Policy & Priorities:
Rethinking University Research with State Data

Grand Rounds: NIH HCS Collaboratory and PCORnet | 6/29/18

Aaron McKethan, PhD | @a_mckethan

Chief Data Officer, NC Department of HHS | aaron.mckethan@dhhs.nc.gov

Assistant Professor of Population Health Sciences, Duke School of Medicine
Senior Policy Fellow, Duke-Margolis Center for Health Policy | aaron.mckethan@duke.edu

Three-part punchline

1. States need help developing **analytic priorities**

2. Start with the simplest available **research methods**

3. Consider **policy implications** from the beginning

Analytic priorities

Analytic priorities

Analytic priorities

"How many OB-GYNs billed at least one claim in Harnett County in 2017?"

Analytic priorities

"How many OB-GYNs billed at least one claim in Harnett County in 2017?"

"What was the fiscal impact of shifting to Medicaid managed care?"

Analytic priorities

"How many OB-GYNs billed at least one claim in Harnett County in 2017?"

The opportunity space for policy-oriented health services researchers

"What was the fiscal impact of shifting to Medicaid managed care?"

Analytic priorities

Analytic priorities

1. **What do we already know?**

   - *…and where is policy not aligned with available evidence?*

Analytic priorities

1. **What do we already know?**

   • *…and where is policy not aligned with available evidence?*

2. **What do we <u>not</u> know?**

   • *…and how valuable would it be to know?*

Analytic priorities

1. **What do we already know?**

   - *…and where is policy not aligned with available evidence?*

2. **What do we <u>not</u> know?**

   - *…and how valuable would it be to know?*

3. **What are the highest-priority questions?**

   - *…that can be answered with available data?*

   - *…that can inform specific policy actions in the near term?*

Example: Prescription Opioids

METRICS FOR NC'S OPIOID ACTION PLAN

Metrics	Baseline Data* (2016 - Q4)	Most Current Provisional Data†	
		Quarterly Data	Time Period
OVERALL			
Number of unintentional opioid-related deaths to NC Residents (ICD-10)	335	358	2017 - Q3
Number of ED visits that received an opioid overdose diagnosis (all intents)	998	1,321	2018 - Q1
Reduce oversupply of prescription opioids			
Average rate of multiple provider episodes for prescription opioids (times patients received opioids from ≥5 prescribers dispensed at ≥5 pharmacies in a six month period), per 100,000 residents	29.9 per 100,000	12.7 per 100,000	2017 – Q4
Total number of opioid pills dispensed	141,258,340	120,950,092	2017 - Q4
Percent of patients receiving more than an average daily dose of >90 MME of opioid analgesics	6.7%	6.3%	2017 - Q4
Percent of prescription days any patient had at least one opioid AND at least one benzodiazepine prescription on the same day	25.1%	20.3%	2017 - Q4
Reduce Diversion/Flow of Illicit Drugs			
Percent of opioid deaths involving heroin or fentanyl/fentanyl analogues	58.7%	81.1%	2017 - Q4
Number of acute Hepatitis C cases	50	47	2017 - Q3
Increase Access to Naloxone			
Number of EMS naloxone administrations	3,185	2,836^	2018 - Q1
Number of community naloxone reversals	817	1,316	2018 - Q1
Treatment and Recovery			
Number of buprenorphine prescriptions dispensed	128,162	154,631	2017 - Q4
Number of uninsured individuals and Medicaid beneficiaries with an opioid use disorder served by treatment programs	15,187	17,259	2017 - Q3
Number of certified peer support specialists (CPSS) across NC	2,352	3,025	2018 - Q1

*Baseline Data for Q4 of 2016 are continually updated as additional cases, visits, claims, and other data points are finalized in each system.
†Most Current Provisional Data as of April 2018, these data are provisional and subject to change. ^EMS data currently transitioning to a new system resulting in a decrease in counts during this period.

