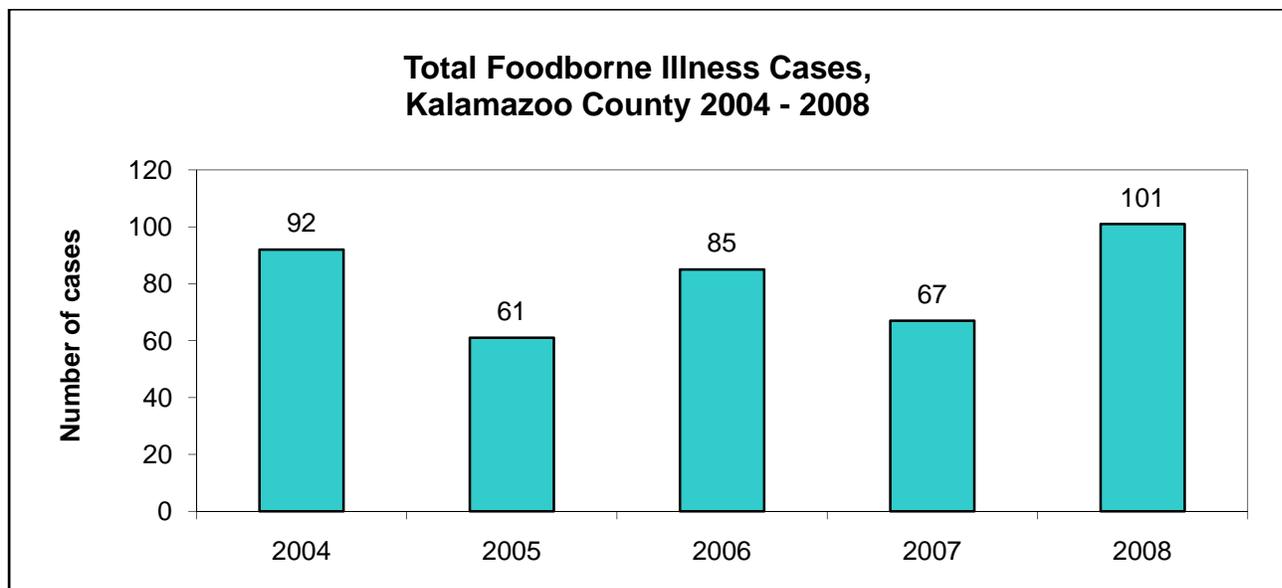


6.5 Foodborne Diseases

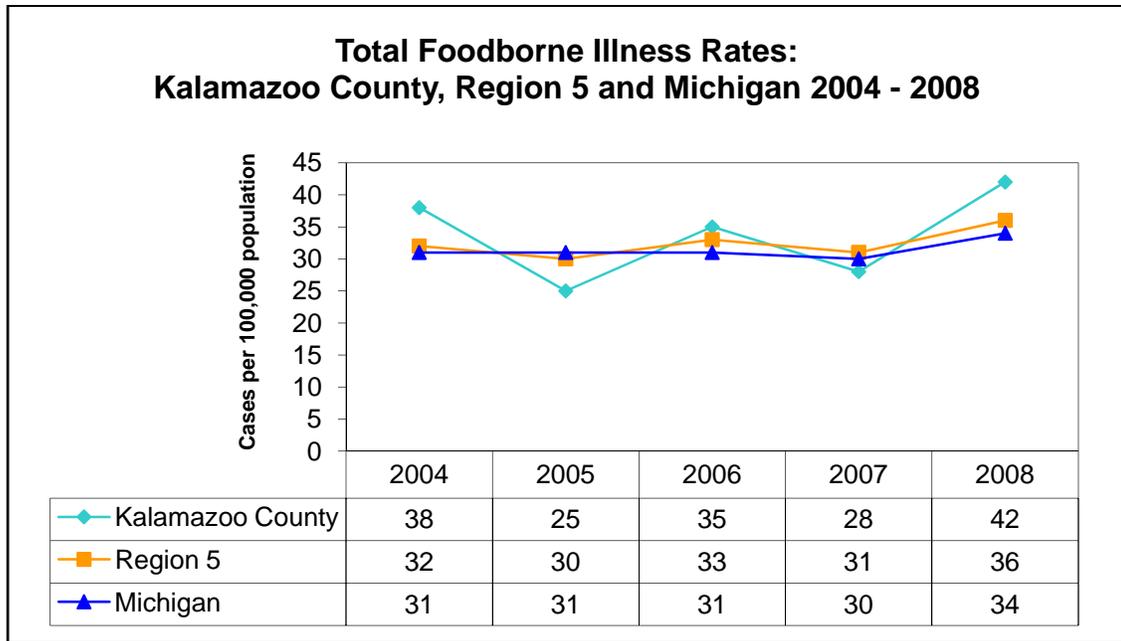
6.5.1 Total Foodborne Illness

Total foodborne illness includes: ambiasis, botulism, campylobacter enteritis, cryptosporidiosis, escherichia coli O157:H7, other shiga toxin producing escherichia coli, giardiasis, listeriosis, salmonellosis, shigellosis, typhoid fever and yersinia enteritis.

