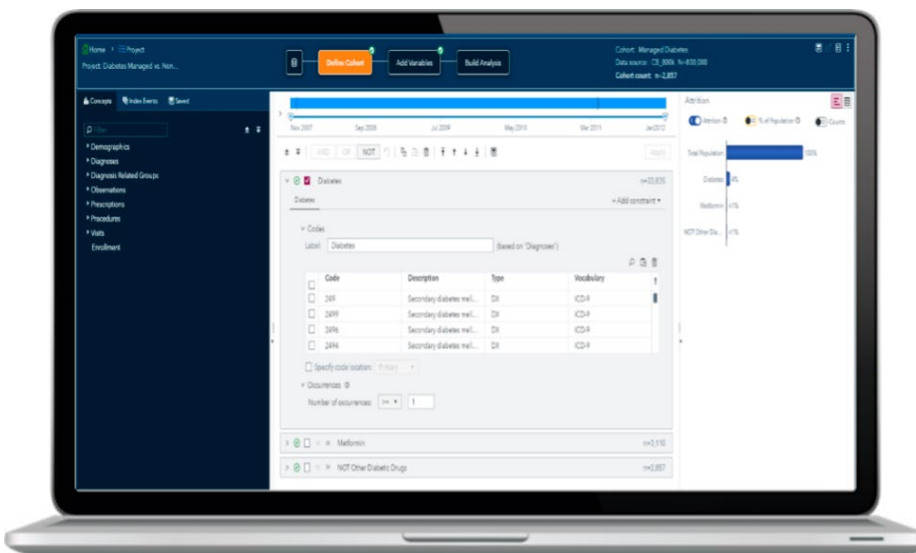

Figure 5: SAS Health Cohort Builder

SAS® Health Episode Builder

SAS Health Episode Builder empowers health care organizations to analyze claims as episodes of care. Clinical rules define which services are related and unrelated to an episode.

Figure 6: SAS Health Episode Builder

Trustworthy AI

AI has the power to support and inform care pathway decisions. SAS Viya allows users to create impactful analyses that help identify patients who need help and figure out effective ways to reach them. Decisions driven by analytical models must be subject to the same scrutiny and ethical standards as any other decision. At SAS, we believe the decisions made using data, AI and analytics should be explainable, transparent and fair.

SAS Viya provides tools and guidance to support the responsible use of our AI technologies across the entire analytics life cycle. Features include built-in governance, model bias detection and mitigation; data quality, compliance and privacy detection; model interpretability and bias assessment; and model transparency and decision monitoring all ensure the responsible use of AI.
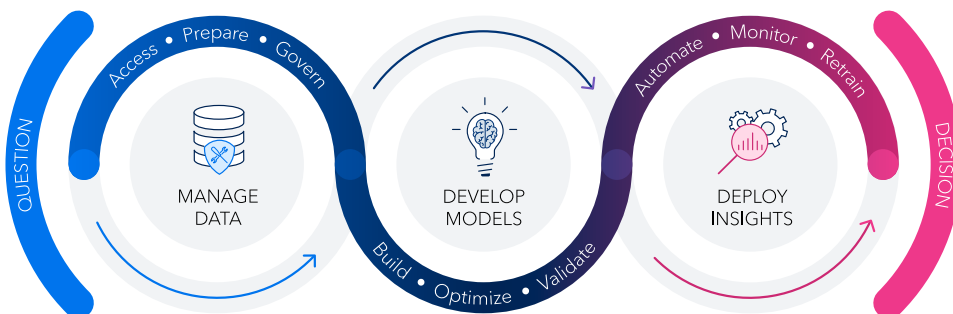

Figure 7: SAS analytics life cycle and trustworthy AI

Challenge 3: Public trust is lacking.

Opportunity to apply analytics

Reducing health inequities is not merely about assigning the right roles and responsibilities and putting the right programs in place. It's also about regaining the trust of communities and individuals disengaged with health care organizations and systems. Everything starts with listening.

Analytical tools – such as text analytics, sentiment analysis and visual analytics – help stakeholders find hidden insights in large volumes of text or speech and visualize them to make better, informed decisions to rebuild trust with communities.

Text analytics capabilities, which are part of the **SAS Viya platform**, allow users to quickly sift through volumes of text data to identify main trends, analyze sentiment and recognize correlations between words with the right combination of natural language processing, machine learning, deep learning methods and linguistic rules.

This leads to discovering insights about communities, which can inform engagement strategy. Embedded visualization capabilities allow for visual exploration of data and analytics, while also providing intuitive dashboards that easily communicate results to a variety of stakeholders.

Figure 8: SAS Viya - text analytics and sentiment analysis

With **SAS Customer Intelligence 360**, health organizations can monitor, measure and improve programs that drive patient engagement in both digital and offline channels. SAS Customer Intelligence 360 allows users to evaluate how program content and campaigns are reaching specific subpopulations and whether there's a positive impact on equity or health outcomes.

Challenge 4: There's not enough representative data.

