Public Health in Mississippi

Objectives
Students will read a brief history of the Mississippi State Department of Health, research and design a brochure based on a common disease found in Mississippi during the first decades of the twentieth century, and use morbidity reports to create three types of graphs.

The *Public Health in Mississippi* lesson is adaptable for grades 4 - 7.

Mississippi Department of Education Curricular Connections		
Mathematics Common Core	Fourth Grade	4.MD.4
	Fifth Grade	5.OA.3; 5.NBT.5; 5.NBT.7
	Sixth Grade	6.RP.1; 6.RP.3c; 6.NS.2
	Seventh Grade	7.RP.2a; 7.RP.2b
Language Arts Common Core	Fourth Grade	RI-1; RI-2; RI-3;RI-4; RI-5; RI-7; RI-10; W-2; W-4; W-5; W-6; W-7; W-8; W-9; W-10; SL-1; L-1; L-2; L-3; L-4; L-5; L-6
	Fifth Grade	RI-1; RI-2; RI-4; RI-7; RI-10; W-2; W-4; W-5; W-6; W-7; W-8; W-9; W-10; SL-1; L-1; L-2; L-3a; L-4; L-5; L-6
	Sixth Grade	W-1; W-2; W-4; W-5; W-6; W-7; W-8; W-10; SL-1; SL-2; SL-3; SL-4; SL-5; SL-6; L-1; L-2; L-3; L-4; L-5; L-6; RH-2; RH-5; RH-7; WHST-1; WHST-2
	Seventh Grade	W-1; W-2; W-4; W-5; W-6; W-7; W-8; W-10; SL-1; SL-2; SL-3; SL-4; SL-5; SL-6; L-1; L-2; L-3; L-4; L-5; L-6; RH-2; RH-5; RH-7; WHST-1; WHST-2
Social Studies	Fourth Grade – Mississippi Studies	1c; 1d; 3a; 4a
	Sixth Grade – World Geography and Citizenship	2b; 4
	Ninth Grade – Mississippi Studies	1f; 2b; 5d;
	U.S. History from Post-Reconstruction to Present	2b; 2c; 4f; 7c; 7d

Copyright 2014. Mississippi Department of Archives and History.

Objective:
Students will read a brief history of the Mississippi State Department of Health, research and design a brochure based on a common disease found in Mississippi during the first decades of the twentieth century, and use morbidity reports to create three types of graphs.

Materials: *The History of Public Health in Mississippi; Discussion Guide;* Internet access; historic public health educational brochures; *Educating the Public; Morbidity Reports; Morbidity Report Worksheet*; graph paper.

Procedures:

Activity One: Students will read a brief history of the Mississippi State Department of Health that describes its mission and activities.

1. Distribute *The History of Public Health in Mississippi* handout to students.
2. Lead a class discussion about the Mississippi State Department of Health in the 1930s using the *Discussion Guide*. Images from the Mississippi State Department of Health Digital Archives (available at http://www.mdah.ms.gov/arrec/digital_archives/series/2176) may be printed and distributed to students or projected on a screen.

Activity Two: In keeping with the Department of Health's mission to educate Mississippians, students will research and design an educational brochure on a disease appearing in the state morbidity reports.

1. Have students use the provided examples of historic public health educational brochures titled *Special Bulletin No. 4 Hookworm Disease How to Prevent and Cure It* and *Protect Your Child against whooping cough* as primary resources.
2. Distribute *Educating the Public* and *Morbidity Reports* handouts to students.
3. Working individually, in pairs, or in groups, have students choose from the list of Mississippi diseases found in the morbidity reports. They may also choose a topic such as dental hygiene, childcare, healthy eating, etc.
4. Have students research their chosen disease or topic and create an educational brochure on its signs, symptoms, treatment, and prevention. Encourage the use of illustrations or photographs.
5. Allow students to share or display their brochures within the classroom.

Activity Three: By looking at morbidity reports from the 1920s and 1930s and translating them into graphs, students will gain an idea of how prevalent various diseases were among Mississippians and how these diseases relate to climate, geography, and economic status.

1. Distribute *Morbidity Reports* handout to students or project each chart for the class.
2. Have students answer the questions on the *Morbidity Report Worksheet*.

Extension Activity: Go Digital! Allow students the opportunity to explore more about diseases that have affected Mississippians via online articles, medical archives, and virtual tours, using the following:

- Read the *Mississippi History Now* article "The Importance of Wearing Shoes" by Deanne Stephens Nuwer and have a class discussion on the article's content. Access the article at http://www.mshistorynow.mdah.ms.gov/articles/241/hookworm-disease-in-mississippi%3A-the-importance-of-wearing-shoes.

- Explore the National Institute of Health's online exhibit, *Dr. Joseph Goldberger and the War on Pellagra*, available at https://history.nih.gov/exhibits/Goldberger/index.html.

Copyright 2014. Mississippi Department of Archives and History.

- Use the Center of Disease Control website at http://www.cdc.gov/malaria/about/index.html to understand the history, biology, and transmission of malaria.

- Visit the National Museum of Health and Medicine virtual exhibit at http://www.medicalmuseum.mil/index.cfm?p=exhibits.virtual.1918killerflu.index about the 1918 Spanish Influenza epidemic.

- During World War II, the Public Health Department and various military branches made educational films highlighting healthy living. Access this historic film footage on the U.S. National Library of Medicine's Digital Archives, including films titled:

  - *Health Education Against Malaria*, 1944 (6:16), available at http://collections.nlm.nih.gov/catalog/nlm:nlmuid-8700198A-vid.

  - *It's Up to You: Dengue-Yellow Fever Control*, 1945 (17:18), available at http://collections.nlm.nih.gov/catalog/nlm:nlmuid-8800171A-vid.

  - *Private Snafu vs. Malaria Mike*, 1944 (4:48), available at http://collections.nlm.nih.gov/catalog/nlm:nlmuid-100960023-vid.

Copyright 2014. Mississippi Department of Archives and History.

The History of Public Health in Mississippi

The first law protecting the health of Mississippians was passed on March 18, 1799, when Mississippi was still a territory. The Law Concerning Aliens and Contagious Diseases was meant to prevent individuals with contagious diseases from entering the territory. It also empowered physicians within the territory to take any measures necessary to prevent or contain a disease and treat those affected.

In February of 1818, a mere two months after achieving statehood, Mississippi organized its first Health Department in the capital city of Natchez. Extraordinarily comprehensive for the time, the law establishing the department charged it with the creation and maintenance of sewers and drains; the ability to remove infected goods, waste, or crops from the city; the management of the local cemetery; the inspection of all boats for communicable diseases prior to docking; and the erection of a temporary hospital outside the city limits at any time to care for sick individuals and prevent the spread of disease.

The State Board of Health, which would develop into the present-day Mississippi Department of Health, would be founded on February 1, 1877 with the help of the Mississippi State Medical Association. Its mission, to protect the life and health of citizens and prevent the spread of disease, is essentially the same today as when the organization was founded over 130 years ago. Some of the responsibilities of the State Board of Health included identifying the causes of disease and epidemics; the collection of data on disease, disease prevention, sanitation, and birth and death rates; the education of the public on health issues; and regular county inspections to identify any public health concerns.

Increased organization came to the Board of Health during the 1910s and 1920s. Field workers were employed to visit communities suffering from epidemics such as hookworm, malaria, and pellagra and begin sanitation education to help prevent these and other diseases. A State Tuberculosis Sanatorium was established in 1916 and bureaus focusing on venereal disease, maternal and child health, nursing and midwifery, and epidemiology were established. County health departments also began to be established during this time, as did a concentrated effort to educate the public on health concerns via newspapers, radio programs, lectures, teacher training, and school instruction.

The Mississippi State Department of Health Photograph Album, digitized and available in its entirety online, is evidence of a unique time in the department's history. From the 1930s, the images hint at the rural lives of many Mississippians and the health obstacles that a rural life contained, such as a lack of running water, large families housed in single-room homes, and home health care performed by visiting doctors, nurses, and midwives.

Posters such as this one encouraged the public to screen their homes in order to keep mosquitoes out and prevent malaria (circa 1930). By 1947, malaria had been essentially eliminated from the region. MDAH, Museum Collections.

Copyright 2014. Mississippi Department of Archives and History.

Teacher Discussion Guide

Use images from the MDAH Digital Archive entitled "Mississippi State Department of Health Photograph Album, c. 1930s" (available at http://www.mdah.ms.gov/arrec/digital_archives/series/2176) to lead your class in a discussion analyzing and interpreting the following images. Note: Locate images by typing the page number in the "search for keyword" box.