In Kalamazoo County during 2004-2008 there were 406 cases of confirmed or probable foodborne illnesses reported to the Kalamazoo County Communicable Disease Surveillance Program. On average, there were 81 cases reported per year. During this time period Kalamazoo County rates were similar to both the state and regional rates.



Michigan Disease Surveillance System, completed cases as of 7/28/09

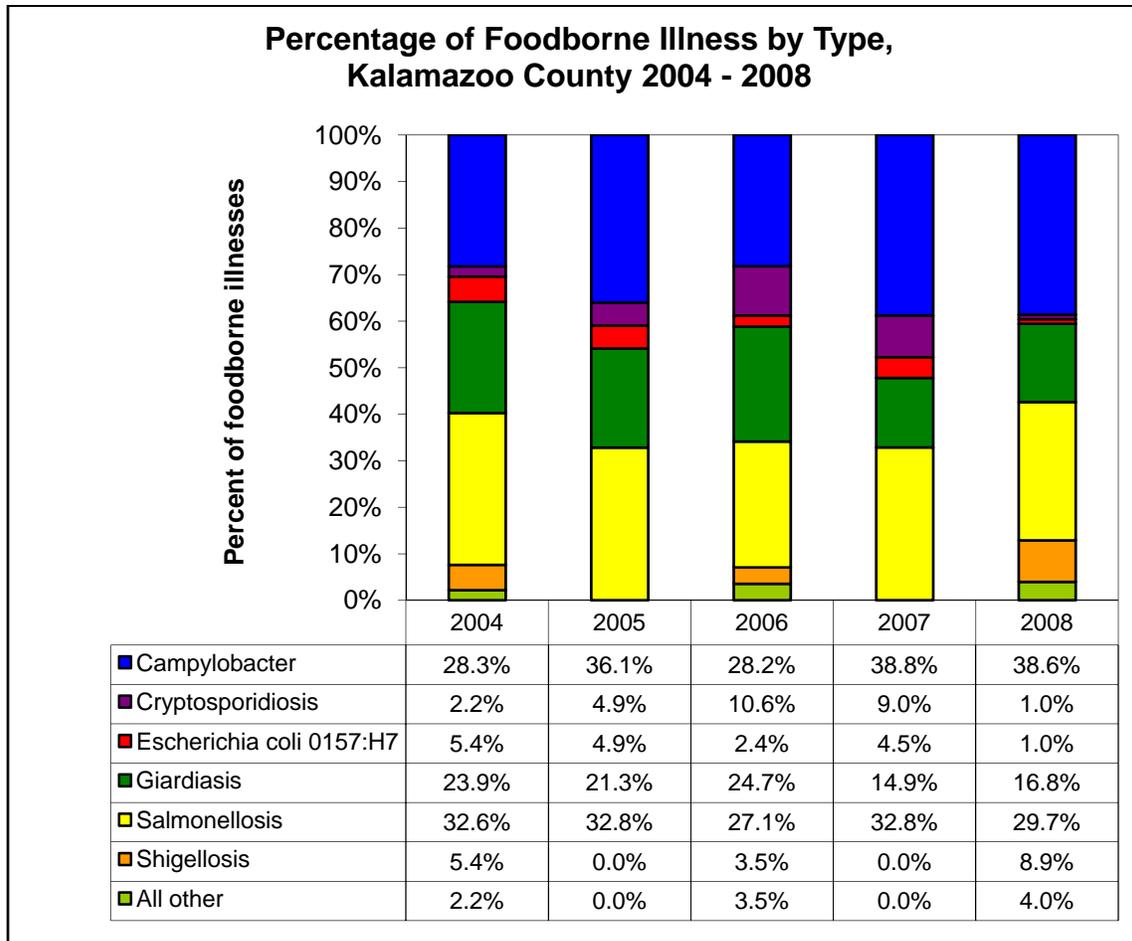


Michigan Disease Surveillance System, completed cases as of 7/28/09

Total Foodborne Illness: Demographic Characteristics of Kalamazoo County Cases 2004-2008

N=406	Number of Cases	Percent of Total
Sex		
Female	189	47%
Male	216	53%
Unknown	1	0%
Age Group		
<1 yr	15	4%
1-4 yrs	52	13%
5-9 yrs	32	8%
10-14 yrs	26	6%
15-19 yrs	22	5%
20-24 yrs	33	8%
25-29 yrs	30	7%
30-34 yrs	24	6%
35-39 yrs	24	6%
40-44 yrs	31	8%
45-49 yrs	28	7%
50-54 yrs	15	4%
55-59 yrs	19	5%
60-64 yrs	20	5%
65-69 yrs	12	3%
>70 yrs	23	6%
Unknown	0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09

