



Public Health
DATA LEARNING CENTER

Introduction to Data Science for Public Health, Part 2

Michelle Campbell, MSHI

Director, Center for Data Modernization and Informatics,
Washington State Department of Health

Eli Kern, MPH, RN

Epidemiologist
Public Health - Seattle & King County



Using Zoom Q&A



If you have a question during the presentation, please click the **Q&A icon** in the Zoom toolbar to open your Q&A Pod.

About the Public Health Data Learning Center



Public Health
DATA LEARNING CENTER



SCHOOL OF PUBLIC HEALTH
UNIVERSITY *of* WASHINGTON



Introduction to Data Science

Data Modernization Initiative Updates



Using Novel Data to Expand the Public Health Practice Toolbox

Eli Kern MPH RN | Epidemiologist

Assessment, Policy Development & Evaluation

Public Health - Seattle and King County



Outline

1. In search of novel data
2. Using novel data in public health practice
3. Lessons learned



Question for the Audience

Which areas represent the biggest obstacles to working with novel data in your organization?

- A. Technical expertise
- B. Access to high-quality, actionable data
- C. Capacity and/or staffing
- D. Partnerships
- E. All of the above
- F. Other (Type in chat)

The background is a deep blue with a network of glowing white and light blue nodes connected by thin lines, suggesting data or a network. In the upper right, a portion of a laptop keyboard is visible, with keys like 'X', 'C', 'V', and 'B' discernible. A magnifying glass with a black handle is positioned in the lower right, its lens partially overlapping the keyboard. The overall aesthetic is technological and data-driven.

In search of novel data

My framework for monitoring ACA impacts in King County

Affordable Care Act Policy Goals	Topic Areas
1. Equitable access for all	<ul style="list-style-type: none">▪ Access▪ Utilization
2. Improve quality and patient experience	<ul style="list-style-type: none">▪ Quality▪ Patient experience▪ Capacity
3. Reduce per capita cost	<ul style="list-style-type: none">▪ Cost
Long-term impact: Improve health of all populations	<ul style="list-style-type: none">▪ Population health

Equity Lens: Data stratified by age, gender, race/ethnicity, payer type, socioeconomic status, and place where possible.

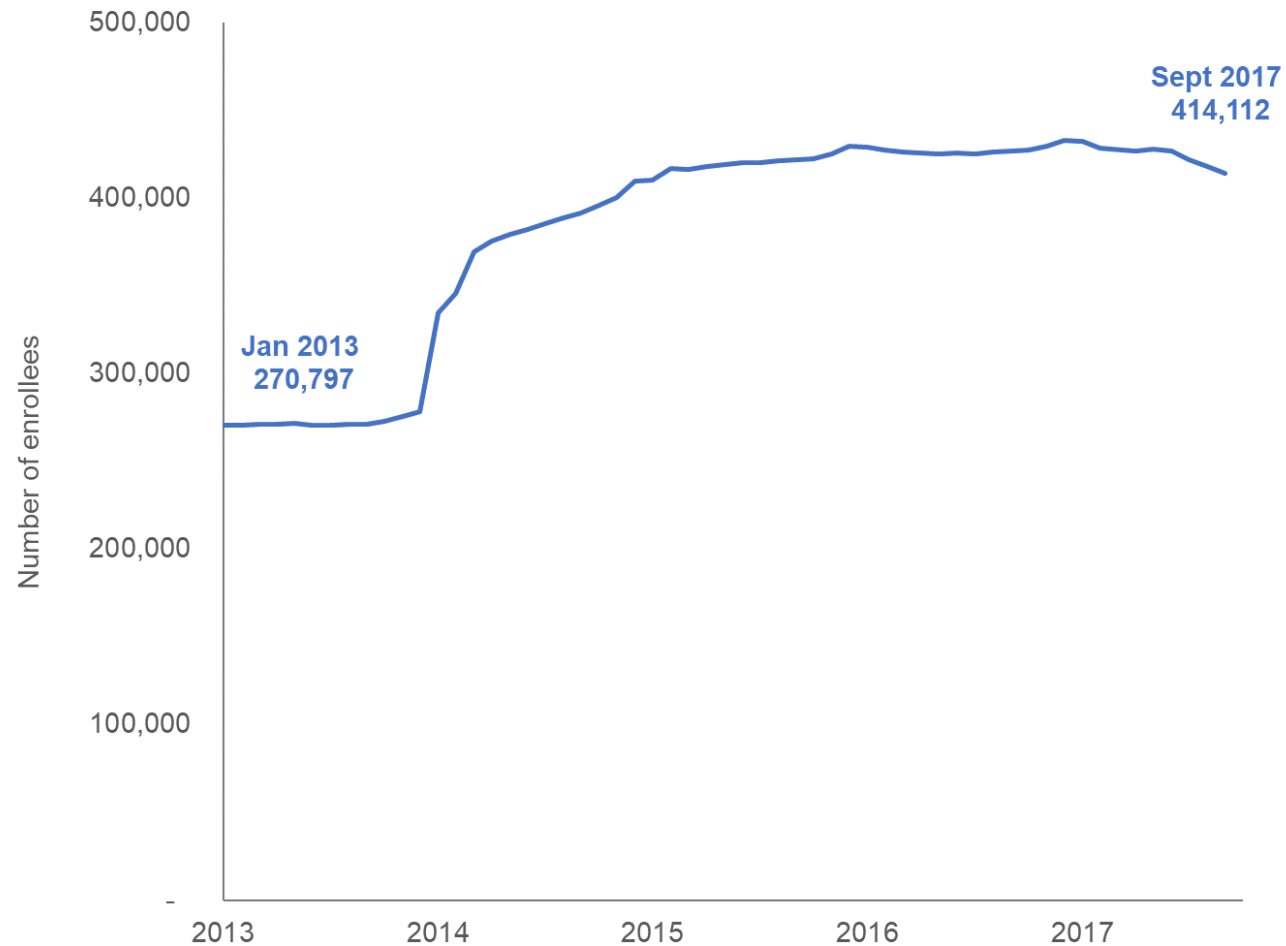
Availability of data for monitoring ACA impacts in King County

