

Community-Based Population Health Research: A Report from the Field

Sharon L Larson, PhD
Professor
Executive Director

Trina Thompson, DrPH, MPH, BSN
Research Associate Professor
Executive Director

Norma Padron, PhD, MPH
Assistant Professor
Associate Director

Marquita Decker-Palmer, MD, PhD
Research Assistant Professor
Associate Director

**Main Line Health System
Center for Population Health Research**

**1889 Jefferson Center
for Population Health**



Learning Objectives

- Describe two innovative models for population health research centers
- List three benefits of partnering with a University when establishing a population health center
- Characterize challenges associated with the development of community-engaged and health system embedded, population health research centers

Population Health and the Learning Health Approach

Knowing

- Characterizing the groups of people we serve

Learning

- What are the needs of our populations?
- What are the recommended best practices for addressing health, wellness, and prevention?

Doing

- Developing relevant strategies and interventions to improve the quality of care and outcomes for our populations in partnership with health care consumers, communities, providers, health care organizations, payers and others

Learning some more

- Assessing what is working, why it is working, what didn't work and how to remove barriers to success...refine and continue the work

Who are we?

Main Line Health Center for Population Health Research



Jefferson
Philadelphia University +
Thomas Jefferson University

College of
Population
Health

1889 Jefferson Center for Population Health



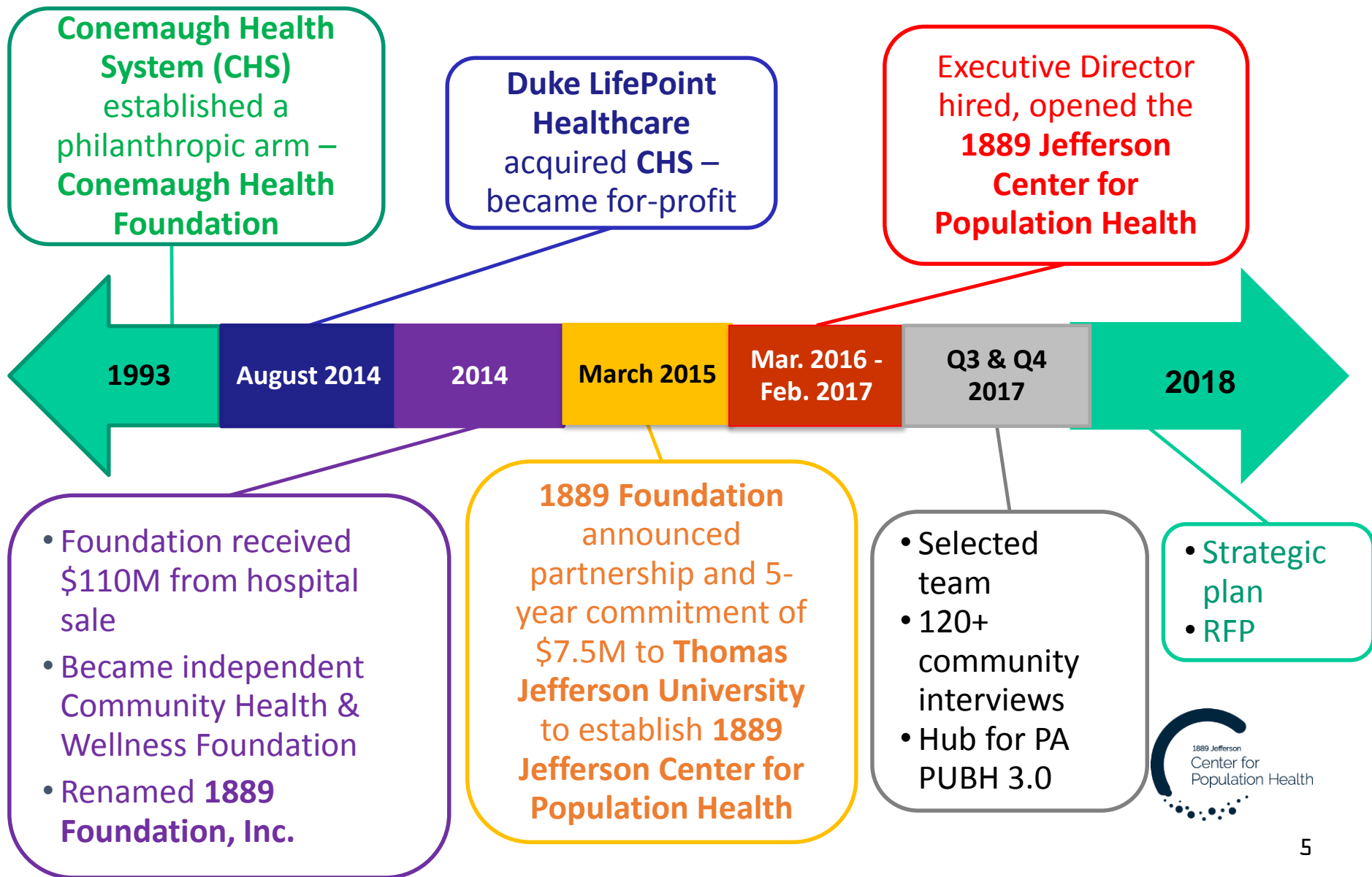
1889
FOUNDATION



Jefferson
Philadelphia University +
Thomas Jefferson University

College of
Population
Health

1889 Jefferson Center for Population Health



1889 Jefferson Center for Population Health

Priorities

- Diabetes
- Obesity & inactivity
- Tobacco (drug & alcohol)
- Mental Health

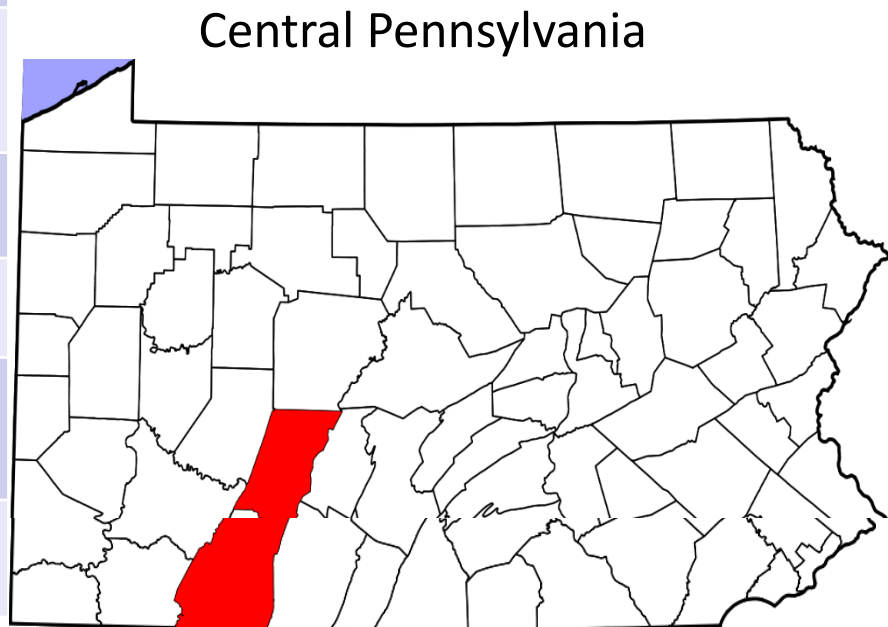
Strategic Direction

Community



