

Digging into Data:

New Methods for Analyzing Newspaper Coverage of the 1918 “Spanish Flu” Epidemic

Tom Ewing, Bernice Hausman,
Kathleen Kerr, and Naren Ramakrishnan

return **week** die wife spent
family **miss** son ill city account
camp **influenza** john **home**
day visit town call school

**GRIP BREAKS
CITY'S DEATH
RATE RECORD**

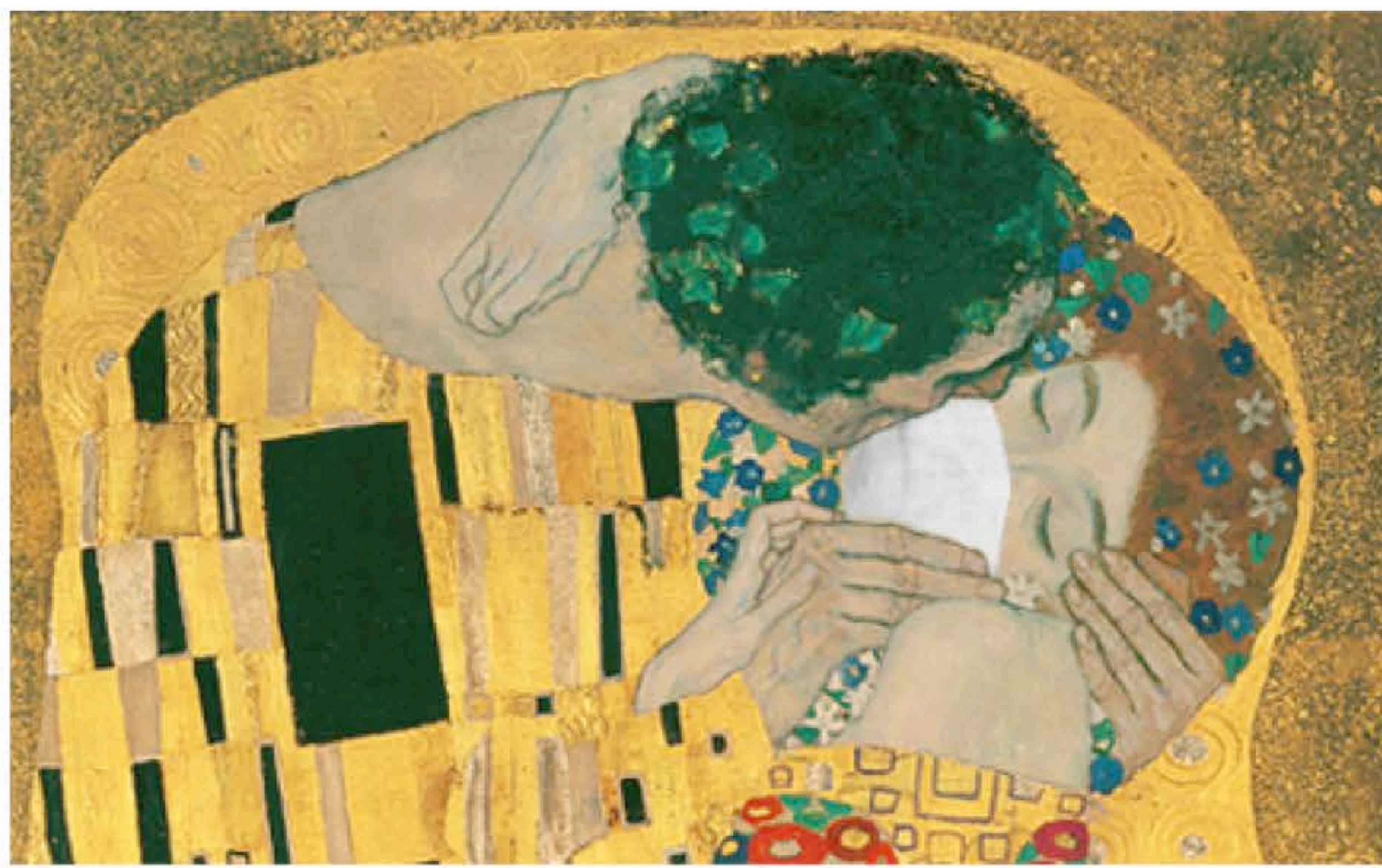
front grip cold little look hour hog
war mean **time** try water
german corn french day

school
vaccination
children
vaccinate
public
health
time
county
law
board
pupil
smallpox
department
attend
certificate
report
enter
admission
age

This presentation explores the use of topic modeling, tone classification, and visualizations to provide new insights into the spread of information and the transmission of disease during the 1918 “Spanish Flu” epidemic. This research is supported by the Digging into Data Challenge funded by the National Endowment for the Humanities, the Institute for Society, Culture, and Environment, and the Discovery Analytics Center (ICTAS).

Wednesday, October 2, 2013, 1:00 P.M.

Scale-Up Classroom, Newman Library (1st Floor)



AN EPIDEMIOLOGY OF INFORMATION

DATA MINING THE 1918 INFLUENZA PANDEMIC | A DIGGING INTO DATA CHALLENGE PROJECT

Principal Investigators:

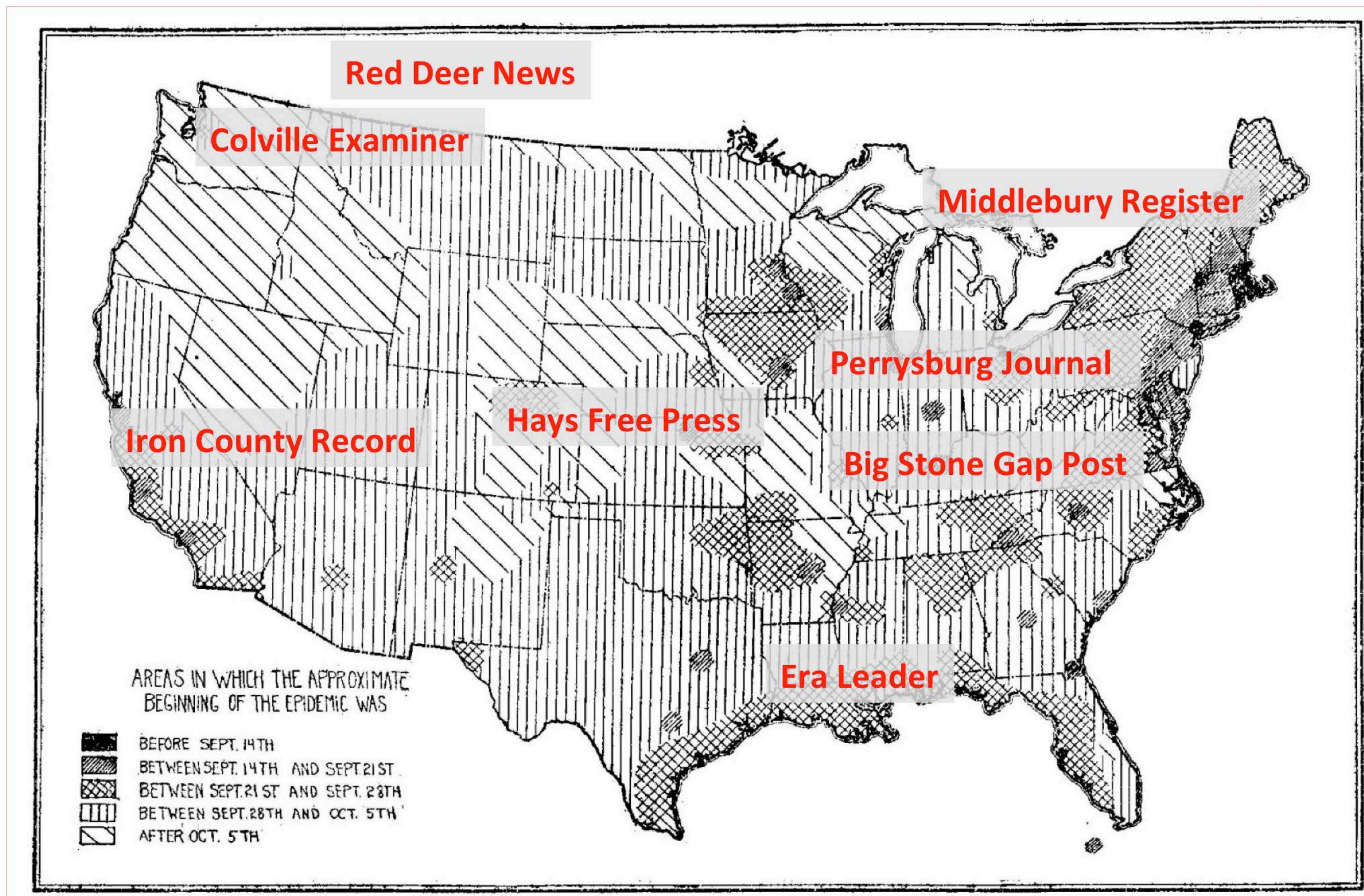
- Tom Ewing, Department of History (VT)
- Bernice Hausman, Department of English (VT)
- Bruce Pencek, University Libraries (VT)
- Naren Ramakrishnan, Dept of Computer Science (VT)
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- Laura West, Department of History (VT)

Funding:

- National Endowment for the Humanities Digging into Data Challenge (\$123,000)
- Institute for Society, Culture, and Environment
- Institute for Critical Technology and Advanced Science
- Departments of Computer Science, English, and History



INFLUENZA IS SERIOUS

MERELY because many of the cases of influenza are mild, we should not underestimate the seriousness of the disease, and those afflicted with it should be very careful not to expose others any more than they have to. Already the epidemic has caused the death of two Iron county people, which is as many as have thus far met death at the front, and it is estimated that the epidemic will claim about 200,000 victims in the United States.

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You can never tell who is going to develop the disease in its dangerous form, and one would certainly feel very badly if he thought he had unwittingly, perhaps carelessly, caused the death of some person.

The disease has secured a very wide distribution throughout the country, and also in the state. It will be only by the co-operation of all the people that the epidemic can be controlled.

There are about fourteen or fifteen homes in Cedar City affected with the disease, and Health Officer, Dr. Macfarlane states that the epidemic is now pretty well in hand with but few new cases developing and with possibly one exception, no cases at present that appear serious.

Now, if everyone will heed the instructions issued by the State Board of Health, as published elsewhere in this issue, we feel sure that the disease can soon be stamped out here.