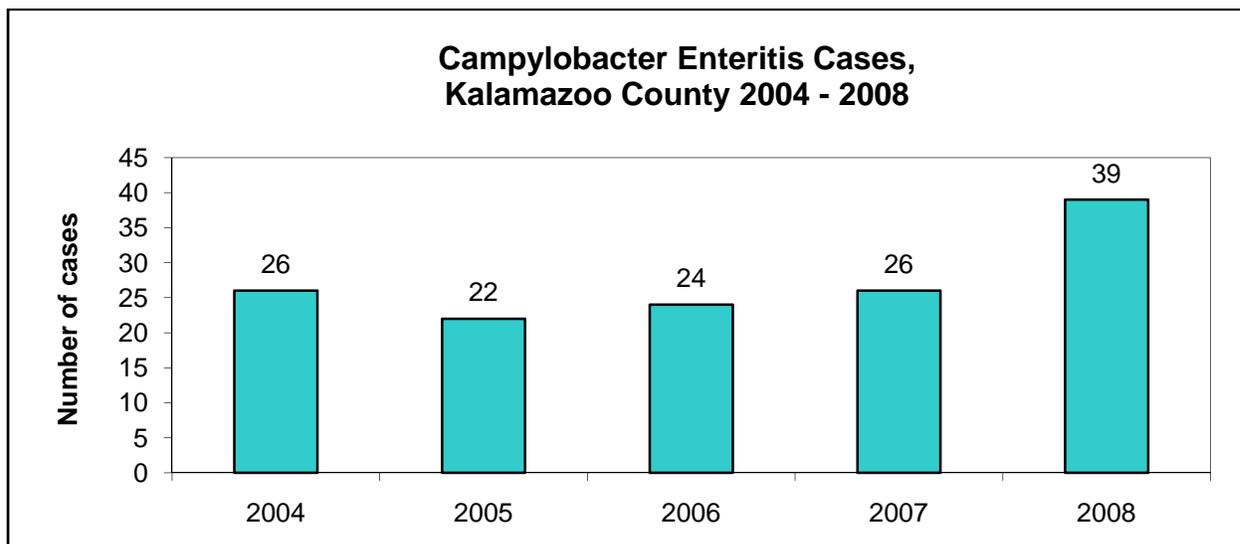


Michigan Disease Surveillance System, completed cases as of 7/28/09

6.5.2 Campylobacter

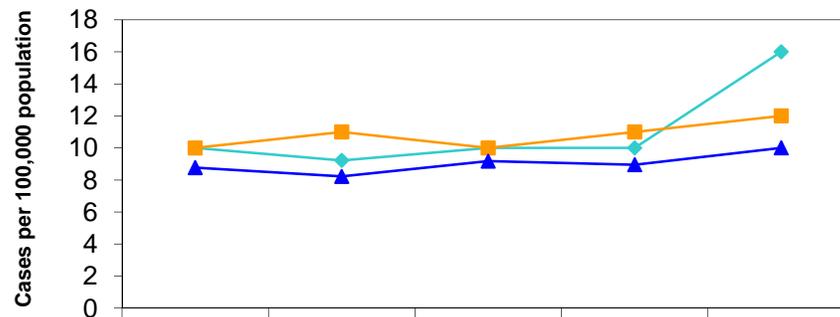
Campylobacter enteritis is an acute zoonotic bacterial enteric disease of variable severity characterized by diarrhea (frequently with bloody stools), abdominal pain, malaise, fever, nausea and/or vomiting. Symptoms usually occur 2-5 days after exposure and may persist for a week. Prolonged illness and/or relapses may occur in adults. The period of communicability is throughout the course of the infection; usually several days to several weeks. Possible modes of transmission include: ingestion of the organisms in under-cooked meat, contaminated food and water or raw milk, or contact with infected pets, farm animals or infected infants. Contamination can also occur from poultry (especially from common cutting boards).

In Kalamazoo County during 2004-2008 there were 137 cases reported to the Kalamazoo County Communicable Disease Surveillance Program with an average of 27 cases per year. Rates in the county over this time period were similar to those for the state of Michigan until 2008 when the county disease incidence rate was higher than the rate statewide.



Michigan Disease Surveillance System, completed cases as of 7/28/09

Campylobacter Enteritis Rates: Kalamazoo County, Region 5 and Michigan 2004 - 2008



	2004	2005	2006	2007	2008
◆ Kalamazoo County	10	9.22	10	10	16
■ Region 5	10	11	10	11	12
▲ Michigan	8.77	8.22	9.17	8.95	10

Michigan Disease Surveillance System, completed cases as of 7/28/09

Campylobacter Enteritis: Demographic Characteristics of Kalamazoo County Cases 2004-2008

