

# Project Tycho

*Preliminary data for the state of Iowa*

## Tycho database beta test version

*The data presented in this report are of preliminary nature and should not be used for publication or other types of official use*

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University of Pittsburgh Graduate School of Public Health



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## Table of Content

<b>Acknowledgements</b>	<b>page 3</b>
<b>Contact information</b>	<b>page 4</b>
<b>Introduction</b>	<b>page 5</b>
<b>Vision and goal</b>	<b>page 7</b>
<b>Collaboration</b>	<b>page 8</b>
<b>Summary of methods</b>	<b>page 9</b>
<b>Overview of data available for the state of Iowa</b>	<b>page 12</b>
<b>Disease specific data for Iowa</b>	<b>page 19</b>
- AIDS	page 19
- Brucellosis	page 20
- Chickenpox	page 21
- Chlamydia	page 23
- Cryptosporidiosis	page 24
- Diphtheria	page 25
- Escherichia Coli	page 28
- Giardiasis	page 29
- Gonorrhea	page 30
- Haemophilus Influenzae	page 31
- Hepatitis	page 32
- Legionellosis	page 34
- Listeriosis	page 35
- Lyme disease	page 36
- Measles	page 37
- Meningitis	page 39
- Meningococcal disease	page 40
- Mumps	page 42
- Pneumonia	page 44
- Poliomyelitis	page 45
- Rabies in animals	page 46
- Rubella	page 47
- Salmonellosis	page 48
- Scarlet fever	page 49
- Shigellosis	page 52
- Streptococcal sore throat	page 53
- Syphilis	page 54
- Toxic Shock Syndrome	page 55

## Disease specific data for Iowa, continued

- Tuberculosis	page 56
- Typhoid fever	page 57
- Typhus fever	page 59
- Whooping cough	page 60

Diseases with fragmented data	page 62
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## Contact information

The Tycho database is currently being tested and a login account will be required to use the database and website ([www.tycho.pitt.edu](http://www.tycho.pitt.edu)). All State Epidemiologists, CDC partners, other federal agencies and our research collaborators will be provided with user accounts. User accounts can also be provided upon specific request. Note that the quality of the data during the testing phase cannot be guaranteed to be sufficient for publication or official use.

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## Introduction

**Project Tycho** started in 2009 as part of the Vaccine Modeling Initiative (VMI) at the University of Pittsburgh Graduate School of Public Health, funded by the Bill & Melinda Gates foundation. This project aims to contribute to the availability of public health data for research and policy making. The vision for this project as described in the next section is a central access point for public health data of a detailed spatial and temporal scale for all countries. Currently, the Tycho database contains 10 million records that each represent a weekly report from a location for a specific disease. These records were extracted from weekly US Nationally Notifiable Disease Surveillance Reports between 1888 and 2009 (6300 reports) using double data entry (200 million keystrokes). The current database includes a total of 90 million reported cases and 4 million reported deaths due to notifiable diseases in the United States for the last 122 years.

Project **Tycho** is named after the Danish nobleman Tycho Brahe (1546 – 1601), who meticulously collected astronomical data. After Brahe's death, his assistant Kepler used these data to develop area laws of planetary motion.

## Background

***"No health department, State or local, can effectively prevent or control diseases without knowledge of when, where and under what conditions cases are occurring"***

(Quote stated above weekly surveillance reports published in the Public Health Reports, 1888-1951)

This quote has accompanied weekly reports on the prevalence of notifiable diseases in the United States as long as these were published in the Public Health Reports, emphasizing the importance of data for disease control policy making. In the current day and age, this statement has lost none of its significance. On the contrary, as infectious diseases continue to pose challenges to the global public health system in an increasingly interconnected global society. The public health system has responded to this challenge by evermore sophisticated disease surveillance systems. The availability of internet and information technology has facilitated collection of detailed data on infectious disease incidence, the spread of pathogens, disease determinants, health behavior, etc. New technologies such as remote sensing and mobile reporting systems have advanced measurement of these factors in both high and low resource settings. The enormous wealth of public health information that is currently being accrued also poses its own challenges for data storage, management, preservation and dissemination. Public health agencies will need to allocate resources and develop capacity to specifically address these issues.

Although the importance of public health data collection has been widely recognized, the dissemination of data has been neglected for many reasons. The above quote does not only imply data collection but also its use and dissemination as knowledge on disease occurrence can only be derived from data after processing and analysis. Not only has disease surveillance become more sophisticated, analytical tools have changed as well and now include computational models to assess disease transmission and to evaluate disease control options. These methods have introduced the opportunity for data intensive studies of fine spatial-temporal patterns using dynamic models. Disease surveillance data at such scale are often not available for analysis for multiple reasons. First, surveillance data are not collected for research purposes but for disease monitoring and planning. Secondly, public health staff often lack time or capacity to prepare these data for analysis. Third, surveillance methodology often lacks transparency and standardization, reducing options for scientific analyses. Fourth, disease surveillance data are often

kept confidential and ownership or data use requirements are often unclear. Finally, archiving and preservation of surveillance data are often not a priority and disaggregated records may get lost, losing the opportunity to ever use these data for analysis.

The Tycho project aims at overcoming some of these challenges by providing open access to large public health datasets of great spatial-temporal detail. Open access to these data will provide great opportunities for scientific analysis and better informed policy making on disease control.

## **The Tycho database and website**

As described in the methods section, a large heterogeneity in reporting practice was observed over the past 122 years of weekly disease surveillance and substantial efforts were made to clean and standardize these data. The current online database includes all cleaned and standardized data in a format that allows comparisons across time and space. It does not include parts of the data that require additional cleaning and research such as classification of disease subcategories.

Each record in the database provides a reported number of cases or deaths due to a specific disease for a specific location, for a certain week. The database can be searched online ([www.tycho.pitt.edu](http://www.tycho.pitt.edu)) by selecting a dataset, an aggregation method and an output format. Data can be viewed in tables, graphics and maps and these can be downloaded for further use.

## **Data availability**

The data provided by the Tycho database reflect the weekly US Nationally Notifiable Disease Surveillance System between 1888 and 2009. It includes all diseases that were reported as part of this system, but it does not yet include records from other surveillance systems such as the annual system or disease specific subsystem (such as the influenza surveillance system).

The available data also reflects changes in reporting practices over time. This explains why city or state level reports are only available for a certain time period (1888-1953 for cities and 1927-2009 for states) and why morbidity and mortality reports are available for different time periods. We are currently working on inclusion of additional data as described in the section on collaboration.

## **Testing and release of the Tycho database**

The Tycho database is currently in a beta testing phase that will start during the 2011 annual meeting of the Council of State and Territorial Epidemiologists (CSTE) in Pittsburgh June 12-16. This phase will end with a release to the general public in the fall of 2011. During the testing phase, invited users will be provided with login accounts that will enable full use of all features of the website and database. Invited users will include all state epidemiologists, partners in the CDC and other federal agencies as well as research collaborators. During this phase, data cleaning and standardization will continue. The quality of the data will not be sufficient for publication or official use during this phase.

## **Future developments**

After optimization of the database and website during the testing phase, the first version of the Tycho database will be released to the general public. After that, efforts to clean and standardize the data will continue and more data will be released in subsequent versions. In addition, ongoing and new collaborations for inclusion of new data will allow gradual expansion of the dataset over time and increased opportunities for data driven analysis and policy making.

## Vision and goal

The vision for project Tycho is based on the value of open access to detailed, disaggregated public health data for scientific analysis and policy making. Starting with 122 years of weekly US surveillance data, it is our hope that this example will convince public health authorities worldwide of the value of this resource and will stimulate similar contributions from other countries.

In the past, data sharing and archiving have not been a priority in public health or among health sciences in general. Continuous and diligent public health data collection has led to a large pool of disaggregated data scattered over the world including the internet, ranging from paper archives to basements of local health departments. The need for open access to a central repository of public health data has been recognized and both benefits and challenges of open access to data in general have been well described. Open access to data could lead to increased accountability, transparency, innovation, collaboration, cost-effectiveness, replication of results, the development of new methods and insights, and a narrower data access gap between low- and higher income countries. Ultimately, this would result in the advancement of science and technology to the benefit of all.

Challenges to open access include inconsistent formats, lack of annotation or metadata, lack of information technology (IT) capacity, a lack of incentive, and cultural norms around data ownership. Open access to public health data in particular is confronted by decentralized archiving of disease reports, lack of time and capacity for data management, degraded physical format of records and archives, and governmental level legal constraints. Multiple principles and requirements for a central open access repository for public health data have been described and include (1) capacity building for data management in low- and middle income countries, (2) feedback loops to data contributors, (3) sustainability, (4) common standards, (5) interoperability, and (6) user-friendliness.

The ultimate goal of the Tycho project is to provide a central global public health data access point. Historical as well as current public health data are of great value if archived and accessible for research and analysis. Open access will enable the use of analytical capacity from around the globe which will lead to new discoveries of disease patterns and control policies. Furthermore, a central data access point will facilitate data archiving and preservation into the future which will be an increasing need in a data rich public health environment.

## Collaboration

The application of the surveillance data from the Tycho database as well as the inclusion of new data will require a wide range of collaborations with public health offices in the US and abroad. The Tycho project has currently made the first step of digitizing 122 years of weekly US surveillance reports that had already been published. The next step will be the completion of the existing dataset as well as the inclusion of new data from unpublished sources.

This report provides an overview of data available from the Tycho database for the state of Iowa. This includes all data that has ever been published at state or city level for Iowa in the weekly US Nationally Notifiable Disease Surveillance System. As you will find, the data availability will vary greatly over time, between city and state level reports, between diseases and between morbidity vs. mortality reports.

The Tycho development team would look forward to work with state health departments in the US to:

1. Better understand the current Tycho data for each state (eg. by collecting historic documentation)
2. Provide better usability and applications of current Tycho data for each state by continued joint development of website and database features.
3. Collect and/or digitize official, confirmed data to validate the current (preliminary) weekly data.
4. For each state, collect and/or digitize new data that has not yet been included. For example all city level reports discontinued in 1953 and completion of city level data until 2009 would greatly increase opportunities for analysis of disease patterns and trends.
5. Provide support to state health offices to manage, preserve and provide access to public health data.



## Summary of methods

Detailed documentation on the methods used for the Tycho database has been provided on the website ([www.tycho.pitt.edu](http://www.tycho.pitt.edu)). This section describes these methods in short.

### Data collection

Weekly reports that contain tables on the occurrence of nationally notifiable diseases have been published since 1888 by public health authorities at the Federal level in various journals. Table 1 provides the list of publications and the responsible agency since 1888. All weekly nationally notifiable disease reports between 1888 and 1951 could be retrieved from the PubMed Central repository of the National Library of Medicine <sup>1</sup>. For 1995 to 2009, these reports could be retrieved from the MMWR digital archive on the CDC website <sup>2</sup>. Most weekly reports between 1952 and 1995 could be retrieved from the HathiTrust Digital Library <sup>3 4</sup>, but many could not be found and had to be copied from hard copies of MMWR issues in the University of Pittsburgh library.

Table 1, publications and responsible Federal agencies for nationally notifiable disease reports

Time period	Publication title	Responsible federal agency
1888-1889	Weekly Abstract of Sanitary Reports	US Marine Hospital Service
1890-1895	Abstract of Sanitary Reports	US Marine Hospital Service
1896-1901	Public Health Reports	US Marine Hospital Service
1902-1911	Public Health Reports	US Public Health and Marine Hospital Service
1912-1951	Public Health Reports	US Public Health Service
1952-1960	Morbidity and Mortality Weekly Report	National Office of Vital Statistics, US Public Health Service
1961-1969	Morbidity and Mortality Weekly Report	Communicable Disease Center
1970-1991	Morbidity and Mortality Weekly Report	Center for Disease Control
1992-2009	Morbidity and Mortality Weekly Report	Centers for Disease Control and Prevention

### Inclusion criteria

Weekly reports of each year were reviewed systematically to assess the diseases reported. We included all tables that provided disease specific information by week for US cities, townships, counties or states. Tables that provided summary or aggregated information by month, year or at the national level were not included. Similarly, tables that did not contain disease specific information (such as all cause mortality) were not included.

### Data entry

Weekly reports were downloaded or scanned as PDF files and selected tables with notifiable disease reports were entered into computer spreadsheets in a highly standardized fashion using double data entry. During the second round of data entry, operators could not see what had been entered in the first round and could not continue if the system detected a discrepancy between the second and first entry

<sup>1</sup> <http://www.pubmedcentral.nih.gov/tocrender.fcgi?journal=333&action=archive>

<sup>2</sup> <http://www.cdc.gov/mmwr>

<sup>3</sup> <http://catalog.hathitrust.org/Record/003910026>

<sup>4</sup> <http://catalog.hathitrust.org/Record/003843660>

for a specific value. Such discrepancies could only be resolved by checking the PDF file and try again or discussion with the group leader and verification of a value in the source documents.

## **Quality control for data entry**

The accuracy of data entry was checked at various levels. First, completeness of data was verified by comparing the content of entered data with PDF sources files. Secondly, accuracy of data entry was verified by multiple rounds of comparing random samples of entered files with PDF source files. Thirdly, data formatting was verified by various checks to ensure appropriate formatting for data loading.

## **Data loading and standardization**

All data was entered in Excel spreadsheets and various components of these spreadsheets were loaded in data files. Table titles, column headers, place names and reported numbers were loaded in separate files. These files were used to extract information on each reported number, including:

1. the disease reported
2. the disease subcategory reported
3. cases or deaths reported
4. the reporting location (name, state and type of location)
5. the time period for which a number was reported
6. the date of publication of the original weekly report associated with a reported number

## **Integration**

All reported numbers and extracted information was integrated in one database with one record per reported number and associated information.

## **Post-processing quality control**

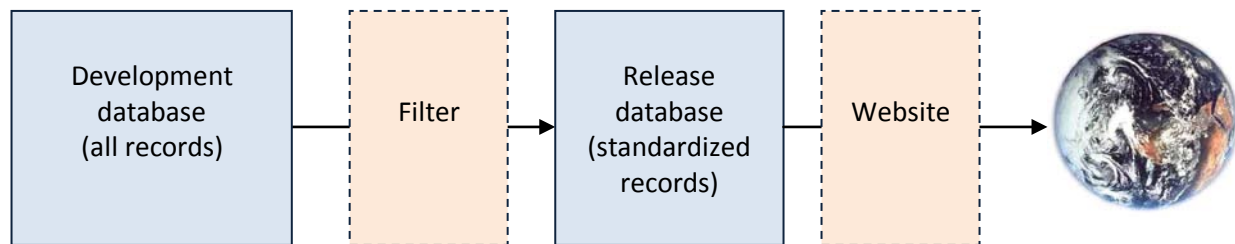
After integration of all data in one database, checks were performed to detect duplicate reports and data inconsistencies. Duplicate records were removed and inconsistencies resolved by verification with original PDF source files.

## **Data filtering**

The digitized version of all historical weekly US nationally notifiable disease surveillance records is a very heterogeneous dataset. It took a substantial number of data processing protocols to standardize time and space variables as well as disease names. All standardized records have been separated from non-standard records by a filter. All remaining heterogeneity in non-standard records is inherent to the surveillance system and can only be standardized after further analysis will have been completed (eg. remaining heterogeneity in reporting periods for reports before 1953 and standardization of disease subcategories). The largest proportion of data (>4 million records) has been standardized however and has been made available in the current testing version.

## **Data visualization**

Figures in this reports were made with the R system, version 2.9.2 and the maps were generated by the GAIA platform developed at the University of Pittsburgh Graduate School of Public Health in collaboration with the Pittsburgh Supercomputing Center (PSC). See <http://midas-pitt.psc.edu/gaia> for more information.



**Figure 1, Schematic of the Tycho data architecture.** Access to a consistent, standardized subset of the digitized US weekly surveillance reports will be provided for beta testing through a website that will allow querying and downloading of data. Data from the development database will be pushed through a filter to feed the Tycho database.

The current Tycho database will provide the reported number of cases or deaths reported by city or state health authorities to the federal health agency for all weeks between 1888 and 2009. Currently, only standardized, consistent data are being released for testing, according to the following criteria:

1. Only weekly reports are provided (reports for other periods such as 10 days, 2 weeks, 1 month, 1 year) are currently not included due to lack of comparability with the weekly reports.
2. Only reports that were published in the same year as the reporting period were included (this excludes updates or comparisons that were published more than a year after the original reporting period)
3. Only numbers were included for which information about the location, time period and disease could be extracted.
4. Only numbers or time periods for which no disease subcategories were reported were included.

Each of the steps described above have been described in detailed protocols that are posted in the documentation part of the Tycho website ([www.tycho.pitt.edu](http://www.tycho.pitt.edu)).

## Website

The Tycho website features simple and advanced searches of the data, visualizations and downloading of machine readable files. A dataset can be selected by specifying: 1) the disease of interest, 2) the location(s) of interest and 3) the time period. In a second step, the type of aggregation and length of increments can be specified and in a third step, the type of output (table, graphic or map) can be selected. After output has been generated, data can be downloaded.

As mentioned above, data availability varies largely by disease, time period and location. We aimed to restrict selection options by data availability to avoid "no results available."

Access to the most of the website will be password protected during the testing phase. For invited users after login, full functionality of the database and website will be available. During this phase however, the data quality will not be sufficient for publication or official use.

## Overview of data available for the state of Iowa

In this section, an overview of data available for the state of Iowa will be provided. As described earlier, data availability depends entirely on historical reporting practices in the weekly US Nationally Notifiable Disease Surveillance System between 1888 and 2009. For this report, we only included morbidity reports (cases) to improve the format and limit the size of this report. As mentioned earlier, the analysis and standardization of has not been completed yet for all records in the database and preliminary data are provided here that may not yet be available in the online database.

This section will provide a general overview of data availability. The next sections will provide disease specific data from state and city level reports of Iowa. Data for a maximum of 3 major cities were provided depending on availability (city data was only reported until 1953). Some summary data will be provided at the end of this report, for a subset of diseases for which data was fragmented over time.

Table 1 lists the number of weekly state or city reports that are available for Iowa per each disease and subcategory.

**Table 1, Number of weekly state or city reports per disease and subcategory**

<b>Disease</b>	<b>City</b>	<b>State</b>
Aids	-	945
Anthrax	-	143
Brucellosis [undulant fever]	1	1058
Chickenpox [varicella]	455	478
Chlamydia	-	646
Cryptosporidiosis	-	495
Diphtheria	1439	1570
Dysentery		
<i>Amebic</i>	-	232
<i>Bacillary</i>	-	201
<i>Unspecified</i>	-	196
Encephalitis		
<i>Lethargic</i>	157	-
<i>Post infectious</i>	-	213
<i>Primary [infectious] including unspecified</i>	3	980
Escherichia coli		
<i>EHEC 0157</i>	-	178
<i>O157:H7 NETSS</i>	-	273
<i>O157:H7 PHLIS</i>	-	242
<i>STEC</i>	-	177
Giardiasis	-	383
Gonorrhea		
<i>Civilian</i>	-	756
<i>Unspecified</i>	-	1017

**Table 1.** Number of weekly state or city reports per disease and subcategory, *continued*

<b>Disease</b>	<b>City</b>	<b>State</b>
Haemophilus influenzae		
<i>Age &lt;5 serotype B</i>	-	43
<i>All ages all serotypes</i>	-	392
Hepatitis		
<i>Acute type A</i>	-	359
<i>Acute type B</i>	-	356
<i>Acute type C</i>	-	20
<i>Acute type NA NB [including C]</i>	-	40
<i>All types, &lt;20 years</i>	-	190
<i>All types, ≥20 years</i>	-	94
<i>All types, all ages</i>	60	713
<i>Type A [infectious]</i>	1	1531
<i>Type B [serum]</i>	1	1205
<i>Type NA NB [including C]</i>	-	619
<i>Type unspecified</i>	1	484
Influenza	292	426
Legionellosis	-	938
Leprosy	-	179
Listeriosis	-	151
Lyme disease	-	785
Malaria		
<i>Civilian</i>	-	4
<i>Unspecified</i>	1	1484
Measles		
<i>Imported</i>	-	169
<i>Indigenous</i>	-	218
<i>Unspecified</i>	1364	2633
Meningitis		
<i>Aseptic</i>	1	820
<i>Meningococcus</i>	324	1191
<i>Unspecified</i>	104	5
Meningococcal disease		
<i>All serogroups</i>	-	46
<i>Invasive all serogroups</i>	-	177
<i>Invasive serogroup unknown</i>	-	35
<i>Serogroup A C Y and W-135</i>	-	2
<i>Serogroup B</i>	-	39
<i>Serogroup unspecified</i>	11	2085
Mumps	454	1621
Pellagra	157	-

