# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 350 |
| Annual Incidence[a] | |
| LA County | 3.70 |
| California[b] | 4.36 |
| United States[b] | 6.51 |
| Age at Diagnosis | |
| Mean | 30.5 |
| Median | 31 |
| Range | 0–87 years |

[a]Cases per 100,000 population.

[b]Calculated from Final 2014 Reports of Nationally Notifiable Infectious Diseases. MMWR 64(36):1019–1033.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). The incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and then spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In LAC, cases and symptomatic contacts in sensitive situations or occupations (e.g., food handlers, daycare and healthcare workers) are routinely removed from work or the situation until their stool specimen cultures are negative when tested by the LAC Public Health Laboratory.

## 2014 TRENDS AND HIGHLIGHTS

- The incidence of shigellosis cases in LAC increased from 2.41 to 3.70 cases per 100,000 in 2014 compared to 2013 (Figure 1).
- The highest incidence rate by age was observed in the 1 to 4 years age group (6.1 per 100,000) followed by the 35-44 age group at 4.8 per 100, 000 (Figure 2). The 1 to 4 year old age group has consistently had the highest incidence rate; in 2006 the incidence rate for the 1-4 year old age group peaked at16.3 cases per 100,000.
- In 2014, white cases had the highest incidence rate of all race/ethnicity groups, 5.0 per 100,000 (Figure 6). In prior years, rates were similar among whites, blacks and Hispanics with lower rates among the Asian population.
- Service Planning Area (SPA) 4 sustained the highest rate (9.4 per 100,000), followed by SPA 6 (3.9 per 100,000) (Figure 4). This is similar to past years and may reflect a greater population of MSM who are at increased risk.
- In 2014, the percentage of shigellosis cases hospitalized for at least two days increased to 24% (n=84) from 16.3% (n=37) in 2013. The number of cases among men who report having sex with men (MSM) in 2014 increased to 24% (n=84) from 10% (n=23) in 2013. No deaths were reported among diagnosed shigellosis cases.
- No outbreaks were identified in 2014.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2010-2014

| | 2010 (N=355) | | | 2011=(N=264) | | | 2012(N=306) | | | 2013 (N=227) | | | 2014 (N=350) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 1 | 1.1 | 0.8 | 4 | 1.5 | 2.9 | 4 | 1.3 | 3.4 | 1 | 0.4 | 0.8 | 2 | 0.5 | 1.7 |
| 1-4 | 79 | 22.2 | 16.3 | 30 | 11.3 | 5.2 | 32 | 10.5 | 6.7 | 26 | 11.4 | 5.3 | 30 | 8.5 | 6.1 |
| 5-14 | 68 | 19.1 | 5.5 | 37 | 14.0 | 2.8 | 54 | 17.6 | 4.5 | 49 | 21.5 | 4.1 | 51 | 14.5 | 4.2 |
| 15-34 | 75 | 21.1 | 2.7 | 80 | 30.3 | 2.7 | 68 | 22.2 | 2.5 | 55 | 24.2 | 1.9 | 85 | 24.2 | 3.0 |
| 35-44 | 63 | 17.7 | 4.7 | 41 | 15.5 | 2.8 | 39 | 12.7 | 2.9 | 31 | 13.6 | 2.3 | 64 | 18.2 | 4.8 |
| 45-54 | 36 | 10.1 | 2.8 | 44 | 16.6 | 3.3 | 31 | 10.1 | 2.0 | 30 | 13.2 | 2.3 | 57 | 16.2 | 4.4 |
| 55-64 | 17 | 4.7 | 1.8 | 15 | 5.6 | 1.6 | 25 | 8.2 | 2.5 | 19 | 8.3 | 1.9 | 30 | 8.5 | 2.8 |
| 65+ | 15 | 4.2 | 1.5 | 12 | 4.5 | 1.1 | 52 | 17.0 | 4.7 | 15 | 6.6 | 1.4 | 31 | 8.8 | 2.7 |
| Unknown | 1 | 0.2 | - | 0 | - | - | 1 | 0.3 | - | 1 | 0.4 | - | 0 | - | - |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 15 | 4.2 | 1.1 | 4 | 1.5 | 0.6 | 2 | 0.6 | 0.2 | 5 | 2.2 | 0.4 | 17 | 4.8 | 1.2 |
| Black | 31 | 8.7 | 4.0 | 24 | 9.0 | 2.8 | 29 | 9.4 | 3.7 | 25 | 11.0 | 3.2 | 19 | 5.4 | 2.4 |
| Hispanic | 203 | 57.1 | 4.6 | 149 | 56.4 | 3.1 | 153 | 50.0 | 3.4 | 107 | 47.1 | 2.3 | 167 | 47.7 | 3.6 |
| White | 94 | 26.4 | 3.5 | 78 | 29.5 | 2.7 | 104 | 33.9 | 3.9 | 82 | 36.1 | 3.1 | 132 | 37.7 | 5.0 |
| Other | 0 | - | - | 0 | - | - | 0 | - | - | 2 | 0.88 | - | 1 | 0.2 | - |
| Unknown | 12 | 3.3 | - | 9 | 3.4 | - | 18 | 5.9 | - | 6 | 2.6 | - | 14 | 4.0 | - |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 3 | 0.8 | 0.8 | 7 | 2.6 | 1.9 | 3 | 0.9 | 0.8 | 4 | 1.7 | 1.0 | 5 | 1.4 | 1.3 |
| 2 | 61 | 17.2 | 2.9 | 40 | 15.1 | 1.8 | 52 | 1.6 | 2.4 | 39 | 17.1 | 1.8 | 59 | 16.8 | 2.7 |
| 3 | 33 | 9.2 | 2.1 | 32 | 12.1 | 1.8 | 26 | 8.4 | 1.6 | 16 | 7.0 | 1.0 | 29 | 8.2 | 1.8 |
| 4 | 91 | 25.6 | 8.1 | 82 | 31.0 | 6.5 | 85 | 27.7 | 7.6 | 58 | 25.5 | 5.1 | 108 | 30.8 | 9.4 |
| 5 | 30 | 8.4 | 4.7 | 14 | 5.3 | 2.1 | 48 | 15.6 | 7.5 | 18 | 7.9 | 2.8 | 25 | 7.1 | 3.8 |
| 6 | 58 | 16.3 | 5.8 | 38 | 14.3 | 3.6 | 37 | 12.0 | 3.6 | 44 | 19.3 | 4.3 | 40 | 11.4 | 3.9 |
| 7 | 54 | 15.2 | 4.2 | 24 | 9.1 | 1.7 | 33 | 10.7 | 2.5 | 33 | 54.1 | 2.5 | 43 | 12.2 | 3.3 |
| 8 | 25 | 7.0 | 2.4 | 26 | 9.8 | 2.3 | 22 | 7.1 | 2.1 | 15 | 6.6 | 1.4 | 41 | 11.7 | 3.8 |
| Unknown | 0 | - | - | 1 | 0.3 | - | 0 | - | - | 0 | - | - | 0 | - | - |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year
LAC, CA and US, 2004-2014**

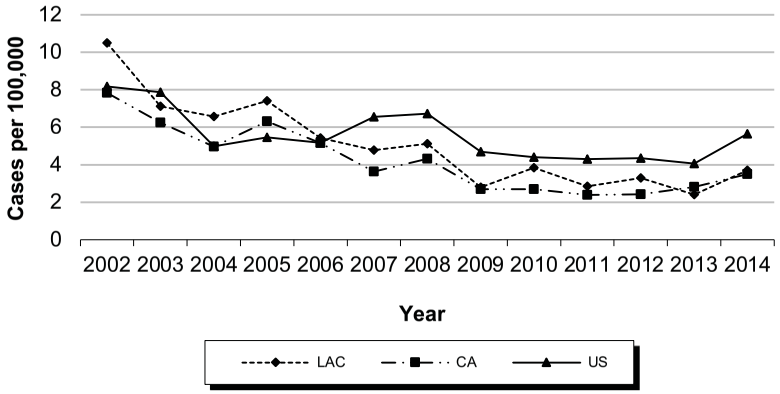



**Figure 2. Reported Shigellosis Rates by Age Group
LAC, 2014 (N=350)**

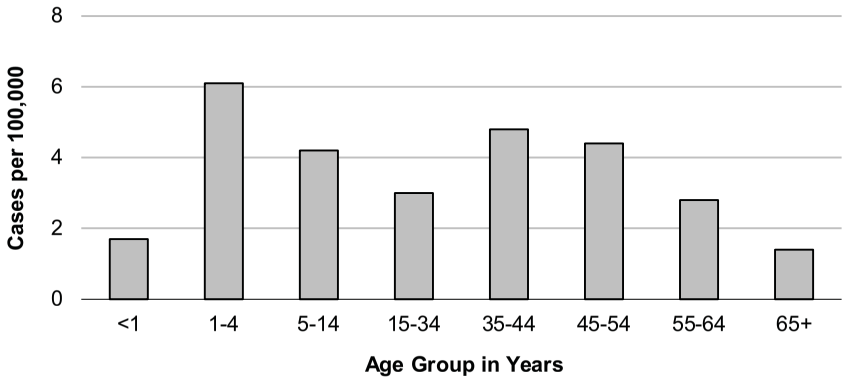



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity
LAC, 2014 (N=350)**

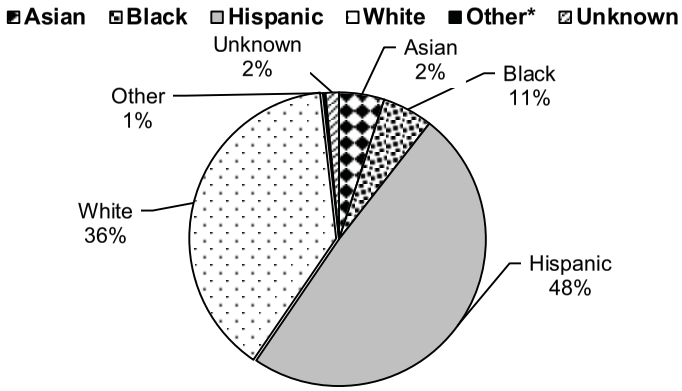



**Figure 4. Reported Shigellosis Rates by SPA
LAC, 2014 (N=350)**

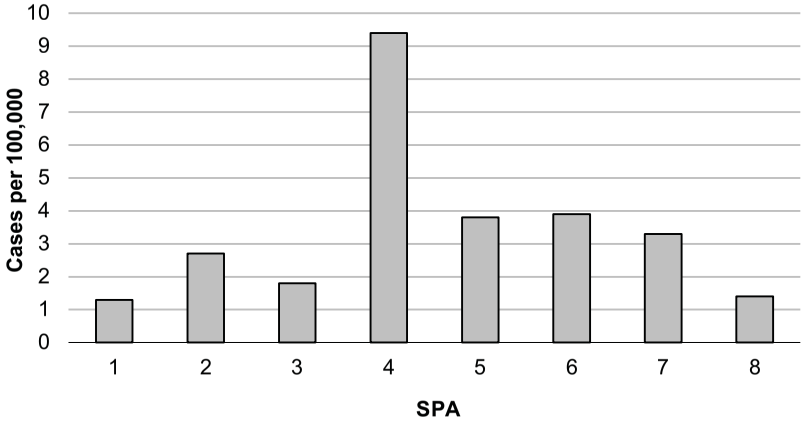


**Figure 5. Reported Shigellosis Cases by Month of Onset
LAC, 2014 (N=350)**

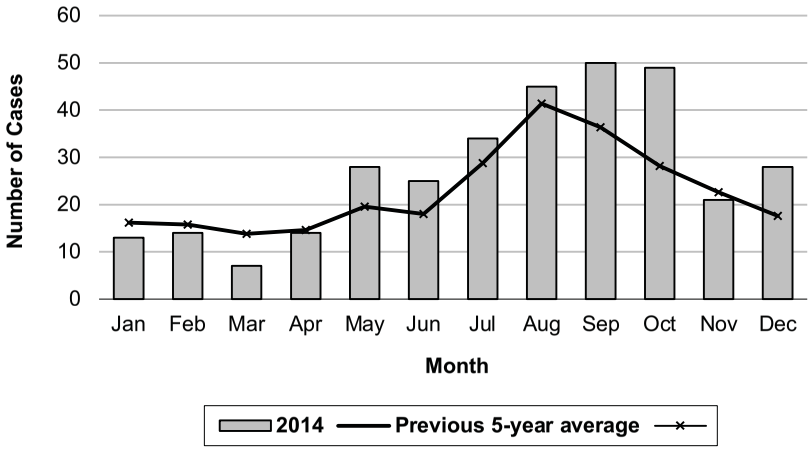
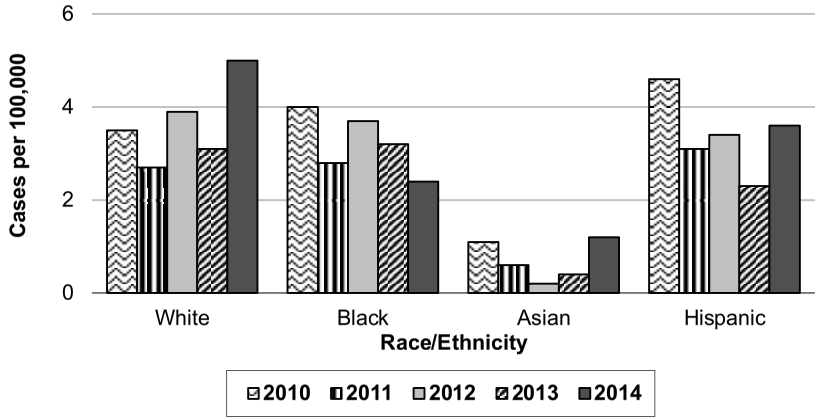
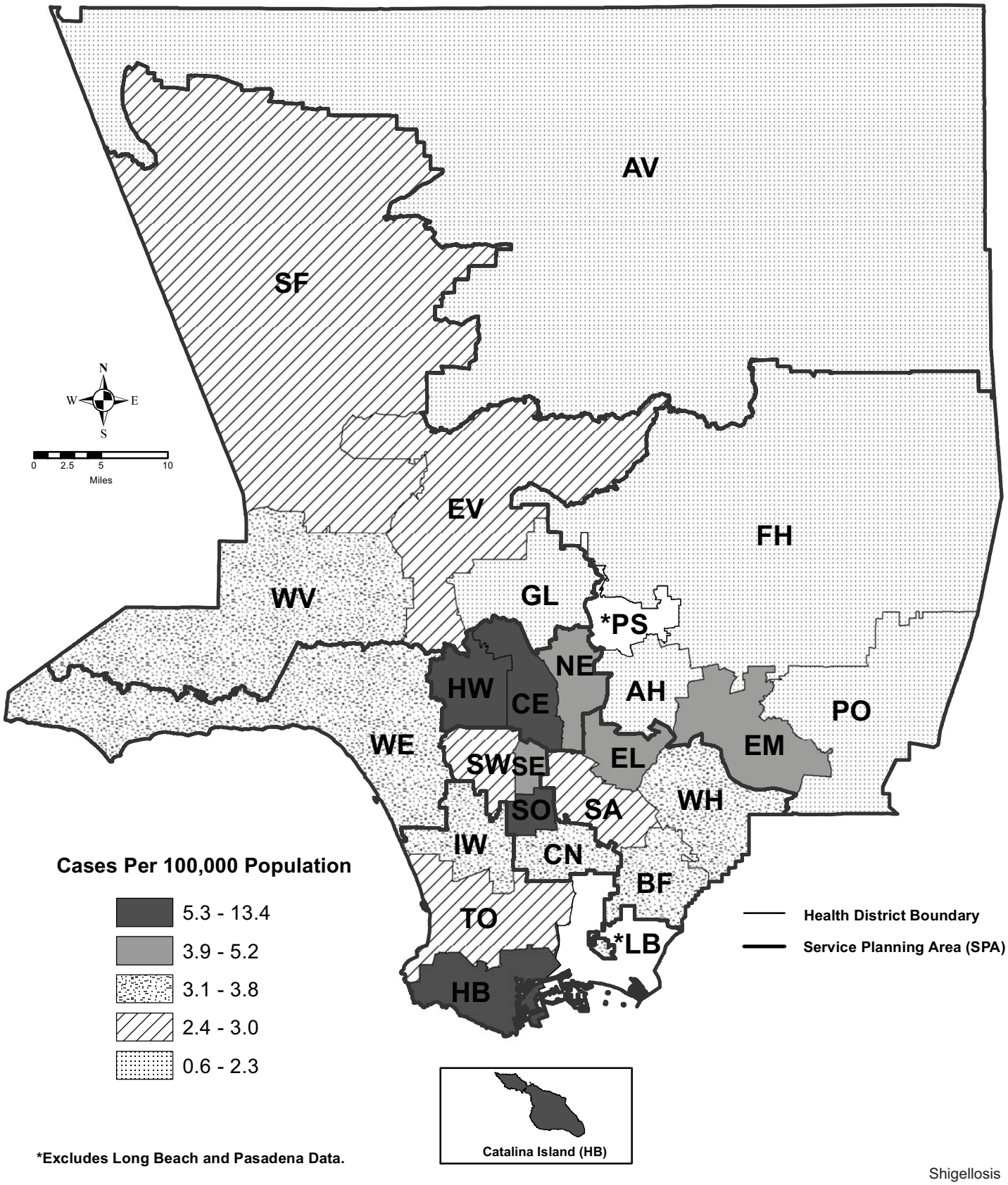



**Figure 6. Shigellosis Incidence by Race/Ethnicity
LAC, 2010-2014**



# Map 13. Shigellosis
# Rates by Health District, Los Angeles County, 2014*




*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 227 |
| Annual Incidence[a] | |
| LA County | 2.41 |
| California[b] | 2.81 |
| United States[b] | 4.06 |
| Age at Diagnosis | |
| Mean | 30.5 |
| Median | 31 |
| Range | 0-87 |

[a]Cases per 100,000 population.
[b]Calculated from Final 2013 Reports of Nationally Notifiable Infectious Diseases. MMWR 63(32):702-716.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). The incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In Los Angeles County (LAC) cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until their stool specimen cultures are negative when tested in the LAC Public Health Laboratory.

## 2013 TRENDS AND HIGHLIGHTS

- There was a 26% decrease in reported cases in 2013 after a 16% increase in cases during 2012 (Figure 1). There was a decrease observed among all races except Asians among whom the rate increased (Figure 6).
- The highest incidence rate by age was observed in the 1 to 4 years age group (5.3 per 100,000) as observed in previous years (Figure 2) (not adjusted for race/ethnicity). The shigellosis rate among all age groups except for age 45-54 in LAC this year has decreased when compared to the last five years.
- In 2013, the incidence of shigellosis among the Hispanic population (47% of cases, 2.3 per 100,000) was the highest, consistent with previous five years (Figures 3, 6). Service Planning Area (SPA) 4 sustained the highest rate (5.1 per 100,000), followed by SPA 6 (4.3 per 100,000) (Figure 4). There was a 4.7% decrease in reported cases in SPA 5 when compared to previous year.
- In 2013, the percentage of shigellosis cases hospitalized for at least two days increased to 16.3% (n=37) from 8.1% (n=25) in 2012. The number of cases of men who have sex with men (MSM) in 2013 increased to 10.1% (n=23) from 8.8% (n=27) in 2012. No deaths were reported among diagnosed shigellosis cases.
- No outbreaks were identified in 2013.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2009-2013

| | 2009 (N=259) | | | 2010(N=355) | | | 2011(N=264) | | | 2012 (N=306) | | | 2013 (N=227) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 4 | 1.5 | 3.3 | 1 | 1.1 | 0.8 | 4 | 1.5 | 2.9 | 4 | 1.3 | 3.4 | 1 | 0.4 | 0.8 |
| 1-4 | 34 | 13.1 | 6.9 | 79 | 22.2 | 16.3 | 30 | 11.3 | 5.2 | 32 | 10.5 | 6.7 | 26 | 11.4 | 5.3 |
| 5-14 | 47 | 18.1 | 3.7 | 68 | 19.1 | 5.5 | 37 | 14.0 | 2.8 | 54 | 17.6 | 4.5 | 49 | 21.5 | 4.1 |
| 15-34 | 67 | 25.9 | 2.4 | 75 | 21.1 | 2.7 | 80 | 30.3 | 2.7 | 68 | 22.2 | 2.5 | 55 | 24.2 | 1.9 |
| 35-44 | 51 | 19.7 | 3.8 | 63 | 17.7 | 4.7 | 41 | 15.5 | 2.8 | 39 | 12.7 | 2.9 | 31 | 13.6 | 2.3 |
| 45-54 | 33 | 12.7 | 2.6 | 36 | 10.1 | 2.8 | 44 | 16.6 | 3.3 | 31 | 10.1 | 2.0 | 30 | 13.2 | 2.3 |
| 55-64 | 12 | 4.6 | 1.3 | 17 | 4.7 | 1.8 | 15 | 5.6 | 1.6 | 25 | 8.2 | 2.5 | 19 | 8.3 | 1.9 |
| 65+ | 11 | 4.2 | 1.1 | 15 | 4.2 | 1.5 | 12 | 4.5 | 1.1 | 52 | 17.0 | 4.7 | 15 | 6.6 | 1.4 |
| Unknown | 0 | 0 | | 1 | 0.2 | | 0 | 0 | | 1 | 0.3 | | 1 | 0.4 | |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 6 | 2.3 | 0.5 | 15 | 4.2 | 1.1 | 4 | 1.5 | 0.3 | 2 | 0.6 | 0.2 | 5 | 2.2 | 0.4 |
| Black | 17 | 6.6 | 2.2 | 31 | 8.7 | 4.0 | 24 | 9.0 | 2.8 | 29 | 9.4 | 3.7 | 25 | 11.0 | 3.2 |
| Hispanic | 154 | 59.5 | 3.5 | 203 | 57.1 | 4.6 | 149 | 56.4 | 3.1 | 153 | 50.0 | 3.4 | 107 | 47.1 | 2.3 |
| White | 69 | 26.6 | 2.4 | 94 | 26.4 | 3.5 | 78 | 29.5 | 2.7 | 104 | 33.9 | 3.9 | 82 | 36.1 | 3.1 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0.88 | |
| Unknown | 13 | 5.0 | | 12 | 3.3 | | 9 | 3.4 | | 18 | 5.9 | | 6 | 2.6 | |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 5 | 1.9 | 1.3 | 3 | 0.8 | 0.8 | 7 | 2.6 | 1.9 | 3 | 0.9 | 0.8 | 4 | 1.7 | 1.0 |
| 2 | 46 | 17.7 | 2.2 | 61 | 17.2 | 2.9 | 40 | 15.1 | 1.8 | 52 | 1.6 | 2.4 | 39 | 17.1 | 1.8 |
| 3 | 23 | 8.9 | 1.4 | 33 | 9.2 | 2.1 | 32 | 12.1 | 1.8 | 26 | 8.4 | 1.6 | 16 | 7.0 | 1.0 |
| 4 | 74 | 28.6 | 6.6 | 91 | 25.6 | 8.1 | 82 | 31.0 | 6.5 | 85 | 27.7 | 7.6 | 58 | 25.5 | 5.1 |
| 5 | 22 | 8.5 | 3.5 | 30 | 8.4 | 4.7 | 14 | 5.3 | 2.1 | 48 | 15.6 | 7.5 | 18 | 7.9 | 2.8 |
| 6 | 41 | 15.8 | 4.1 | 58 | 16.3 | 5.8 | 38 | 14.3 | 3.6 | 37 | 12.0 | 3.6 | 44 | 19.3 | 4.3 |
| 7 | 33 | 12.7 | 2.5 | 54 | 15.2 | 4.2 | 24 | 9.1 | 1.7 | 33 | 10.7 | 2.5 | 33 | 54.1 | 2.5 |
| 8 | 14 | 5.4 | 1.3 | 25 | 7.0 | 2.4 | 26 | 9.8 | 2.3 | 22 | 7.1 | 2.1 | 15 | 6.6 | 1.4 |
| Unknown | 1 | 0.3 | | 0 | 0 | | 1 | 0.3 | | 0 | 0 | | 0 | 0 | |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year
LAC, CA and US, 2003-2013**