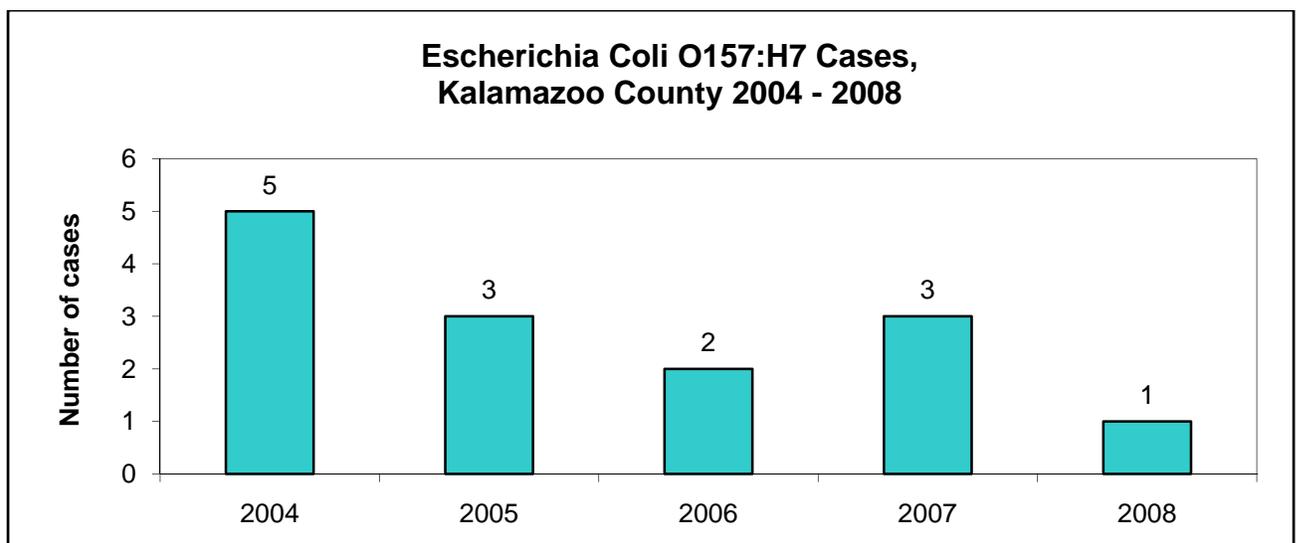
N=137		Number of Cases	Percent of Total
Sex			
Female	60	44%	
Male	77	56%	
Unknown	0	0%	
Age Group			
<1 yr	0	0%	
1-4 yrs	16	12%	
5-9 yrs	4	3%	
10-14 yrs	8	6%	
15-19 yrs	7	5%	
20-24 yrs	12	9%	
25-29 yrs	11	8%	
30-34 yrs	7	5%	
35-39 yrs	10	7%	
40-44 yrs	15	11%	
45-49 yrs	8	6%	
50-54 yrs	7	5%	
55-59 yrs	9	7%	
60-64 yrs	8	6%	
65-69 yrs	6	4%	
>70 yrs	9	7%	
Unknown	0	0%	

Michigan Disease Surveillance System, completed cases as of 7/28/09

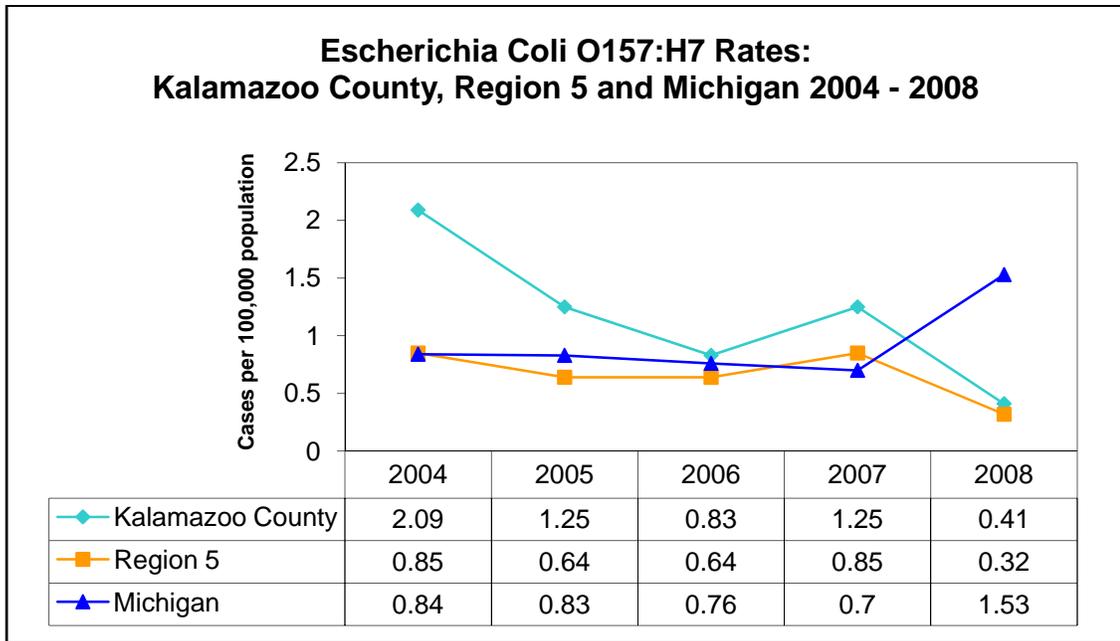
6.5.3 Escherichia Coli O157:H7

Infection with Escherichia coli O157:H7 bacteria often leads to bloody diarrhea and occasionally can lead to hemolytic uremic syndrome and kidney failure. Symptoms typically begin two to eight days after exposure, but some infected persons remain asymptomatic throughout the course of the illness. Transmission occurs through eating ground beef that has not been cooked sufficiently or from other food sources such as sprouts, lettuce, and unpasteurized milk or juice. The bacteria can be transmitted from swimming in or drinking water contaminated by sewage or can be passed person to person if hygiene or hand-washing practices are inadequate. All persons are potentially at risk for infection, however the disease is more likely to occur in toddlers (aged two to four years) who are not fully toilet trained and in their family members and playmates.

