Patterns in the centralized delivery of information about COVID vaccine: rural vs. urban states

December 2020 to October 2021

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Overview

- This project is a part of the larger study “Individual differences in information processing and decision making”
  1. Decision making in the laboratory setting (binary choices during the experiment)
  2. Decision making in real life (whether or not to receive COVID vaccine)
  3. Informational context for the individual vaccination decision

- This presentation describes the *Information context* component
  1. Methodology
  2. Dataset
  3. Overview of results of interim analyses

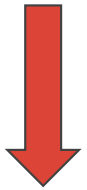
The views expressed are those of the authors
and not of the State of Connecticut, Yale University, or Tobin Institute.

Background & Significance

***We also asked each participant which state they live in**

- Decision making in the lab: Feb/Dec 2019, N=650
- Survey, wave 1: Feb/Mar 2021, N1=511
- Survey, wave 2: Apr/May 2021, N=475
- Survey, wave 3: Sep/Oct 2021, N=502
- Waves 1-3, N=349

This is where I came in.

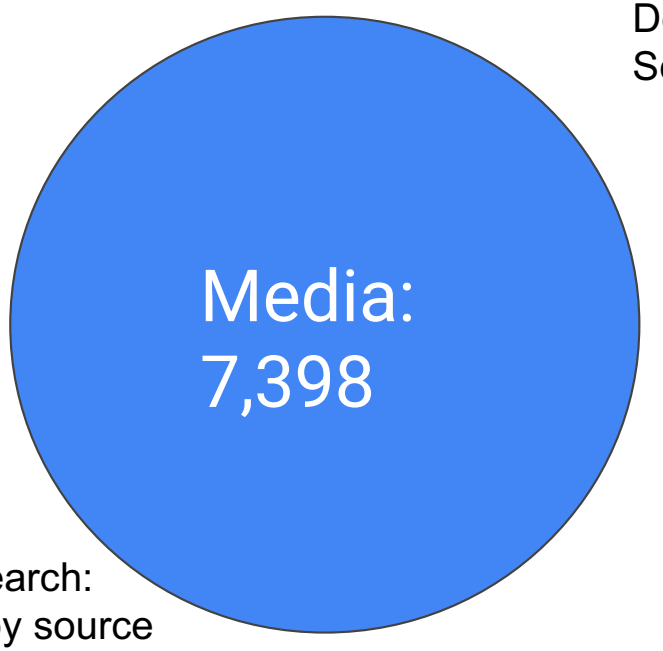


Wave 1		Wave 2	Wave 3
Ask each participant what sources of information they use	Compiled a LIST of all sources →	Asked each participant how much they trust sources from the LIST	Asked each participant to list their 3 main sources of information

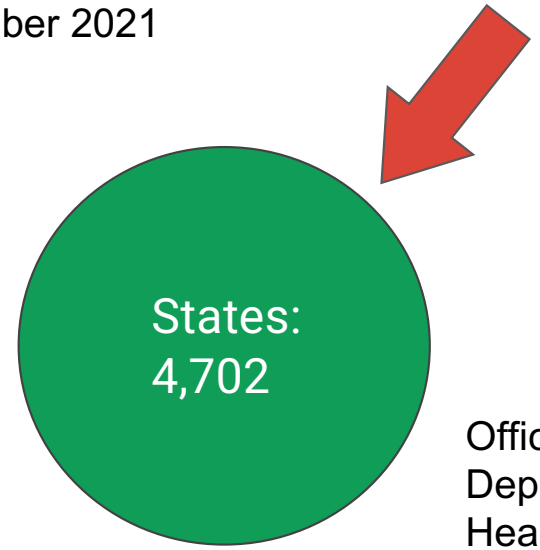
3 waves:
1) Trust in CDC, NIH, federal and local gov.
2) Whether they feel the vaccine was safe.
3) If they have received the vaccine 1st and 2nd dose.