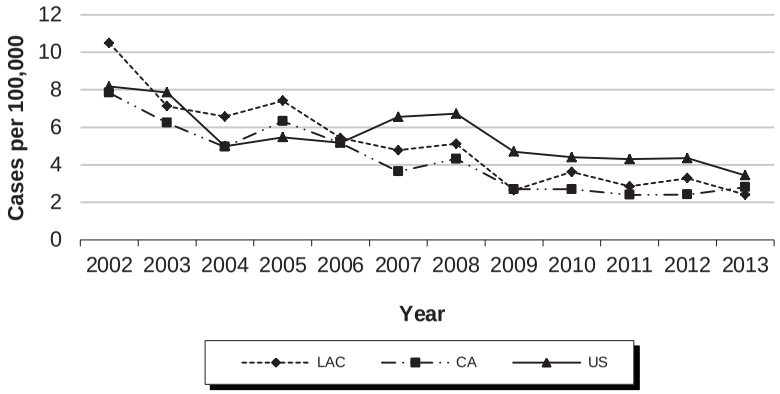



**Figure 2. Reported Shigellosis Rates by Age Group
LAC, 2013 (N=227)**

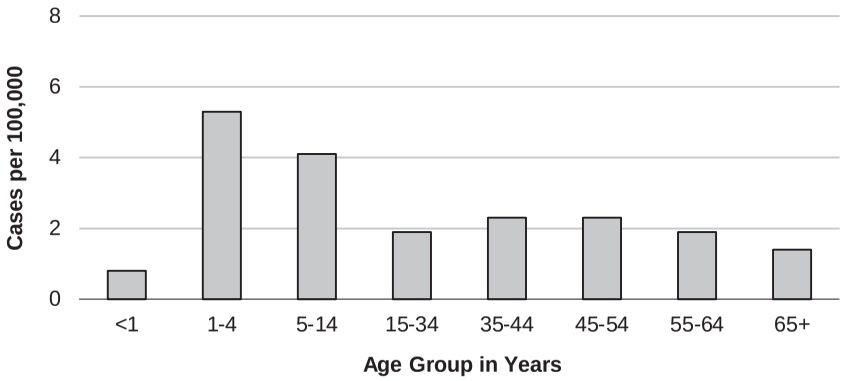



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity
LAC, 2013 (N=227)**

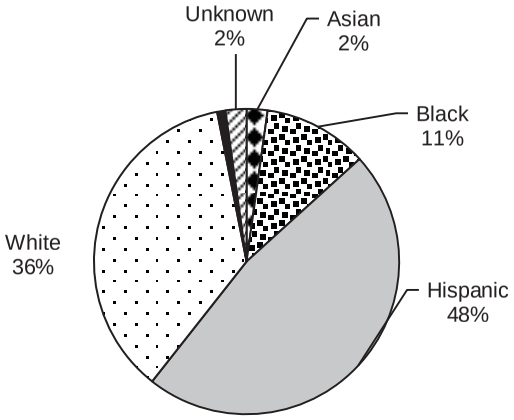



**Figure 4. Reported Shigellosis Rates by SPA
LAC, 2013 (N=227)**

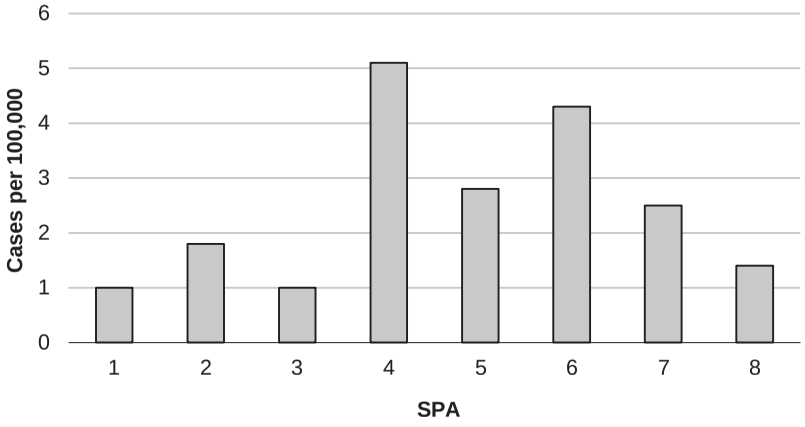


**Figure 5. Reported Shigellosis Cases by Month of Onset
LAC, 2013 (N=227)**

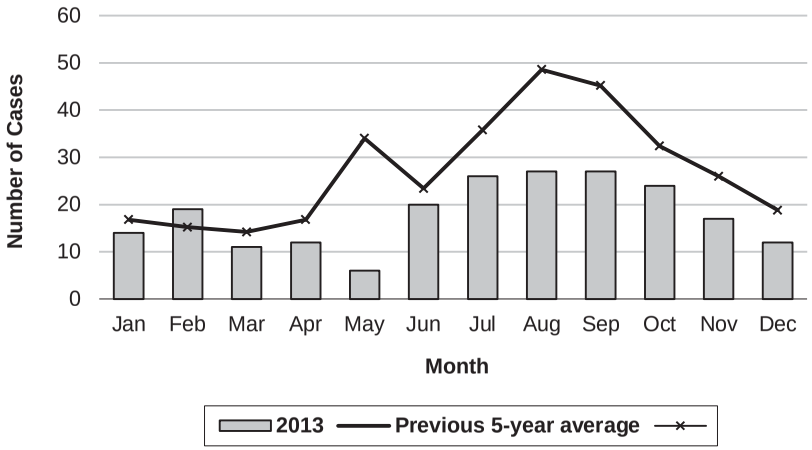
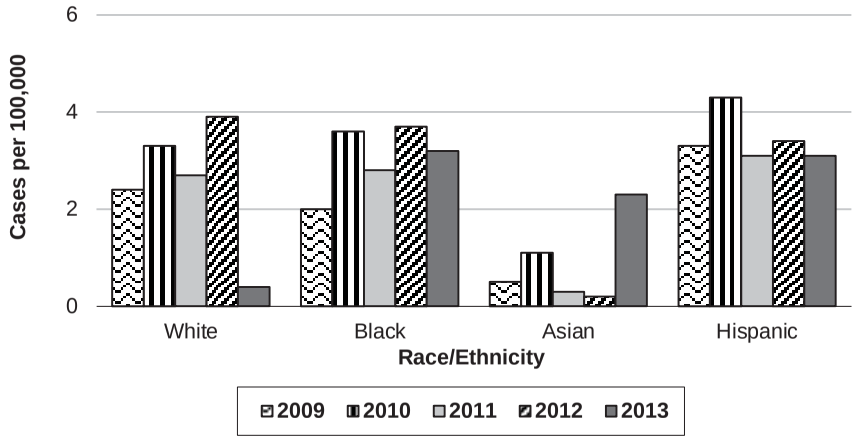
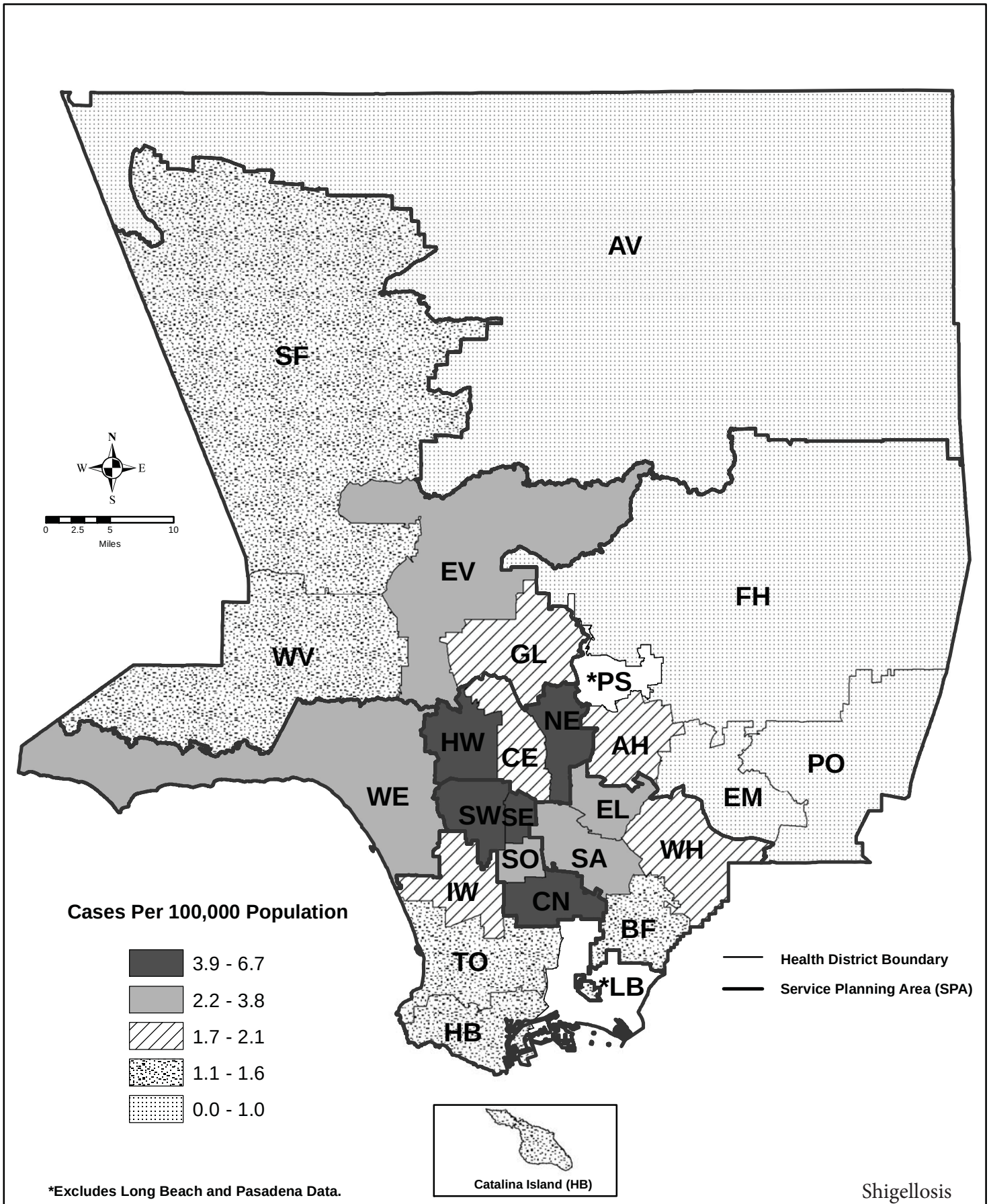



**Figure 6. Shigellosis Incidence by Race/Ethnicity
LAC, 2009-2013**



# Map 14. Shigellosis
# Rates by Health District, Los Angeles County, 2013*




*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 306 |
| Annual Incidence[a] | |
| LA County | 3.29 |
| California[b] | 2.42 |
| United States[b] | 4.35 |
| Age at Diagnosis | |
| Mean | 35 |
| Median | 34 |
| Range | 0-98 |

[a]Cases per 100,000 population.
[b]Calculated from Final 2012 Reports of Nationally Notifiable Infectious Disease. MMWR 62(33);669-682.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In Los Angeles County (LAC) cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until their stool specimen cultures are negative when tested in the LAC Public Health Laboratory.

## 2012 TRENDS AND HIGHLIGHTS

- *Shigella sonnei* was confirmed in one outbreak this year. This outbreak involved 43 cases who ate at a private bridge club. Fourteen club members and staff tested positive for *Shigella sonnei.* Ten of the 14 samples underwent PFGE and yielded the same outbreak pattern. One club employee who tested positive was a food handler who was involved in the preparation of the majority of foods identified as being associated with illness (see 2012 Special Studies Report for details).
- No other outbreaks were identified in 2012. For more information see 2012 ACDC Special Studies Reports and Foodborne Outbreak summary in this report.
- There was a 16% increase in reported cases in 2012 after a 26% decrease in cases during 2011 (Figure 1). There was an increase observed among all races except Asians. (Figure 6).
- The highest age group incidence rate was observed in the 1 to 4 years age group (6.7 per 100,000) as observed in previous years (Figure 2) (not adjusted for race/ethnicity). The shigellosis rate in the 1 to 4 years age group in LAC this year has decreased when compared to the last five years (range: 6.7 versus 20.8 per 100,000).
- In 2012, the incidence of shigellosis among the white population (34% of cases, 3.9 per 100,000) was the highest; however, in the previous years the highest frequency was seen among Hispanics (Figures 3, 6). The increase of cases among the white population is due to the May outbreak. Service Planning Area (SPA) 4 sustained the highest rate (7.6 per 100,000), followed by SPA 5 (7.5 per 100,000) (Figure 4). There was a 5.4% increase in reported cases in SPA 5 when compared to previous year. The increase in SPA 5 can be attributed to the May outbreak.
- The May outbreak greatly impacted the number of cases by month of onset when compared to other months and previous years. (Figure 5).
- In 2012, the percentage of shigellosis cases hospitalized for at least two days has

decreased to 8.1% (N=25) from 14.7% (N=39) in 2011. The numbers of cases of men who have sex with men (MSM) in 2012 have decreased to 8.8% (N=27) from 16.2% (N=43) in 2011. No deaths were reported among diagnosed shigellosis cases.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2008-2012

| | 2008 (N=498) | | | 2009 (N=259) | | | 2010 (N=355) | | | 2011 (N=264) | | | 2012 (306) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 8 | 1.6 | 5.7 | 4 | 1.5 | 2.9 | 1 | 1.1 | 0.7 | 4 | 1.5 | 2.9 | 4 | 1.3 | 3.4 |
| 1-4 | 118 | 23.7 | 20.8 | 34 | 13.1 | 6.1 | 79 | 22.2 | 13.6 | 30 | 11.3 | 5.2 | 32 | 10.5 | 6.7 |
| 5-14 | 137 | 27.5 | 9.8 | 47 | 18.1 | 3.4 | 68 | 19.1 | 5.1 | 37 | 14.0 | 2.8 | 54 | 17.6 | 4.5 |
| 15-34 | 122 | 24.5 | 4.3 | 67 | 25.9 | 2.4 | 75 | 21.1 | 2.5 | 80 | 30.3 | 2.7 | 68 | 22.2 | 2.5 |
| 35-44 | 42 | 8.4 | 2.8 | 51 | 19.7 | 3.4 | 63 | 17.7 | 4.4 | 41 | 15.5 | 2.8 | 39 | 12.7 | 2.9 |
| 45-54 | 26 | 5.2 | 1.9 | 33 | 12.7 | 2.4 | 36 | 10.1 | 2.7 | 44 | 16.6 | 3.3 | 31 | 10.1 | 2.0 |
| 55-64 | 23 | 4.6 | 2.5 | 12 | 4.6 | 1.3 | 17 | 4.7 | 1.8 | 15 | 5.6 | 1.6 | 25 | 8.2 | 2.5 |
| 65+ | 22 | 4.4 | 2.2 | 11 | 4.2 | 1.0 | 15 | 4.2 | 1.4 | 12 | 4.5 | 1.1 | 52 | 17.0 | 4.7 |
| Unknown | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.3 | 0 |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 10 | 2.0 | 0.8 | 6 | 2.3 | 0.5 | 15 | 4.2 | 1.1 | 4 | 1.5 | 0.3 | 2 | 0.6 | 0.2 |
| Black | 25 | 5.0 | 2.9 | 17 | 6.6 | 2.0 | 31 | 8.7 | 3.6 | 24 | 9.0 | 2.8 | 29 | 9.4 | 3.7 |
| Hispanic | 376 | 75.5 | 8.0 | 154 | 59.5 | 3.3 | 203 | 57.1 | 4.3 | 149 | 56.4 | 3.1 | 153 | 50.0 | 3.4 |
| White | 71 | 14.3 | 2.4 | 69 | 26.6 | 2.4 | 94 | 26.4 | 3.3 | 78 | 29.5 | 2.7 | 104 | 33.9 | 3.9 |
| Other | 3 | 0.6 | 12.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 13 | 2.6 | | 13 | 5.0 | 0 | 12 | 3.3 | -- | 0 | 0 | 0 | 18 | 5.9 | |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 11 | 2.2 | 3.0 | 5 | 1.9 | 1.9 | 3 | 0.8 | 0.8 | 7 | 2.6 | 1.9 | 3 | 0.9 | 0.8 |
| 2 | 89 | 17.9 | 4.1 | 46 | 17.7 | 2.1 | 61 | 17.2 | 2.8 | 40 | 15.1 | 1.8 | 52 | 1.6 | 2.4 |
| 3 | 66 | 13.3 | 3.8 | 23 | 8.9 | 1.3 | 33 | 9.2 | 1.9 | 32 | 12.1 | 1.8 | 26 | 8.4 | 1.6 |
| 4 | 71 | 14.3 | 5.6 | 74 | 28.6 | 5.9 | 91 | 25.6 | 7.2 | 82 | 31.0 | 6.51 | 85 | 27.7 | 7.6 |
| 5 | 23 | 4.6 | 3.6 | 22 | 8.5 | 3.4 | 30 | 8.4 | 4.5 | 14 | 5.3 | 2.1 | 48 | 15.6 | 7.5 |
| 6 | 109 | 21.9 | 10.3 | 41 | 15.8 | 3.9 | 58 | 16.3 | 5.4 | 38 | 14.3 | 3.6 | 37 | 12.0 | 3.6 |
| 7 | 93 | 18.7 | 6.7 | 33 | 12.7 | 2.4 | 54 | 15.2 | 3.9 | 24 | 9.1 | 1.7 | 33 | 10.7 | 2.5 |
| 8 | 34 | 6.8 | 3.0 | 14 | 5.4 | 1.2 | 25 | 7.0 | 2.2 | 26 | 9.8 | 2.3 | 22 | 7.1 | 2.1. |
| Unknown | 2 | 0.4 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year
LAC, CA and US, 2002-2012**

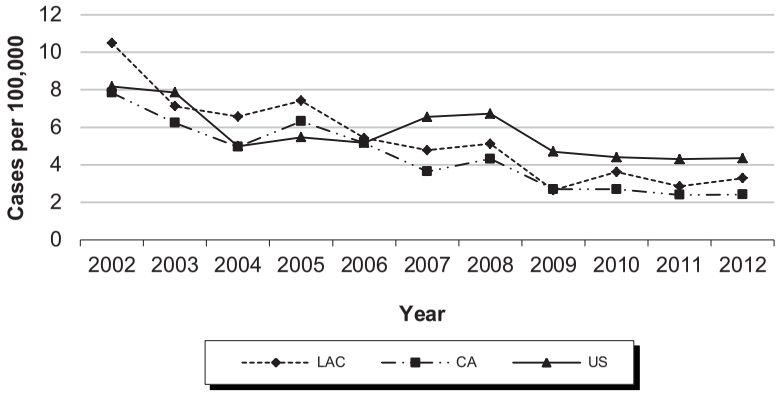



**Figure 2. Reported Shigellosis Rates by Age Group
LAC, 2012 (N=306)**

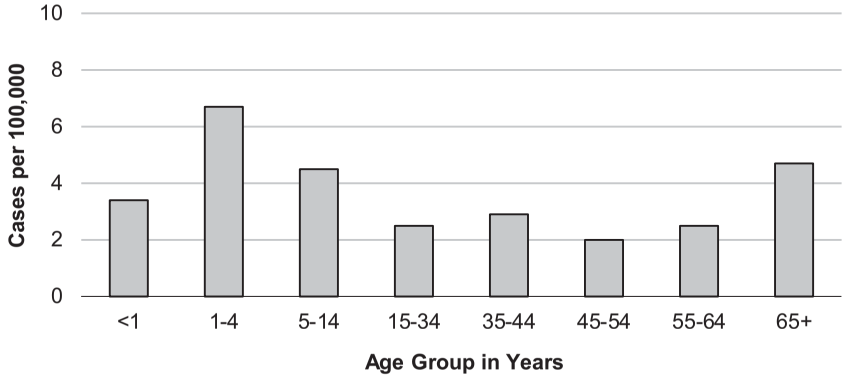



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity
LAC, 2012 (N=306)**

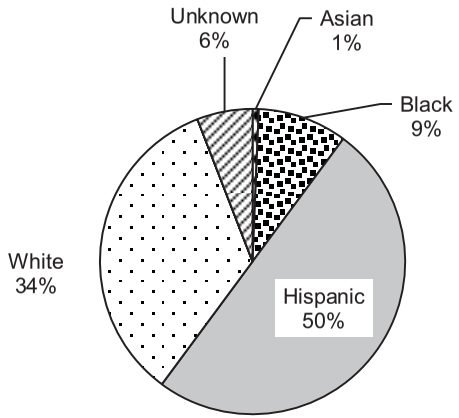



**Figure 4. Reported Shigellosis Rates by SPA
LAC, 2012 (N=306)**

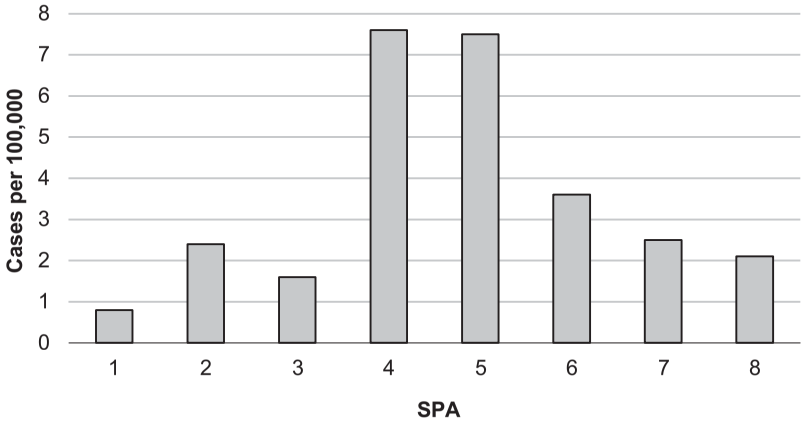


**Figure 5. Reported Shigellosis Cases by Month of Onset
LAC, 2012 (N=306)**

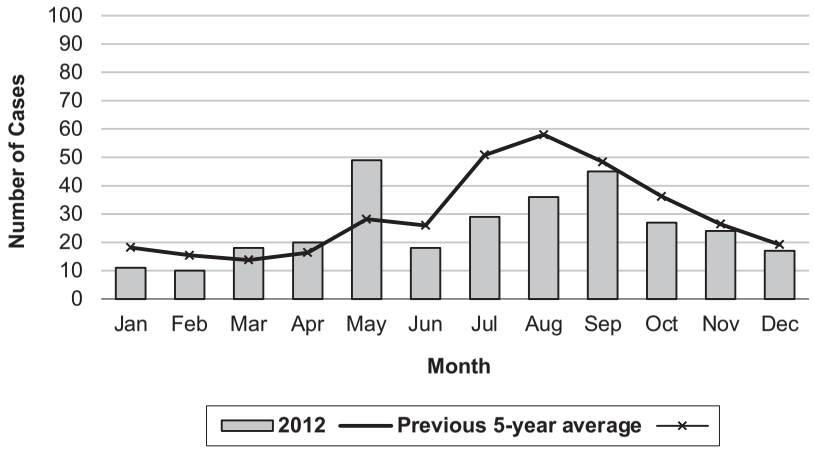
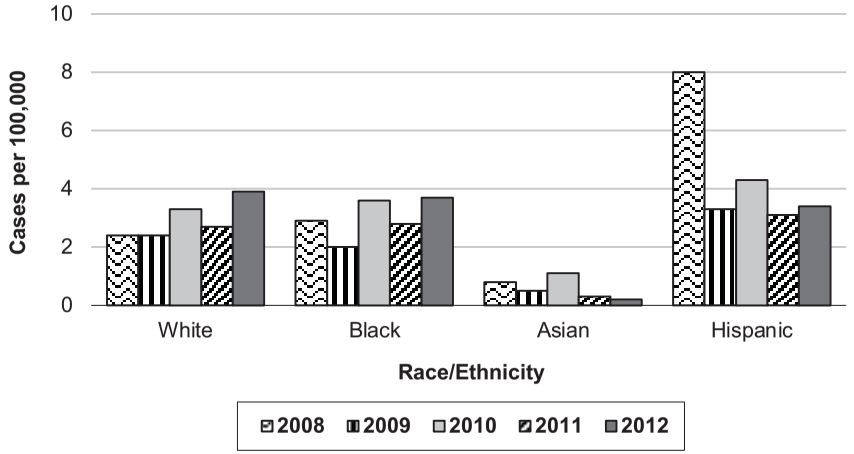
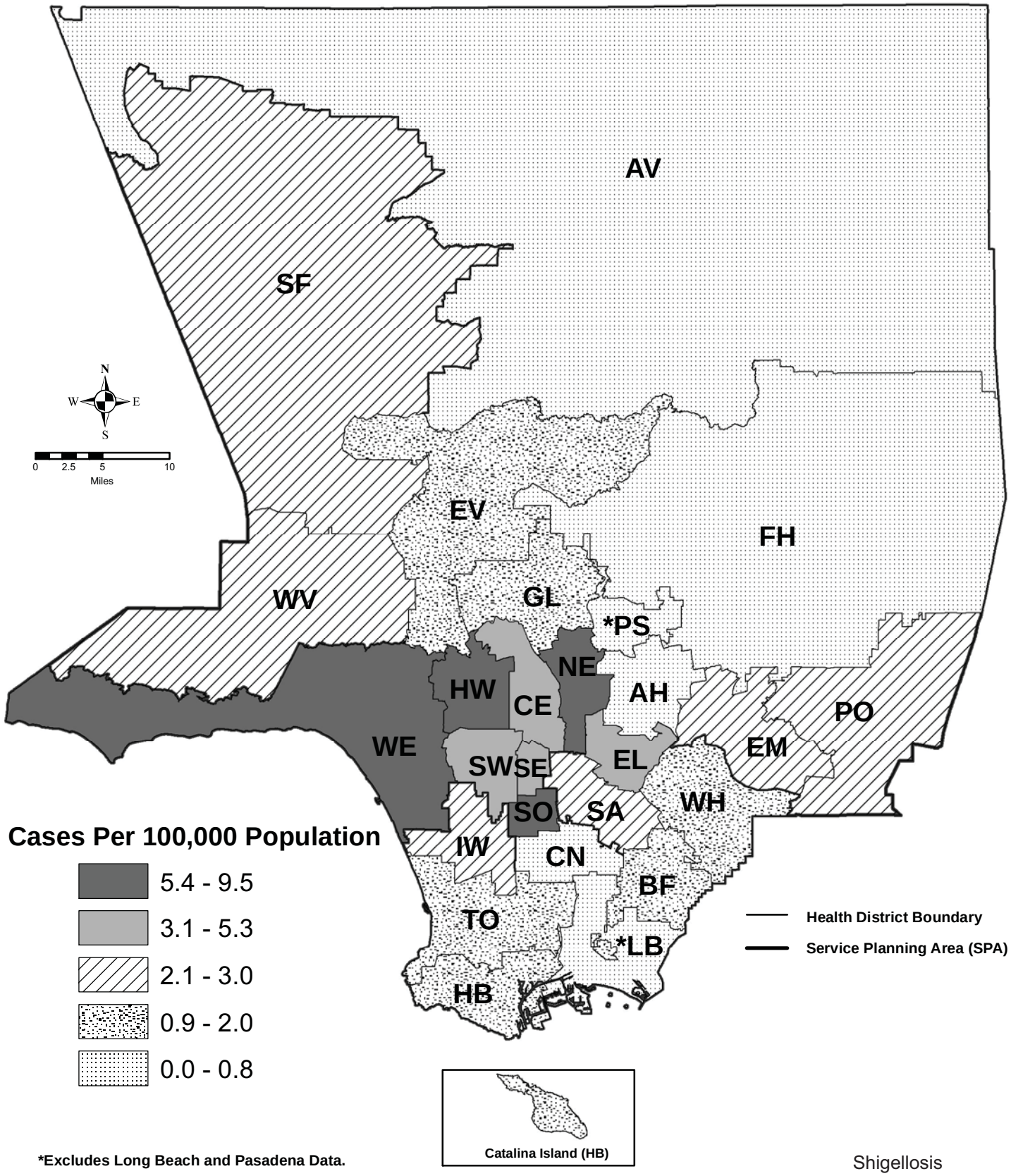