Number of opioid prescription claims and
percentage of all Medicaid prescription claims that are opioids
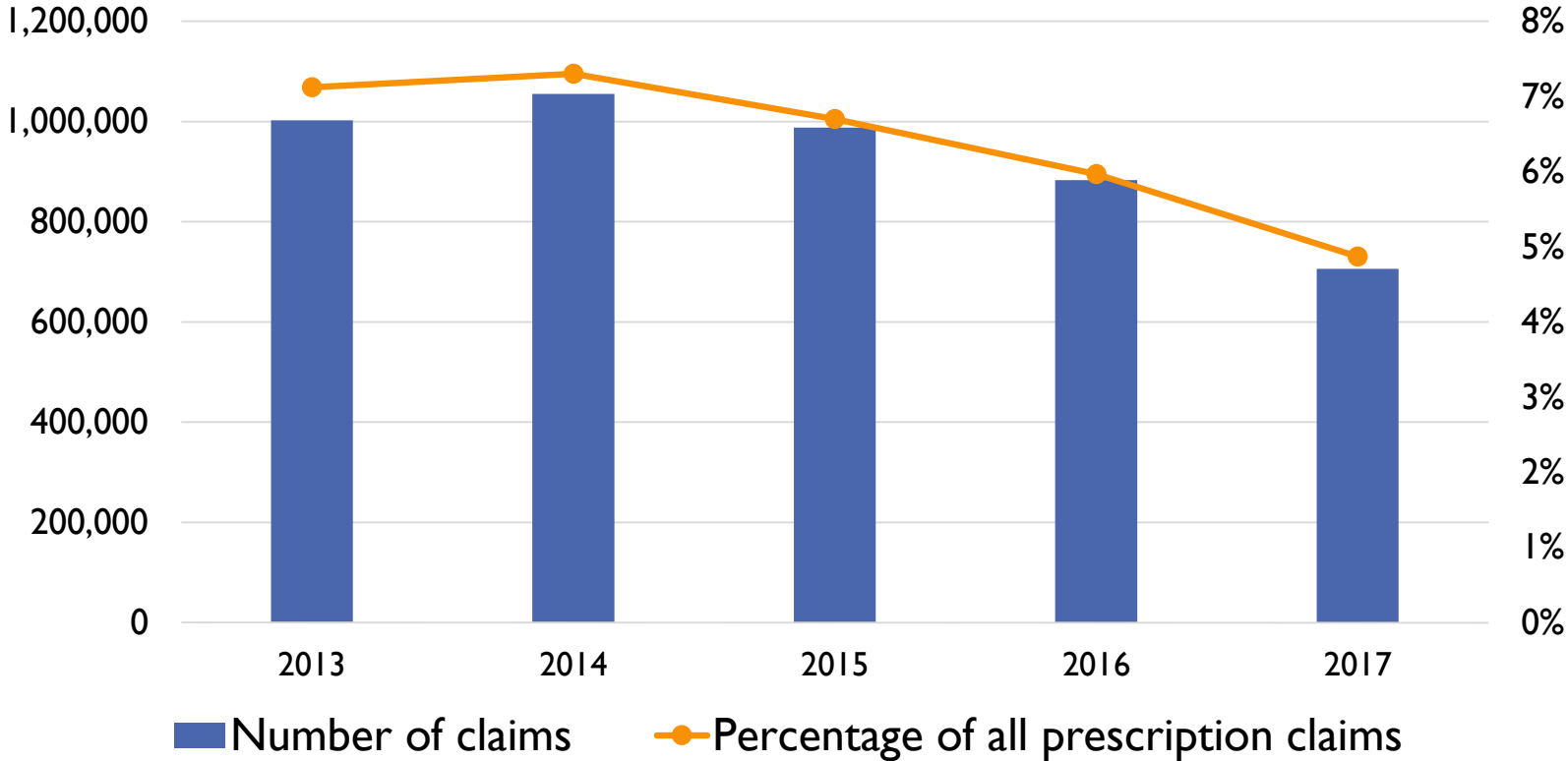
Average morphine milligram equivalents (MME) per day and average days's supply per prescription
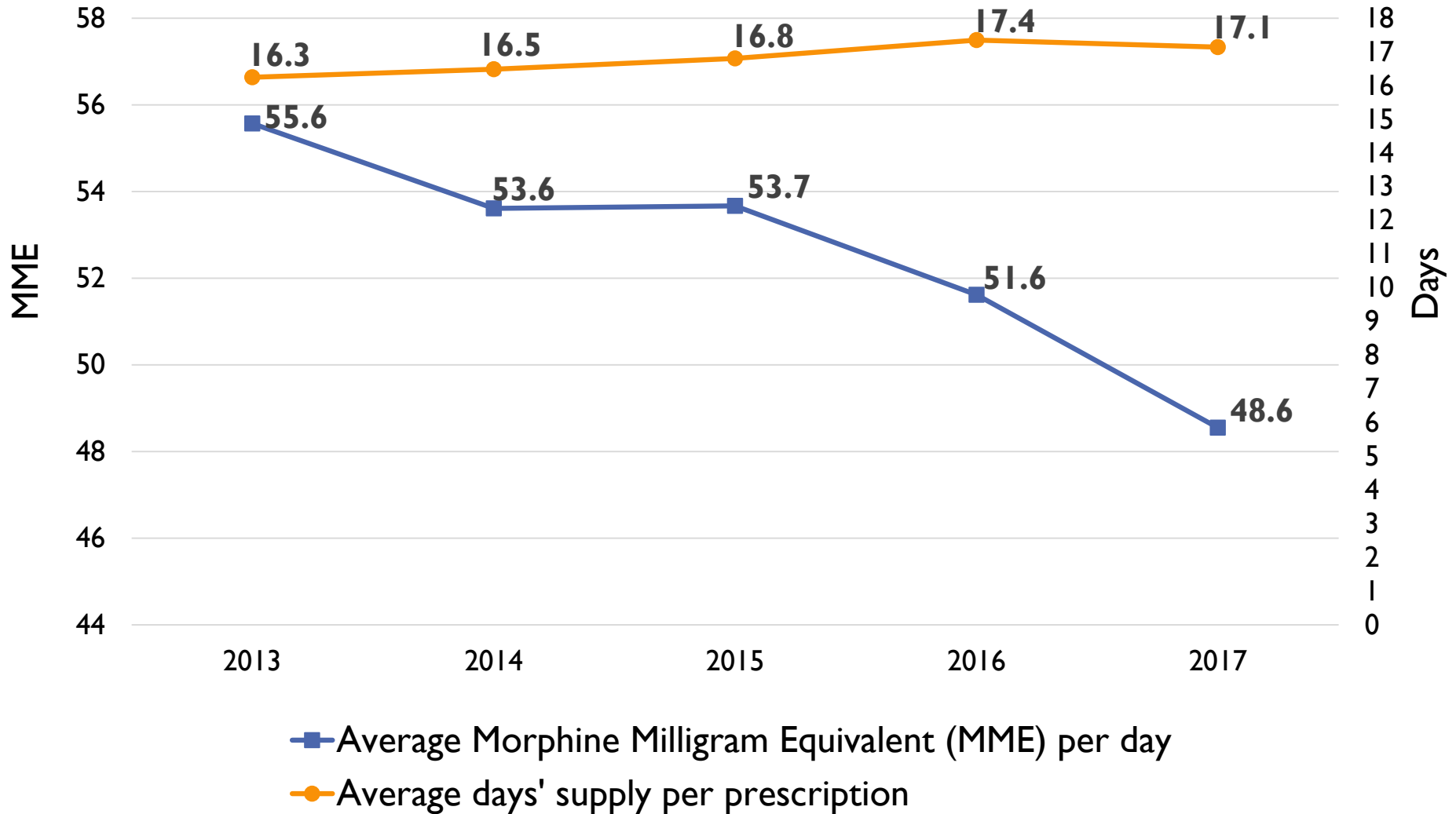
Average MME/day per prescription in 2017 by county, with state average comparison
