

# ***Defining and measuring disparities, inequities, and inequalities in the Healthy People initiative***

**Richard Klein MPH, David Huang, Ph.D.**

**National Center for Health Statistics**

**Centers for Disease Control and Prevention**



# Four Concepts of Difference

Disparity

Inequity

Inequality

Burden

# Distinctions Among the Concepts

<b>Concept</b>	<b>Research question</b>	<b>Application to policy or program planning</b>
<b>Disparity</b>	Is there a difference in health status rates between population groups?	Is the difference too large?
<b>Inequity</b>	Is the disparity in rates due to differences in social, economic, environmental or healthcare resources?	Is the distribution of resources <i>fair</i> ?
<b>Inequality*</b>	How do rates vary with the amount of the resource, and how is the population distributed among resource groups?	Can the distribution of the population among resource groups and/or the rates within resource groups be influenced?
<b>Burden</b>	How many people are affected in specific groups and in the total population?	How many people would benefit from interventions?

\*Questions and applications refer to ordered groups



# The Concept of Disparity

*Disparity* is the quantity that separates a group from a reference point on a particular measure of health that is expressed in terms of a rate, proportion, mean, or some other quantitative measure. (HP2010)

# Disparity in Healthy People 2010

*( and implicit value judgments\*)*

- Disparities are measured from the most favorable group rate, *(Preference for raising health among unhealthy groups)*
- in terms of relative differences, *(Equality valued over population health or rates of disease)*
- with groups unweighted for size *(Groups are of equal importance regardless of size)*
- Disparity across domains is measured by average difference *(Emphasis on reducing inequality regardless of how)*

\*

# Infant Mortality Rates per 1,000 Live Births by Mother's Education, US 2005

EDUCATION	RATE
0-8 years	6.6
9-11 years	9.3
12 years	8.1
13-15 years	6.1
16 years or more	4.2

Source: National Vital Statistics System (NVSS), CDC, NCHS.

## A difference in disparity...

- *For example*—The infant mortality rate for mothers with 9-11 years of education is 5.1 infant deaths per 1,000 live births (or 121%) greater than the rate for mothers with 16 or more years of education.

# The Concept of Health Equity

*Health equity* is the fair distribution of health determinants, outcomes, and resources within and between segments of the population, regardless of social standing.

Working definition from the CDC Health Equity Working Group, October 2007

# The Concept of Inequity

## Inequity...

- A difference in the distribution or allocation of a resource between groups (usually expressed as group-specific rates)
- Resources relevant to health include:
  - Health insurance
  - Education
  - Flu vaccine
  - Fresh food
  - Clean air



# Percent of mothers with 12 or more years of education, by race/ethnicity, U.S. 2005

Race/Ethnicity	Percent
American Indian or Alaska Native	70.2
Asian or Pacific Islander	90.7
Hispanic	52.7
Black non-Hispanic	77.1
White non-Hispanic	89.3

Source: National Vital Statistics System (NVSS), CDC, NCHS.