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PAGE FOUR

THE IRON COUNTY RECORD

WEEKLY PAPER

Published at Cedar City, Utah, Every

WEDNESDAY, by

CHAS. E. WILKINSON, Editor and

Proprietor

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Entered at the Post Office at Cedar

City, Utah, as second class matter

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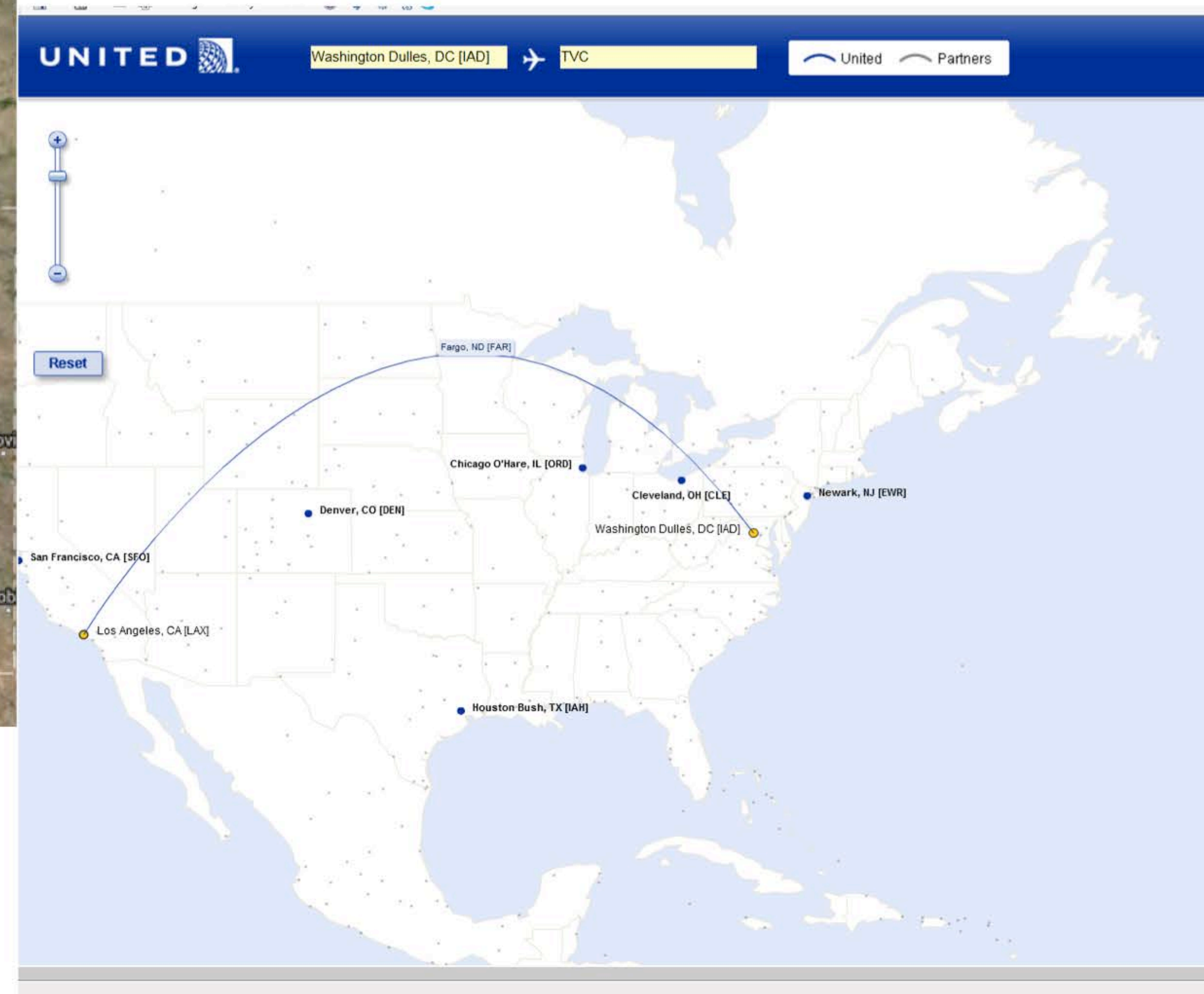
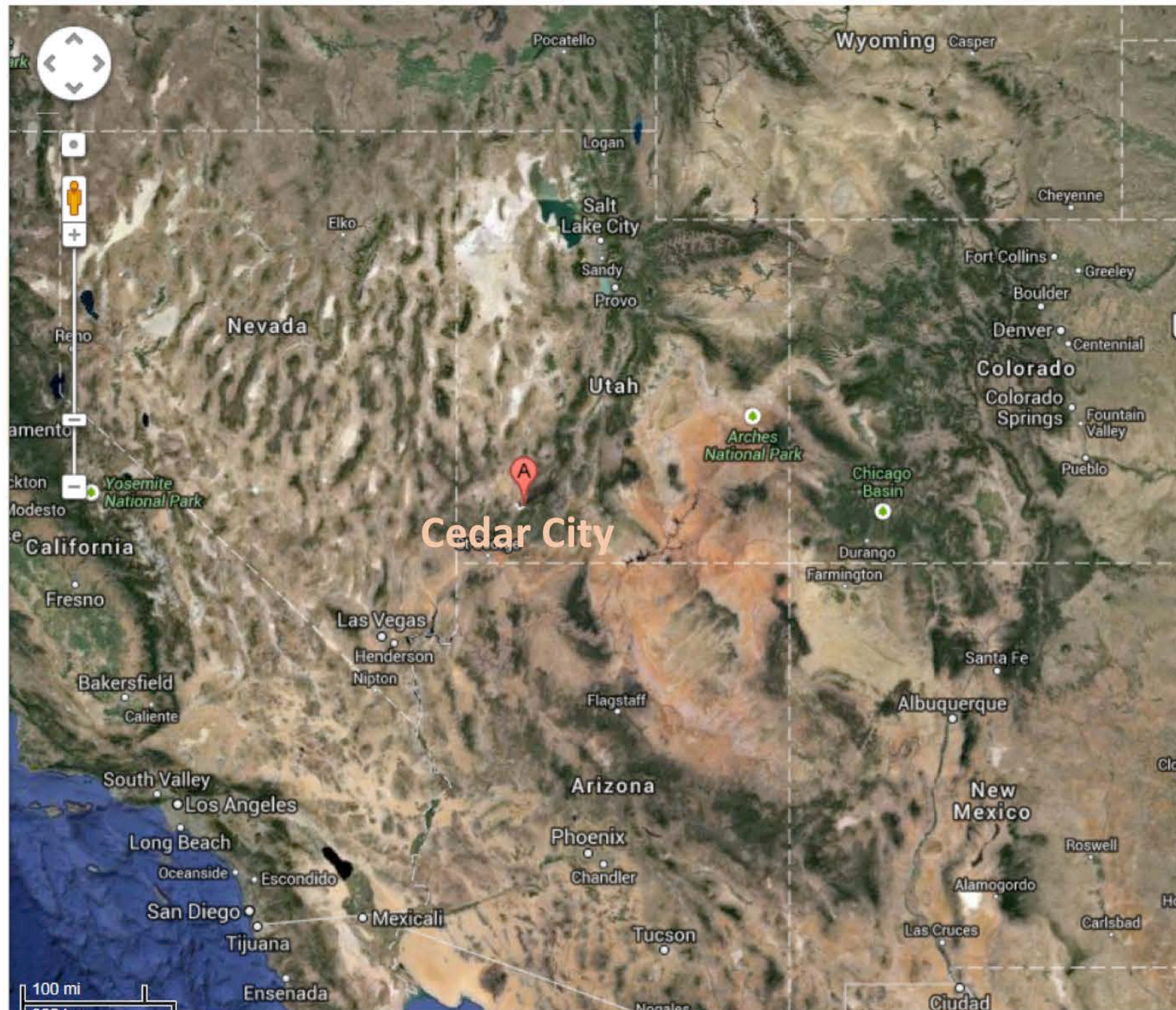
WEDNESDAY, by

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Iron County, Utah

Census	Population
1900	3,546
1920	5,787
1940	8,331
1960	10,795
1980	17,349
2000	33,779
2010	46,163






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 The Iola register. (Iola, Kan.)
 Iowa state bystander. (Des Moines, Iowa)
 Iron County news. (Cedar City, Utah)
Iron County record. (Cedar City, Utah)
 The islander. (Friday Harbor, Wash.)
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Or Date Range

☒ from to

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Language

Enter Search

...with **any** of the words:

...with **all** of the words:

...with the **phrase**:

...with the words:

within words of each other

[Clear](#)
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Search term:
Influenza
52 results
September to
December 1918

Results 1 - 20 of 52 1 | 2 | 3 → Jump to page: **GO**

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52 results containing "influenza"