**Table 1.** Number of weekly state or city reports per disease and subcategory, *continued*

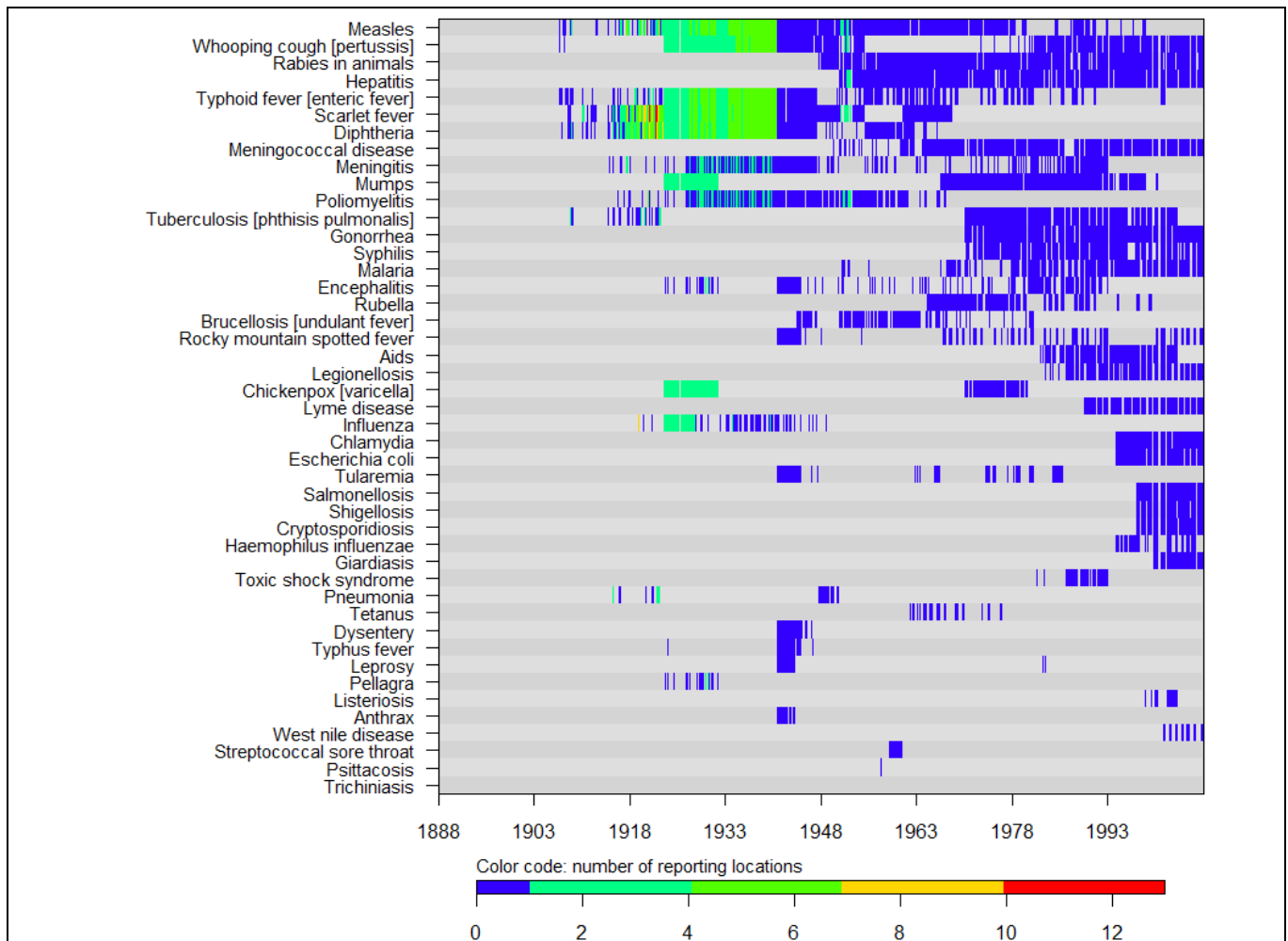
<b>Disease</b>	<b>City</b>	<b>State</b>
Pneumonia		
<i>Lobar</i>	4	-
<i>Unspecified</i>	153	109
Poliomyelitis		
<i>Non paralytic</i>	-	182
<i>Paralytic</i>	-	325
<i>Total</i>	466	1731
Psittacosis	-	15
Rabies in animals	3	2890
Rocky mountain spotted fever	-	979
Rubella	-	1077
Salmonellosis		
<i>NETSS</i>	-	125
<i>PHLIS</i>	-	123
<i>Unspecified</i>	-	380
Scarlet fever		
<i>Including streptococcal sore throat</i>	64	548
<i>Unspecified</i>	1457	1267
Shigellosis		
<i>NETSS</i>	-	125
<i>PHLIS</i>	-	118
<i>Unspecified</i>	-	374
Streptococcal sore throat	-	102
Syphilis		
<i>Civilian primary and secondary</i>	-	712
<i>Primary and secondary</i>	-	881
Tetanus	-	241
Toxic shock syndrome	-	361
Trichiniasis	-	6
Tuberculosis [phthisis pulmonalis]		
<i>New active</i>	-	144
<i>Unspecified</i>	243	1400
Tularemia	-	567
Typhoid fever [enteric fever]		
<i>Including paratyphoid fever</i>	-	576
<i>Unspecified</i>	1178	1544
Typhus fever		
<i>Endemic</i>	-	21
<i>Unspecified</i>	7	176

**Table 1,** Number of weekly state or city reports per disease and subcategory, *continued*

<b>Disease</b>	<b>City</b>	<b>State</b>
West nile disease		
<i>Neuroinvasive</i>	-	108
<i>Non-neuroinvasive</i>	-	106
Whooping cough [pertussis]	987	2158

The diseases included in the weekly US Nationally Notifiable Disease Surveillance System varied largely over time and reflected the historical social-political priorities of each time period. Note that the diseases in the weekly system were a subset of all diseases included in the annual Notifiable Disease Surveillance System (that was not entered as part of this project).

The number of locations reporting diseases also varied over time depending on the type of reports submitted. Figure 1 on the next page provides an overview of the number of unique locations reporting each disease per week between 1888 and 2009. For the remainder of this report, the state of Iowa was considered a unique reporting location in addition to the individual city reports. Figure 1 indicates that many locations (mostly cities) were included in the reporting system before 1925, after which the number of cities dropped substantially. After 1953, only state reports were included and city reports were discontinued. These patterns were observed nationwide.

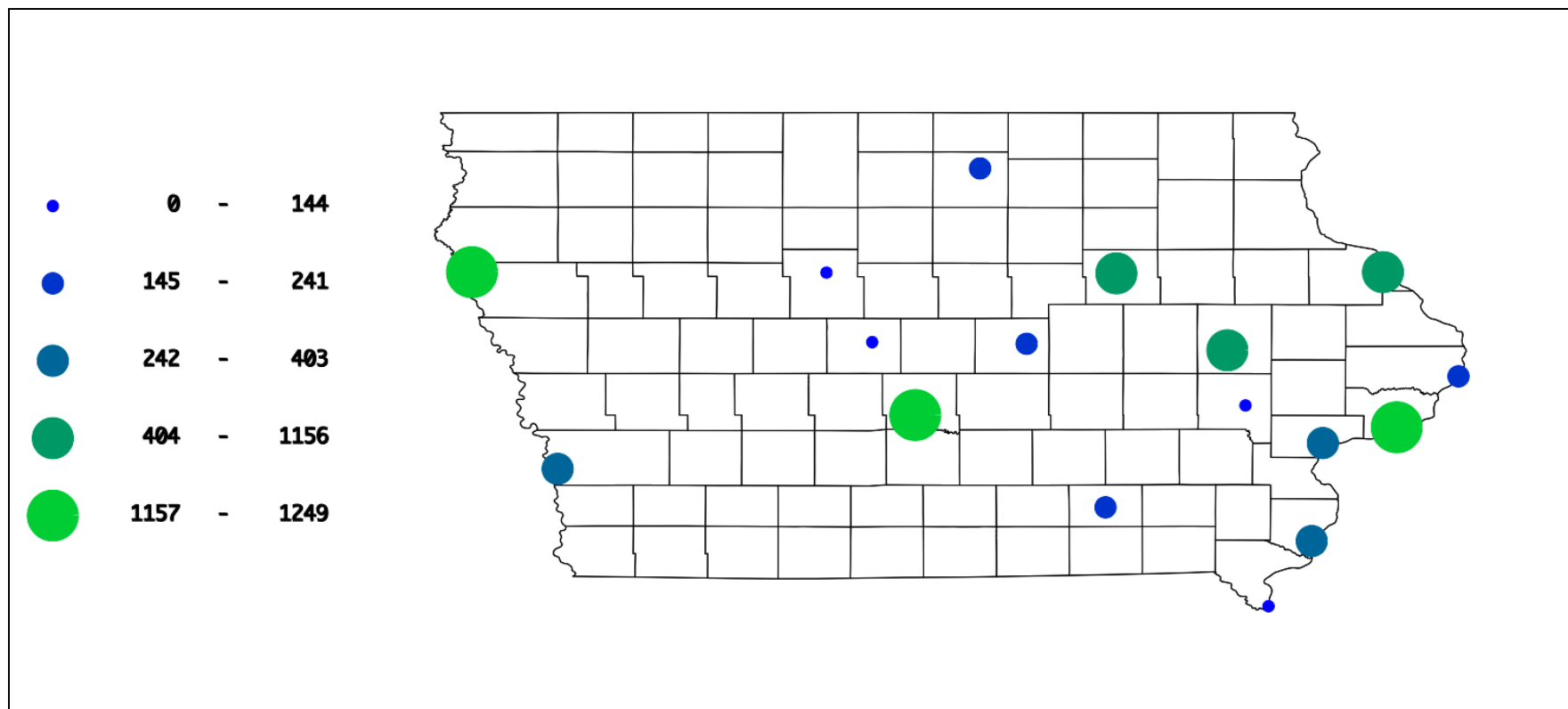


**Figure 1,** The number of locations (in color code) reporting on each disease per week between 1888 and 2009

For the majority of the time period between 1888 and 2009, only state level reports were available. It would be of great interest to complete the collection of city data after 1953 and we will seek collaboration with state health offices for this.

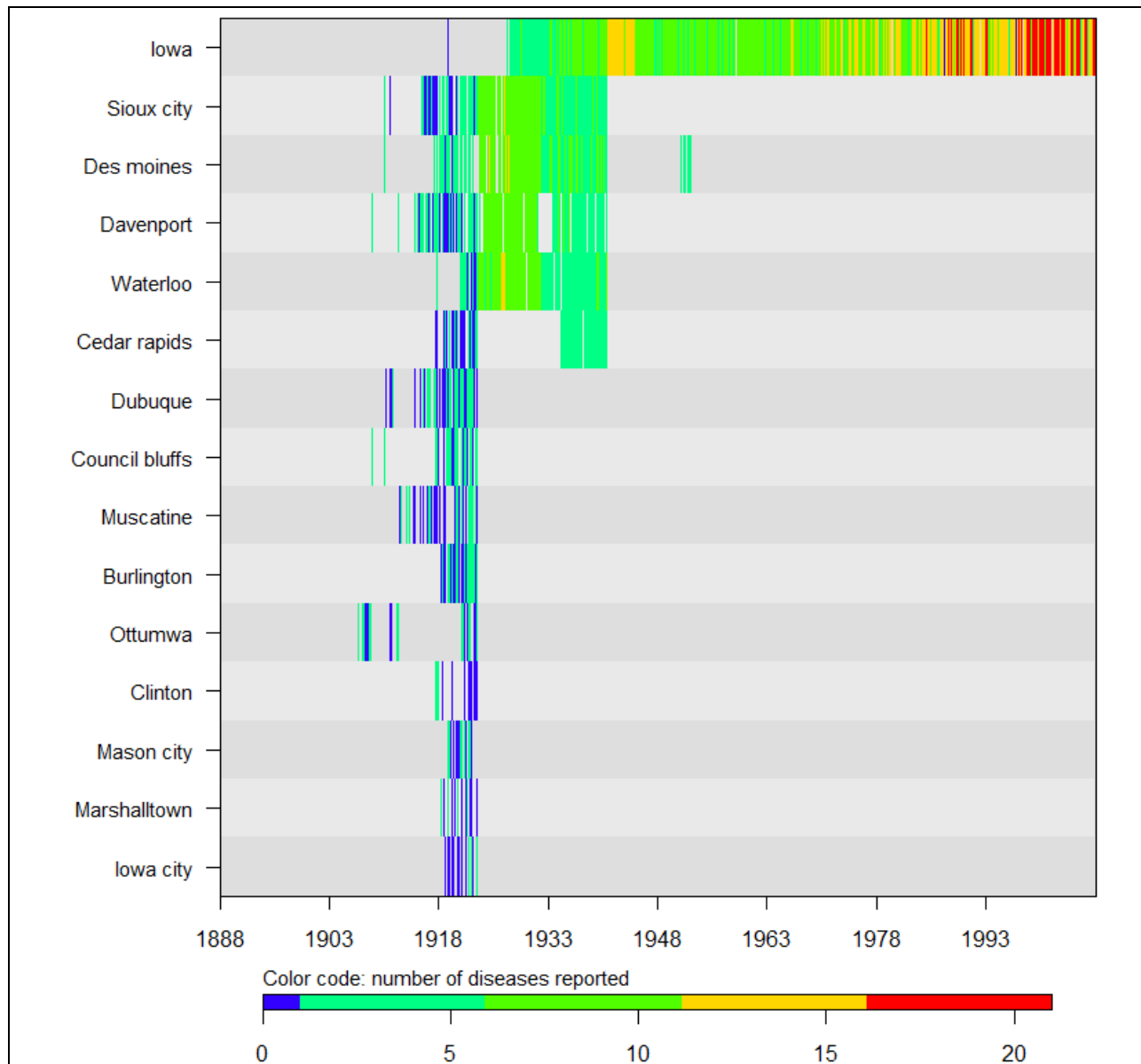
The map in figure 2 (next page) illustrates the geographical distribution of the available city data. It displays the number of weekly reports for any disease available per location that was included (and for which coordinates could be derived)





**Figure 2,** This map displays the number of weekly reports available for any disease per city (note that city reports were only available until 1953)

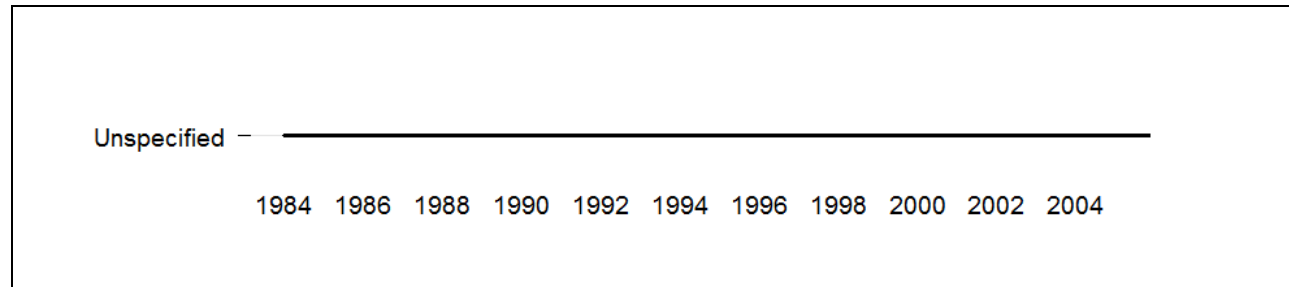
Figure 3 below provides an overview of the number of diseases for which a weekly report was included at the state level and for individual cities. All cities for which at least 100 weekly reports are available have been listed. For most states, it shows a major drop in the number of cities after 1925 and after 1953, city reports were discontinued except for New York City, which became its own reporting jurisdiction.



**Figure 3,** The number of diseases (in color code) that were reported for the state and city level (state on top row) for each week between 1888 and 2009

## Disease specific data for Iowa

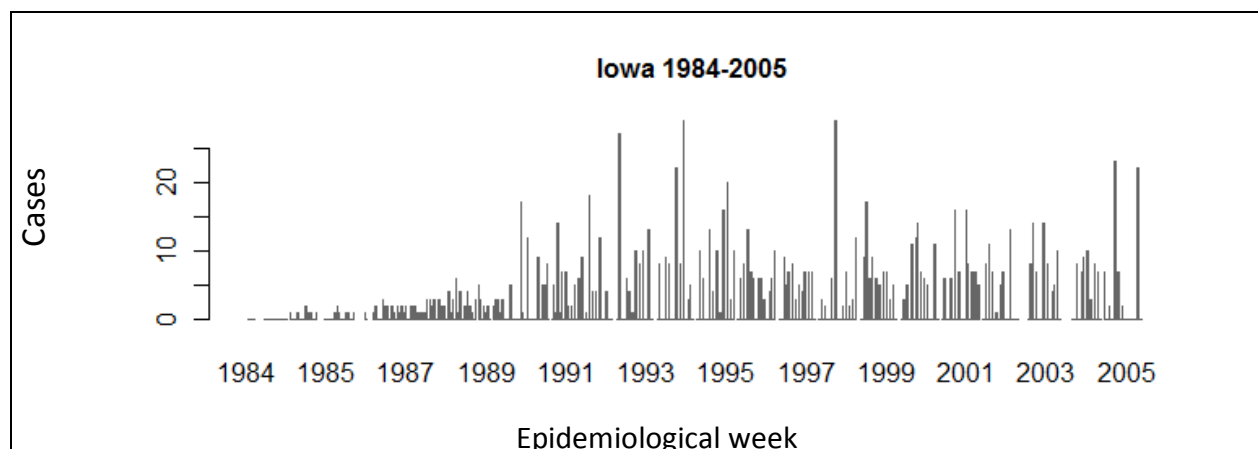
### AIDS



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

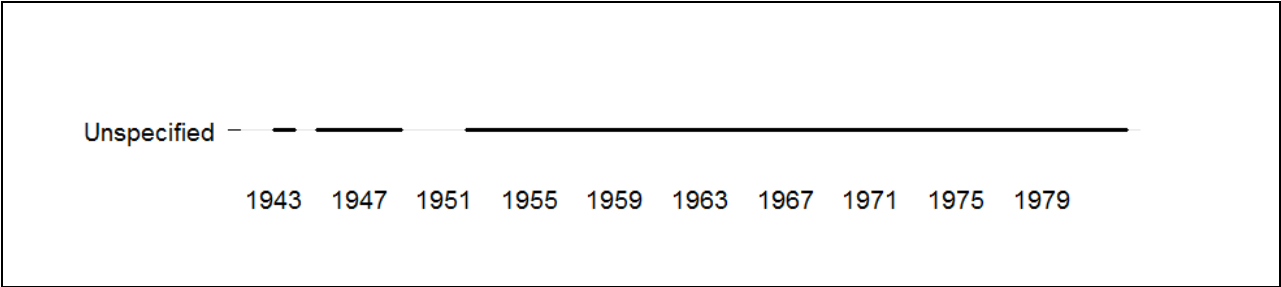
**Table D1,** Summary information for AIDS

Indicator	Iowa
Report period	1984-2005
Total weeks	945
Total cases	1,483
Max. cases per year	167
Year (max)	2004
Max. cases per week	115
Week (max)	2004, wk 22
Average cases per year	67
95%CI	(48-86)
Average cases per week	2
95%CI	(2-2)



**Figure D2,** Number of cases reported for AIDS per epidemiological week

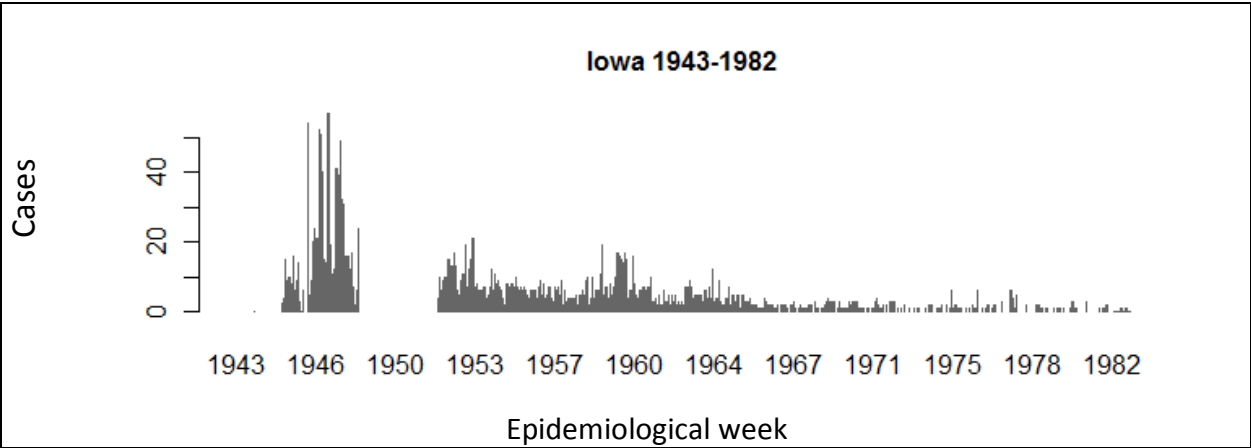
Brucellosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Brucellosis

Indicator	Iowa
Report period	1943-1982
Total weeks	1,058
Total cases	5,917
Max. cases per year	1,197
Year (max)	1970
Max. cases per week	1,158
Week (max)	1970, wk 44
Average cases per year	164
95%CI	(78-250)
Average cases per week	6
95%CI	(4-8)



**Figure D2,** Number of cases reported for Brucellosis per epidemiological week

## Chickenpox



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Chickenpox

Indicator	Iowa	Sioux City	Davenport
Report period	1972-1981	1924-1932	1924-1932
Total weeks	478	428	372
Total cases	88,505	2,277	690
Max. cases per year	11,765	469	155
Year (max)	1976	1931	1928
Max. cases per week	924	41	20
Week (max)	1973, wk 11	1929, wk 20	1928, wk 29
Average cases per year			
before 1995	8,850	253	77
95%CI	(7,677-10,023)	(163-343)	(46-108)
after 1995	-	-	-
95%CI	-	-	-
Average cases per week			
before 1995	185	5	2
95%CI	(170-200)	(4-6)	(2-2)
after 1995	-	-	-
95%CI	-	-	-