## Inequity question:

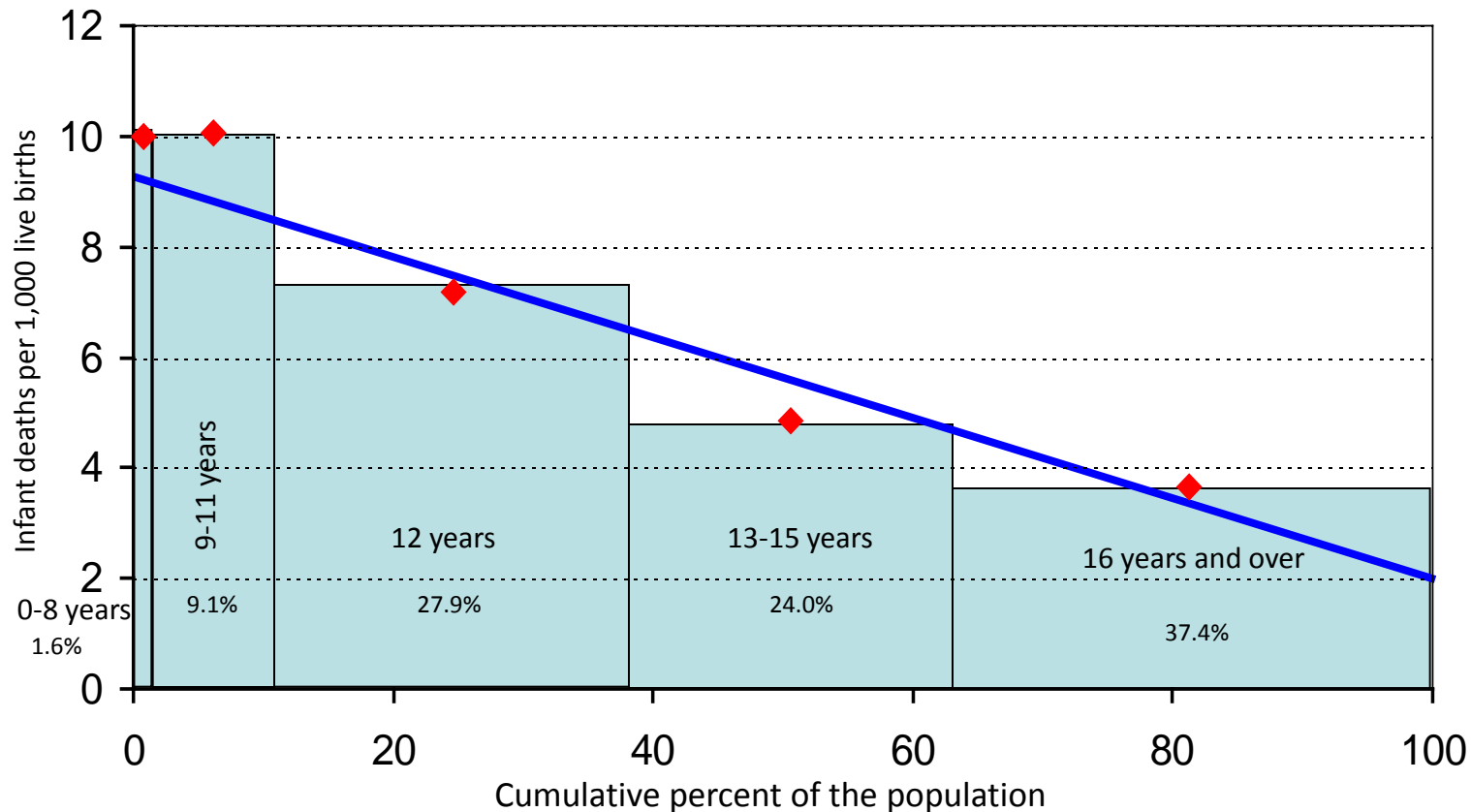
- Are the racial/ethnic differences in infant mortality rates that we observe attributable to educational differences?
- Are those differences “fair”?

# The Concept of Inequality

## Inequality...

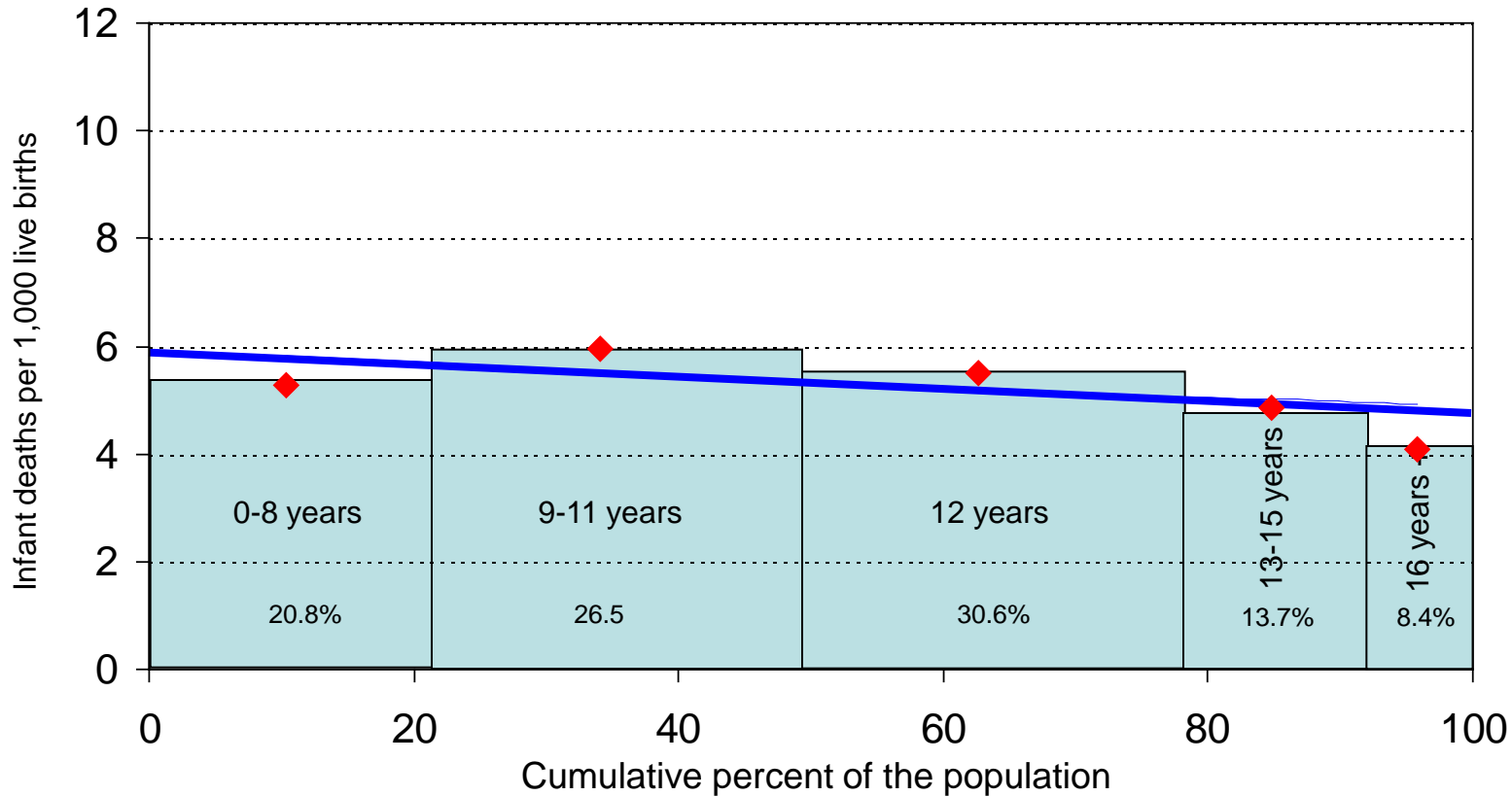
- A measure of the degree of association between differences in rates between groups and the distribution of the population among groups
  