☐ Show only front pages Sort by: Relevance ▼ Results per page: 20 ▼



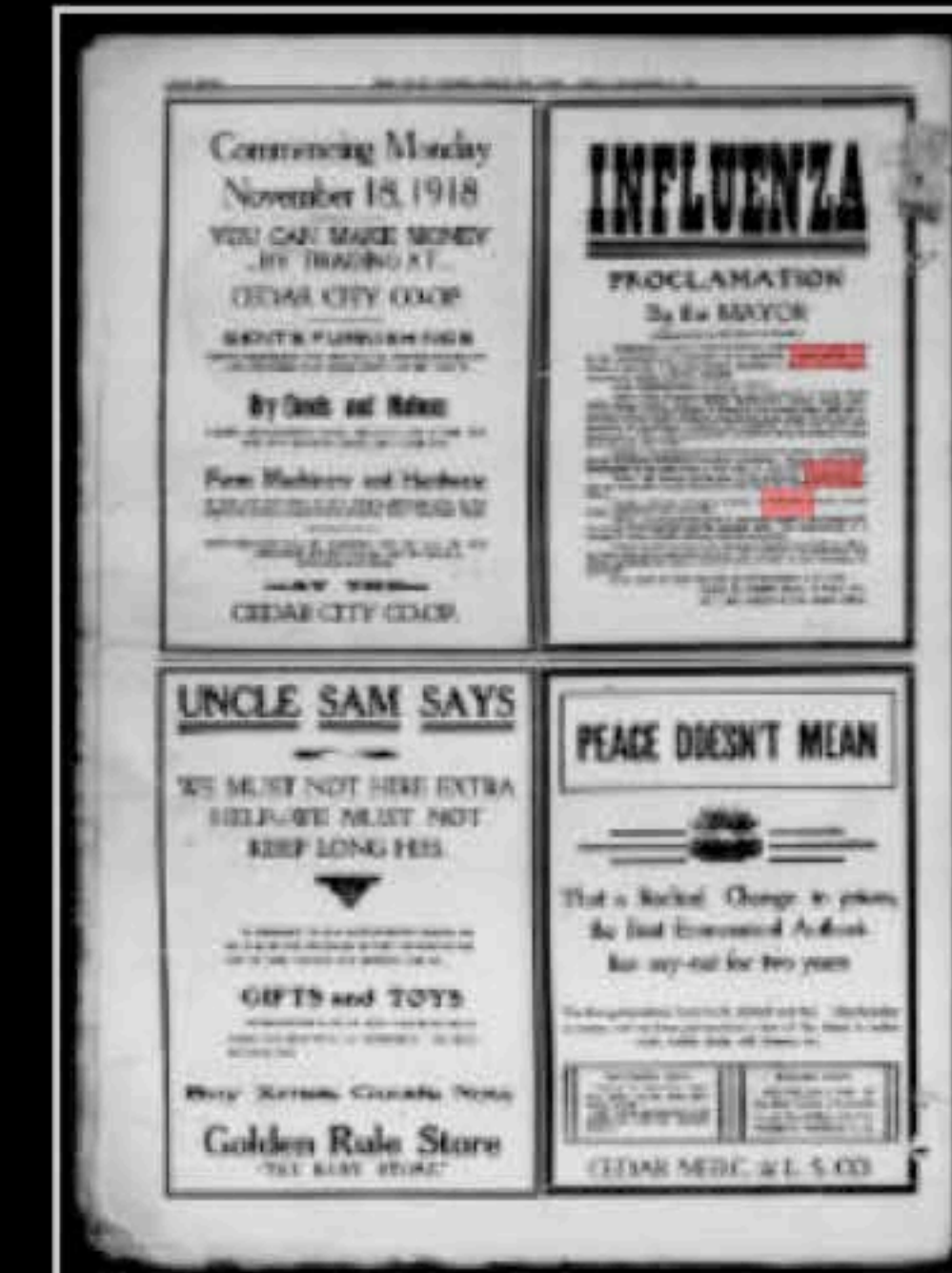
[Iron County record. \(Cedar City, Utah\), November 29, 1918, Page PAGE FOUR, Image 4](#)



[Iron County record. \(Cedar City, Utah\), November 15, 1918, Page PAGE ONE, Image 1](#)



[Iron County record. \(Cedar City, Utah\), October 18, 1918, Page PAGE ONE, Image 1](#)



[Iron County record. \(Cedar City, Utah\), November 15, 1918, Page PAGE EIGHT, Image 8](#)



[Iron County record. \(Cedar City, Utah\), December 20, 1918, Page PAGE EIGHT, Image 8](#)



[Iron County record. \(Cedar City, Utah\), November 15, 1918, Page PAGE FIVE, Image 5](#)



[Iron County record. \(Cedar City, Utah\), November 29, 1918, Page PAGE EIGHT, Image 8](#)



[Iron County record. \(Cedar City, Utah\), December 06, 1918, Page PAGE ONE, Image 1](#)

Topic Modeling with Segmentation: *Iron County Record*. August 30 to October 18

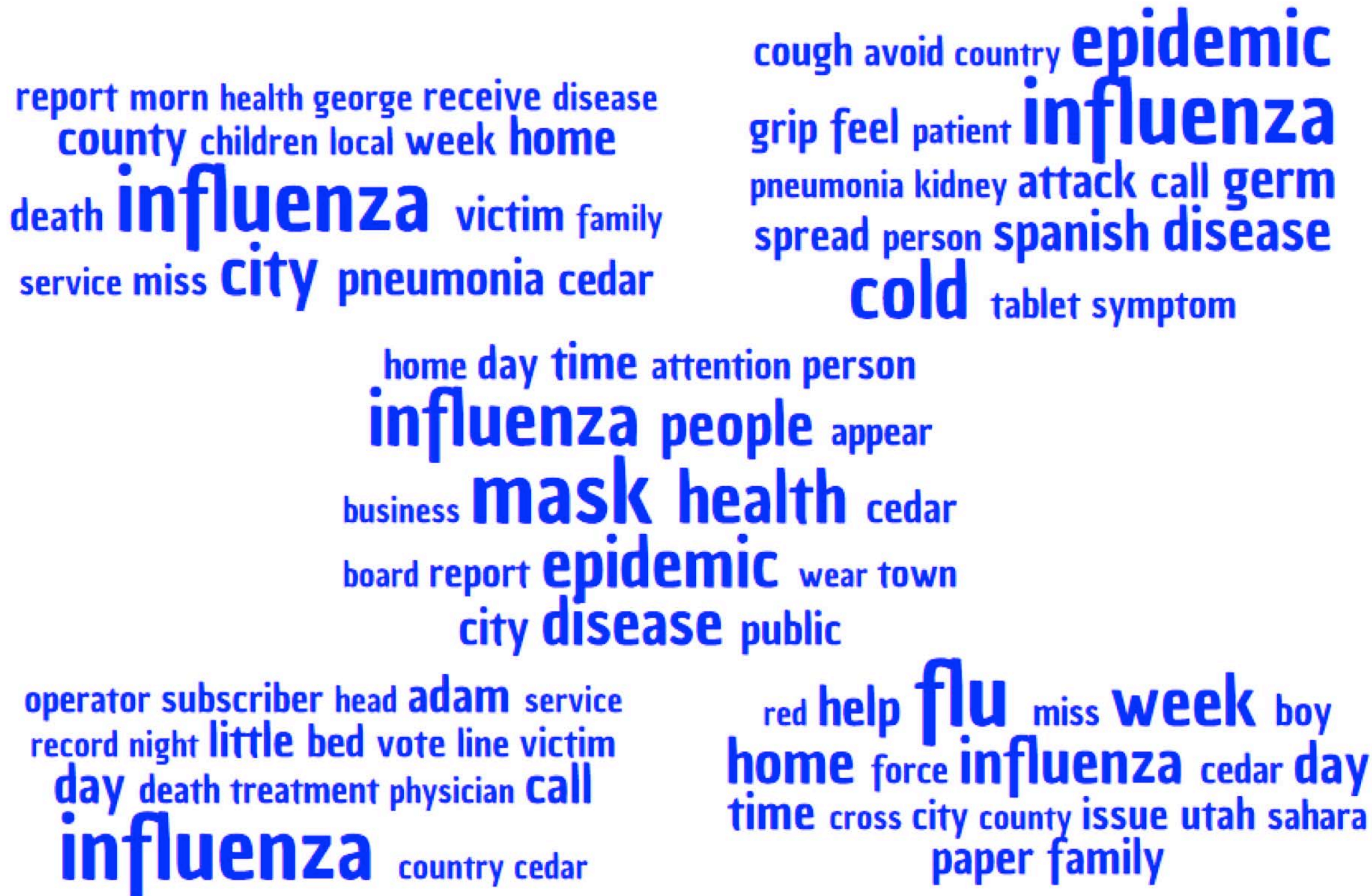


Topic Modeling with Segmentation: *Iron County Record*. August 30 to October 18



Topic Modeling with Segmentation:

Iron County Record. October 19 to December 14



Search term:
Influenza
52 results
September to
December 1918

Results 1 - 20 of 52 1 | 2 | 3 → Jump to page: **GO**

View: Gallery | List

52 results containing "influenza"

☐ Show only front pages Sort by: Relevance ▼ Results per page: 20 ▼



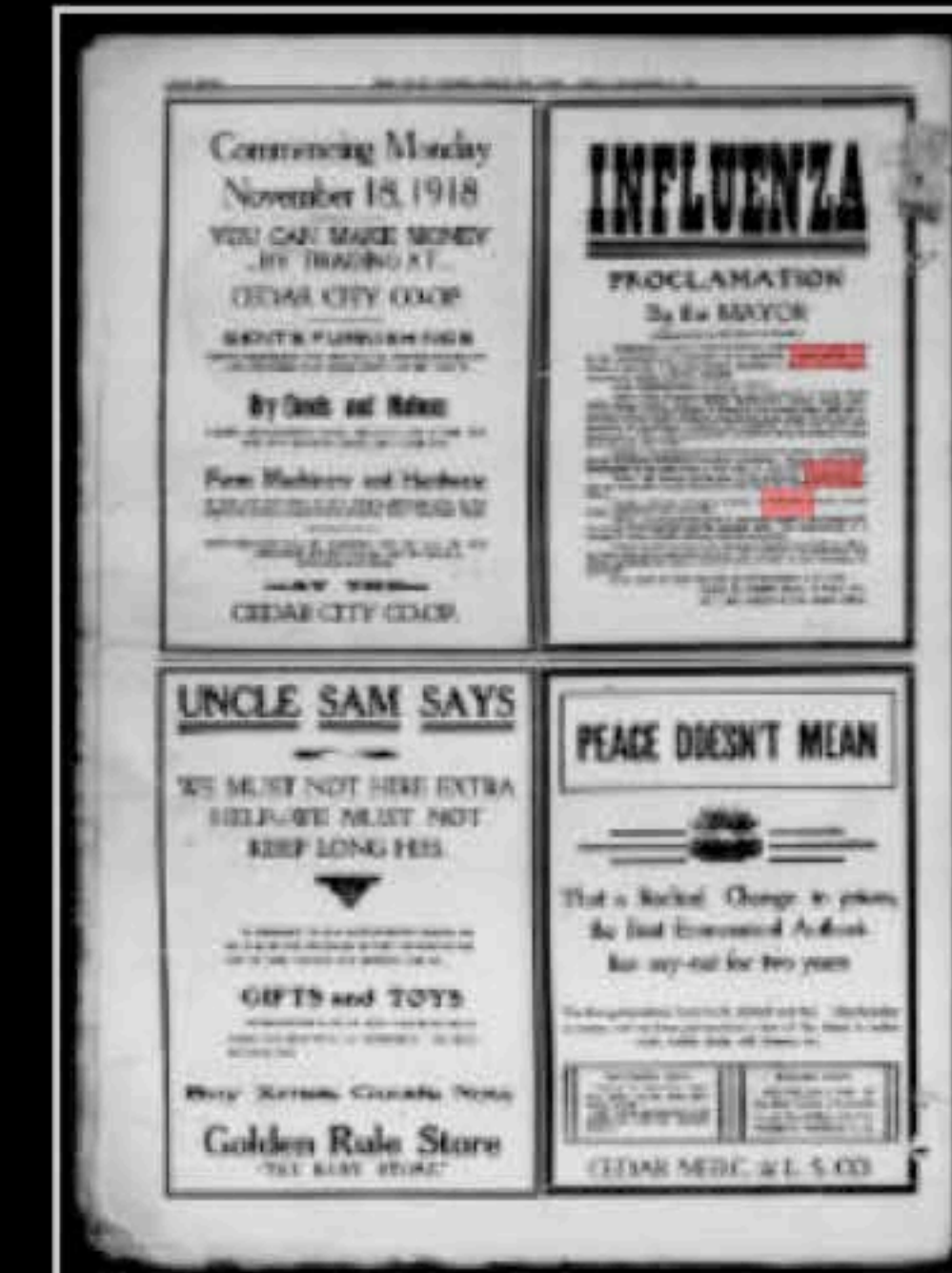
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INFLUENZA IS SERIOUS

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You can never tell who is going to develop the disease in its dangerous form, and one would certainly feel very badly if he thought he had unwittingly, perhaps carelessly, caused the death of some person.