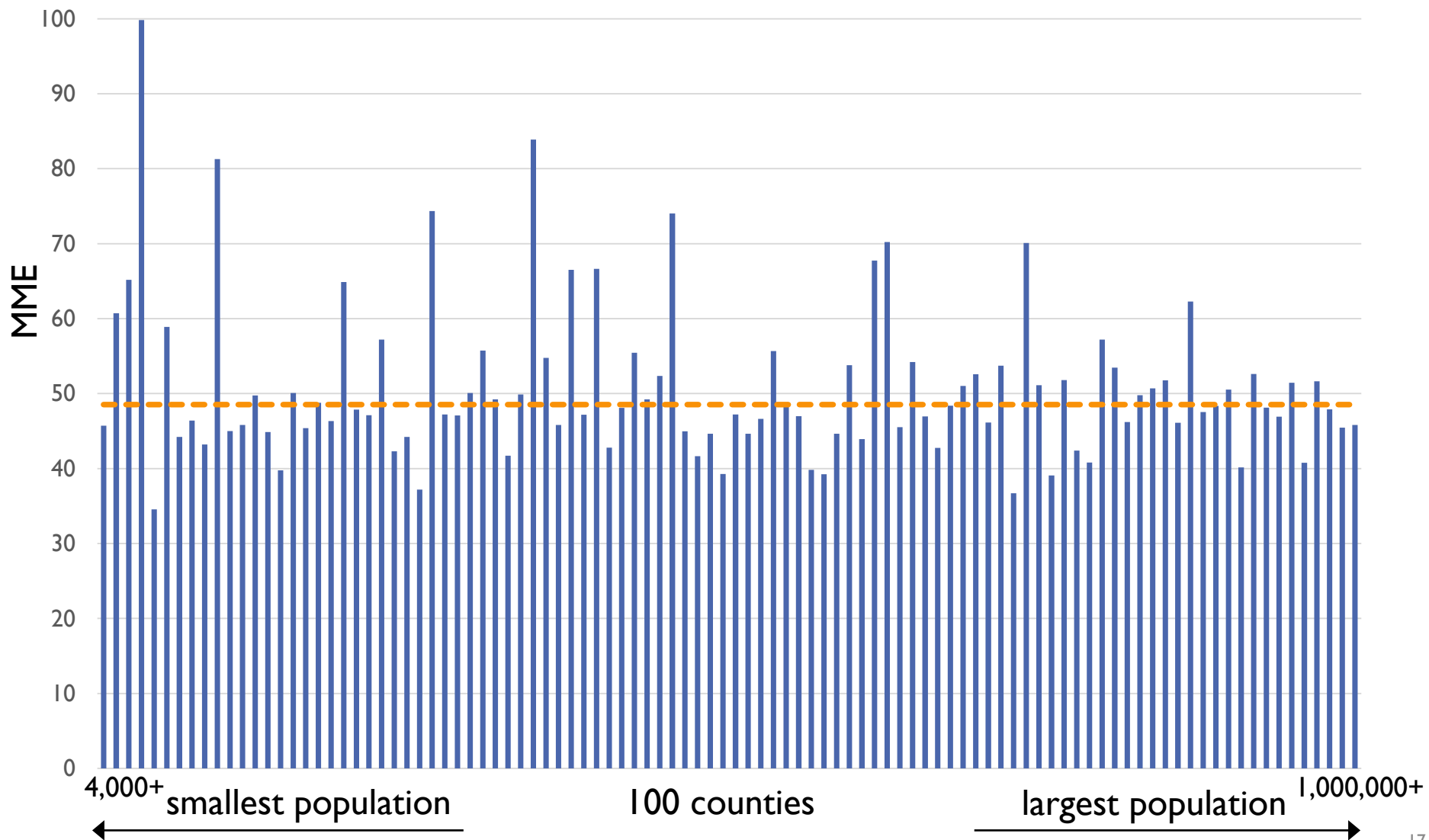
Number and percentage of Medicaid beneficiaries 18 to 64 years old with concurrent use of prescription opioids and benzodiazepines, 2013-2017
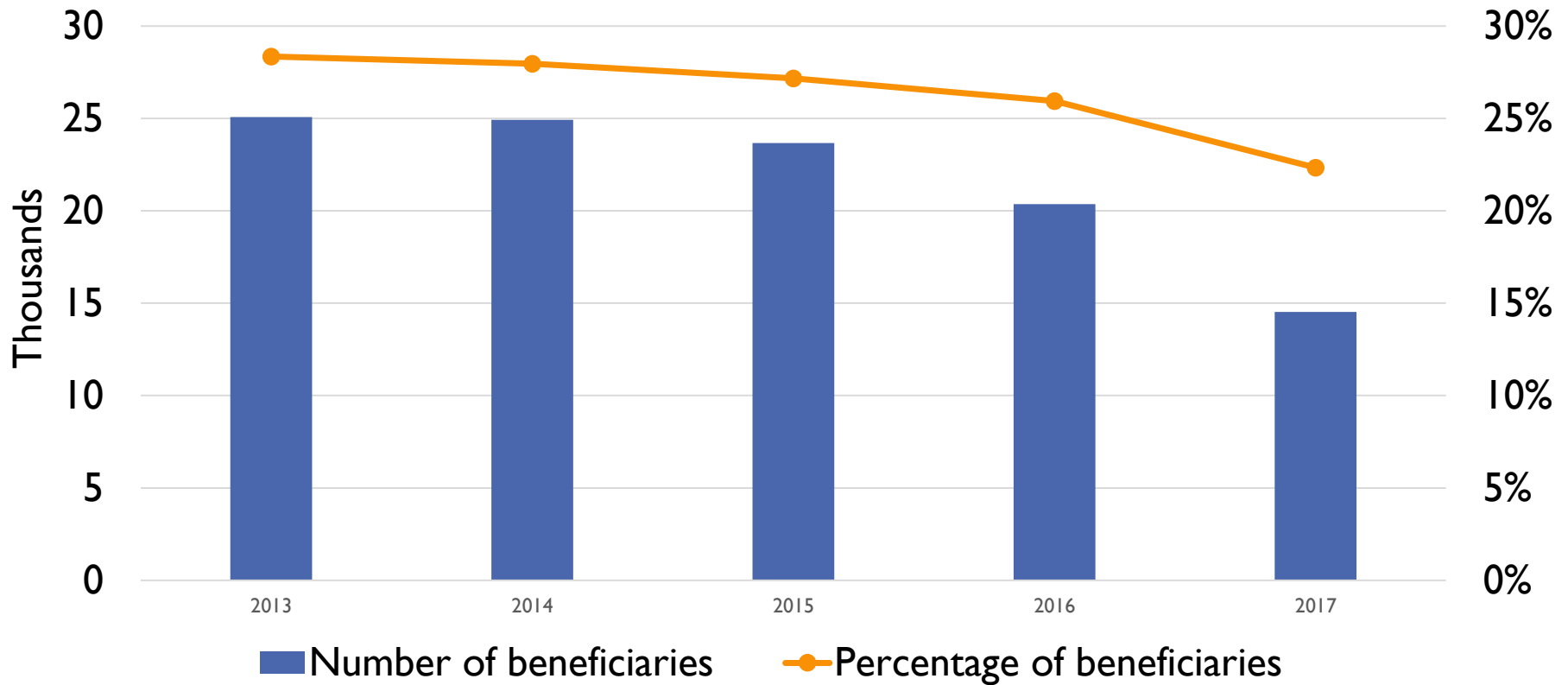
County variation in rate of concurrent opioids and benzodiazepines, 2017