Topic Area	Data Availability in 2014	Example indicators	Relevant data sources
Access	Good	<ul style="list-style-type: none"> Lacking health insurance Not seeking care due to cost 	<ul style="list-style-type: none"> ACS BRFSS WAHBE CHARS
Utilization	Fair	<ul style="list-style-type: none"> Routine annual checkup Avoidable hospitalizations 	<ul style="list-style-type: none"> BRFSS CHARS ProviderOne
Quality	Poor	<ul style="list-style-type: none"> Quality of diabetes care 	<ul style="list-style-type: none"> ProviderOne WHA Community Checkup
Patient experience	Poor	<ul style="list-style-type: none"> Satisfaction with health care 	<ul style="list-style-type: none"> BRFSS CAHPS
Capacity	Poor	<ul style="list-style-type: none"> Providers accepting new patients 	<ul style="list-style-type: none"> OIC Safety net Mystery shopper
Cost	Poor	<ul style="list-style-type: none"> Per capita cost of health care 	<ul style="list-style-type: none"> CHARS ProviderOne
Population health	Good	<ul style="list-style-type: none"> Late/no prenatal care Child immunization rate 	<ul style="list-style-type: none"> Vital stats WSIIS BRFSS

ACS - American Community Survey; BRFSS - Behavioral Risk Factor Surveillance System; CAHPS - Consumer Assessment of Healthcare Providers and Systems; CHARs - Comprehensive Hospital Abstract Reporting System; WAHBE – WA Health Benefits Exchange; OIC - Office of the Insurance Commissioner; WHA - Washington Health Alliance; WSIIS – Washington State Immunization Information System.

Why Medicaid data?