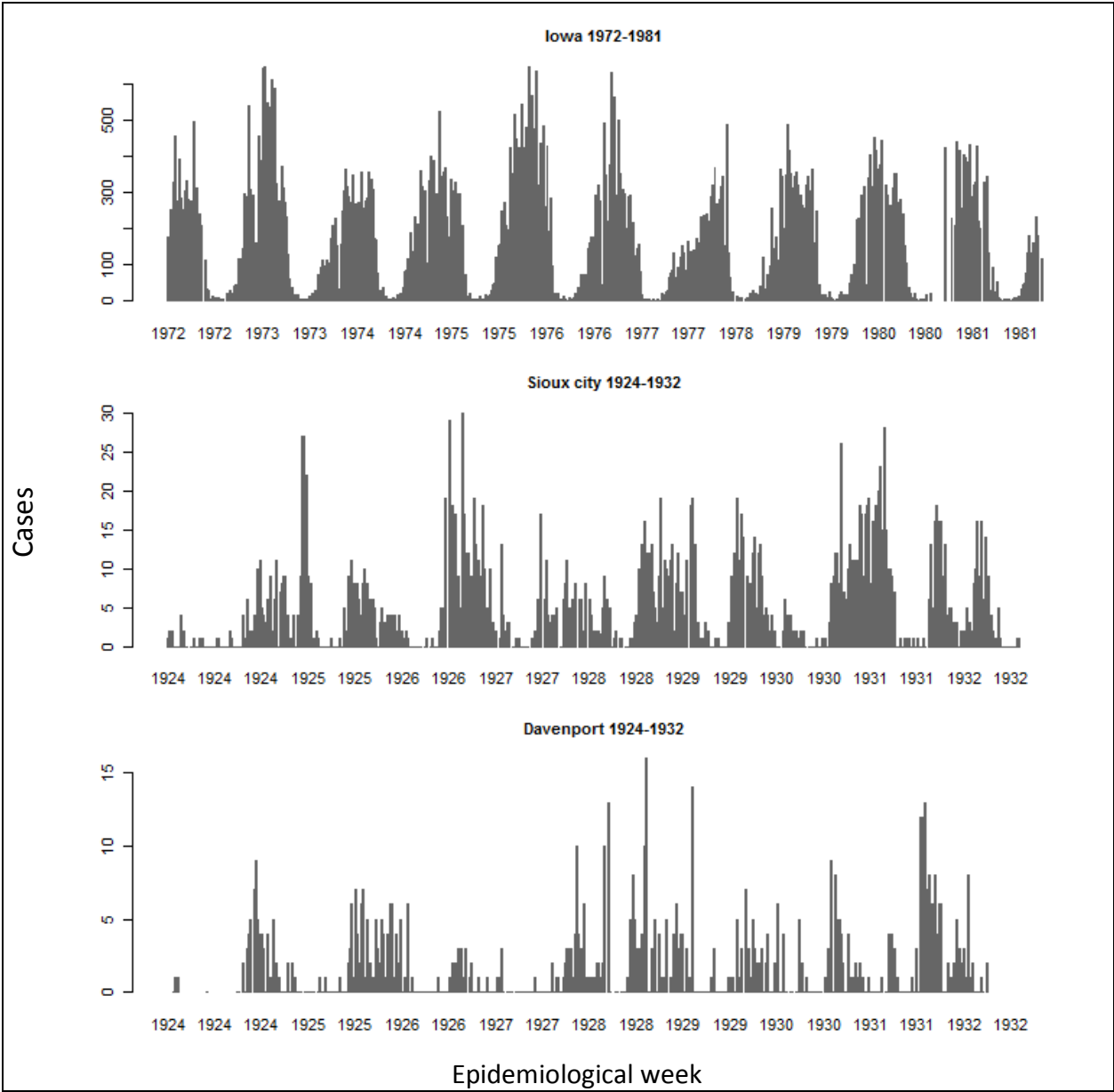
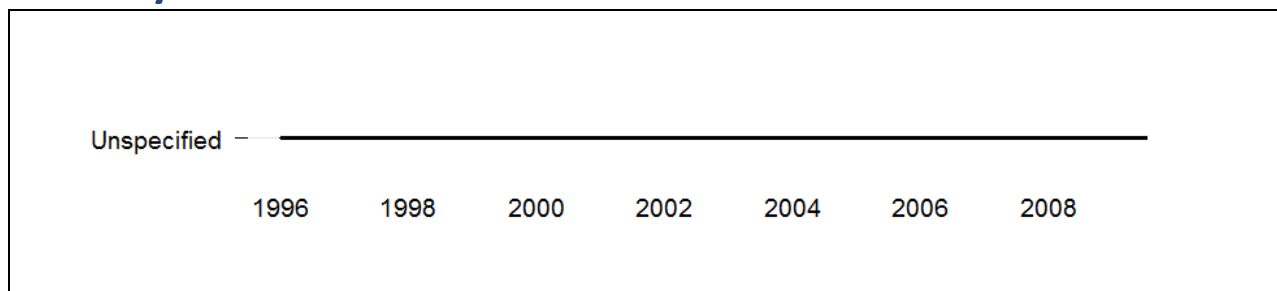


Figure D2, Number of cases reported for Chickenpox per epidemiological week

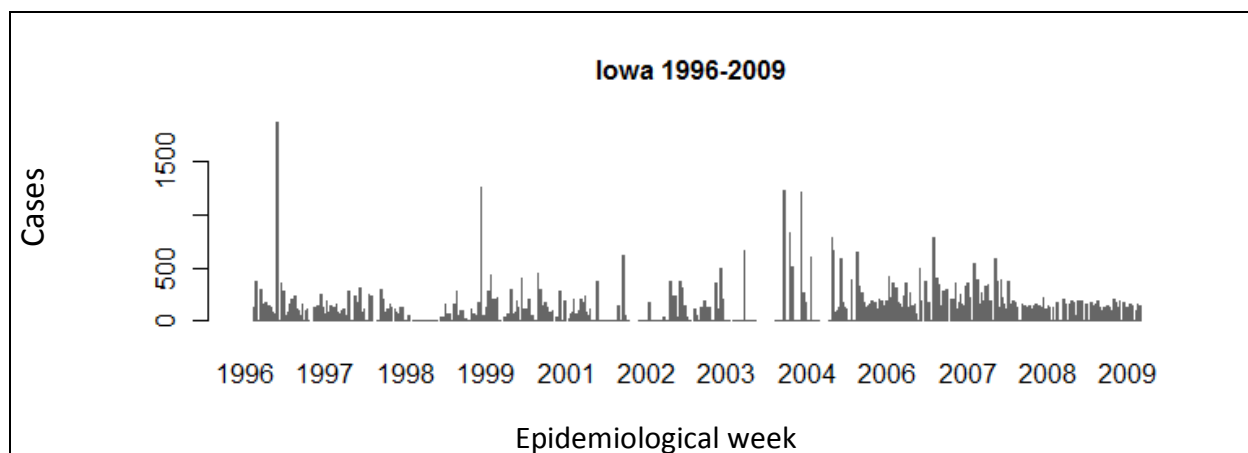
## Chlamydia



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

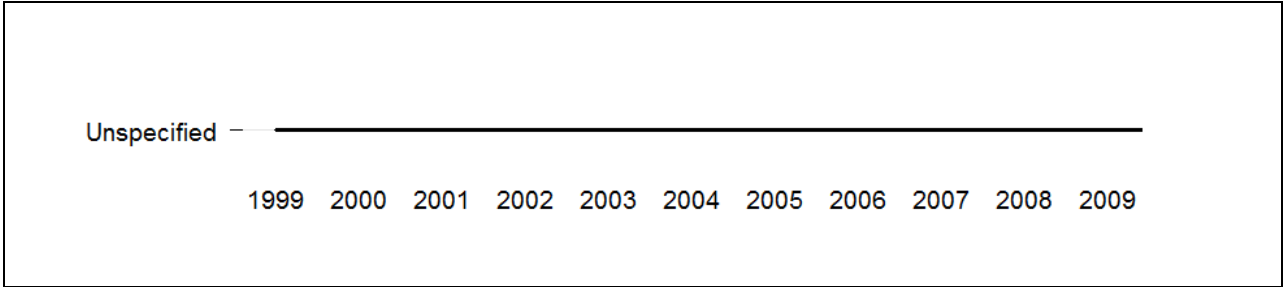
**Table D1,** Summary information for Chlamydia

Indicator	Iowa
Report period	1996-2009
Total weeks	646
Total cases	76,408
Max. cases per year	11,984
Year (max)	2004
Max. cases per week	7,171
Week (max)	2004, wk 22
Average cases per year	5,458
95%CI	(3,964-6,952)
Average cases per week	118
95%CI	(92-144)



**Figure D2,** Number of cases reported for Chlamydia per epidemiological week

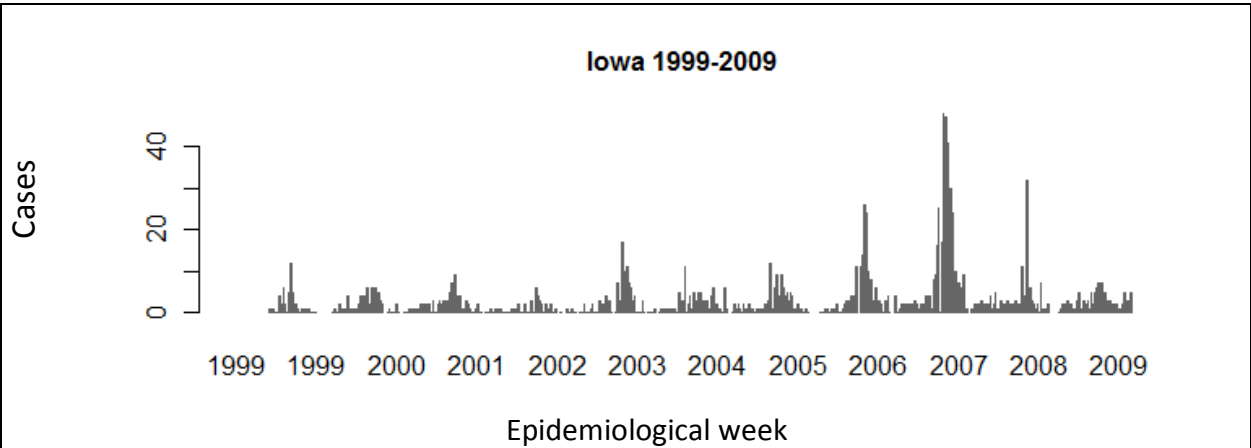
Cryptosporidiosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Cryptosporidiosis

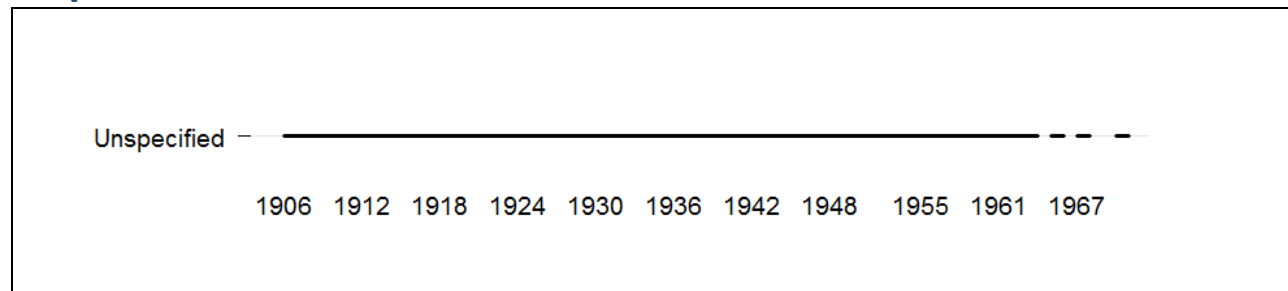
Indicator	Iowa
Report period	1999-2009
Total weeks	495
Total cases	1,567
Max. cases per year	609
Year (max)	2007
Max. cases per week	68
Week (max)	2007, wk 33
Average cases per year	142
95%CI	(35-249)
Average cases per week	3
95%CI	(2-4)



**Figure D2,** Number of cases reported for Cryptosporidiosis per epidemiological week



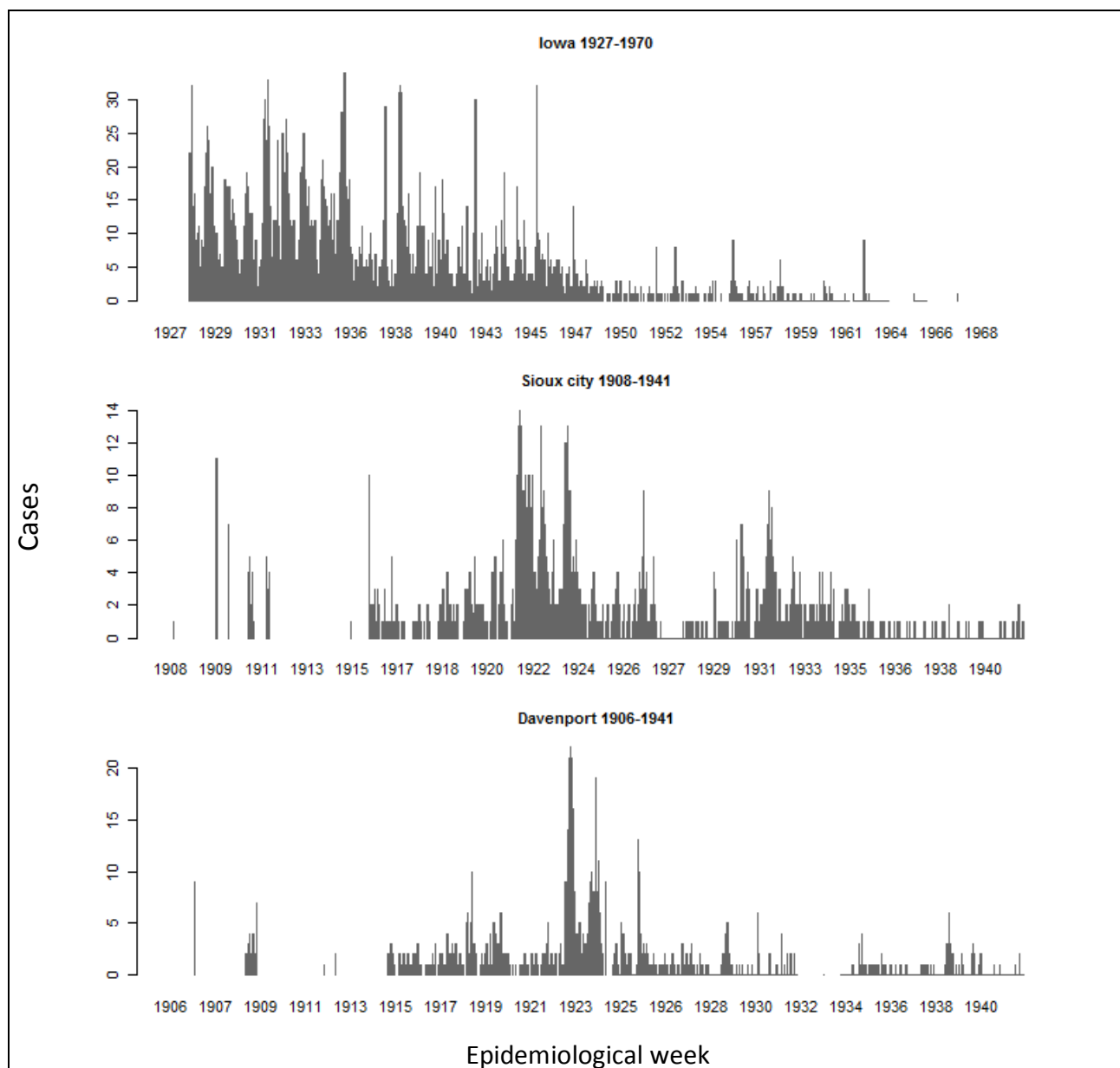
## Diphtheria



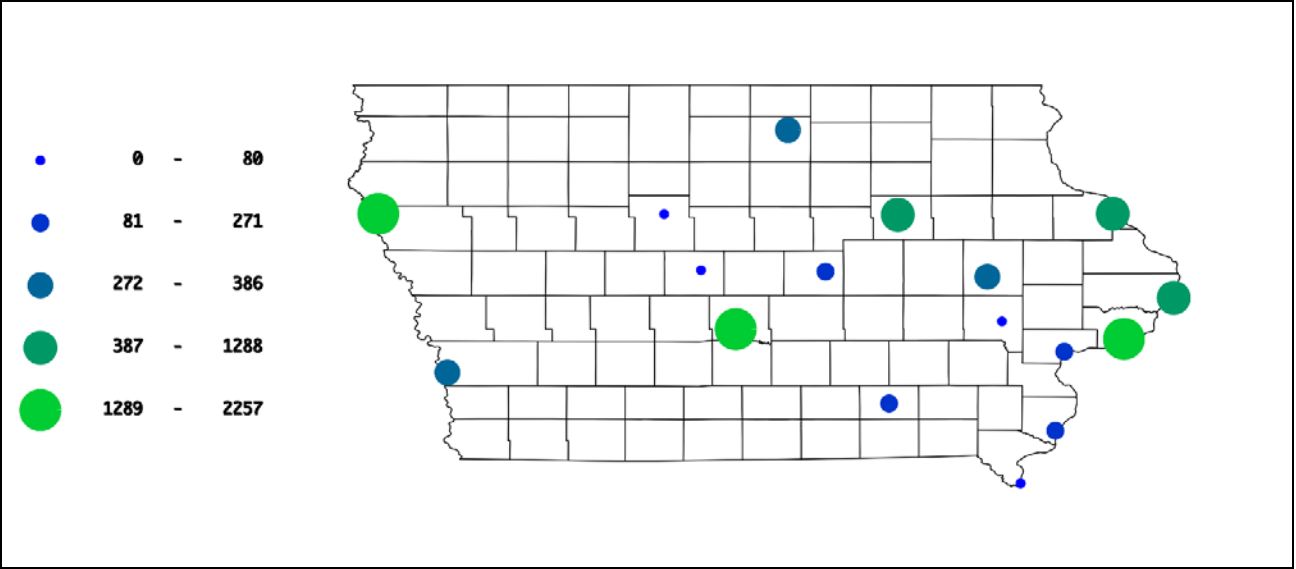
**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Diphtheria

Indicator	Iowa	Sioux City	Davenport
Report period	1927-1970	1908-1941	1906-1941
Total weeks	1,570	1,144	1,016
Total cases	7,425	1,522	1,289
Max. cases per year	633	267	284
Year (max)	1932	1922	1922
Max. cases per week	336	33	34
Week (max)	1970, wk 44	1921, wk 44	1906, wk 52
Average cases per year			
before 1940	391	50	43
95%CI	(295-487)	(27-73)	(21-65)
after 1940	75	11	5
95%CI	(37-113)	-	-
Average cases per week			
before 1940	8	1	1
95%CI	(7-9)	(1-1)	(1-1)
after 1940	2	0	0
95%CI	(1-3)	(0-0)	(0-0)