County Demographics 2016

Variable	Cambria	Somerset
Population	134,700	75,000
Male	49%	52%
Female	51%	48%
% Poverty	15.6%	14.1%
Median Income	\$43,614	43,938
Population Density sq/mile	200	70
Health Systems	3 for-profit	1 nonprofit



<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

https://www.census.gov/data-tools/demo/saipe/saipe.html?s_appName=saipe&map_yearSelector=2016&map_geoSelector=aa_c&s_state=42&s_county=42021.42111&menu=grid_proxy

What are we doing at 1889 Jefferson?



Mountains we are climbing 1889 Jefferson

- Partnerships with community organizations
 - For-profit hospital
- Transforming silos to collaboration—changing culture and territorial conflicts
- ‘Kid in the candy shop’ syndrome—selecting the focus
- Staffing challenges
- External matching funds to 1889 Foundation funding
- Frequent target of funding requests
- Focus: data vs. community story



Main Line Health[®]

Well ahead.[®]

Main Line Health Center for Population Health Research


About our Health System – Main Line Health

- Founded in 1985, Main Line Health® is a not-for-profit health system serving portions of Philadelphia and its western suburbs.
- Four of the region's most respected acute care hospitals— Lankenau Medical Center, Bryn Mawr Hospital, Paoli Hospital and Riddle Hospital
- Bryn Mawr Rehabilitation Hospital
- Mirmont Treatment Center for drug and alcohol recovery
- Main Line Health Centers including primary care doctors, specialists, laboratory, radiology, rehabilitation and other outpatient services
- Lankenau Institute for Medical Research, a non-profit biomedical research organization

The Center for Population Health Research in the Main Line Health System

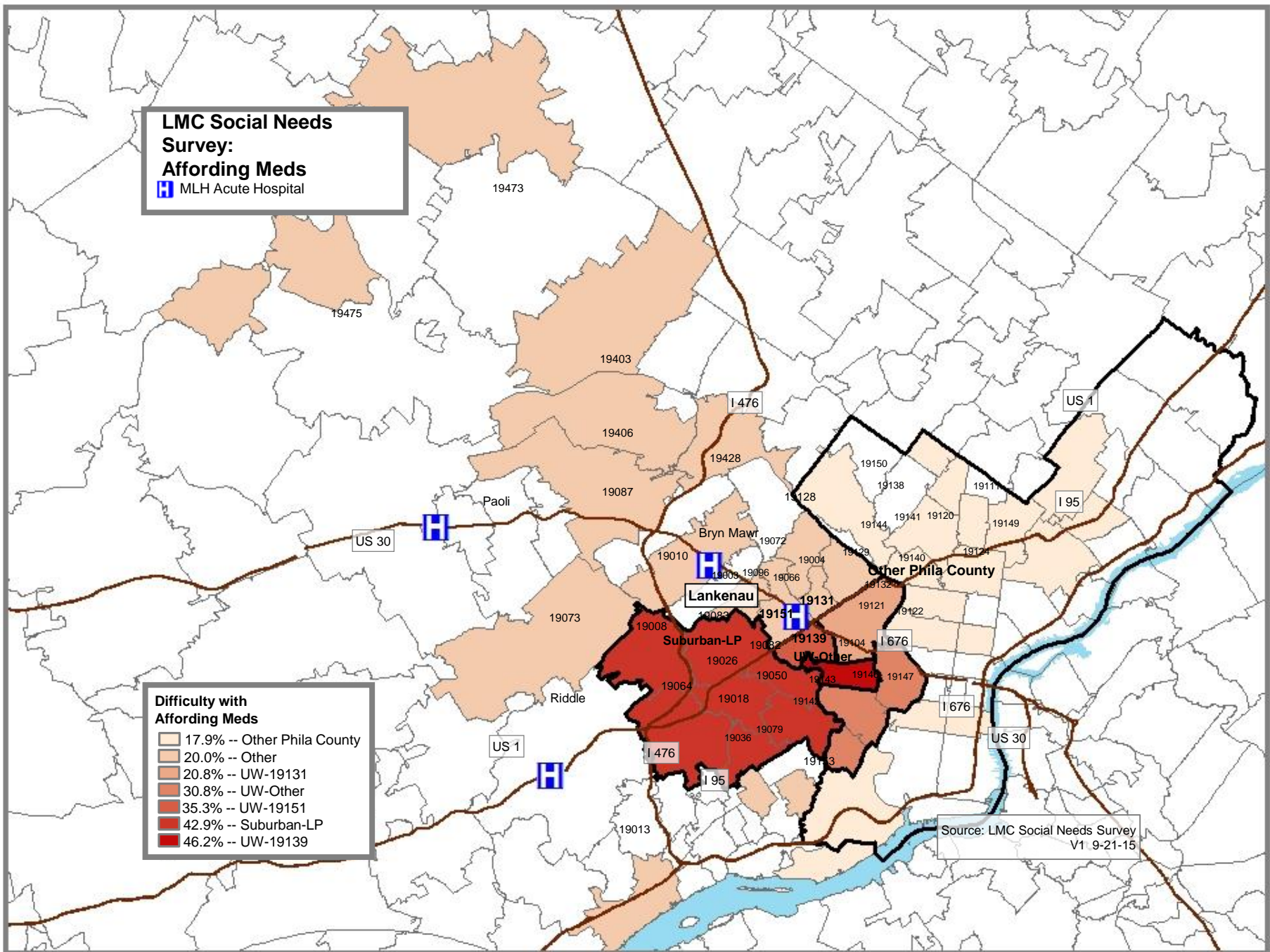
- Represents a Partnership with Jefferson College of Population Health
- Joint steering committee of Main Line Health executive leadership and Jefferson leadership
- Significant study prior to the development of the center by an outside consultancy
- Dr. Norma Padron, Associate Director 2016
- Dr. Sharon Larson, Executive Director 2017

