

Assessing the County-Level Representativeness of an Electronic Health-Record Based Surveillance System in a Large Metropolitan Area

Ken Scott, MPH, PhD



**DENVER
PUBLIC HEALTH™**

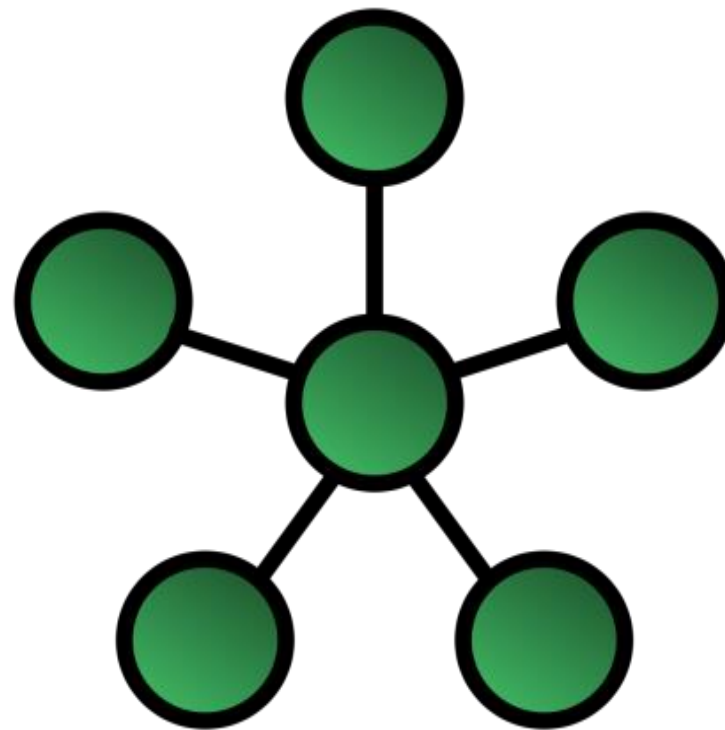
Distributed Data Networks: A New Tool for Public Health

- Millions of individuals seek care in US hospitals and clinics each year
- Electronic health records (EHR) are widespread and routinely share information to improve patient health
- EHR data are increasingly being shared to care for population health



Distributed Data Networks: A New Tool for Public Health

- HIPAA protects the privacy and security of data collected in health systems
- Distributed data networks (DDNs) enable health data to remain in place until they are required for a research or public health question



Colorado Health Observation Regional Data Service (CHORDS)



Health Systems

- Children's Hospital Colorado
 - Denver Health
- Kaiser Permanente Colorado



Mental Health Centers

- Mental Health Center of Denver
- Jefferson Center for Mental Health



Safety Net Providers

- Clinica Family Health
- Colorado Alliance for Health Equity and Practice
 - Colorado Coalition for the Homeless
 - High Plains Community Health Center
 - Metro Community Providers Network
 - Salud Family Health Centers
 - Clinica Tepeyac

Question: Can CHORDS be Used for Surveillance?

Steps in the collection of EHR data through CHORDS:

1. A person seeks healthcare
2. A person is seen by a provider
3. A person chooses a particular healthcare organization
4. Particular organizations participate in CHORDS
5. Particular organizations in CHORDS choose to share data in a given query

Question: Can CHORDS be Used for Surveillance?

- Surveillance systems should be **representative** in order “to better characterize the epidemiologic characteristics of a health-related event in a defined population”
 - Compared to a larger population
 - Utilizing multiple data sources

Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group. MMWR July 27, 2001 / 50(RR13); 1-35

Assessing County-Level Representativeness of CHORDS

- **Goal:** To assess the county-level representativeness of CHORDS, restricted to:
 - Adults 18 years and older
 - Ambulatory visit during 2015

Comparator Populations:

- The general population in a county
 - *American Community Survey (5-year estimates)*
- The county population that sought any healthcare
 - *Colorado Health Access Survey*
- The county population receiving routine healthcare
 - *Colorado Behavioral Risk Factor Surveillance System*

