Rural Population Health Information Initatives

David Marc, PhD, CHDA
The College of St. Scholastica
Duluth, MN

Objectives

- Identify available data sources that could be compiled to create an understanding of the health status of a population
- Describe how a rural hospital might utilize the data to inform and implement population health activities
- Recognize the value of population health information initiatives and how Flex Programs can support them

A culture of data sharing

- The Internet has created a Data Revolution
  - A lot of data is collected
  - Storage is cheap and not centralized
  - Most people have access
- Internet technologies are paving the way for data sharing:
  - Email, online storage (drives), social media, streaming platforms, journals and libraries, online shopping and review of products

Source: https://www.incibe-cert.es/en/blog/united-against-cyberthreats-information-sharing

Benefits of making data available

- Transparency
  - Monitor government activities
  - Greater citizen participation in government affairs
- Public Service Improvement
  - Offers citizens the raw materials needed to engage with their communities to improve public services
- Innovation and Economic Value
  - Supports the design of new technologies, services, and data driven products
  - Better understand potential markets and customers
- Efficiency
  - Less costly to discover and access data

http://opendatatoolkit.worldbank.org/en/starting.html

Data Sources

Public vs Open Data

Public

Data that is freely available on the internet

- Not readily accessible
- Format of the data can be widespread and is often messy
- May have restrictions on use and require permissions
- E.g., Indeed, Facebook

vs.

Open

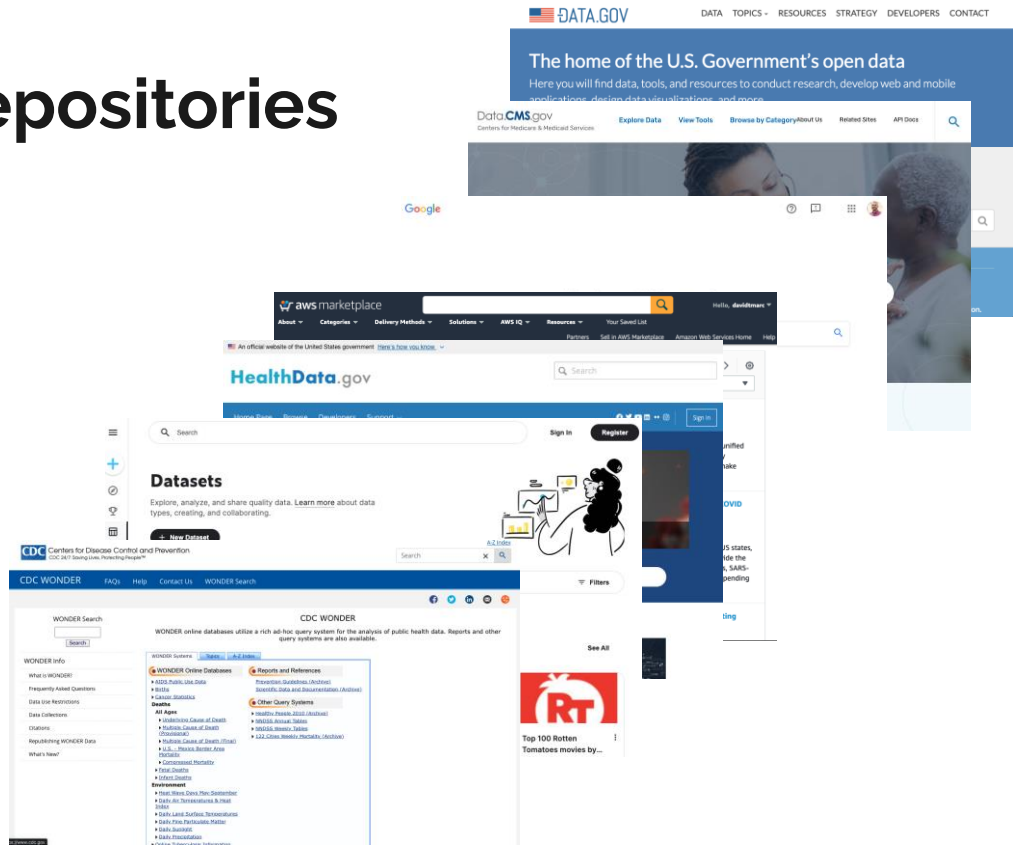
Data that is freely available and can be readily accessed, used, reused, and redistributed.

- Readily accessible
- Often managed by government agencies
- No restrictions on use
- Format tends to be more structured and usable often stored in a repository
- E.g., Data.gov, data.cms.gov

Public data can be open, but that isn't always the case.