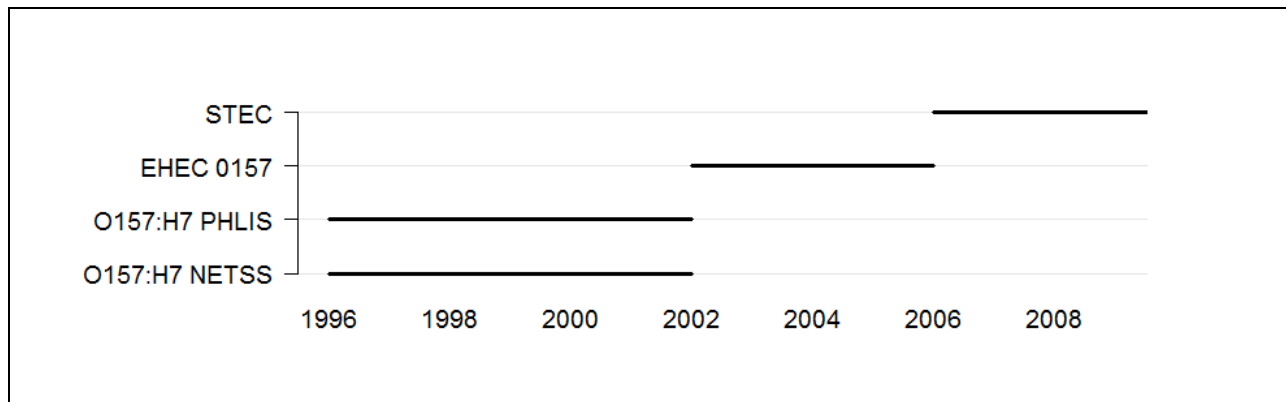


**Figure D2,** Number of cases reported for Diphtheria per epidemiological week



**Figure D3**, The total number of cases reported for Diphtheria by each city for the entire time period

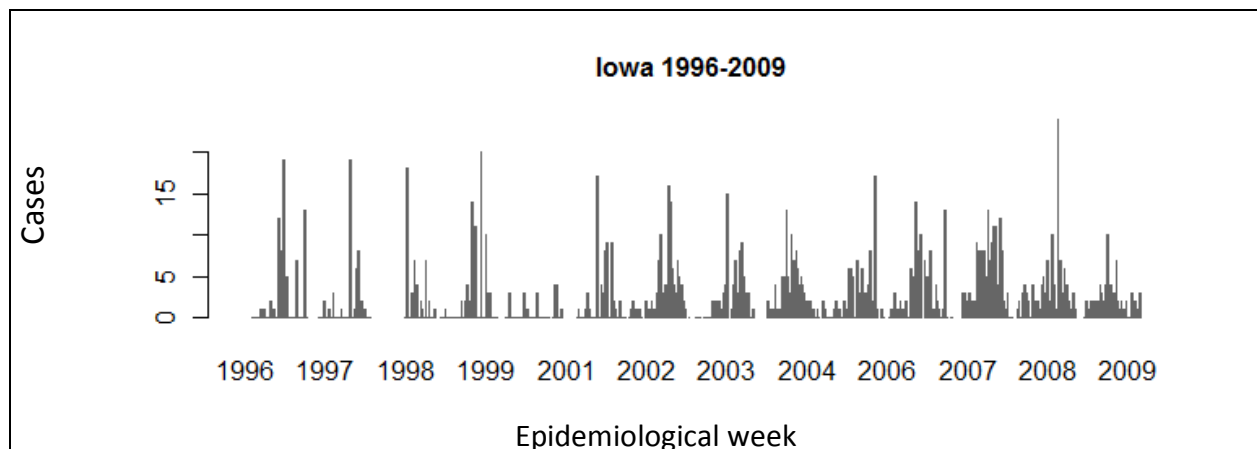
## Escherichia Coli



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

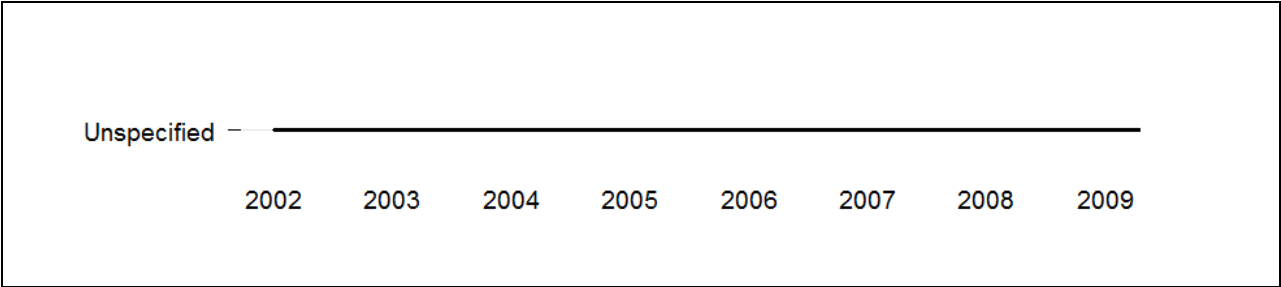
**Table D1,** Summary information for Escherichia Coli (O157:H7 PHLIS, EHEC 0157, and STEC)

Indicator	Iowa
Report period	1996-2009
Total weeks	597
Total cases	1,375
Max. cases per year	174
Year (max)	2007
Max. cases per week	63
Week (max)	2000, wk 33
Average cases per year	98
95%CI	(79-117)
Average cases per week	2
95%CI	(2-2)



**Figure D2,** Number of cases reported for Escherichia Coli per epidemiological week

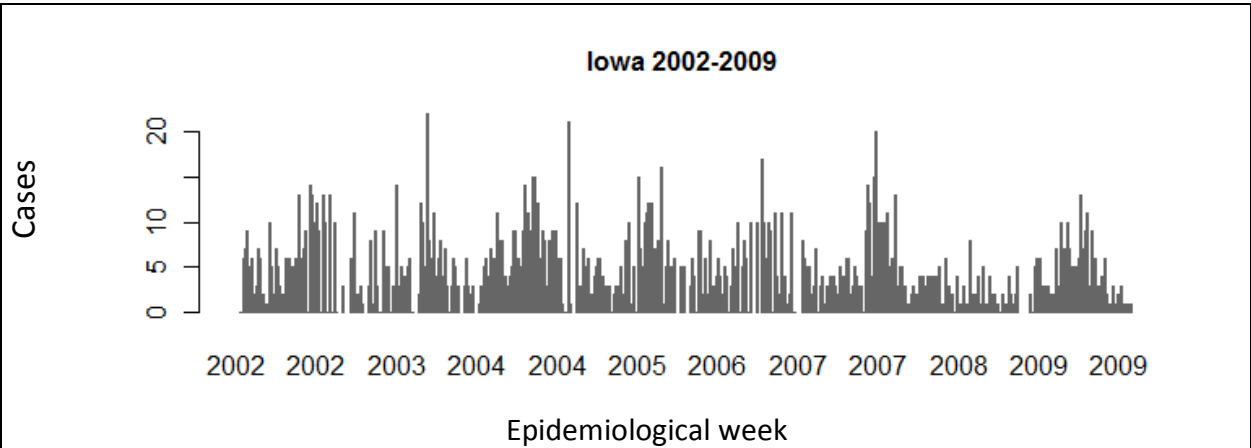
Giardiasis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

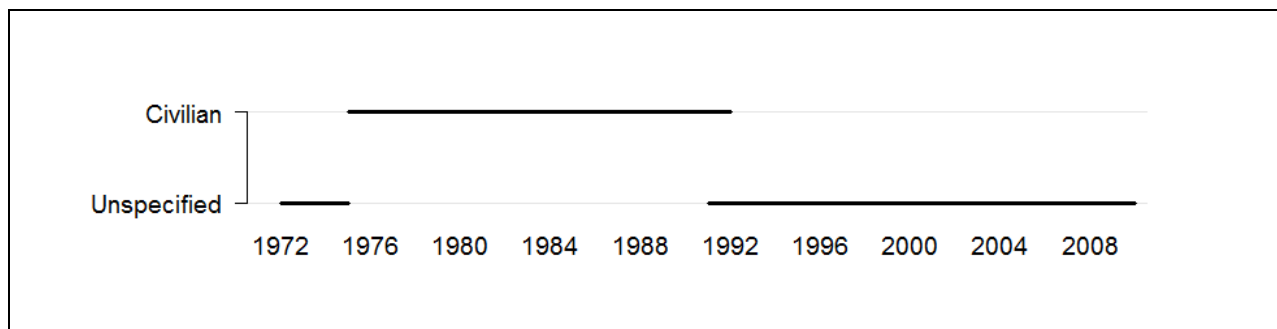
**Table D1,** Summary information for Giardiasis

Indicator	Iowa
Report period	2002-2009
Total weeks	383
Total cases	7,228
Max. cases per year	5,550
Year (max)	2006
Max. cases per week	5,308
Week (max)	2006, wk 35
Average cases per year	904
95%CI	(-666-2,474)
Average cases per week	19
95%CI	(-8-46)



**Figure D2,** Number of cases reported for Giardiasis per epidemiological week

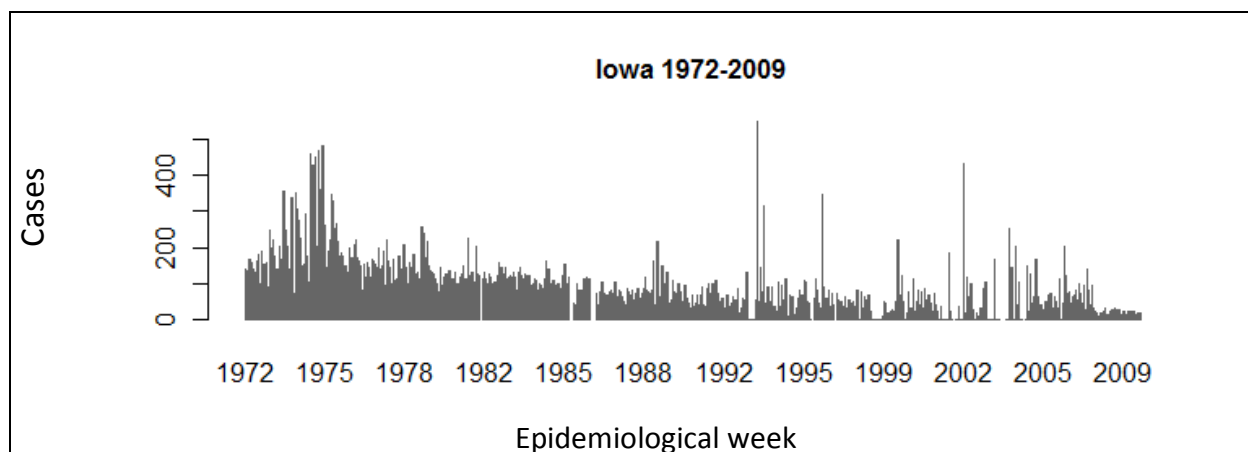
## Gonorrhea



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

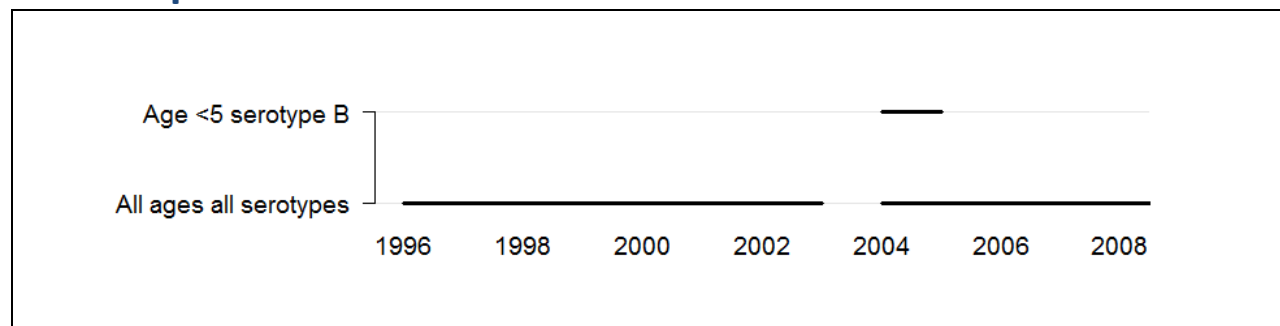
**Table D1,** Summary information for Gonorrhea (Unspecified and Civilian)

Indicator	Iowa
Report period	1972-2009
Total weeks	1,773
Total cases	108,907
Max. cases per year	7,219
Year (max)	1975
Max. cases per week	1,016
Week (max)	2001, wk 44
Average cases per year	2,866
95%CI	(2,202-3,530)
Average cases per week	61
95%CI	(58-64)



**Figure D2,** Number of cases reported for Gonorrhea per epidemiological week

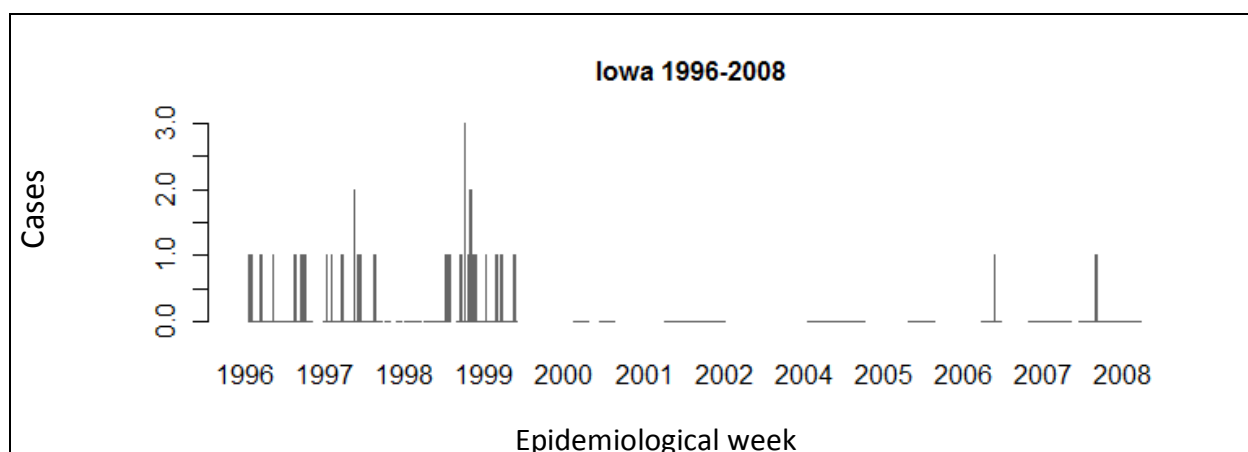
## Haemophilus Influenzae



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

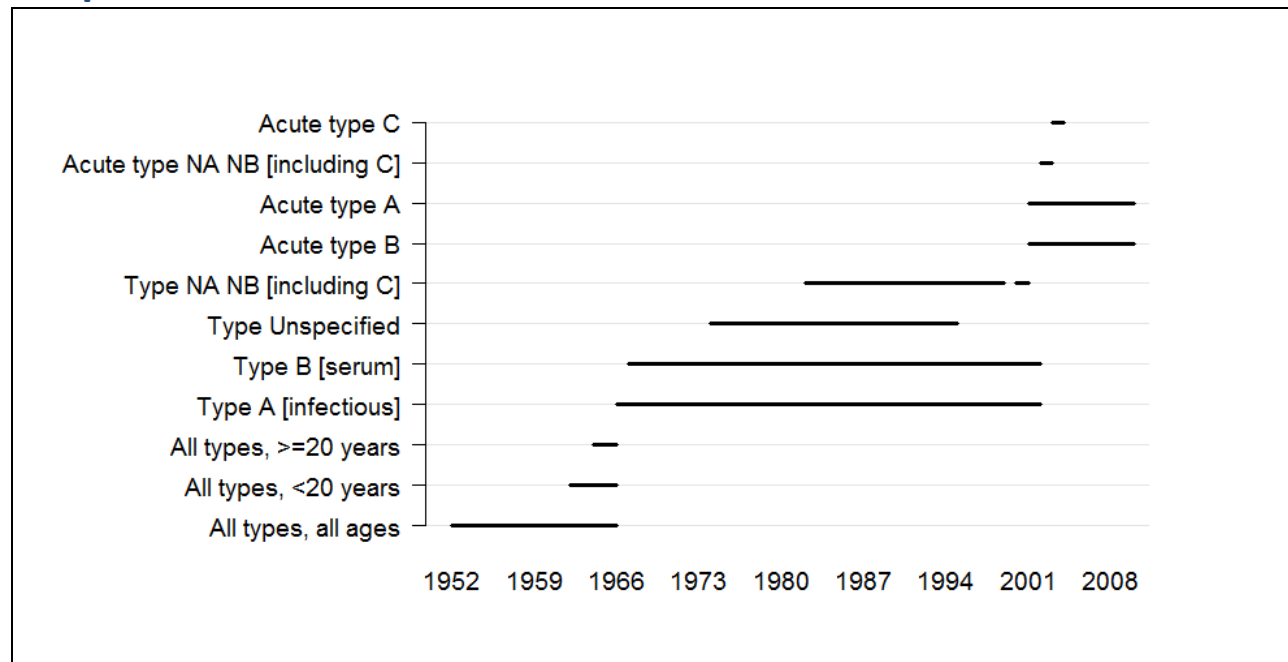
**Table D1,** Summary information for Haemophilus Influenzae (All ages all serotypes)

Indicator	Iowa
Report period	1996-2008
Total weeks	392
Total cases	119
Max. cases per year	77
Year (max)	2006
Max. cases per week	76
Week (max)	2006, wk 35
Average cases per year	10
95%CI	(-4-24)
Average cases per week	0
95%CI	(0-0)



**Figure D2,** Number of cases reported for Haemophilus Influenzae per epidemiological week

## Hepatitis

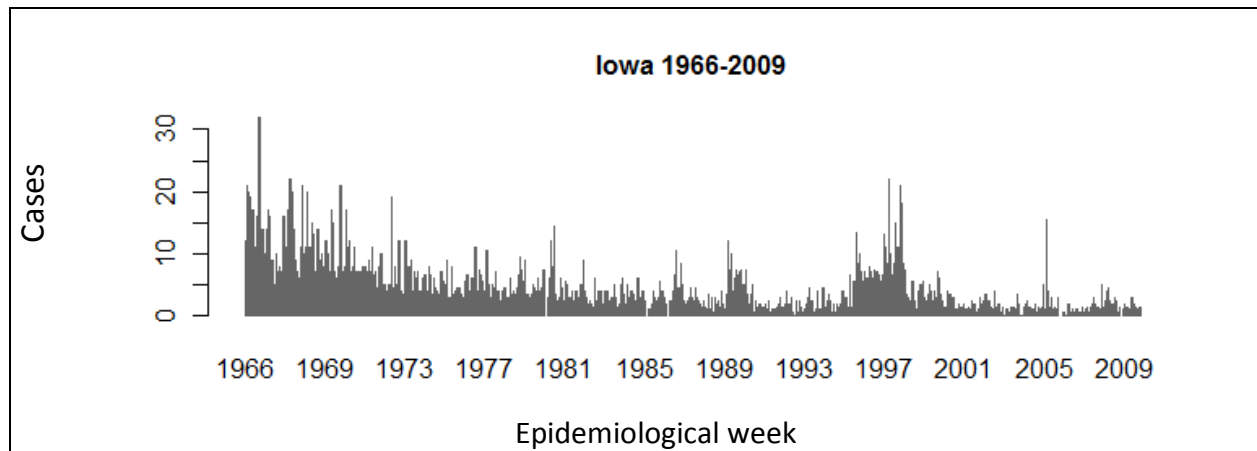


**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Hepatitis (Type A [Infectious], Acute type A, Type B [Serum], and Acute type B)

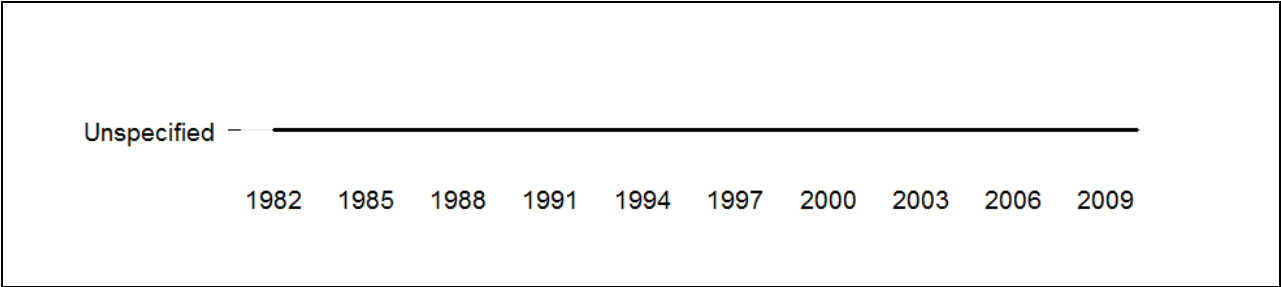
Indicator	Iowa
Report period	1966-2009
Total weeks	2,032
Total cases	7,751
Max. cases per year	1,765
Year (max)	1970
Max. cases per week	1,438
Week (max)	1970, wk 44
Average cases per year	
before 1990	250
95%CI	(111-389)
after 1990	78
95%CI	(38-118)
Average cases per week	
before 1990	5
95%CI	(3-7)
after 1990	2
95%CI	(2-2)





**Figure D2,** Number of cases reported for Hepatitis per epidemiological week

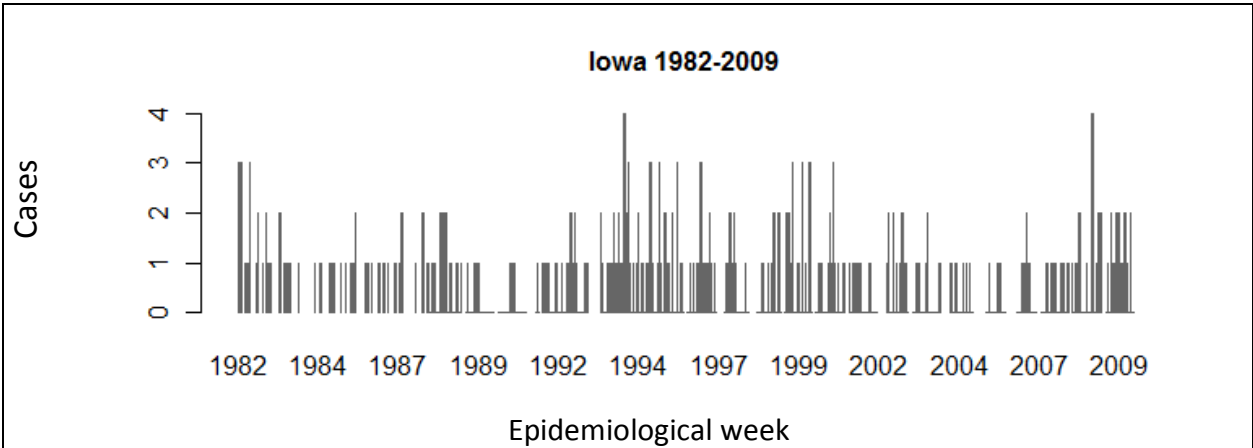
Legionellosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

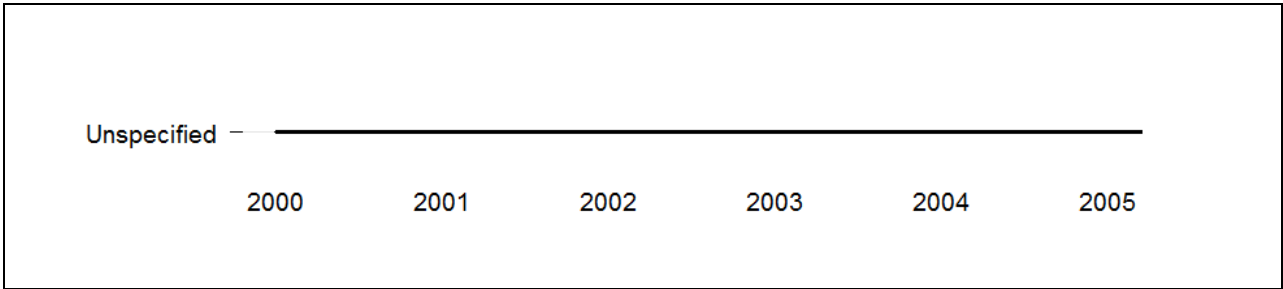
**Table D1,** Summary information for Legionellosis