In Kalamazoo County during 2004-2008 there were 14 cases reported to the Kalamazoo County Communicable Disease Surveillance Program with an average of 2.8 cases per year. In 2004, the county had a slightly higher rate than the state and region, but rates for all three areas were low, and from 2005 through 2007 rates in Kalamazoo County were similar to rates in Michigan and the region. The statewide rate in 2008 was slightly higher than the regional or county rate.



Michigan Disease Surveillance System, completed cases as of 7/28/09



Michigan Disease Surveillance System, completed cases as of 7/28/09

Escherichia Coli O157:H7 Illness: Demographic Characteristics of Kalamazoo County Cases 2004-2008

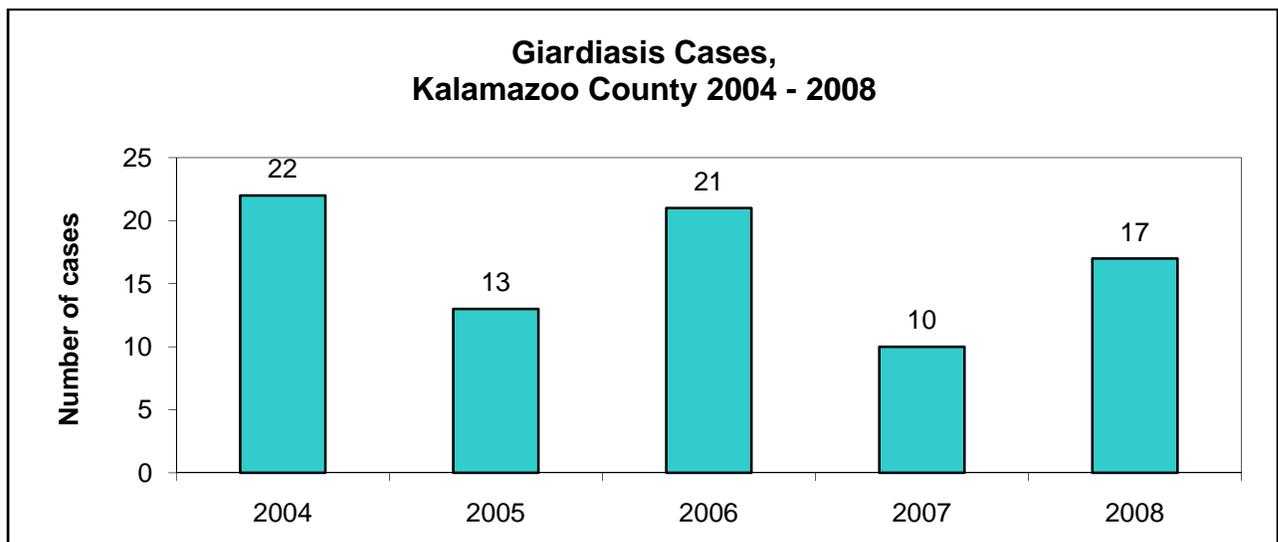
N=14		Number of Cases	Percent of Total
Sex			
Female		8	57%
Male		6	43%
Unknown		0	0%
Age Group			
<1 yr		1	7%
1-4 yrs		0	0%
5-9 yrs		0	0%
10-14 yrs		3	21%
15-19 yrs		4	29%
20-24 yrs		1	7%
25-29 yrs		0	0%
30-34 yrs		0	0%
35-39 yrs		1	7%
40-44 yrs		0	0%
45-49 yrs		2	14%
50-54 yrs		1	7%
55-59 yrs		1	7%
60-64 yrs		0	0%
65-69 yrs		0	0%
>70 yrs		0	0%
Unknown		0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09