Public Data - Data Repositories

- Data.gov
- HealthData.gov
- Google Dataset Search
- CMS Data Navigator
- CDC Wonder
- AWS Data Exchange
- Kaggle
- GitHub
- Harvard Dataverse
- Others



Public Data - Stand Alone Datasets

- IPUMS
- County Health Rankings
- Compare
- Dartmouth Atlas
- CDC PLACES
- CMS Payment Data PUF

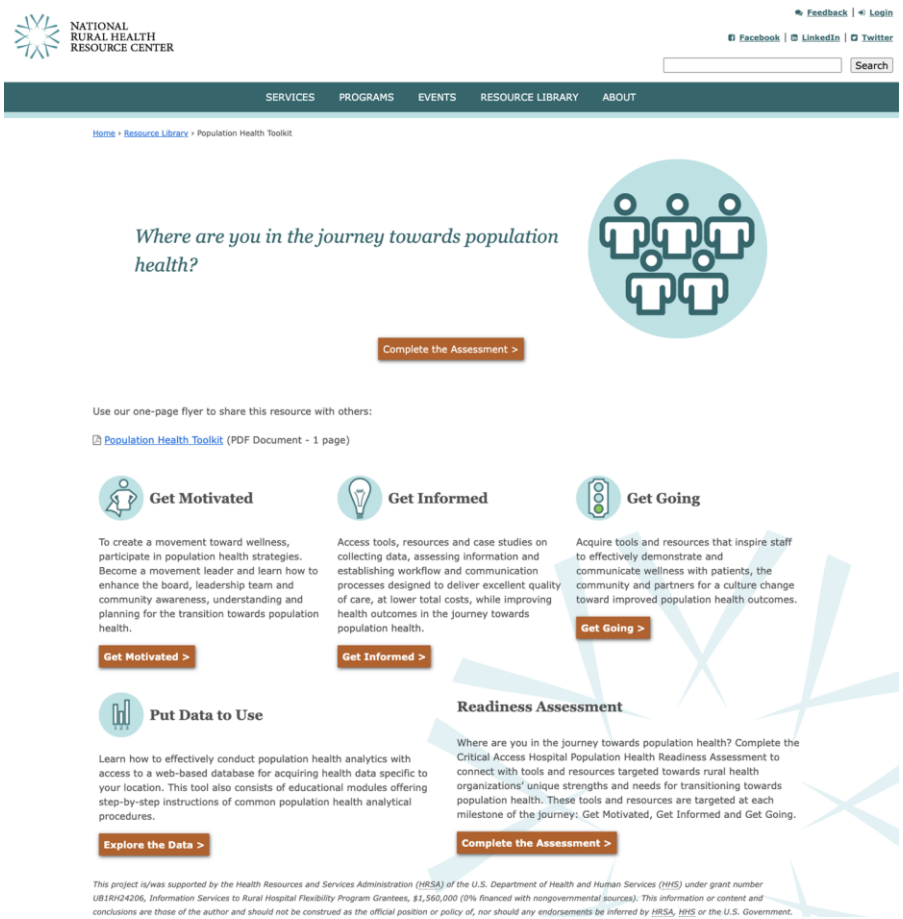
Licensed Data

- Healthcare Cost and Utilization Project (HCUP)
- Outpatient Prospecitive Payment System (OPPS) Claims Data
- Health Care Cost Institute
- National Committee for Quality Assurance (NCQA)
- n2c2 NLP Research Data Sets

https://www.ruralcenter.org/population-health-toolkit

Population Health Tools

- Build rural population health awareness
- Inform stakeholders on how to utilize population level data based on relevant scenarios
- Act upon data to address rural health problems



Utilize Population Health Data

A case study

COPD and Uninsured Rates in Rural America

https://www.ruralcenter.org/population-health-toolkit/data/copd-risk-factors

- Compare COPD and uninsured rates in rural and metropolitan MN and LA
- Develop an interpretation of the data
- Establish an actionable step to address the observed problem

Time for a demonstration

What did we observe?

- In Minnesota:
  - COPD rates were higher in rural counties compared to urban counties
  - There was a moderately strong positive correlation between uninsured rates and COPD rates in rural counties
  - The average COPD rate in rural counties was about 5.4% and the uninsured rate was about 7%
- In Louisiana:
  - COPD rates were higher in rural counties compared to urban counties
  - There was not a significant correlation between uninsured rates and COPD rates in rural counties, but there was in urban counties
  - The average COPD rate in rural counties was about 10.55% and the uninsured rate was about 10%

What does this data tell us about COPD and uninsured rates?

In rural LA counties, uninsured and COPD rates were high overall.