Indicator	Iowa
Report period	1982-2009
Total weeks	938
Total cases	341
Max. cases per year	31
Year (max)	1994
Max. cases per week	5
Week (max)	1982, wk 17
Average cases per year	12
95%CI	(9-15)
Average cases per week	0
95%CI	(0-0)



**Figure D2,** Number of cases reported for Legionellosis per epidemiological week

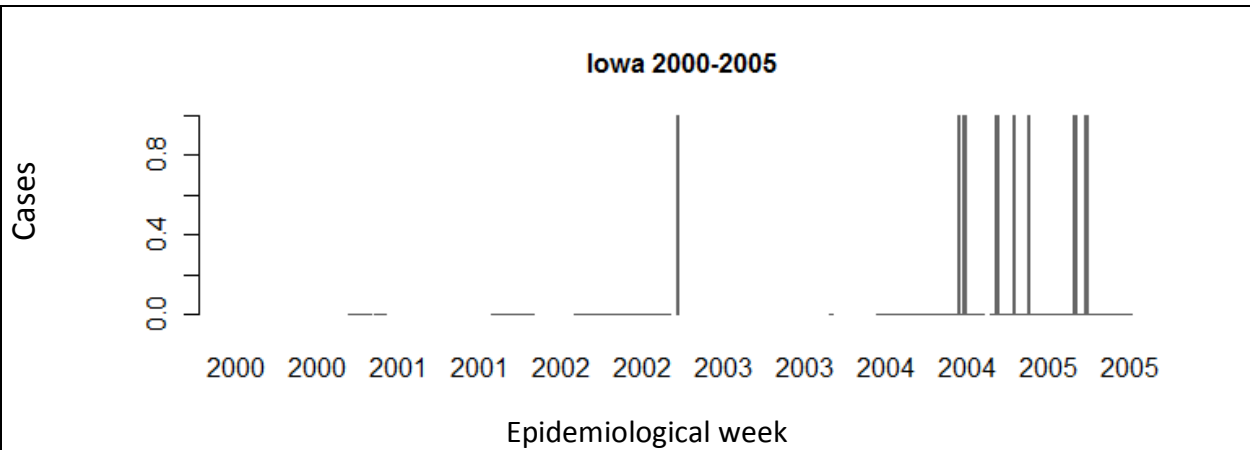
Listeriosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

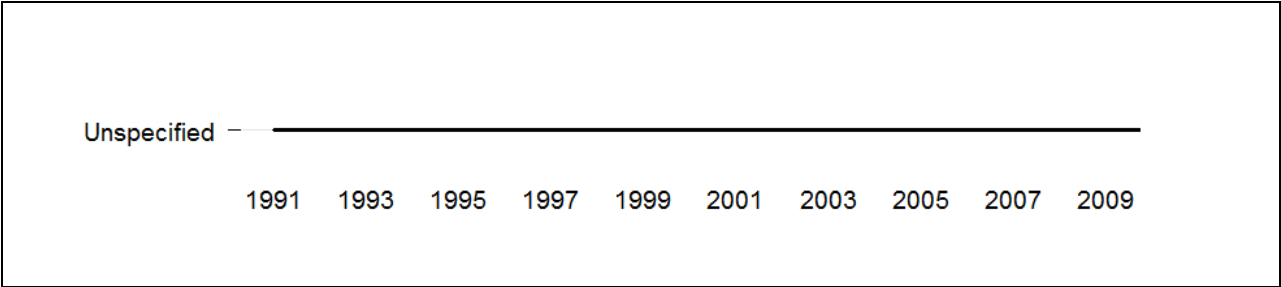
**Table D1,** Summary information for Listeriosis

Indicator	Iowa
Report period	2000-2005
Total weeks	151
Total cases	12
Max. cases per year	7
Year (max)	2005
Max. cases per week	2
Week (max)	2005, wk 31
Average cases per year	2
95%CI	(-1-5)
Average cases per week	0
95%CI	(0-0)



**Figure D2,** Number of cases reported for Listeriosis per epidemiological week

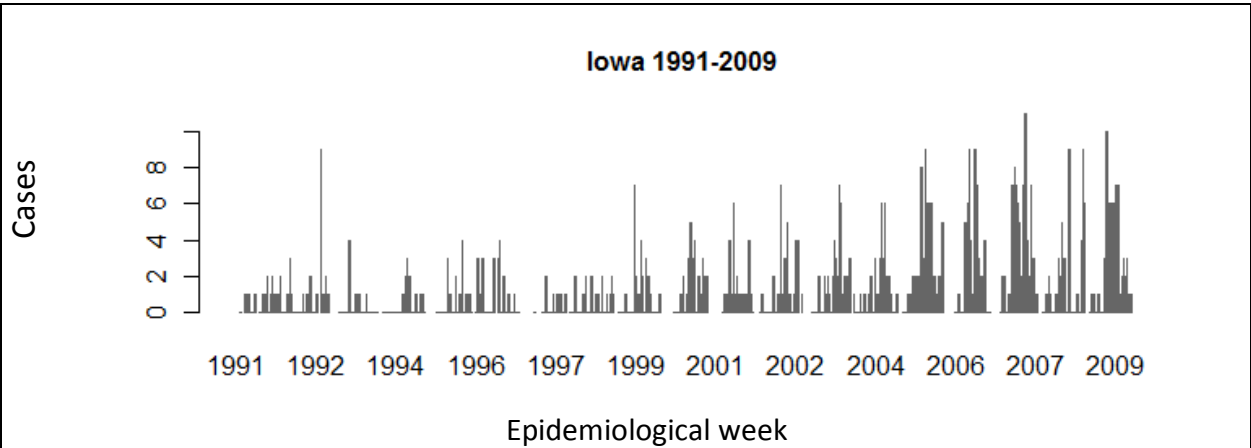
Lyme Disease



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

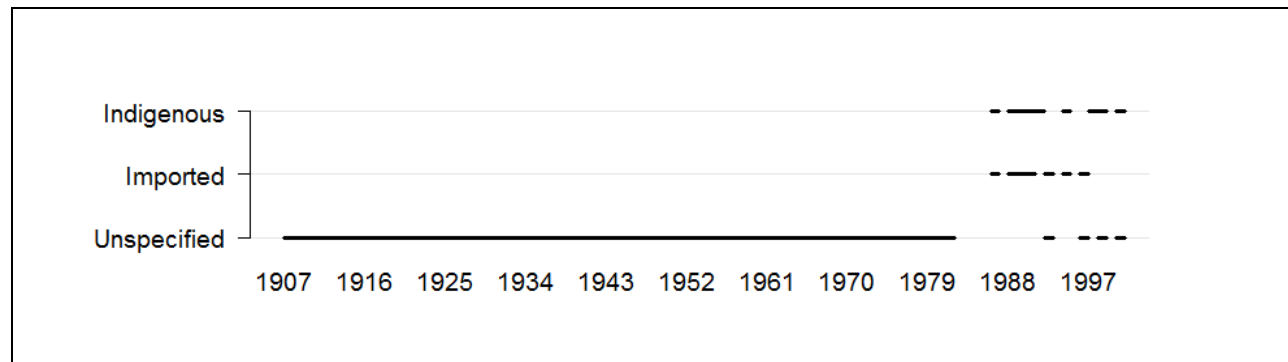
**Table D1,** Summary information for Lyme Disease

Indicator	Iowa
Report period	1991-2009
Total weeks	785
Total cases	848
Max. cases per year	118
Year (max)	2007
Max. cases per week	47
Week (max)	2008, wk 38
Average cases per year	45
95%CI	(29-61)
Average cases per week	1
95%CI	(1-1)



**Figure D2,** Number of cases reported for Lyme Disease per epidemiological week

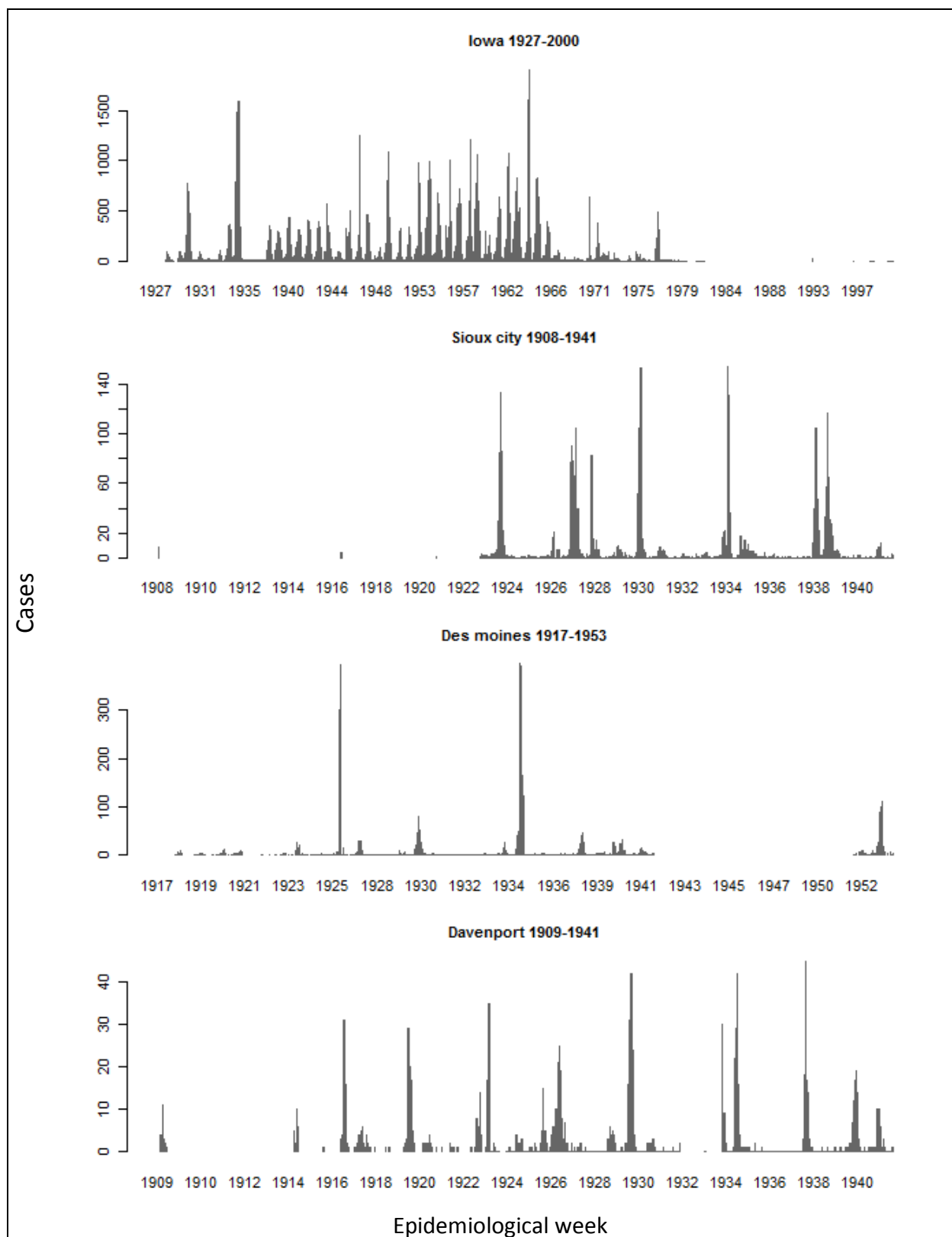
## Measles



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

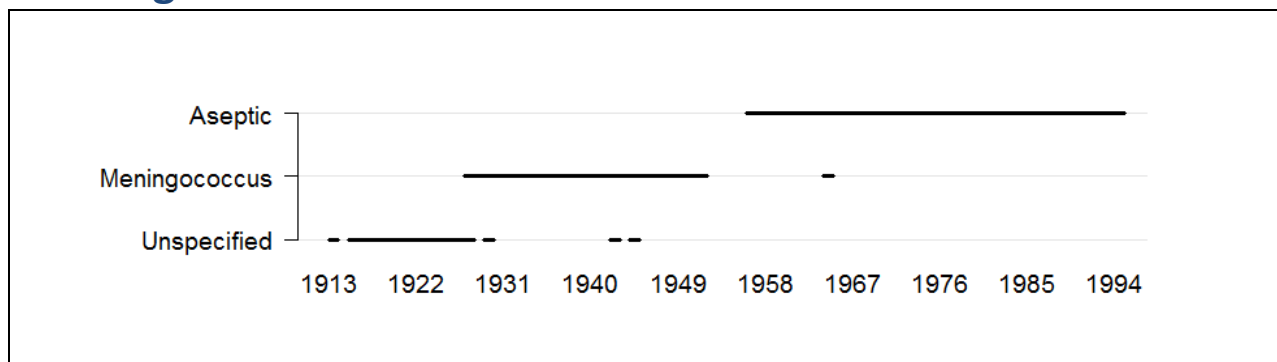
**Table D1,** Summary information for Measles (Unspecified)

Indicator	Iowa	Sioux City	Des Moines	Davenport
Report period	1927-2000	1908-1941	1917-1953	1909-1941
Total weeks	2,633	935	981	879
Total cases	264,014	6,492	8,521	2,109
Max. cases per year	22,703	1,234	4,569	368
Year (max)	1964	1938	1935	1923
Max. cases per week	5,251	230	1,453	64
Week (max)	1964, wk 22	1934, wk 21	1935, wk 14	1923, wk 49
Average cases per year				
before 1970	5,806	282	316	75
95%CI	(4,236-7,376)	(98-466)	(-34-666)	(40-110)
after 1970	571	-	-	-
95%CI	(-39-1,181)	-	-	-
Average cases per week				
before 1970	122	7	9	2
95%CI	(111-133)	(6-8)	(5-13)	(2-2)
after 1970	16	-	-	-
95%CI	(12-20)	-	-	-



**Figure D2,** Number of cases reported for Measles per epidemiological week

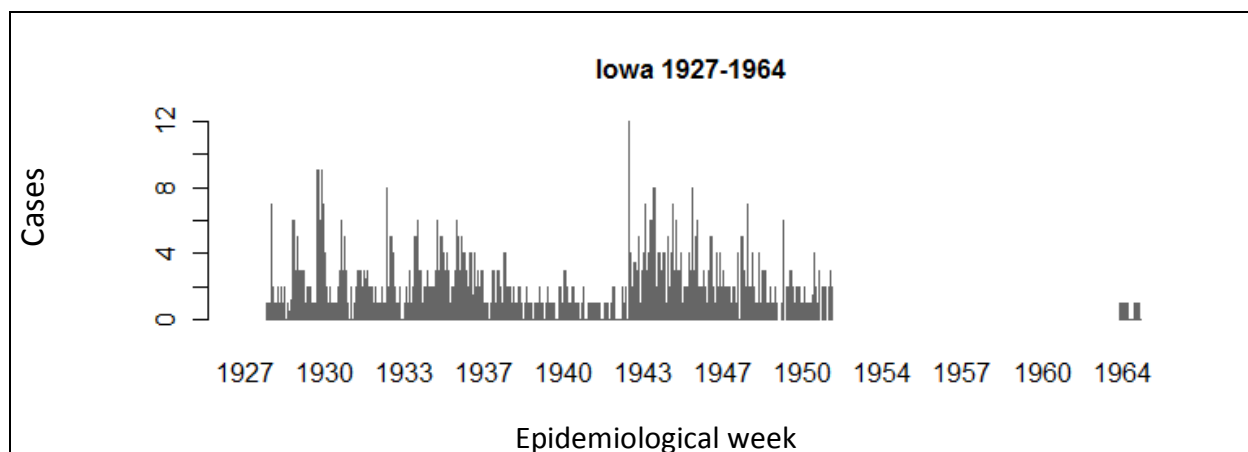
## Meningitis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

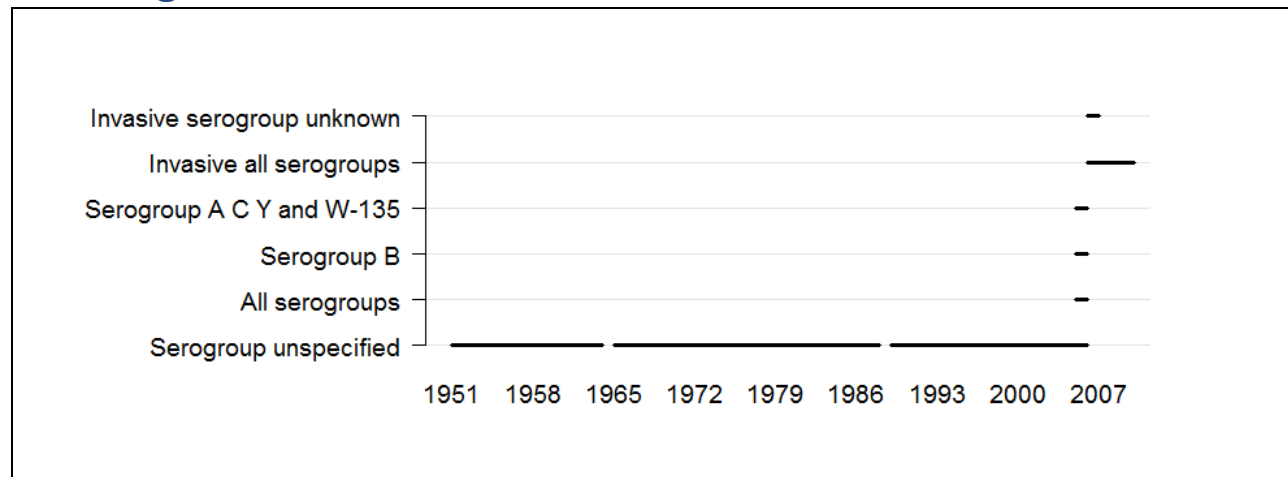
**Table D1,** Summary information for Meningitis (Meningococcus)

Indicator	Iowa
Report period	1927-1964
Total weeks	1,191
Total cases	1,425
Max. cases per year	129
Year (max)	1930
Max. cases per week	24
Week (max)	1930, wk 52
Average cases per year	55
95%CI	(41-69)
Average cases per week	1
95%CI	(1-1)



**Figure D2,** Number of cases reported for Meningitis per epidemiological week

## Meningococcal Disease

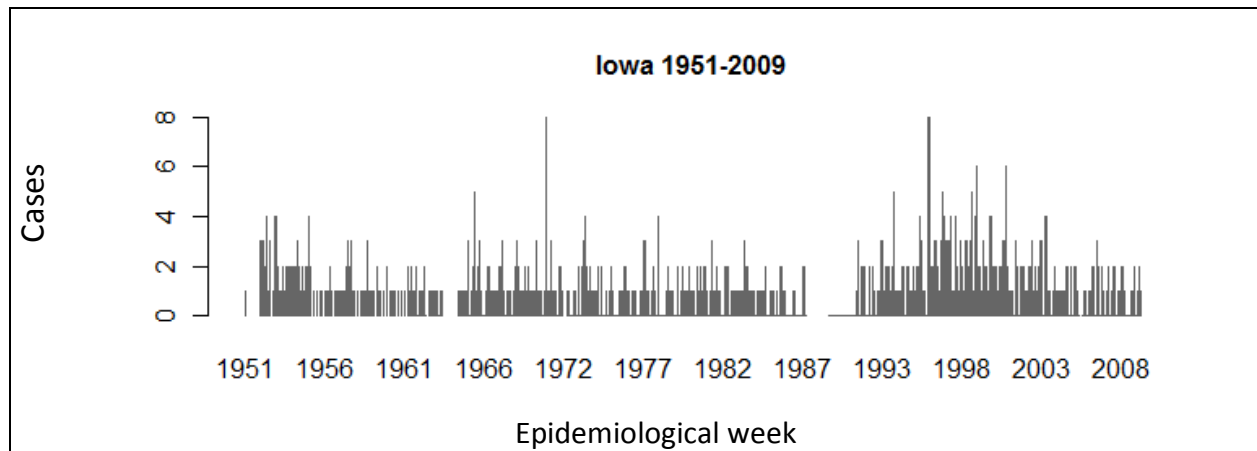


**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Meningococcal Disease (Serogroup unspecified and Invasive all serogroups)