Medicaid covers 1 in 5 people in King County



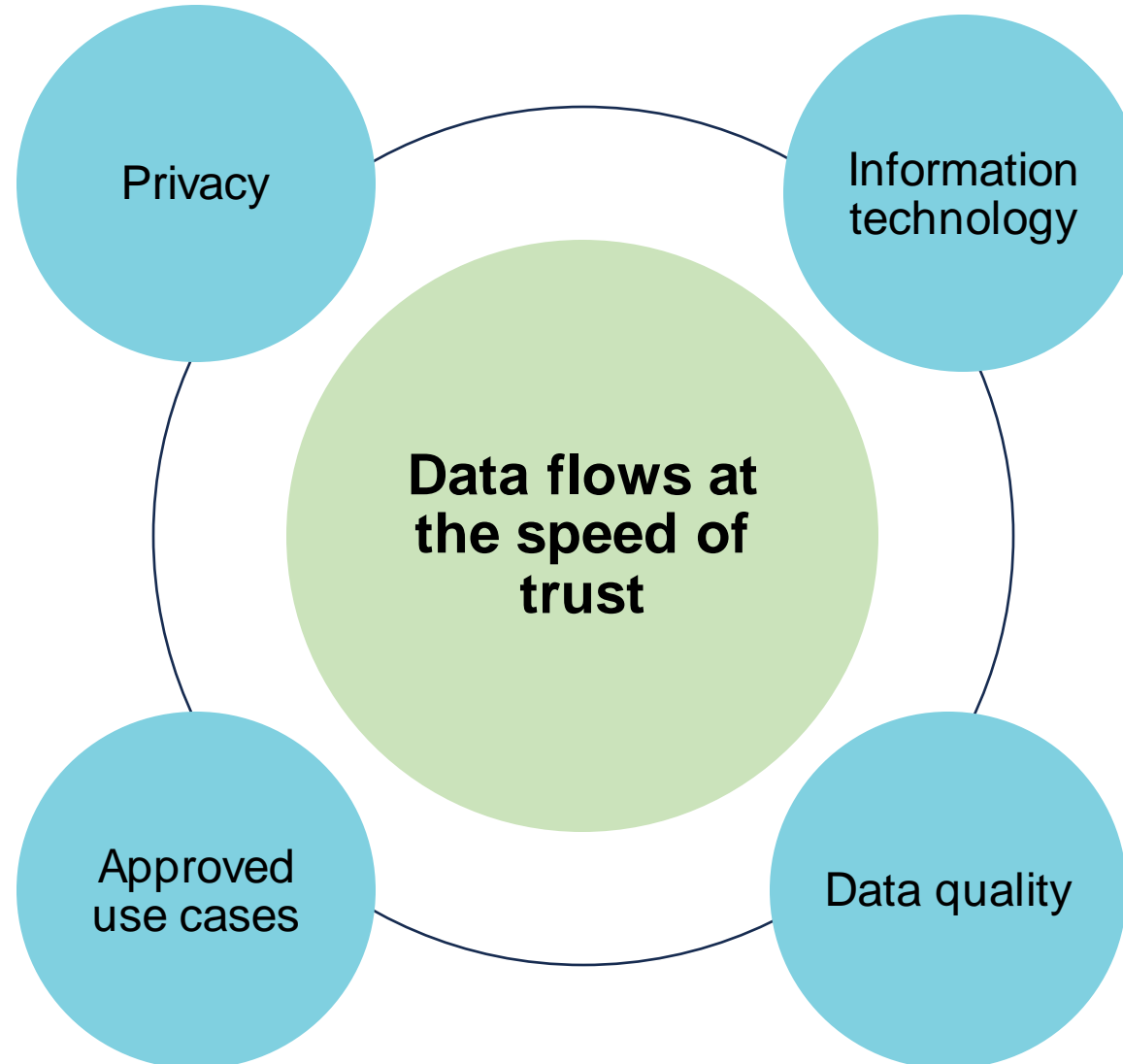
Data Source: Washington State Health Care Authority

Long walk to Medicaid data

1. Differing legal interpretations
2. IT challenges
3. No data dictionary
4. Dynamic data
5. Designed for billing



Cross-sector data sharing is both an art and a science



A hand in a dark suit sleeve is shown interacting with a futuristic, glowing blue digital interface. The interface features various medical and data-related icons: a central large cross, a heart with a pulse line and a cross, a stethoscope, a shield with a cross, a clipboard, and a pair of pills. The background is dark with glowing blue lines and data points, suggesting a high-tech, data-driven environment.