Assessing County-Level Representativeness of CHORDS

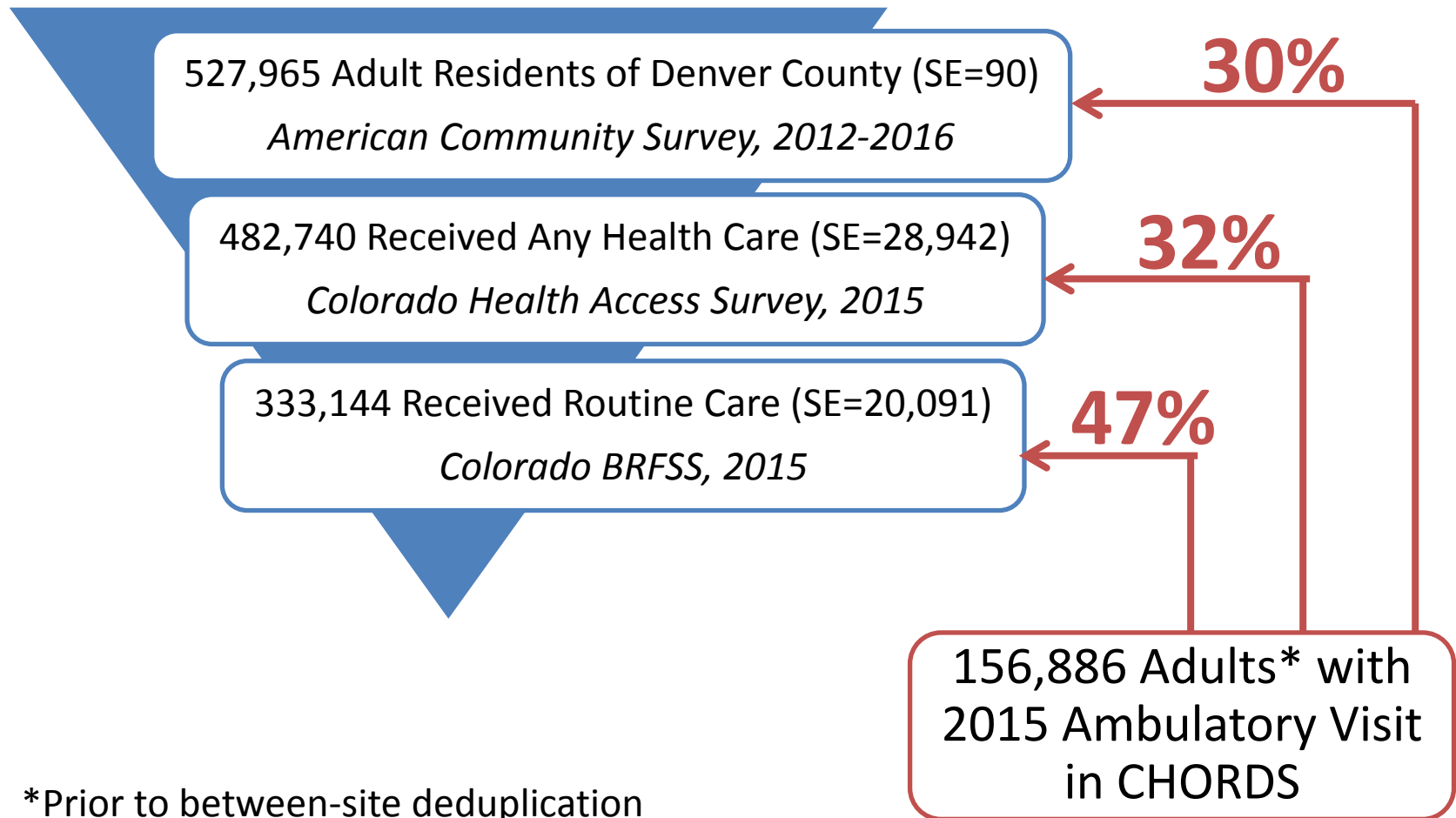
- **Goal:** To assess the county-level representativeness of CHORDS, restricted to:
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Methods:

- County Comparisons:
 - *Counts*
 - *Sex distribution*
 - *Age distribution*
 - *Race/ethnicity distribution*
 - *Poverty areas*
- Standard errors and z scores estimated according to US Census Bureau guidance
 - *$p = 0.01$ and $p = 0.05$*

CHORDS Coverage:

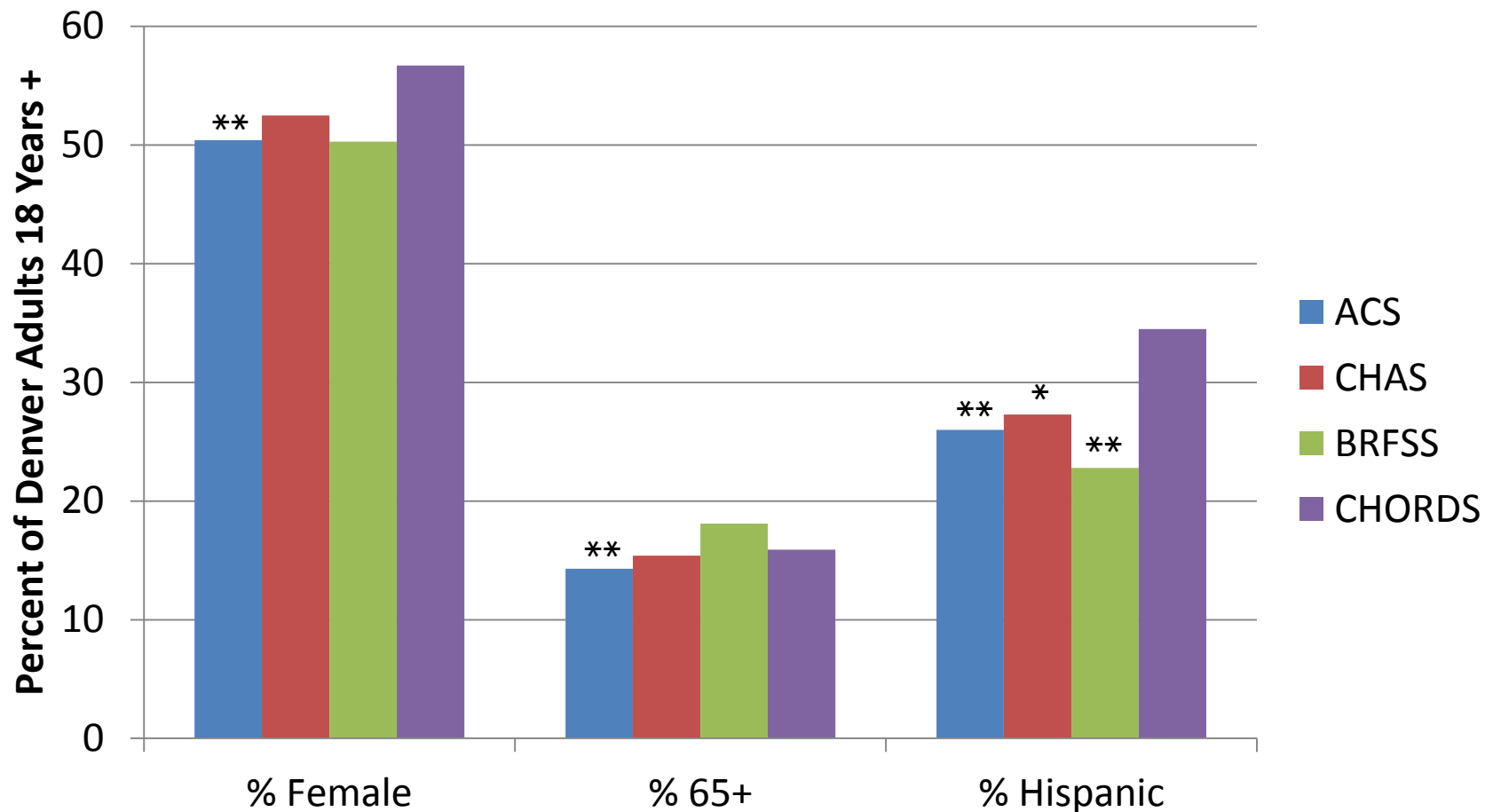
Adults \geq 18 years, Residing in Denver County



*Prior to between-site deduplication

CHORDS Representativeness:

Percent of Adults in Denver by Data Source, 2015



* Significant at p=0.05

** Significant at p=0.01

Cross-County Trends in EHR Representativeness

- CHORDS compared to general adult population (ACS):
 - Higher proportions of females in CHORDS
 - Higher proportions of adults 65 years and older
 - Higher proportions of Hispanic or Latino adults
 - Higher proportions of adults in poverty areas
- CHORDS compared to adults in care (CHAS & BRFSS):
 - Higher proportions of Hispanic or Latino adults
- Some variation in coverage and representativeness by county and population