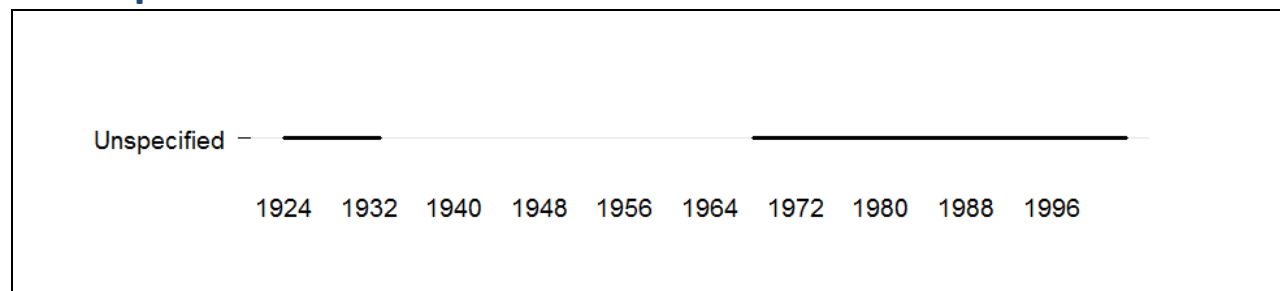
Indicator	Iowa
Report period	1951-2009
Total weeks	2,262
Total cases	1,222
Max. cases per year	179
Year (max)	1953
Max. cases per week	86
Week (max)	1953, wk 02
Average cases per year	
before 1980	21
95%CI	(9-33)
after 1980	21
95%CI	(16-26)
Average cases per week	
before 1980	1
95%CI	(1-1)
after 1980	0
95%CI	(0-0)





**Figure D2,** Number of cases reported for Meningococcal Disease per epidemiological week

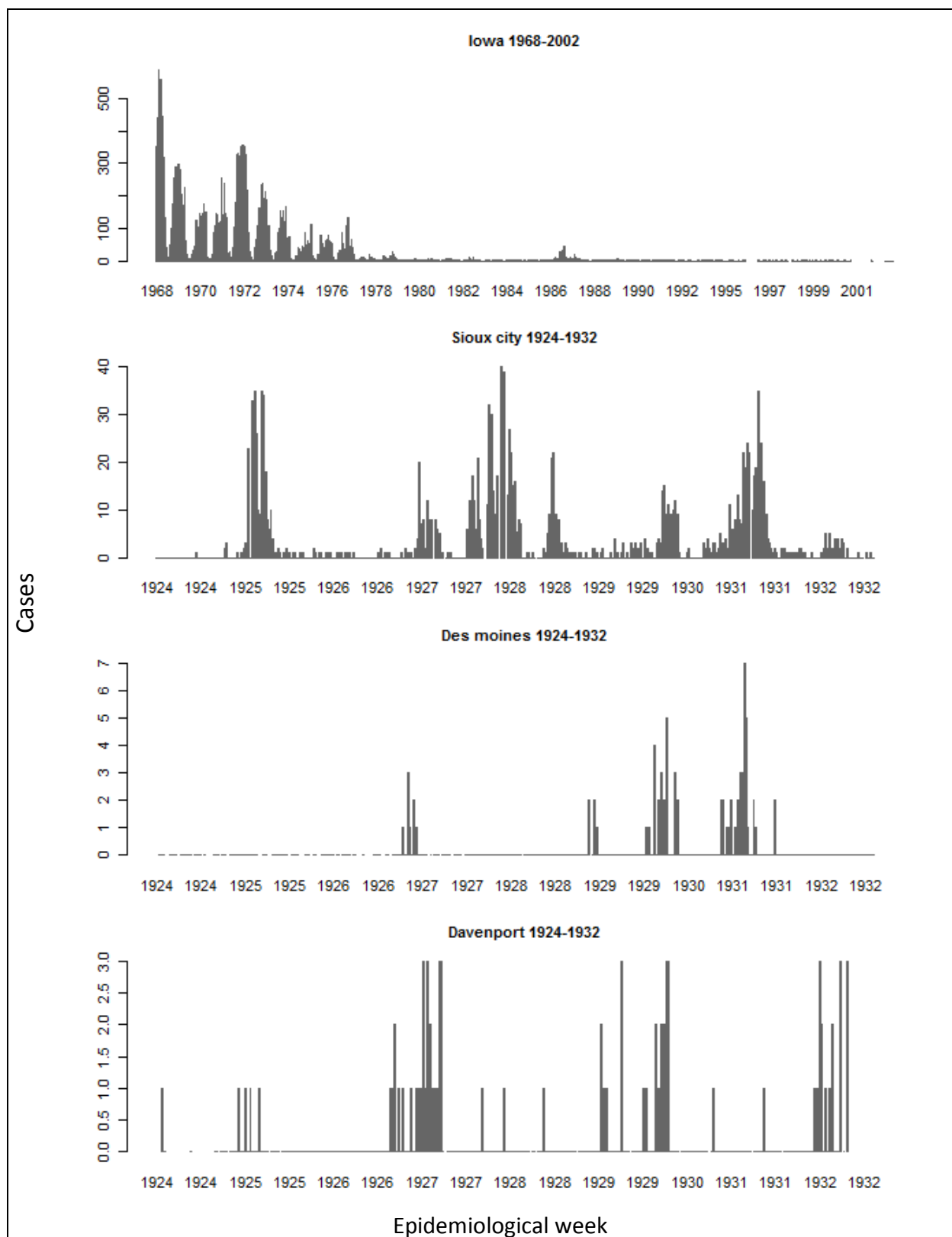
## Mumps



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

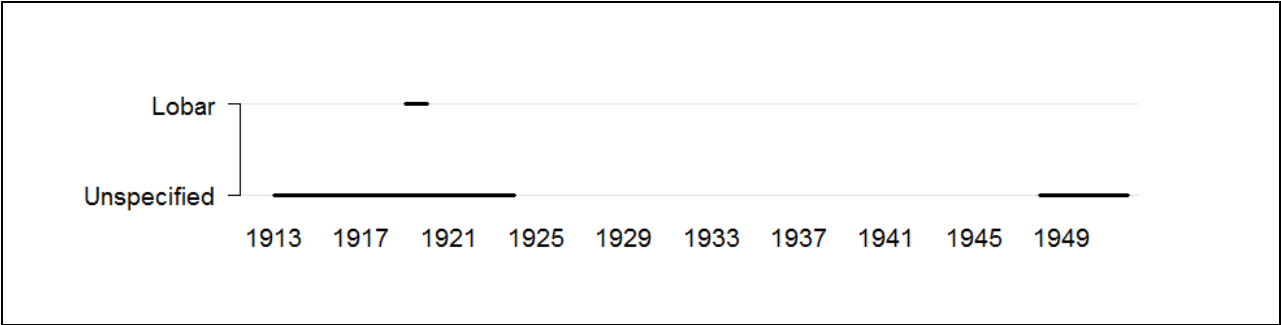
**Table D1,** Summary information for Mumps

Indicator	Iowa	Sioux City	Des Moines	Davenport
Report period	1968-2002	1924-1932	1924-1932	1924-1932
Total weeks	1,621	428	382	370
Total cases	43,225	1,752	137	98
Max. cases per year	11,927	563	63	37
Year (max)	1968	1928	1926	1927
Max. cases per week	694	94	31	7
Week (max)	1968, wk 11	1928, wk 12	1926, wk 11	1927, wk 13
Average cases per year				
before 1980	3,247	195	15	11
95%CI	(1,236-5,258)	(45-345)	(-2-32)	(2-20)
after 1980	46	-	-	-
95%CI	(3-89)	-	-	-
Average cases per week				
before 1980	64	4	0	0
95%CI	(56-72)	(3-5)	(0-0)	(0-0)
after 1980	1	-	-	-
95%CI	(1-1)	-	-	-



**Figure D2,** Number of cases reported for Mumps per epidemiological week

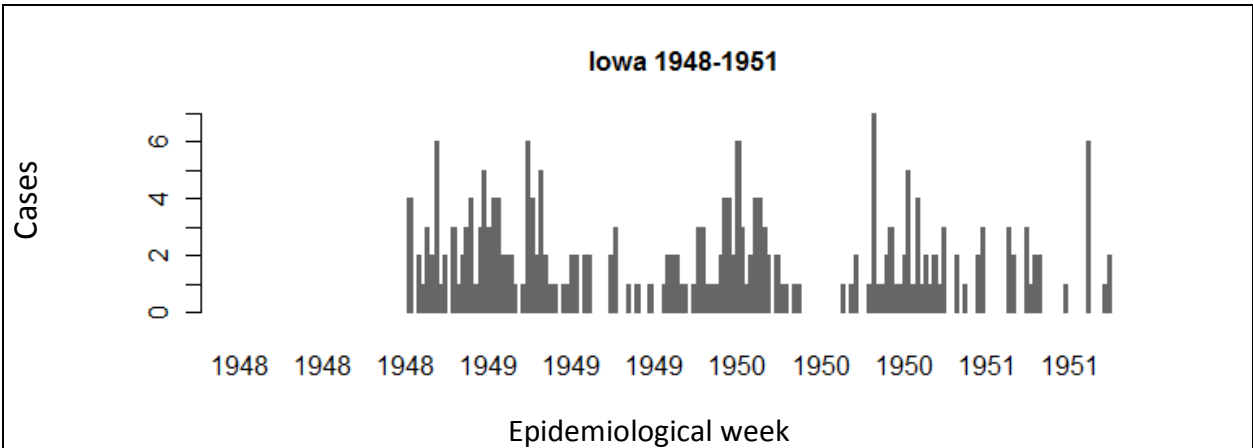
Pneumonia



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

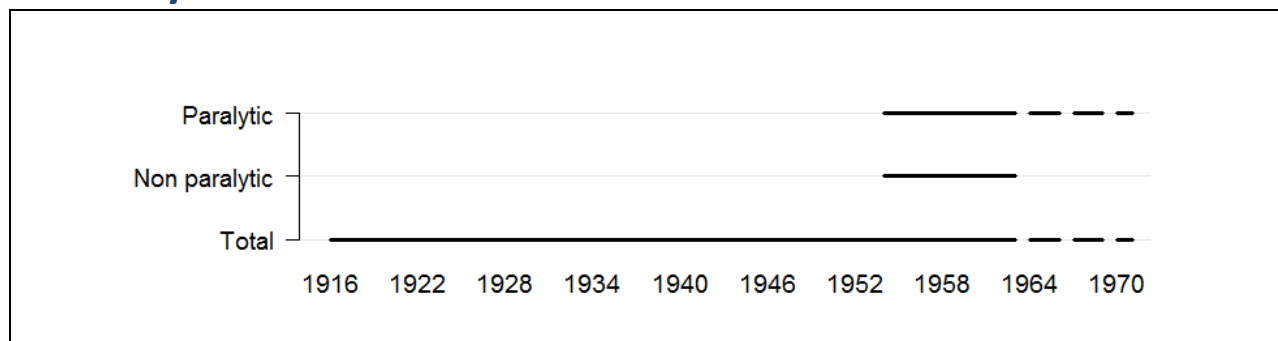
**Table D1,** Summary information for Pneumonia (Unspecified)

Indicator	Iowa
Report period	1948-1951
Total weeks	109
Total cases	264
Max. cases per year	86
Year (max)	1950
Max. cases per week	10
Week (max)	1951, wk 39
Average cases per year	66
95%CI	(23-109)
Average cases per week	2
95%CI	(2-2)



**Figure D2,** Number of cases reported for Pneumonia per epidemiological week

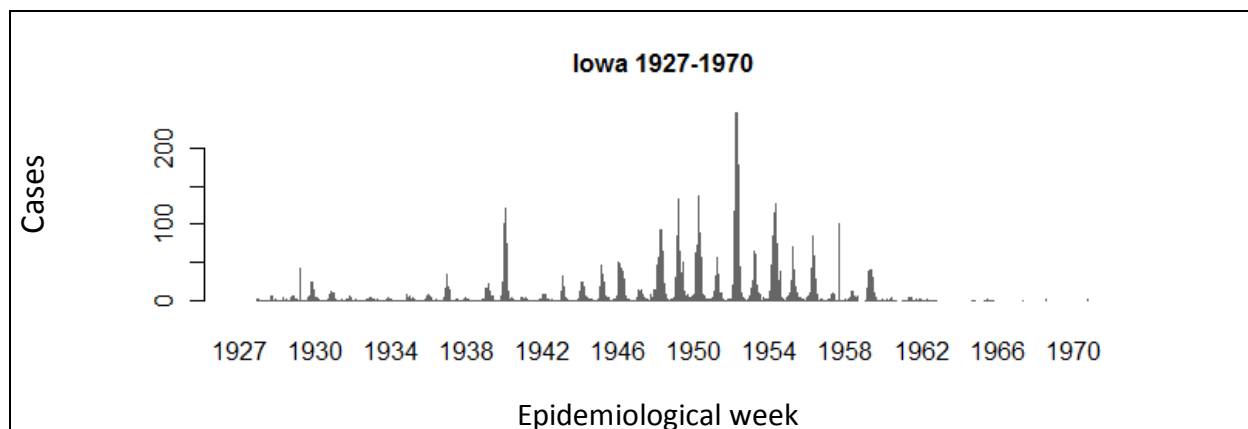
## Poliomyelitis



**Figure D1**, Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

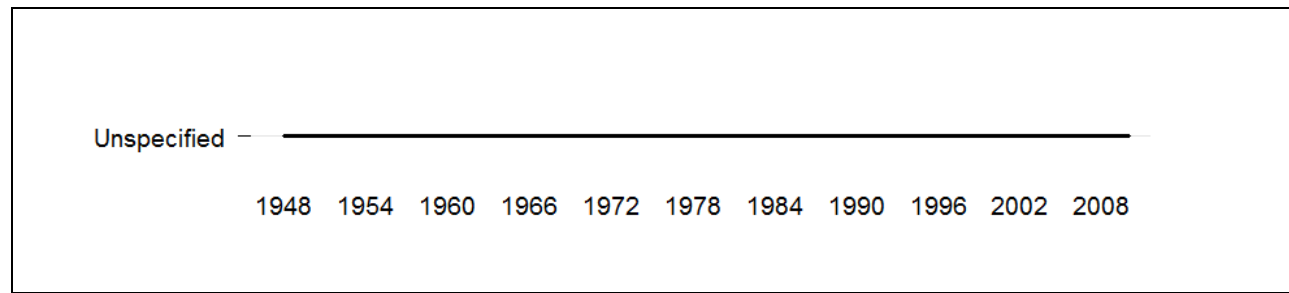
**Table D1**, Summary information for Poliomyelitis (Total)

Indicator	Iowa
Report period	1927-1970
Total weeks	1,731
Total cases	15,323
Max. cases per year	3,511
Year (max)	1952
Max. cases per week	286
Week (max)	1952, wk 35
Average cases per year	
before 1960	449
95%CI	(213-685)
after 1960	6
95%CI	(-1-13)
Average cases per week	
before 1960	9
95%CI	(8-10)
after 1960	0
95%CI	(0-0)



**Figure D2**, Number of cases reported for Poliomyelitis per epidemiological week

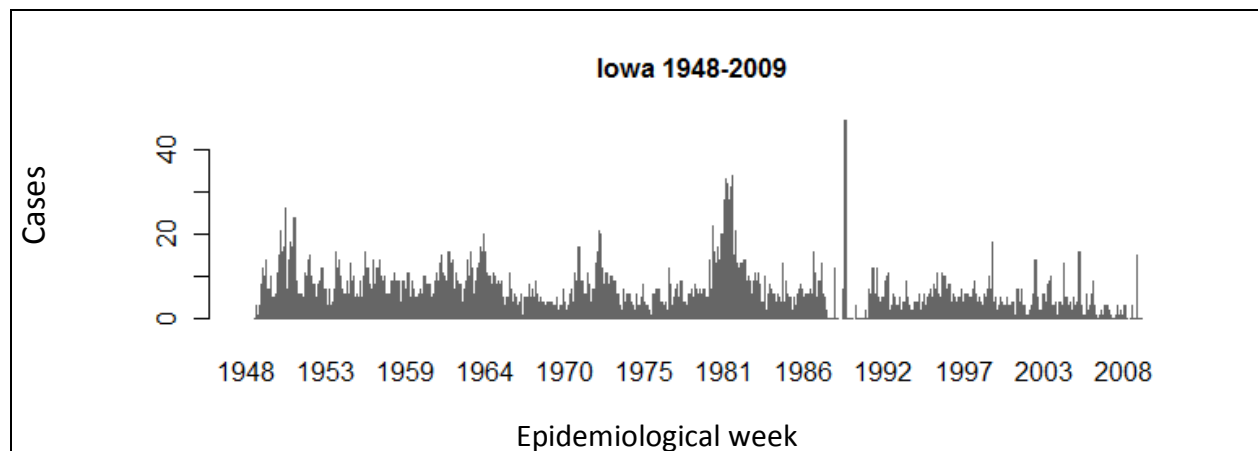
## Rabies in Animals



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

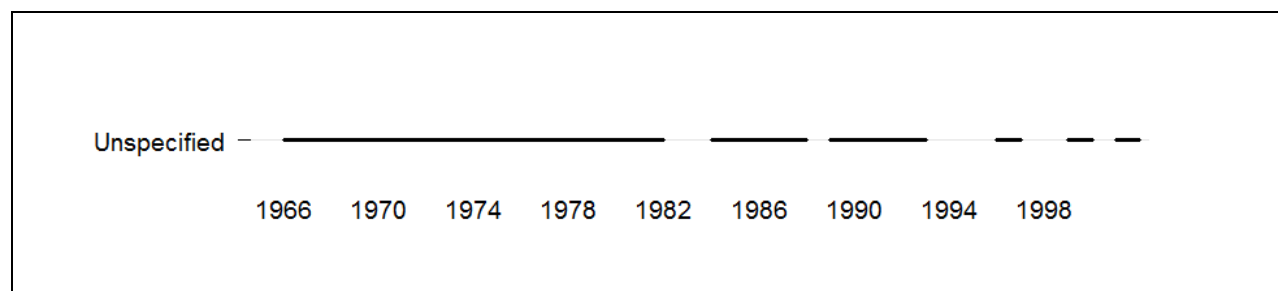
**Table D1,** Summary information for Rabies in Animals

Indicator	Iowa
Report period	1948-2009
Total weeks	2,890
Total cases	11,522
Max. cases per year	774
Year (max)	1981
Max. cases per week	102
Week (max)	2005, wk 50
Average cases per year	186
95%CI	(153-219)
Average cases per week	4
95%CI	(4-4)



**Figure D2,** Number of cases reported for Rabies in Animals per epidemiological week

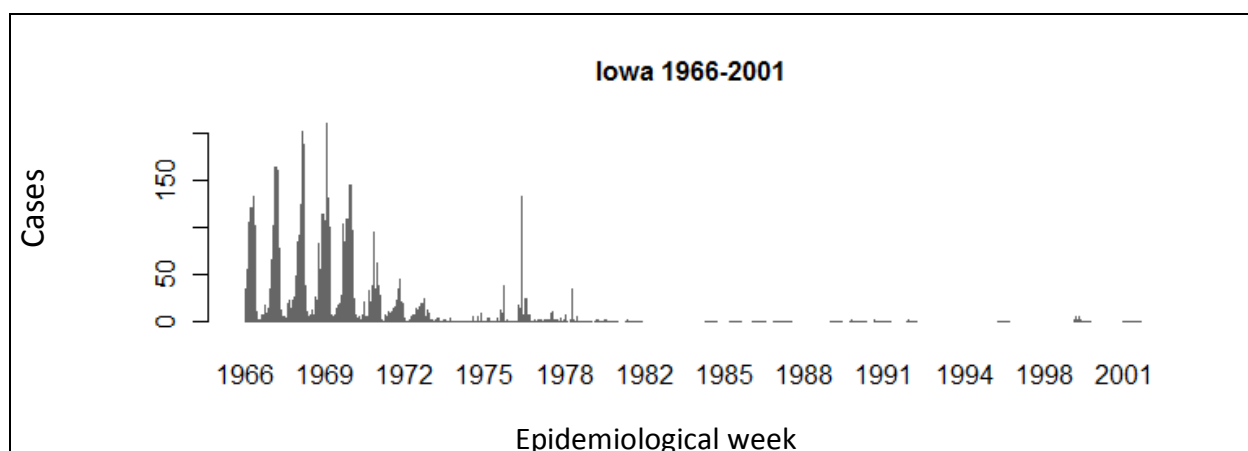
## Rubella



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

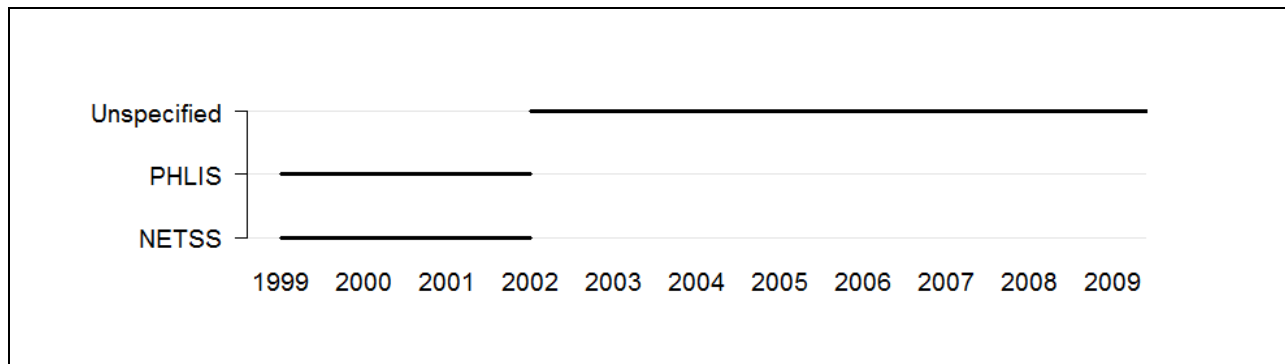
**Table D1,** Summary information for Rubella

Indicator	Iowa
Report period	1966-2001
Total weeks	1,077
Total cases	12,337
Max. cases per year	2,430
Year (max)	1969
Max. cases per week	234
Week (max)	1966, wk 18
Average cases per year	
before 1970	2,043
95%CI	(1,752-2,334)
after 1970	96
95%CI	(12-180)
Average cases per week	
before 1970	41
95%CI	(35-47)
after 1970	3
95%CI	(2-4)