1. **Page 20 (top), Page 45 (bottom), and Page 47 (top):** What do all these homes have in common? How could this lead to disease?
   - All the homes are adjacent to standing water. Standing water breeds mosquitoes that in turn transmit malaria, dengue fever, and other diseases. It also harbors other types of bacteria and parasites. Standing water is oftentimes polluted with animal and human feces, making it dangerous to drink.

2. **Page 20:** Discuss the change in environment with the addition of a drainage ditch. How would the ditch have changed the living conditions of the residents nearby?
   - The ditch would decrease the amount of standing water in the area, lowering the risk of disease-transmitting mosquitoes and cross-contamination of drinking water.

3. **Page 18:** The caption to the bottom image reads "Making screen doors on a plantation." This could imply that working hours were used to make and install screen doors and windows on the homes of tenant farmers. If this was the case, what would have been the motivation of the plantation owner to allow or finance this installation?
   - The investment (in time and money) of installing screens in the homes of employees would have been far less than the investment of time if that employee became ill from a preventable disease spread by mosquitoes.

4. **Page 28:** How do you think segregation and racism affected health care in 1930s Mississippi?
   - At times, diseases that affected more African Americans than whites were largely ignored by politicians and even physicians. But many diseases were caused by poor diet or living conditions and thus, because many were poor farmers, African Americans had a higher incidence of certain diseases than whites.

5. **Page 37:** What would have been the pros and cons of holding a health clinic outside in the 1930s?
   - Pros: No need to erect or maintain a permanent building. Ability to travel to patients who may not have traveled to a permanent clinic. Public display of health care could encourage others to participate (get vaccinated, improve their diet or hygiene, etc.).
   - Cons: No ability to provide long-term care to patients in a hospital setting. Restricted by weather or climate changes. Only have access to medical supplies and equipment that can be easily transported.

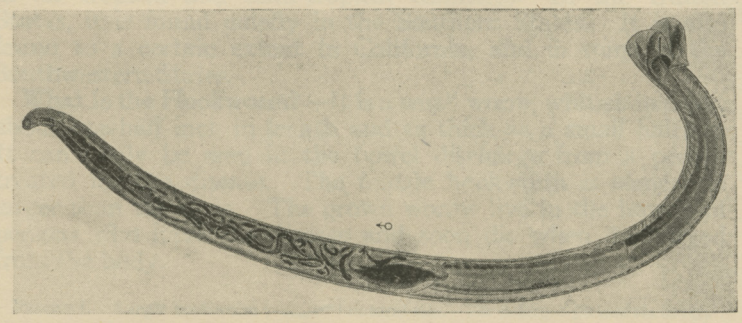
6. **Page 39:** Notice that the children in the bottom photo appear to be dressed in their Sunday best. If they dressed-up to receive a vaccine, what do you think that says about how much they or their parents valued health care?

Copyright 2014. Mississippi Department of Archives and History.

SPECIAL BULLETIN No. 4

Hookworm Disease

How to Prevent and Cure It



A male hookworm very much magnified.

MISSISSIPPI STATE BOARD OF HEALTH

JACKSON, MISSISSIPPI

OFFICERS

C. D. MITCHELL, M. D., President, Pontotoc

S. W. GLASS, M. D., Lyon
T. H. SEAY, M. D., Laurel
H. F. GARRISON, M. D., Seminary
B. L. CRAWFORD, M. D., Tylertown
J. H. JOHNSON, M. D., Brookhaven
W. W. HALL, M. D., Gunnison
T. F. ELKIN, M. D., Tupelo
L. L. McDOUGAL, M. D., Booneville
J. H. McNEILL, M. D., Olive Branch
S. E. EASON, M. D., New Albany
T. W. REAGAN, M. D., Union
W. H. WATSON, M. D., Brandon

Prepared by
W. S. LEATHERS, M. D.,
Executive Officer

TUCKER PRINTING HOUSE JACKSON MISS

Special Bulletin No. 4 Hookworm Disease How to Prevent and Cure It. **Mississippi State Board of Health. MDAH Archives and Records Services.**

Copyright 2014. Mississippi Department of Archives and History.

Hookworm Disease and How to Prevent It.

What Is Hookworm Disease?—A disease due to the presence in the small bowel of many tiny worms, called hookworms, which make the person become pale and weak and also cause other symptoms.

Where Does Hookworm Disease Occur?—This disease occurs in all tropical and semi-tropical countries. In the United States, it is found chiefly in the Southern States. It is also found to a certain extent in California, and in some of the Southwestern States.

What Is the Hookworm?—It is a small worm, whitish in color, about one-half inch in length and as thick as a small hairpin. It can easily be seen in the bowel discharge from a person treated for the disease. The female hookworm is somewhat larger than the male. The grown worms live in the bowels of persons who have the disease and soon die when discharged from the body.

FIGURE 1. A male hookworm (—•) natural size. For enlarged picture see cover.

What Does the Hookworm Do?—It attaches itself to the lining membrane of the bowel and sucks the blood. When it lets go to become attached to a new place, the blood may ooze from the small wound for sometime. The hookworm forms a poisonous secretion which makes the blood flow more freely and which also poisons the body. There is usually on an average of from one hundred to one thousand worms in a person who has the disease. It is, therefore, possible for thousands of small wounds to be produced in the lining membrane of the bowel, and which may also serve as points of infection. The constant irritation produces, in time, inflammation of the bowel. The female hookworms lay thousands of eggs which are passed out in the discharges.

What Becomes of the Eggs?—The eggs hatch under most favorable conditions of temperature, moisture, and soil in from one to three days, into tiny hookworms (larvae).

What about the Young Hookworms or Larvae?—After hatching, the young hookworms eat heartily for two or three days and shed their skin. They go on eating three or four days longer and again shed the newly formed skin. They may live enclosed in the dead skin from a week to several months in the

Copyright 2014. Mississippi Department of Archives and History.

soil. In this stage they can only be seen when highly magnified. This is called the infestive stage.

How Does the Hookworm Get into the Body of a Person?—The young hookworms may be taken into the body by swallowing them in the water, or uncooked foods which have been contaminated; but usually they get in by boring through the skin, especially, the skin of the feet. It is thought that only about 10% of those with hookworm disease contract it through the mouth, the remaining 90% get it through the skin.

What Symptoms Are Caused When They Bore Through the Skin?—There is a swelling of the skin, and frequently intense itching. The skin looks red, and often sores are produced.

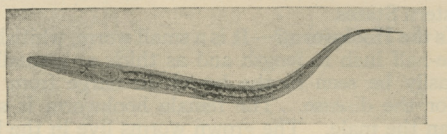


Figure 3. This shows the young worm a short time after it escapes from the eggshell. The bottle-shaped structure at the blunt end is the esophagus, or gullet, and the darker organ following this is the intestine. This worm crawls or is scattered around on the ground. It feeds for about 8 days or more, according to conditions, storing up food and growing; during this process it sheds its skin twice, much like a snake.

This is called, "ground-itch," "dew-itch," "cow-itch," and because it frequently occurs on the feet, it is also called "toe-itch," or "foot-itch."

What Is the First Symptom of Hookworm Disease?—"Ground-itch" is the first symptom of hookworm disease, and if you have had "ground-itch," you have had or now have hookworm disease.

After Young Hookworms Bore into the Skin, What Then Happens?—They get into the blood and lymph vessels and then pass to the heart in the blood stream; from the heart they pass to the lungs and on reaching these organs they find the blood vessels too small to pass through; the tiny active hookworms then work their way out into the air cavities of the lungs and crawl up the wind-pipe into the throat; they are then swallowed passing through the stomach into the bowels. After undergoing further development they become attached to its lining. It requires from four to six weeks after entering the body before they become grown and begin sucking blood.

What Are the Harmful Effects of Hookworms?—They suck a person's blood and secrete a poison which weakens the body,

and because of the inflammation of the bowel the person is unable to obtain sufficient nourishment from the food. Likewise, owing to the decrease in the number of red corpuscles or a decrease in the red coloring matter of the blood the person becomes pale and suffers for want of oxygen (air). As this disease is found more usually among children it is easy to understand why thousands of children are suffering from the effects of hookworms, and are dwarfed mentally and physically.

What Are Some of the Symptoms of Hookworm Disease?—In severe cases the persons may be dwarfed in mind and body. The blood is thin. The skin may be dry and of a pasty yellow, and in some cases tan colored; the hair is dry; the shoulder blades prominent and the abdomen frequently swollen. There is usually a tenderness in the pit of the stomach. Ulcers are often

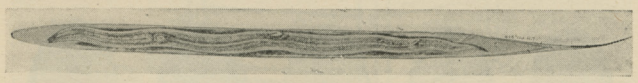


Figure 4. This represents the worm after it has shed its skin the second time; the worm remains encysted, as shown, in this skin; it now no longer takes food until it enters man. It may live just so long (5 months, more or less) as it can live on the food which it has already eaten. If it becomes completely dried, it dies; therefore it cannot be blown around in the air as dust; prolonged solid freezing kills it. When partially dry, it is quiet, but it is very active when wet, as in dew. It can wriggle up a surface which is moist. This young worm may be swallowed, but more generally it enters through the skin.

seen on the shin which heal slowly. There may be severe headaches and dizziness, the digestion is poor, and in many cases the appetite is perverted. Often there is aching in the joints. The eyes are listless, the mind is dull, and in school the child falls behind in his work. The person lacks energy, because his body is weakened.