Data collection

Time period:
December 2020 –
September 2021



Google search:
by week by source



Official Governor or
Department of
Health websites:
by week by state

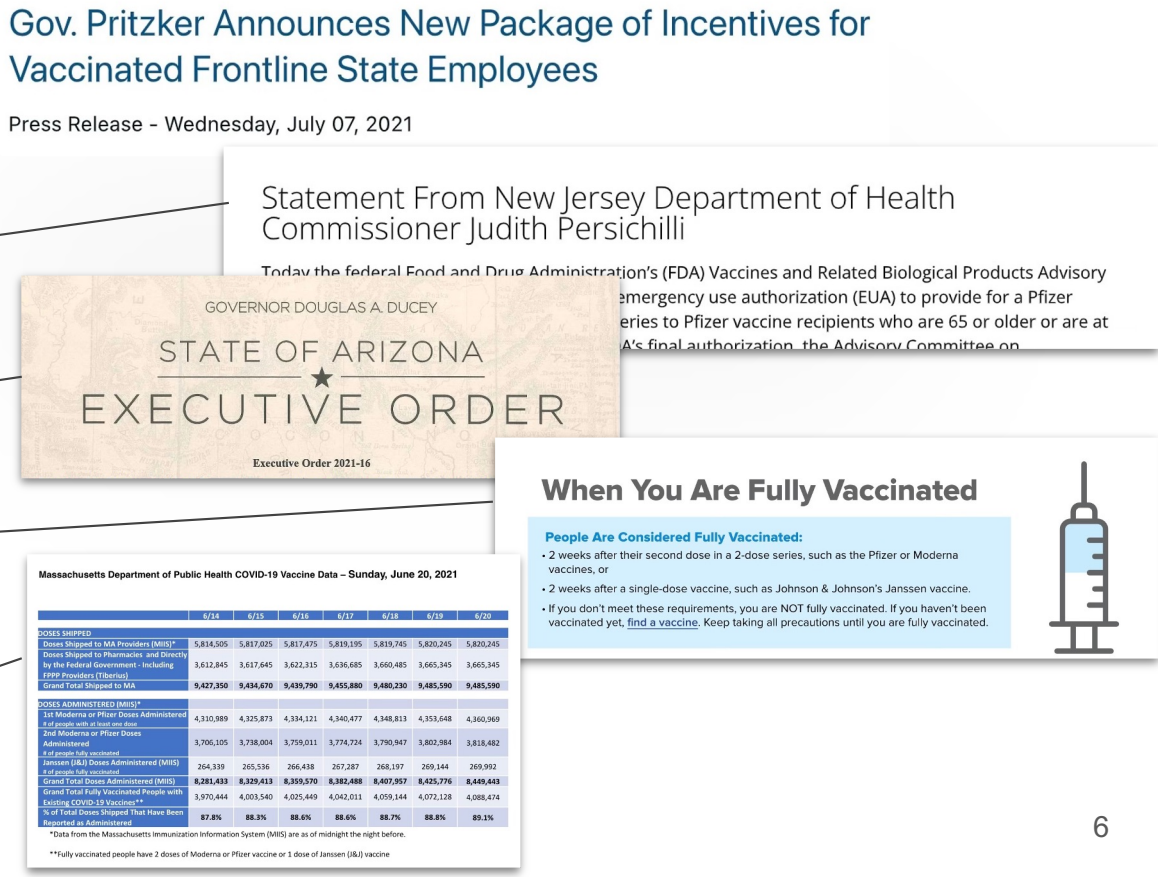
Preparing data for analyses

1. Organize documents by types for each state
    - *data from 18 out of 47 states are ready for analyses*
2. Derive quantitative indices:
    - Total number of documents by states by types
    - Frequency of words referencing social structures
    - Frequency of emotional “loaded” words
3. Qualitative analysis (e.g., thematic analysis)

We rely on NVIVO software for analysis of qualitative data

Types of documents from official state sources

- **Press Releases (2)**
  - **state government or any government official**
  - **state Department of Health discussed in full-length sentences to full-length paragraphs**
- Executive Orders
  - directives issued by a governor that regulates operations of the state government and certain aspects of citizen life
- Flyers
  - advertising FAQs and information on vaccination. Often through artwork and listed in bullet points, not always in full-length sentences or paragraphs
- Milestones
  - numerical and/or raw data on immunization records



Gov. Pritzker Announces New Package of Incentives for Vaccinated Frontline State Employees

Press Release - Wednesday, July 07, 2021

Statement From New Jersey Department of Health Commissioner Judith Persichilli

Today the federal Food and Drug Administration's (FDA) Vaccines and Related Biological Products Advisory
emergency use authorization (EUA) to provide for a Pfizer
eries to Pfizer vaccine recipients who are 65 or older or are at
A's final authorization, the Advisory Committee on

GOVERNOR DOUGLAS A. DUCEY

STATE OF ARIZONA

EXECUTIVE ORDER

Executive Order 2021-16

When You Are Fully Vaccinated

People Are Considered Fully Vaccinated:

- 2 weeks after their second dose in a 2-dose series, such as the Pfizer or Moderna vaccines, or
- 2 weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine.
- If you don't meet these requirements, you are NOT fully vaccinated. If you haven't been vaccinated yet, find a vaccine. Keep taking all precautions until you are fully vaccinated.

