Novel Approaches to Addressing Health Disparities & Social Determinants of Health

HEALTH EDUCATORS INSTITUTE CONFERENCE

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Disclosure—Amy Sheon

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Funding Contracts Through Case Western Reserve University:

- Public Insight Data: Health data visualization Subject Matter Expert
- NODE.Health/Uber Health (Evidence Base for Mobile Health)
- Ohio Department of Medicaid (Virtual Reality SDOH Simulation)
- Office of Cuyahoga County Executive, via Connected Insights, re digital connectivity and health
Learning Objectives

- Demonstrate novel data visualization techniques including mapping and storytelling to increase understanding of social determinants of health (SDOH)
- Describe potential value of digital medicine for public health
- Describe disparities in digital skills and connectivity, and frame them as a social justice issue
- Describe use of public health data in a medical hackathon
- Demonstrate use of virtual reality to increase awareness of social determinants of health and increase empathy accuracy
Part 1: Health Disparity Data Visualization

Cleveland & Cuyahoga
Health Data Matters

Data + Sharing + Innovation = Health Improvement

https://www.healthdatamatters.org
WHAT DETERMINES OUR HEALTH

How healthy we are and how long we live is not just the result of our genes and our biology, but also a direct result of the health choices we make, the place where we live, the health care we receive, and policies and laws that affect our opportunities and choices. Among the social factors that contribute to health, the most important predictors are education and income. Explore these pages to see the connection between these factors and the health of the people in Cleveland and Cuyahoga County.
Rationale

- Provide single place for accessing definitive data on health outcomes and social determinants of health
- Bring focus on health disparities and health equity, esp place-based
- Encourage open data movement
- Spawn innovation through real-time data access
Historic Lens: Redlining & Health

Cuyahoga County PlaceMatters

Historic Redlining (Red = No Lend; Green = Lending Encouraged)

% Residents that are Black (Red Highest, Green lowest)

http://guides.osu.edu/maps-geospatial-data/maps/redlining/
Cuyahoga County: Health Status

LIFE EXPECTANCY, 2010-2015

% LIVING IN POVERTY

Data source: Cuyahoga County Board of Health
Power of Data Visualizations

Black % and White % by Neighborhood
Source: NEOCANDO Data by Neighborhood and Suburban Muni for Select Variables

% BLACK

Cleveland & Cuyahoga
Health Data Matters
Data + Sharing + Innovation = Health Improvement
Historic Lens: Redlining & Health

Redlining and Cancer

Redlining and Life Expectancy

R² = 0.2138

Redlining and Cancer

R² = 0.1602

Data source: Cuyahoga County Board of Health
Part 2: Digital Medicine Technology to improve population health

AKA: Connected Health, Mobile Health

https://www.medinaction.com/technology-revolutionizing-healthcare-the-future-is-changing-now/
What can you do with Digital Health Tools?

- Participate in research; update health status.
- Caregiver proxy access.
Low Levels of MyChart Use at MetroHealth

![Bar chart showing the use of MyChart among patients at MetroHealth. 70.9% do not use MyChart, while 29.1% use it. The total number of patients is 243,248.]

Public Health Lens: Look at Disparities

Perzynski, et al 2017

UNINSURED: 17.4%
MEDICAID: 26.5%
MEDICARE: 23.4%
COMMERCIAL: 39.3%
Public Health Lens: SocioEcologic Model of HIT Barriers

<table>
<thead>
<tr>
<th>Structures and Systems</th>
<th>Fed/State/Local broadband policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td>Access to internet, training, care</td>
</tr>
<tr>
<td>Institutions and Organizations</td>
<td>Provider workflow, policies</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Trust, support, content, development</td>
</tr>
<tr>
<td>Individual</td>
<td>Language, usability, privacy, cost</td>
</tr>
</tbody>
</table>

**SEM Model Source:** U.S. Centers for Disease Control and Prevention
Upstream Cause: MyChart Use by Broadband Access

Perzynski, et al 2017

Census Tract Broadband Coverage

% of total population

% Using PHR

0 - 20% 20 - 40% 40 - 60% 60 - 80% 80 - 100%

0 5 10 15 20 25 30 35 40

MetroHealth

R² Linear = 0.678
Digital Divides As Social Justice Issue

% With Broadband Internet

360 Public Premium
AT&T Has Historically Excluded Cleveland's Poorest Neighborhoods From Its Internet Access Improvements

Cleveland, Ohio—AT&T has historically excluded the city's poorest neighborhoods from its internet access improvements, according to a new study by the Center for Community Development and Innovation (CCDI) at Case Western Reserve University.