**Figure D2,** Number of cases reported for Rubella per epidemiological week

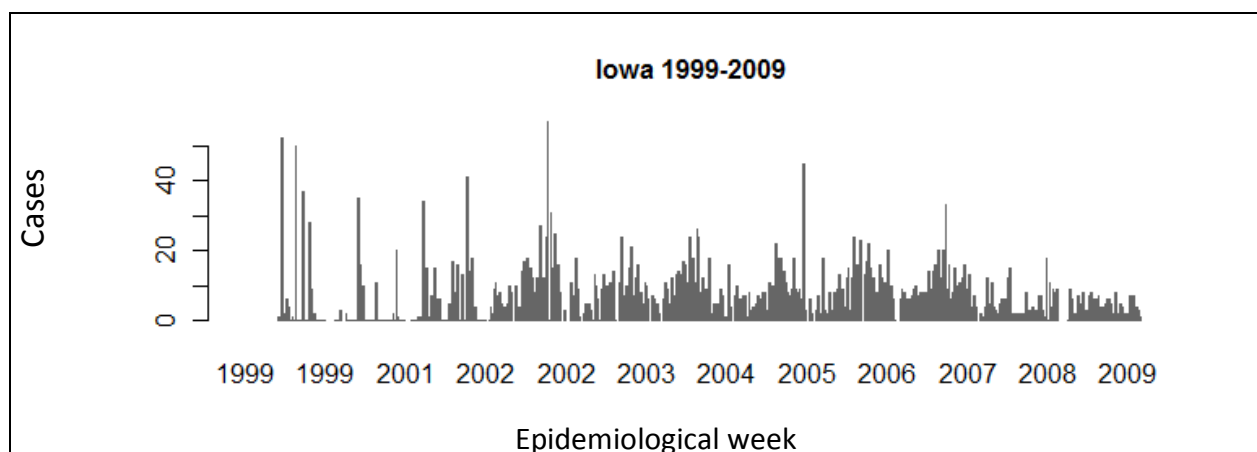
## Salmonellosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Salmonellosis (PHLIS and Unspecified)

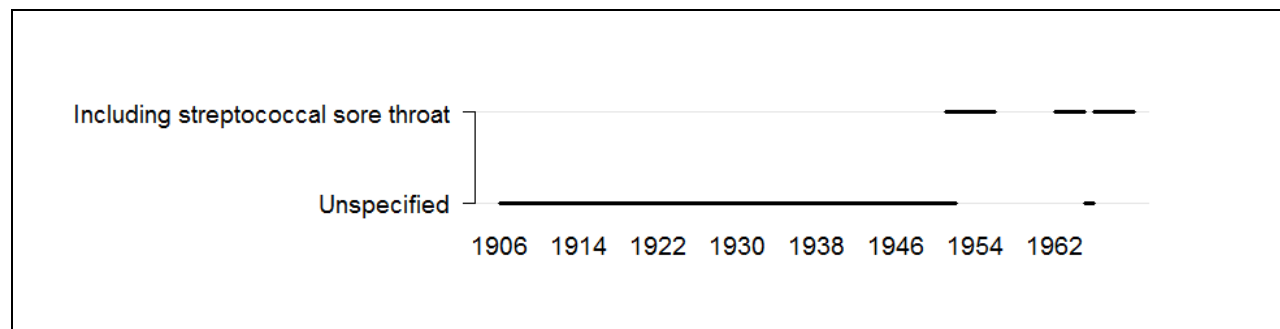
Indicator	Iowa
Report period	1999-2009
Total weeks	503
Total cases	3,690
Max. cases per year	459
Year (max)	2007
Max. cases per week	104
Week (max)	2000, wk 44
Average cases per year	335
95%CI	(266-404)
Average cases per week	7
95%CI	(6-8)



**Figure D2,** Number of cases reported for Salmonellosis per epidemiological week



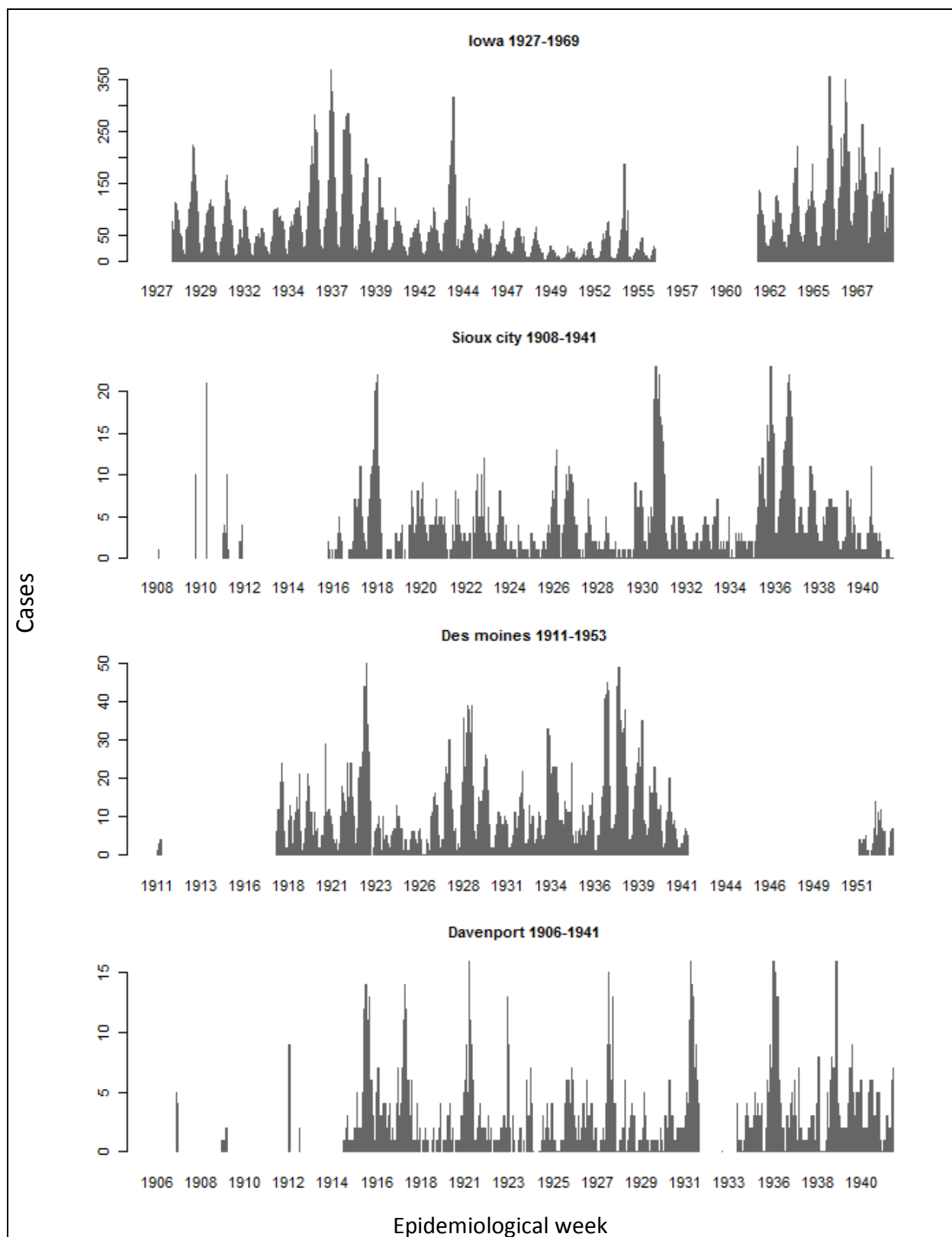
## Scarlet Fever



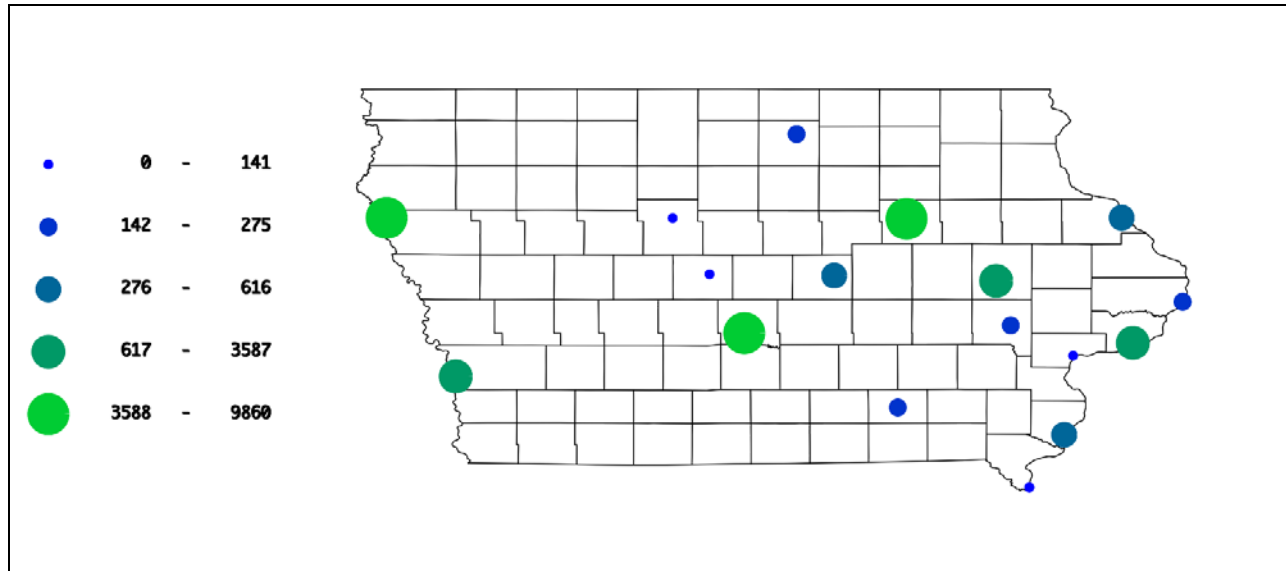
**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Scarlet Fever (Including streptococcal sore throat and Unspecified)

Indicator	Iowa	Sioux City	Des Moines	Davenport
Report period	1927-1969	1908-1941	1911-1953	1906-1941
Total weeks	1,814	1,189	1,138	1,022
Total cases	110,597	3,756	9,859	2,465
Max. cases per year	7,990	396	1,052	252
Year (max)	1967	1937	1937	1936
Max. cases per week	1,120	27	61	19
Week (max)	1968, wk 16	1937, wk 07	1937, wk 10	1936, wk 15
Average cases per year	2,989	121	352	80
95%CI	(2,298-3,680)	(81-161)	(253-451)	(56-104)
Average cases per week	61	3	9	2
95%CI	(58-64)	(3-3)	(8-10)	(2-2)

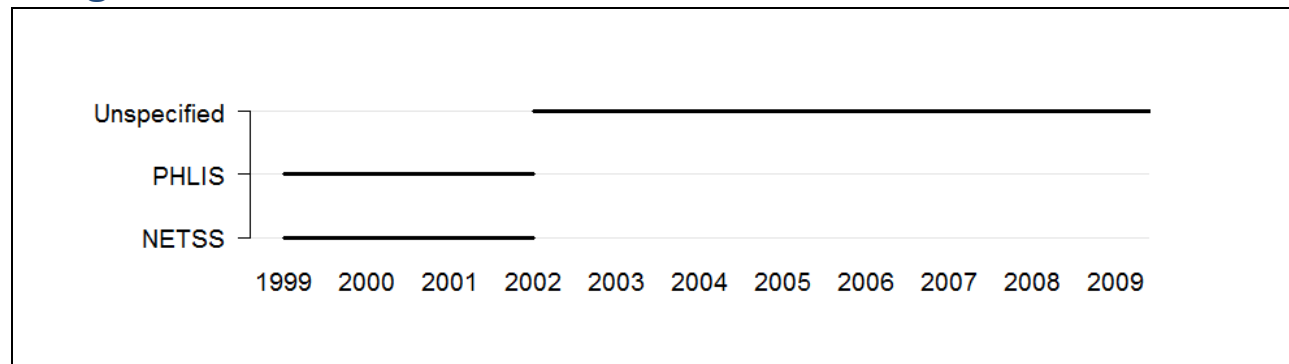


**Figure D2,** Number of cases reported for Scarlet Fever per epidemiological week



**Figure D3**, Total number of all cases reported for Scarlet Fever by each city for the entire time period

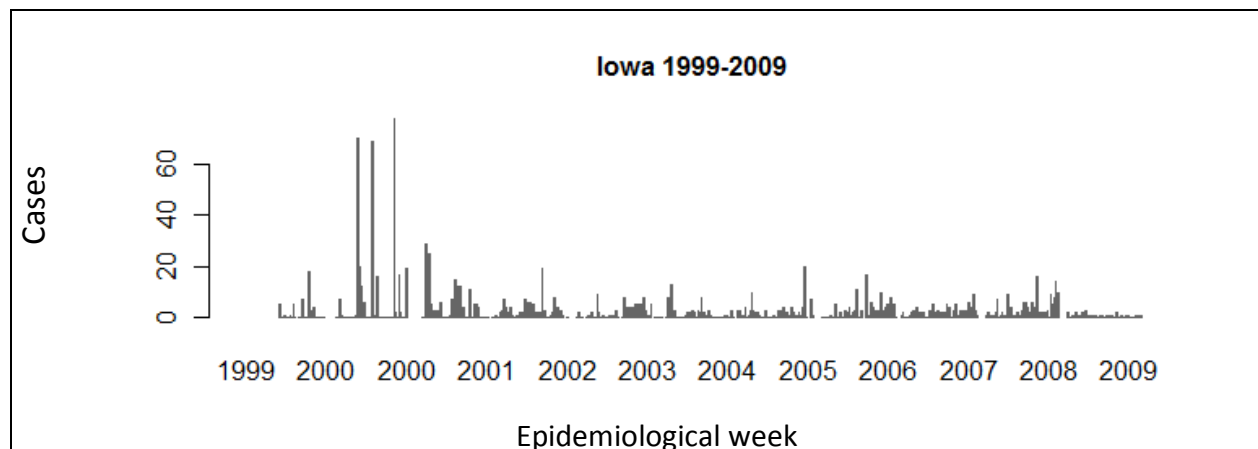
## Shigellosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Shigellosis (Unspecified and PHLIS)

Indicator	Iowa
Report period	1999-2009
Total weeks	492
Total cases	1,610
Max. cases per year	328
Year (max)	2000
Max. cases per week	130
Week (max)	2001, wk 29
Average cases per year	146
95%CI	(85-207)
Average cases per week	3
95%CI	(2-4)



**Figure D2,** Number of cases reported for Shigellosis per epidemiological week

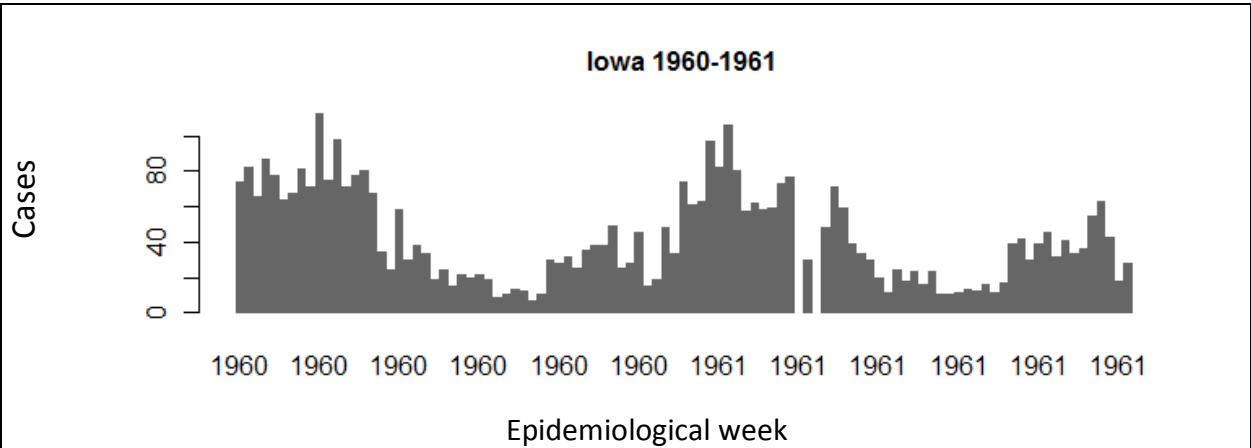
Streptococcal Sore Throat



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

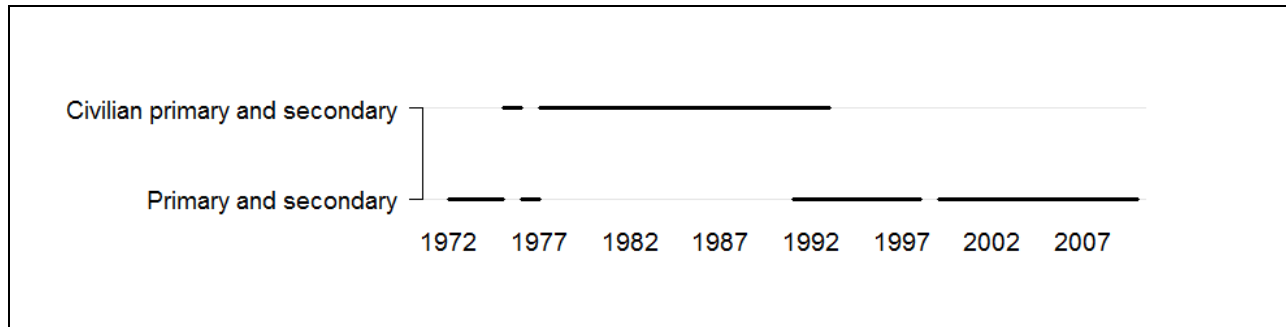
**Table D1,** Summary information for Streptococcal Sore Throat

Indicator	Iowa
Report period	1960-1961
Total weeks	102
Total cases	4,548
Max. cases per year	2,477
Year (max)	1960
Max. cases per week	118
Week (max)	1960, wk 15
Average cases per year	2,274
95%CI	(-305-4,853)
Average cases per week	45
95%CI	(39-51)



**Figure D2,** Number of cases reported for Streptococcal Sore Throat per epidemiological week

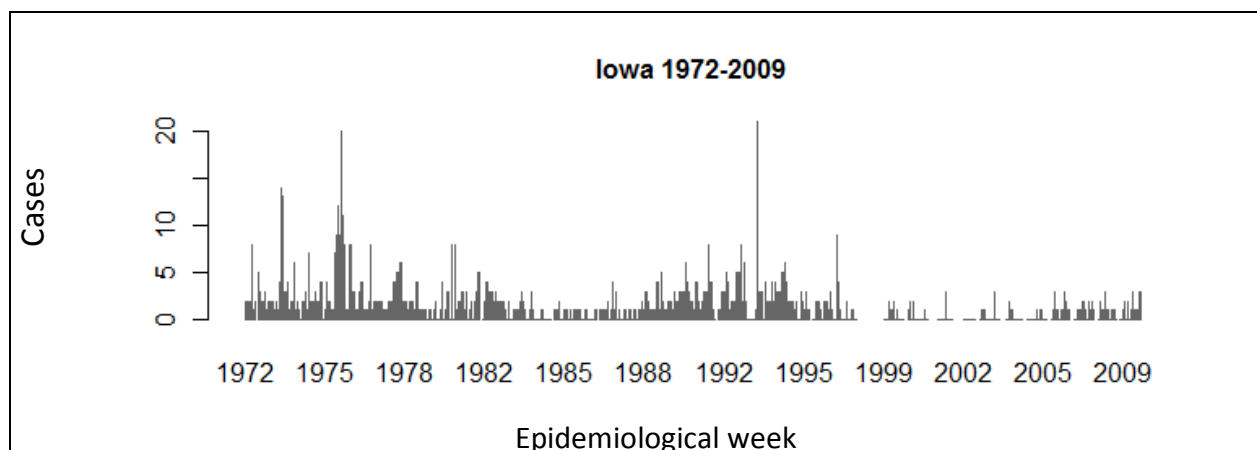
## Syphilis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

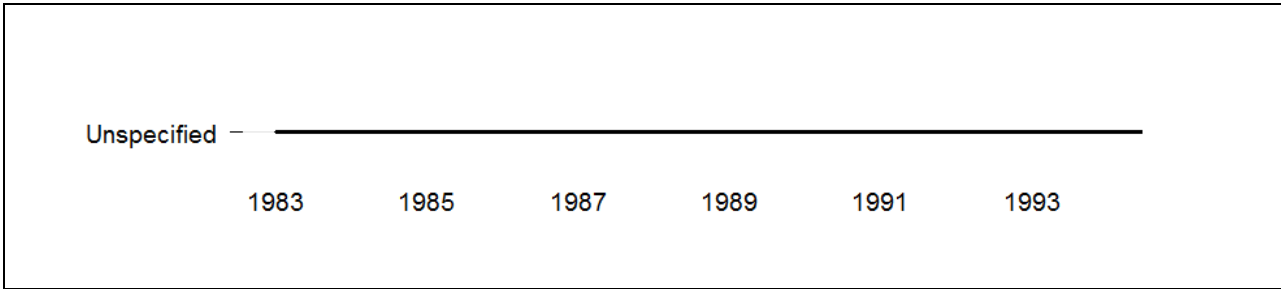
**Table D1,** Summary information for Syphilis (Primary and secondary and Civilian primary and secondary)