Y-axis: Those in Denominator with 30+ Days Overlapping Benzodiazepine Rxs

X-axis: Beneficiaries 18-64 Who Received 2+ Opioid Prescriptions for a Total of 15+ Days

Legend: Rural, Urban

Labeled points: Gaston, Mecklenburg, Cumberland, Rockingham, Robeson, Wake, Durham, Scotland
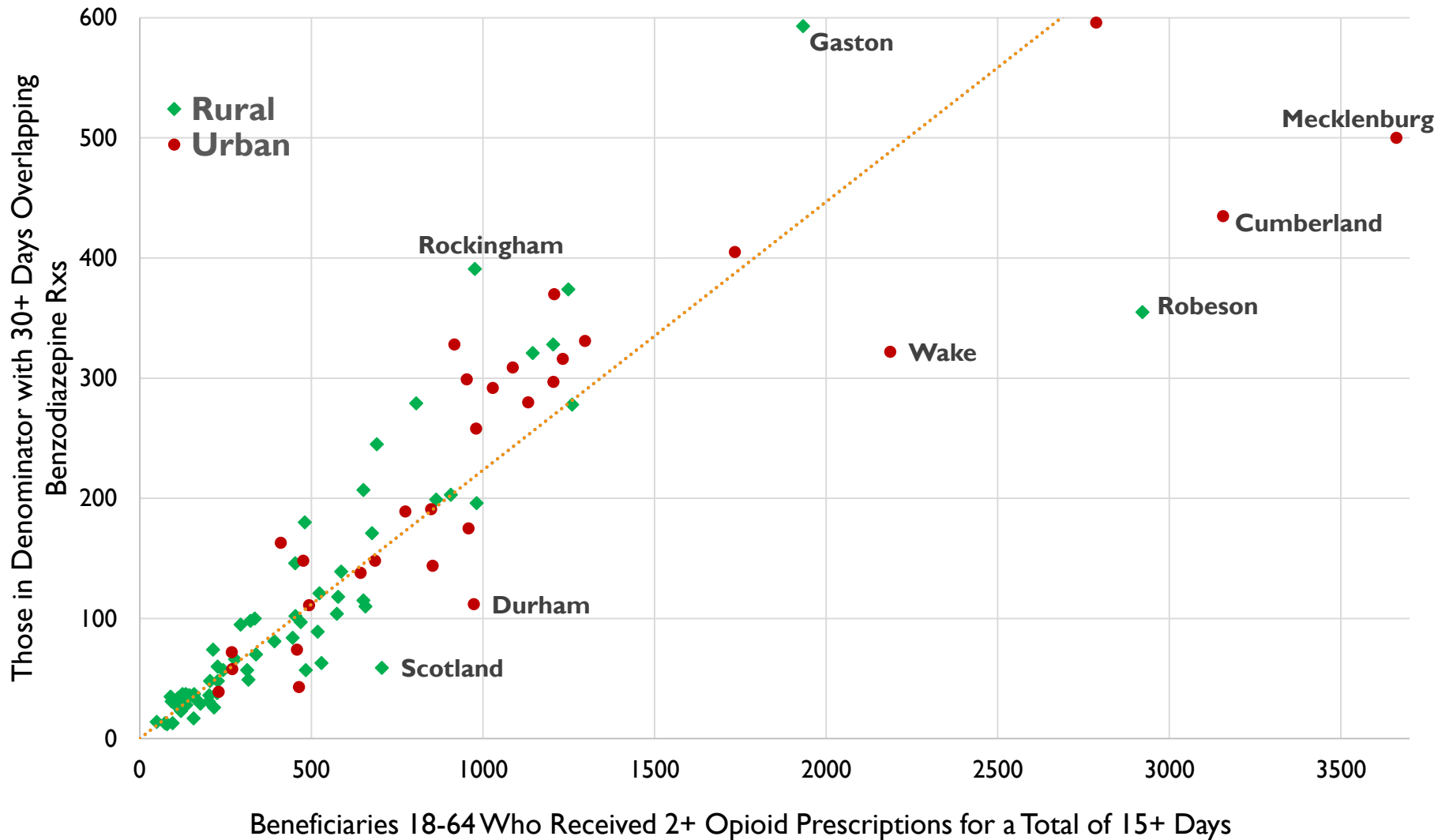
Number and percentage of concurrent opioid and benzodiazepine users 18-64 with a fill of naloxone in the previous 24 months, 2013-2017