Massachusetts Department of Public Health COVID-19 Vaccine Data – Sunday, June 20, 2021

	6/14	6/15	6/16	6/17	6/18	6/19	6/20
DOSES SHIPPED							
Doses Shipped to MA Providers (MIIS)*	5,814,505	5,817,025	5,817,475	5,819,195	5,819,745	5,820,245	5,820,245
Doses Shipped to Pharmacies and Directly by the Federal Government - Including FPPP Providers (Tiberius)	3,612,845	3,617,645	3,622,315	3,636,685	3,660,485	3,665,345	3,665,345
Grand Total Shipped to MA	**9,427,350**	**9,434,670**	**9,439,790**	**9,455,880**	**9,480,230**	**9,485,590**	**9,485,590**
DOSES ADMINISTERED (MIIS)*							
1st Moderna or Pfizer Doses Administered # of people with at least one dose	4,310,989	4,325,873	4,334,121	4,340,477	4,348,813	4,353,648	4,360,969
2nd Moderna or Pfizer Doses Administered # of people fully vaccinated	3,706,105	3,738,004	3,759,011	3,774,724	3,790,947	3,802,984	3,818,482
Janssen (J&J) Doses Administered (MIIS) # of people fully vaccinated	264,339	265,536	266,438	267,287	268,197	269,144	269,992
Grand Total Doses Administered (MIIS)	**8,281,433**	**8,329,413**	**8,359,570**	**8,382,488**	**8,407,957**	**8,425,776**	**8,449,443**
Grand Total Fully Vaccinated People with Existing COVID-19 Vaccines**	3,970,444	4,003,540	4,025,449	4,042,011	4,059,144	4,072,128	4,088,474
% of Total Doses Shipped That Have Been Reported as Administered	**87.8%**	**88.3%**	**88.6%**	**88.6%**	**88.7%**	**88.8%**	**89.1%**

*Data from the Massachusetts Immunization Information System (MIIS) are as of midnight the night before.

**Fully vaccinated people have 2 doses of Moderna or Pfizer vaccine or 1 dose of Janssen (J&J) vaccine

Rural Places and Territory

- Territory, population, and housing units that the Census Bureau does not classify as urban are classified as rural. For instance, a rural place is any incorporated place or CDP with fewer than 2,500 inhabitants that is located outside of a UA. A place is either entirely urban or entirely rural, except for those designated as an extended city.

Rurality: % of population living in rural areas according to Census

Urbanized Areas (UAs)