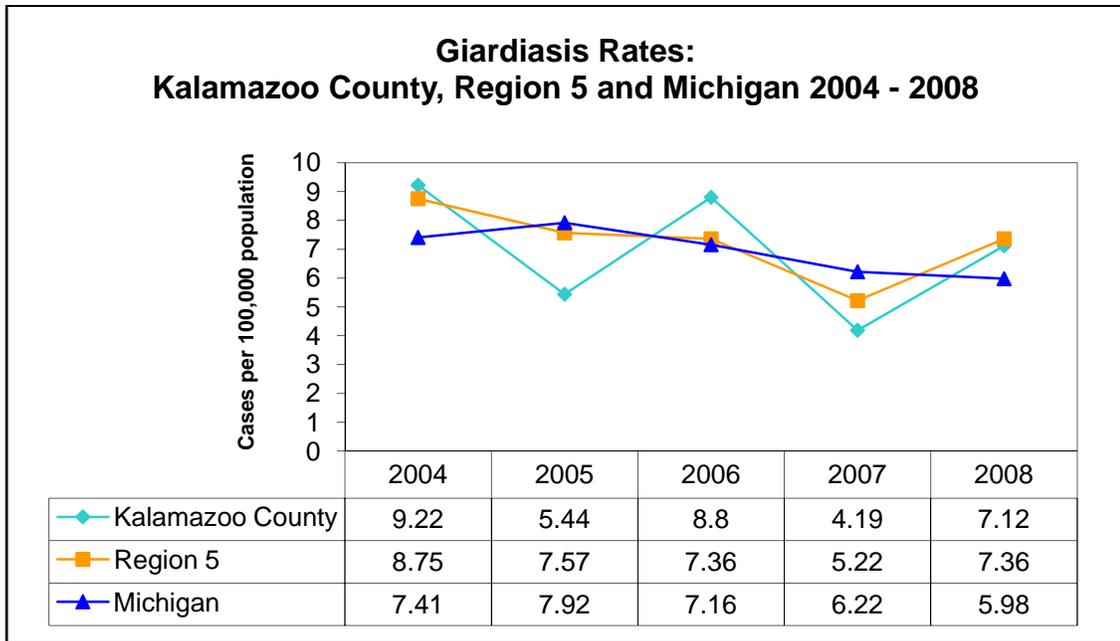
6.5.4 Giardiasis

The symptoms of giardiasis include diarrhea, stomach cramps, and an upset stomach, but some people exhibit no symptoms during the course of the illness. Typically symptoms begin one to two weeks after infection and last approximately two to six weeks. Giardiasis is an illness caused by a parasite that is able to survive outside the body and in the environment for a long period of time. Transmission occurs from ingesting fecally contaminated soil, food, or water, or can be transferred from fecally contaminated surfaces to the mouth. In addition, eating uncooked food including contaminated fruits and vegetables can transmit the parasite. All persons are at risk for giardiasis, however some are at higher risk including child care workers, children who attend day care centers, diaper aged children, international travelers, hikers, campers, and swimmers.

In Kalamazoo County during 2004-2008 there were 83 cases reported to the Kalamazoo County Communicable Disease Surveillance Program with an average of 16.6 cases per year. From 2004-2008 rates were similar in Kalamazoo County, Region 5 and Michigan.



Michigan Disease Surveillance System, completed cases as of 7/28/09



Michigan Disease Surveillance System, completed cases as of 7/28/09

Giardiasis: Demographic Characteristics of Kalamazoo County Cases 2004-2008

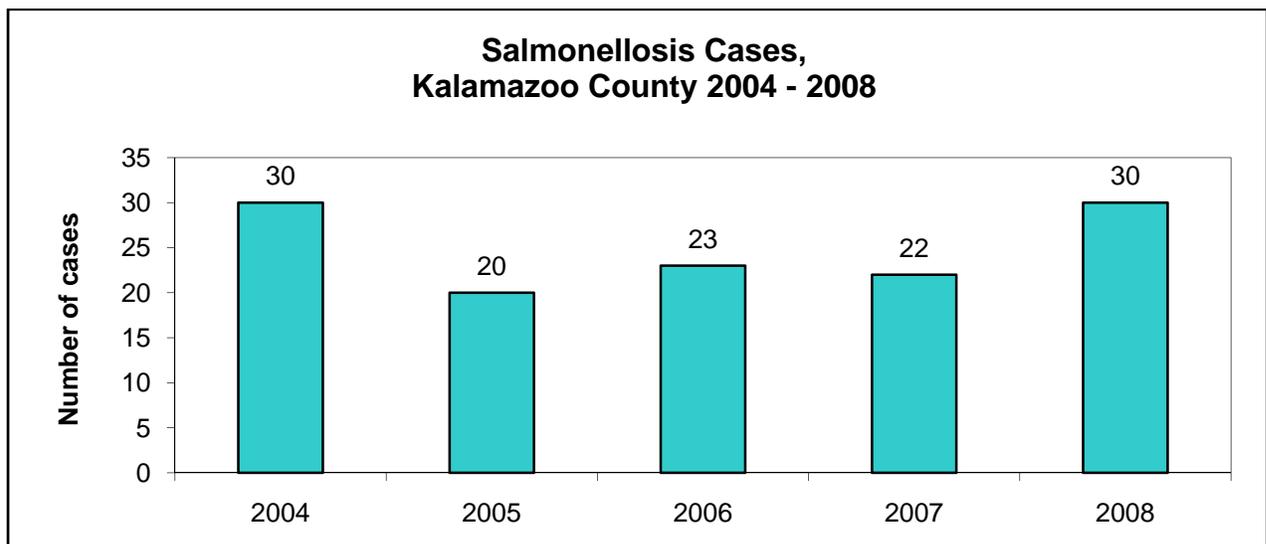
N=83		Number of Cases	Percent of Total
Sex			
	Female	38	46%
	Male	45	54%
	Unknown	0	0%
Age Group			
	<1 yr	4	5%
	1-4 yrs	14	17%
	5-9 yrs	11	13%
	10-14 yrs	5	6%
	15-19 yrs	3	4%
	20-24 yrs	6	7%
	25-29 yrs	6	7%
	30-34 yrs	3	4%
	35-39 yrs	7	8%
	40-44 yrs	4	5%
	45-49 yrs	7	8%
	50-54 yrs	2	2%
	55-59 yrs	2	2%
	60-64 yrs	5	6%
	65-69 yrs	3	4%
	>70 yrs	1	1%
	Unknown	0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09