LMC Social Needs Survey: Affording Meds

 MLH Acute Hospital

Difficulty with Affording Meds

- 17.9% -- Other Phila County
- 20.0% -- Other
- 20.8% -- UW-19131
- 30.8% -- UW-Other
- 35.3% -- UW-19151
- 42.9% -- Suburban-LP
- 46.2% -- UW-19139










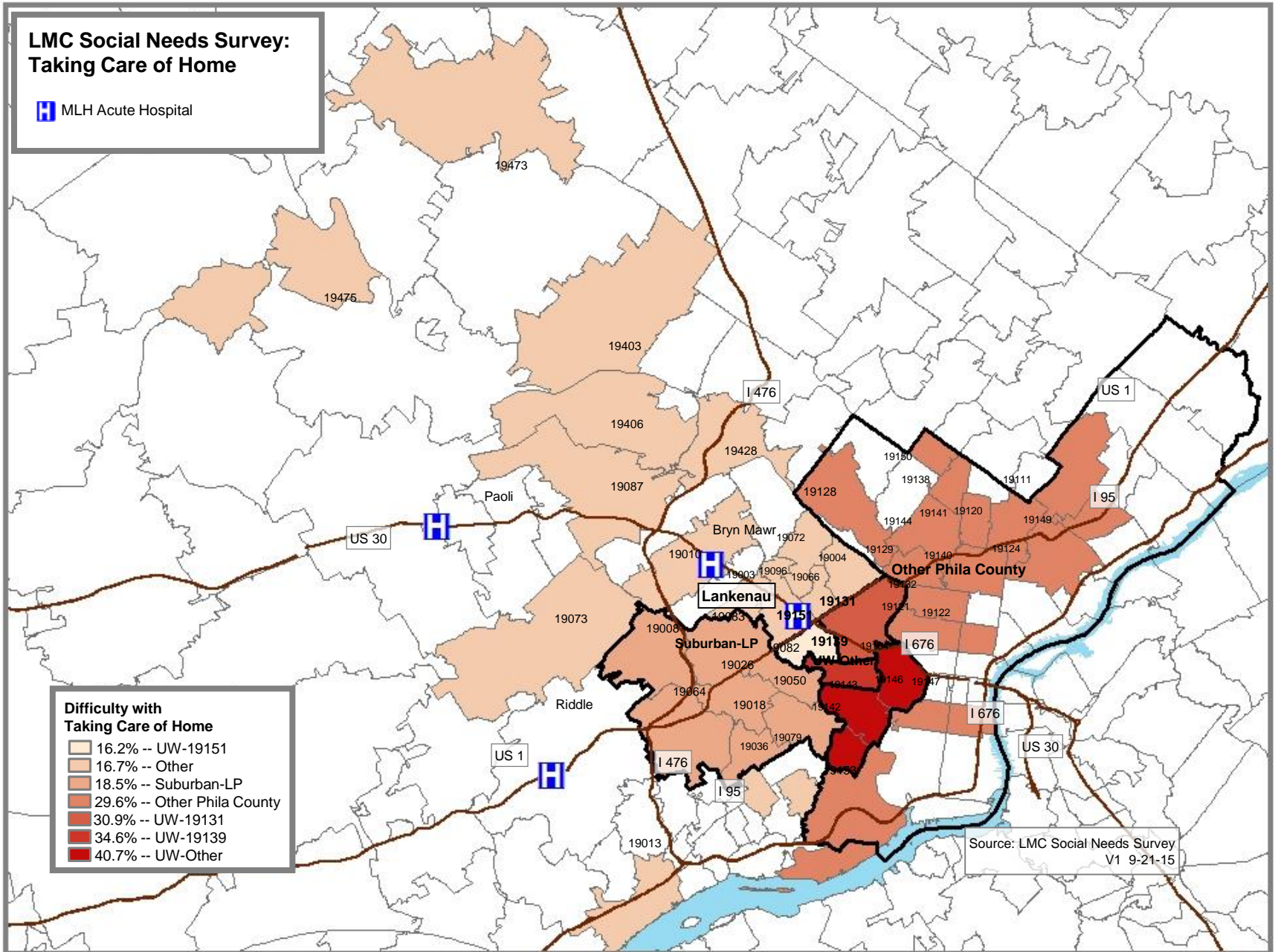
Source: LMC Social Needs Survey
V1 9-21-15