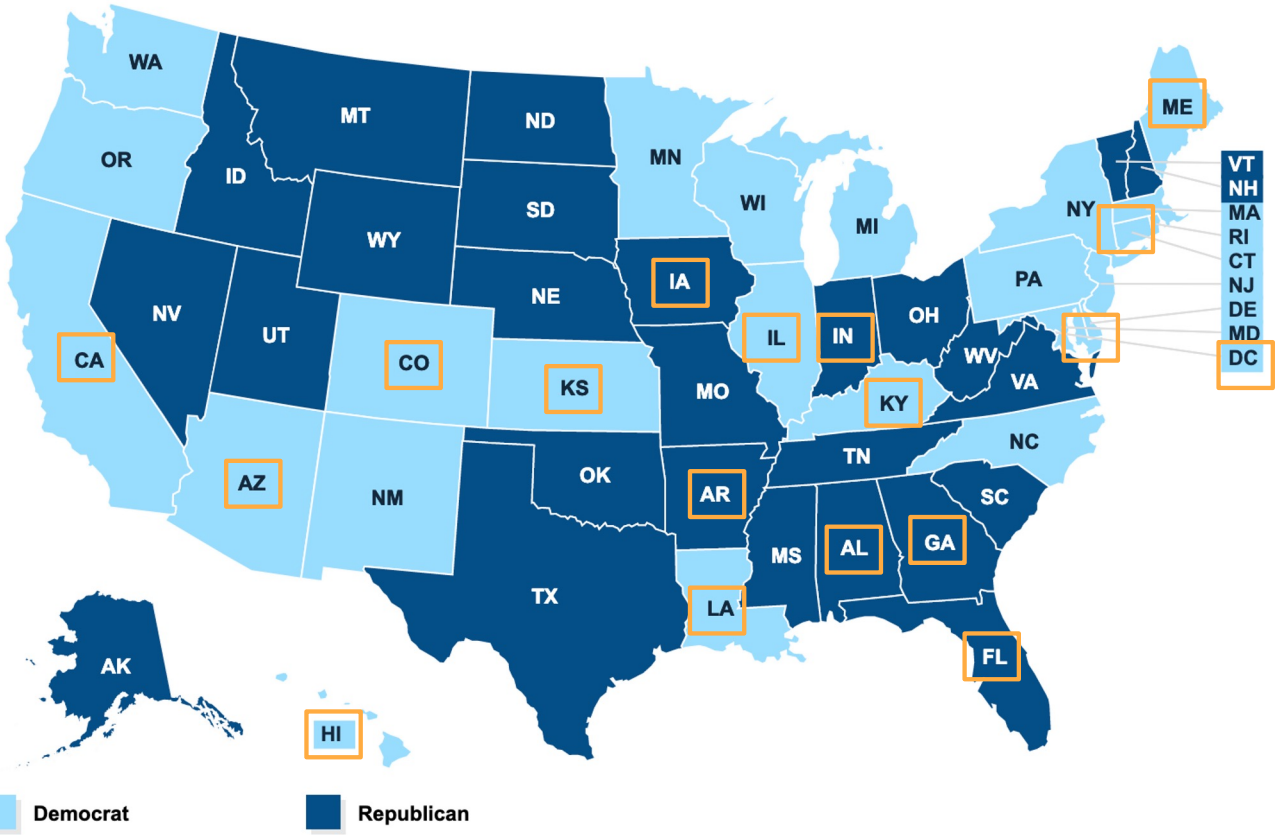
- The Bureau of the Census defines urban as comprising all territory, population, and housing units located in urbanized areas and in places of 2,500 or more inhabitants outside of UAs. The term urban refers to both kinds of geographic entities. The terms urban, urbanized area, and rural are the Census Bureau's definitions; other Federal agencies, State agencies, local officials, and private groups may use these same terms to identify areas based on different criteria.

- A UA is a continuously built-up area with a population of 50,000 or more. It comprises one or more places—central place(s)—and the adjacent densely settled surrounding area—urban fringe—consisting of other places and nonplace territory.

The Development of the Urban-Rural Classification in the United States: 1874-1949 [by Dr. Leon Truesdell], U.S. Department of Commerce, Current Population Reports, Series P-23, No. 1, August 5, 1949.

Data ready for analyses

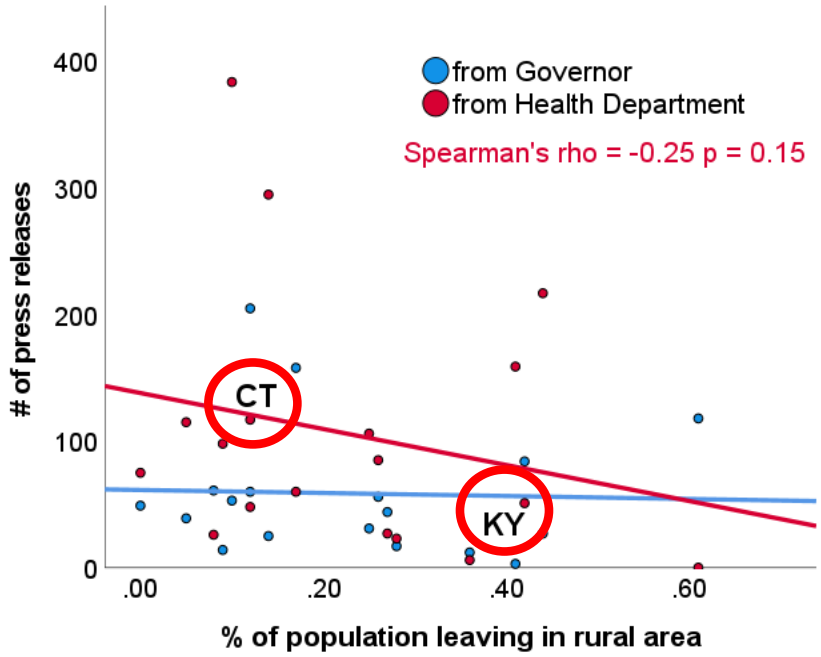
1. Maine: 61%
2. Arkansas: 44%
3. Kentucky: 42%
4. Alabama: 41%
5. Iowa: 36%
6. Indiana: 28%
7. Louisiana: 27%
8. Kansas: 26%
9. Georgia: 25%
10. Delaware: 17%
11. Colorado: 14%
12. Connecticut: 12%
13. Illinois: 12%
14. Arizona: 10%
15. Florida: 9%
16. Hawaii: 8%
17. California: 5%
18. DC: 0%