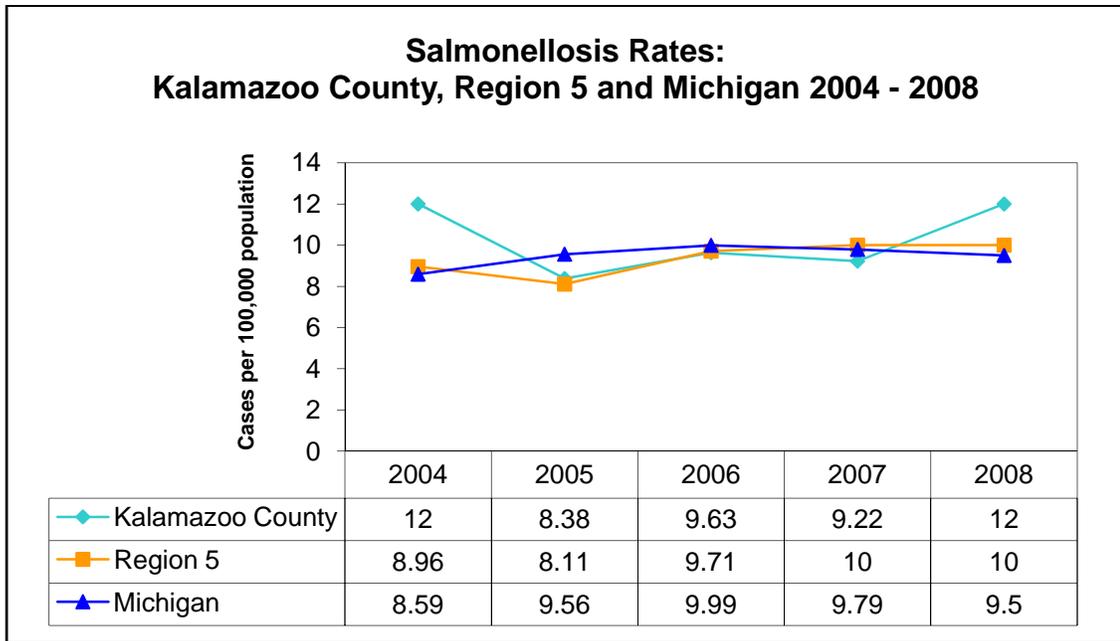
6.5.5 Salmonellosis

Salmonellosis can be caused by any of several serotypes of salmonella bacteria. Symptoms of salmonellosis occur twelve to seventy-two hours after infection and include diarrhea, fever, and abdominal cramps typically lasting from four to seven days. A temporary carrier state can exist in infants. A severe infection can spread from intestines to the blood stream and to other sites. Transmission frequently occurs from eating foods contaminated with animal feces. Although most often found in poultry, ground beef, and eggs, all foods including vegetables can be contaminated. Contamination may also occur as a result of unwashed hands. Pet feces and reptiles such as turtles are especially likely to carry the bacteria. All persons are at risk for salmonellosis, but the illness tends to be more severe in the elderly, infants, and those with compromised immune systems.

In Kalamazoo County during 2004-2008 there were 125 cases reported to the Kalamazoo County Communicable Disease Surveillance Program with an average of 25 cases per year. During this time period, Kalamazoo County rates were similar to the state and regional rates.



Michigan Disease Surveillance System, completed cases as of 7/28/09



Michigan Disease Surveillance System, completed cases as of 6/8/07

Salmonellosis: Demographic Characteristics of Kalamazoo County Cases 2004-2008

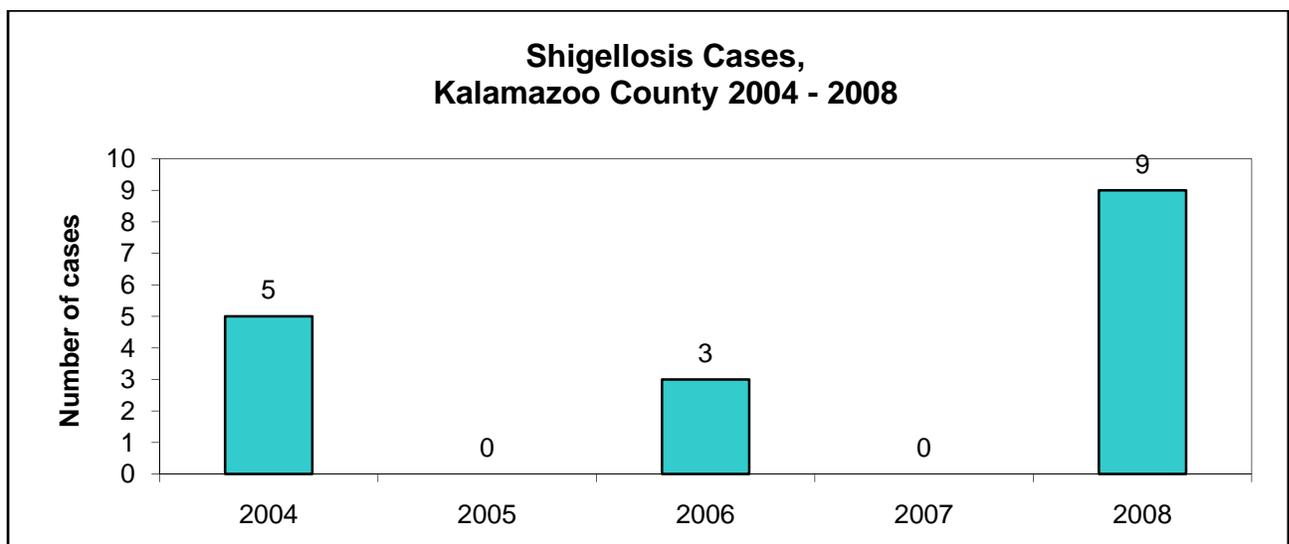
N=125	Number of Cases	Percent of Total
Sex		
Female	68	54%
Male	56	45%
Unknown	1	1%
Age Group		
<1 yr	10	8%
1-4 yrs	13	10%
5-9 yrs	11	9%
10-14 yrs	6	5%
15-19 yrs	6	5%
20-24 yrs	12	10%
25-29 yrs	8	6%
30-34 yrs	11	9%
35-39 yrs	3	2%
40-44 yrs	6	5%
45-49 yrs	9	7%
50-54 yrs	3	2%
55-59 yrs	5	4%
60-64 yrs	6	5%
65-69 yrs	3	2%
>70 yrs	13	10%
Unknown	0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09