Using novel data in public health practice

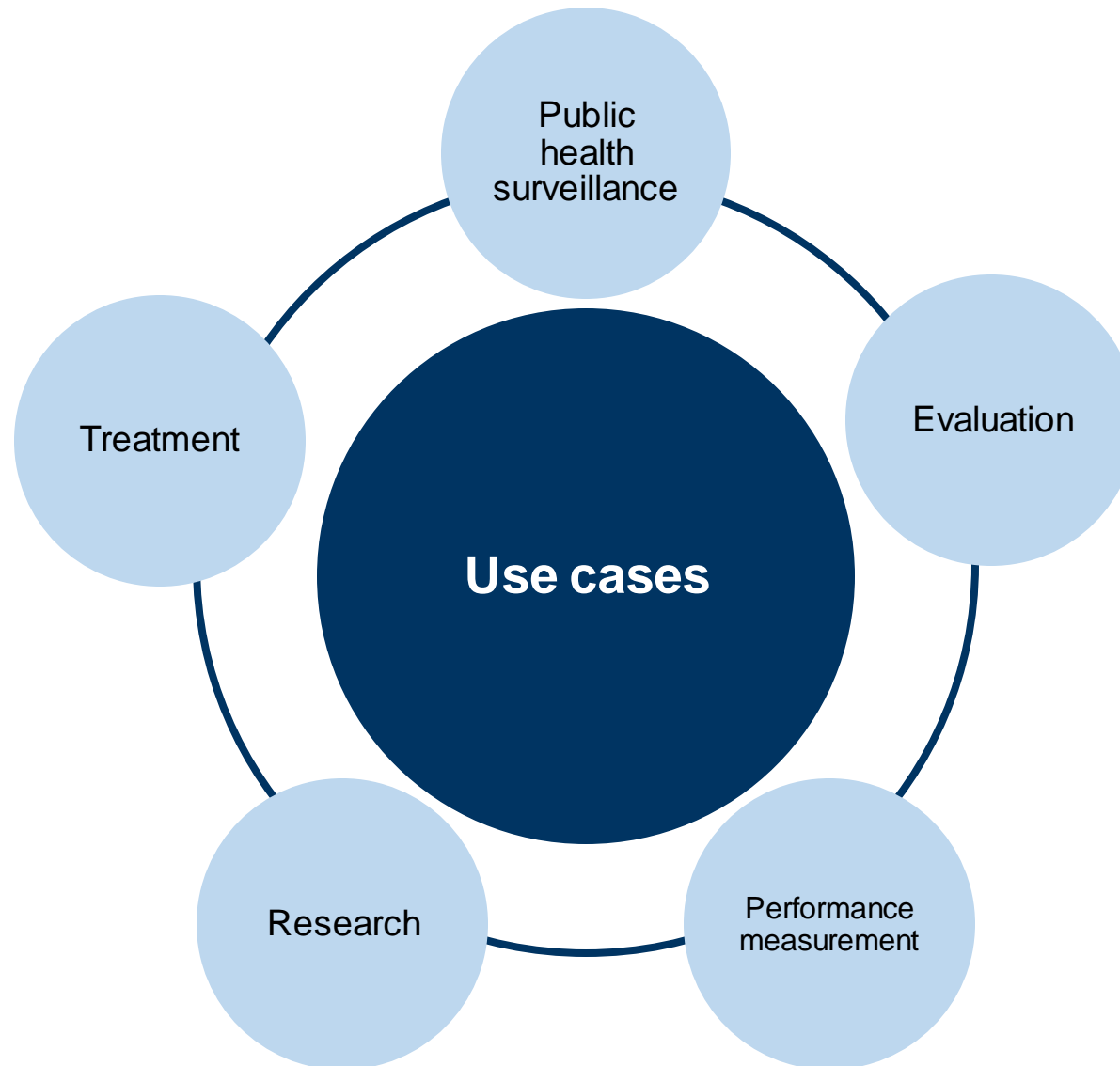


Question for the Audience

When using data in your work, which of the following areas currently requires most of your time and attention?

- A. Evaluation
- B. Performance measurement
- C. Research
- D. Treatment
- E. Surveillance/assessment
- F. All of the above
- G. Other (Type in chat)

King County uses Medicaid data to support community health and well-being



Use Case: Evaluation

- **Public Health – Seattle & King County** partnered with multiple organizations to conduct a mixed method evaluation of the impact of the **Yesler Terrace Redevelopment Project** on resident and community health and well-being.
- The evaluation made use of multiple data sources, including Medicaid claims data.
- More info is available at: [Evidence for Action: Seattle's Yesler Terrace Redevelopment](#)



Use Case: Performance measurement

- King County Department of Community & Human Services uses Medicaid data to produce value-based payment measures for Managed Care Organizations, which are used to monitor the quality of publicly-funded behavioral health care services in King County.



Use Case: Research

- Partnering with HealthierHere and University of Washington faculty, Public Health – Seattle & King County used Medicaid claims and other data sources to answer the research question:

“Are higher levels of behavioral health integration in community health clinics associated with lower rates of Emergency Department and hospital use?”