**Figure 6. Shigellosis Incidence by Race/Ethnicity
LAC, 2008-2012**



# Map 12. Shigellosis
# Rates by Health District, Los Angeles County, 2012*




*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 264 |
| Annual Incidence[a] | |
| LA County | 2.69 |
| California[b] | 2.44 |
| United States[b] | 4.32 |
| Age at Diagnosis | |
| Mean | 30 |
| Median | 30 |
| Range | 0-101 |

[a]Cases per 100,000 population.
[b]Calculated from Final 2011 Reports of Nationally Notifiable Infectious Disease. MMWR 61(32);625-637.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In Los Angeles County (LAC) cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until their stool specimen cultures are negative when tested in the LAC Public Health Laboratory.

## 2011 TRENDS AND HIGHLIGHTS

- There was a 26% decrease in reported cases in 2011 after a 37% increase in cases during 2010 (Figure 1). These decreases were observed among all races (Figure 6).
- The highest age group incidence rate was observed in the 1 to 4 years age group (5.2 per 100,000) (Figure 2) (not adjusted for race/ethnicity).
- The shigellosis rate in the 1 to 4 years age group in LAC this year has decrease when compared to the last four years (range: 5.2 versus 20.8 per 100,000).
- The incidence of shigellosis among the Hispanic population (56% of cases, 3.1 per 100,000) remained highest, consistent with previous years (Figures 3, 6). Much of this is believed to be due to overcrowded living situations and contact with visitors from endemic countries.
- Service Planning Area (SPA) 4 sustained the highest rate (6.5 per 100,000), followed by SPA 6 (3.6 per 100,000) (Figure 4).
- In 2011, the monthly incidence peaked in August, however the incidence during 2011 was below the five-year average, except for the early spring (Figure 5).
- Two shigellosis cases were part of an out-of-county outbreak involving a church group that traveled to Mexico.
- In 2011, the percentage of shigellosis cases hospitalized for at least two days has remained consistent from 14.7% (N=39) to 13.2% (N=47) in 2010. One death was reported among diagnosed shigellosis cases; the fatal case had other medical problems including congestive heart failure and diabetes, contributing to the death.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2007-2011

| | 2007 (N=463) | | | 2008 (N=498) | | | 2009 (N=259) | | | 2010 (N=355) | | | 2011 (N=264) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 13 | 2.8 | 8.8 | 8 | 1.6 | 5.7 | 4 | 1.5 | 2.9 | 1 | 1.1 | 0.7 | 4 | 1.5 | 2.9 |
| 1-4 | 100 | 21.6 | 17.3 | 118 | 23.7 | 20.8 | 34 | 13.1 | 6.1 | 79 | 22.2 | 13.6 | 30 | 11.3 | 5.2 |
| 5-14 | 90 | 19.4 | 6.3 | 137 | 27.5 | 9.8 | 47 | 18.1 | 3.4 | 68 | 19.1 | 5.1 | 37 | 14.0 | 2.8 |
| 15-34 | 104 | 22.5 | 3.7 | 122 | 24.5 | 4.3 | 67 | 25.9 | 2.4 | 75 | 21.1 | 2.5 | 80 | 30.3 | 2.7 |
| 35-44 | 67 | 14.5 | 4.5 | 42 | 8.4 | 2.8 | 51 | 19.7 | 3.4 | 63 | 17.7 | 4.4 | 41 | 15.5 | 2.8 |
| 45-54 | 43 | 9.3 | 3.3 | 26 | 5.2 | 1.9 | 33 | 12.7 | 2.4 | 36 | 10.1 | 2.7 | 44 | 16.6 | 3.3 |
| 55-64 | 20 | 4.3 | 2.3 | 23 | 4.6 | 2.5 | 12 | 4.6 | 1.3 | 17 | 4.7 | 1.8 | 15 | 5.6 | 1.6 |
| 65+ | 26 | 5.6 | 2.6 | 22 | 4.4 | 2.2 | 11 | 4.2 | 1.0 | 15 | 4.2 | 1.4 | 12 | 4.5 | 1.1 |
| Unknown | 0 | 0.0 | | 0 | 0.0 | | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 26 | 5.6 | 2.0 | 10 | 2.0 | 0.8 | 6 | 2.3 | 0.5 | 15 | 4.2 | 1.1 | 4 | 1.5 | 0.3 |
| Black | 27 | 5.8 | 3.2 | 25 | 5.0 | 2.9 | 17 | 6.6 | 2.0 | 31 | 8.7 | 3.6 | 24 | 9.0 | 2.8 |
| Hispanic | 281 | 60.7 | 6.1 | 376 | 75.5 | 8.0 | 154 | 59.5 | 3.3 | 203 | 57.1 | 4.3 | 149 | 56.4 | 3.1 |
| White | 56 | 12.1 | 1.9 | 71 | 14.3 | 2.4 | 69 | 26.6 | 2.4 | 94 | 26.4 | 3.3 | 78 | 29.5 | 2.7 |
| Other | 4 | 0.9 | 19.2 | 3 | 0.6 | 12.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 69 | 14.9 | | 13 | 2.6 | | 13 | 5.0 | 0 | 12 | 3.3 | -- | 0 | 0 | 0 |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 10 | 2.2 | 2.8 | 11 | 2.2 | 3.0 | 5 | 1.9 | 1.9 | 3 | 0.8 | 0.8 | 7 | 2.6 | 1.9 |
| 2 | 93 | 20.1 | 4.3 | 89 | 17.9 | 4.1 | 46 | 17.7 | 2.1 | 61 | 17.2 | 2.8 | 40 | 15.1 | 1.8 |
| 3 | 72 | 15.6 | 4.2 | 66 | 13.3 | 3.8 | 23 | 8.9 | 1.3 | 33 | 9.2 | 1.9 | 32 | 12.1 | 1.8 |
| 4 | 87 | 18.8 | 6.9 | 71 | 14.3 | 5.6 | 74 | 28.6 | 5.9 | 91 | 25.6 | 7.2 | 82 | 31.0 | 6.51 |
| 5 | 29 | 6.3 | 4.5 | 23 | 4.6 | 3.6 | 22 | 8.5 | 3.4 | 30 | 8.4 | 4.5 | 14 | 5.3 | 2.1 |
| 6 | 80 | 17.3 | 7.7 | 109 | 21.9 | 10.3 | 41 | 15.8 | 3.9 | 58 | 16.3 | 5.4 | 38 | 14.3 | 3.6 |
| 7 | 64 | 13.8 | 4.6 | 93 | 18.7 | 6.7 | 33 | 12.7 | 2.4 | 54 | 15.2 | 3.9 | 24 | 9.1 | 1.7 |
| 8 | 28 | 6.0 | 2.5 | 34 | 6.8 | 3.0 | 14 | 5.4 | 1.2 | 25 | 7.0 | 2.2 | 26 | 9.8 | 2.3 |
| Unknown | 0 | 0.0 | | 2 | 0.4 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year**
**LAC, CA and US, 2002-2011**

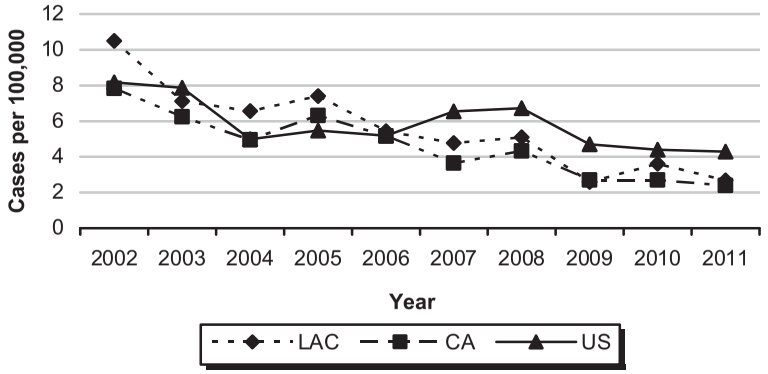



**Figure 2. Reported Shigellosis Rates by Age Group**
**LAC, 2011 (N=264)**

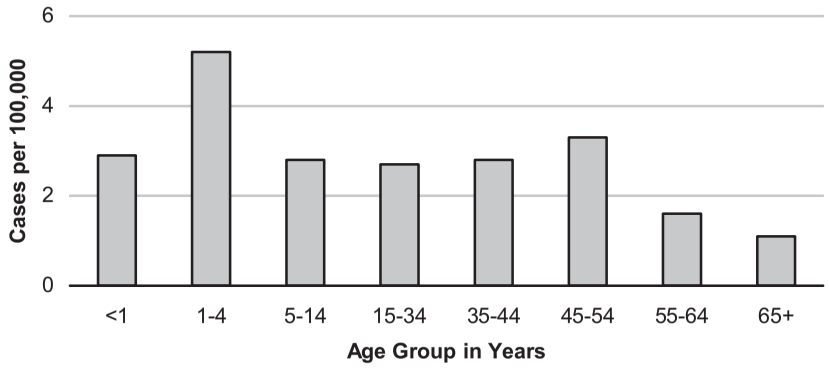



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity**
**LAC, 2011 (N=264)**

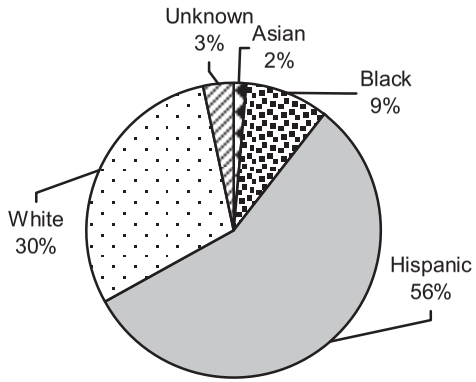



**Figure 4. Reported Shigellosis Rates by SPA**
**LAC, 2011 (N=264)**

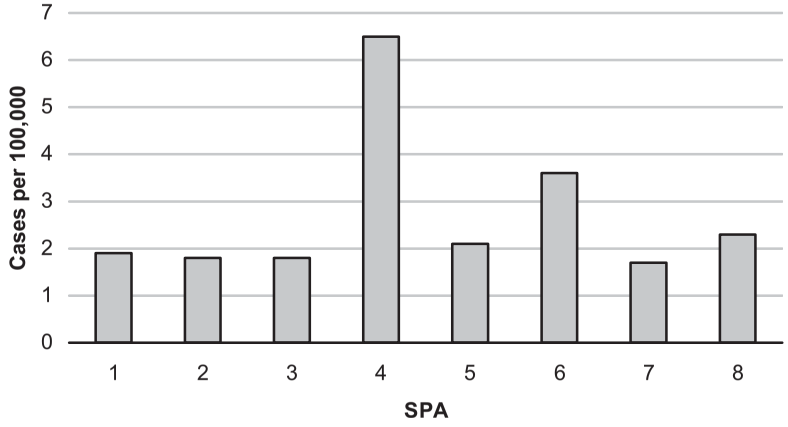


**Figure 5. Reported Shigellosis Cases by Month of Onset**
**LAC, 2011 (N=264)**

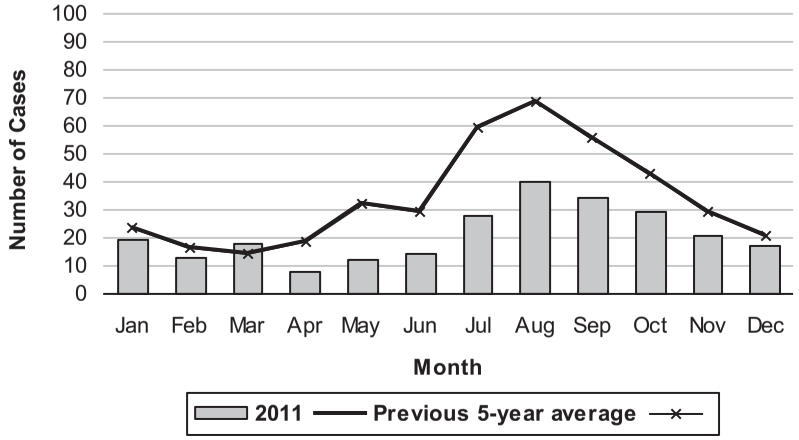
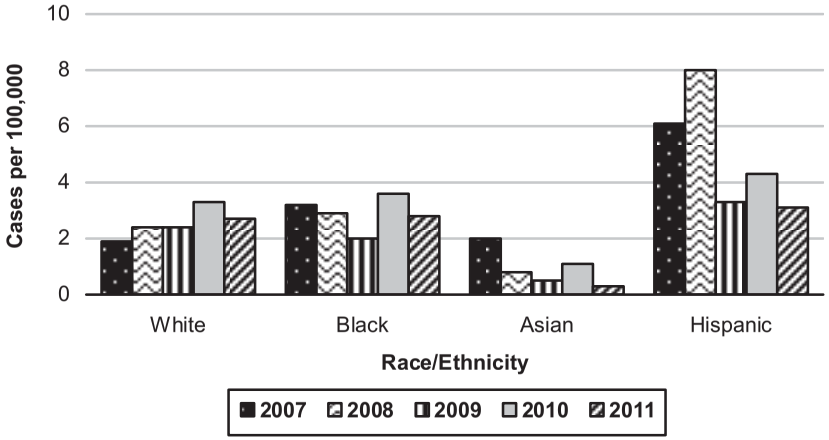
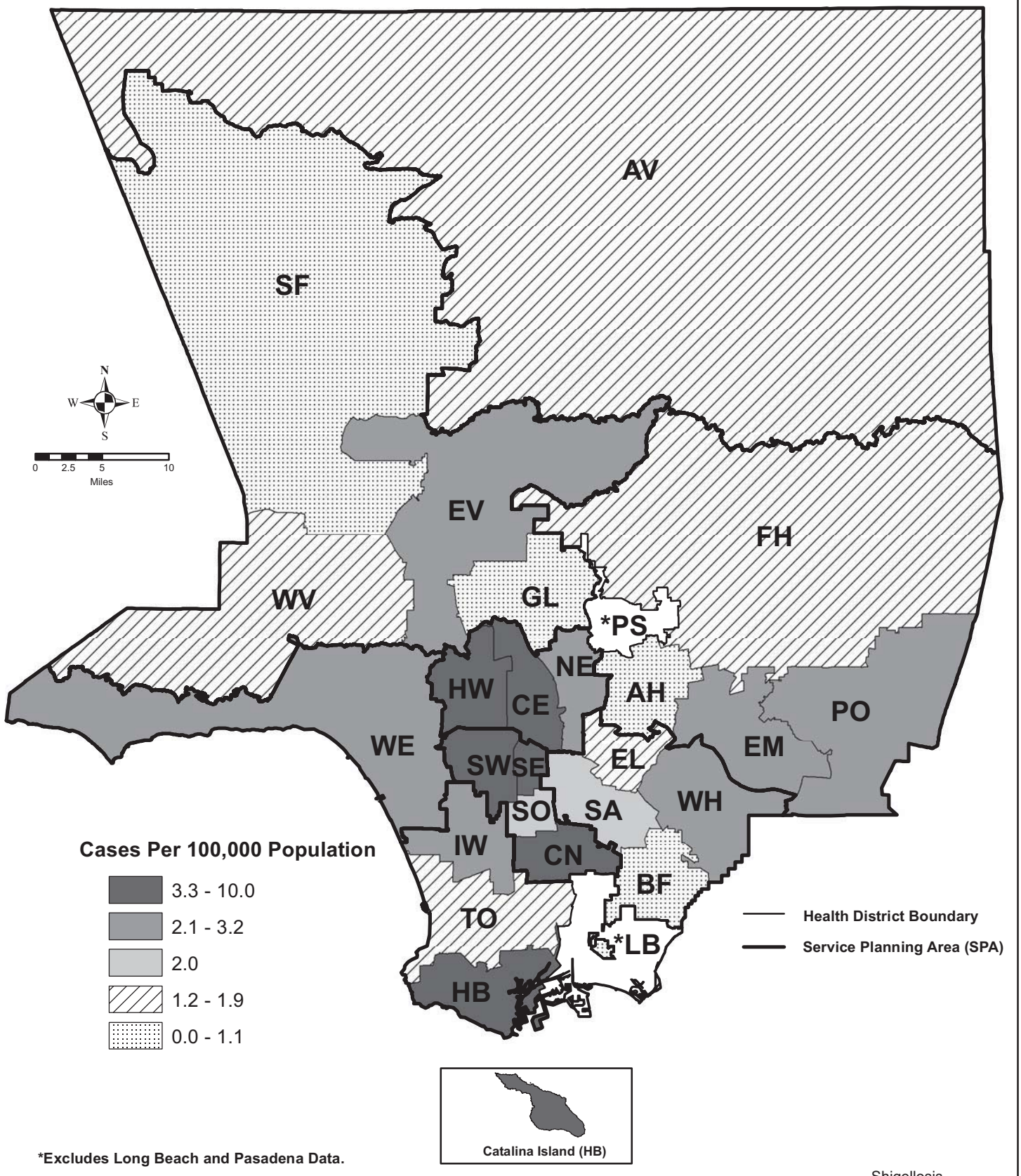



**Figure 6. Shigellosis Incidence by Race/Ethnicity**
**LAC, 2007-2011**



# Map 14. Shigellosis
# Rates by Health District, Los Angeles County, 2011*




*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 355 |
| Annual Incidence[a] | |
| LA County | 3.62 |
| California[b] | -- |
| United States[b] | -- |
| Age at Diagnosis | |
| Mean | 25 |
| Median | 25 |
| Range | 0-99 |

[a]Cases per 100,000 population.
[b]See Final Summary of Nationally Notifiable Infectious Diseases, United States on MMWR website http://www.cdc.gov/mmwr/mmwr_nd/index.html.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Young children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In Los Angeles County (LAC) cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until their stool specimens are culture negative when tested in the LAC Public Health Laboratory.