Opportunity to apply analytics

Governments, payers and providers need to track data as much as possible to identify health inequities and implement measures. Stakeholders might already collect relevant data, but the data may be reported in different formats and places. Consistently collecting data that can be used for analysis is the key to seeing the whole picture of the needs of a population – and individuals and social determinants of health need to be overlayed with care needs.

There's still a lack of qualitative data, which can be collected via surveys or targeted focus groups. Community health workers can be key facilitators when it comes to the collection of qualitative data since they are trusted community members. SAS helps organizations combine qualitative and quantitative data for analysis.

Ensuring clinical trials represent the diversity of patient populations that the trial is designed for is an important step toward equity in health outcomes.

SAS® Life Science Analytics Framework

SAS Life Science Analytics Framework enables organizations to develop, execute and manage their analysis and reporting activities for clinical studies – so new therapies can be delivered to the market faster. The advanced visualization and analytical capabilities provide pharmaceutical sponsors with an overview of the research and participant data to ensure their research meets DEI (diversity, equity and inclusion) goals.

Conducting decentralized clinical trials with the right technology can bring research to remote and underserved populations, and improve access to underrepresented patients in clinical trials – increasing participant diversification and reducing bias in clinical research.

Challenge 5: There's a lack of data and care integration.

Opportunity to apply analytics

Health and social care stakeholders need to work together to integrate care better. Health and social services data is often not integrated, which is crucial to get a complete picture of care needs and gaps.

Using advanced analytics, organizations can combine health, genetic, geographical, law enforcement and behavioral data to better understand patient demographics and other major factors contributing to health care disparities. **SAS Health** powered by **SAS Viya** helps integrate data from health and non-health sources and conduct a utilization analysis – giving a full picture of care used and needed. This helps to predict availability and demand. SAS Viya includes **information governance**, which improves the quality and completeness of data sets used for analytics, models and algorithms.

In addition to measuring whether enough data is available for specific variables to be meaningfully included, SAS enables de-identification of personally identifiable information (PII) data so it can be shared without compromising privacy.

Access does not equal availability. For example, someone with a mental health crisis may have access to a broad provider network. However, it doesn't mean there are enough providers so they can be seen promptly. This is where advanced analytics plays an important role. Based on demand, analysts use SAS to determine if there are enough providers in specific regions. Increasing access to timely care will contribute to more equitable care. Predictive models anticipate demand over time, helping providers and payers coordinate resources better.

And collecting data is crucial. Health leaders can rely on text analytics from SAS to understand the whole person needs of the community more completely. Valuable information is sometimes hidden in provider, radiology and laboratory notes. **SAS Viya** includes natural language processing and sentiment analysis, leading to further insights into health inequities and needs.

Conclusion

A few pioneering organizations and countries have started investigating the root causes of health inequities and are implementing measures to mitigate them. These projects tend to be in the early stages and are often voluntary rather than formalized or comprehensive.

Analytics can be used to:

- Identify, track and close gaps in health equity.
- Integrate data from multiple health and non-health sources.
- Integrate qualitative and quantitative data for analysis.
- Create and analyze patient cohorts.
- Conduct utilization analysis and better predict demand.
- Discover hidden insights and patterns on which to take action.
- Evaluate the effectiveness of clinical, public health policies, programs and interventions.

Learn more

Learn more about how SAS delivers the advanced analytics that **public health**, **health care** and **life sciences** organizations need to make health care more equitable.

Watch the **Health Pulse podcast** to find out how SAS helps create a healthier world with ethical AI.
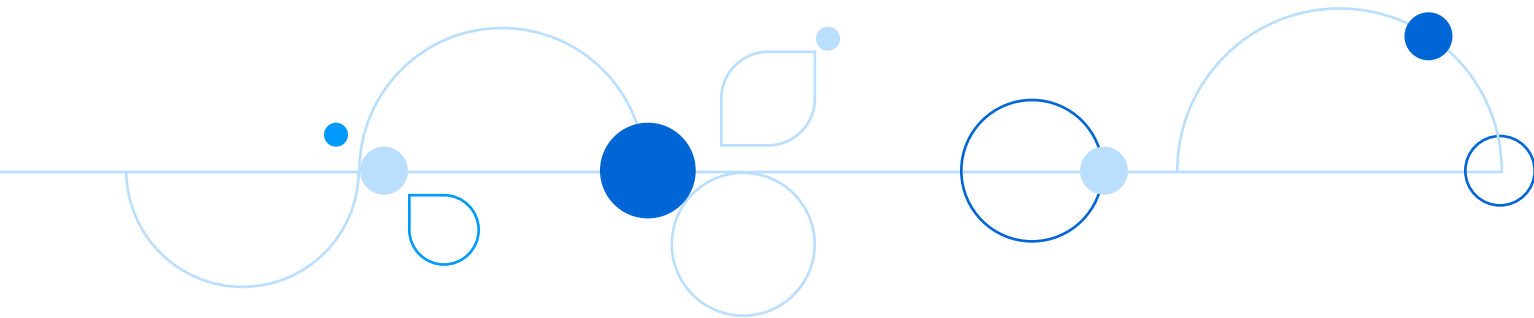
To learn more, please visit sas.com/healthcare.

SAS