LMC Social Needs Survey: Taking Care of Home

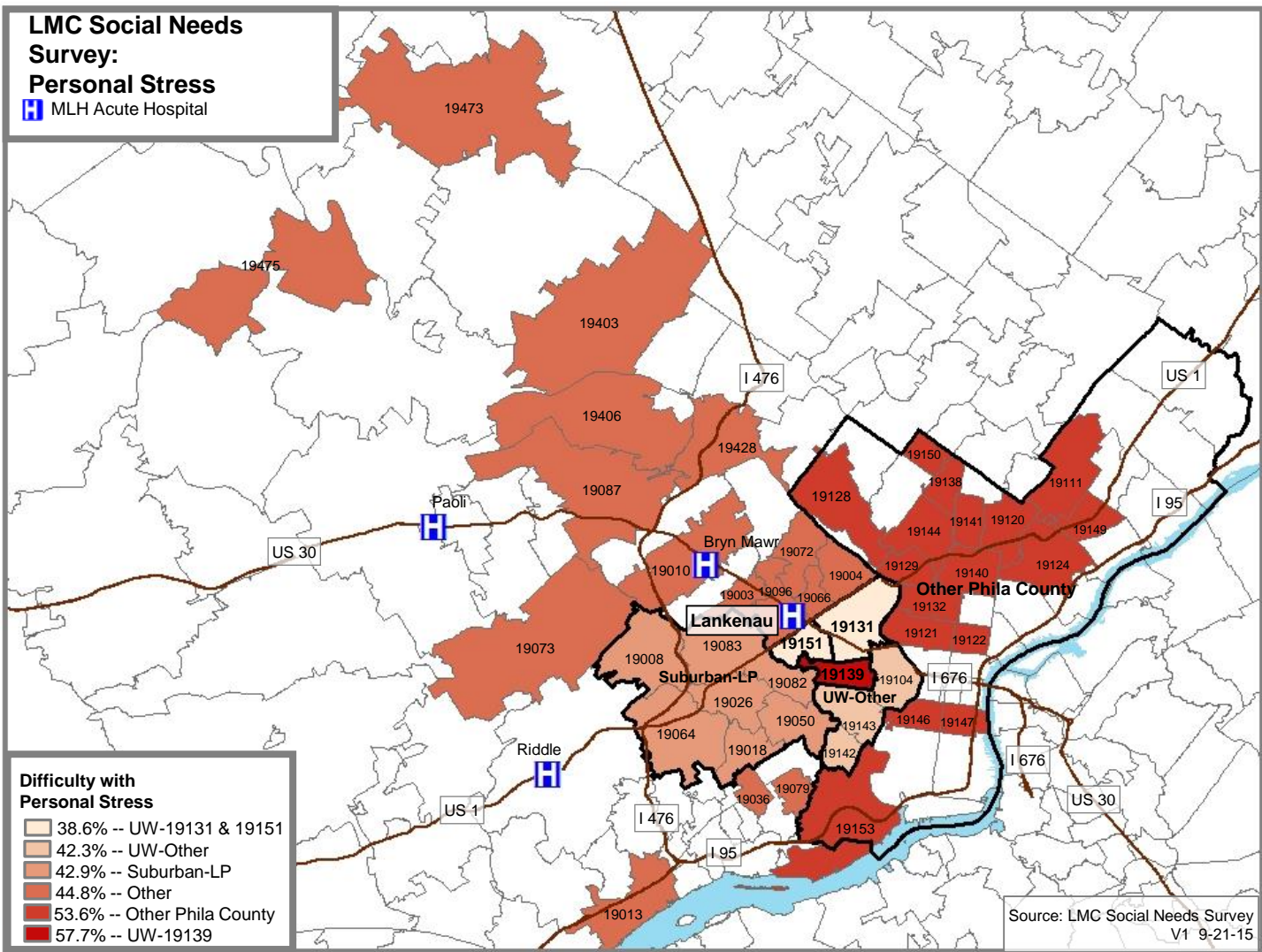
 MLH Acute Hospital

Difficulty with Taking Care of Home

-  16.2% -- UW-19151
-  16.7% -- Other
-  18.5% -- Suburban-LP
-  29.6% -- Other Phila County
-  30.9% -- UW-19131
-  34.6% -- UW-19139
-  40.7% -- UW-Other



Source: LMC Social Needs Survey
V1 9-21-15



What are we doing at Main Line CPHR?

- Harm reduction among opioid substance abusers
- Depression care pathways
- Human trafficking– a project developed by a group of nurse residents
- Emergency department utilization
- Women's heart health
- Cancer and the value of care coordination
- Promoting health professions among under represented minority students
- Building partnerships with clinicians and clinical departments

Mountains we are climbing CPHR

- New tools for research
- Identifying the silos and potential partners
- Partnerships with the clinical enterprise
- Data access
- Data development
- ‘Kid in the candy shop’ syndrome—Figuring out the questions
- Staffing
- Funding—internal and external

Meeting Challenges Through Population Health Science

Main Line Health Center for Population Health Research



Jefferson
Philadelphia University +
Thomas Jefferson University

College of
Population
Health

1889 Jefferson Center for Population Health



1889
FOUNDATION



Jefferson
Philadelphia University +
Thomas Jefferson University

College of
Population
Health

Identifying Health Priorities

- Publically-reported disease prevalence data

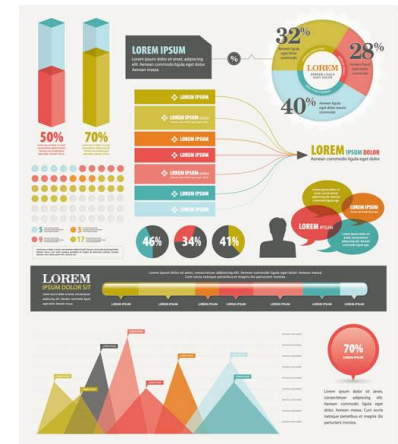


Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™



pennsylvania
DEPARTMENT OF HEALTH

- Community Health Needs Assessments
- Stakeholder engagement



- Priorities of average community residents?



Identifying Health Priorities

- **Assess community-reported health priorities to inform our strategic plan**
 - Surveys?
 - Focus groups?
 - Free Listing Interviews
 - Qualitative research method
 - Relatively easy to conduct, low response burden
 - Analysis less time-consuming than focus group, less extraneous data
 - Limitations: interpretation bias, response bias, selection bias, assumption that order of terms matters

Identifying Health Priorities

- **Using Free Listing Interviews to Assess Community-Reported Health Priorities (n = 98)**

List the things that improve your health

List the health problems that affect you

List the things that make it hard for you to stay healthy

- Demographic data:
 - Year of birth
 - Gender
 - Race
 - Zip code
 - Health insurance status