Governor Political Affiliation: Current Governors 2023, National Governors Association (NGA), as of January 18,2023.**State & Legislative Partisan Composition**: 2023 State & Legislative Partisan Composition, National Conference of State Legislatures (NCSL), as of January 17,2023.**State Attorney General Political Affiliation**: Attorneys General: Who's My AG?, National Association of Attorneys General (NAAG), accessed January 17,2023.**State Insurance Commissioner Political Affiliation**: National Association of Insurance Commissioners Membership List, National Association of Insurance Commissioners (NAIC), revised January 11,2023.

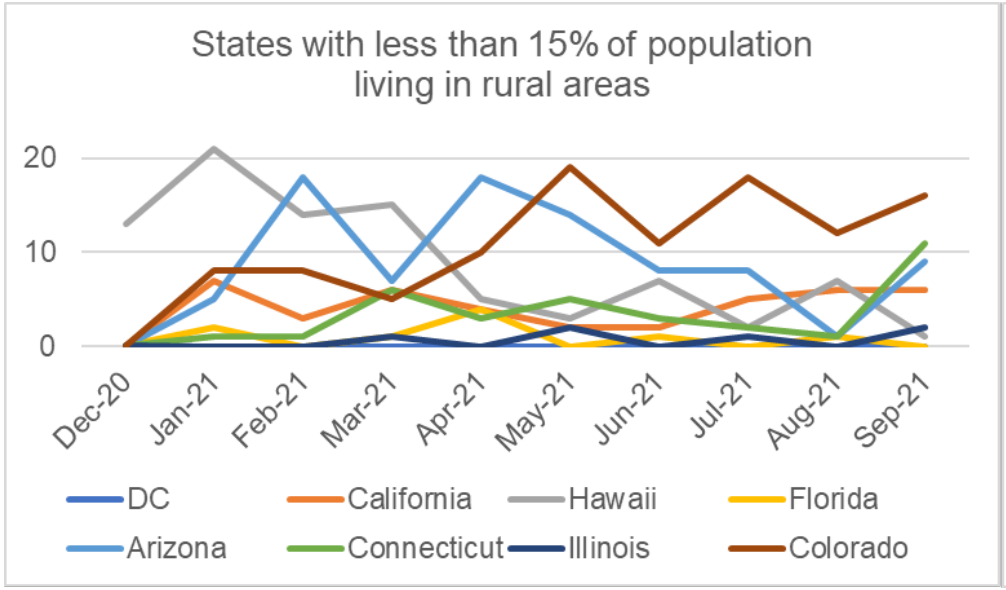
Patterns in the centralized delivery of information about COVID vaccine by rurality of states (N=18)

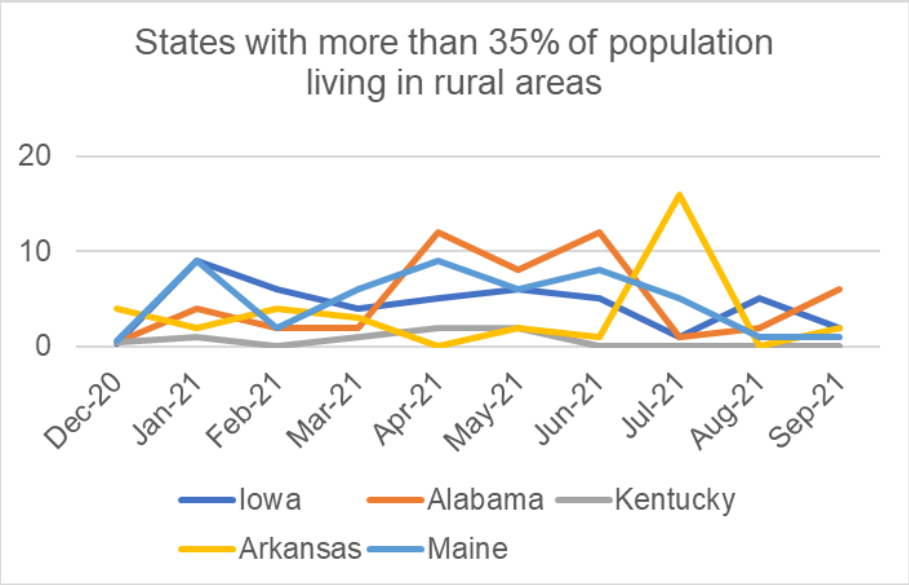
- A lot of heterogeneity across states
- # of press releases from the Governors is largely stable across more urban and more rural states
- # of press releases from Departments of Health may be lower among more rural states (potentially emergent trend)
- Zoom in on two representative of more urban (CT) and more rural (KY) states