Indicator	Iowa
Report period	1972-2009
Total weeks	1,593
Total cases	1,344
Max. cases per year	143
Year (max)	1976
Max. cases per week	86
Week (max)	1995, wk 16
Average cases per year	36
95%CI	(25-47)
Average cases per week	1
95%CI	(1-1)



**Figure D2,** Number of cases reported for Syphilis per epidemiological week

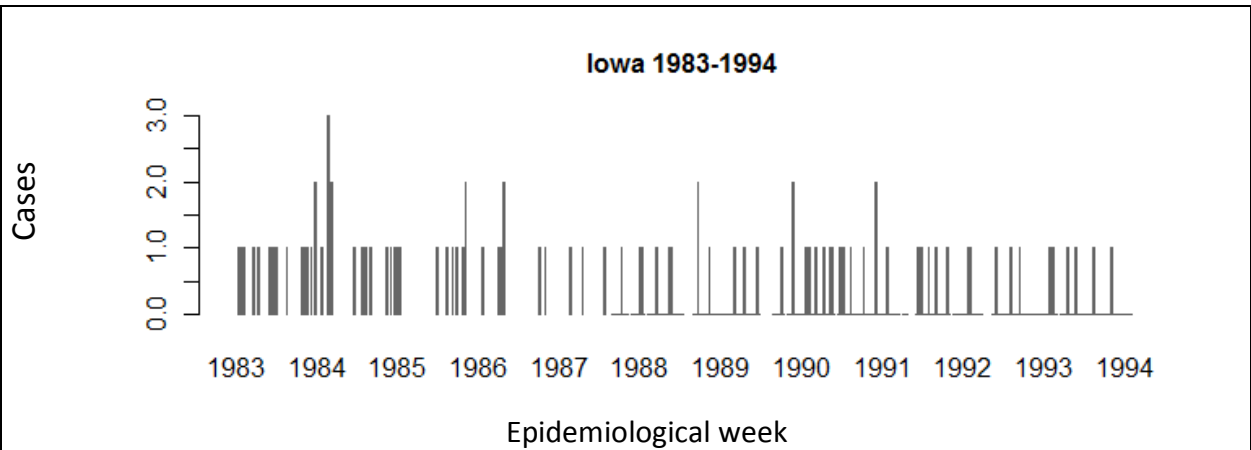
Toxic Shock Syndrome



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

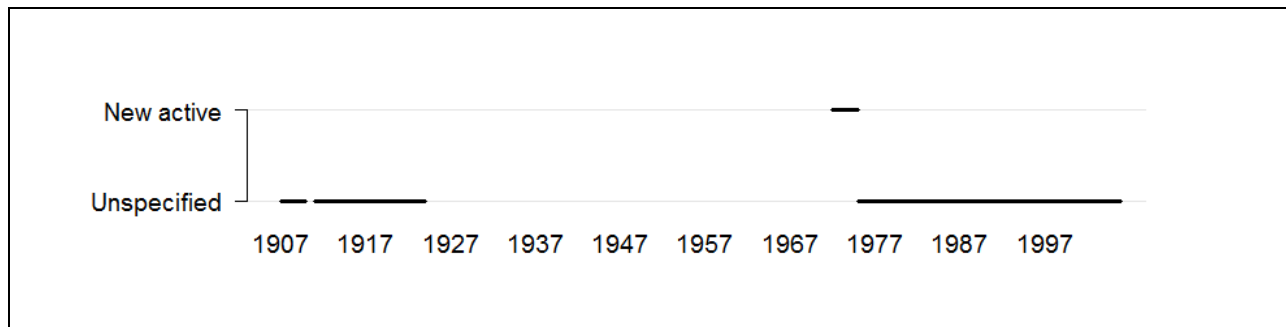
**Table D1,** Summary information for Toxic shock syndrome

Indicator	Iowa
Report period	1983-1994
Total weeks	361
Total cases	109
Max. cases per year	17
Year (max)	1983
Max. cases per week	6
Week (max)	1991, wk 35
Average cases per year	9
95%CI	(7-11)
Average cases per week	0
95%CI	(0-0)



**Figure D2,** Number of cases reported for Toxic Shock Syndrome per epidemiological week

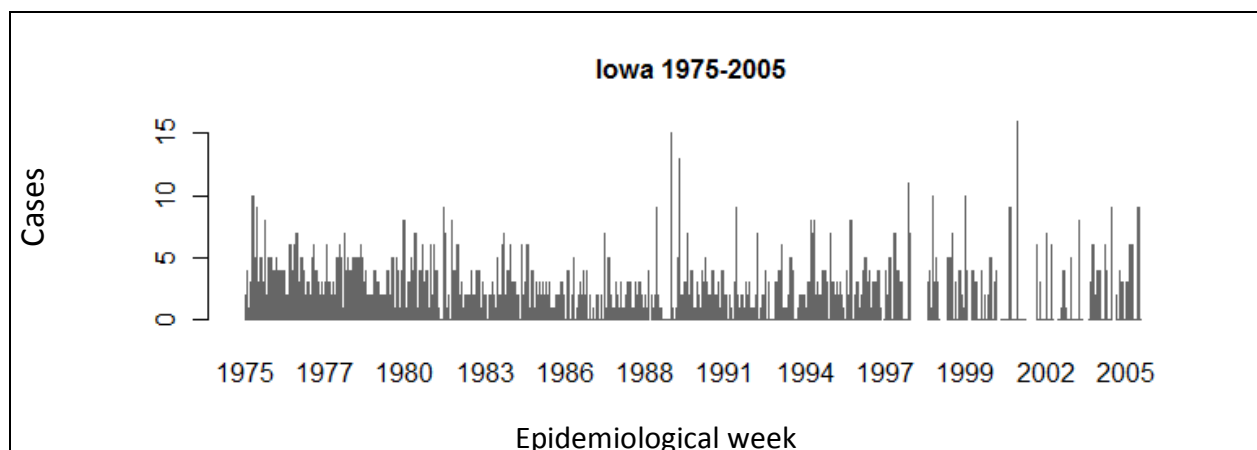
## Tuberculosis



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Tuberculosis (Unspecified)

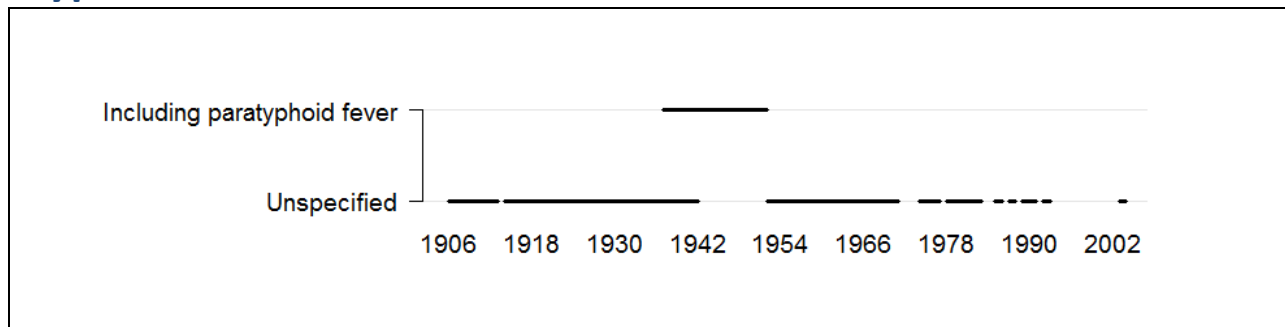
Indicator	Iowa
Report period	1975-2005
Total weeks	1,400
Total cases	2,173
Max. cases per year	174
Year (max)	2005
Max. cases per week	138
Week (max)	2005, wk 41
Average cases per year	70
95%CI	(57-83)
Average cases per week	2
95%CI	(2-2)



**Figure D2,** Number of cases reported for Tuberculosis per epidemiological week



## Typhoid Fever



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Typhoid Fever (Unspecified and Including paratyphoid fever)

Indicator	Iowa	Sioux City
Report period	1927-2003	1915-1941
Total weeks	2,120	906
Total cases	2,824	66
Max. cases per year	317	16
Year (max)	1929	1923
Max. cases per week	42	5
Week (max)	1929, wk 37	1923, wk 39
Average cases per year		
before 1950	104	3
95%CI	(67-141)	(2-4)
after 1950	9	-
95%CI	(4-14)	-
Average cases per week		
before 1950	2	0
95%CI	(2-2)	(0-0)
after 1950	0	-
95%CI	(0-0)	-

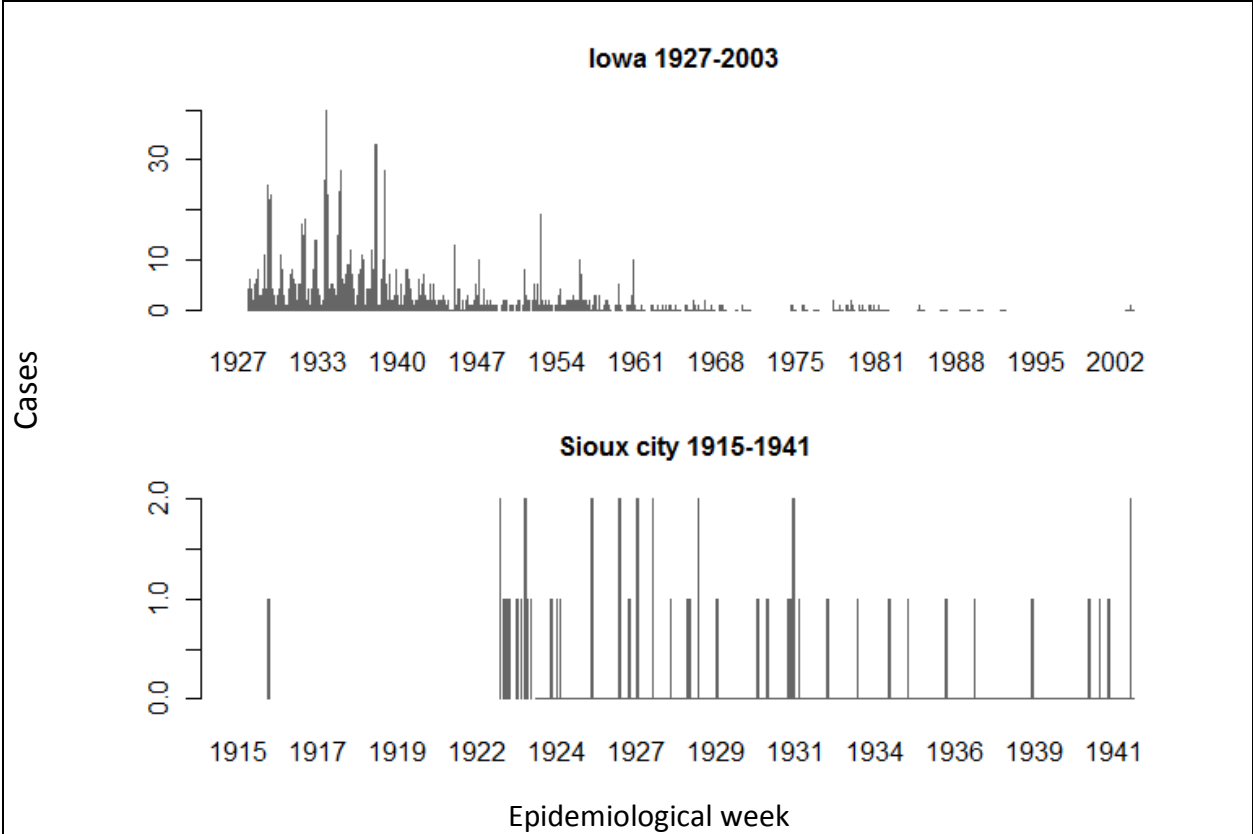
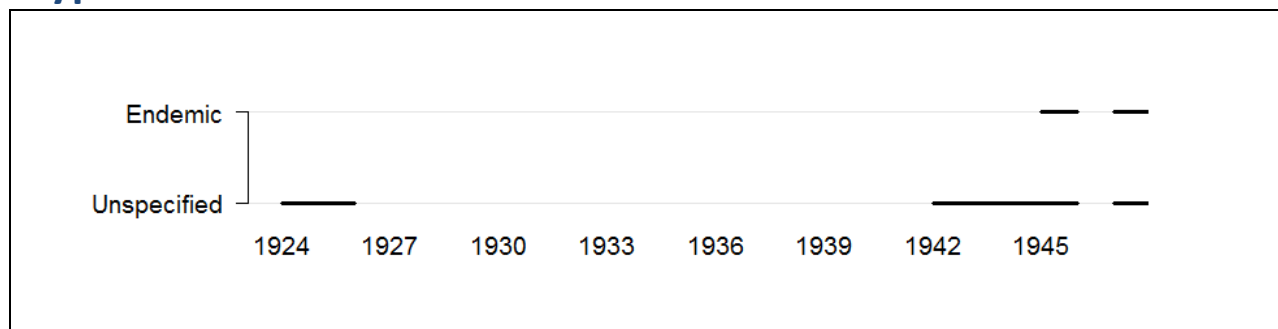


Figure D2, Number of cases reported for Typhoid Fever per epidemiological week

## Typhus Fever

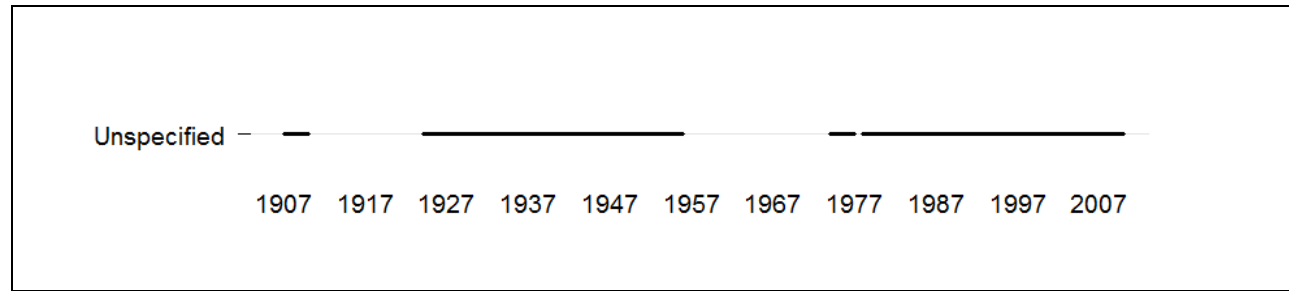


**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Typhus Fever (Unspecified and Endemic)

Indicator	Iowa	Des Moines
Report period	1942-1947	1925-1925
Total weeks	197	2
Total cases	15	0
Max. cases per year	14	0
Year (max)	1947	1925
Max. cases per week	13	0
Week (max)	1947, wk 42	1925, wk 28
Average cases per year	3	0
95%CI	(-5-11)	-
Average cases per week	0	0
95%CI	(0-0)	(0-0)

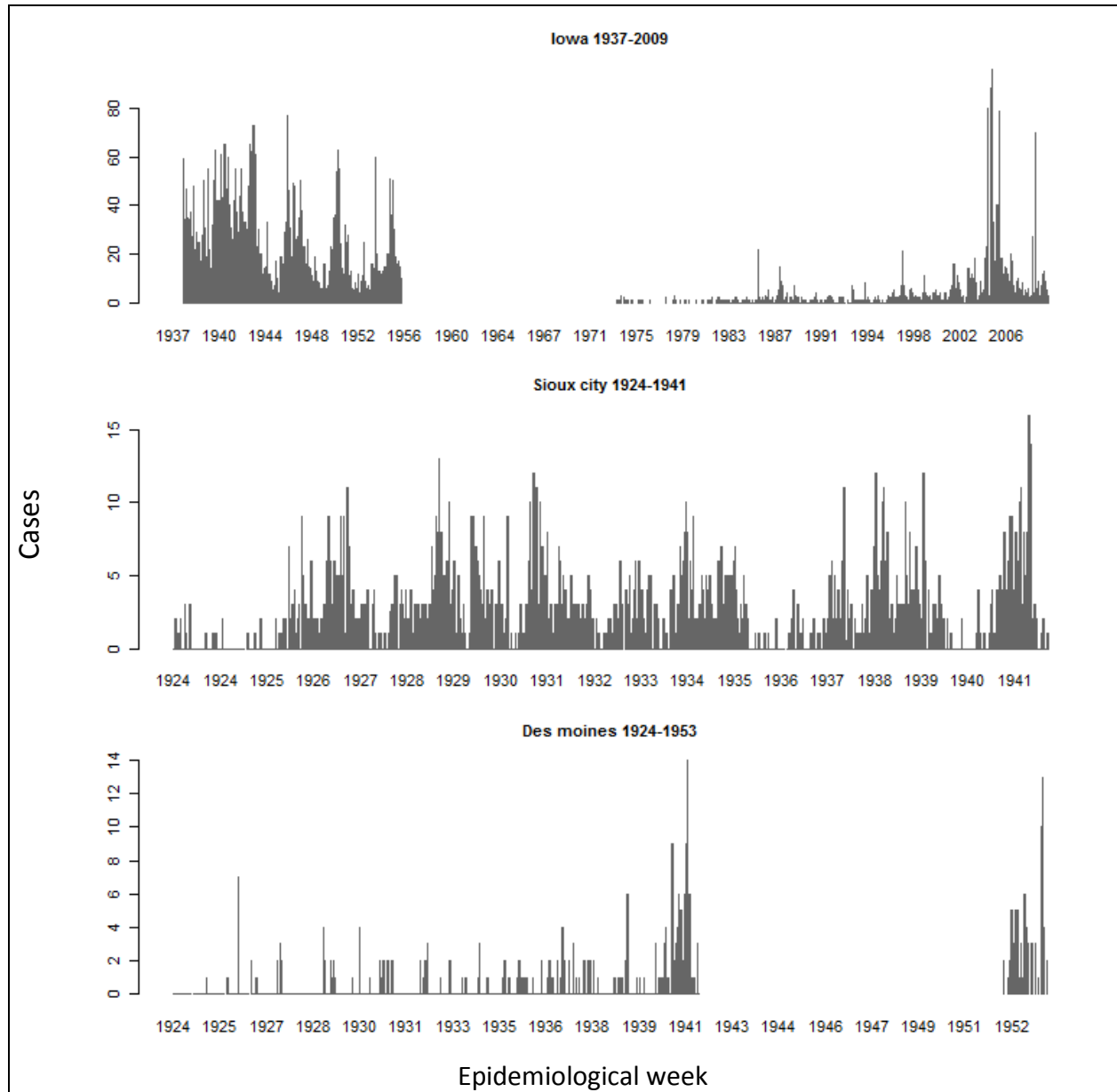
## Whooping Cough



**Figure D1,** Weeks between 1888 and 2009 for which data on the disease and subcategories (if applicable) are available in the Tycho database. If no subcategory was reported, a subcategory of "Unspecified" was assigned.

**Table D1,** Summary information for Whooping Cough

Indicator	Iowa	Sioux City	Des Moines
Report period	1937-2009	1924-1941	1924-1953
Total weeks	2,158	897	884
Total cases	18,706	1,997	406
Max. cases per year	1,678	230	106
Year (max)	1943	1941	1941
Max. cases per week	784	25	15
Week (max)	2005, wk 50	1929, wk 35	1926, wk 11
Average cases per year			
before 1960	792	111	20
95%CI	(557-1,027)	(78-144)	(7-33)
after 1960	104	-	-
95%CI	(9-199)	-	-
Average cases per week			
before 1960	17	2	0
95%CI	(16-18)	(2-2)	(0-0)
after 1960	3	-	-
95%CI	(2-4)	-	-



**Figure D2,** Number of cases reported for Whooping Cough per epidemiological week

## Diseases with fragmented data over time

For a number of diseases, only fragmented data was available for Iowa. This was due to the inclusion of these diseases in the weekly surveillance system for short periods or widely dispersed periods of time. Due to these wide gaps or limited data, data for these diseases were not presented in separate sections but in the table below. Work will continue to include more data in the Tycho database and complete data sets for each disease where possible. Collaborations with local, state and federal public health agencies will be made to explore data availability and opportunities to include these in the Tycho database.

**Table 2,** Summary information on the occurrence of diseases with fragmented data in Iowa

Disease	Report type	Report period	Number of reports	Total cases
Anthrax	State	1942-1945	143	0
Dysentery	State	1942-1948	235	58
Encephalitis	City	1952-1953	3	8
Encephalitis	State	1942-1994	980	981
Influenza	City	1920-1941	970	6778
Influenza	State	1919-1951	423	67496
Leprosy	State	1942-1984	179	0
Malaria	City	1952-1952	1	14
Malaria	State	1952-2009	1484	318
Pellagra	City	1924-1932	201	0
Psittacosis	State	1956-1959	15	18
Rocky mountain spotted fever	State	1942-2009	979	169
Tetanus	State	1962-1980	241	31
Trichiniasis	State	1952-1955	6	28
Tularemia	State	1942-1987	567	86
West nile disease	State	2003-2009	140	142

Preliminary data, not for publication or official use

## Project Tycho

This report provides preliminary data for the state of Iowa available in the Tycho database. This database is currently being beta tested and these data cannot be used for publication or other official use at this time. An open access release to the general public is planned for later in 2011.

Please visit the Tycho website for more information and to query the database at: [www.tycho.pitt.edu](http://www.tycho.pitt.edu). For further information regarding the Tycho project, contact Dr. Wilbert van Panhuis at the University of Pittsburgh Graduate School of Public Health.

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