Number of beneficiaries — Percentage of beneficiaries

Measure specification for denominator is from Pharmacy Quality Alliance: "Concurrent Use of Opioids and Benzodiazepines"
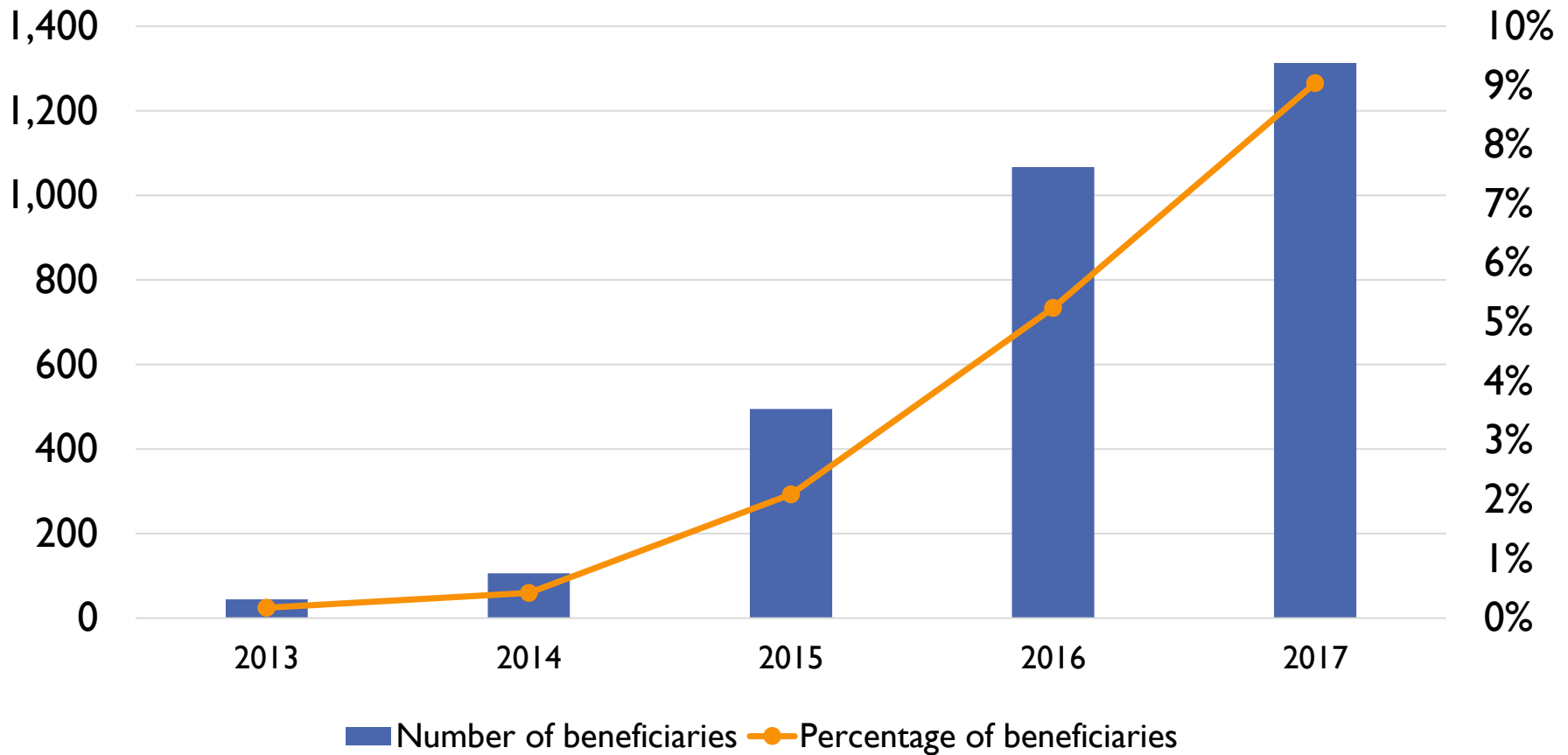
NC Opioid Symposium: Developing an Analytic Agenda

- What are the most important 'known unknowns'?
- >70 experts (including government officials)
- Medicaid claims and controlled substances data