Do All Cases Have These Symptoms?—No, mild cases may show only slight indigestion, and some paleness. The symptoms would, therefore, vary according to whether the case is mild, medium, or severe.

What Effect Does Hookworm Disease Have on Children?—It stunts the growth of the child. A boy or girl of fifteen years may appear to be not more than ten. A child is often frail, thin blooded and dwarfed in body and mind. In other words, children with hookworm are dull in their studies. Therefore, children suffering from hookworm disease are unable to make use of the opportunity of school life, and money used for educating children with hookworm, is expended with poor results.

How Do You Tell When a Person Has Hookworm Disease?—It is possible to form a pretty correct idea from the symptoms

Copyright 2014. Mississippi Department of Archives and History.

in severe cases, but the way to make a correct diagnosis is to examine a bit of bowel discharge with a microscope.

How Do You Tell by Examining the Bowel Discharge whether a Person Has Hookworm Disease?—By finding the eggs of the hookworm in the discharge; the female hookworm lays about one

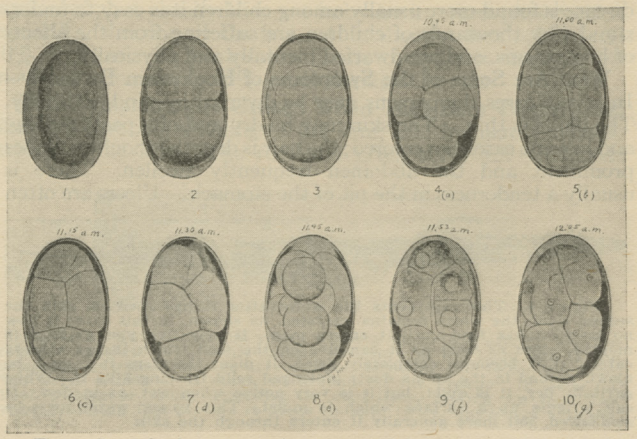


Figure 5. A hookworm egg in process of development. At first this egg contains only 1 cell (see 1), which later divides into 2 cells (2), each of which divides, thus forming 4 cells (3, 4, 5); these cells keep on dividing until, sometimes by the end of 8 hours, a young worm (see fig. 3) is formed.

thousand eggs each day in the bowel of a person infected and they may be seen by examining a small bit of discharge under the microscope.

How Can the Microscopic Examinations Be Made?—This can be done by getting your physician to send a specimen to the Mississippi Hygienic Laboratory, Jackson, Mississippi, or by getting the Field Director of the State Board to make the examination for you. The examination is free.

How Can Hookworm Disease Be Prevented?—By not soiling the ground with the bowel discharges. This will prevent the hookworm eggs from hatching. **Good privies should be built and used so that the ground will not become polluted or infected.** Of course, by wearing shoes, the disease could be prevented. But the best way is to prevent soil pollution, or the bowel discharge from getting into the soil, as this will also prevent typhoid fever, tuberculosis, and other bowel troubles. Every home and school should be provided with sanitary privies.

A TYPE OF RURAL PRIVY

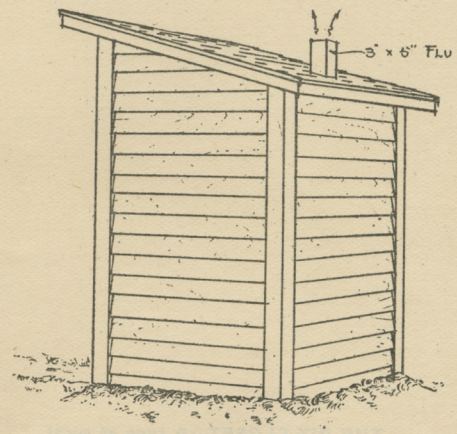


FIG - 6 -
THE CLOSET COMPLETED
DIRT BANKED UP A FEW
INCHES TO PREVENT WATER
ENTERING IT DURING RAIN

Can Hookworm Disease Be Cured?—Yes, if you will take the treatment as directed by the doctor.

What Is Necessary to Cure the Disease?—All that is necessary to do is to get the worms out of the patient's bowel and the patient will then get well himself, but some effects of the disease may be permanent in extreme cases. Therefore, you should take the treatment before the disease becomes severe, and the severe case should take the treatment in order to feel well. All people who have hookworm disease should be cured to prevent others from becoming infected.

What Medicines Are Usually Used?—The drug known as Chenopodium is used, and also a drug known as Thymol. Either of these drugs may be used to cure the disease. The Field Directors of the State Board of Health are now using Oil of Chenopodium.

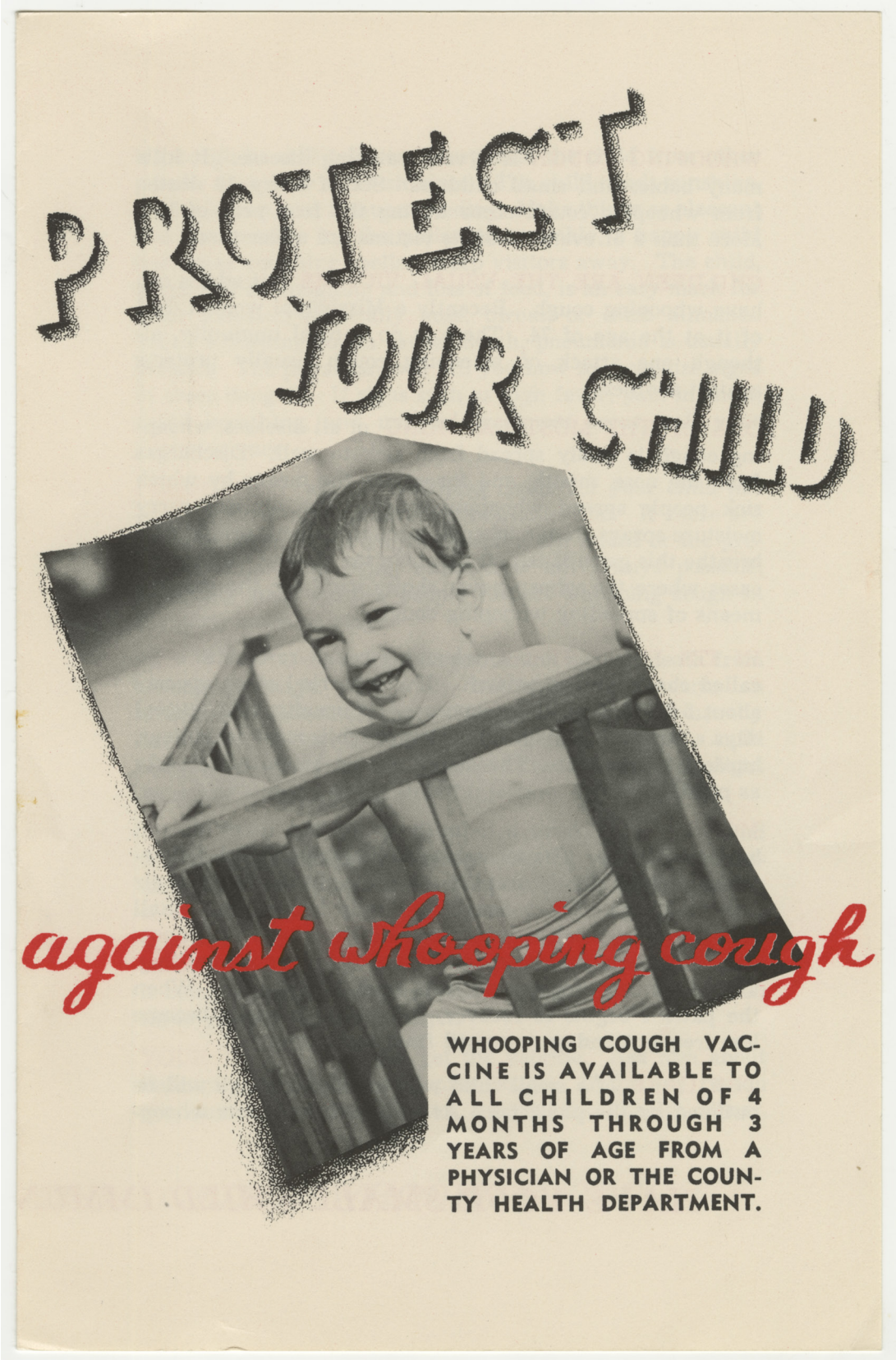
What Are You Going to Do about It?—If you are pale and feel "out of sorts" be examined for hookworm disease, especially if you live in a hookworm country. The examination is free and if you are not found infected, no harm is done by the examination. If you have the disease, it is your duty to take the treatment until cured.