CCDI's study, which examined internet access in Cleveland from 2014 to 2017, found that neighborhoods with high concentrations of poverty have less access to high-speed internet service than those with lower poverty levels.

The study used data from the Federal Communications Commission (FCC) and the American Community Survey (ACS) to map internet access and poverty rates across the city. It found that neighborhoods with poverty rates above 35% had lower internet download speeds than those with lower poverty rates.

"Our study shows that internet access is not just a matter of having a computer or knowing how to use one," said Peter L. Dray, director of CCDI. "It's a question of whether you can afford it or whether you live in an area where it's not available."

The findings are part of a broader trend of internet inequality across the country. According to a report from the National Broadband Map, 15% of American households lack access to broadband internet, with many of these households living in poverty-stricken areas.

The study's authors recommend that policymakers and businesses take steps to address this issue, such as increasing investment in infrastructure and providing affordable internet options to low-income communities.

"Connect Your Community" is a national initiative that aims to increase digital literacy and access for all our neighbors and neighborhoods. The initiative is supported by the National Broadband Map and is part of a broader effort to close the digital divide.

For more information, visit http://guides.osu.edu/maps-geospatial-data/maps/redlining/.
% HH with no internet, 2017 ACS 5 year estimate

Connect Your Community
Digital literacy and access for all our neighbors and neighborhoods.
Digital Inclusion Framework
Digital Divides Risk Widening Health Disparities

% Has Cell Data Plan

Diabetes Prevalence, BRFSS
500 Cities Project 2015
Part 3: Digital Skills & Access as SDOH
Computers and Broadband in Home, 7 Cities

American Community Survey, 2015, 2016, 2017; analysis by Sheon. See: Health Data Matters LiveStories hdm.livestories.com
Digital Natives?

% of Youth <18 with Broadband

2015 2016 2017
Digital Inclusion as a Social Determinant of Health

<table>
<thead>
<tr>
<th>Economic Stability</th>
<th>Neighborhood and Physical Environment</th>
<th>Education</th>
<th>Food</th>
<th>Community and Social Context</th>
<th>Health Care System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Housing</td>
<td>Literacy</td>
<td>Hunger</td>
<td>Social integration</td>
<td>Health coverage</td>
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<tr>
<td>Income</td>
<td>Transportation</td>
<td>Language</td>
<td>Access to healthy options</td>
<td>Support systems</td>
<td>Provider availability</td>
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<tr>
<td>Expenses</td>
<td>Safety</td>
<td>Early childhood education</td>
<td>Hunger</td>
<td>Community engagement</td>
<td>Provider linguistic and cultural competency</td>
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<tr>
<td>Debt</td>
<td>Parks</td>
<td>Vocational training</td>
<td>Access to healthy options</td>
<td>Discrimination</td>
<td>Quality of care</td>
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<tr>
<td>Medical bills</td>
<td>Playgrounds</td>
<td>Higher education</td>
<td>Hunger</td>
<td>Stress</td>
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<td>Support</td>
<td>Walkability</td>
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<td>Zip code / geography</td>
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**Health Outcomes**
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations
Public Health Approach: Reframing

“Digital Skills and Connectivity as Social Determinants of Health (SDOH)” panel

- **Digital Skills: A Hidden ‘Super’ Social Determinant of Health (Conference Report)** by Amy Sheon *(October 15, 2018)*
Solution: Population-based approach

Screening, Brief Intervention, Referral to Treatment (SBIRT)

- Screen all patients for digital skills and connectivity
- Refer to community organizations to address gaps in equipment, connectivity and basic digital skills
- Train patients to use health apps
- Train community health workers to screen, refer and train
- “Train the Trainer” model; partner with local CHW training programs
Solution: Population-based approach

Screening, Brief Intervention, Referral to Treatment (SBIRT)

% of Participants Needing Assistance to Complete Tasks, by Health Literacy

- Logging In
- Visit Summary
- Reviewing Rx Factsheet
- Lab Results
- Looking up Health Info

Cembali, NDIA 2018 Digital Inclusion Net Summit
Addressing Disparities in Diabetes Management Through Novel Approaches to Encourage Technology Adoption and Use
Amy R Sheon, Shari D Bolen, Bill Callahan, Sarah Shick, Adam T Perzynski
JMIIR Diabetes 2017;2(2):6751
Part 4: Bringing Public Health Perspective to Innovation
Part 5: Bringing Innovation to Public Health: Neighborhood Immersion for Compassion & Empathy (NICE) VR Simulation for Medicaid Providers
Thanks to:

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CWRU Medicaid Equity Simulation Team

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  ◦ Wanda Davis, Ashbury Senior Computer Community Center
Questions

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