What else do we not know re: opioid prescribing and use?
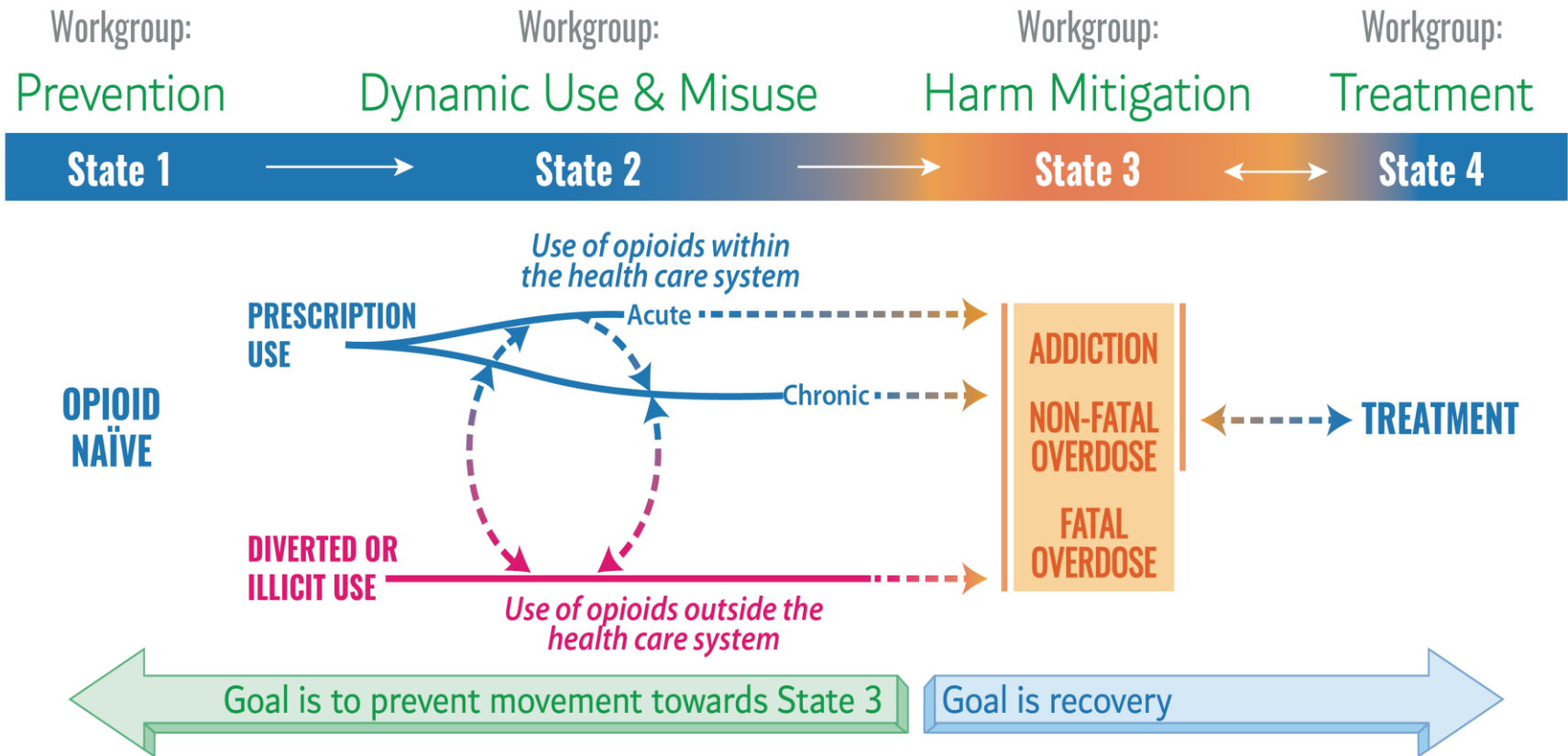
McKethan A., Powell E., Patel A., Daniels C., Campbell H., Marshall S., & Proescholdbell S.

NC Opioid Symposium - Examples

- "Does proactively informing prescribers on where they fall on opioid prescribing metrics change prescribing behavior?"

- "What has the effect of the STOP Act been on prescribing behaviors, opioid action plan metrics, and other outcomes?"

- "Is geographic clustering of harm reduction strategies associated with reduced negative outcomes?"

- "What is the current rate of referral from the hospital (E.D., inpatient) to treatment?"

- "What are the predictors of success in treatment in OBOTs? What are the best metrics to define treatment success (retention, relapse, etc.)?"

- "What is the best set of outcomes and metrics that can be used across treatment studies?"

And 100+ more

DHHS Data Lab

- Data sharing and research agreements with:

State-University Partnership Learning Network (SUPLN) Multi-State Medicaid OUD Project

Principal Investigator: Julie Donohue, PhD (Pitt)

Selected Draft Measures
- Initiation and engagement of alcohol and other drug dependence treatment
- Continuity of pharmacotherapy for opioid use disorder
- Follow-up after Emergency Department visit for alcohol and other drug abuse or dependence

States
- Kentucky
- Maryland
- Michigan
- North Carolina
- Ohio
- Pennsylvania
- Virginia
- West Virginia
- Wisconsin

http://www.academyhealth.org/SUPLN

Opportunities for PCORnet

Researchers • Patients • Clinicians • Data • Health Systems

A collaborative **national resource** using the power of **partnerships** and **health data** for better research.