Note: Plates for figures 1, 3, 4 and 5 are used through the courtesy of the Metropolitan Insurance Company.

Copyright 2014. Mississippi Department of Archives and History.

THE PIT CLOSET—A type of rural privy, shown on page 7, should be built only according to the rules and directions of the State Board of Health as given in Bulletin on Rural Privy. Write to the State Board of Health for this Bulletin.

Copyright 2014. Mississippi Department of Archives and History.



Protect Your Child against whooping cough. **Mississippi State Board of Health. MDAH Archives and Records Services.**

Copyright 2014. Mississippi Department of Archives and History.

WHOOPING COUGH is a very catching disease. It kills many babies and small children. Six of every 10 deaths from whooping cough occur during the first year of life. More than 9 of every 10 of its victims are under three.

CHILDREN ARE THE USUAL VICTIMS but adults can have whooping cough. Recently a Mississippi woman died of it at the age of 74. There is no natural immunity, although one attack of whooping cough usually protects against another.

ONE OF THE MOST CATCHING of all diseases, whooping cough is easily spread from sick to well. Discharges from the nose, mouth, and throat are the means by which sick people spread whooping cough. The air can carry moisture sprays from a whooping cough patient; people who breathe this germ-laden air can take the disease. Unknown cases where the whoop never shows itself are the greatest means of spreading whooping cough.

IN ITS FIRST STAGE whooping cough resembles a so-called chest cold, or catarrh. This catarrhal stage appears about 5 to 14 days after exposure. It usually lasts several days. During this stage whooping cough is most contagious, hardest to diagnose. The doctor should be called as early as possible.

MOST CASES have a definite whoop but many do not have the whoop. The whoop is caused by one cough following another so closely that the patient is not able to draw air into his lungs. When coughing finally brings up a small wad of mucus, intake of air into the lungs causes the whoop. Strain from a coughing spasm frequently brings on vomiting. The worst coughing period lasts from 2 to 6 weeks. When the patient begins to recover, the coughing spells become less frequent and severe until final recovery.

THE CARE of a small child with whooping cough will be outlined by the physician. As soon as he suspects whooping cough he will tell you to separate the child from other people, especially other children. The child needs sunshine, fresh air, rest, and frequent feeding. Make things as pleasant and comfortable for the patient as possible; a happy child has fewer coughing spells. Keep visitors away. The child, weakened by coughing and loss of food, is an easy mark for other diseases, especially nose, throat, or chest ailments. When whooping cough causes death, pneumonia is usually present. The physician will tell you how to recognize signs of these dangers. If signs such as high fever, pain in chest, rapid breathing, and unusual weakness occur, call your doctor at once.

PROTECTION against whooping cough for your child lies in (1) preventing exposure; (2) immunization. If there are other children in the family, keeping the infant or the preschool child from being exposed is not always possible, especially since too few people suspect whooping cough in the early catching stage.

IMMUNIZATION is the best protection against death from whooping cough. Generally immunization prevents an attack of the disease; where it does not prevent, it usually lessens the severity. Small children usually have a mild reaction from taking the vaccine. There may occur slight fever and redness at the site of injection.

THE MISSISSIPPI STATE BOARD OF HEALTH and County Health Departments are offering you this protection against whooping cough. They recognize the seriousness of the disease and the importance of vaccine in protection against it. In an effort to cut down whooping cough deaths among infants and small children, whooping cough vaccine is being supplied to all physicians in Mississippi for children **three years of age or younger.**

YOUR PHYSICIAN can get the vaccine. Ask him about immunization against whooping cough. If for any reason you cannot see your physician, see your local health officer.

HAVE YOUR SMALL CHILD IMMUNIZED AGAINST WHOOPING COUGH

Copyright 2014. Mississippi Department of Archives and History.

THINGS TO REMEMBER ABOUT WHOOPING COUGH

Immunization with vaccine is the best protection against whooping cough

Whooping cough should never be regarded lightly

It kills more babies than measles, diphtheria, and scarlet fever combined

Call the physician early

It is most catching before the whoop begins

Small children and babies should be kept away from people with colds

Whooping cough patients should be isolated until the health officer releases them

Fresh air and proper food are important to recovery

Sputum and soiled articles of a whooping cough patient must be burned or disinfected; ask the physician or nurse about this

Dishes used by the patient should be kept apart and washed separately

One attack usually gives immunity but second attacks do occur

Adults can have whooping cough

You Can Get This Protection for Your Child of 4 Months through 3 Years of Age

Whooping Cough Vaccine Is Available through Your Physician or Full-Time County Health Department

MISSISSIPPI STATE BOARD OF HEALTH

Felix J. Underwood, M. D.

Executive Officer

JACKSON, MISSISSIPPI

Copyright 2014. Mississippi Department of Archives and History.

Name: _____ Date: _____

Educating the Public

Imagine you worked for the Mississippi Department of Health in the 1930s and that you have been charged with educating the public on the symptoms and prevention of diseases and basic health care. Choose one of the diseases listed on the morbidity reports and then write an educational brochure that would educate Mississippians on how to improve their health or prevent disease.

Use the questions below to help guide your research and organize your brochure.

What is the scientific name of the disease? _____

What is the common name of the disease? _____

What are the signs of the disease? (Signs are objective, factual – example, a rash or a fever) _____

_____

_____

_____

What are the symptoms of the disease? (Symptoms are subjective, believed – example, stomachache or body pains) _____

_____

_____

_____

How long does the disease last? _____

_____

_____

_____

Copyright 2014. Mississippi Department of Archives and History.

Who is affected by the disease (include age, sex, gender, economic status, geographical location or any other pertinent facts)? _____

_____

_____

_____

How is the disease caused? _____

_____

_____

_____

How is the disease cured? _____

_____

_____

_____

How is the disease prevented? _____

_____

_____

_____

Copyright 2014. Mississippi Department of Archives and History.

Morbidity Reports

State of Mississippi State Board of Health County Health Officers' Morbidity Report for 1920			
	Total Cases	White	Black
Typhoid	2,644	1,438	1,206
Malaria	118,376	53,944	64,432
Influenza	55,289	34,979	18,310
Smallpox	3,148	1,075	2,073
Measles	1,796	1,291	505
Scarlet Fever	1,610	1,392	218
Whooping Cough	7,933	5,817	2,116
Diphtheria	2,225	1,611	614
Puerperal Septicaemia	736	262	474
Dysentery - Amoebic	1,263	803	460
Dysentery - Bacillary	9,592	5,461	4,131
Gonorrhea	14,388	4,506	9,882
Anthrax	37	15	22
Ophthalmia Neonatorum	274	76	198
Chicken Pox	4,955	3,652	1,303
Pellagra	5,887	1,642	4,245
Tuberculosis - All Forms	4,180	1,484	2,696
Syphilis	7,438	1,821	5,617
Cancer	1,273	631	642
Meningitis - Epidem. Cerebrospinal	45	29	16
Meningitis - Tuberculous	48	19	29
Meningitis - Other Forms	70	42	28
Acute Poliomyelitis	66	36	30
Pneumonia	14,073	8,030	6,043
Hookworm Disease	2,943	2,593	350
Trachoma	123	90	33
Mumps	3,174	2,339	835
Leprosy	1	1	0
Rabies	0	0	0

Mississippi State Board of Health, Bureau of Vital Statistics. **Morbidity Statistics, 1913-1935.** ***State Government Records Series 2313/Box 8399.***

Copyright 2014. Mississippi Department of Archives and History.