The disease has secured a very wide distribution throughout the country, and also in the state. It will be only by the co-operation of all the people that the epidemic can be controlled.

There are about fourteen or fifteen homes in Cedar City affected with the disease, and Health Officer, Dr. Macfarlane states that the epidemic is now pretty well in hand with but few new cases developing and with possibly one exception, no cases at present that appear serious.

Now, if everyone will heed the instructions issued by the State Board of Health, as published elsewhere in this issue, we feel sure that the disease can soon be stamped out here.

"Influenza is Serious," *Iron County Record*, October 18, 1918, p. 4.

H FRIDAY, OCT. 18, 1918.

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Tone Classification Categories:

- ***Alarmist***: uses fear or urgency; induces a sense of panic; mentions a number in a comparative context (e.g., 10 *more* deaths today); mentions a seemingly large number for the context (i.e., *hundreds* in a single day).
- ***Warning***: refers to the gravity of the situation; serious but not urgent; cautioning; advises the reader what to do; mentions measures being taken as a sign of seriousness of threat
- ***Reassuring***: comforting; implies threat is diminishing; addresses fears with soothing sensibility; motivates action with sense of hopefulness, improvement, or possibility of avoidance of disease
- ***Explanatory***: neutral source of information; lacks distinctive affect.

Washington Herald: ≈700 sentences manually coded, Sept 12-Oct 22, 1918

						The Spanish influenza situation at the near-by camps is reaching alarming proportions.
10/4/1918	a	a	A	A	A4	
10/5/1918	a	a	A	A	A4	New cases of influenza today leaped to 1,695, as against 999 reported yesterday.
10/5/1918	a	a	A	A	A4	Five More Grip victims Succumb-- City Closed Tight.
						Racing at the Maryland plant will be resumed sometime next week as the Maryland Health Board is now confident that the epidemic is waning and conditions are gratifying.
10/19/1918	r	R	R	r	R4	
						The number of new influenza cases and of deaths in the army camps is showing a slight decrease, according to a statement issued by the military authorities yesterday.
10/9/1918	R	r	R	r	R4	
						The Spanish influenza is on the wane here according to Dr. W. L. Wood, a special state health officer, and also of the United States Public Health Service.
10/8/1918	R	r	R	r	R4	
10/19/1918	e	E	E	e	E4	Middies Game with Princeton Pay Station Put Off Because of "Flu."
						Mrs. Crozier was expected in Washington for a visit during October, but has postponed her trip on account of the influenza epidemic.
10/19/1918	e	E	E	e	E4	
						These children, he stated, are suffering with the influenza and it is impossible for the two nurses who have been caring for them during the past week to give each the individual treatment they need.
10/19/1918	e	E	E	a	E3	
10/7/1918	A	w	W	a	W3	The Spanish influenza situation here continues serious.
						Friends and relatives of Washingtonians and war workers in the city are requested by the health department to remain out of the city until the epidemic is under control.
10/8/1918	W	w	W	w	W4	
						Relatives of even those who are ill with the disease are warned that their presence in the city can do no good, and that they are running an unnecessary risk.
10/8/1918	W	w	W	w	W4	

Washington Herald: 537 sentences manually coded, 75% or more agreement

Week	Alarmist	Warning	Explanatory	Reassuring	All	
Sept 8-14	0	0	3	0	3	0.6%
Sept 15-21	0	2	9	5	16	3.0%
Sept 22-29	5	3	14	4	26	4.8%
Sept 29-Oct 5	10	18	37	11	76	14.2%
Oct 6-Oct 12	19	39	69	38	165	30.7%
Oct 13-19	18	28	99	50	195	36.3%
Oct 20-26	1	4	31	20	56	10.4%
Totals	53	94	262	128	537	
	9.2%	14.4%	50.8%	25.6%		

Washington Herald: 537 sentences manually coded, Sept 12-Oct 22, 1918

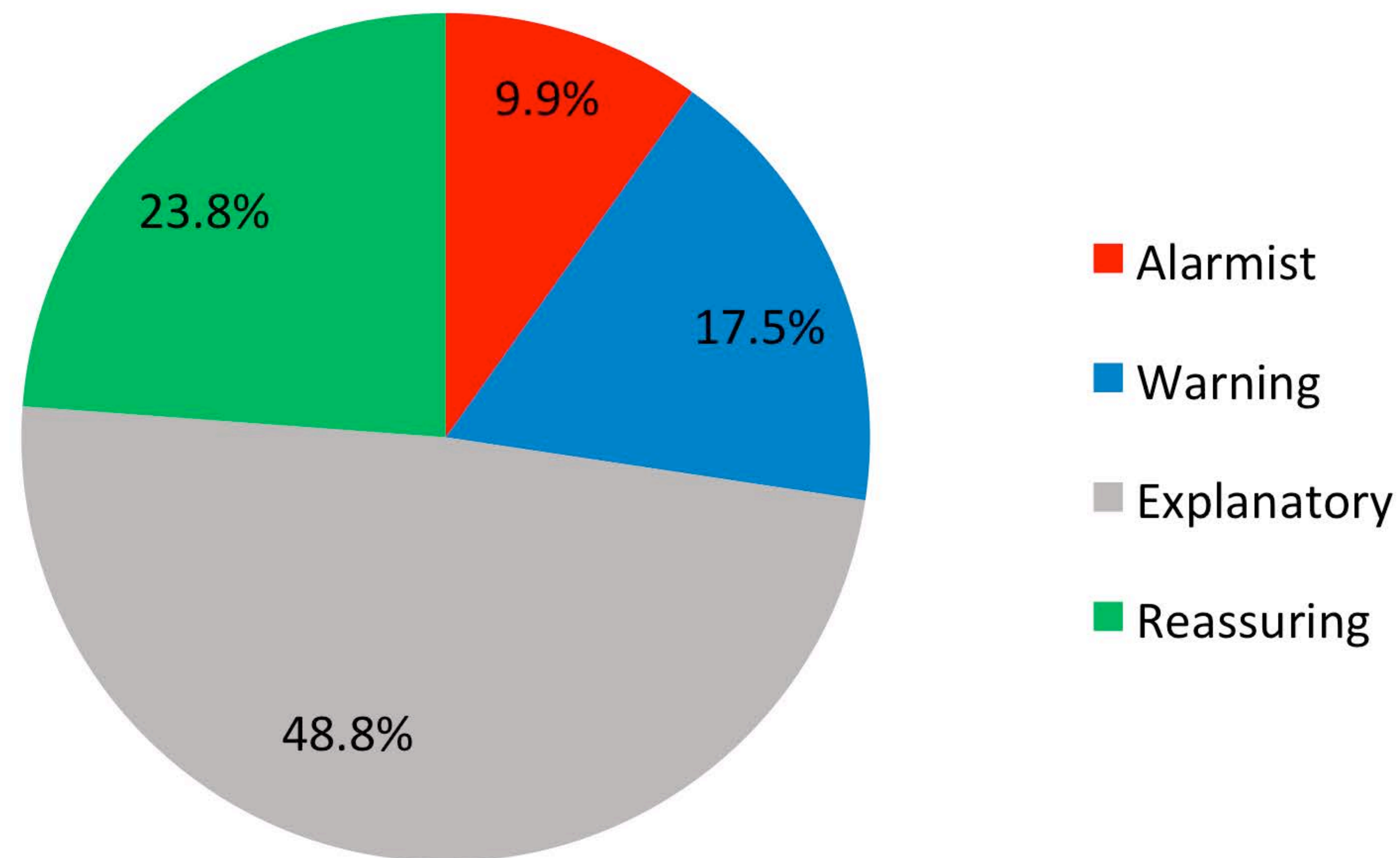
“Expert” Coders:

Kathleen Kerr, GRA, English

Bernice Hausman, Professor, Department of English

Bruce Pencek: Social sciences librarian, University Librarian

Tom Ewing: professor, Department of History

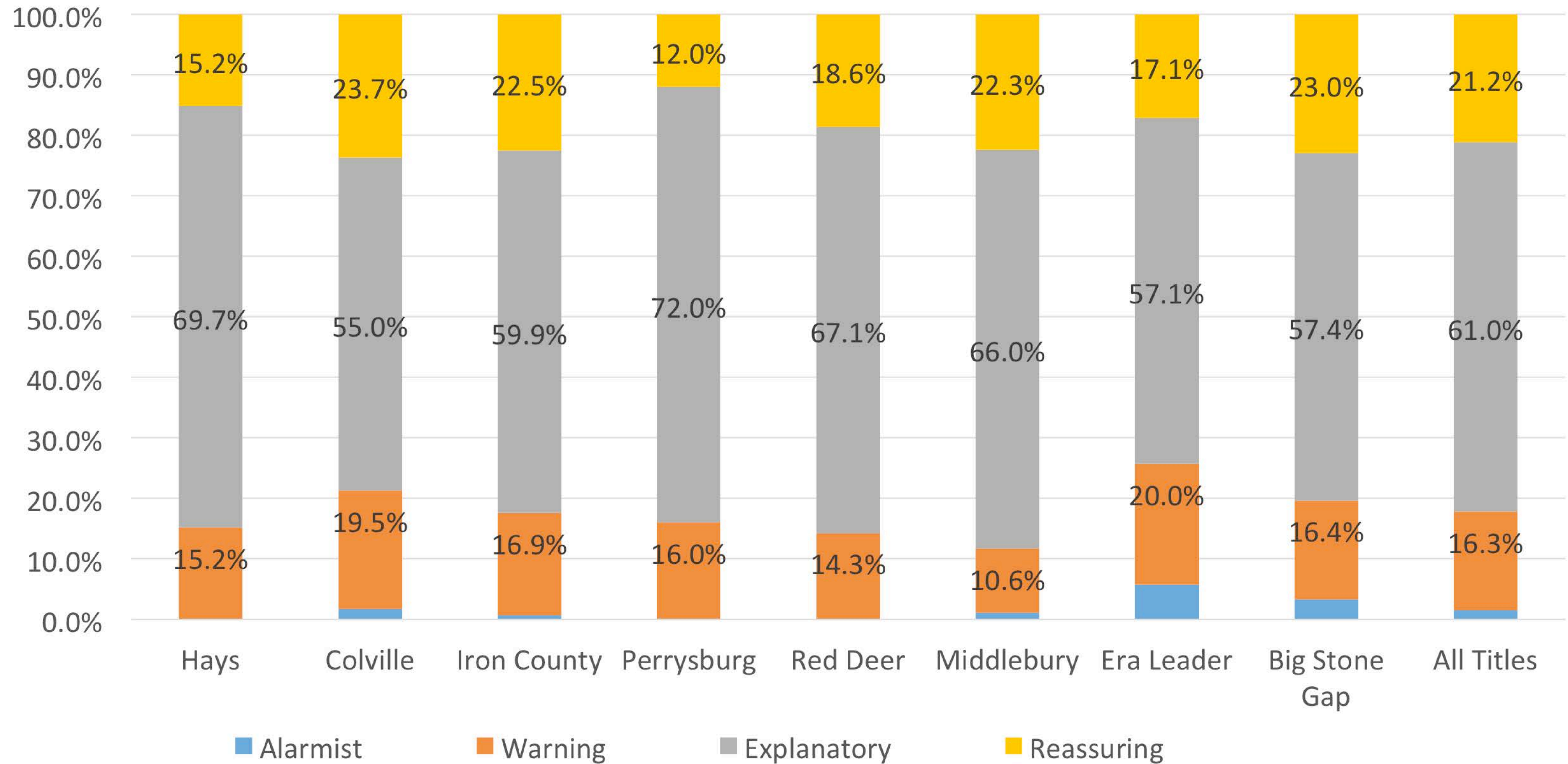


Tone classification on 8 weekly newspapers

- Selected texts: local reporting on the disease, including news articles, statements from county and city health officials, editorials and letters, and advertisements from local companies that referenced influenza.
- This sample did not include reports on individual victims, such as obituaries or reports of ill individuals.
- Total of 723 sentences from *Hays Free Press* (66), *Colville Examiner* (169), *Iron County Record* (142), *Perrysburg Journal* (25), *Red Deer News* (70), *Middlebury Register* (94), *Era Leader* (35), and *Big Stone Gap Post* (122).

Title	Alarmist	Warning	Explanatory	Reassuring	Total
Hays	0.0%	15.2%	69.7%	15.2%	66
Colville	1.8%	19.5%	55.0%	23.7%	169
Iron County	0.7%	16.9%	59.9%	22.5%	142
Perrysburg	0.0%	16.0%	72.0%	12.0%	25
Red Deer	0.0%	14.3%	67.1%	18.6%	70
Middlebury	1.1%	10.6%	66.0%	22.3%	95
Era Leader	5.7%	20.0%	57.1%	17.1%	35
Big Stone Gap	3.3%	16.4%	57.4%	23.0%	122
All Titles	1.5%	16.3%	61.0%	21.2%	723

Tone Classification, by Title, as Percent of Total



Sample sentences coded by classifier from the *Iron County Record* (Utah):

Do not trifle with the deadly disease, but go promptly to bed and summon a physician.

Warning

Keep off the streets and at your own homes, if your presence in town is not imperative.

Warning

City physician Macfarlane reports the appearance of Spanish influenza in Cedar City, some five or six cases having developed since the return of the conference and fair visitors to Salt Lake City.

Explanatory

All cases have been quarantined and isolated as far as possible, and it was hoped that the epidemic had been gotten well in hand.

Explanatory

Now if everyone will be careful and conscientiously follow the instructions of the State Board of Health, we will soon be able to return to a normal situation and raise the closing order.

Reassuring

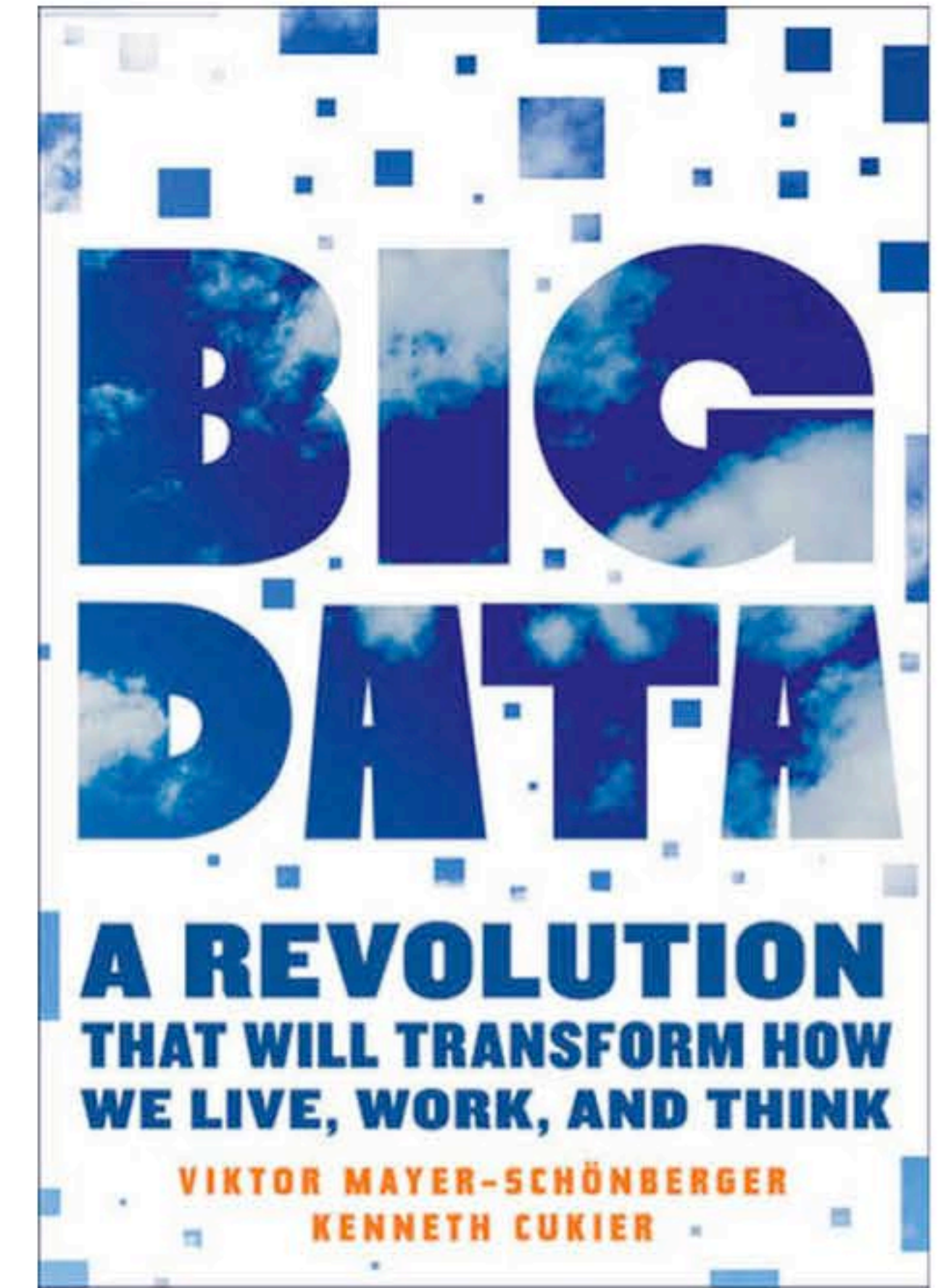
We trust that the doctors have caught the right germ and tamed it for the prevention and cure of the disease this time, so that there may not be a recurrence of the blight.

Reassuring

Issues with Tone Detection

- (Dis)agreement among coders
- Poor text derived from OCR and substantial time needed to prepare text
- Level of analysis: phrase, sentence, or article
- Limited number of newspapers available for text mining (Chronicling America and Peel's Prairie Provinces)
- Accuracy rate of the classifier
- Balancing precision with scale

“To be sure, subject-area experts won’t die out. But their **supremacy will ebb**. From now on, they must share the podium with the big-data geeks, just as princely causation must share the limelight with humble correlation. This transforms the way we value knowledge, because **we tend to think that people with deep specialization are worth more than generalists—that fortune favors depth**. Yet expertise is like exactitude: appropriate for a small-data world where one never has enough information, or the right information, and thus has to rely on intuition and experience to guide one’s way. In such a world, experience plays a critical role, since it is **the long accumulation of latent knowledge—knowledge that one can’t transmit easily or learn from a book, or perhaps even be consciously aware of—that enables one to make smarter decisions**. But when you are stuffed silly with data, you can tap that instead, and to greater effect. Thus those who can analyze big data may see past the superstitions and conventional thinking not because they’re smarter, but because they have the data.” (pp. 142-143)



Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data. A Revolution that will Transform how We Live, Work, and Think* (Boston: Houghton Mifflin, 2013)

Morning
Oregonian
November 18,
1918, p. 1



Daily Newspapers Case Study

INFLUENZA?

Keep your bowels in good condition with Rexall Orderlies and use Rexall Throat Gargle.