20 Patient-Powered Research Networks (PPRNs) **+** 13 Clinical Data Research Networks (CDRNs) **=** PCORnet A national infastructure for people-centered clinical research

https://pcornet.org/

Three-part punchline

1. States need help developing **analytic priorities**

2. Start with the simplest available **research methods**

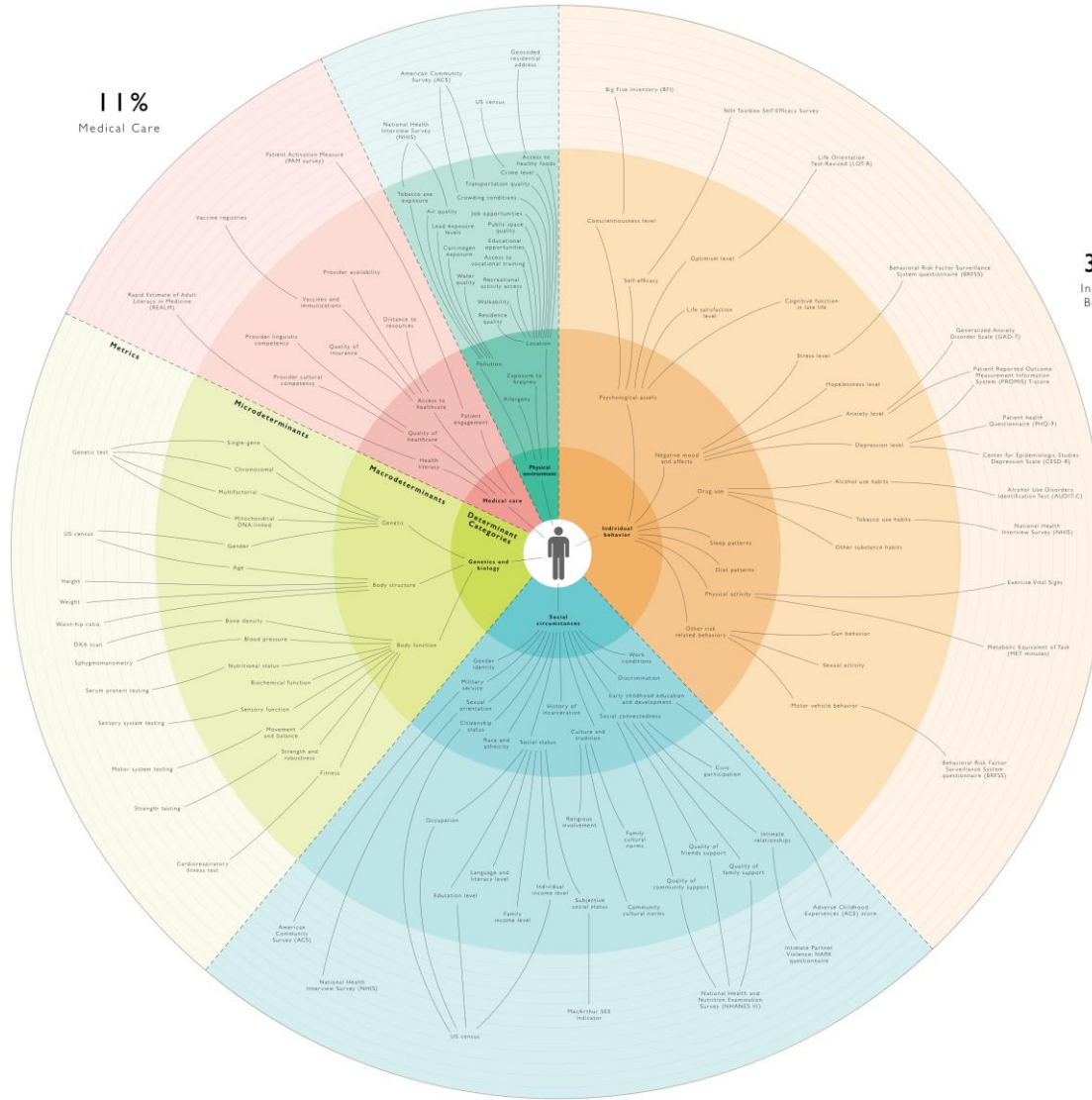3. Consider **policy implications** from the beginning

11%
Medical Care

36%
Individual Behavior

22%
Genetics and Biology

24%
Social Circumstances

Determinant Categories

Metrics

Microdeterminants

Macrodeterminants

Physical environment

Medical care

Genetics and biology

Individual behavior

Social circumstances

Physical Environment
Geocoded residential address
American Community Survey (ACS)
US census
National Health Interview Survey (NHIS)
Access to healthy foods
Crime level
Transportation quality
Crowding conditions
Air quality
Job opportunities
Public space quality
Educational opportunities
Access to vocational training
Recreational activity access
Walkability
Residence quality
Location
Tobacco use exposure
Lead exposure levels
Carcinogen exposure
Water quality
Pollution
Exposure to biotoxins
Allergens

Medical Care
Patient Activation Measure (PAM survey)
Vaccine registries
Rapid Estimate of Adult Literacy in Medicine (REALM)
Provider availability
Vaccines and immunizations
Provider linguistic competency
Quality of insurance
Provider cultural competency
Patient engagement
Distance to resources
Access to healthcare
Quality of healthcare
Health literacy

Genetics and Biology
Genetic test
Single-gene
Chromosomal
Multifactorial
Mitochondrial
DNA-linked
US census
Height
Weight
Waist-hip ratio
DXA scan
Sphygmomanometry
Serum protein testing
Sensory system testing
Motor system testing
Strength testing
Cardiorespiratory fitness test
Genetic
Gender
Age
Body structure
Bone density
Blood pressure
Nutritional status
Biochemical function
Sensory function
Body function
Movement and balance
Strength and robustness
Fitness