Morbidity Reports

State of Mississippi State Board of Health County Health Officers' Morbidity Report for 1930			
	Total	**White**	**Black**
Typhoid	1,239	517	722
Influenza	26,811	18,432	8,379
Smallpox	312	180	132
Diptheria	1,273	1,040	233
Scarlet Fever	885	847	38
Epidemic Cerebrospinal Meningitis	325	74	251
Acute Poliomyelitis	45	33	12
Dengue	77	65	12
Malaria	50,477	31,803	18,674
Whooping Cough	10,959	8,268	2,691
Dysentery - Amoebic	740	593	107
Dysentery - Bacillary	12,219	8,280	3,939
Measles	3,708	2,867	841
Chicken Pox	7,011	5,522	1,489
Pellagra	10,173	338	6,792
Tuberculosis	3,067	1,237	1,830
Syphillis	15,666	4,278	11,388
Cancer	2,118	1,394	724
Meningitis - Tubercular	67	34	33
Meningitis - Other Forms	150	92	58
Pneumonia	11,519	7,348	4,171
Hookworm	3,293	3,100	193
Trachoma	108	65	43
Mumps	5,011	4,099	912
Ophthalmia Neonatorum	168	57	111
Puerperal Septicemia	387	163	224
Gonorrhea	24,615	9,425	15,190
Anthrax	0	0	0
Rabies - In Man	1	1	0
Rabies - In Animals	73	n/a	n/a

Mississippi State Board of Health, Bureau of Vital Statistics. **Morbidity Statistics, 1913-1935.** ***State Government Records Series 2313/Box 8399.***

Copyright 2014. Mississippi Department of Archives and History.

Morbidity Reports

Disease by Month for 1920				
	Typhoid	**Malaria**	**Influenza**	**Pneumonia**
January	80	3,909	3,688	2,072
February	78	3,465	26,270	3,349
March	98	4,193	17,482	3,071
April	142	6,433	1,985	1,118
May	140	7,295	520	446
June	299	9,564	189	201
July	441	14,134	234	193
August	523	18,372	277	217
September	391	24,041	421	290
October	212	16,015	585	560
November	151	7,594	904	1,054
December	89	4,361	744	1,501
Total	2,644	118,376	53,289	14,073

Mississippi State Board of Health, Bureau of Vital Statistics. **Morbidity Statistics, 1913-1935.** ***State Government Records Series 2313/Box 8399.***

Copyright 2014. Mississippi Department of Archives and History.

Pellagra by County, 1920

	Total	White	Black
Adams	81	24	57
Alcorn	42	35	7
Amite	22	7	15
Attala	15	12	3
Benton	2	2	
Bolivar	627	66	561
Calhoun	9	7	2
Carroll	47	18	29
Chickasaw	63	14	49
Choctaw			
Claiborne	10		10
Clarke	24	16	6
Clay	49	12	37
Coahoma	457	3	454
Copiah	80	21	59
Covington	34	23	11
DeSoto	108	8	100
Forrest	92	49	43
Franklin	25	24	1
George	21	18	3
Greene	29	27	2
Grenada	5	3	2
Hancock	1	1	
Harrison	4		4
Hinds	264	87	177
Holmes	251	18	233
Humphreys	235	41	194
Issaquena	14	1	13
Itawamba	21	19	2

	Total	White	Black
Jackson	20	16	4
Jasper	60	40	20
Jefferson	13	6	7
Jefferson Davis	36	15	21
Jones	50	38	12
Kemper	35	21	14
Lafayette	13	11	2
Lamar	23	22	1
Lauderdale	50	35	15
Lawrence	89	53	36
Leake	30	20	10
Lee	74	45	29
Leflore	58	6	52
Lincoln	132	20	112
Lowndes	24	6	18
Madison	83	9	74
Marion	37	19	18
Marshall	89	10	79
Monroe	48	39	9
Montgomery	28	18	10
Neshoba	27	26	1
Newton	1	1	
Noxubee	60	9	51
Oktibbeha	10	7	3
Panola	79	8	71
Pearl River	25	22	3
Perry	9	9	

	Total	White	Black
Pike	42	21	21
Pontotoc	20	18	2
Prentiss	19	19	
Quitman	156	24	132
Rankin	4	3	1
Scott	13	11	2
Sharkey	83	7	76
Simpson	23	20	3
Smith	21	10	11
Stone	16	2	14
Sunflower	583	162	421
Tallahatchie	172	23	149
Tate	35	13	22
Tippah	29	29	
Tishomingo	52	44	8
Tunica	162	5	157
Union	19	14	5
Walthall	11	5	6
Warren	43	8	35
Washington	268	33	235
Wayne	13	9	4
Webster	11	11	
Wilkinson	24	17	7
Winston	10	8	2
Yalobusha	16	10	6
Yazoo	219	29	190
Total	5,899	1,642	4,255

Mississippi State Board of Health, Bureau of Vital Statistics. Morbidity Statistics, 1913-1935. *State Government Records Series 2313/Box 8399.*

Copyright 2014. Mississippi Department of Archives and History.

Name: _____ Date: _____

Morbidity Report Worksheet

Using the Morbidity Reports provided by your teacher, answer the following questions.

Part I: The Most Common Diseases in Mississippi

1. Identify the ten most common diseases (use the total population) in 1920 and 1930 and write them in order in the charts below.

2. Next, determine the percentage of each disease diagnosed within the total number of cases of top ten diseases using the following formula (round to the nearest tenth of a percent):
   (total cases of one disease / total cases of all top 10 diseases) x 100 = percent of single disease

Ten Most Common Diseases in 1920		
Disease Name	Total	Percentage
Total Cases		

Ten Most Common Diseases in 1930		
Disease Name	Total	Percentage
Total Cases		

Copyright 2014. Mississippi Department of Archives and History.

3. Turn your information into a pie chart.

a. Determine the number of degrees of each pie slice using the following formula (remember, a circle is 360 degrees):

(total cases of one disease / total cases of all top 10 diseases) x 360 = number of degrees

Ten Most Common Diseases in 1920	
Disease Name	Degrees

Ten Most Common Diseases in 1930	
Disease Name	Degrees

b. Use a sheet of graph paper and a protractor to measure the degrees of each pie slice and create a pie chart.

4. Compare and contrast the data from 1920 and 1930.

a. What disease was most common in 1920 and 1930?

b. With the knowledge that the population of Mississippi was 1,790,618 in 1920 and 2,009,821 in 1930, what percentage of Mississippians were affected with malaria in 1920 and 1930?

c. What are some of the reasons the number of cases diagnosed in 1930 was significantly lower than that in 1920?

5. Morbidity Reports can be difficult to read and interpret. If you were going to track these statistics, how would you design your reports to make them more understandable?

Copyright 2014. Mississippi Department of Archives and History.

Part II: Disease Patterns by Month

1. Using the monthly data from 1920 and a sheet of graph paper, create a line graph comparing the number of cases of each on a monthly basis.

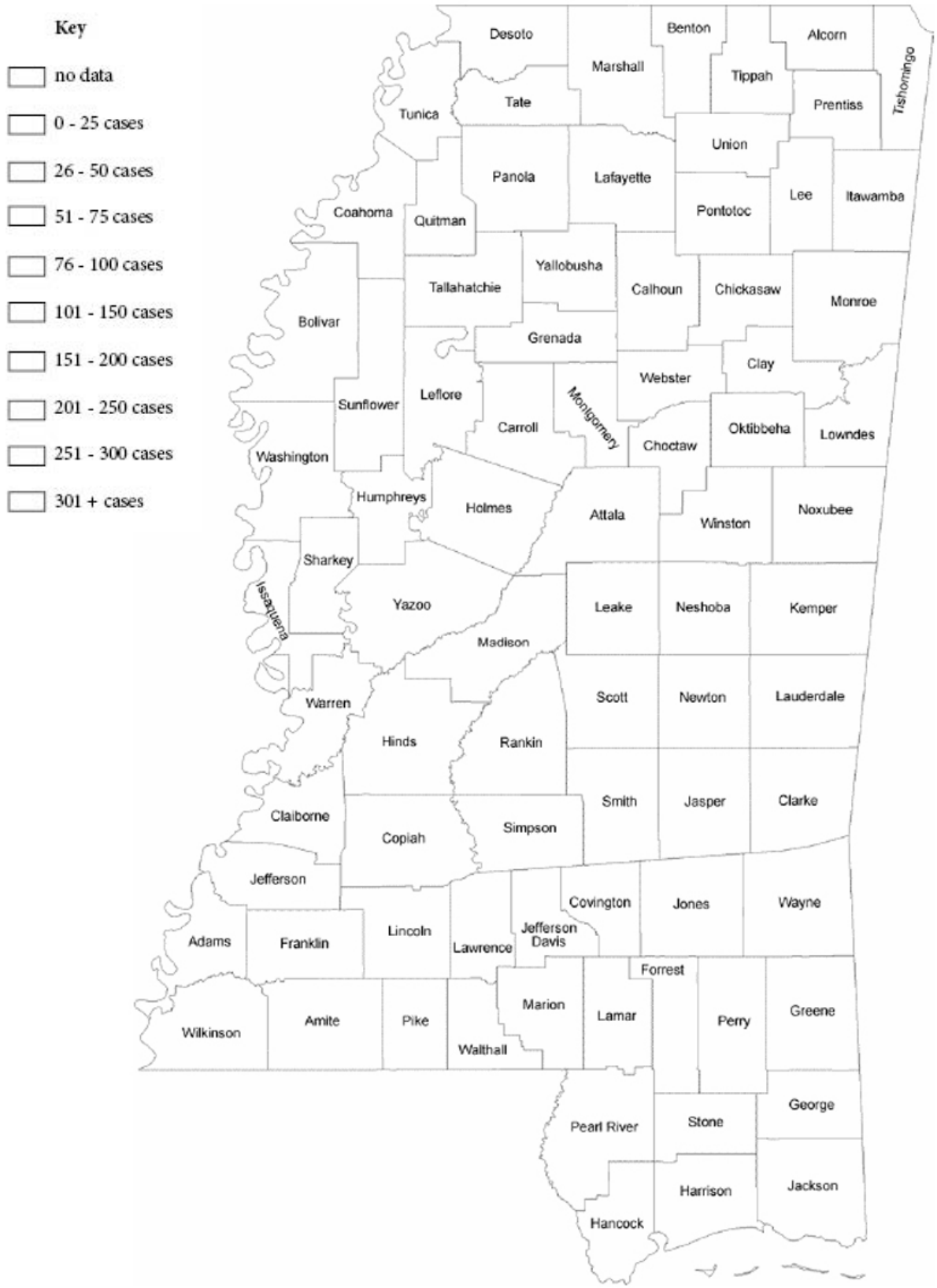
2. Identify the peak of each disease.

