



Using secondary data to monitor racial/ethnic minority health inequities in Michigan: The Michigan Health Equity Data Project

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Introduction

African Americans, American Indians/Alaska Natives, Arab Americans, Asian Americans, and Hispanics/Latinos together comprise 22.5% of Michigan's total population. These minority populations experience disproportionately adverse health outcomes, or **health inequities**.

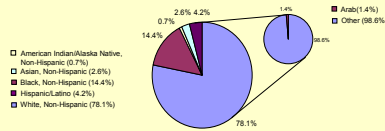


Figure 1: 2009 Michigan population by race/ethnicity (NCHS, MDCH)^{1,2}

Tracking racial/ethnic minority health inequities can be challenging due to:

- Availability of data;
- Small sample sizes;
- Differently defined populations;
- Different sampling methods in different data sources; and
- Inconsistent definitions and methods for quantifying inequities.

The Michigan Health Equity Data Project (HEDP) addresses these challenges by 1) compiling standardized secondary data for six populations across consistent indicators and time periods, and 2) calculating disparities within time periods and changes in these disparities between time periods. This allows inequities to be identified and monitored consistently over time.

Purpose

To 1) Identify disproportionate health exposures and outcomes in racial/ethnic populations, and 2) Monitor progress toward achieving health equity in Michigan.

Data

Multiple Data Sources, including:

- Michigan live birth and death records
- Michigan Behavioral Risk Factor Survey
- Michigan Disease Surveillance System
- Center for Educational Performance and Information
- U.S. Census

Six Populations:

- African Americans
- Arab Americans
- Hispanics/Latinos
- American Indians/Alaska Natives
- Asian Americans
- Whites

18 Indicators (listed in Figure 3), representing three categories:

- Social Determinants of Health
- Health Status/Behaviors/Healthcare
- Morbidity and Mortality

Calculating Disparities

Pairwise Disparity

Pairwise Disparity describes the difference between a minority population rate and the reference population rate.³

Pairwise disparities in each time period were measured using absolute and relative differences:

$$\begin{aligned} \text{Absolute disparity} &= \text{Minority estimate} - \text{Reference estimate} \\ \text{Relative disparity} &= \text{Minority estimate} / \text{Reference estimate} \end{aligned}$$

Change in pairwise disparity over time was measured using the percent change in relative disparity:

$$\% \text{ Change} = \frac{(\text{Relative disparity in time 2}) - (\text{Relative disparity in time 1})}{(\text{Relative disparity in time 1})}$$

Choice of reference group

For all pairwise comparisons the white population served as the reference group. This choice was made because, in Michigan, it is the only population large enough to provide a stable comparison over time.

Population Disparity

Population Disparity describes how much disparity exists in the entire population for one indicator by combining the disparity experienced by all subgroups into one measure. This is helpful when prioritizing public health action by indicator instead of by subpopulation.

For each indicator, population disparity was estimated with an **Index of Disparity⁴ (ID)**, which describes average subpopulation variation around the total population rate.

$$ID = \left(\sum |r_{(n)} - R| / n \right) / R * 100$$

r = Subpopulation rate, R = Total population rate, n = number of subpopulations

ID is expressed as a percentage, with 0% indicating no disparity and higher values indicating increasing levels of disparity.

Change in ID over time was measured using the absolute difference in ID from one time period to another:

$$\text{Change in population disparity over time} = ID_{(\text{Time 1})} - ID_{(\text{Time 2})}$$

Conceptual Clarification

- Disparities are differences between groups.
- Changes in disparities are not equal to changes in health status.
- Disparities are used to identify inequities.

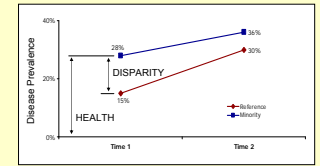


Figure 4: Fictional data demonstrating a scenario when disease prevalence increases (worsens) but equity improves between Time 1 and Time 2.