Individual Behavior
Big Five Inventory (BFI)
NIH Toolbox Self-Efficacy Survey
Life Orientation Test-Revised (LOT-R)
Conscientiousness level
Optimism level
Behavioral Risk Factor Surveillance System questionnaire (BRFSS)
Self-efficacy
Life satisfaction level
Cognitive function in late life
Generalized Anxiety Disorder Scale (GAD-7)
Psychological assets
Stress level
Patient Reported Outcome Measurement Information System (PROMIS) T-score
Hopelessness level
Anxiety level
Patient Health Questionnaire (PHQ-9)
Negative mood and affects
Depression level
Center for Epidemiologic Studies Depression Scale (CESD-R)
Drug use
Alcohol use habits
Alcohol Use Disorders Identification Test (AUDIT-C)
Tobacco use habits
Other substance habits
National Health Interview Survey (NHIS)
Sleep patterns
Diet patterns
Exercise Vital Signs
Physical activity
Other risk related behaviors
Gun behavior
Metabolic Equivalent of Task (MET minutes)
Sexual activity
Motor vehicle behavior
Behavioral Risk Factor Surveillance System questionnaire (BRFSS)

Social Circumstances
Work conditions
Discrimination
Gender identity
Early childhood education and development
Military service
Social connectedness
Sexual orientation
History of incarceration
Citizenship status
Culture and tradition
Race and ethnicity
Social status
Civic participation
Occupation
Religious involvement
Family cultural norms
Intimate relationships
Language and literacy level
Quality of friends support
Quality of family support
Education level
Individual income level
Subjective social status
Quality of community support
Community cultural norms
Adverse Childhood Experiences (ACE) score
Family income level
American Community Survey (ACS)
National Health Interview Survey (NHIS)
Intimate Partner Violence (HARK questionnaire)
MacArthur SES indicator
National Health and Nutrition Examination Survey (NHANES III)
US census

Social circumstances

- Gender identity
- Work conditions
- Military service
- Discrimination
- Sexual orientation
- History of incarceration
- Early childhood education and development
- Citizenship status
- Social connectedness
- Social status
- Culture and tradition
- Civic participation
- Occupation
- Religious involvement
- Family cultural norms
- Intimate relationships
- Quality of friends support
- Language and literacy level
- Quality of family support
- Education level
- Individual income level
- Quality of community support
- Family income level
- Subjective social status
- Community cultural norms
- Adverse Childhood Experiences (ACE) score

Other risk related behaviors
- Gun behavior
- Sexual activity
- Motor vehicle behavior
- Behav Surv quest

- American Community Survey (ACS)
- National Health Interview Survey (NHIS)
- US census
- MacArthur SES indicator
- National Health and Nutrition Examination Survey (NHANES III)
- Intimate Partner Violence: HARK questionnaire

Body function
- od pressure
- al status
- iochemical function
- ory function
- Movement and balance
- Strength and robustness
- Fitness

24% - Social Circumstances

2016 NORTH CAROLINA RESIDENT LIVE BIRTHS: MEDICAID STATUS BY PRENATAL WIC STATUS

	TOTAL		MOTHER'S MEDICAID STATUS:					
			...Prenatal Medicaid*		...Emergency Medicaid**		...Non-Medicaid	
	Births		Births		Births		Births	
	#	%	#	%	#	%	#	%
TOTAL RESIDENT BIRTHS	120,765	100.0	57,650	100.0	8,407	100.0	54,708	100.0
MOTHER'S WIC STATUS:								
...Prenatal WIC	52,409	43.4	41,031	71.2	6,576	78.2	4,802	8.8
...No Prenatal WIC	68,356	56.6	16,619	28.8	1,831	21.8	49,906	91.2

* Medicaid paid for prenatal care and delivery. ** Medicaid paid for delivery only, not prenatal care.
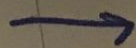
% Columns may not sum to 100.0% due to rounding.

Source: State Center for Health Statistics NC Department of Health and Human Services

monthly, by county, benefit level

A hand-drawn matrix/grid. Column headers (top): Medicaid ABD WIC Children etc., TANF, SNAP, WIC →. Row labels (left side, top to bottom): Medicaid, TANF, SNAP, WIC ↓.

Cells marked with X along the diagonal:
- X 100%
- X 100%
- X 100%
- X 100%
- X 100%

Beneficiaries enrolled in....	Also enrolleed in...				
	Medicaid	SNAP	TANF	Childcare subsidy	LIHEAP
Medicaid	2149977 (100%)	1056769(49.15%)	26412(1.22%)	73746(3.43%)	303788(14.13%)
SNAP	1056769(74.16%)	1424944(100%)	20588(1.44%)	51938(3.64%)	310451(21.79%)
TANF	26412(95.33%)	20588(74.31%)	27703 (100%)	4181(15.09%)	8162(29.46%)
Childcare subsidy	73746(93.40%)	51938(65.78%)	4181(5.29%)	78953(100%)	16708(21.16%)
LIHEAP	303788(68.15%)	310451(69.65%)	8162(1.83%)	16708(3.74%)	445707 (100%)

How can we use these data products?

1. Better front-end technology

2. Benchmarking and business processes at county level

3. Measurement and support for health plans

4. Measurement and support for medical home providers

5. Collaboration with community-based organizations

6. Other

Three-part punchline

1. States need help developing **analytic priorities**

2. Start with the simplest available **research methods**

3. Consider **policy implications** from the beginning

Policy Implications

Health Affairs | The NEW ENGLAND JOURNAL of MEDICINE | JAMA The Journal of the American Medical Association

Introduction	Background	Background
Data & Methods	Methods	Methods
Results	Results	Results
Discussion	Discussion	Discussion
Policy Implications		Conclusion
Conclusions		

Policy Implications

Paraphrase:

"Thus, policy makers could further encourage these trends by continuing to invest in education and training."

Three-part punchline

1. States need help developing **analytic priorities**

2. Start with the simplest available **research methods**

3. Consider **policy implications** from the beginning