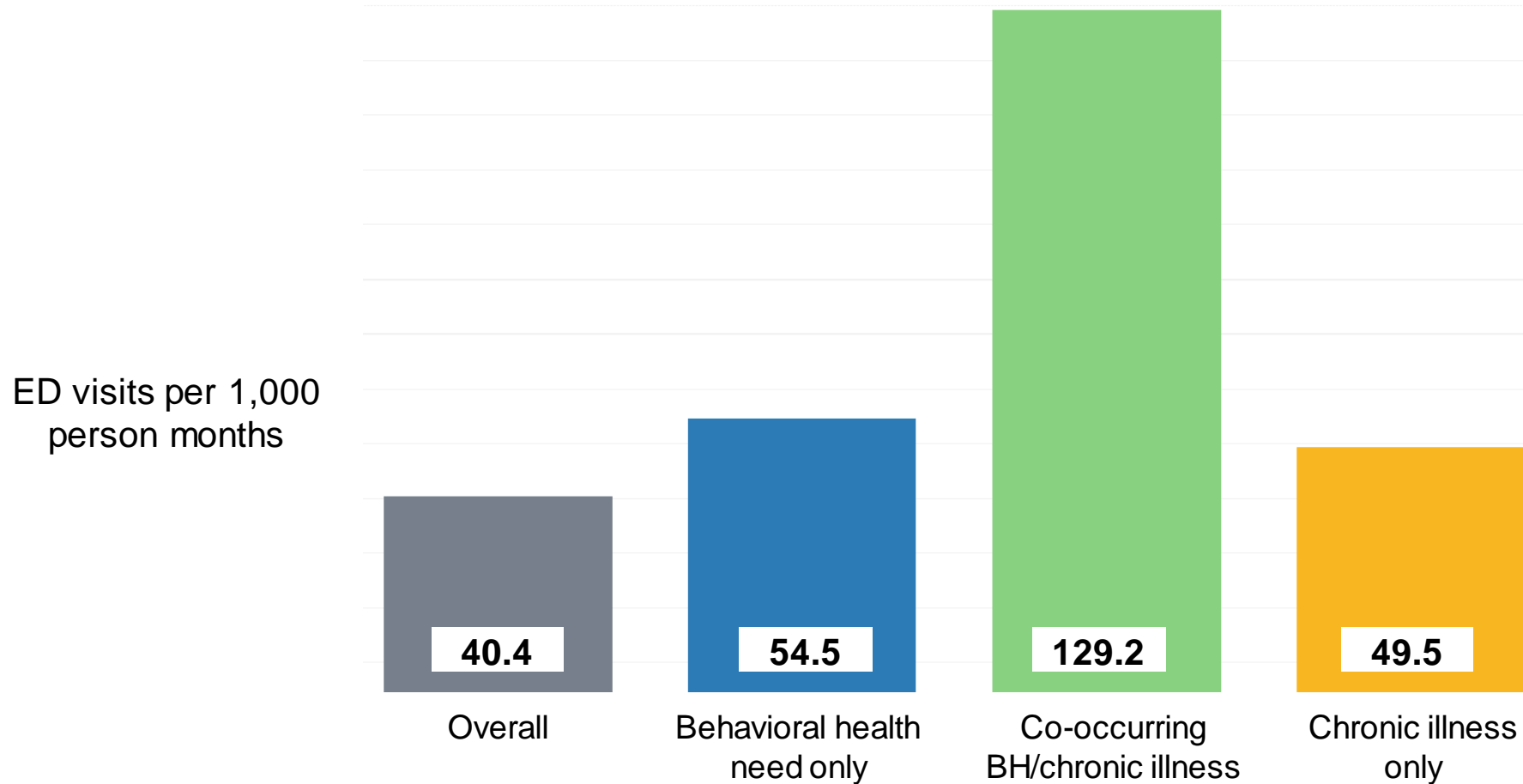


Use Case: Treatment

- King County Department of Community & Human Services has used Medicaid data linked to other data sources to prioritize homeless services for COVID high-risk individuals in King County.



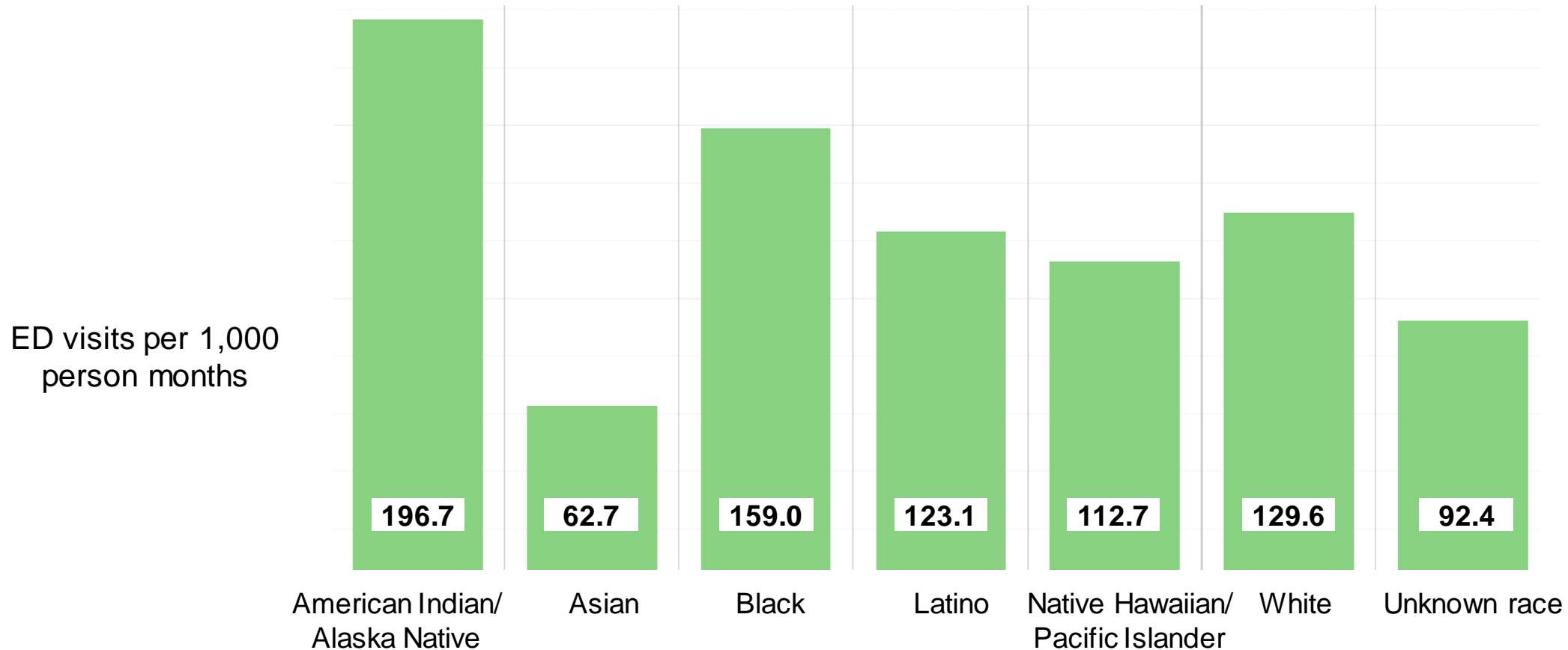
Exploring the relationship between health status and Emergency Department (ED) use among King County Medicaid beneficiaries