3. What is it about these diseases that make them more prevalent in one season than another?

Copyright 2014. Mississippi Department of Archives and History.

Part III: Disease Patterns by Geography

1. Using the county data for pellagra cases in 1920, complete the below map with colors of your choice.



Copyright 2014. Mississippi Department of Archives and History.

2. What are the specific counties or regions where pellagra was most common? What are possible reasons for this?

3. In 1920, 1,642 white Mississippians were diagnosed with pellagra while 4,255 black Mississippians were diagnosed.

   a. What was the ratio of black to white pellagra victims?

   b. What may the reasons have been for the higher rate of black victims?

Copyright 2014. Mississippi Department of Archives and History.

Name: _____ Date: _____

Morbidity Report Worksheet Answer Key

Using the Morbidity Reports provided by your teacher, answer the following questions.

Part I: The Most Common Diseases in Mississippi

1. Identify the ten most common diseases (use the total population) in 1920 and 1930 and write them in order in the charts below.

2. Next, determine the percentage of each disease diagnosed within the total number of cases of top ten diseases using the following formula (round to the nearest tenth of a percent):
   (total cases of one disease / total cases of all top 10 diseases) x 100 = percent of single disease

Ten Most Common Diseases in 1920		
Disease Name	Total	Percentage
Malaria	118,376	48.89
Influenza	55,289	22.84
Gonorrhea	14,388	5.94
Pneumonia	14,073	5.81
Dysentery - Bacillary	9,592	3.96
Whooping Cough	7,933	3.28
Syphillis	7,438	3.07
Pellagra	5,887	2.43
Chicken Pox	4,955	2.05
Tuberculosis - All Forms	4,180	1.73
Total Cases	242,111	

Ten Most Common Diseases in 1930		
Disease Name	Total	Percentage
Malaria	50,477	28.93
Influenza	26,811	15.37
Gonorrhea	24,615	14.11
Syphillis	15,666	8.98
Dysentery - Bacillary	12,219	7.00
Pneumonia	11,519	6.60
Whooping Cough	10,959	6.28
Pellagra	10,173	5.83
Chicken Pox	7,011	4.02
Mumps	5,011	2.87
Total Cases	174,461	

Example, Malaria Percentage:

118,376 / 242,111 = 0.4889

0.4889 x 100 = 48.89%

Copyright 2014. Mississippi Department of Archives and History.

3. Turn your information into a pie chart.

a. Determine the number of degrees of each pie slice using the following formula (remember, a circle is 360 degrees):

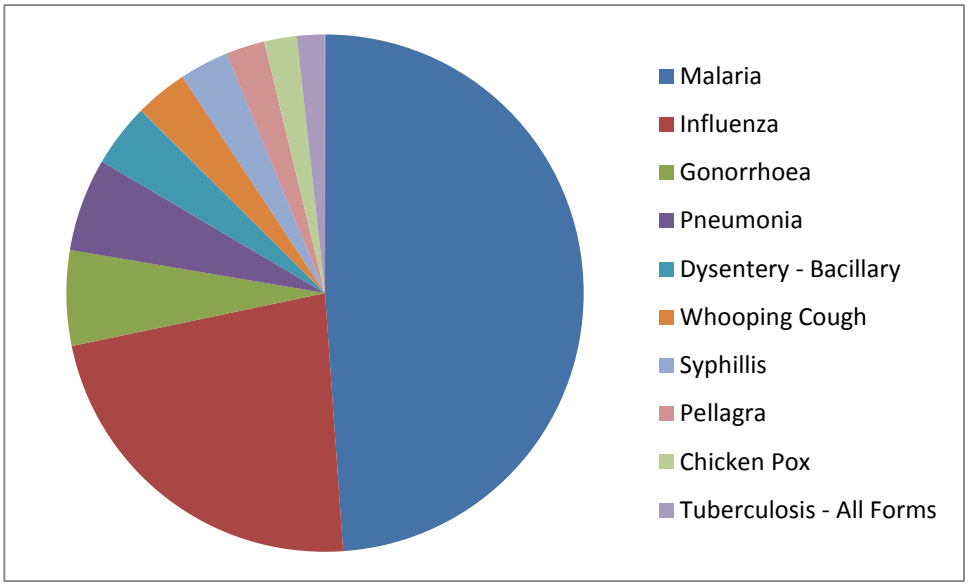
(total cases of one disease / total cases of all top 10 diseases) x 360 = number of degrees

Ten Most Common Diseases in 1920	
Disease Name	Degrees
Malaria	176.02
Influenza	82.21
Gonorrhea	21.39
Pneumonia	20.93
Dysentery - Bacillary	14.26
Whooping Cough	11.80
Syphillis	11.06
Pellagra	8.75
Chicken Pox	7.37
Tuberculosis - All Forms	6.22

Ten Most Common Diseases in 1930	
Disease Name	Degrees
Malaria	104.16
Influenza	55.32
Gonorrhea	50.79
Syphillis	32.33
Dysentery - Bacillary	25.21
Pneumonia	23.77
Whooping Cough	22.61
Pellagra	20.99
Chicken Pox	14.47
Mumps	10.34

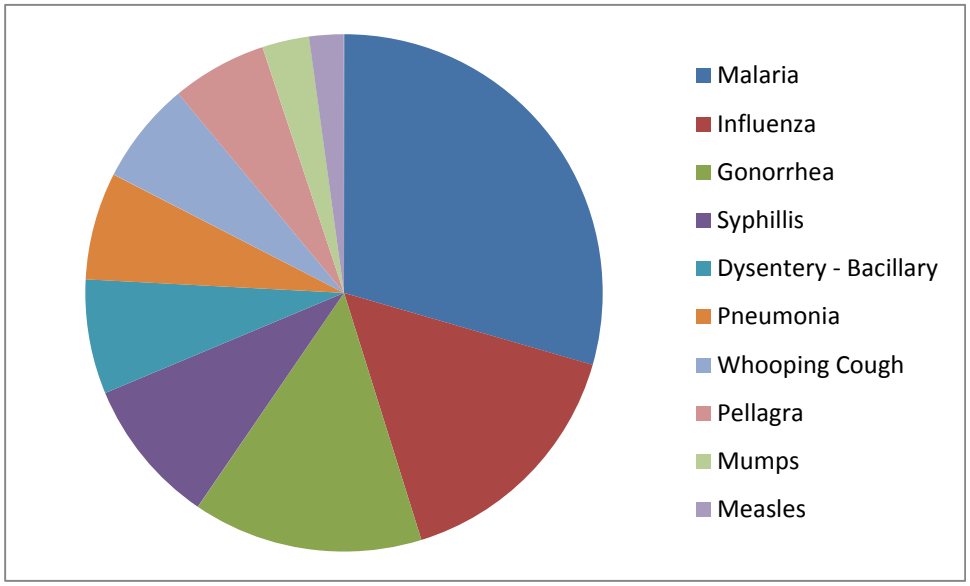
b. Use a sheet of graph paper and a protractor to measure the degrees of each pie slice and create a pie chart.

The Ten Most Common Diseases in 1920



Copyright 2014. Mississippi Department of Archives and History.

The Ten Most Common Diseases in 1930



4. Compare and contrast the data from 1920 and 1930.

a. What disease was most common in 1920 and 1930? Malaria

b. With the knowledge that the population of Mississippi was 1,790,618 in 1920 and 2,009,821 in 1930, what percentage of Mississippians were affected with malaria in 1920 and 1930?