Discussion

The Michigan Health Equity Data Project (HEDP) provides a consistent methodology to identify and monitor racial and ethnic minority health inequities in Michigan. More specifically, the HEDP:

- Gathers standard, comparable data for each racial/ethnic population.
- Combines multiple indicators in one place.
- Includes a focus on social determinants.
- Provides quick access to data for community groups, policymakers, and others.
- Identifies gaps in knowledge.
- Monitors health equity over time for specific minority populations and the overall population.

Limitations:

- Disparities are not necessarily inequities.
- No individual or local level data, statewide only.
- No information about if or how indicators are associated with each other.
- No statistical information about the precision of reported rates.
- Equity calculation is a relative number, does not indicate health status.

References

- 1) 2009 Population Estimate, National Center for Health Statistics, U.S. Census Populations with Bridged Race Categories.
- 2) 2009 Michigan Resident Birth Files, Vital Records and Health Data Development Section, Michigan Department of Community Health.
- 3) Keppel KG, Pamuk E, Lynch J, et al. Methodological issues in measuring health disparities. *Vital and Health Statistics*. 2005;2(141):1-16.
- 4) Pearcey JN, Keppel KG. A summary measure of health disparity. *Public Health Reports*. 2002;117:273-280.
- 5) Revised Health Equity Reference Tables for the Michigan Health Equity Data Project. Lansing, MI: Michigan Department of Community Health, Health Disparities Reduction and Minority Health Section and Bureau of Epidemiology. 2011.

Acknowledgments

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Results

Pairwise Disparities

Table 1. Indicators with the smallest and largest relative disparities between racial/ethnic minority populations and the white population, 2005-2009.

Population	Smallest Disparity (Best)		Largest Disparity (Worst)	
	Indicator	Relative Disparity	Indicator	Relative Disparity
African American	Current Smoker	1.0	Gonorrhea Incidence	27.3
American Indian/Alaska Native	Unintentional Injury Mortality	1.0	Gonorrhea Incidence	3.3
Arab	Diabetes Prevalence	0.9	Infant Mortality Rate	1.4
Asian	Obesity Prevalence	0.2	Diabetes Prevalence	1.6
Hispanic/Latino	All-Cancer Mortality Rate	0.6	High School Dropout Rate	2.6

Table 2. Indicators showing the largest improvements and worsenings in relative disparities between Time 1 and Time 2, by race/ethnicity.

Population	Largest Worsening		Largest Improvement	
	Indicator	Change Over Time	Indicator	Change Over Time
African American	Percent Without Health Insurance (1997-99 to 2005-07)	38.6%	Unemployment Rate (2000 to 2009)	-22.7%
American Indian/Alaska Native	Gonorrhea Incidence (2003 to 2009)	312.5%	Diabetes Prevalence (2001-03 to 2007-09)	-34.8%
Arab	Infant Mortality Rate (2002 to 2007)	60.7%	N/A	N/A
Asian	Unhealthy Mental Days (2001-03 to 2007-09)	208.4%	Obesity Prevalence (2001-03 to 2007-09)	-65.6%
Hispanic/Latino	Percent Children Living in Poverty (2000 to 2006-08)	30.1%	HIV Prevalence Rate (2000 to 2008)	-36.6%

Population Disparities

Figure 2. Indicators showing the most and least population equity in Time 2, measured by the Index of Disparity (ID).

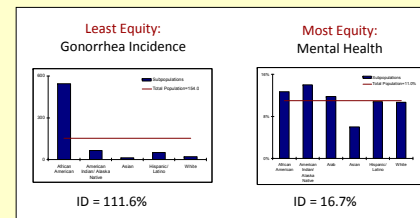
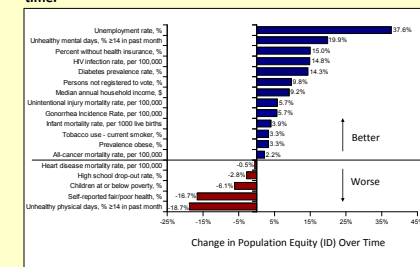


Figure 3. Change in population equity (ID) for 18 priority indicators in order of best to worst change in equity over time.



Complete data can be found in the Michigan Health Equity Data Project Equity Tables.