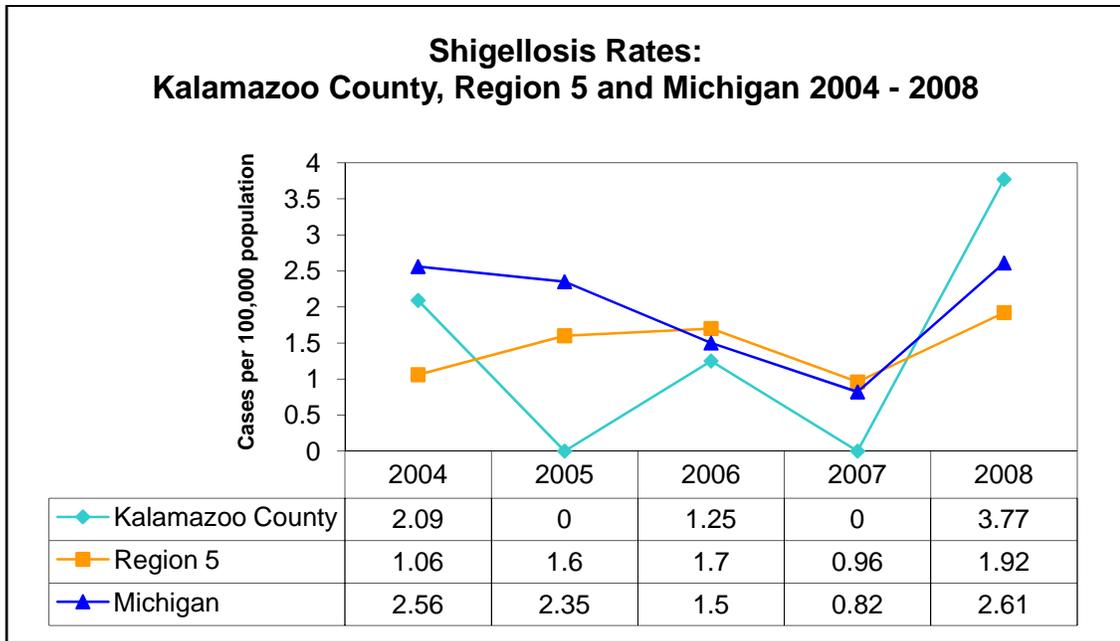
6.5.6 Shigellosis

Most persons infected with shigella bacteria develop diarrhea (often bloody), fever, and stomach cramps one to two days after exposure (incubation period one to three days). The period of communicability occurs as long as the microorganism is present in the feces, but asymptomatic individuals can transmit the disease. The illness usually resolves itself in five to seven days. Infections often result from bacteria passing from stools or soiled fingers of one person to the mouth of another (person to person). The bacteria can be acquired from eating contaminated food or by drinking or swimming in contaminated water. All persons are at risk for shigellosis, however the disease is more likely to occur in toddlers (aged two to four years) who are not fully toilet trained and in their family members and playmates. Those who travel to developing countries are also at increased risk.

In Kalamazoo County during 2004-2008 there were 17 cases reported to the Kalamazoo County Communicable Disease Surveillance Program. On average, there were 3.4 cases reported per year. During this time period, Kalamazoo county rates were similar to both the state and regional rates.



Michigan Disease Surveillance System, completed cases as of 7/28/09



Michigan Disease Surveillance System, completed cases as of 7/28/09

Shigellosis: Demographic Characteristics of Kalamazoo County Cases 2004-2008

N=17		Number of Cases	Percent of Total
Sex			
	Female	9	53%
	Male	8	47%
	Unknown	0	0%
Age Group			
	<1 yr	0	0%
	1-4 yrs	5	29%
	5-9 yrs	3	18%
	10-14 yrs	0	0%
	15-19 yrs	0	0%
	20-24 yrs	0	0%
	25-29 yrs	2	12%
	30-34 yrs	0	0%
	35-39 yrs	1	6%
	40-44 yrs	3	18%
	45-49 yrs	1	6%
	50-54 yrs	1	6%
	55-59 yrs	0	0%
	60-64 yrs	1	6%
	65-69 yrs	0	0%
	>70 yrs	0	0%
	Unknown	0	0%

Michigan Disease Surveillance System, completed cases as of 7/28/09