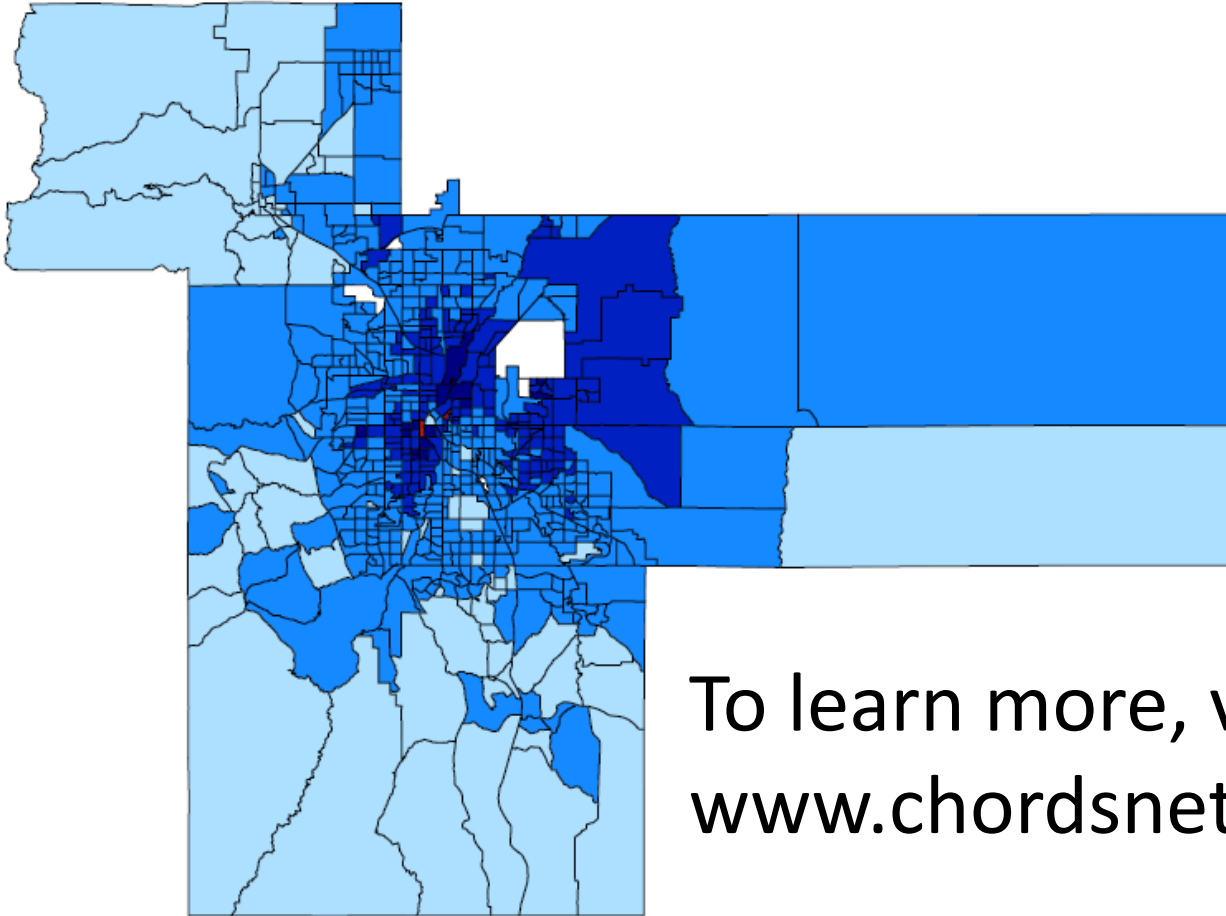
Discussion

- Large number of patients in CHORDS EHR network
- DDN reflects patterns in healthcare utilization (e.g., women vs. men), as well as the composition of the CHORDS network (e.g., FQHCs)
- Large uncertainty in survey estimates at the local level limits validation efforts somewhat
- Population weighting can be applied to EHR data to make population estimates more representative

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Thank you.



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