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CRISP User Summit 2022

How Can Health IT Promote Health Equity?
Basics of Health Equity Data

David A. Mann, MD, PhD, Epidemiologist

david.mann@maryland.gov

Office of Minority Health and Health Disparities

Maryland Department of Health

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Outline of Presentation

- **The one rule of health equity data**
- **Role of IT and various data sets in health analytics**
- **Roles of Data in Public Health and Health Equity**
- **Health Disparity Causal (and Data) Model**
- **Complexity and Volume of Public Health Data**

The Main Rule of Health Equity Data

Dr. Mann's first rule of health equity data is:

"Any metric that is worth tracking is worth tracking separately by race/ethnicity" ***(and by other markers of disadvantage, by income, education and other social factors, and by sex, sexual orientation, age and place).***

Collection of the stratification variables is essential, because

Stratified analysis is the key

Uses of IT in Health

- **Public Health Surveillance (disease burden and distribution)**
- **Healthcare Quality Improvement (health care utilization big data)**
- **Resource Allocation and Planning (small area geographic big data)**
- **Clinical decision support (predictive analytics from AI access to individual EMR data and clinical guidelines)**
  - **Longitudinal trending of test results in particular is useful here: predict the future level of a parameter**
- **And a use of IT that isn't purely data: personal devices as**

  a) communications push to send information,

  b) receive information and individual data in healthcare,

  c) as telehealth platforms

A Crosswalk of Data Sources with Data Uses

Purpose Data Sets	Public Health Needs Assessment and Resource Allocation	Health Care Quality	Individual Patient Management
Birth Certificates	Yes	Maybe	No
Death Certificates	Yes	Maybe	No
Hospital Claims data	Yes	Yes	Sometimes
Insurer Claims data	Yes	Yes	Sometimes
EHR data (in and out pt)	Possibly	Absolutely	Absolutely
Population survey data	Absolutely	Maybe	No
SDOH survey data	Absolutely	Probably not	No
SDOH practice data	Maybe	Maybe	Absolutely

Three Roles of Data in Health Equity

- Needs assessment: who has the problem, where, and how big or bad is the problem?
  - Usually done by public health using surveillance data
- Intervention Planning: why do we see this (causes) and how do we fix it (evidence-based interventions)?
  - What to do is found by academia using research data
  - Where to do is found by public health surveillance data
- Evaluation: are we making progress?
  - Repeat the needs assessment analysis over time

Health Disparity Causal and Data Model

Causal Chain of Health Disparities from Social Determinants to Ultimate Outcomes

Social Determinants of Health			
Education *Employment* *Income* *Wealth* *Health Insurance* *Housing* *Transportation* *Food security* *Safety/Violence* *Environment* *Racism* *Etc.* (Many of these vary by place)	Prevalence of Causes of Disease ("risk factors")	Frequency of Disease: Number of Cases New cases = incidence All cases = prevalence	Ultimate Outcomes: Death, Disability, Amputations, ED Visits, Hospital Admissions, and Costs
	Access to and quality of prevention services		
	Severity of Causes of Disease ("risk factors")	Severity of Disease: Rate of adverse events per case	
	Access to and quality of treatment services		

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Challenge of Disaggregated Data – Tons of It

	Outcomes		Demographics		Geography		Metric type		Time options
How does	Total tests Positive tests Total CV admits ICU CV admits CV Deaths Total bed use ICU bed use	*differ between groups defined by*	Age Sex Race/ethnic Age x R/E Age x Sex Sex x R/E Age x Sex x R/E	*in geographic areas defined as*	Statewide Regions Jurisdictions ZIP codes Census tracts	*using*	*Count *Rate/pop *Age-adjusted rate	*over*	1 day snapshot Cumulative Daily trend
	8 options		7 options		5 options		3 options		3 options
					24 jurisdict				
					500+ ZIPs				
					1406 tracts				

This results in 2,520 Analytic Frameworks (or research questions) that can be requested on the COVID-19 data (not all of which can be fulfilled) This does not even include breaking out nursing homes and jails/prisons, and by staff and residents/inmates.