(118,376/1,790,618) x 100 = 6.6% of the population in 1920

(50,477/2,009,821) x 100 = 2.5% of the population in 1930

c. What are some of the reasons the number of cases diagnosed in 1930 was significantly lower than that in 1920? The diagnosed cases in 1930 may be lower due to improved strategies to decrease the mosquitoes population (such as the use of screen doors, the removal of standing water, and the covering of water sources such as wells). The weather may have also contributed to fewer cases, as malaria is most common during hot months.

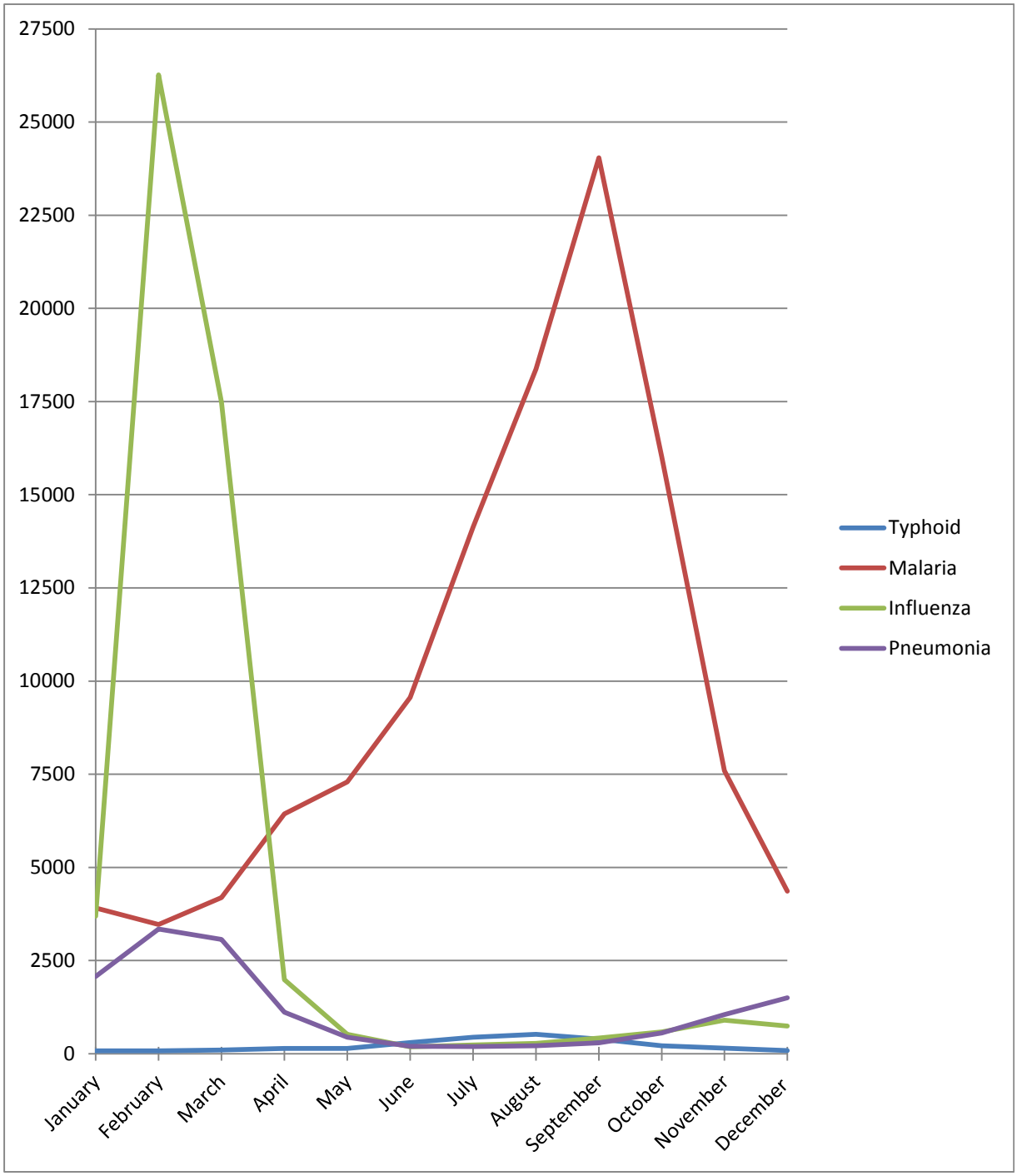
5. Morbidity Reports can be difficult to read and interpret. If you were going to track these statistics, how would you design your reports to make them more understandable?

Copyright 2014. Mississippi Department of Archives and History.

Part II: Disease Patterns by Month

1. Using the monthly data from 1920 and a sheet of graph paper, create a line graph comparing the number of cases of each on a monthly basis.

Disease Patterns by Month in 1920



Copyright 2014. Mississippi Department of Archives and History.

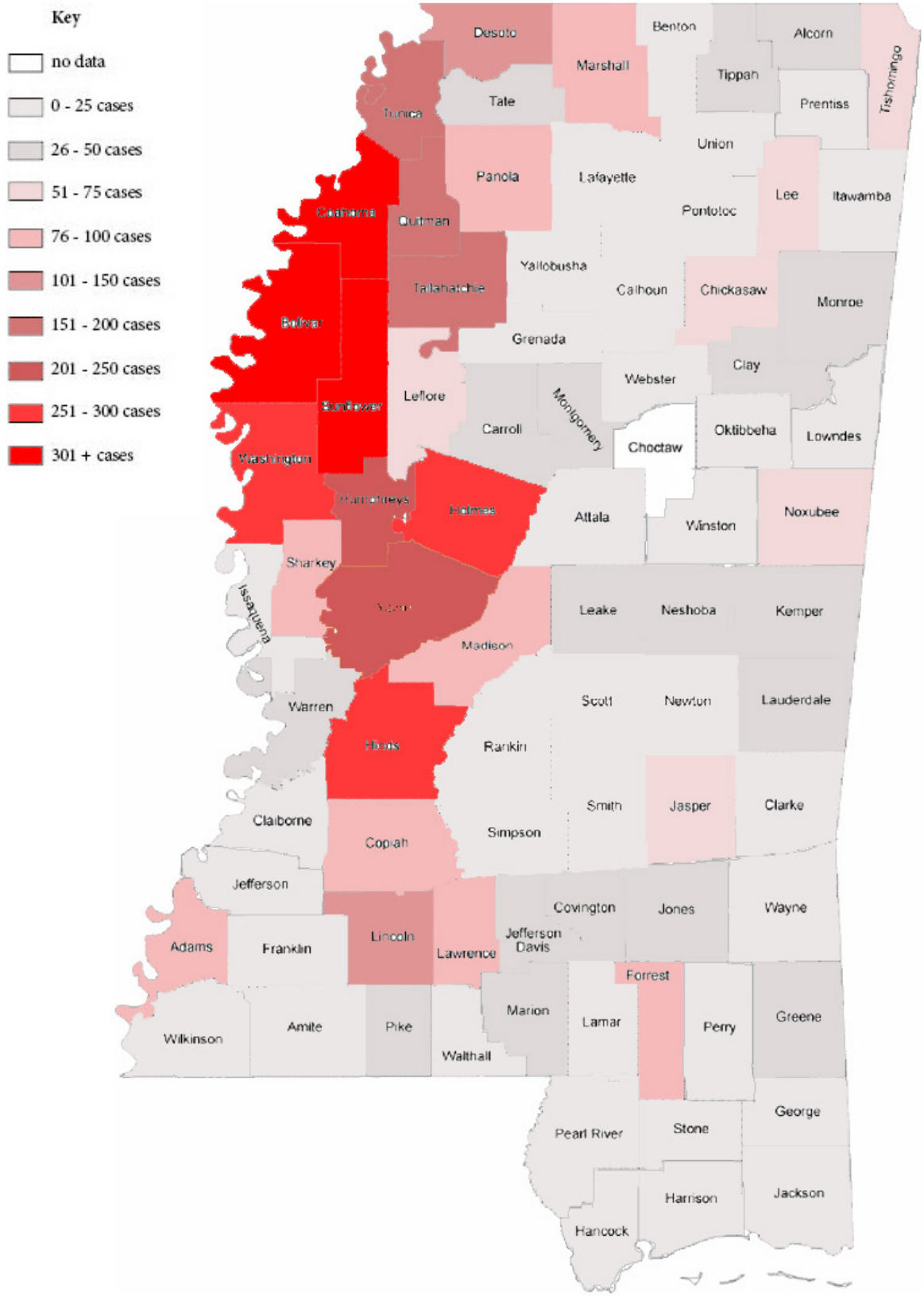
2. Identify the peak of each disease. Typhoid: August. Malaria: September. Influenza: February. Pneumonia: February.