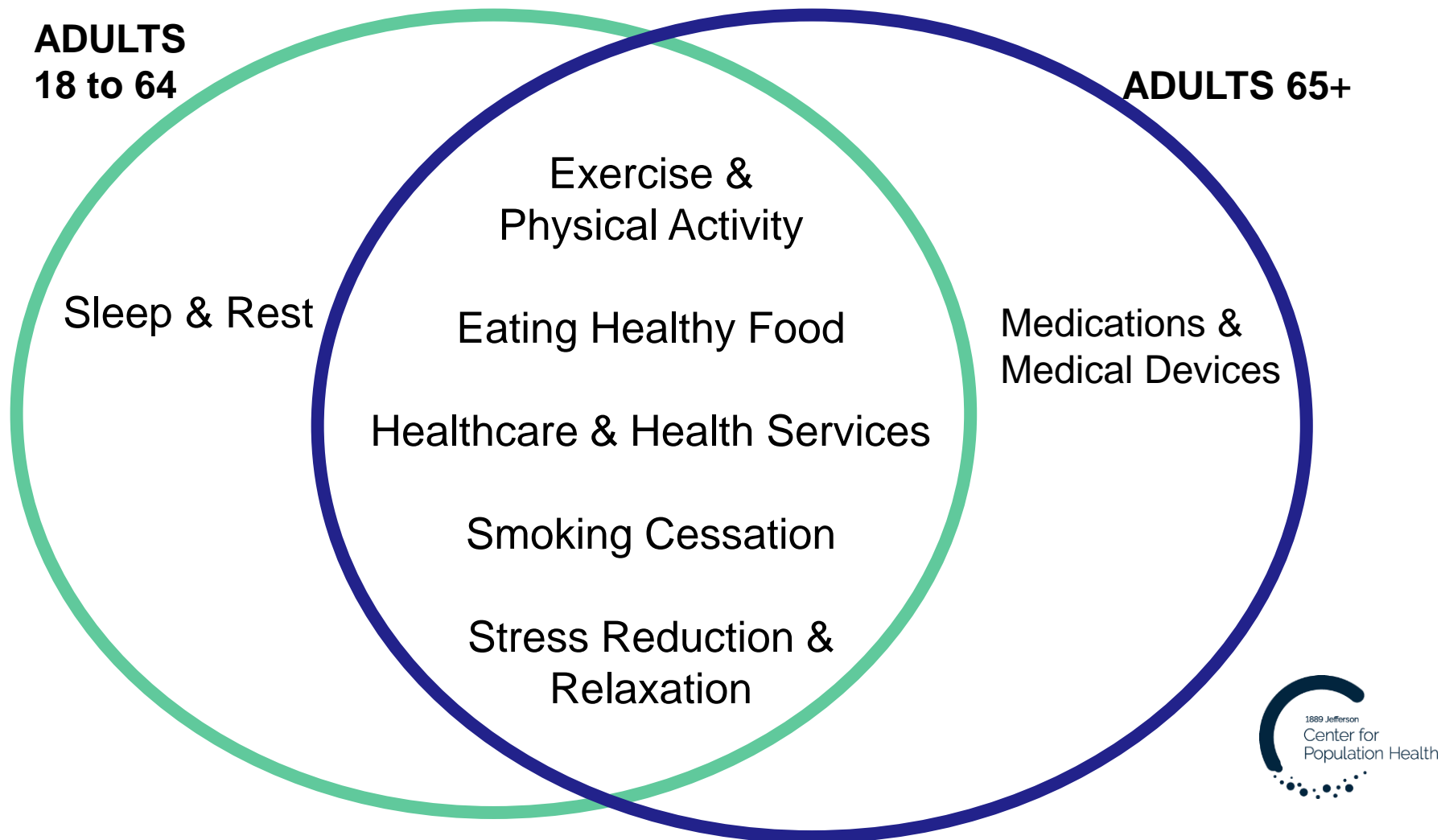
- Analysis:
 - Group terms → Domains
 - Saliency index