DON'T BE CARELESS

BALL'S DRUG STORE

Main St. THE REXALL STORE Phone 307

Bisbee Daily Review, October 10, 1918, page 2

List of Daily Newspapers	
Newspaper Title	Location
<i>The Evening World</i> <i>New York Tribune</i> <i>The Sun (NY)</i>	New York, NY
<i>Evening Public Ledger</i>	Philadelphia, PA
<i>The Washington Times</i> <i>The Washington Herald</i>	Washington, DC
<i>The Evening Missourian</i>	Columbia, MO
<i>El Paso Herald</i>	El Paso, TX
<i>The Bemidji Daily Pioneer</i>	Bemidji, MN
<i>The Bismarck Tribune</i>	Bismarck, ND
<i>Bisbee Daily Review</i>	Bisbee, AZ
<i>Rogue River Courier</i>	Grants Pass, OR
<i>The Evening Herald</i>	Albuquerque, NM
<i>Tulsa Daily World</i>	Tulsa, OK
<i>The Ogden Standard</i>	Ogden, UT
<i>The Morning Bulletin</i>	Alberta

“All 16 Papers” Output

home street hospital john
influenza death die daughter
ill wife spanish day city attack son oct
funeral morn pneumonia miss

store price spanish patient time people
food air spread attack disease **cold**
prevent flu **influenza** throat
bed grippe epidemic germ

nurse city cross liberty
influenza loan day call
service time war women unit
epidemic committee meet
german district american red

death hour school city board camp
close disease **influenza**
pneumonia spread **report**
epidemic hospital day public
spanish dr **health** total

eleven naval team time college
influenza spanish day
football tin club flu game
play epidemic meet camp
school week call

bed grippe water cold patient air
food attack prevent hour spanish blood tonic
nose throat disease grip germ avoid
influenza

phone sale value size women fur winter
black store epidemic tin stock coat ill little
price iii flu market special

hospital public death report
district disease epidemic
board dr school day department
health time week city help
nurse people influenza

return day son hospital held avenue morn
influenza death home
 school miss street funeral week di
 john city attack service

government time meet peace german
american washington call
influenza army soldier
epidemic month president people flu
unit day **war** camp

1918/10/09 To 1918/10/23

1918/10/24 To 1918/12/19

“Anomalies”

- Reporting Peak
- Intensity of Reporting
- *iii* Character Set
- *Football*
- *Quarantine*

EXTRA

On Account
of the
FLU



Several Hundred Subscribers of The
Bismarck Tribune

have been able to take advantage of the special inducements offered to subscribers who paid up before November 1st, so we have decided to extend the following offer for ten more days.

IF YOU LIVE
IN BISMARCK

You Save
\$1.20
a Year

IF YOU PAY A YEAR'S SUBSCRIPTION IN ADVANCE BEFORE NOVEMBER 14th FOR THE

Bismarck Tribune

YOU GET IT
BY CARRIER

for **\$6. a Year**

BY MAIL IF
PAID NOW

\$4.00 a Year

After Nov. 14th. The Tribune Delivered by Carrier is 10c a Month in the City of Bismarck. **\$7.20 a Year**

By Mail after November 14th Three months \$1.25
Six Months \$2.50
\$5.00 a Year

City subscribers who are in arrears are asked to call at the office and settle before November 14, as all arrearages will be figured at the new rate unless settled by November 14.
All subscriptions payable strictly in advance under ruling of Federal Trade Commission.

The Morning Bulletin (Edmonton)

west german government north south
germany canadian **war** people
avenue street public allies
peace telephone school canada
condition track city

patient death mask doctor province
provincial local sent regulation
department people day **report**
district nurse follow board city help
health

loan size **special** team bond
northern wool **flag campaign**
black total price town phone
captain **district** honor
alberta day **victory**

patient time city help home attack
epidemic sick **miss** committee
nurse day nurse volunteer charge call
school relief week **district**

ship week **death** city
influenza ago street brother home
edmonton held nov **die report**
avenue day morn **funeral** epidemic
hospital

Football

home street hospital john
influenza death **die** daughter
ill wife spanish day city attack son oct
funeral morn pneumonia miss

store price spanish patient time people
food air spread attack disease **cold**
prevent flu **influenza** throat
bed grippe epidemic germ

nurse city cross **liberty**
influenza loan day call
service time **war** women unit
epidemic committee meet
german district american red

death hour school city board camp
close disease **influenza**
pneumonia spread **report**
epidemic hospital day public
spanish dr **health** total

eleven naval **team** time college
influenza spanish day
football tin club **flu** **game**
play **epidemic** meet camp
school week call

GRID GAMES ON "INTERAC" LIST WILL BE PLAYED

Delay Caused by Epidemic Will Not Affect Contests in November

Although rumors to the effect that the intercademic football schedule would have to be canceled because of the shattered condition of the teams have been as plentiful as those of the Kaiser's abdication, they appear to be without foundation. Officials of the league contend that the November games undoubtedly will be played although all the October contests may be called off.

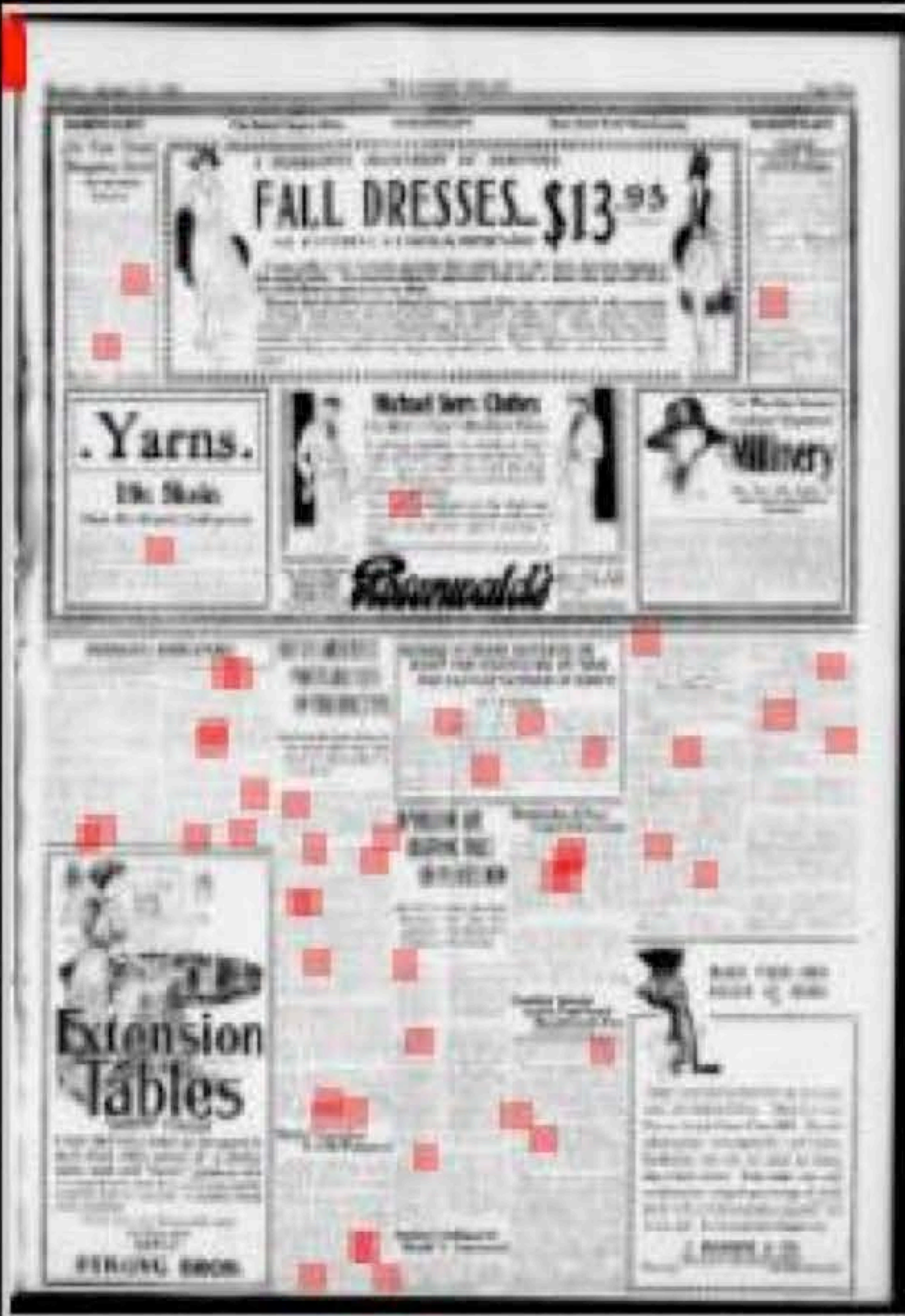
Coach Merritt, of Penn Charter, has canceled the game with Swarthmore Prep scheduled for tomorrow and he also has called off practice for this week.

If the health authorities permit the school to be opened on Monday, practice will be re-started immediately in preparation for the game with St. Lukes, dated for next Friday.

Chestnut Hill, Central High, Germantown Academy, Episcopal Academy, Wodbury High and Chester High all have had their squads practicing daily despite the fact that no games have been played.

Chestnut Hill is taking considerable interest in football affairs and should have a good eleven. It was reported that the Hillers were suffering from the epidemic, but such is not the case. The suburbanites are making preparations for their battle with Episcopal Academy.