3. What is it about these diseases that make them more prevalent in one season than another? Typhoid is transmitted from human to human through poor personal hygiene habits and public sanitation. It can also be transmitted via flies that feed off feces, so although the disease may be transmitted during any time of year, fly season may see an increase in cases. Malaria is most common in the hottest months of the year, months that are conducive to mosquito breeding. Influenza season comes to countries around the world during the coldest months of the year. In the United States, the period last approximately from October through May with February the month of highest incidence. Influenza may occasional develop into pneumonia.

Copyright 2014. Mississippi Department of Archives and History.

Part III: Disease Patterns by Geography

1. Using the county data for pellagra cases in 1920, complete the below map with colors of your choice.



Copyright 2014. Mississippi Department of Archives and History.

2. What are the specific counties or regions where pellagra was most common? What are possible reasons for this? The Delta (specifically Coahoma, Bolivar, and Sunflower Counties). In the 1920s the Delta was predominantly used for farming cotton. There, the sharecropping system kept tenant farmers poor, making it difficult to maintain the well-balanced diet that prevented pellagra.

3. In 1920, 1,642 white Mississippians were diagnosed with pellagra while 4,255 black Mississippians were diagnosed.

   a. What was the ratio of black to white pellagra victims?

   4255 / 1642 = 2.59 blacks were victims of pellagra for every 1 white victim

   b. What may the reasons have been for the higher rate of black victims? In the 1920s, many blacks in rural areas of Mississippi participated in the sharecropping system, a system of farming that kept its tenant farmers poor. This lack of funds prohibited many farmers from purchasing food that would have allowed a well-balanced diet which is necessary to preventing pellagra. The high rate of pellagra cases among blacks may also be due to lack of funds for or access to medical care.

Copyright 2014. Mississippi Department of Archives and History.

Vocabulary

alien: a resident born in or belonging to another country.

anemia: a blood deficiency that caused weakness and a lack of energy.

bacillary: rod-shaped or cylindrical bacterium.

bacteria: one-celled organisms that cause diseases.

chronic: to continue for a long period of time or to regularly occur.

communicable: to transmit a disease from one person to another.

contagious: to transmit a disease from one person to another.

contamination: to make impure or unsuitable by contact with something unclean.

dengue fever: an infectious fever that occurs in warm climates that is characterized by severe pains in the joints and muscles.

diagnosis: to determine the cause or nature of a problem.

disease: an abnormal condition or incorrectly functioning organ, part, structure, or system of the body.

dysentery: an infectious disease marked by inflammation and ulceration of the bowels and diarrhea.

epidemic: a disease that affects many persons at the same time.

epidemiology: a branch of medicine that looks at the incidence and prevalence of disease in large populations.

eruption: the sudden break out of a rash.

feces: waste matter discharged from the intestines.

flea: a small, wingless, bloodsucking insect that is parasitic to humans and noted to leap from host to host.

germ: a microorganism that causes disease.

gonorrhea: a contagious, purulent inflammation caused by bacteria.

hookworm: a bloodsucking worm that enters the body through ingestion or through the skin of the feet or legs that causes abdominal pain, nausea, and severe anemia.

hygiene: the condition or practice that preserves health and cleanliness.

Copyright 2014. Mississippi Department of Archives and History.

immune: to protect from disease via inoculation.

infection: to affect or contaminate with disease or disease-producing germs.

inflammation: a redness or swelling of an area of the body.

influenza: a highly contagious viral disease characterized by fever, prostration, muscular aches and pains, and inflammation of the respiratory passages.

inoculate: to introduce a vaccine into the body in order to cause immunity and prevent disease.

lice: a small, wingless, bloodsucking insect that is parasitic to humans.

malaise: general body weakness or discomfort that often marks the onset of a disease.

malaria: an infectious disease characterized by recurring attacks of chills and fever, caused by the bite of an infected mosquito.

microorganism: an organism too small to be viewed by the naked eye such as bacteria.

midwifery: the practice of assisting women in childbirth.

morbidity: the proportion of sickness or specific diseases in a specific geographic locality.

mortality: to be subject to death.

mumps: an infectious disease characterized by inflammatory swelling of salivary glands.

niacin: a component in vitamin B that treats and prevents pellagra (also known as nicotinic acid).

objective: to look at the facts, without bias (the opposite of subjective).

organism: any living thing, such as an animal, plant, fungus, or bacteria.

parasite: an organism that lives on or in an organism of another species (known as the host) from which it obtains nutrients or other advantages.

pellagra: a disease caused by a deficiency or niacin in the diet, characterized by skin changes (including burning, itching, and scaling), severe nerve dysfunction, mental symptoms, and diarrhea.

pneumonia: inflammation of lungs caused by bacteria and characterized by fever, cough, and difficulty breathing.

pollute: to make unclean with harmful chemicals or waste products.

Copyright 2014. Mississippi Department of Archives and History.

prevalent: widespread.

prevention: to stop, to keep from occurring.

preventive medicine: a branch of medical science that deals with the prevention of disease and the promotion of physical and mental health.

prostrate: to be physically weak or exhausted.

public health: health services that improve and protect community health, especially sanitation, immunization, and preventive medicine.

purulent: the discharging of pus from an ulcer or sore.

pus: drainage from an ulcer or sore.

sanatorium: a hospital for the treatment of chronic diseases such as tuberculosis.

sanitation: to develop and apply safety measures for the sake of cleanliness and the protection of health.

signs: a symptom of disease.

subjective: to look at with bias (the opposite of objective).

symptom: a sign or indication of disease.

syphilis: a chronic infectious venereal disease that can spread through the entire body and cause death.

chicken pox: a disease (common to children) characterized by headache, fever, malaise, and the eruption of blisters on the skin.

tuberculosis: an infectious disease affecting the lungs and characterized by cough, fever, and chest pains.

typhoid: an infectious (often fatal) disease that occurs in the summer months and is characterized by intestinal inflammation and ulceration and caused by a bacteria introduced by contaminated food or drink.

typhus: an infectious disease transmitted by lice or fleas characterized by acute prostration, headache, and the eruption of reddish spots on the body.

ulcer: a sore on the skin that is characterized by the disintegration of tissue and the formation of pus.

ulceration: to ulcer.

vaccinate: to inoculate with a vaccine that prevents a specific disease.

Copyright 2014. Mississippi Department of Archives and History.

vaccine: a preparation that may be used for inoculation to prevent disease.

venereal disease: a sexually transmitted disease such as gonorrhea or syphilis.

viral: caused by a virus.

virus: an infection that causes disease.

whooping cough: an infectious disease of the respiratory mucous membrane characterized by a series of short, convulsive coughs followed by a deep inhalation that causes a whooping sound (also known as pertussis).

Copyright 2014. Mississippi Department of Archives and History.

MISSISSIPPI DEPARTMENT OF HISTORY LESSON PLANS

TEACHER EVALUATION

COMPLETE BOTH SIDES AND PLEASE MAIL OR FAX TO THE ADDRESS ON THE NEXT PAGE. THANK YOU!

TEACHER NAME _____

SCHOOL NAME & ADDRESS _____

_____

EMAIL *(OPTIONAL)* _____

TOTAL NUMBER OF STUDENTS_____ **GRADE LEVEL** _____

LESSON TITLE ***Public Health in Mississippi***

1. In your opinion, did this unit elicit better than average student response; if so, how?

2. Which segments of the unit exceeded your students' attention span?

3. Will this unit be of assistance to you in developing future classroom activities; if so, how?

4. How did this unit add to your earlier teaching on the same subject?

5. Would this teaching unit be handier to use as a:
   ___multi-day unit ___multi-week unit ___other

6. Were the activities and lessons appropriate for your students? How?

Copyright 2014. Mississippi Department of Archives and History.

Please rate the following lesson materials and activities by circling the appropriate number.

4=excellent, **3**=good, **2**=average, **1**=inadequate

Directions and Notes	4	3	2	1
Curricular Connections	4	3	2	1
Student Worksheets	4	3	2	1
Interactive Activities	4	3	2	1
Historic Images	4	3	2	1
References and Resources	4	3	2	1

Activity One	4	3	2	1
Activity Two	4	3	2	1
Activity Three	4	3	2	1
Extension Activities	4	3	2	1
Vocabulary	4	3	2	1
Overall Unit	4	3	2	1

We would appreciate any additional comments on this teaching unit and any suggestions for improvement. Comments may be entered in the space below.

Museum Division
Mississippi Department of Archives and History
P.O. Box 571, Jackson, MS 39205
Phone: 601-576-6800 Fax: 601-576-6815
outreachprograms@mdah.ms.gov

Copyright 2014. Mississippi Department of Archives and History.