$$s_j = l \frac{r_j l}{n l}$$

$$s_j = \frac{n r_j}{n l}$$

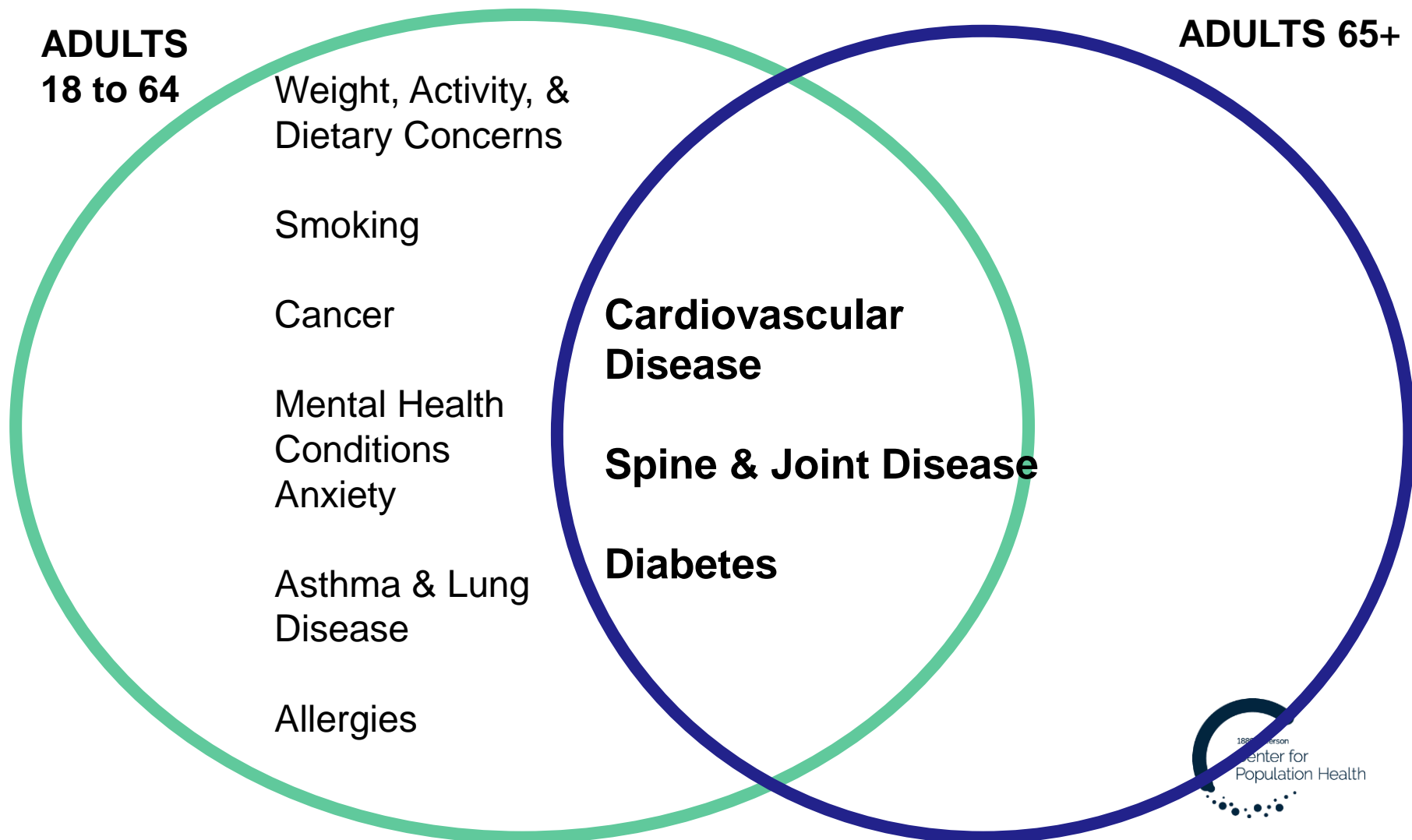
Identifying Health Priorities

Salient Factors that Improve Health in adults under 65 versus 65+



Identifying Health Priorities

Salient Health Problems in adults under 65 versus 65+



Identifying Health Priorities

Salient Barriers to Health in adults under 65 versus 65+

**ADULTS
18 to 64**

ADULTS 65+

Lack of Motivation

**Weight, Activity,
& Dietary Concerns**

Occupational Concerns

Time constraints

Stress & Fatigue

Financial Constraints

Barriers to Healthcare

Smoking Cessation

Aging

Interim Summary

- Assessment of community-reported health priorities is important for informing a strategic plan
 - Focus future health interventions to address community needs and wants
 - Tailoring interventions to community preferences
 - Community buy-in

Leveraging large datasets for population health

- Population health dashboard
- Applications to understand social determinants of health and ED utilization

CPHR—Research and Data Products

- Background:

- A strong system-wide agenda to address disparities
- The MLHS 2013 and 2015 CHNAs for each hospital
- 2015 Social Needs Survey
- Diversity, Respect and Inclusion Agenda

- Background:

- A strong system-wide agenda to address disparities
- The MLHS 2013 and 2015 CHNAs for each hospital
- 2015 Social Needs Survey
- Diversity, Respect and Inclusion Agenda



N= 4,040,000



N= 13,300



CENTERS FOR DISEASE
CONTROL AND PREVENTION

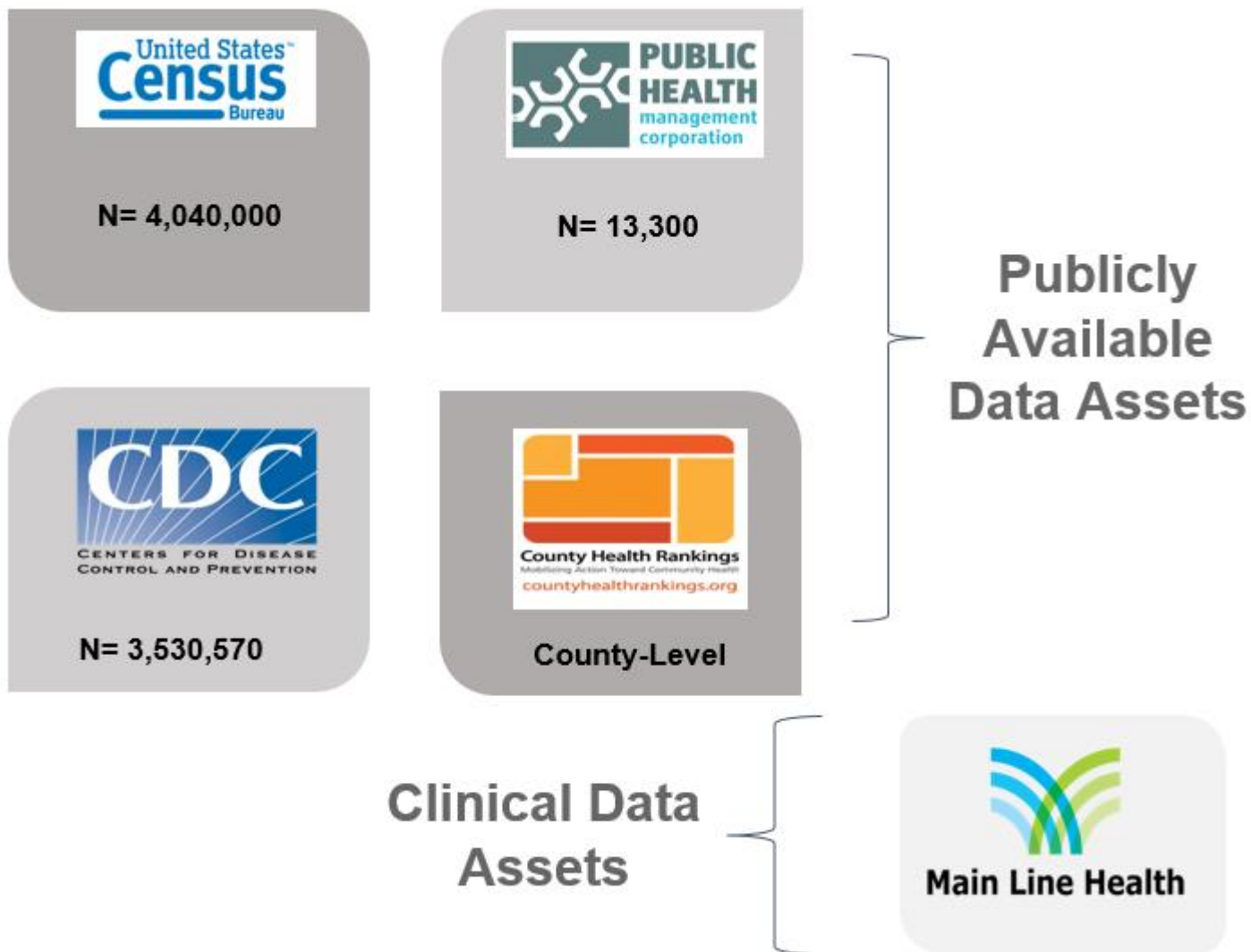
N= 3,530,570



County Health Rankings
Mobilizing Action Toward Community Health
countyhealthrankings.org

County-Level

**Publicly
Available
Data Assets**





CPHR—Research and Data Products

- How can publicly available data assets be aggregated and maintained a resource across the system?
- Who would the users be?
- What questions are relevant and to what groups across the system?