Source: Medicaid claims data, WA Health Care Authority (HCA). Data shown are for King County Medicaid members for services received in 2017. Behavioral health includes mental illness and substance use disorder. Chronic illness includes asthma, chronic obstructive pulmonary disease, diabetes, chronic kidney disease, heart failure, hypertension and ischemic heart disease.

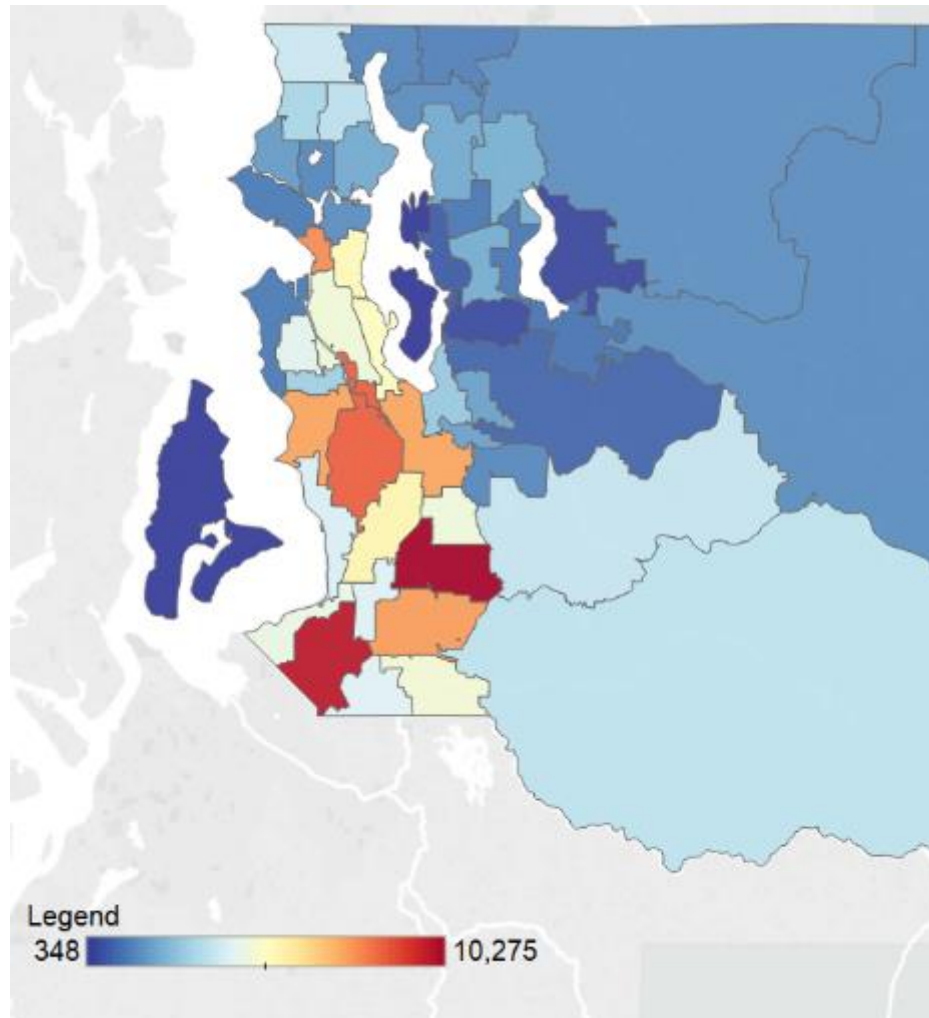
Health status-related inequities widen when looking at race/ethnicity