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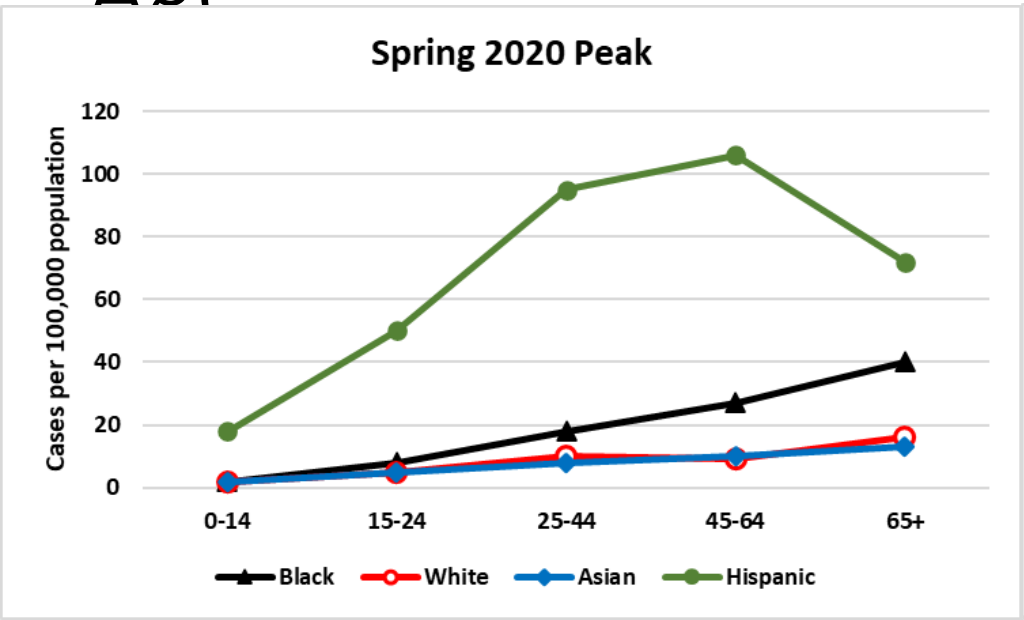
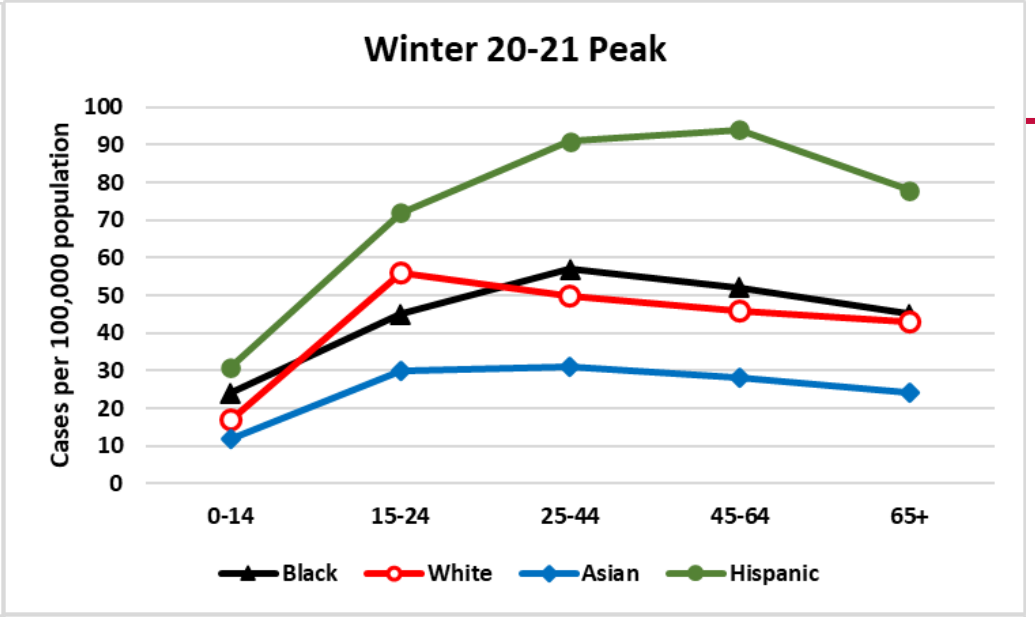
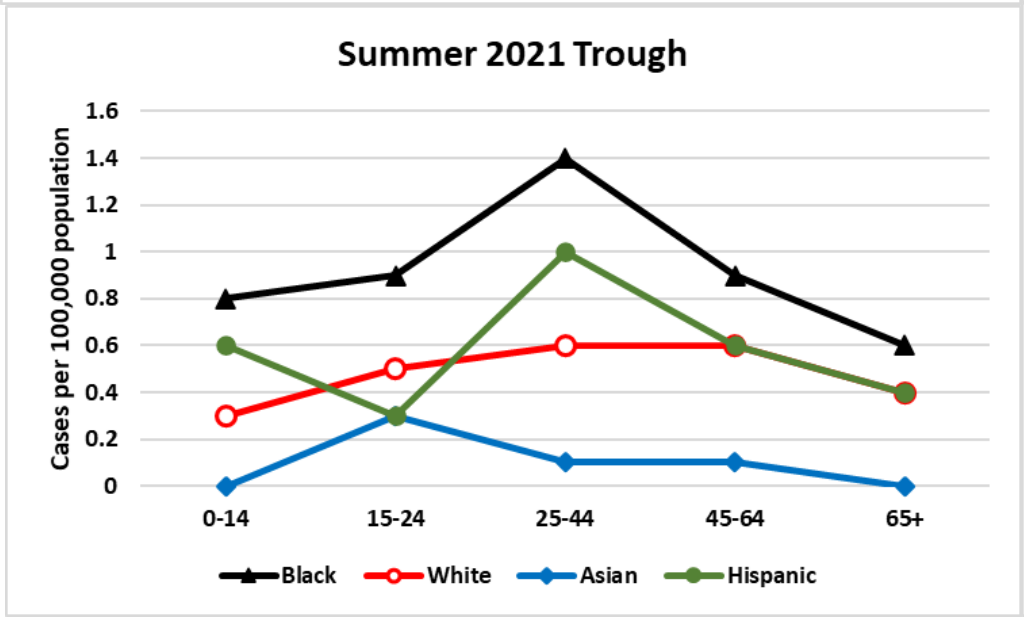
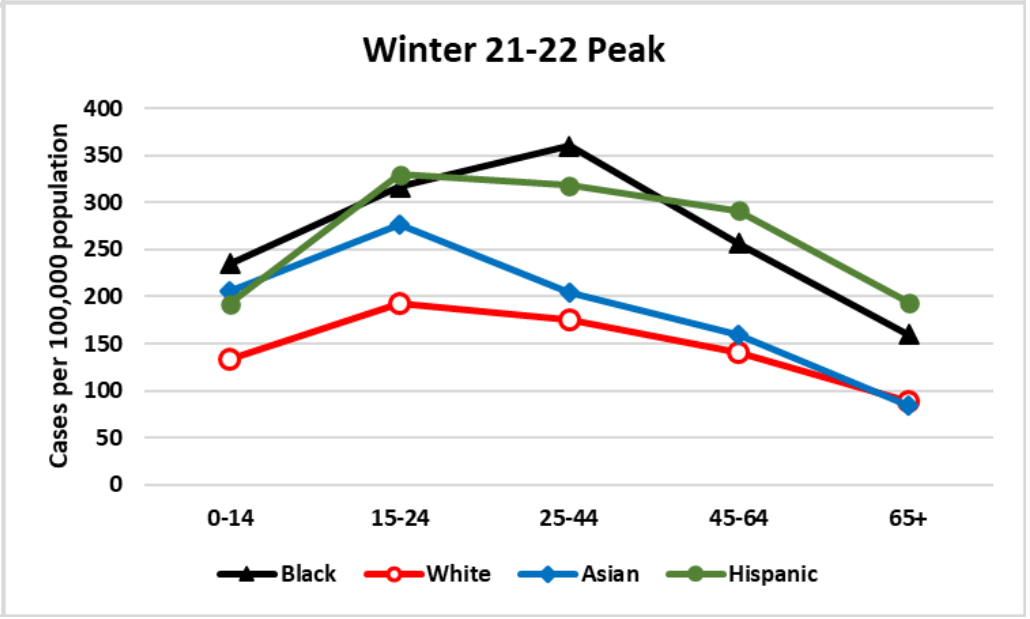
Maryland Case Rate Peaks/Troughs by Race/Ethnicity & Age









Absolute disparity gaps are widest during the peaks, and smaller during toughs.

Some relative disparities persist in the troughs.

Unresolved social determinant disparities drive the persistent relative disparities.

Summary

- **The Key to Equity Data Analysis is appropriate Stratified analysis**
- **Data serve Equity in the Areas of Needs Assessment, Intervention Planning, and Program Evaluation**
- **Health Problems and Health Disparities travel a causal chain from Social Factors to Risk Factors to Disease Frequency and Severity to Ultimate outcomes.**
- **The complexity and volume of local data cross-stratified analysis requires big data IT solutions.**