- It is a single value that represents
  - The degree of association between rates for a health indicator and the distribution of the population among ordered groups (education and income)
  - or-
  - The degree of variation in rates among unordered groups, weighted by group size (race and ethnicity)

# Educational inequality in infant mortality for white non-Hispanic mothers, U.S. 2005



■ The slope index of inequality = -7.3. The infant mortality rate declines by an average of 7.3 infant deaths per 1,000 live births over this population, ordered by years of education.

# Educational inequality in infant mortality for Hispanic mothers, U.S. 2005



■ The slope index of inequality = -1.1. The infant mortality rate declines by an average of 1.1 infant deaths per 1,000 live births over this population, ordered by years of education.

# The Concept of Burden

A difference in **burden...**

- The difference in the number of persons affected between groups.
- Generally, the larger the group—the larger the burden.

# Number of Infant Deaths by Mother's Education, US 2005

EDUCATION	NUMBER
0-8 years	1,145
9-11 years	3,836
12 years	6,747
13-15 years	3,666
16 years or more	3,231
Not stated	994

Source: National Vital Statistics System (NVSS), CDC, NCHS.

## A difference in burden...

- *For example*—The **burden** of infant deaths is greatest for mothers with 12 years of education.

# Burden of infant deaths and reduction in burden, by race/ethnicity of mother, U.S. 2005

Population by race and ethnicity	Infant deaths per 1,000 live births	Burden (number of infant deaths)	Reduction in burden (number of infant deaths)	
			If disparities eliminated	If HP target achieved with no change in disparity
Non-Hispanic black	13.6	7,958	5,103	2,705
American Indian or Alaska Native	8.1	361	142	123
Non-Hispanic white	5.8	13,134	1,985	4,464
Hispanic	5.6	5,537	718	1,881
Asian or Pacific Islander( <b>best rate</b> )	4.9	<u>1,129</u>	<u>0</u>	<u>383</u>
Total		28,119	7,948	9,556

Source: National Vital Statistics System (NVSS), CDC, NCHS.

**HP2010 objective: reduce the infant mortality rate to 4.5 infant deaths per 1,000 live births**

# Disparity/Inequity in Healthy People 2020

- What was called disparity (i.e. difference) in HP2010 is increasingly being called “inequality” (*Harper et al, Pokras et al*)
- The concept of disparity in HP2020 is closer to previous conceptions of inequity:

*Health disparity: A particular type of health difference that is closely linked with **social or economic disadvantage**. Health disparities adversely affect groups of people who have systematically experienced greater social or economic obstacles to health based on their racial or ethnic group, religion, socioeconomic status, gender, mental health, cognitive, sensory, or physical disability, sexual orientation, geographic location, or other characteristics historically linked to discrimination or exclusion.*





# The Concept of Health Equity

**“Health equity is a desirable goal/standard that entails special efforts to improve the health of those who have experienced social or economic disadvantage”**

Source: Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020

# Summary

- There are multiple, valid methods for assessing **differences** in health between population groups
- Selection of specific methods implies **value judgments** and methods can often come to contradictory conclusions
- **Terminology** is evolving and is not always used consistently by all researchers
- The approach for Healthy People is moving from measuring **bivariate differences** to also considering **equity/fairness** and **univariate** approaches. This presents serious methodological/measurement challenges

**GARFIELD®**



Jim Davis

The goal to eliminate disparities  
remains **undefined**.



When is a disparity **eliminated**?

When has parity **been reached**?

When has health equity **been  
achieved**?