## 2010 TRENDS AND HIGHLIGHTS

- There was a 37% increase in reported cases in 2010 after a 48% decrease in cases during 2009 (Figure 1). These increases were observed among all races (Figure 6).
- The highest age group incidence rate was observed in the 1 to 4 years age group (13.6 per 100,000) (Figure 2) (not adjusted for race/ethnicity).
- Although the shigellosis rate in the 1 to 4 years age group in LAC this year is double that of last year's (13.6 versus 6.1 per 100,000) it is within the range of rates seen in the last four years (range: 6.1 to 20.8 per 100,000).
- The incidence of shigellosis among the Hispanic population (58% of cases, 4.3 per 100,000) remained highest, consistent with previous years (Figures 3, 6). Much of this is believed to be due to overcrowded living situations and contact with visitors from endemic countries.
- Service Planning Area (SPA) 4 sustained the highest rate (7.2 per 100,000), followed by SPA 6 (5.4 per 100,000) (Figure 4).
- In 2010, the monthly incidence peaked in August, however the incidence during 2010 was below the five-year average, except for the winter months (Figure 5).
- Two shigella-associated outbreaks were investigated in 2010 by LAC DPH community health services.
- In 2010, the percentage of shigellosis cases hospitalized for at least two days decreased to 13.2% (N=47) from 24% (N=63) in 2009. One death was reported among diagnosed shigellosis cases; the fatal case had other medical problems including respiratory failure, acute kidney injury, and sepsis contributing to the death.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2006-2010

| | 2006 (N=524) | | | 2007 (N=463) | | | 2008 (N=498) | | | 2009 (N=259) | | | 2010 (N=355) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 5 | 1.0 | 3.5 | 13 | 2.8 | 8.8 | 8 | 1.6 | 5.7 | 4 | 1.5 | 2.9 | 1 | 1.1 | 0.7 |
| 1-4 | 118 | 22.5 | 20.3 | 100 | 21.6 | 17.3 | 118 | 23.7 | 20.8 | 34 | 13.1 | 6.1 | 79 | 22.2 | 13.6 |
| 5-14 | 134 | 25.6 | 9.1 | 90 | 19.4 | 6.3 | 137 | 27.5 | 9.8 | 47 | 18.1 | 3.4 | 68 | 19.1 | 5.1 |
| 15-34 | 111 | 21.2 | 4.0 | 104 | 22.5 | 3.7 | 122 | 24.5 | 4.3 | 67 | 25.9 | 2.4 | 75 | 21.1 | 2.5 |
| 35-44 | 71 | 13.5 | 4.7 | 67 | 14.5 | 4.5 | 42 | 8.4 | 2.8 | 51 | 19.7 | 3.4 | 63 | 17.7 | 4.4 |
| 45-54 | 39 | 7.4 | 3.0 | 43 | 9.3 | 3.3 | 26 | 5.2 | 1.9 | 33 | 12.7 | 2.4 | 36 | 10.1 | 2.7 |
| 55-64 | 17 | 3.2 | 2.0 | 20 | 4.3 | 2.3 | 23 | 4.6 | 2.5 | 12 | 4.6 | 1.3 | 17 | 4.7 | 1.8 |
| 65+ | 29 | 5.5 | 3.0 | 26 | 5.6 | 2.6 | 22 | 4.4 | 2.2 | 11 | 4.2 | 1.0 | 15 | 4.2 | 1.4 |
| Unknown | 0 | 0.0 | | 0 | 0.0 | | 0 | 0.0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 23 | 4.4 | 1.8 | 26 | 5.6 | 2.0 | 10 | 2.0 | 0.8 | 6 | 2.3 | 0.5 | 15 | 4.2 | 1.1 |
| Black | 42 | 8.0 | 5.0 | 27 | 5.8 | 3.2 | 25 | 5.0 | 2.9 | 17 | 6.6 | 2.0 | 31 | 8.7 | 3.6 |
| Hispanic | 356 | 67.9 | 7.7 | 281 | 60.7 | 6.1 | 376 | 75.5 | 8.0 | 154 | 59.5 | 3.3 | 203 | 57.1 | 4.3 |
| White | 99 | 18.9 | 3.4 | 56 | 12.1 | 1.9 | 71 | 14.3 | 2.4 | 69 | 26.6 | 2.4 | 94 | 26.4 | 3.3 |
| Other | 1 | 0.2 | 3.5 | 4 | 0.9 | 19.2 | 3 | 0.6 | 12.2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Unknown | 3 | 0.6 | | 69 | 14.9 | | 13 | 2.6 | | 13 | 5.0 | 0 | 12 | 3.3 | -- |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 6 | 1.1 | 1.7 | 10 | 2.2 | 2.8 | 11 | 2.2 | 3.0 | 5 | 1.9 | 1.9 | 3 | 0.8 | 0.8 |
| 2 | 87 | 16.6 | 4.1 | 93 | 20.1 | 4.3 | 89 | 17.9 | 4.1 | 46 | 17.7 | 2.1 | 61 | 17.2 | 2.8 |
| 3 | 62 | 11.8 | 3.6 | 72 | 15.6 | 4.2 | 66 | 13.3 | 3.8 | 23 | 8.9 | 1.3 | 33 | 9.2 | 1.9 |
| 4 | 103 | 19.7 | 8.2 | 87 | 18.8 | 6.9 | 71 | 14.3 | 5.6 | 74 | 28.6 | 5.9 | 91 | 25.6 | 7.2 |
| 5 | 34 | 6.5 | 5.3 | 29 | 6.3 | 4.5 | 23 | 4.6 | 3.6 | 22 | 8.5 | 3.4 | 30 | 8.4 | 4.5 |
| 6 | 106 | 20.2 | 10.2 | 80 | 17.3 | 7.7 | 109 | 21.9 | 10.3 | 41 | 15.8 | 3.9 | 58 | 16.3 | 5.4 |
| 7 | 84 | 16.0 | 6.1 | 64 | 13.8 | 4.6 | 93 | 18.7 | 6.7 | 33 | 12.7 | 2.4 | 54 | 15.2 | 3.9 |
| 8 | 41 | 7.8 | 3.7 | 28 | 6.0 | 2.5 | 34 | 6.8 | 3.0 | 14 | 5.4 | 1.2 | 25 | 7.0 | 2.2 |
| Unknown | 1 | 0.2 | | 0 | 0.0 | | 2 | 0.4 | | 0 | 0 | 0 | 0 | 0 | 0 |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year**
**LAC, CA and US, 2001-2010**

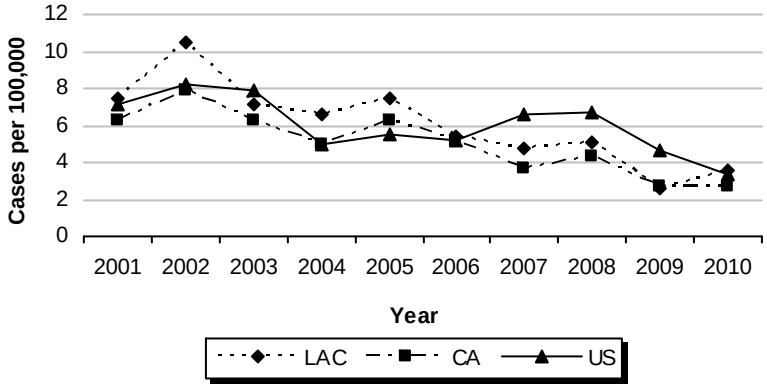



**Figure 2. Reported Shigellosis Rates by Age Group**
**LAC, 2010 (N=355)**

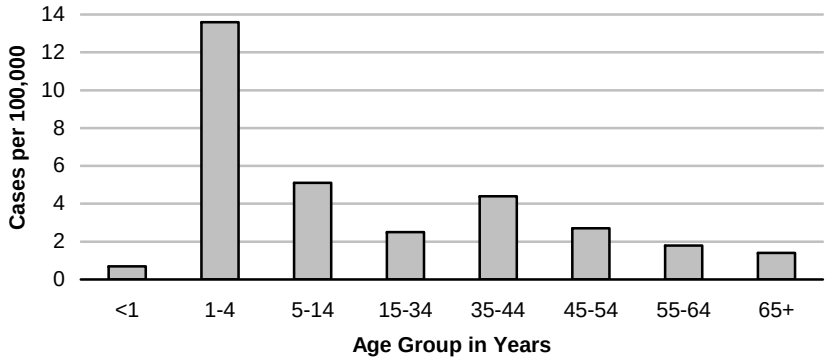



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity**
**LAC, 2010 (N=355)**

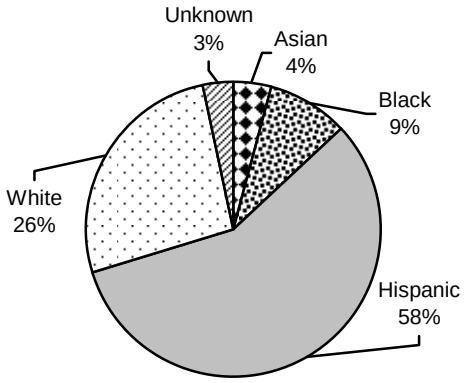



**Figure 4. Reported Shigellosis Rates by SPA**
**LAC, 2010 (N=355)**

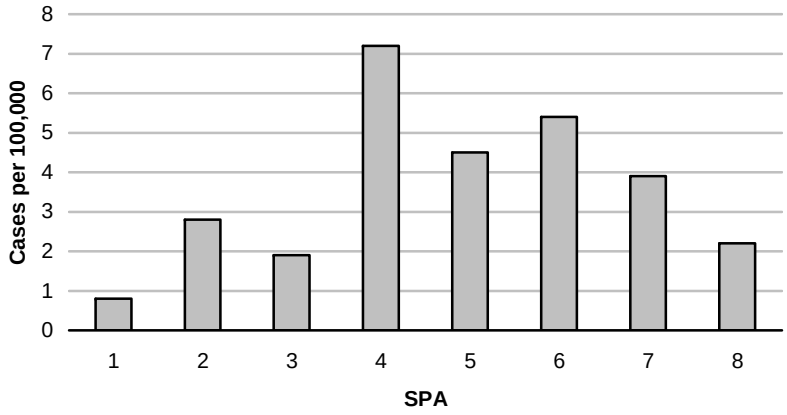


**Figure 5. Reported Shigellosis Cases by Month of Onset**
**LAC, 2010 (N=355)**

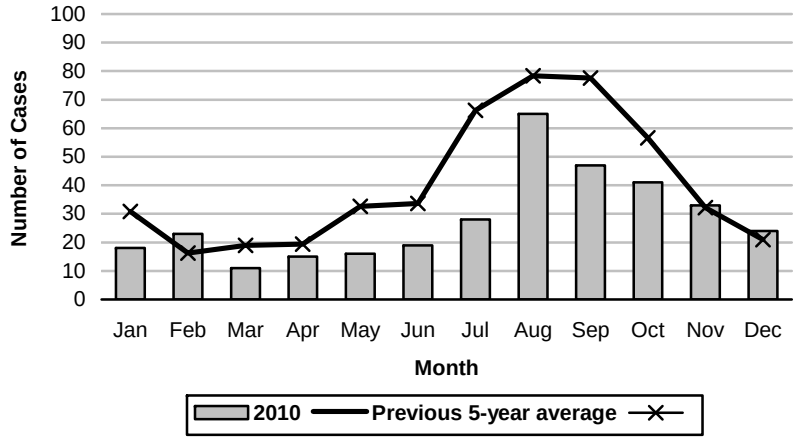
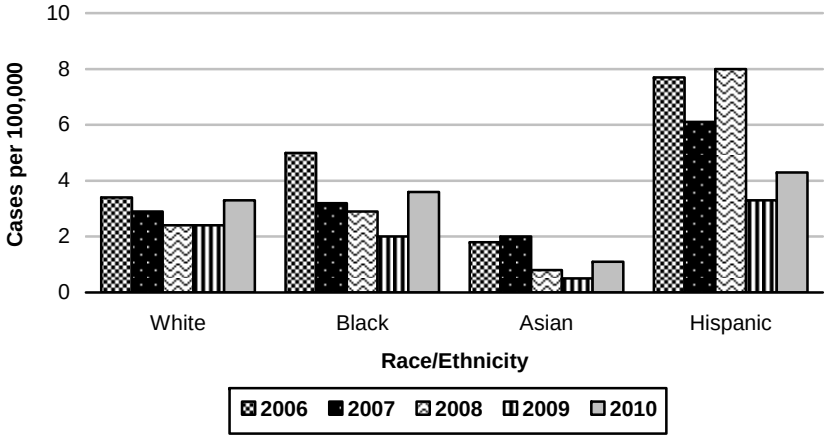



**Figure 6. Shigellosis Incidence by Race/Ethnicity**
**LAC, 2006-2010**



# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 259 |
| Annual Incidence[a] | |
| LA County | 2.6 |
| California[b] | 4.6 |
| United States[b] | 7.5 |
| Age at Diagnosis | |
| Mean | 28.8 |
| Median | 30 |
| Range | 0-87 |

[a]Cases per 100,000 population.
[b]Calculated from Final 2008 Reports of Nationally Notifiable Infectious Disease. MMWR 58(31);856-857;859-869.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1 to 3 days. Humans are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as ten organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Young children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas. Children with diarrhea, especially those in diapers, should not be allowed to swim or wade in public swimming areas. In Los Angeles County (LAC) cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the LAC Public Health Laboratory.

## 2009 TRENDS AND HIGHLIGHTS

- There was a 48% decrease in reported cases in 2009 after a 7.6% increase in cases during 2008 (Figure 1).
- The highest incidence rate was observed in the 1 to 4 years age group (6.1 per 100,000) (Figure 2).
- The incidence of shigellosis among the Hispanic population (59 %, 3.3 per 100,000) remained highest, consistent with previous years (Figures 3, 6). Much of this is believed to be due to overcrowded living situations and contact with visitors from endemic countries.
- Service Planning Area (SPA) 4 had the highest rate (5.9 per 100,000) in 2009, whereas in the previous two years SPA 6 had the highest rates (Figure 4).
- In 2009, the monthly incidence peaked in August, however the incidence during 2009 was below the five-year average, for every month except Feburary (Figure 5).
- No shigellosis outbreaks were detected in 2009.
- In 2009, the percentage of shigellosis cases hospitalized for at least two days increased to 24% (n=63), compared to 16% (n=78) in 2008. No deaths were reported.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2005-2009

| | 2005 (N=710) | | | 2006 (N=524) | | | 2007 (N=463) | | | 2008 (N=498) | | | 2009 (N=259) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 13 | 1.8 | 9.2 | 5 | 1.0 | 3.5 | 13 | 2.8 | 8.8 | 8 | 1.6 | 5.7 | 4 | 1.5 | 2.9 |
| 1-4 | 170 | 23.9 | 29.3 | 118 | 22.5 | 20.3 | 100 | 21.6 | 17.3 | 118 | 23.7 | 20.8 | 34 | 13.1 | 6.1 |
| 5-14 | 213 | 30.0 | 14.4 | 134 | 25.6 | 9.1 | 90 | 19.4 | 6.3 | 137 | 27.5 | 9.8 | 47 | 18.1 | 3.4 |
| 15-34 | 149 | 21.0 | 5.3 | 111 | 21.2 | 4.0 | 104 | 22.5 | 3.7 | 122 | 24.5 | 4.3 | 67 | 25.9 | 2.4 |
| 35-44 | 70 | 9.9 | 4.6 | 71 | 13.5 | 4.7 | 67 | 14.5 | 4.5 | 42 | 8.4 | 2.8 | 51 | 19.7 | 3.4 |
| 45-54 | 34 | 4.8 | 2.7 | 39 | 7.4 | 3.0 | 43 | 9.3 | 3.3 | 26 | 5.2 | 1.9 | 33 | 12.7 | 2.4 |
| 55-64 | 31 | 4.4 | 3.7 | 17 | 3.2 | 2.0 | 20 | 4.3 | 2.3 | 23 | 4.6 | 2.5 | 12 | 4.6 | 1.3 |
| 65+ | 28 | 3.9 | 2.9 | 29 | 5.5 | 3.0 | 26 | 5.6 | 2.6 | 22 | 4.4 | 2.2 | 11 | 4.2 | 1.0 |
| Unknown | 2 | 0.3 | | 0 | 0.0 | | 0 | 0.0 | | 0 | 0.0 | | 0 | 0 | 0 |
| **Race / Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 27 | 3.8 | 2.1 | 23 | 4.4 | 1.8 | 26 | 5.6 | 2.0 | 10 | 2.0 | 0.8 | 6 | 2.3 | 0.5 |
| Black | 43 | 6.1 | 5.1 | 42 | 8.0 | 5.0 | 27 | 5.8 | 3.2 | 25 | 5.0 | 2.9 | 17 | 6.6 | 2.0 |
| Hispanic | 500 | 70.4 | 11.0 | 356 | 67.9 | 7.7 | 281 | 60.7 | 6.1 | 376 | 75.5 | 8.0 | 154 | 59.5 | 3.3 |
| White | 126 | 17.7 | 4.3 | 99 | 18.9 | 3.4 | 56 | 12.1 | 1.9 | 71 | 14.3 | 2.4 | 69 | 26.6 | 2.4 |
| Other | 3 | 0.4 | 10.6 | 1 | 0.2 | 3.5 | 4 | 0.9 | 19.2 | 3 | 0.6 | 12.2 | 0 | 0 | 0 |
| Unknown | 11 | 1.5 | | 3 | 0.6 | | 69 | 14.9 | | 13 | 2.6 | | 13 | 5.0 | 0 |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 21 | 3.0 | 6.2 | 6 | 1.1 | 1.7 | 10 | 2.2 | 2.8 | 11 | 2.2 | 3.0 | 5 | 1.9 | 1.9 |
| 2 | 133 | 18.7 | 6.2 | 87 | 16.6 | 4.1 | 93 | 20.1 | 4.3 | 89 | 17.9 | 4.1 | 46 | 17.7 | 2.1 |
| 3 | 80 | 11.3 | 4.7 | 62 | 11.8 | 3.6 | 72 | 15.6 | 4.2 | 66 | 13.3 | 3.8 | 23 | 8.9 | 1.3 |
| 4 | 146 | 20.6 | 11.7 | 103 | 19.7 | 8.2 | 87 | 18.8 | 6.9 | 71 | 14.3 | 5.6 | 74 | 28.6 | 5.9 |
| 5 | 43 | 6.1 | 6.8 | 34 | 6.5 | 5.3 | 29 | 6.3 | 4.5 | 23 | 4.6 | 3.6 | 22 | 8.5 | 3.4 |
| 6 | 120 | 16.9 | 11.6 | 106 | 20.2 | 10.2 | 80 | 17.3 | 7.7 | 109 | 21.9 | 10.3 | 41 | 15.8 | 3.9 |
| 7 | 107 | 15.1 | 7.8 | 84 | 16.0 | 6.1 | 64 | 13.8 | 4.6 | 93 | 18.7 | 6.7 | 33 | 12.7 | 2.4 |
| 8 | 60 | 8.5 | 5.4 | 41 | 7.8 | 3.7 | 28 | 6.0 | 2.5 | 34 | 6.8 | 3.0 | 14 | 5.4 | 1.2 |
| Unknown | 0 | 0.0 | | 1 | 0.2 | | 0 | 0.0 | | 2 | 0.4 | | 0 | 0 | 0 |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year**
**LAC, CA and US, 1998-2009**

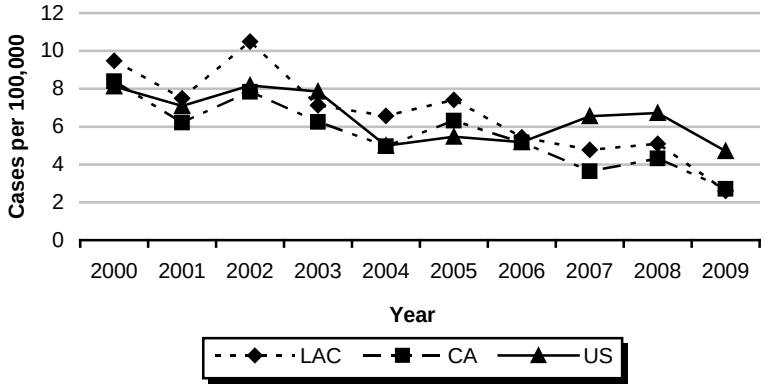



**Figure 2. Reported Shigellosis Rates by Age Group**
**LAC, 2009 (N=259)**

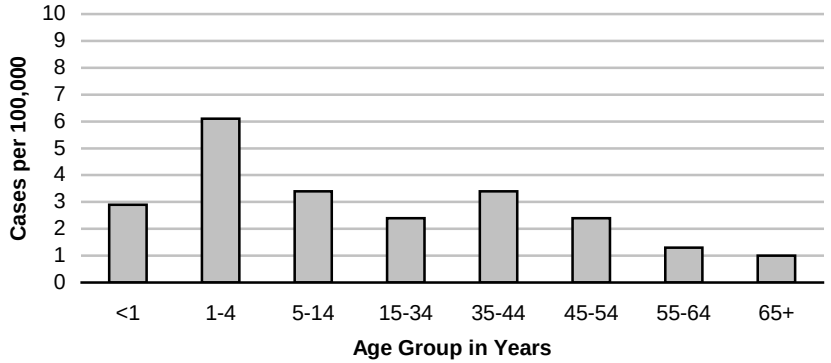
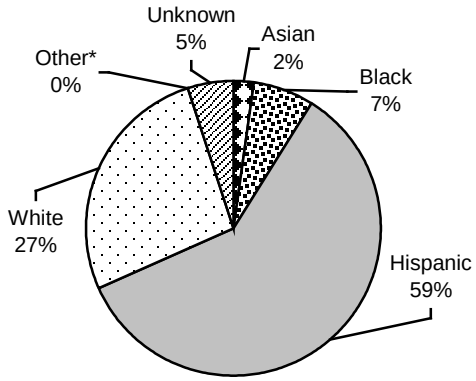



**Figure 3. Percent Cases of Shigellosis by Race/Ethnicity**
**LAC, 2009 (N=259)**




*Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, or white.

**Figure 4. Reported Shigellosis Rates by SPA**
**LAC, 2009 (N=259)**

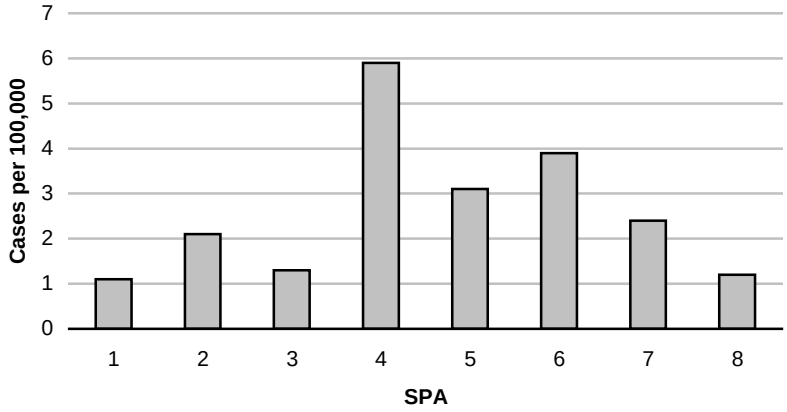


**Figure 5. Reported Shigellosis Cases by Month of Onset**
**LAC, 2009 (N=259)**

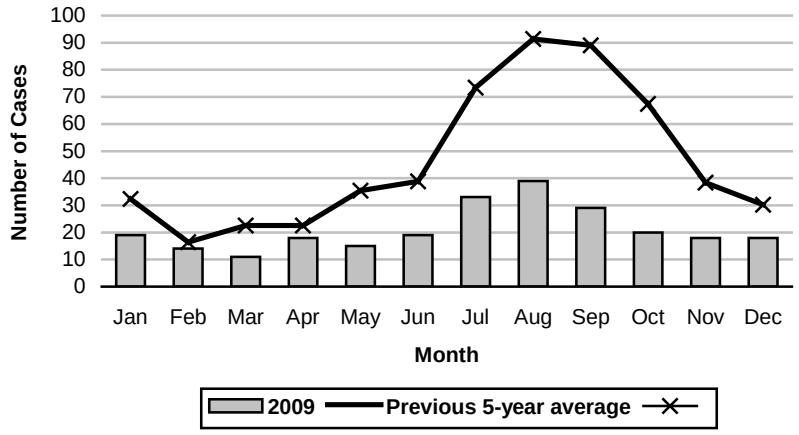
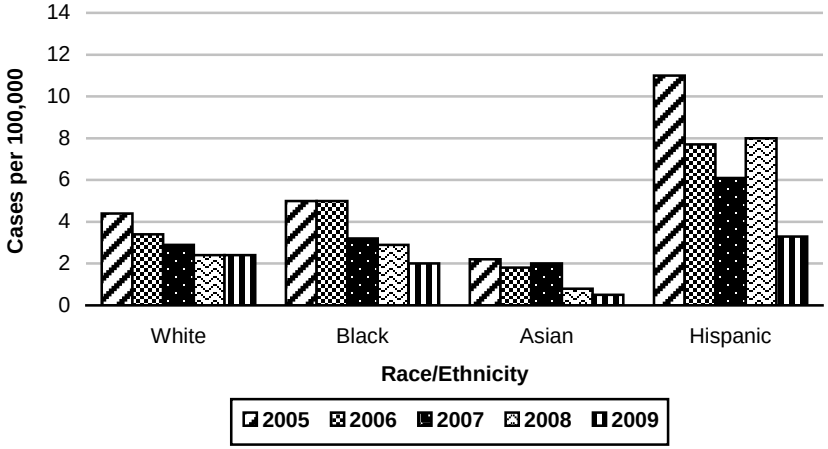
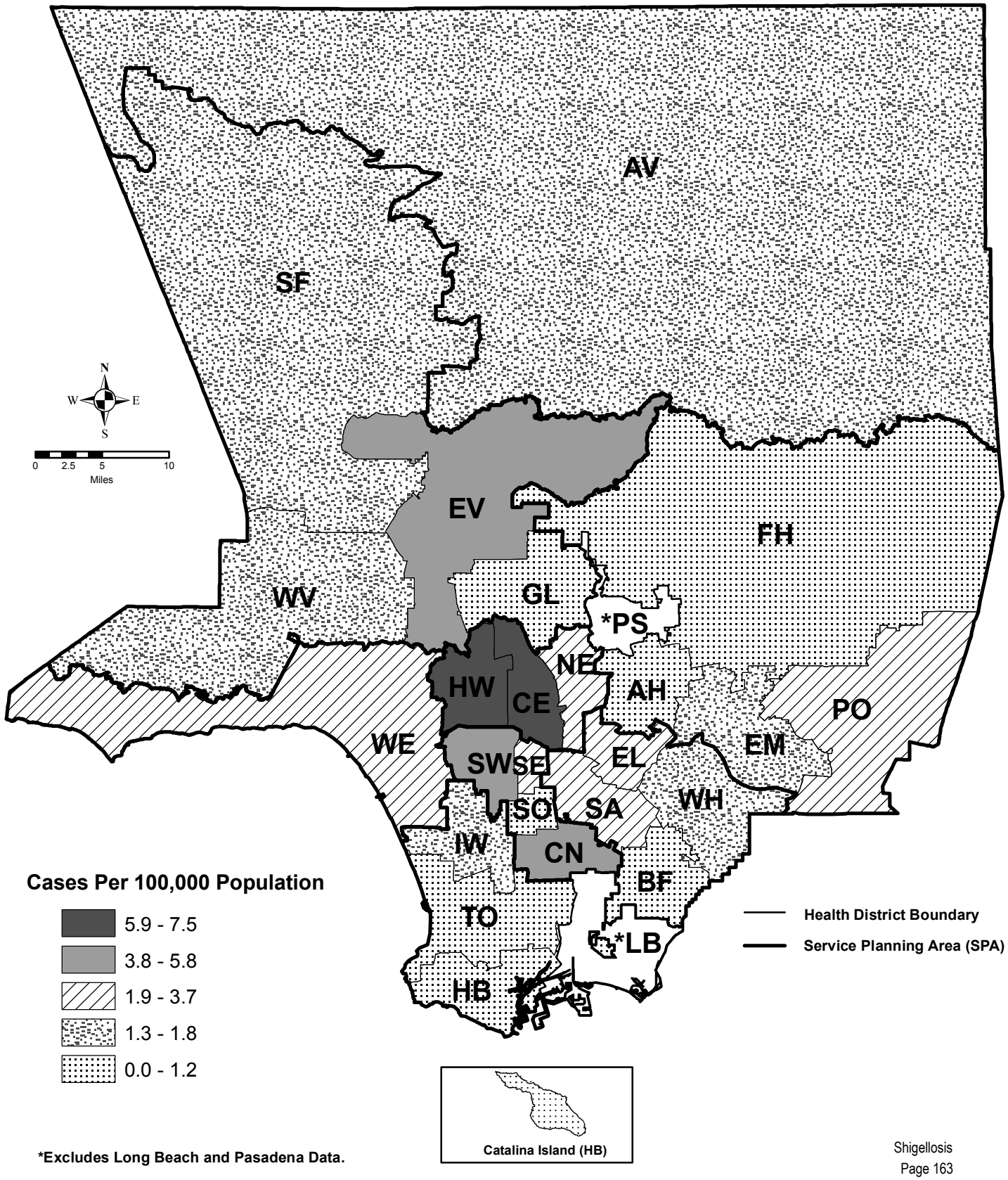



**Figure 6. Shigellosis Incidence by Race/Ethnicity**
**LAC, 2005-2009**



# Map 12. Shigellosis
# Rates by Health District, Los Angeles County, 2009*




*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 498 |
| Annual Incidence[a] | |
| LA County | 5.1 |
| California[b] | 4.6 |
| United States[b] | 7.5 |
| Age at Diagnosis | |
| Mean | 20.8 |
| Median | 12 |
| Range | 0-93 |

[a]Cases per 100,000 population.
[b]Calculated from Final 2008 Reports of Nationally Notifiable Infectious Disease. MMWR 58(31);856-857;859-869.

## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1 to 3 days. Human are the definitive host; fecal-oral transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, infected either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Hand washing is vital in preventing this disease. Young children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; ill children (exhibiting symptoms) in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or hand washing facilities. In Los Angeles County (LAC), cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the LAC Public Health Laboratory.

## 2008 TRENDS AND HIGHLIGHTS

- There was a 7.6% increase in reported cases in 2008 after an 11.6% decrease in cases during 2007 (Figure 1).
- The highest incidence rate was observed in the 1 to 4 years age group (20.8 per 100,000) followed by the 5 to 14 years age group (9.8 per 100,000) (Figure2).
- The incidence of shigellosis among the Hispanic population (76%, 8.0 per 100,000) remained highest consistent with previous years (Figure 3, 6). Much of this is believed to be due to overcrowding living situations in addition to the higher overall rate of Hispanic population.
- Service Planning Area (SPA) 6 had the highest rate (10.3 per 100,000), consistent with last two previous years (Figure 4).
- In 2008, the monthly incidence peaked in May above the previous five-year average due to several family clusters; however during the summer the incidence decreased below the five-year average, possibly due to a reduction in summer travel (Figure 5).
- Two shigellosis outbreaks were investigated in 2008.
- Sixteen percent of shigellosis cases (n=78) were hospitalized for at least two days. One death was reported who was diagnosed with shigellosis; the case had other medical problems (cirrhosis, cardiomegaly, and sepsis) contributing to the death.

## Reported Shigellosis Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
## Los Angeles County, 2004-2008

| | 2004 (N=625) | | | 2005 (N=710) | | | 2006 (N=524) | | | 2007 (N=463) | | | 2008 (N=498) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 | No. | (%) | Rate/ 100,000 |
| **Age Group** | | | | | | | | | | | | | | | |
| <1 | 9 | 1.4 | 6.3 | 13 | 1.8 | 9.2 | 5 | 1.0 | 3.5 | 13 | 2.8 | 8.8 | 8 | 1.6 | 5.7 |
| 1-4 | 139 | 22.2 | 24.1 | 170 | 23.9 | 29.3 | 118 | 22.5 | 20.3 | 100 | 21.6 | 17.3 | 118 | 23.7 | 20.8 |
| 5-14 | 181 | 29.0 | 12.2 | 213 | 30.0 | 14.4 | 134 | 25.6 | 9.1 | 90 | 19.4 | 6.3 | 137 | 27.5 | 9.8 |
| 15-34 | 110 | 17.6 | 3.9 | 149 | 21.0 | 5.3 | 111 | 21.2 | 4.0 | 104 | 22.5 | 3.7 | 122 | 24.5 | 4.3 |
| 35-44 | 82 | 13.1 | 5.5 | 70 | 9.9 | 4.6 | 71 | 13.5 | 4.7 | 67 | 14.5 | 4.5 | 42 | 8.4 | 2.8 |
| 45-54 | 58 | 9.3 | 4.7 | 34 | 4.8 | 2.7 | 39 | 7.4 | 3.0 | 43 | 9.3 | 3.3 | 26 | 5.2 | 1.9 |
| 55-64 | 26 | 4.2 | 3.3 | 31 | 4.4 | 3.7 | 17 | 3.2 | 2.0 | 20 | 4.3 | 2.3 | 23 | 4.6 | 2.5 |
| 65+ | 20 | 3.2 | 2.1 | 28 | 3.9 | 2.9 | 29 | 5.5 | 3.0 | 26 | 5.6 | 2.6 | 22 | 4.4 | 2.2 |
| Unknown | 0 | 0.0 | | 2 | 0.3 | | 0 | 0.0 | | 0 | 0.0 | | 0 | 0.0 | |
| **Race/Ethnicity** | | | | | | | | | | | | | | | |
| Asian | 11 | 1.8 | 0.9 | 27 | 3.8 | 2.1 | 23 | 4.4 | 1.8 | 26 | 5.6 | 2.0 | 10 | 2.0 | 0.8 |
| Black | 24 | 3.8 | 2.8 | 43 | 6.1 | 5.1 | 42 | 8.0 | 5.0 | 27 | 5.8 | 3.2 | 25 | 5.0 | 2.9 |
| Hispanic | 461 | 73.8 | 10.3 | 500 | 70.4 | 11.0 | 356 | 67.9 | 7.7 | 281 | 60.7 | 6.1 | 376 | 75.5 | 8.0 |
| White | 113 | 18.1 | 3.9 | 126 | 17.7 | 4.3 | 99 | 18.9 | 3.4 | 56 | 12.1 | 1.9 | 71 | 14.3 | 2.4 |
| Other | 0 | 0.0 | 0.0 | 3 | 0.4 | 10.6 | 1 | 0.2 | 3.5 | 4 | 0.9 | 19.2 | 3 | 0.6 | 12.2 |
| Unknown | 16 | 2.6 | | 11 | 1.5 | | 3 | 0.6 | | 69 | 14.9 | | 13 | 2.6 | |
| **SPA** | | | | | | | | | | | | | | | |
| 1 | 8 | 1.3 | 2.4 | 21 | 3.0 | 6.2 | 6 | 1.1 | 1.7 | 10 | 2.2 | 2.8 | 11 | 2.2 | 3.0 |
| 2 | 116 | 18.6 | 5.5 | 133 | 18.7 | 6.2 | 87 | 16.6 | 4.1 | 93 | 20.1 | 4.3 | 89 | 17.9 | 4.1 |
| 3 | 65 | 10.4 | 3.8 | 80 | 11.3 | 4.7 | 62 | 11.8 | 3.6 | 72 | 15.6 | 4.2 | 66 | 13.3 | 3.8 |
| 4 | 147 | 23.5 | 11.9 | 146 | 20.6 | 11.7 | 103 | 19.7 | 8.2 | 87 | 18.8 | 6.9 | 71 | 14.3 | 5.6 |
| 5 | 40 | 6.4 | 6.3 | 43 | 6.1 | 6.8 | 34 | 6.5 | 5.3 | 29 | 6.3 | 4.5 | 23 | 4.6 | 3.6 |
| 6 | 104 | 16.6 | 10.2 | 120 | 16.9 | 11.6 | 106 | 20.2 | 10.2 | 80 | 17.3 | 7.7 | 109 | 21.9 | 10.3 |
| 7 | 93 | 14.9 | 6.8 | 107 | 15.1 | 7.8 | 84 | 16.0 | 6.1 | 64 | 13.8 | 4.6 | 93 | 18.7 | 6.7 |
| 8 | 52 | 8.3 | 4.7 | 60 | 8.5 | 5.4 | 41 | 7.8 | 3.7 | 28 | 6.0 | 2.5 | 34 | 6.8 | 3.0 |
| Unknown | 0 | 0.0 | | 0 | 0.0 | | 1 | 0.2 | | 0 | 0.0 | | 2 | 0.4 | |

*Rates calculated based on less than 19 cases or events are considered unreliable.

**Figure 1. Reported Shigellosis Rates by Year**
**US, CA and LAC, 1999-2008**

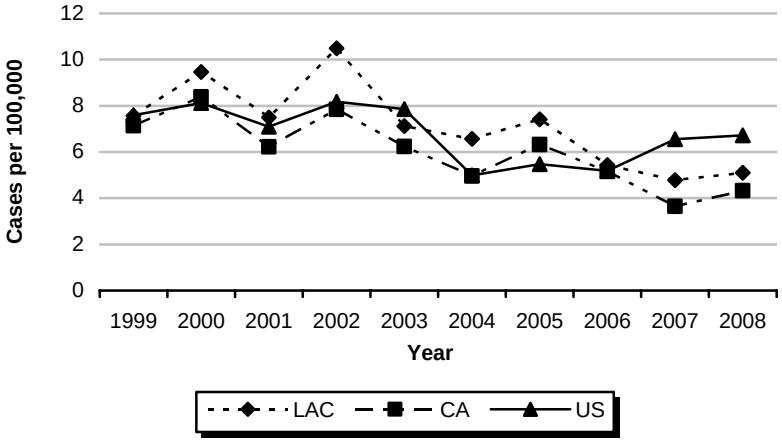



**Figure 2. Reported Shigellosis Rates by Age Group**
**LAC, 2008**

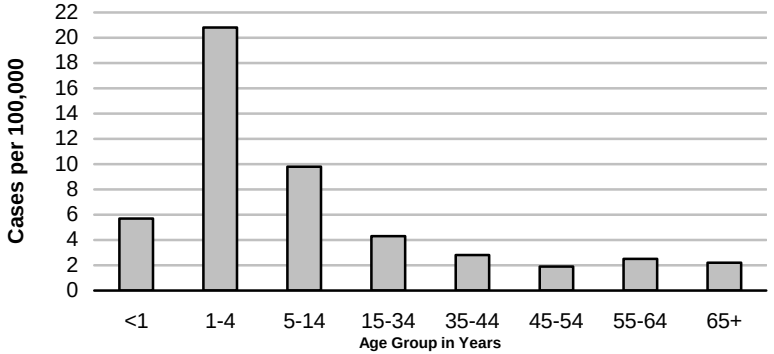
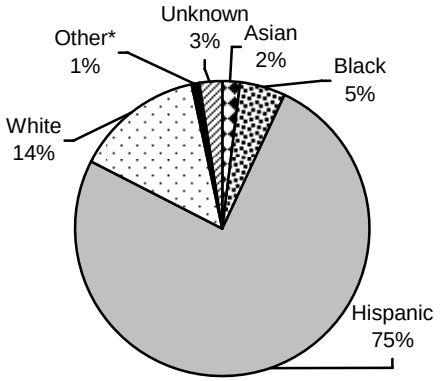



**Figure 3. Percent Cases of Shigellosis by**
**Race/Ethnicity LAC, 2008**




*Other includes Native American and any additional racial/ethnic group that cannot be categorized as Asian, black, Hispanic, or white.

**Figure 4. Reported Shigellosis Rates by SPA**
**LAC, 2008**

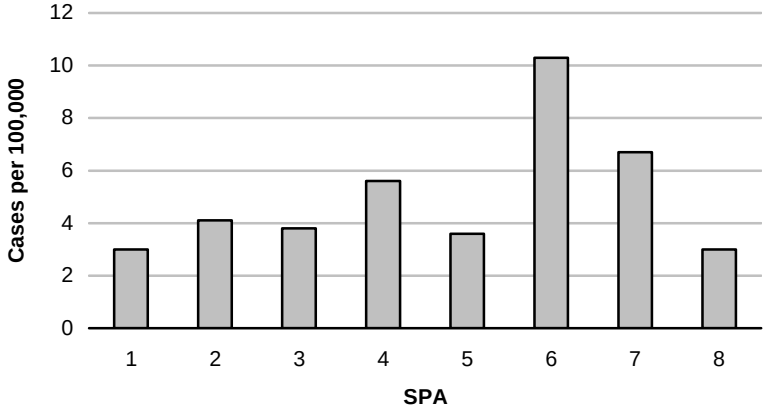


**Figure 5. Reported Shigellosis Cases by Month of Onset**
**LAC, 2008**

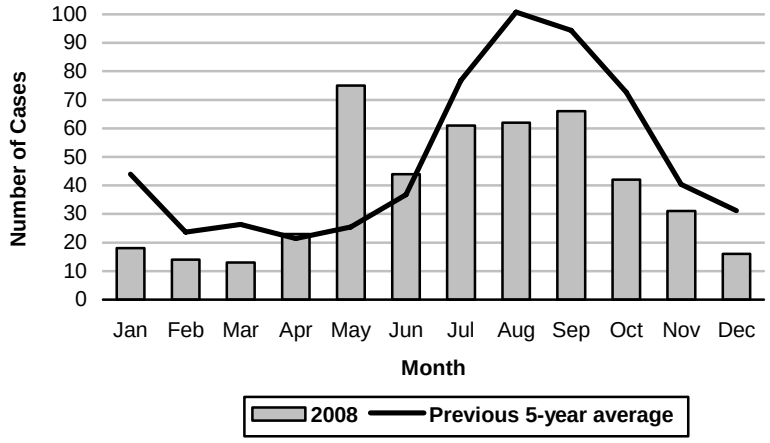
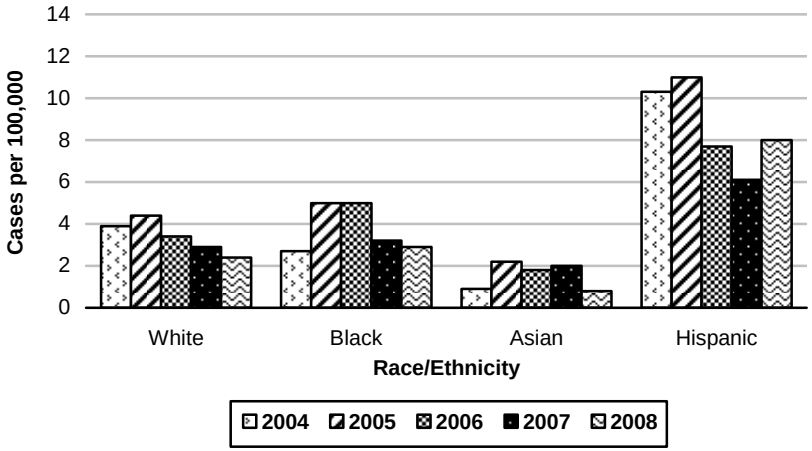
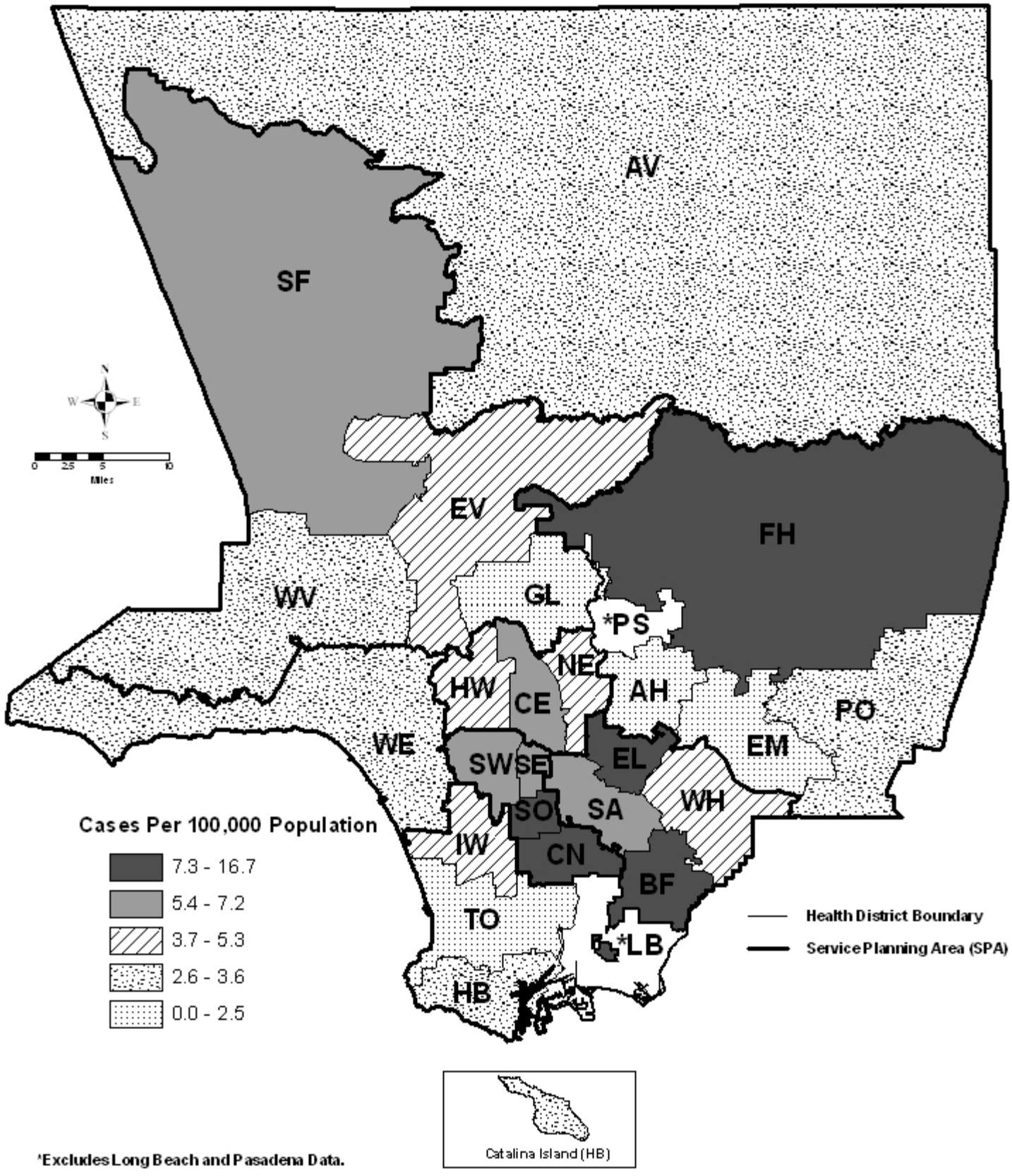



**Figure 6. Shigellosis Incidence by Race/Ethnicity**
**LAC, 2004-2008**



# Map 14. Shigellosis
# Rates by Health District, Los Angeles County, 2008*




*Excludes Long Beach and Pasadena Data.

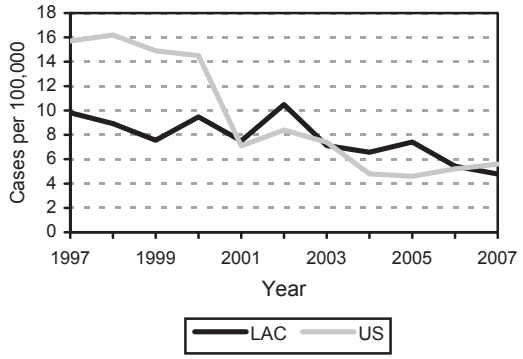
# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 463 |
| Annual Incidence[a] | |
| LA County | 4.78 |
| California | 3.25[b] |
| United States | 5.6[b] |
| Age at Diagnosis | |
| Mean | 24.65 |
| Median | 21 |
| Range | <1– 98 |

[a] Cases per 100,000 population.

[b] Calculated from Final 2007 Reports of Nationally Notifiable Infectious diseases issue of MMWR (57:901, 903-913).

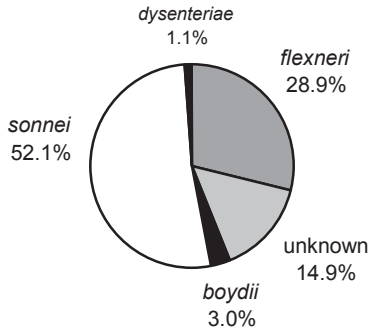
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1997–2007




## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1-3 days. Human are the definitive host; transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by Serogroup
LAC, 2007 (N=463)




## DISEASE ABSTRACT

- There was an 11.6% decrease in reported cases in 2007.
- Three shigellosis-associated outbreaks were investigated in 2007.
- In 2007, incidence peaked in July and other months stayed below the five-year average through the entire year (Figure 3). This was due primarily to a large outbreak and several family clusters during the month of July. The rate of travel related cases that occurred from July through September decreased to 44% when compared to 60% in 2006.

## STRATIFIED DATA

**Trends**: There was an 11.6% decrease in the number of cases during 2007. This is lowest rate in over twenty years. The rate in LAC continues to decline since peaking in 2005 (Figure 1).

**Serotypes**: In 2007, *S. sonnei* (n=241; 52.1%) represented a smaller percentage of case when compared to 2006 (n=315; 60%) but remains the dominant serotype. Other serotypes identified during 2007 include: *S. flexneri* (n=134), *S. dysenteriae* (n=5), and *S. boydii* (n=14) (Figure 2).

**Age**: Infants less than 1 year (8.7 per 100,000) and children 1–4 (17.3 per 100,000) had the highest rates. The rate for children aged 1-4 years was significantly higher than all other age groups but below the five-year average. Infants had the highest rates above the five-year average (Figure 4). The rates for adults between the ages of 45 and 65+ were significantly lower than the county average.

**Race/Ethnicity**: During 2007, Hispanics aged 1-4 years again had the highest age-adjusted rate (Figure 5). Hispanic children aged <1, 1-4 and 5-14 had higher age adjusted rates compared to other race/ethnicities. Overcrowding and living with extended family members in addition to the higher overall rate in Hispanics may be possible causes. Black adults aged 45-55 years, had a higher rate than other ethnicities.

**Location**: The rates for SPA 6 (7.65 per 100,000) and SPA 4 (6.89 per 100,000) were significantly higher than the county average (4.77 per 100,000). The increase in SPA 6 is consistent with previous years. The rate for SPA 8 (2.5 per 100,000) was significantly lower than the county average. The three outbreaks involved cases from all SPAs except for SPA 1. The majority of men who have sex with men (MSM) cases (50%) were seen in SPA 4.

**Severity of Illness**: Fourteen percent of shigellosis cases (n=66) were hospitalized for at least two days. There were no shigellosis-associated deaths reported.

**Risk Factors**: Exposure to a case inside or outside the household (21%) and foreign travel (16%) were the most commonly reported potential sources of infection. The majority of foreign travel–associated illness (42%) involved visiting Mexico. Four of the 14 *S.boydii* cases reported travel to Mexico, Pakistan, and within the US. Two of the five *S. dysenteriae* traveled to Peru and Egypt during the incubation period. In 2007, three percent of cases were in MSM compared to five percent in 2006.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2007

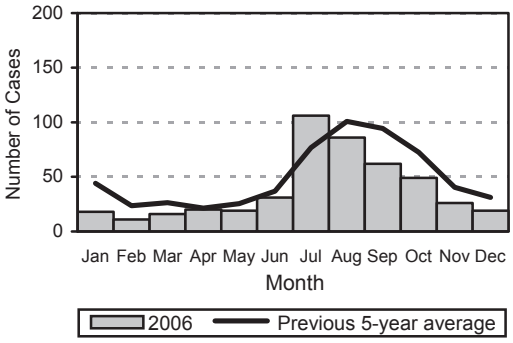



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2007

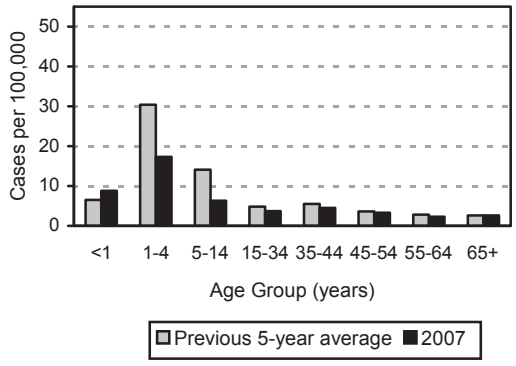
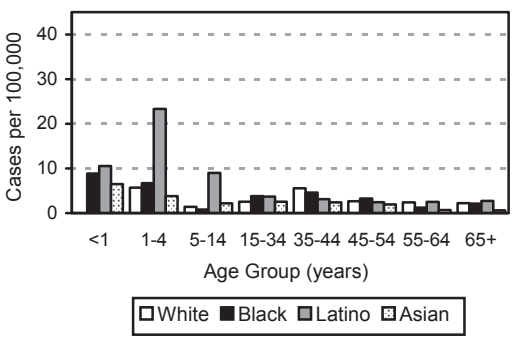



Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2007 (N=463)



## COMMENTS

There were three shigellosis outbreaks investigated in 2007, all were laboratory confirmed. One was a community outbreak involving a day care setting, the second was a foodborne outbreak involving a restaurant, and the third involving a board and care facility. There was no source identified in any of the outbreaks that were investigated.

Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 12 shigellosis cases reported in MSM in 2007. No links could be established among these cases. *S. flexneri* (83%) was again the predominant serotype in 2007 for this risk group; in 2002 the predominant MSM serotype was *S. sonnei* (56%).

## PREVENTION

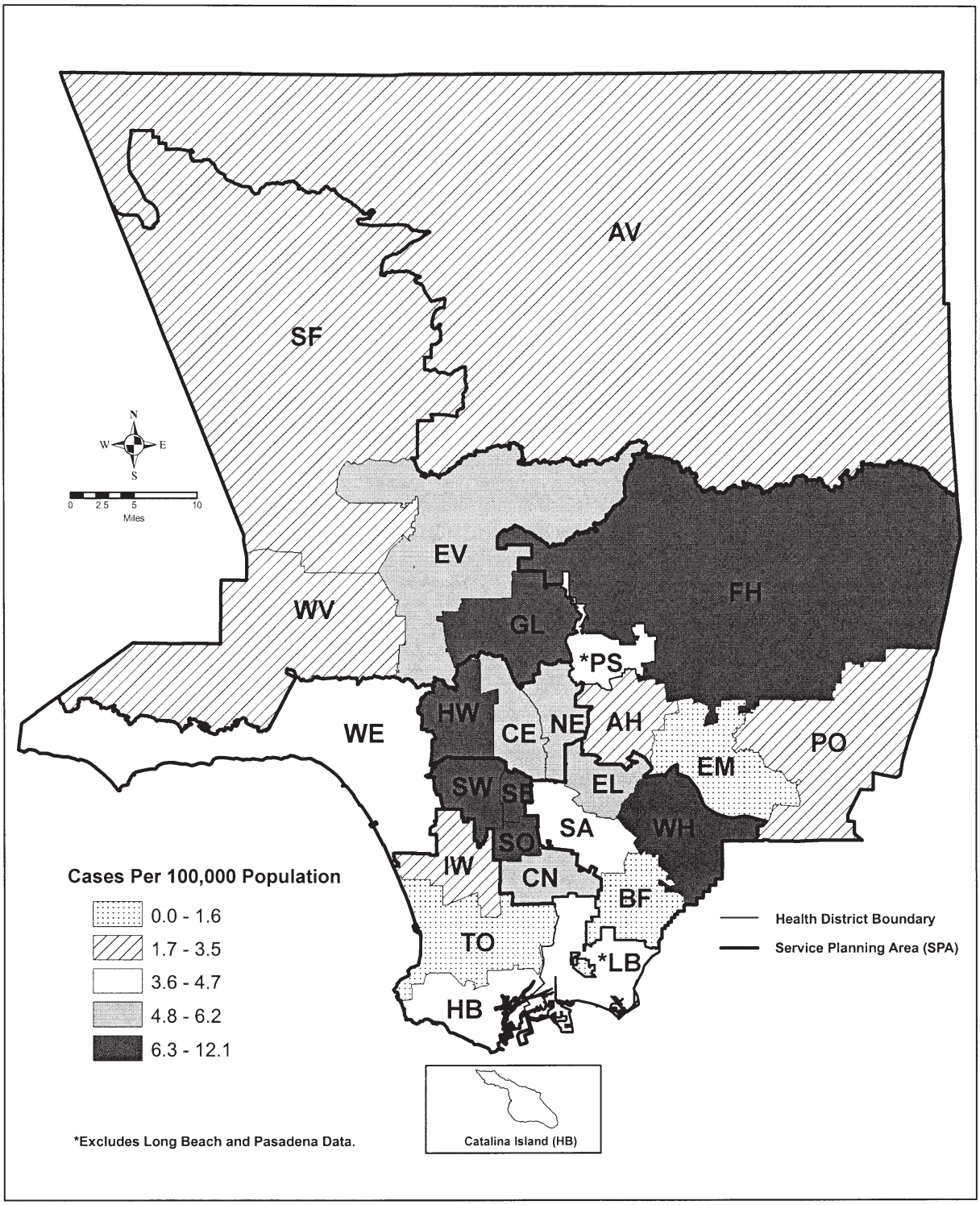
Hand washing is vital in preventing this disease. Young children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; ill children (exhibiting symptoms) in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or hand washing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

## ADDITIONAL RESOURCES

CDC General Information – http://www.cdc.gov/nczved/dfbmd/disease_listing/shigellosis_gi.html

LAC General Information – http://www.lapublichealth.org/acd/Diseases/Shigellosis.htm

# Map 13. Shigellosis
# Rates by Health District, Los Angeles County, 2007*



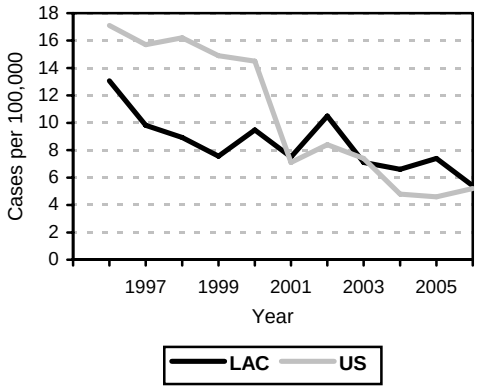
# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 524 |
| Annual Incidence[a] | |
| LA County | 5.4 |
| California | 5.18[b] |
| United States | 5.23[b] |
| Age at Diagnosis | |
| Mean | 23.3 |
| Median | 18 |
| Range | <1– 98 |

[a] Cases per 100,000 population.

[b] Calculated from 2007 Summary of notifiable diseases issue of MMWR (56:853-863).

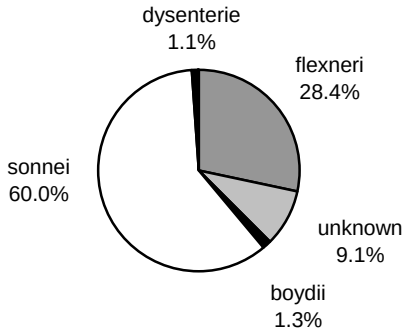
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1996–2006




## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1-3 days. Human are the definitive host; transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by Serogroup
LAC, 2006
(N=524)




## DISEASE ABSTRACT

- There was a 35.5% decrease in reported cases in 2006.
- Two shigellosis-associated outbreaks were investigated in 2006.

## STRATIFIED DATA

**Trends**: There was a 35.5% decrease in the number of cases during 2006. This is lowest rate in over twenty years. The LAC rate had been decreasing since a peak in 2002 (Figure 1), before peaking again in 2005. Although the 2006 rate may be an adjustment from the 2005 increase, continued surveillance is needed to identify an emerging trend.

**Serotypes**: In 2006, *S. flexneri* (n=149; 28.4%) represented a larger percentage than 2005 (n=122; 17.2%). *S. sonnei* remains the dominant serotype (n=315; 60%). Other serotypes identified during 2006 include: *S. boydii* (n=7) and *S. dysenterie* (n=6) (Figure 2).

**Seasonality**: In 2006, incidence peaked in August and stayed at or below the five-year average through the entire year (Figure 3). There were nine family clusters during the month of August. The rate of travel related cases that occurred from July through September decreased to 48% as compared to 60% in 2005.

**Age**: Children aged 1–4 years (20.3 per 100,000) and 5-14 (9.1 per 100,000) again had the highest rates; however, these rates were lower than the previous five-year average. The rate for children aged 1-4 years was significantly higher than all other age groups. Adults 65 years and older were the only age group to have a rate higher than the five-year average (Figure 4). This rate was still significantly lower than the county average.

**Race/Ethnicity**: During 2006, Latinos aged 1–4 years again had the highest age-adjusted rate (Figure 5). For the fourth year, Latino infants and children aged 5–14 had higher age adjusted rates compared to other race/ethnicities. This year, Latinos aged 65 years and older also had higher age-adjusted rates compared to other race/ethnicities. Overcrowding and living with extended family members in addition to the higher overall rate in Latinos may be possible causes. Blacks adults aged 45-55 years, had a higher rate than other ethnicity. All but one case among Latinos were male; of these male cases one self-reported as MSM and the others refused to disclose their sexual orientation.

**Sex**: The male-to-female rate ratio was 1.1:1. Men are still the preponderant group as reflected in the 2006 ratio.

**Location**: The rates for SPA 6 (10.2 per 100,000) and SPA 4 (8.2 per 100,000) were significantly higher than the county average (5.45 per 100,000). The increase in SPA 6 is consistent with previous years and may be due to changing demographics in that location. The two outbreaks involved cases from SPAs 3, 4, 5, and 6. The majority of MSM cases (66%) were seen in SPA 4.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2006

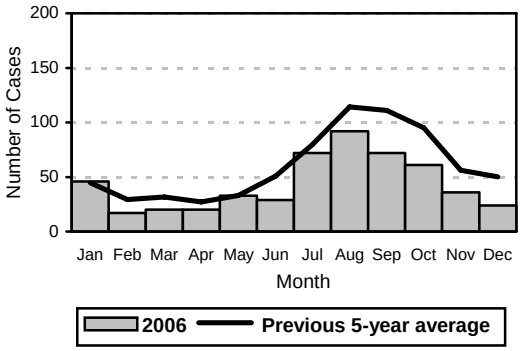



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2006

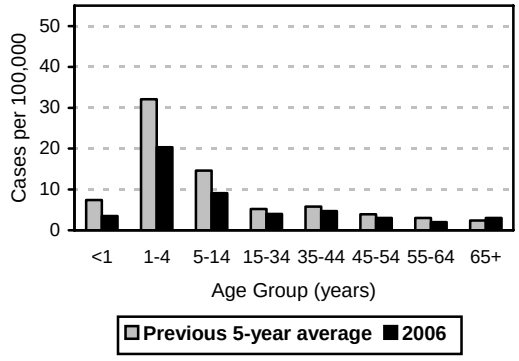
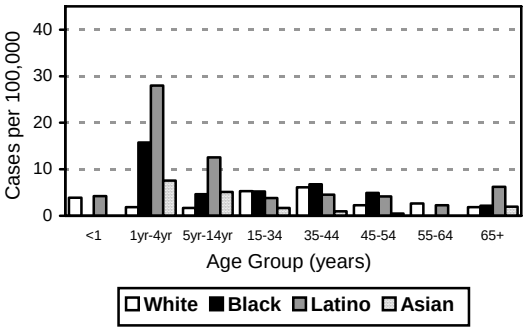



Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2006 (N=524)



**Severity of Illness**: Fifteen percent of shigellosis cases (n=79) were hospitalized for at least two days. There were two shigellosis-associated deaths reported; both cases were immunocompromised.

**Risk Factors**: Exposure to a case inside or outside the household (15%) and foreign travel (15%) were the most commonly reported potential sources of infection. The majority of foreign travel–associated illness (50%) involved visiting Mexico. Two of the seven *S.boydii* cases reported travel to Africa and India. Three of the six *S. dysenterie* traveled to India, Mexico, and Asia during the incubation period. One *S. dysenterie* case was found during contact follow-up of a typhoid case. In 2006, five percent of cases were in MSM compared to four percent in 2005.

## PREVENTION

Careful hand washing is vital in preventing this disease. Young children or anyone with uncertain hygiene practices should be monitored to promote compliance. Hand washing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; ill children (exhibiting symptoms) in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or hand washing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

## COMMENTS

There were two shigellosis outbreaks investigated in 2006, both laboratory confirmed. One was a community outbreak involving a day care setting and the second was a foodborne outbreak involving a restaurant.

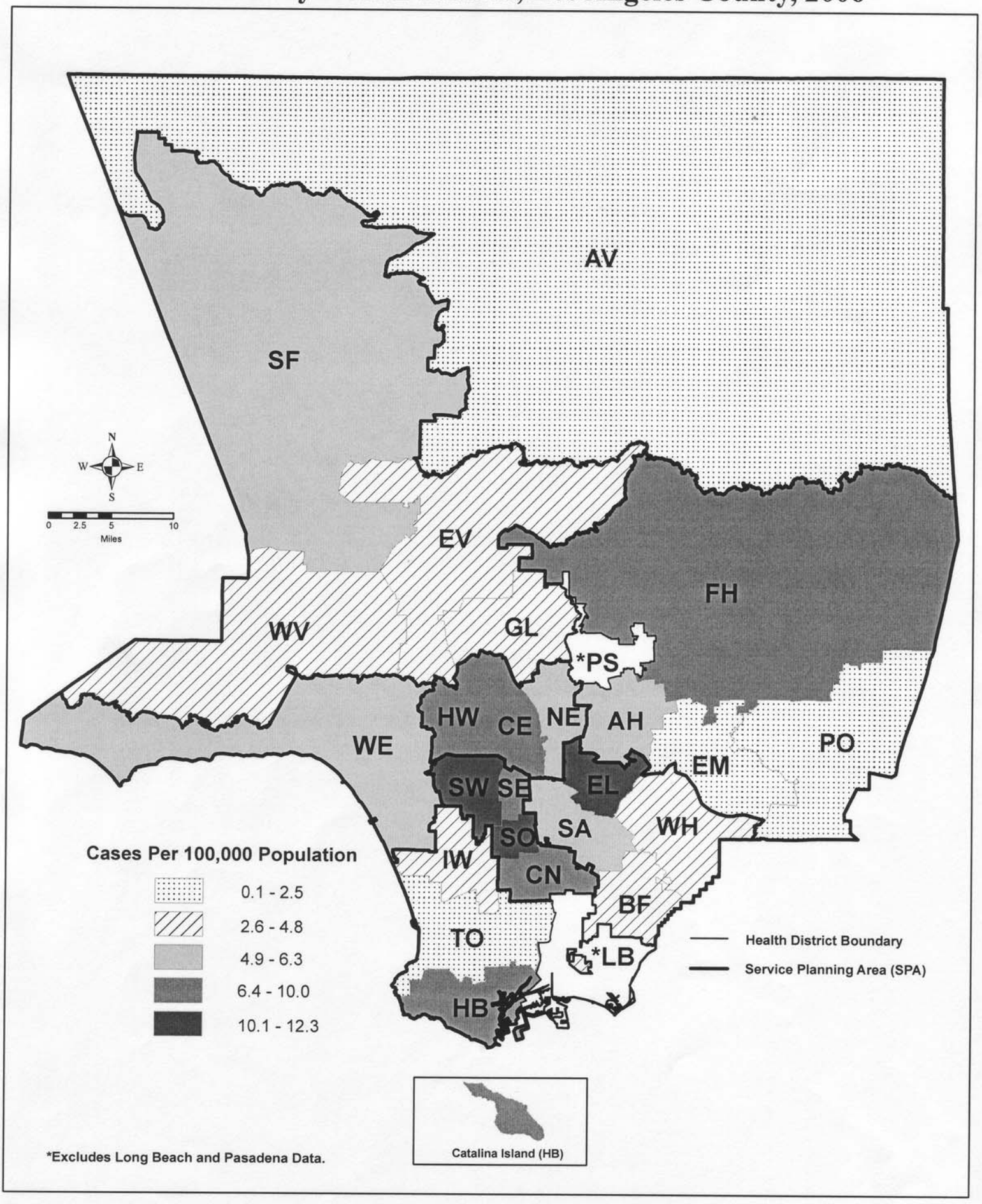
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 28 shigellosis cases reported in MSM in 2006. No links could be established among these cases. *S. flexneri* (55%) was again the predominant serotype in 2003 and 2004 for this risk group; in 2002 the predominant MSM serotype was *S. sonnei* (56%).

## ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm

General information and reporting information about this and foodborne diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

# Map 11. Shigellosis
# Rates by Health District, Los Angeles County, 2006*



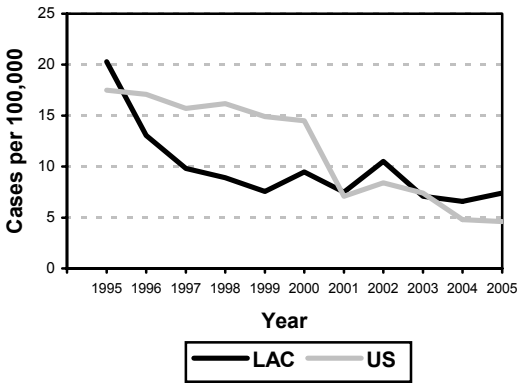

*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 710 |
| Annual Incidence[a] | |
| LA County | 7.4 |
| California | 5.8 |
| United States | 4.6 |
| Age at Diagnosis | |
| Mean | 20.3 |
| Median | 11 |
| Range | <1–89 years |
| Case Fatality | |
| LA County | <1% |
| United States | N/A |

[a] Cases per 100,000 population.

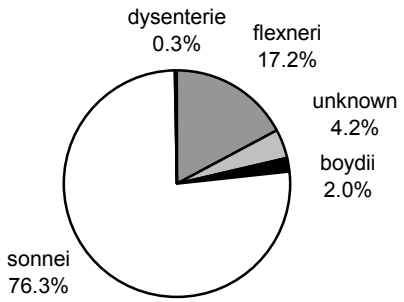
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1995–2005




## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1-3 days. Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact, including sexual behaviors, or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by Serogroup
LAC, 2005
(N=710)




## DISEASE ABSTRACT

- There was a 14% increase in reported cases in 2005 due to an increase in family clusters and outbreak related cases.
- Three shigellosis-associated outbreaks were investigated in 2005.

## STRATIFIED DATA

**Trends**: There was a 14% increase in the number of cases during 2005. The rate had been decreasing since reaching a peak of 10.5 in 2002 but increased in 2005 (Figure 1). This may be due to an increase in family clusters and outbreak related cases.

**Serotypes**: In 2005, there was a significant decrease in the proportion of *S. flexneri* (n=122) when compared to 2004 ($p<0.005$). *S. sonnei* remains the dominant serotype (n=542). Other serotypes identified during 2005 include: *S. boydii* (n=14) and *S. dysenterie* (n=3) (Figure 2). A few of the *S.boydii* cases (n=5, 36%) reported travel as possibly related to their exposure. The three reported cases of *S. dysenterie* did not travel during the incubation period.

**Seasonality**: In 2005, incidence peaked in September and continued to stay above the five-year average through October (Figure 3). This was due primarily to two outbreaks and several large family clusters. The rate of travel related cases that occurred from July through September increased to 60% as compared to 43% in 2004.

**Age**: Children aged 1–4 years (29.5 per 100,000) and 5–14 (14.4 per 100,000) again had the highest rates; however, these rates were lower than the previous five-year average (Figure 4).

**Race/Ethnicity**: During 2005, Latinos aged 1–4 years again had the highest age-adjusted rate (Figure 5). For the third year, Latino infants and children aged 5–14 had higher age adjusted rates compared to other race ethnicities. Latinos aged 55 years and older also had higher age-adjusted rates compared to other race ethnicities. Overcrowding and living with extended family members plus the higher overall rate in Latinos may be possible causes.

**Sex**: The male-to-female rate ratio was 1:1. Men are still the preponderance group, however, the ratio has decreased compared to 2004 and with fewer MSM in 2005.

**Location**: The rates for SPA 4 (11.7 per 100,000) and SPA 6 (11.6 per 100,000) were again significantly higher than the county average (8.20 per 100,000). One outbreak each occurred in SPAs 2, 4, and 8. The majority of MSM cases (38%) were again seen in SPA 4.

**Severity of Illness**: Many of the reported shigellosis cases (17%) were hospitalized for at least two days. There was one shigellosis-associated death reported—a two year old girl with no history of medical problems.

**Risk Factors**: Exposure to a case inside or outside the household (26%, n=186) and foreign travel (23%, n=166) were the most commonly reported potential sources of infection. The majority of travel–associated illness (61%, n=102) involved visiting Mexico. In 2005, four percent of cases were in MSM compared to seven percent in 2004.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2005

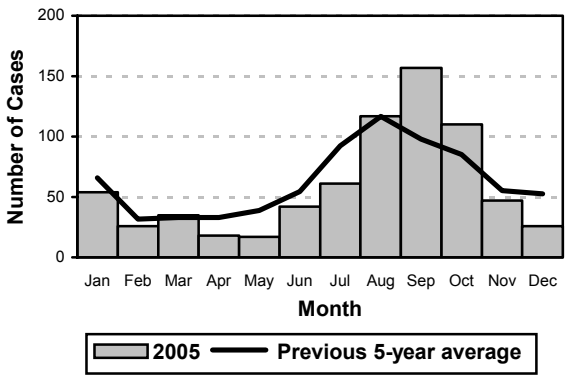



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2005

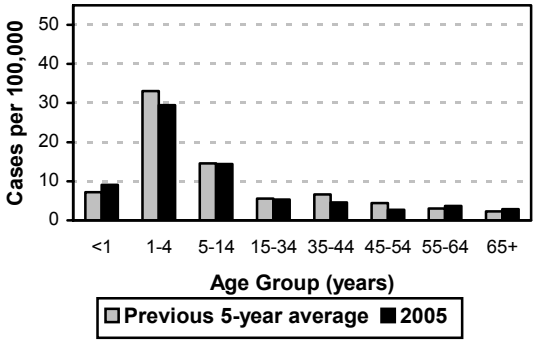
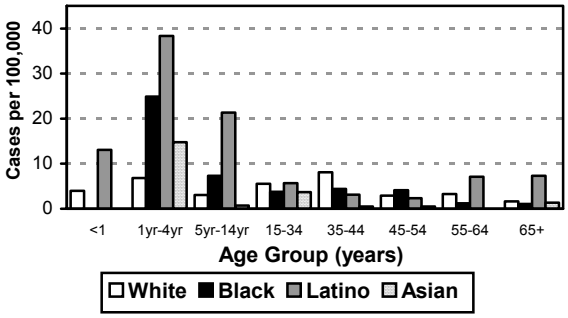



Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2005 (N=710)



## PREVENTION

Careful hand washing is vital in preventing this disease. Young children or anyone with questionable hygiene should be monitored to promote compliance. Hand washing is especially important when out in crowded areas such as amusement parks or shopping malls. Ill children should not be allowed to swim or wade while ill with diarrhea; ill children in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or hand washing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

## COMMENTS

There were three shigellosis outbreaks investigated in 2005; all three were laboratory confirmed. Two were community outbreaks involving cases among extended family members and friends and a home day care operation. The third outbreak was travel related.

Eight LAC residents were involved with an out-of-state outbreak and five other cases were named as part of another investigation. Both of these outbreaks appeared to be from person-to-person transmission.