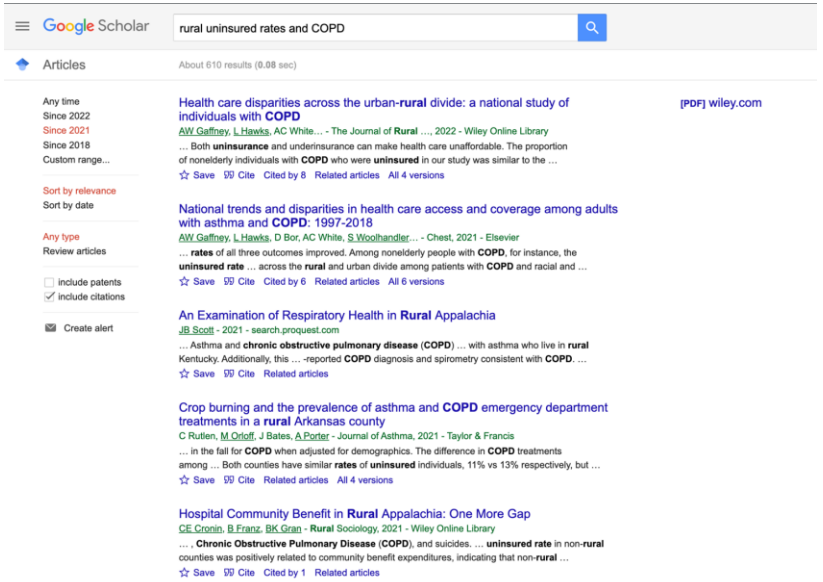
In rural MN counties, the COPD rates were highest in the counties with a higher uninsured rate.

Rural counties with high uninsured rates are more likely to have high COPD rates.

WHY?

Explaining the observations

- Studies have found that rural residents with COPD were poorer, had less education, worse health, and more disability. Studies observed large access disparities by race/ethnicity and income among individuals in both urban and rural counties, with the highest rates of forgone care among minorities in rural counties. Expanded access to health care could address respiratory health inequities. (Gaffney, et al, 2022)
- Studies found that providers in rural areas were satisfied with their ability to treat symptoms and exacerbations, but many were unhappy with their access to pulmonologists or pulmonary rehabilitation. (Diaz del Valle, et al., 2021)



Let’s go back to our data, and look at the impact of race on COPD rates

- What trends do we see related to race and COPD rates?
  - In both MN and LA, there is a lower COPD rate in counties with a higher percentage of a white population in rural areas

What action can be taken given these observations?

- Advocate for public change and access to care and services for specific populations (e.g., people of color in rural counties)
  - Access care through FQHCs - advocate for education on respiratory health (i.e., hire nurses or respiratory therapists to conduct patient education at the clinic level)
- Create pathways for care for specific populations:
  - Remote monitoring - integrated care with remote monitoring reduced COPD-related urgent office visits, decreased smoking, increased activity level, improved body mass index-airway obstruction-dyspnea-exercise tolerance (BODE) index and oxygen titration. (Koff, et al., 2021)

Conclusion

- Data is readily available to understand and address population health in rural America
- Action can be taken to address population health issues
- Public change begins with information which is derived from data

Data Sources (cont.)

CMS Data Navigator: https://dnav.cms.gov/
CMS SynPUF: https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/SynPUFs/DE_Syn_PUF.html
CMS Medicare Part D Lookup: https://data.cms.gov/tools/medicare-part-d-prescriber-look-up-tool
County Health Rankings: http://www.countyhealthrankings.org/
Data.gov: https://www.data.gov/
Google Dataset Search: https://toolbox.google.com/datasetsearch
HealthData.gov: https://healthdata.gov/
Hospital Compare: https://data.medicare.gov/data/hospital-compare
Harvard Dataverse: https://dataverse.harvard.edu/
HCUP: https://www.hcup-us.ahrq.gov/
IPUMS: https://ipums.org/
MN Public Health Data: https://data.web.health.state.mn.us/home
n2c2: https://n2c2.dbmi.hms.harvard.edu/
OPPS Data: https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/LimitedDataSets/HospitalOPPS
Population Health Toolkit: https://www.ruralcenter.org/population-health-toolkit
Synthea: https://syntheticahealth.github.io/synthea/
The Islands: https://theislands.umn.edu/login.php

Citations

Del Valle, F. D., Koff, P. B., Min, S. J., Zakrajsek, J. K., Zittleman, L., Fernald, D. H., ... & Vandivier, R. W. (2021). Challenges faced by rural primary care providers when caring for COPD patients in the western United States. *Chronic Obstructive Pulmonary Diseases: Journal of the COPD Foundation*, *8*(3), 336.

Gaffney, A. W., Hawks, L., White, A. C., Woolhandler, S., Himmelstein, D., Christiani, D. C., & McCormick, D. (2022). Health care disparities across the urban-rural divide: a national study of individuals with COPD. *The Journal of Rural Health*, *38*(1), 207-216.

Koff, P. B., Min, S. J., Freitag, T. J., Diaz, D. L., James, S. S., Voelkel, N. F., ... & Vandivier, R. W. (2021). Impact of proactive integrated care on chronic obstructive pulmonary disease. *Chronic Obstructive Pulmonary Diseases: Journal of the COPD Foundation*, *8*(1), 100.

Questions and Contact Information

David Marc
Chair and Associate Professor
Department of Health Informatics and Information Management
The College of St. Scholastica
Duluth, MN
dmarc@css.edu