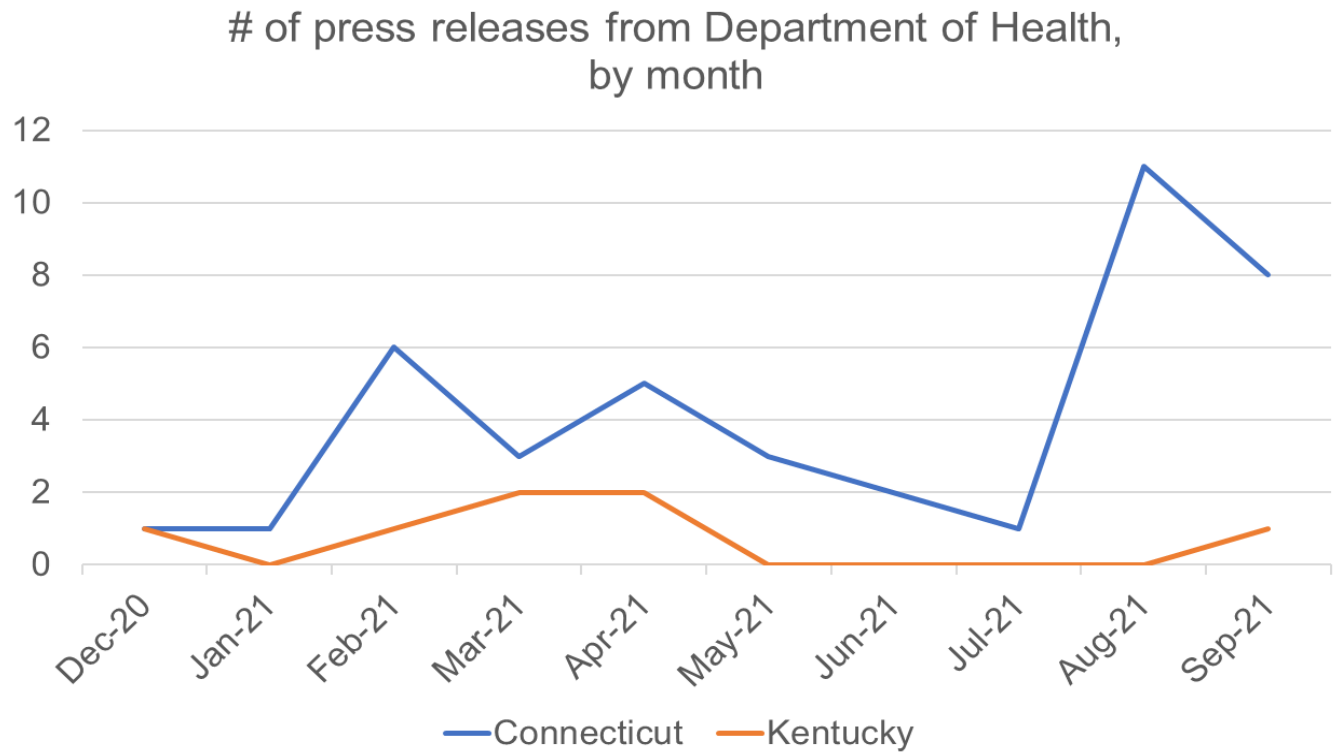
Longitudinal pattern in information flow from Departments of Health: urban vs. rural states (N=18)