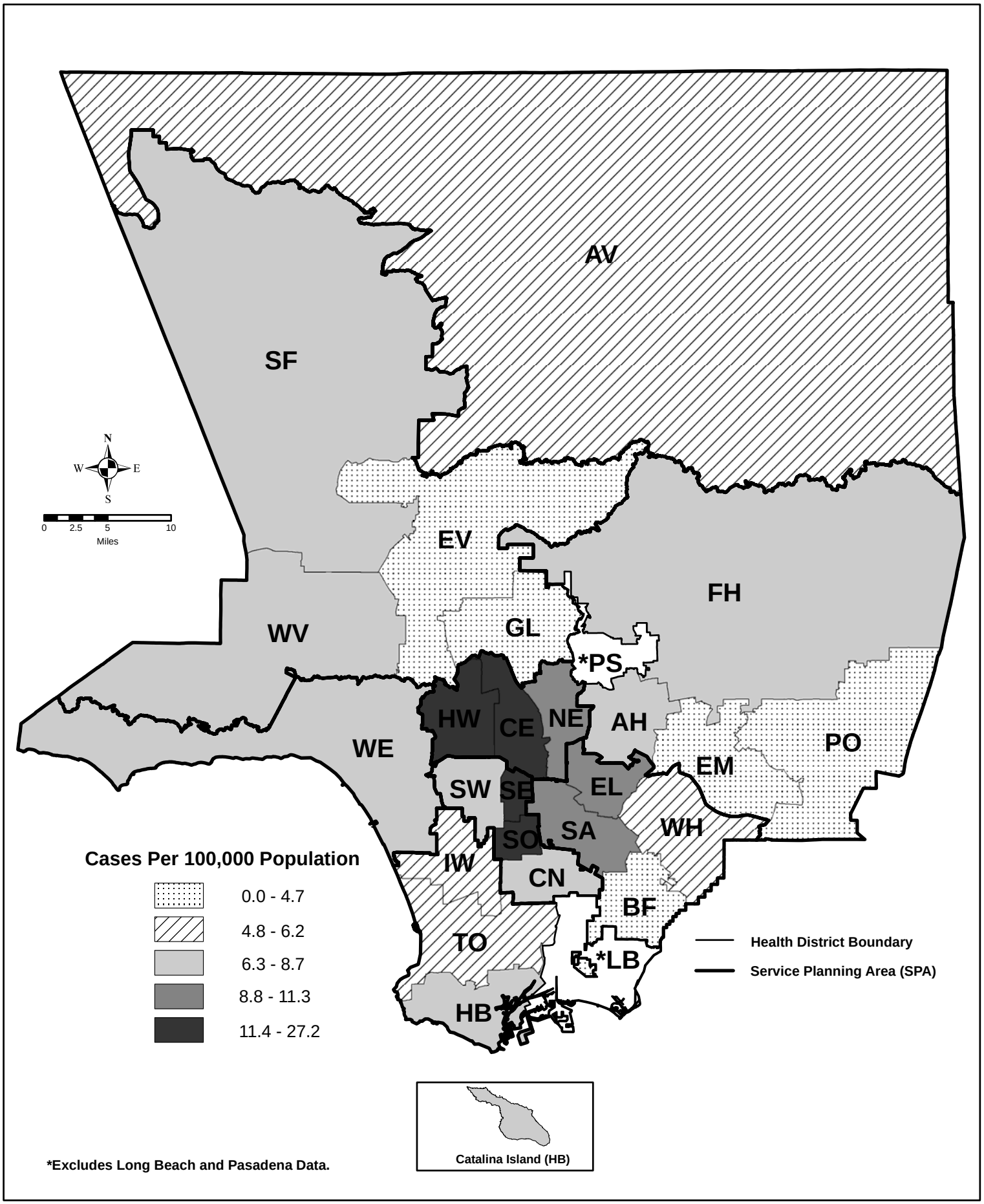
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 29 shigellosis cases reported in MSM. No links could be established among these cases. *S. flexneri* (55%) was again the predominant serotype in 2003 and 2004 for this risk group; in 2002 the predominant MSM serotype was *S. sonnei* (56%).

## ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm

General information and reporting information about this and foodborne diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

# Map 12. Shigellosis
# Rates by Health District, Los Angeles County, 2005*



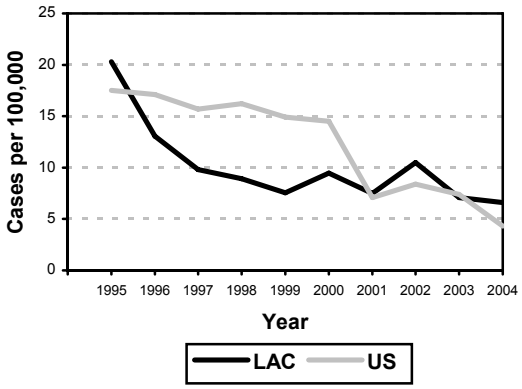

*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 625 |
| Annual Incidence[a] | |
| LA County | 6.60 |
| California | 5.00 |
| United States | 4.81 |
| Age at Diagnosis | |
| Mean | 22 |
| Median | 12 |
| Range | <1– 85 years |
| Case Fatality | |
| LA County | <1% |
| United States | N/A |

[a] Cases per 100,000 population.

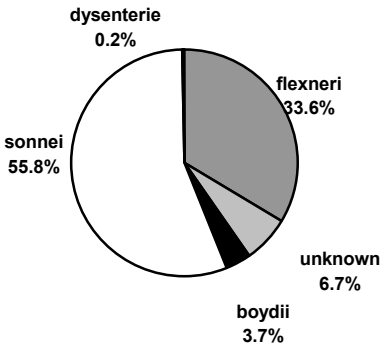
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1995–2004




## DESCRIPTION

Shigellosis is caused by a gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1-3 days. Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact including sexual behaviors or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by serogroup
LAC, 2004
(N=625)




## DISEASE ABSTRACT

- There was a seven percent decrease in reported cases in 2004.
- Six shigellosis associated outbreaks were investigated in 2004.

## STRATIFIED DATA

**Trends:** There was a seven percent decrease in the number of cases during 2004. The rate has been decreasing since reaching a peak of 10.5 in 2002 (Figure 1). The increase of sporadic cases in districts with multifamily dwellings seen in late 2002 was not seen in 2003 or 2004.

**Serotypes**: There has been a significant increase in the proportion of *S. flexneri* (n=210) when compared with other serotypes (p< 0.01). *S. sonnei* remains the dominant serotype (N=349). Other serotypes identified during 2004 include: *S. boydii* (N=23) and *S. dysenterie* (N=1) (Figure 2). Forty-three percent (N=10) of *S.boydii* cases traveled. The single reported case of *S. dysenterie* did not travel during the incubation period.

**Seasonality:** In 2004, incidence again peaked in August (Figure 3). The reason for January's consistently higher number of cases may be due to travel during winter school break. Ten percent of case-related travel took place in late December. Forty-three percent of travel took place from July through September.

**Age:** Children aged 1–4 (24.5 per 100,000) and 5–14 (12.2 per 100,000) years again had the highest rates; however, these rates were lower than the previous five-year average (Figure 4).

**Race/Ethnicity:** During 2004, Latinos aged 1–4 years again had the highest age-adjusted rate (Figure 5). For the second year, Latino infants and children aged 5-14 had higher age adjusted rates compared to other race ethnicities. Overcrowding and the higher overall rate in Latinos may be possible causes.

**Sex:** The male-to-female rate ratio was 1.2:1; there was no change from 2003.

**Location:** The rates for SPA 4 (11.8 per 100,000) and SPA 6 (10 per 100,000) were again significantly higher than the county average (6.6 per 100,000). One outbreak occurred in SPA 4. The majority of MSM cases (52%) were again seen in SPA 4.

**Severity of Illness**: Thirteen percent of reported shigellosis cases were hospitalized for at least two days. There was one shigellosis-associated death reported late in 2004. This was a three year old boy with no previous known medical problems.

**Risk Factors**: Exposure to a case inside or outside the household (25% N=158) and exposure during travel (20% N=124) were the most commonly reported potential sources of infection. The majority of travel associated illness (60% N=74) involved visiting Mexico. Seven percent of cases were in MSM.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2004

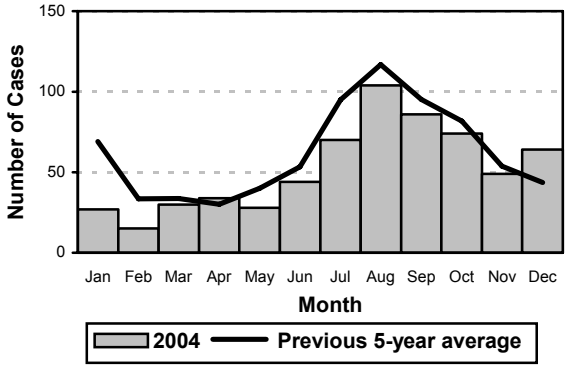



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2004

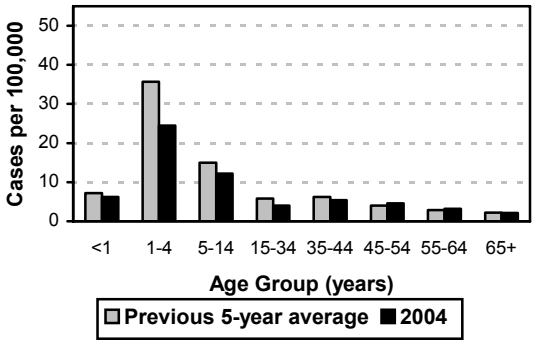
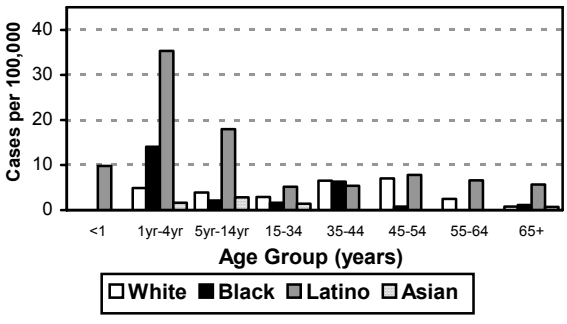



Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2004 (N=625)



## PREVENTION

Careful handwashing is vital in preventing this disease. Young children or anyone with questionable hygiene should be monitored to promote compliance. Handwashing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; children in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or handwashing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, daycare and healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

## COMMENTS

There were six shigellosis-associated outbreaks investigated in 2004; however, only five could be laboratory confirmed. Two were community outbreaks involving cases among extended family members and friends and two outbreaks involved home day care operations. Another outbreak involved restaurant workers; there was no evidence of transmission to consumers. All of these outbreaks appear to be from person-to-person transmission. The last outbreak was a joint investigation done by LAC and Orange County. The implicated food was tacos possibly contaminated with *S. sonnei*. This outbreak could not be confirmed as a shigellosis outbreak, however, as only a single Orange County case had positive laboratory results. Thirty-two cases were identified, with thirty living in Orange County or other jurisdictions.

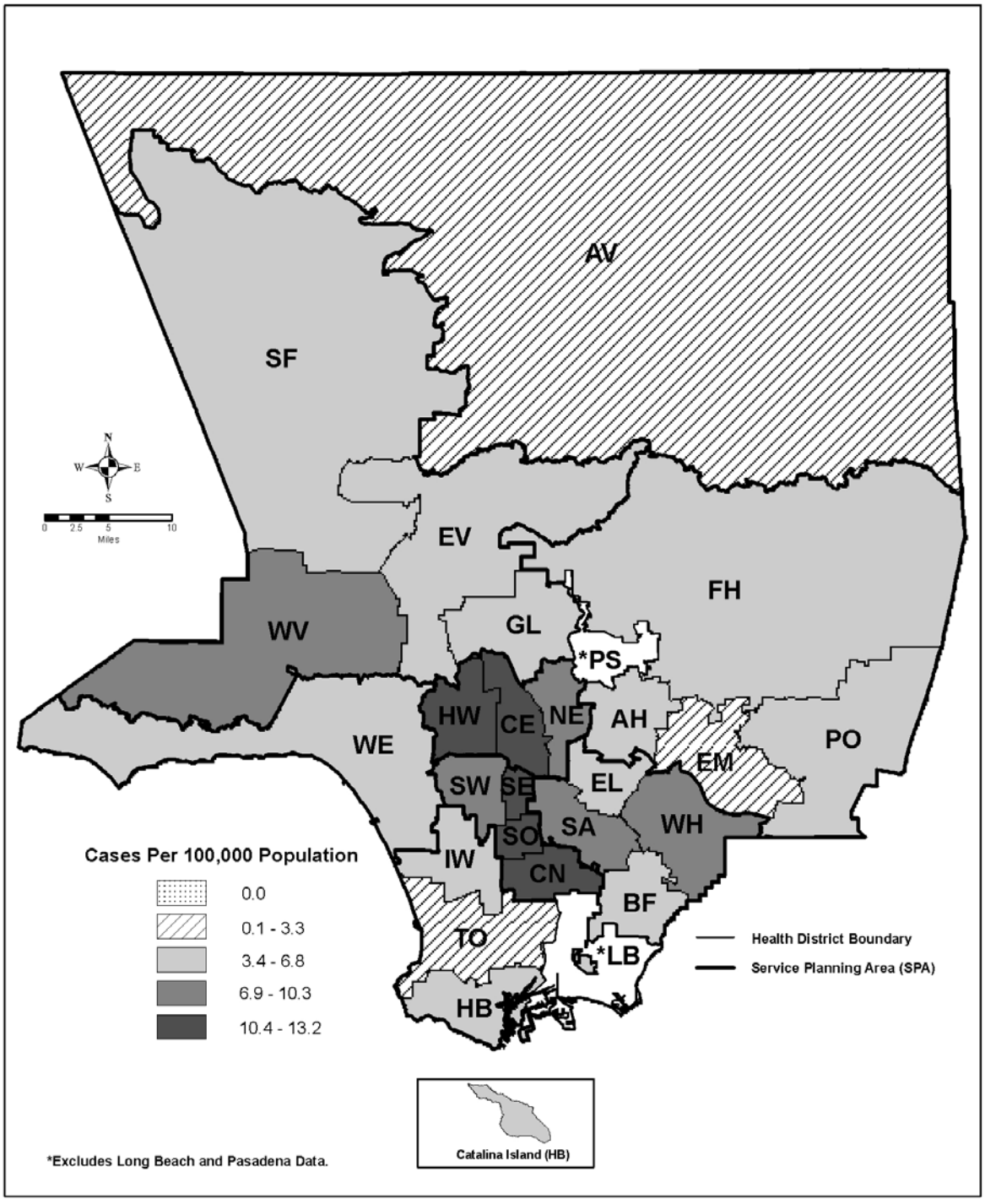
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 42 shigellosis cases reported in MSM. No links could be established among these cases. *S. flexneri* (86%) was again the predominant serotype in this risk group; in 2002 the predominant serotype was *S. sonnei* (56%).

## ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm

General information and reporting information about this and foodborne diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

## Map 12. Shigellosis
## Rates by Health District, Los Angeles County, 2004*

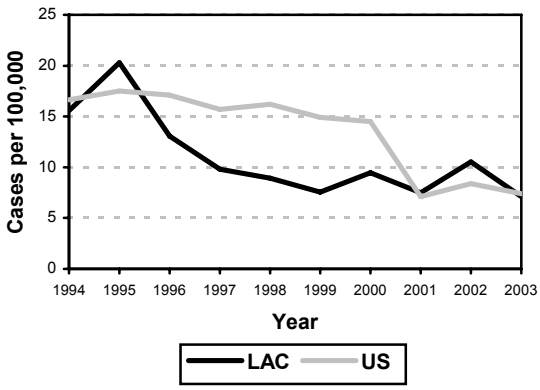


# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 669 |
| Annual Incidence[a] | |
| LA County | 7.12 |
| California | 6.46 |
| United States | 8.19 |
| Age at Diagnosis | |
| Mean | 18.9 |
| Median | 10 |
| Range | <1– 84 years |
| Case Fatality | |
| LA County | 0.0% |
| United States | N/A |

[a] Cases per 100,000 population.

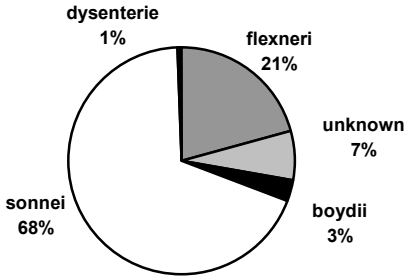
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1994–2003




## DESCRIPTION

Shigellosis is caused by a gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Incubation period is 1-3 days. Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact including sexual behaviors or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by serogroup
LAC, 2003
(N=670)




## DISEASE ABSTRACT

- There was a 31% decrease in cases in 2003 after a 42% increase in cases, during 2002 (Figure 1).
- Four outbreaks were investigated in 2003.

## STRATIFIED DATA

**Trends:** There was a 31% decrease in the number of cases during 2003. The rate decreased from 10.5 in 2002 to 7.1. The increase of sporadic cases in districts with multifamily dwellings seen in late 2002 was not seen in 2003.

**Serotypes**: As in most developed countries, *S. sonnei* continues to be the most common serotype seen in LAC followed by *S. flexneri* (Figure 2). Other serotypes identified during 2003 include: *S. boydii* (N=21), *S. dysenterie* (N=3). Sixty-six percent of *S. dysenterie* cases traveled during their incubation period and 38% of *S.boydii* cases traveled.

**Seasonality:** In 2003, incidence peaked in August (Figure 3). The reason for January's consistently higher number of cases may be due to travel during winter school break. Ten percent of case-related travel took place in late December and early January. Fifty-eight percent of travel took place from July through September.

**Age:** Children aged 1–4 and 5–14 years again had the highest rates, however, these rates were lower than the five-year average. The rate in persons aged 65 years and older continues to be higher than the five-year average (Figure 4).

**Race/Ethnicity:** During 2003, Latinos aged 1–4 years again had the highest age-adjusted rate (Figure 5). The reason for the high rate in Latino infants cannot be determined at this time. Overcrowding and the higher overall rate in Latinos may be possible causes.

**Sex:** The male-to-female rate ratio was 1.2:1. In 2002 the rate ratio was 1:1.

**Location:** The rates for SPA 4 and SPA 6 were again significantly higher than the county average. One outbreak occurred in SPA 4. The majority of MSM cases (74%) were again seen in SPA 4.

**Severity of Illness**: Twenty-one percent of reported shigellosis cases were hospitalized for at least two days. There were no shigellosis-associated deaths reported in 2003.

**Risk Factors**: Exposure to a case inside or outside the household (29%) and exposure during travel (18%) were the most commonly reported potential sources of infection. The majority of travel associated illness (62% n=62) involved visiting Mexico. Five percent of cases were in MSM.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2003

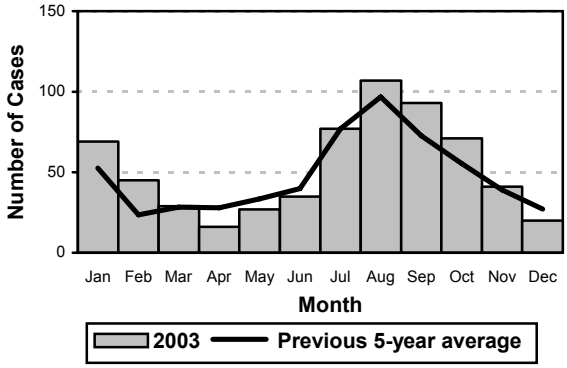



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2003

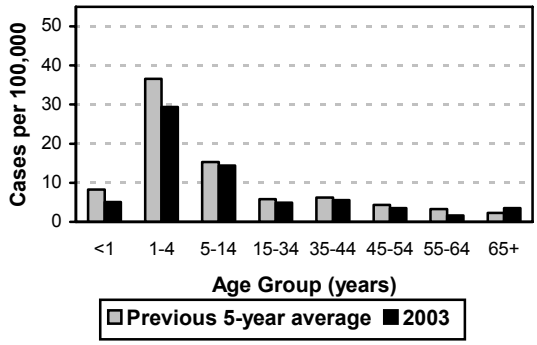
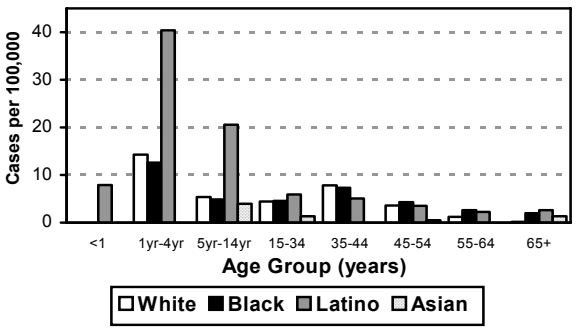



Figure 5
Shigellosis Incidence Rates
by Age Group and Race
LAC, 2003 (N=659)




**PREVENTION**

Careful handwashing is important in preventing this disease. Handwashing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; children in diapers

should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or handwashing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, healthcare workers) are routinely removed from work or the situation until they have culture negative stool specimens tested in the Public Health Laboratory.

**COMMENTS**

There were four outbreaks investigated in 2003; three were community outbreaks including a multi-household, a shelter and a babysitting group outbreak. All of these outbreaks appear to be from person-to-person transmission. One outbreak occurred in a home for the developmentally disabled. There were no restaurant-related shigellosis outbreaks reported in 2003.

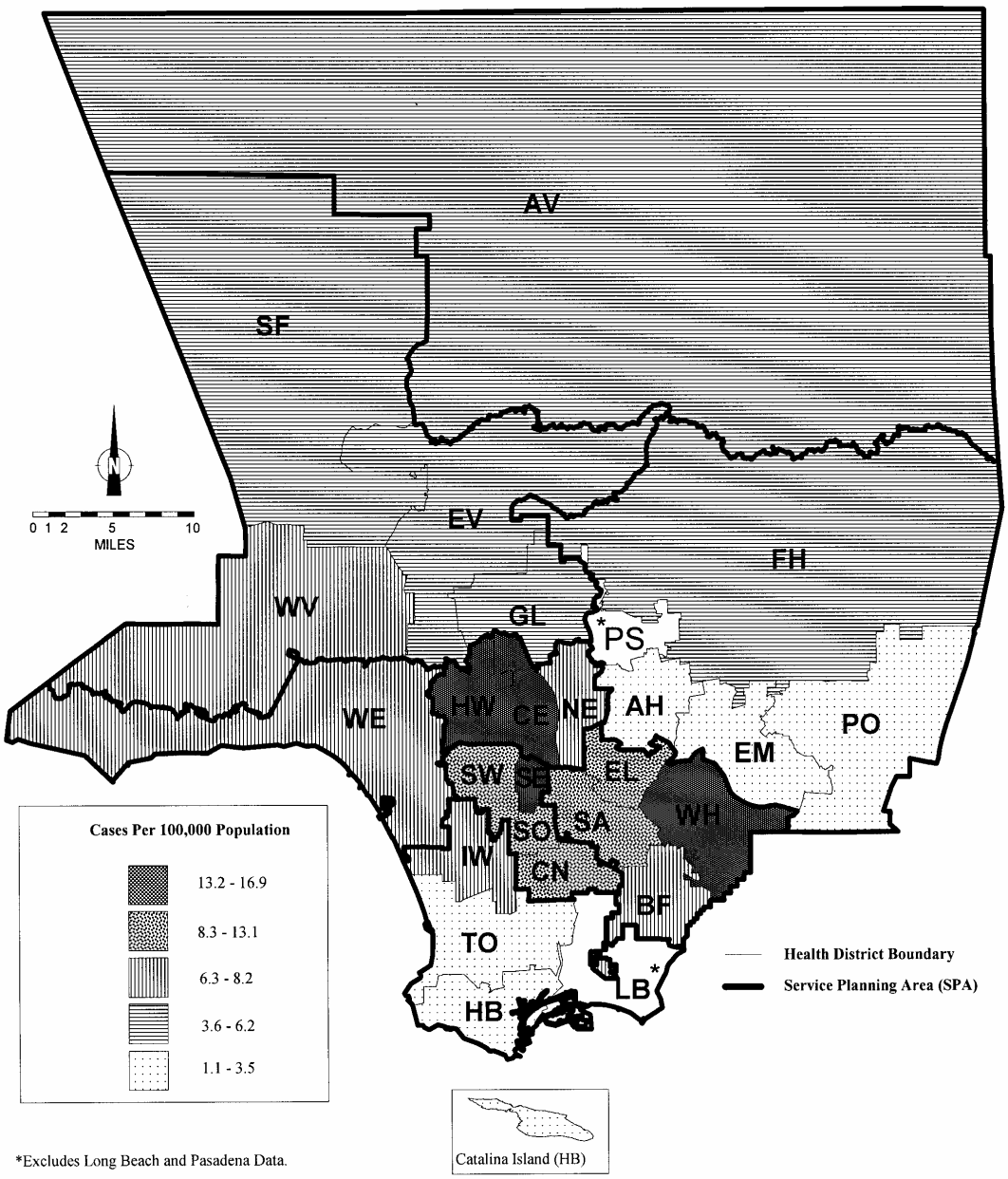
Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 35 shigellosis cases reported in MSM. No links could be established among these cases. *S. flexnerii* (54%) was the predominant serotype in this risk group; in 2002 the predominant serotype was *S. sonnei* (56%).