iii Character Set



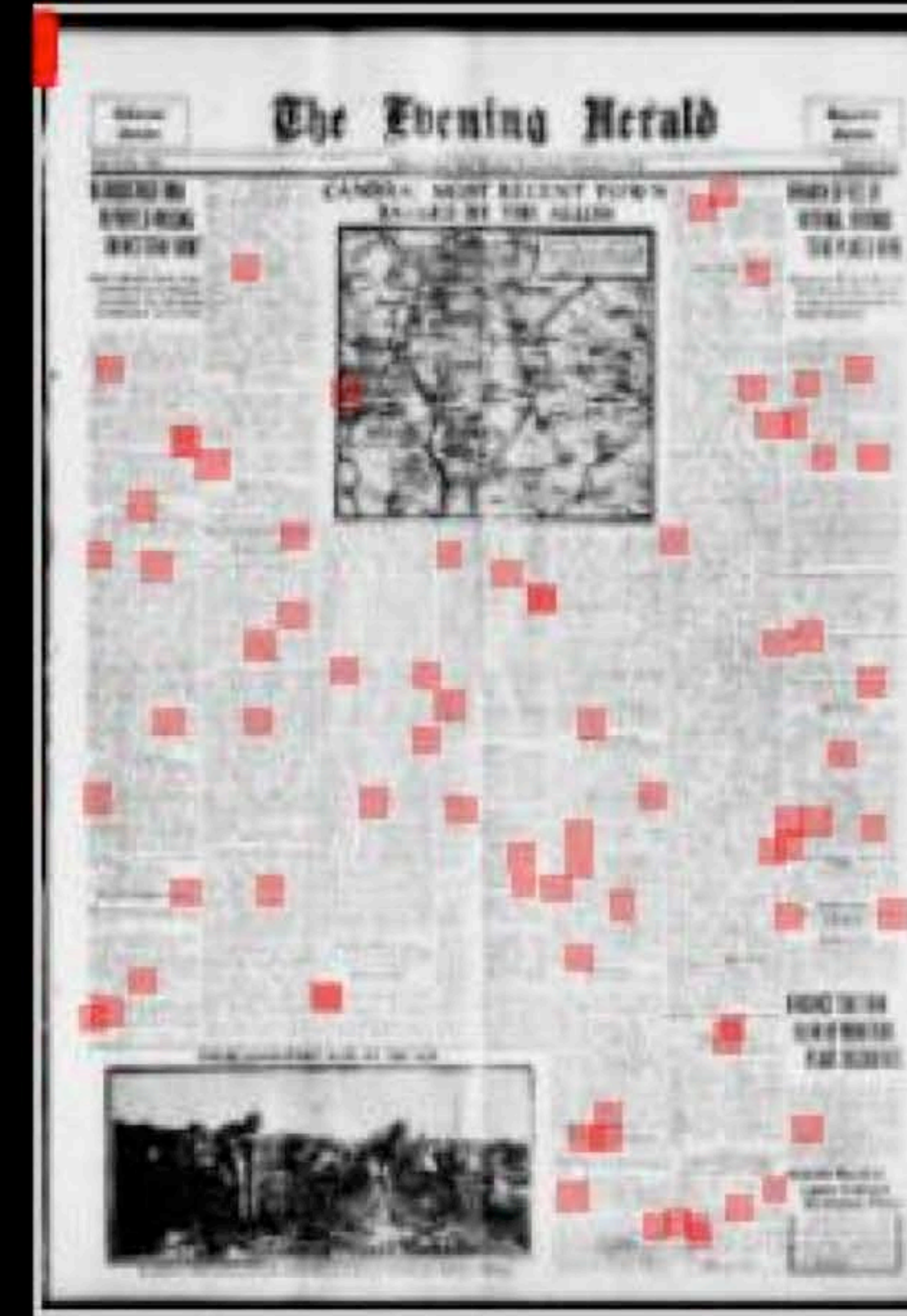
The evening herald. (Albuquerque, N.M.), October 19, 1918, Page
Page three, Image 3



The evening herald. (Albuquerque, N.M.), October 22, 1918, Page
Page five, Image 5



The evening herald. (Albuquerque, N.M.), October 12, 1918, Section
Two, Page Page seven, Image 15



The evening herald. (Albuquerque, N.M.), October 09, 1918, Section
Two, Image 7

Bisbee Smallpox Quarantine

QUARANTINE IN BISBEE IS REPLACED TO CURB DISEASE

County and City Health Authorities Decide That City Should Undergo Part Quarantine to Safeguard Public.

The quarantine is on again.

At a meeting yesterday afternoon, attended by Mayor Erickson and other members of the city health board, Dr. C. A. Hunt, county superintendent of health, Sheriff Harry Wheeler and City Marshal Allison, it was decided to close all theaters, billiard parlors, schools, lodges, card games, dances and churches, as a precautionary measure to prevent the smallpox epidemic spreading. The order does not apply to cigar stores and soft drink parlors but the public is asked to co-operate in every way with the city and coun-

Bisbee Influenza Quarantine

HEAVY INCREASE IN INFLUENZA IN WARREN DISTRICT

Quarantine Will Remain in Force at Least Ten Days and Ban Will Be Lifted With Caution

The quarantine in the Warren district, imposed on account of the epidemic of influenza, will not be lifted today nor tomorrow. At least ten days must pass before it is lifted and the removal of the ban then will be attended by extreme precautionary measures. This was the sense of a meeting held last night in the rooms of the Warren District Commercial club between the directors of the club and the physicians of the district. After hearing what the doctors had to say about the present situation the directors unanimously passed a resolution endorsing the action of the physicians in extending the quarantine.

Quarantine


Size Matters



Vaccination-Visualization Study

- Visualization choices are not neutral.
- 1918 is an important period in the history of vaccination.
- Our study did not originally seek to answer questions about visualization. Instead, these questions came to us late in the process of research, after decisions about data mining algorithms had been made.

For Skilled
Honest Treatment
After Other Doctors
Fail



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DR. S. D. FRANCIS
120 Fells St., St. Joseph, Mo.

Expert in the Treatment of all
Chronic, Nervous, Blood, Skin
and Pelvic Diseases of Men and
Women. I give a \$10 Examina-
tion Free.

"606 and 914"
Administered Intravenously for
Blood Disorders

CHRONIC DISEASES—I treat
successfully Catarrh, Asthma,
Bronchitis, Consumption, Can-
cer, Growths, Tumors, Enlarged
Glands, Pimples, Eruptions, St.
Vitus' Dance, Palsy, Dyspepsia,
Lumbago, Sciatica, Neuritis,
Paralysis, Deafness, Goitre,
Rheumatism, Dropsy, Gall
Stones, Varicocele, Stricture,
Hydrocele, Rupture, Prostate
Gland, Bladder and Kidney
Troubles, Female Weakness,
Piles, Flatula and Rectal Af-
fections.

I employ in my practice all
the latest Serums, Vaccines,
Antitoxins, Bacterins, Intraven-
ous Specific Remedies and the
latest and best appliances for
the speedy cure of stubborn
diseases.

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pay for results only. No false
hopes or promises, but perman-
ent, lasting cures.
Consultation and Examination
Free. All Dealings Confidential.

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days: 10 to 1. Phone Main 2567.

Come join the crowd of grateful
patients who are flocking to my
treatment rooms daily. Invest
for Good Health.

Rationalist vs. Social Constructionist View

- A rationalist approach suggests that the goal is to represent data credibly and accurately—the ideal is achievable with the right format.
- The social constructionist approach, on the other hand, suggests that the right format is negotiated in relation to the needs of both producer and user, emphasizing design conventions and their naturalization.



The *Serum* Question

- A serum is created by separating blood into its solid and liquid components so that antibodies to microbes can be utilized for their immunizing properties.
- *Serums* are injected into people who are already sick in the hope that antibodies from other people who have been sick and recovered will be helpful.
- However, *serum* at the time was sometimes used as a synonym for *vaccine*, although not all the time as we discovered.

WILL TRY BLOOD SERUM

Illinois Doctors Will Employ Influenza Remedy Used Here.

The state influenza commission of Illinois has decided to try the blood serum which has been employed by University of Missouri physicians in combatting influenza.

The commission is faced with a difficult problem to obtain the curative in sufficient quantities, as it was stated that eight ounces of blood must be taken from a patient who has survived the malady to produce three ounces of the serum.

The commission received first hand reports of experiments with the serum from Dr. Herman N. Bundesen of the Chicago Health Department, who returned recently from an Eastern trip. The commission laid emphasis on the fact that the serum cannot be obtained for use in the thousands of cases of influenza in the state, and that it should not be confused with the vaccine now in use. The vaccine is a preventive and the serum is used as a curative only in desperate cases. The commission expect to rely on the vaccine from the Mayo Foundation for general vaccination.

The Serum Question continued.

- In excluding the texts chunks that included *serum*, we lost some reporting on the influenza vaccine, significantly reporting on the Rosenow vaccine from the Mayo Clinic, which was used in Chicago and widely reported on.
- The following slide shows an article and the word cluster associated with this reporting on Rosenow's vaccine and the city of Chicago.

COMMUNICATION FROM STATE BOARD OF HEALTH.

Paris, Ky., Jan. 14, 1919.

Believing that a former order of the City Board of Health strongly urging the importance of inoculation with the Rosenow-Mayo serum as the safest known method for protection against influenza and pneumonia, has in a large measure been disregarded, the percentage of inoculated children in the various rooms of the City School being about six, and in further view of the fact that the Board finds many cases, though mild, which might have been prevented, respectfully calls attention to the following communication:

Bowling Green, Ky., Jan. 9, 1919.

**THE STATE BOARD OF HEALTH.
THE ROSENOW—MAYO VACCINE**

Dr. A. H. Keller, City Health Officer,
Paris, Ky.

As requested, I am sending you the Rosenow-Mayo Vaccine for preventive inoculation against influenza, and especially against the types of pneumonia which have caused most of the deaths during this epidemic. Dr. Rosenow says "This vaccine is prepared from pneumococci of the various types and allied green-producing streptococci, from hemolytic streptococci, staphylococci and influenza bacilli, as isolated from the sputa and lungs of cases during the present epidemic of influenza and pneumonia."

Dr. Rosenow advises that individuals be given three inoculations, one week apart, in order to get the highest and most enduring immunity. There is usually no reaction from the inoculation except in persons about to come down with influenza, and even then the disease seems to run a shorter and milder course and complicating pneumonia seldom occurs.

Table 5: Word Frequency List for “No Black Leg/No Cholera” Extraction
9/28/1918-11/23/1918

CHICAGO WILL USE NEW ‘FLU’ VACCINE

CHICAGO, Oct. 17.—Vaccine originated by Dr. H. C. Rosenow, of the Mayo clinic, Rochester, Minn., will be used in Chicago's campaign against Spanish influenza.

Dr. Rosenow told the Chicago influenza emergency commission of his experiments with the vaccine, with which he has treated 20,000 persons. The commission at once named a committee of physicians to take charge of the manufacture and use of all vaccines and serum in Chicago, including the Rosenow vaccine. Another committee was named to raise funds for its manufacture and distribution.

Five days will be required to begin the manufacture of the vaccine here, it was stated. Meantime Dr. Rosenow will provide a supply sufficient for 100,000 doses from his laboratory at Rochester.

The vaccine is designed to provide immunity from the disease, though Dr. Rosenow is unwilling to make specific claims as to its value. He believes it aided greatly to suppress the spread of influenza at Rochester.