Our Process




Population Health Dashboard

View only zip codes whose income is in the selected range

Loading data and maps



Select one of these tabs

[About](#)
[Socio-demographics](#)
[Risk Factors](#)
[Health](#)
[More](#)

Select one factor

Which risk factor do you want to visualize ?

Diabetes rate (%) - PHMC

Median household income in each county (\$) :

14,897 219,228

Definition

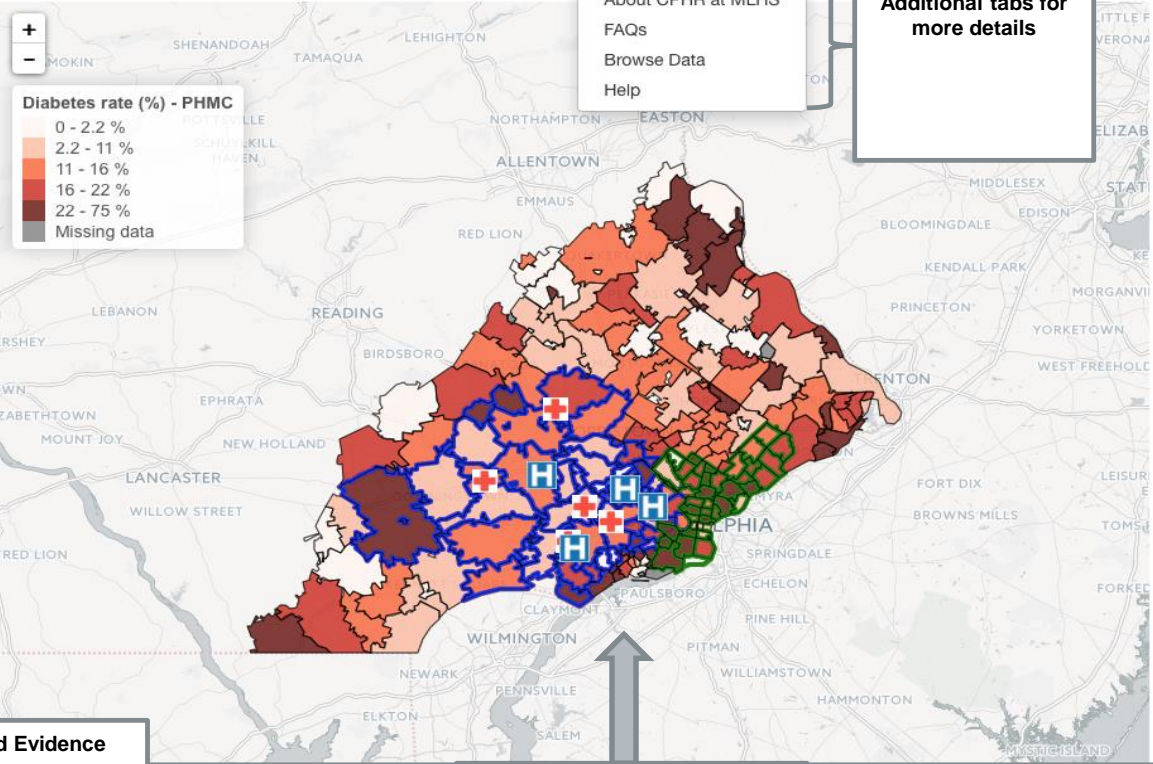
Source : Public Health Management Corporation (2014-2016)
 Percentage of respondents who answered "YES" to the following question : "Have you EVER been told by a doctor or other health professional that you have or had diabetes?"

Any relationship with cardiovascular diseases?

About half of all Americans (47%) have at least one of the three key risk factors for heart disease: high blood pressure, high cholesterol, and smoking. [Here](#) is an interesting article.

A large body of epidemiological and pathological data documents that diabetes is an independent risk factor for Cardiovascular Disease in both men and women.

Read more about it [here](#).



Diabetes rate (%) - PHMC

- 0 - 2.2 %
- 2.2 - 11 %
- 11 - 16 %
- 16 - 22 %
- 22 - 75 %
- Missing data

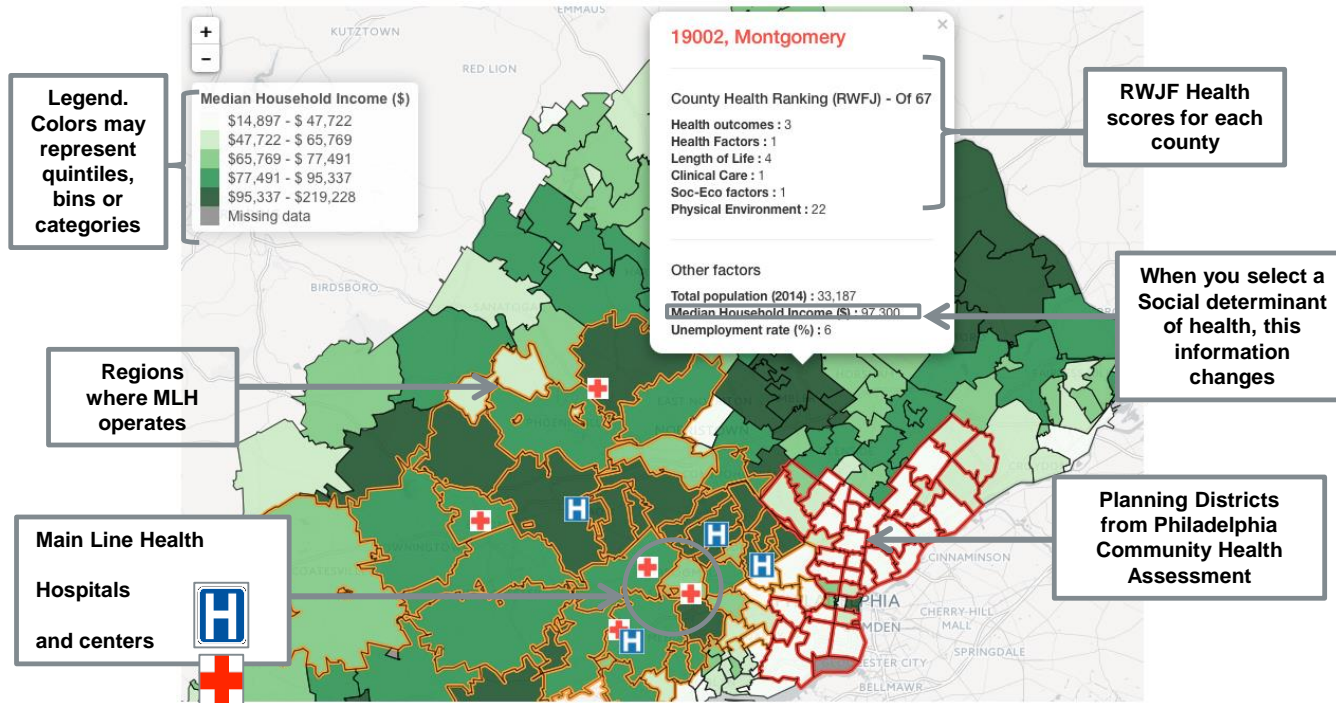
Additional information Definitions and Evidence Base from Academic Literature