Medicaid members with co-occurring behavioral health & chronic illness

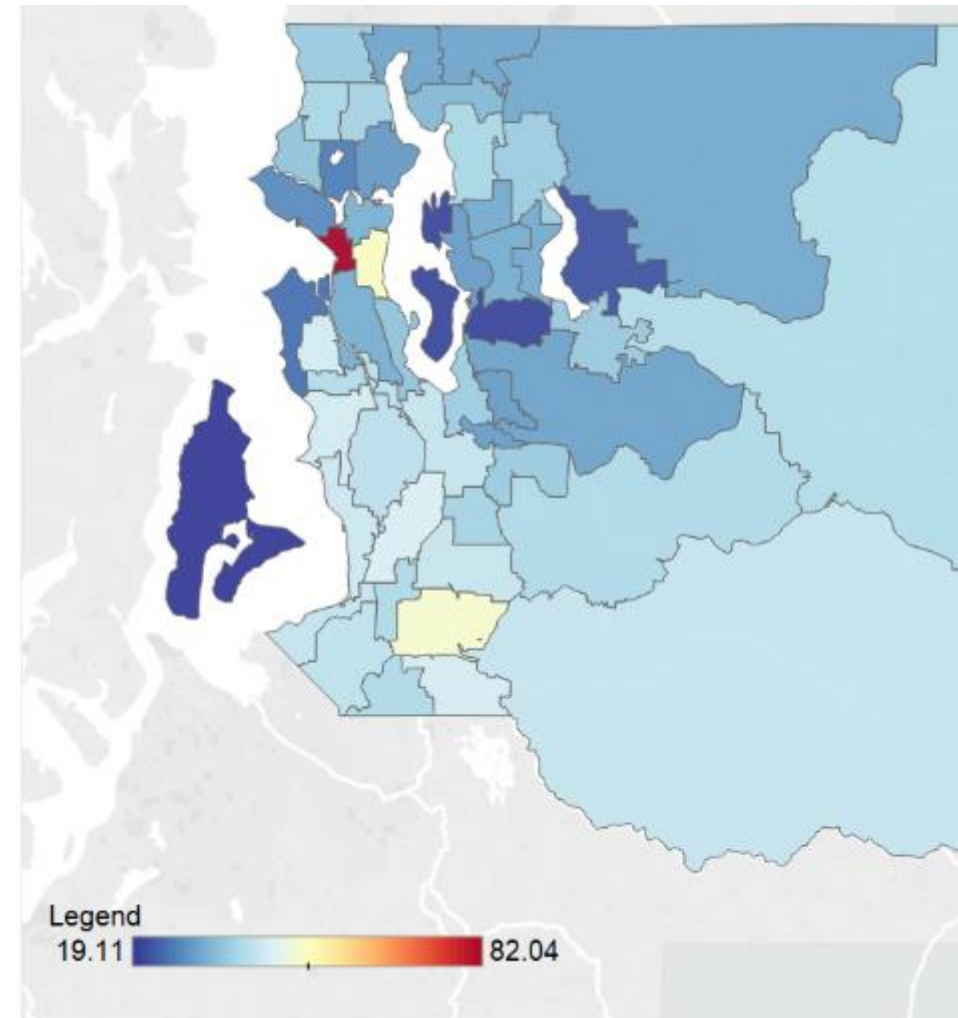


Source: Medicaid claims data, WA Health Care Authority (HCA). Data shown are for King County Medicaid members for services received in 2017. Behavioral health includes mental illness and substance use disorder. Chronic illness includes asthma, chronic obstructive pulmonary disease, diabetes, chronic kidney disease, heart failure, hypertension and ischemic heart disease.

Absolute and relative inequities – mapping Medicaid ED visits by residence



Counts of ED visits



Rates of ED visits per 1,000 person months

Leading causes of ED visits – primary diagnosis only

Overall	Cause of visit	Behavioral health need only	Co-occurring BH/chronic Illness	Chronic illness only
1	Respiratory infections	1	4	1
2	Abdominal Pain	2	2	5
3	Pregnancy/childbirth complications	4	11	3
4	Skin infections	3	5	9
5	Sprains and strains	7	6	7