Topic: 2	Topic: 3	Topic: 4	Topic: 5
vaccine	serum	vaccine	vaccine
influenza	army	influenza	serum
serum	pneumonia	city	county
health	vaccine	disease	influenza
dr	war	patient	health
report	camp	inoculation	dr
physician	public	treatment	grippe
pneumonia	day	serum	germ
mayo	epidemic	spanish	people
department	health	health	bureau
chicago	medical	germ	call
death	person	specific	disease
receive	officer	dr	cent
supply	influenza	preventive	confidence
commission	surgeon	effect	successfully
announce	service	lake	furnish
prevent	treatment	free	successful
city	result	mis	price
spanish	follow	injection	time
epidemic	test	measure	contract

Tag Clouds

safe medicine **blood** business
disease kidney administer
ulcer heart wait vaccine low
skin bacteria life **eruption** rum
cure nervous private

word little letter disease receive
treatment **typhoid** homo
son moro vaccination week
vaccine danger examination
physician **vaccinate** army heart
past

vaccinate physician kidney past
eruption **word** army soldier
examination **business**
son letter medicine
receive little treatment life
week wait disease

private rum ulcer anti
bacteria life safe eruption
vaccine kidney cos skin
charge ladle disease
medicine wait
administer nervous cure

vaccinate letter examination typhoid
danger moro medicine **army**
word receive heart treatment past
business homo **soldier** disease
vaccination week physician

food son train american sale
county month shot inoculate
street people aug notice germ week
term arm **price** time family

inoculation plant alfalfa
crop form successfully sweet
bean **vaccinate** county land
field **soil** cattle usually br
disease stock machine
prepare

vaccine eruption serum
medicine safe wait fur disease
cure **ulcer** administer ladle
rum low charge blood **private**
life trouble bacteria

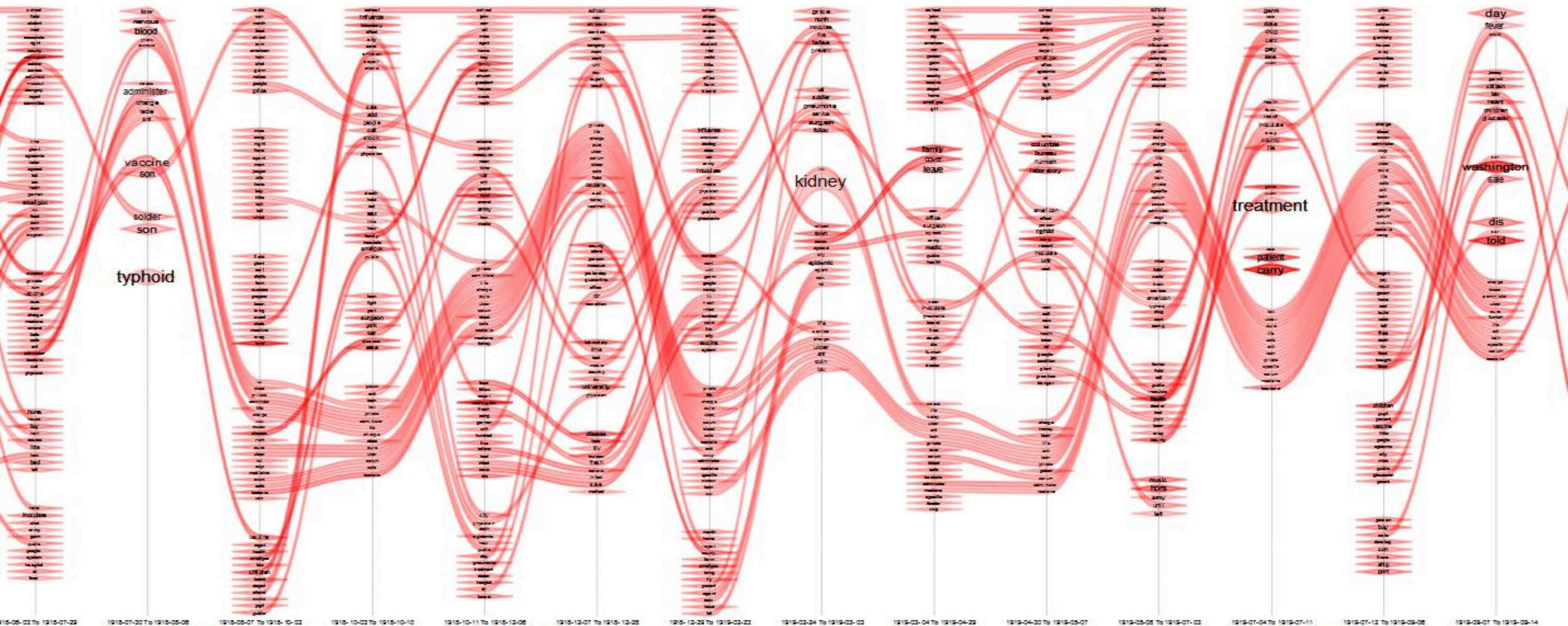
visit afternoon france little time
miss **spent** boy wife week
jasper **day** tell night morn
letter camp home wheat family

public pupil smallpox board
school admission vaccinate
vaccination report law health age
county children certificate attend
department district time enter

1918/07/30 To 1918/08/06

1918/08/07 To 1918/10/02

ThemeDelta



ThemeDelta with Interactive Element

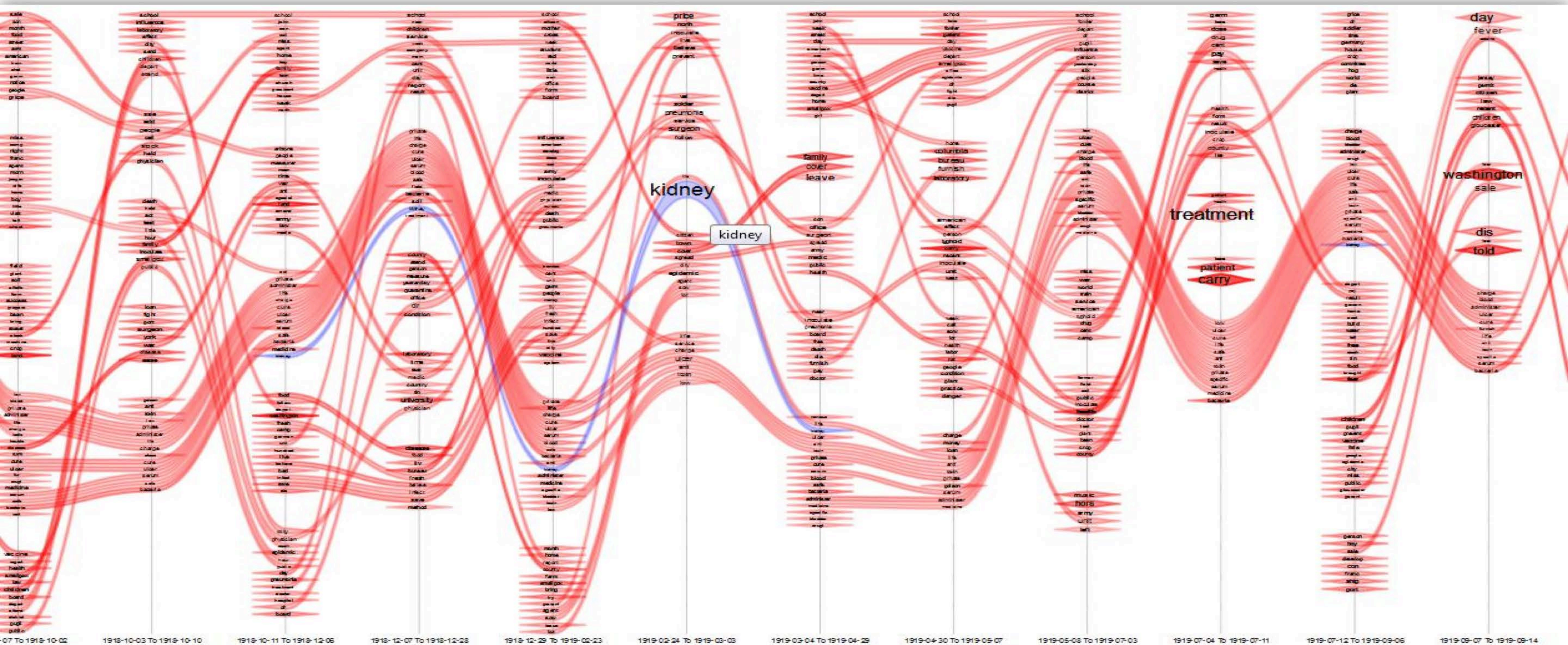


TABLE 6. Word Frequency Lists: 1/10/1918 – 3/7/1918 Segment

Topic: 1	Topic: 2	Topic: 3	Topic: 4	Topic: 5
call	school	spent	street	typhoid
german	county	day	camp	vaccination
club	vaccinate	week	war	smallpox
inoculate	board	home	time	physician
cent	farm	miss	day	disease
hay	day	youngstown	committee	vaccine
jesu	red	visit	arm	vaccinate
free	health	john	ohio	health
people	color	night	special	fever
inoculation	cent	daughter	week	house
government	week	family	lie	result
kidney	smallpox	son	son	danger
propaganda	price	feb	school	city
poison	city	north	doctor	ease
life	children	guest	little	army
country	bank	church	vaccinate	american
world	jasper	call	company	dis
john	lost	parent	town	medical
house	public	school	home	tell
record	ship	entertain	receive	bad

**“An Epidemiology of Information:
New Methods for Interpreting Disease and Data”
A Digging into Data Research Symposium—October 17, 2013**

Virginia Tech Research Center – Arlington

Broadcast to Virginia Bioinformatics Institute, Blacksburg Campus, Room 120

8:30 a.m. – 8:45 a.m. Welcome

8:45 a.m. – 10:15 a.m. Presentation: The Epidemiology of Information: Alternative Analytics for Public Health—Focus on Historical Interpretation

10:30 a.m. – 11:45 a.m. Presentation: The Epidemiology of Information: New Methods, New Challenges, New Opportunities—Focus on Methods and Rhetoric

1:00 p.m. **Keynote: Hunting the 1918 Influenza Virus: Then and Now and Tomorrow – David Morens, NIAID, and Jeffrey Taubenberger, NIAID**

2:30 p.m. – 3:45 p.m. Panel: Implications: Considering the Spanish Flu, Data Mining, and the Transforming World of Epidemic Disease and Documentary Traces

4:00 p.m. – 5:00 p.m. Panel: How Big Data Can Change Public Health—Alternative Forms of Public Information: Social Media for “Epidemic Intelligence”