Additional tabs for more details

- About CPHR at MLHS
- FAQs
- Browse Data
- Help

Interactive map

Population Health Dashboard



Geographic Variation and Emergency Department Utilization in Southeastern Pennsylvania

Norma A. Padrón, PhD, MPH, MA
~~Saema Adeeb~~
Jennifer B. Mason

January 2018

**Main Line Health
Center for Population Health Research
at the Lankenau Institute for Medical Research**

100 East Lancaster Avenue, Wynnewood, Pennsylvania

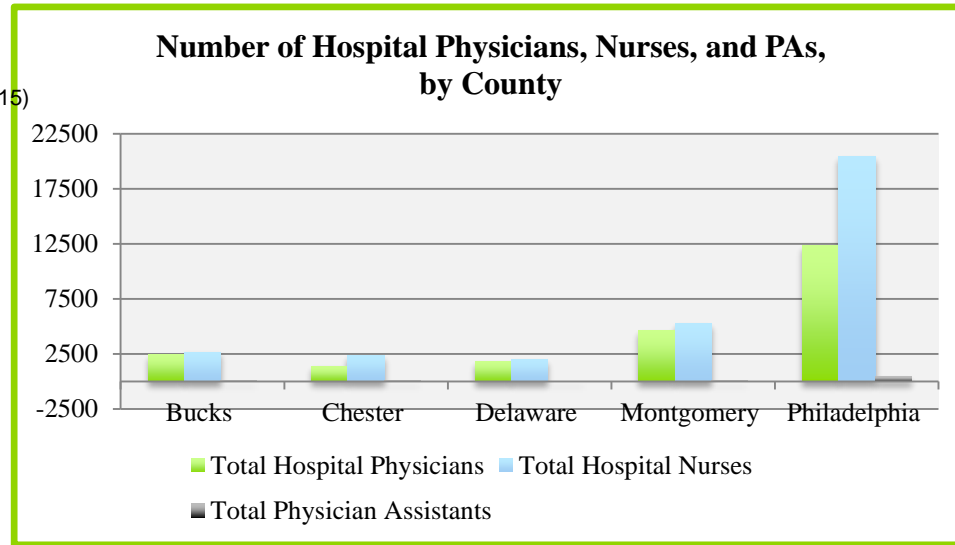


Geographic Variation and Emergency Department Utilization in Southeastern Pennsylvania

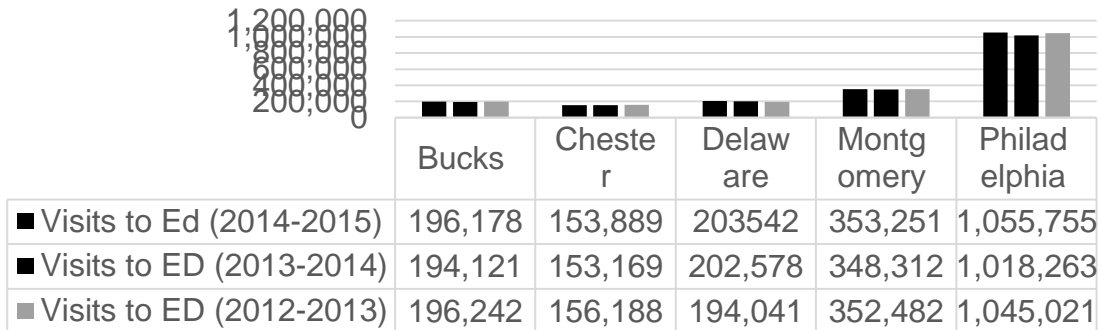
Table of Contents

EXECUTIVE SUMMARY	3
DEFINITIONS	4
INTRODUCTION.....	5
DISCUSSION	5
REGIONAL EMERGENCY DEPARTMENTS IN SOUTHEASTERN PENNSYLVANIA	6
EMERGENCY DEPARTMENT SERVICE CAPABILITY	7
TRAUMA CENTERS	8
SEPA HOSPITAL SYSTEMS WITH EMERGENCY DEPARTMENTS	9
HOSPITAL TAX CLASSIFICATION	10
VISITS AND ADMISSIONS	11
EMERGENCY DEPARTMENT WAIT TIMES	14
HEALTH CONDITIONS AND HOSPITAL READMISSIONS	16
HOSPITAL-WIDE READMISSIONS	16
SURGICAL COHORT	17
ACUTE MYOCARDIAL INFARCTION.....	17
CONGESTIVE HEART FAILURE.....	18
STROKE.....	18
PNEUMONIA.....	19
CHRONIC OBSTRUCTIVE PULMONARY DISEASE	20
CORONARY ARTERY BYPASS GRAFT	20
TOTAL HIP ARTHROPLASTY AND TOTAL KNEE ARTHROPLASTY	21
SUPPLY.....	22
EMERGENCY DEPARTMENT PHYSICIANS	22
PHYSICIANS, NURSES AND PHYSICIAN ASSISTANTS (PAs).....	23
TOTAL HOSPITAL STAFF	23
LIMITATIONS AND FURTHER RESEARCH	24
REFERENCES.....	25

Data aggregated from PA
Department of Health, Annual
 Hospital Questionnaire (2014-2015)
 [14]



Total SEPA ED Visits by County, 2012-2015



Final Comments

- Models like ours at CPHR at other health systems and organizations
- Huge opportunities for multi-sectoral collaborations
- Need remains to disseminate lessons learned and iterate to design best practices to different settings