- High heterogeneity across states in both more urban and more rural groups

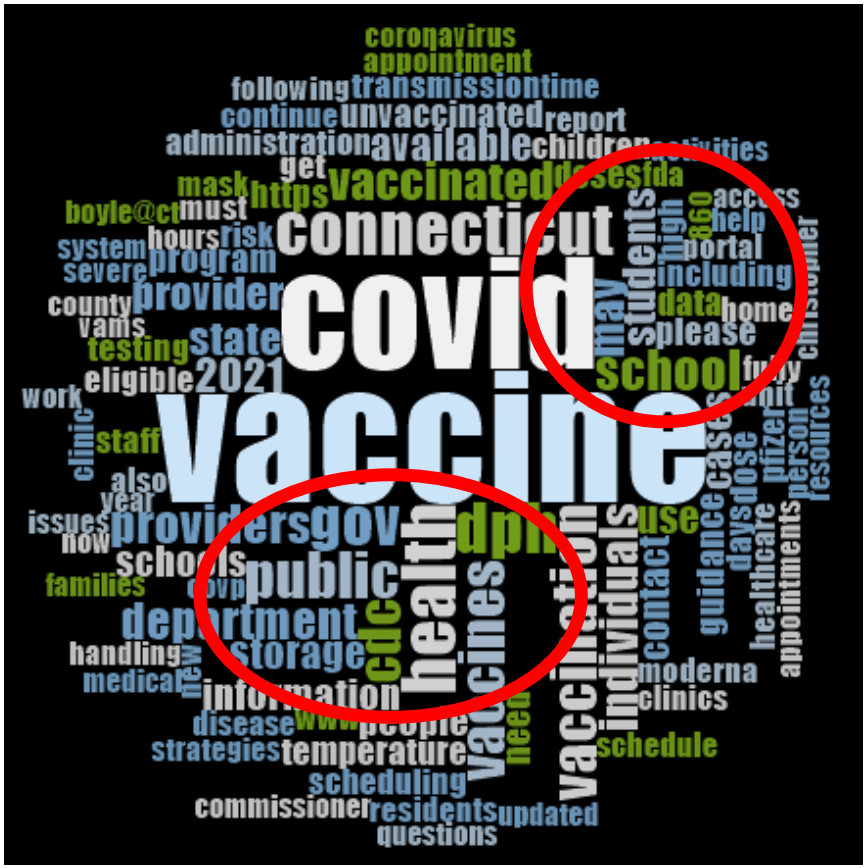




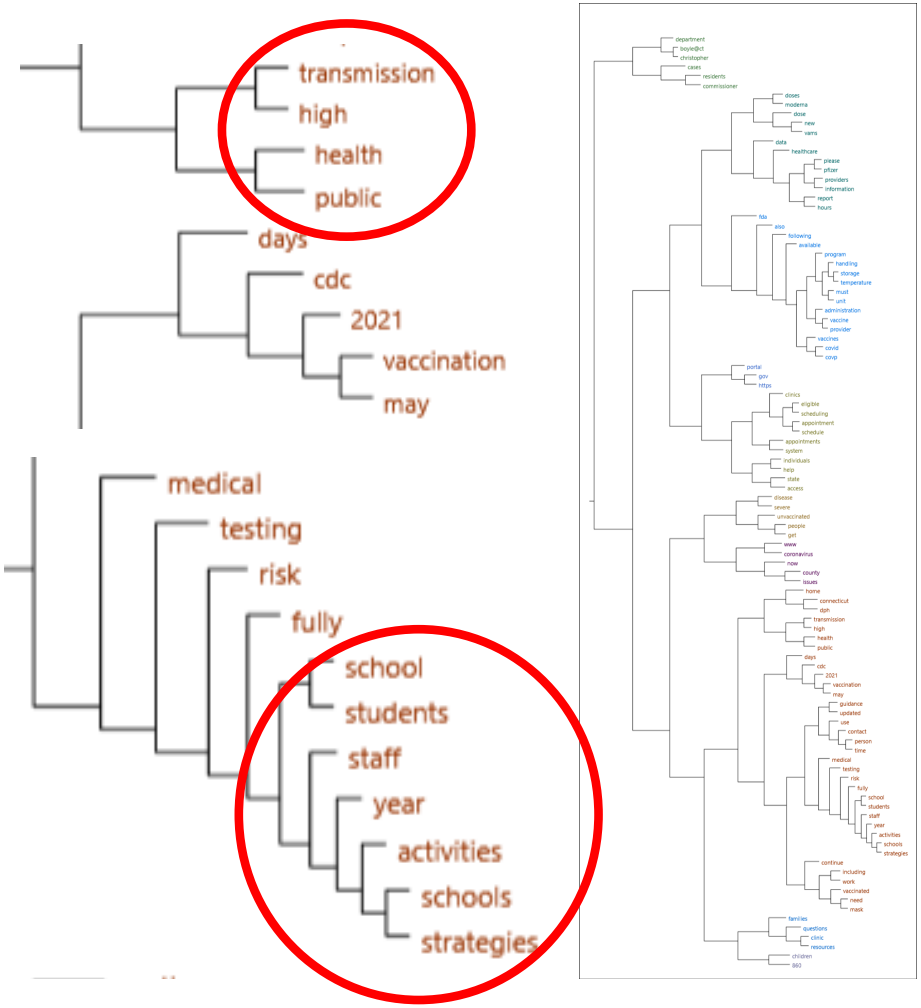
Longitudinal pattern in information flow from Departments of Health: CT (12% rurality) vs. KY (42% rurality)