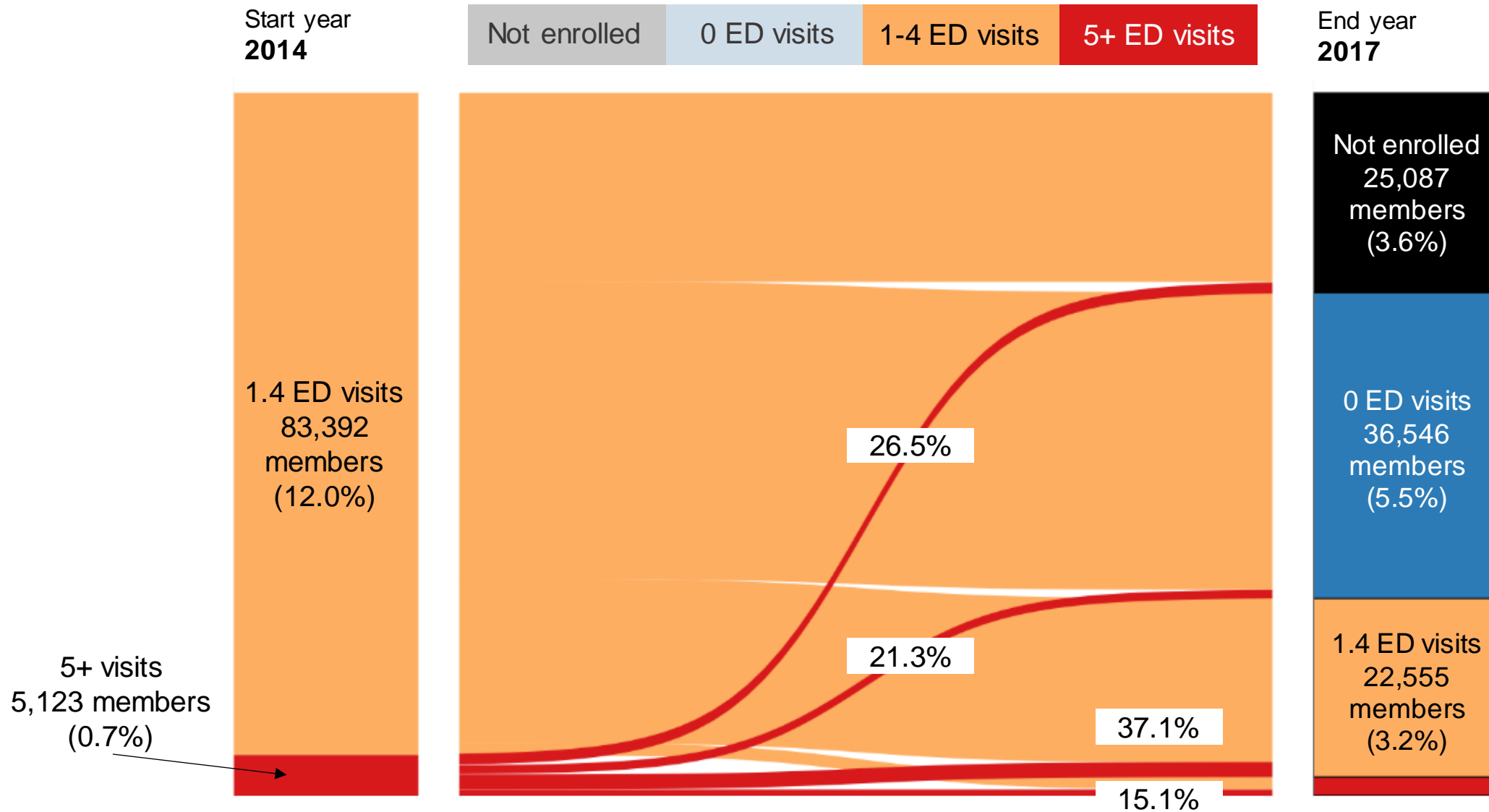
Source: Medicaid claims data, WA Health Care Authority (HCA). Data shown are for King County Medicaid members for services received in 2017. Behavioral health includes mental illness and substance use disorder. Chronic illness includes asthma, chronic obstructive pulmonary disease, diabetes, chronic kidney disease, heart failure, hypertension and ischemic heart disease.

Leading causes of ED visits – first 12 diagnoses

Overall	Cause of visit	Behavioral health need only	Co-occurring BH/chronic Illness	Chronic illness only
1	Substance use disorders	1	1	7
2	Respiratory infections	5	14	3
3	Allergic reactions	3	5	5
4	Abdominal pain	2	8	9
5	Hypertension	--	2	2
6	Heart Disease	11	3	4
7	Nausea and vomiting	7	--	10
8	Asthma	--	4	1
9	Urinary system disease	15	11	8
10	Mood disorders	4	7	--
11	Minor injuries (e.g., bruise)	10	--	--
12	Pregnancy/childbirth complications	13	--	13

Source: Medicaid claims data, WA Health Care Authority (HCA). Data shown are for King County Medicaid members for services received in 2017. Behavioral health includes mental illness and substance use disorder. Chronic illness includes asthma, chronic obstructive pulmonary disease, diabetes, chronic kidney disease, heart failure, hypertension and ischemic heart disease.

Following ED high utilizers over time



Source: Medicaid claims data, WA Health Care Authority (HCA). Data shown are for King County Medicaid members for services received in 2017.

Lessons learned



Lessons learned

- Data flows at the **speed of trust**
- While perfection is the enemy of progress, **shared learning can be our friend**
- Data modernization should include **power sharing** through collaborative data governance
- **Thinking outside the box** is challenging, but can lead to meaningful benefits for community



Resources

Public Health – Seattle & King County

- [Community Health Indicators](#)
- [Economic, Social, and Overall Health impacts Dashboard](#)

HealthierHere

- [Our Impact: Data Dashboards](#)

National leaders in data sharing:

- [Data Across Sectors for Health \(DASH\)](#)
- [Actionable Intelligence for Social Policy](#)

Thank you!

Eli Kern MPH RN | Epidemiologist

Assessment, Policy Development & Evaluation

Public Health - Seattle and King County

Phone: 206.263.8727

Email: eli.kern@kingcounty.gov

QUESTIONS?



Q&A

To ask a question, please click the **Q&A icon** in the Zoom toolbar to open your Q&A Pod.