100 most used words: CT

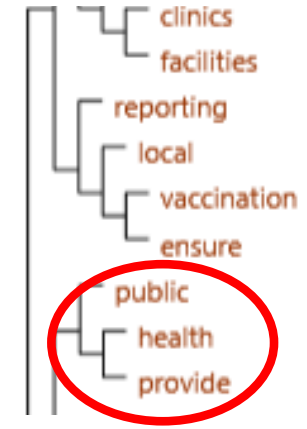


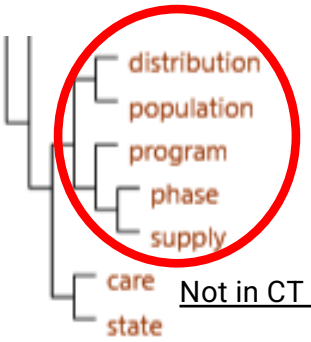
Cluster analysis:
reveals what words tend to appear together



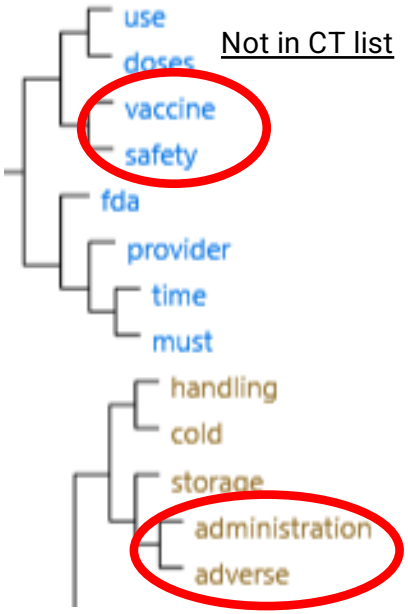
100 most used words: KY

Cluster analysis:





Not in CT list



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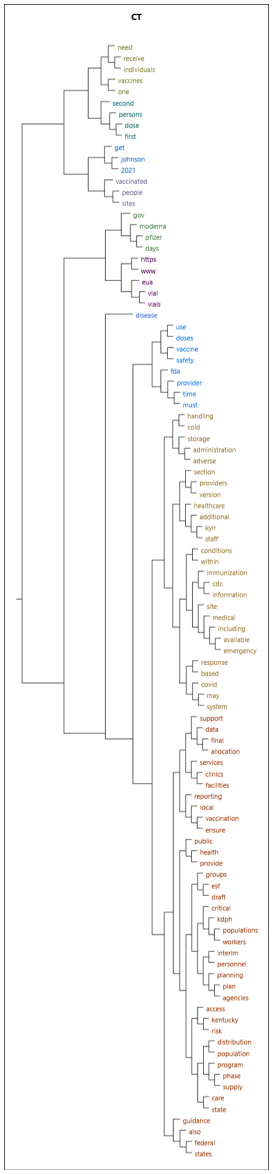

“Schools” did not make it in the top 100 words in KY

Emergent patterns so far

- # of press releases from Departments of Health may be lower in more rural states than in more urban states
- Significant heterogeneity in longitudinal patterns across states in both more urban and more rural groups
- An example of a more urban state: CT with 12% of rurality
  - Maybe there is more focus on public policies – e.g., how to reopen schools?
- An example of more rural state: KY with 42% rurality
  - Maybe there is more focus on vaccine safety and availability?

Emergent questions

- Do centralized health organizations (e.g., State Departments of Health) play bigger roles in more urban settings and somewhat smaller roles in more rural settings?
- Do they play different roles?
- If so – why?

Summary

- We have an amazing data in its breadth: total 4,702 documents.
- We are still working on cleaning, organizing, and understanding it - to make it usable and **openly available**.
- This presentation offers a very first glance at interim patterns. We don't know if they hold in the full sample.
- We finished organizing and are currently analyzing another component – data from media sources and can discuss that part with you if there is any interest.
- We want to share what we have and invite anybody who might be interested in working with our data. We are sure you have perspectives and approaches that we have not yet considered.

References

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thank
you