**ADDITIONAL RESOURCES**

General information about shigellosis is available at:
www.cdc.gov/ncidod/dbmd/diseaseinfo/shigellosis_g.htm

General information and reporting information about this and foodborne diseases in LAC is available at:
www.lapublichealth.org/acd/food.htm

## MAP 11. Shigellosis
## Rates by Health District, Los Angeles County, 2003*



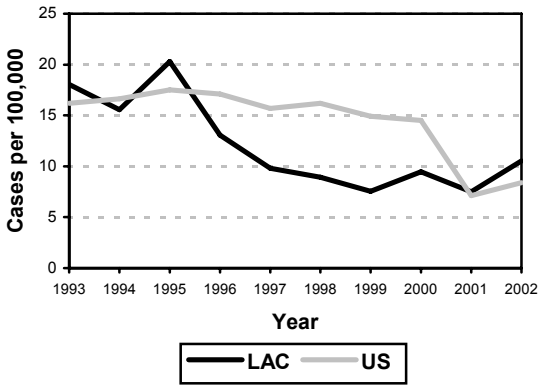

*Excludes Long Beach and Pasadena Data.

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 974 |
| Annual Incidence[a] | |
| LA County | 10.5 |
| California | 8.1 |
| United States | 8.4 |
| Age at Diagnosis | |
| Mean | 19 |
| Median | 9 |
| Range | <1–92 years |
| Case Fatality | |
| LA County | 0.1% |
| United States | N/A |

[a] Cases per 100,000 population.

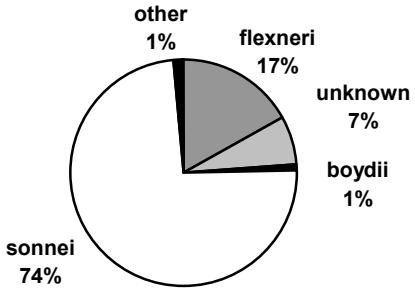
Figure 1
Shigellosis
Incidence Rates by Year of Onset
LAC and US, 1993–2002




## DESCRIPTION

Shigellosis is caused by a Gram-negative bacillus with four main serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact including sexual behaviors or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

Figure 2
Shigellosis
Percent by serogroup
LAC, 2002
(N=974)




## DISEASE ABSTRACT

- There was a 42% increase in shigellosis cases, during 2002. This ended a general 6-year downward trend.
- There were eight outbreaks investigated in 2002.
- There was an increase in sporadic cases in SPAs 6 and 4 during the last part of 2002.

## STRATIFIED DATA

**Trends:** There was a 42% increase in the number of cases during 2002. The rate increased from 7.7 in 2001 to 10.5. This may be due to outbreaks, increased reporting of presumptive cases and an increase of cases in districts with multifamily dwellings corresponding with more young children and high population density. There is anecdotal evidence that shigellosis is increasing nationally; increasing reports of outbreaks has occurred in other states.

**Serotypes**: *S. sonnei* continues to be the most common serotype seen in LAC followed by *S. flexneri* (Figure 2). *S. sonnei* increased from 64% of speciated cases in 2001 to 74% of cases in 2002. Other serotypes identified during 2002 include: *S. boydii*, *S. flexneri* Provisional 89-141 and *S. flexneri* Provisional SH-108.

**Seasonality:** In 2002, there was an increase in cases starting in summer and continuing through the end of the year. Incidence peaked during August and October, but numbers of cases starting in June were higher than the 5–year average (Figure 3). This was partly due to outbreaks that occurred starting in July and the increase in sporadic cases in SPAs 6 and 4.

**Age:** The rates in children aged 1–4 and 5–14 years were higher than the 5-year average. This was probably due to outbreaks occurring in preschools, the community and a primary school. The rates in persons aged 35–44 years and over 65 years are higher than the 5-year average. One outbreak occurred in the 35–44 age group. There were more Latino cases in persons aged 65 years or older.

**Race/Ethnicity:** During 2002, Latinos aged 1–4 years again had the highest age-adjusted rate. Rates in Blacks aged 1–4 years, 5–14 years and 15–34 years were higher due to outbreaks in SPA 6. The higher rate seen in Whites aged 35–44 years was due to more shigellosis cases among men who have sex with men (MSM) in that age group during 2002. The reason for the higher rate in Latinos aged 65 years and older is unknown.

**Sex:** The male-to-female rate ratio was 1:1. In 2001 the rate ratio was 1:1.2 due to more reports of shigellosis among MSM in 2001.

Figure 3
Shigellosis
Cases by Month of Onset
LAC, 2002

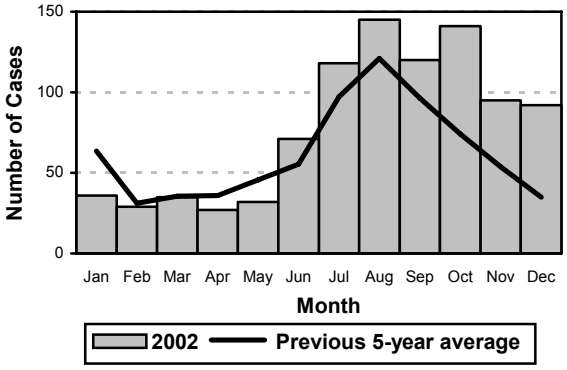



Figure 4
Shigellosis
Incidence Rates by Age Group
LAC, 2002

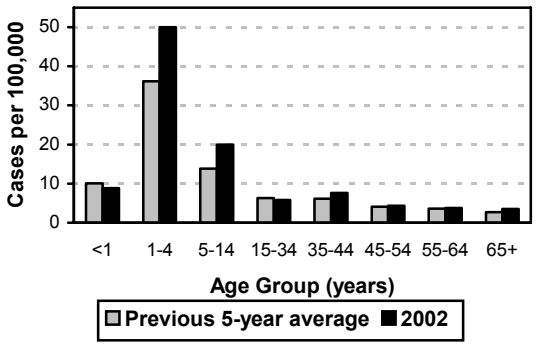
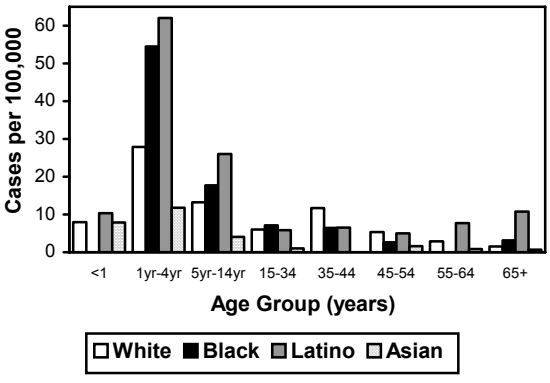



Figure 5
Shigellosis
Incidence Rates
by Age Group and Race
LAC, 2002 (N=974)



**Location:** The rates for SPA 4 and SPA 6 were significantly higher than the county average. This was due to outbreaks occurring in those districts and the increase in sporadic cases. Also 63% of MSM cases were reported in the Hollywood Wilshire health district (20 cases). SPA 5 had a higher rate in 2002 due to two large outbreaks there.

**Severity of Illness**: Fifteen percent of reported shigellosis cases were hospitalized. There was one shigellosis related death in an infant with multiple medical/social problems.

**Risk Factors**: Exposure to a case inside or outside the household (37%) and exposure during travel (14%) were the most commonly reported potential sources of infection. The majority of travel associated illness (66%) involved visiting Mexico.

## PREVENTION

Careful handwashing is important in preventing this disease. Handwashing is especially important when out in crowded areas such as amusement parks or shopping malls. Children should not be allowed to swim or wade while ill with diarrhea; children in diapers should never be allowed in public swimming areas. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or handwashing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, healthcare workers) are routinely removed from work or the situation until they are negative on stool specimens tested in the Public Health Laboratory.

## COMMENTS

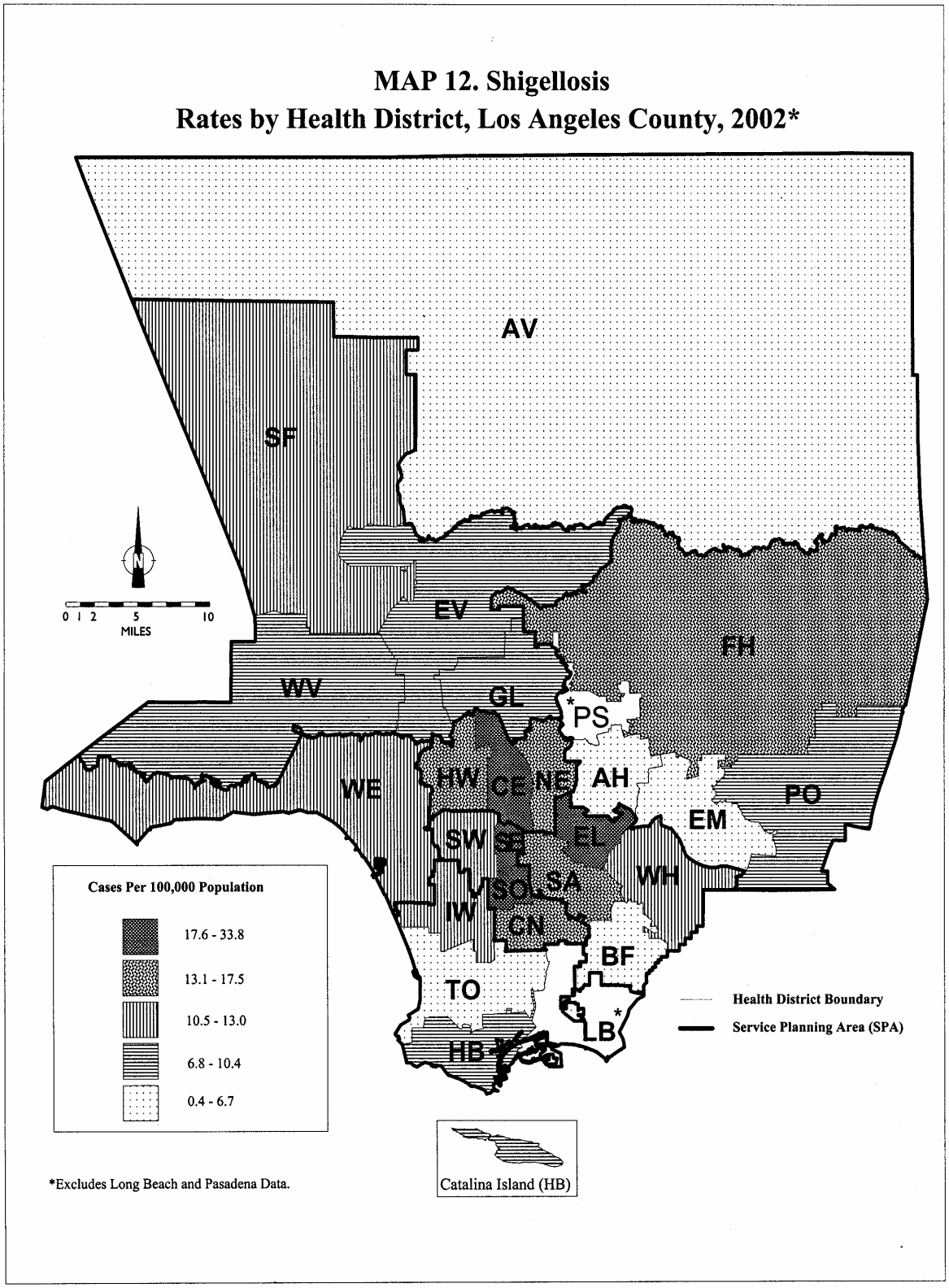
There were eight outbreaks investigated in 2002; three were community outbreaks involving multiple households. One was a community outbreak involving individuals visiting a particular park. One outbreak involved a daycare facility and one outbreak involved a residential facility for the developmentally disabled. Two outbreaks involved LAC's Jewish communities. All of these outbreaks appear to be from person-to-person transmission. There were no restaurant-related shigellosis outbreaks reported in 2002.

Certain sexual practices—especially those in which there is direct contact with fecal material—are a potential source of infection. There were 32 shigellosis cases in MSM. No links were established among these cases. *S. sonnei* (56%) continued to be the predominant serotype in this risk group.

## ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/abmd/diseaseinfo/shigellosis_g.htm

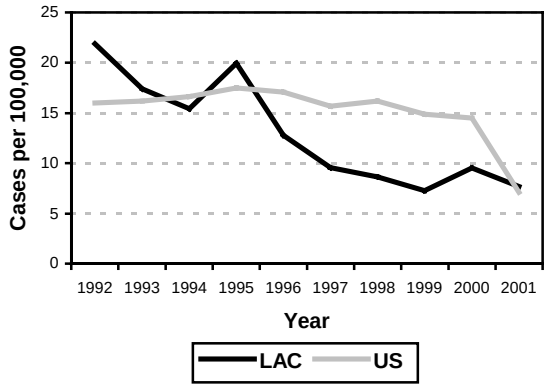
General information and reporting information about this and other foodborne diseases in LAC is available at: www.lapublichealth.org/acd/food.htm


MAP 12. Shigellosis
Rates by Health District, Los Angeles County, 2002*
AV
SF
EV
FH
WV
GL
PS
WE
HW
CE
NE
AH
PO
EM
SW
SE
EL
WH
SO
SA
IW
CN
BF
TO
LB
HB
N
0 1 2 5 10
MILES
Cases Per 100,000 Population
17.6 - 33.8
13.1 - 17.5
10.5 - 13.0
6.8 - 10.4
0.4 - 6.7
Health District Boundary
Service Planning Area (SPA)
*Excludes Long Beach and Pasadena Data.
Catalina Island (HB)

# SHIGELLOSIS

| CRUDE DATA | |
|---|---|
| Number of Cases | 684 |
| Annual Incidence[a] | |
| LA County | 7.7 |
| California | 6.2 |
| United States | 7.1 |
| Age at Diagnosis | |
| Mean | 21 |
| Median | 16 |
| Range | <1-90 years |
| Case Fatality | |
| LA County | 0.0% |
| United States | N/A |

**Figure 1**
**Shigellosis**
**Incidence Rates by Year of Onset**
**LAC and US, 1992 - 2001**




[a] Cases per 100,000 population.

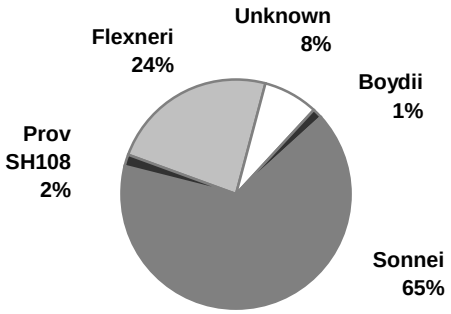
## DESCRIPTION

Shigellosis is caused by a gram-negative bacillus with four serogroups: *Shigella dysenteriae* (group A), *S. flexneri* (group B), *S. boydii* (group C) and *S. sonnei* (group D). Transmission occurs when individuals fail to thoroughly wash their hands after defecation and spread infective particles to others, either directly by physical contact including sexual behaviors or indirectly by contaminating food. Infection may occur with ingestion of as few as 10 organisms. Common symptoms include diarrhea, fever, nausea, vomiting, and tenesmus. Stool may contain blood or mucous depending on the serogroup. In general, the elderly, the immunocompromised, and the malnourished are more susceptible to severe disease outcomes.

## DISEASE ABSTRACT

- In general, shigellosis rates have continued to fall.
- In LAC, most cases occur sporadically. No outbreaks were seen in childcare and institutions in 2001.

**Figure 2**
**Shigellosis**
**Percent by serotype**
**LAC, 2001**
**N=684**




## STRATIFIED DATA

**Trends:** Shigellosis rates declined between 1994 and 1999, and then increased in 2000 (9.0 per 100,000). This increase was attributed to the large multi-state outbreak that year and high rates of disease in men who have sex with men (MSM). Although there continues to be high rates among MSM, in 2001, the overall LAC rate decreased 18% to a rate comparable to the 1999 rate.

**Serotypes**: S. sonnei continues to be the most common serotype seen in LAC followed by S. flexneri (Figure No 2).

**Seasonality:** As in previous years, the highest number of cases was seen in spring and summer, peaking in August (Figure 3).

**Age:** Although the rate for children aged 1-4 years is lower than the five-year average, it is still higher than any other age group. Rates for persons aged 35-44 years and 45-54 years are higher than the previous 5 year average and may be due to cases among MSM.

**Race/Ethnicity:** In 2001 Latino children aged 1-4 years had the highest age adjusted rate. This is probably due to more travel to endemic countries, families with more small children and overcrowded living conditions.

**Sex:** The male-to-female rate ratio for all shigellosis was 1.25:1. For cases 14 years and younger, the ratio was 0.9:1. For cases 15 years and older, the ratio was 2:1; this difference may be due to cases among MSM.

**Location:** The rate for SPA 4 was significantly higher than county average. The high incidence in SPA 4 is due to the number of MSM cases reported in the Hollywood Wilshire health district (33 cases).

**Severity of Illness**: Fourteen percent of reported shigellosis cases were hospitalized. There were no shigellosis related deaths reported in 2001.

**Risk Factors**: Exposure during travel (18%) and exposure to a case inside or outside the household (20%) were the most commonly reported potential sources. Other reported potential risks included participation in an outdoor activity (e.g., hiking, camping, swimming) and drinking untreated water. Swimming or wading in areas not designated for this activity was associated with several cases of shigellosis.

**Figure 3**
**Shigellosis**
**Cases by Month of Onset**
**LAC, 2001**

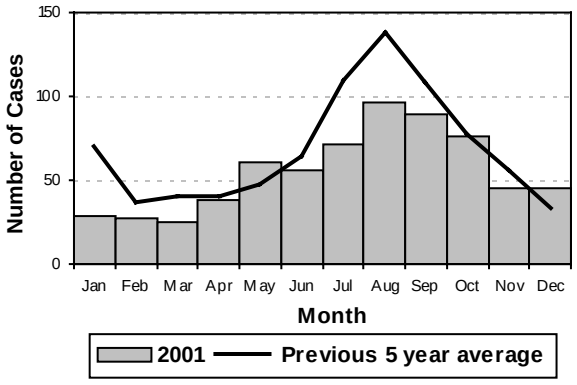



**Figure 4**
**Shigellosis**
**Incidence Rates by Age Group**
**LAC, 2000 - 2001**

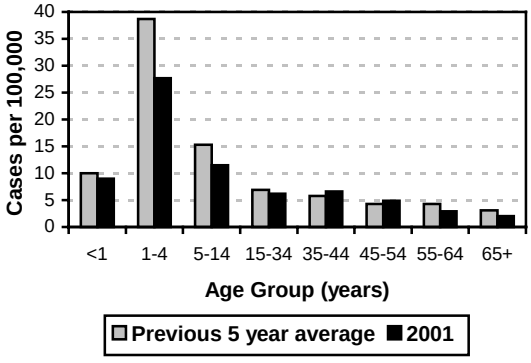
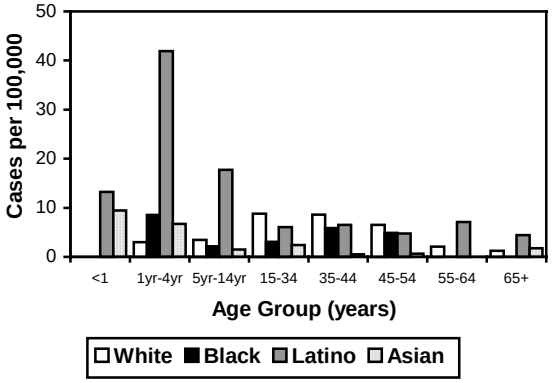



**Figure 5**
**Shigellosis**
**Incidence Rates**
**by Age Group and Race**
**LAC, 2001 (N=664)**



## COMMENTS

Indirect exposure by consumption of food contaminated by an ill individual is a potential source. There were two restaurant-related shigellosis outbreaks reported in 2001. Both were caused by *S. sonnei* (described under Foodborne Outbreaks in the Disease Outbreaks section of this report).

Certain sexual practices – those in which there is direct contact with fecal material – can be a potential source of infection. In 2001, *S. sonnei* (81%) continued to be the predominant serotype among MSM cases. A cluster of PFGE-related *S. sonnei* cases in MSM occurred in March 2001. No links were established among these cases.

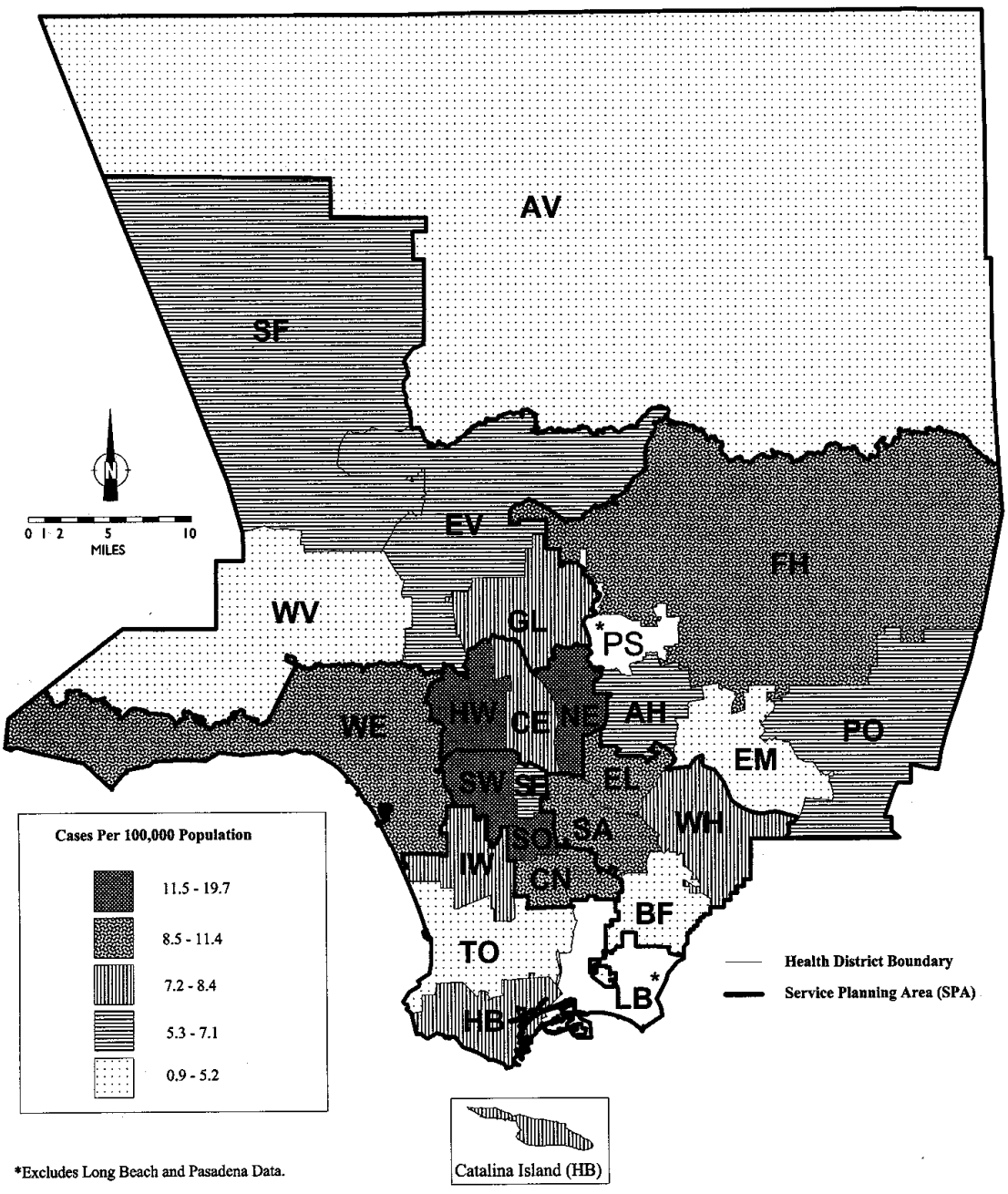
Two percent of LAC case isolates were serotyped as Provisional SH108. This unusual serotype has been associated with travel or having visitors from Mexico.

**Prevention:** Careful handwashing is important in preventing this disease. Children should not be allowed to swim or wade while ill with diarrhea. Swimming or wading in areas not designated for such activities should be avoided, especially in areas where there are no toileting or handwashing facilities. In LAC, cases and symptomatic contacts in sensitive occupations or situations (e.g., food handling, healthcare workers) are routinely removed from work or the situation until they are negative on stool specimens tested in the Public Health Laboratory.

## ADDITIONAL RESOURCES

General information about shigellosis is available at:
www.cdc.gov/ncidod/abmd/diseaseinfo/shigellosis_g.htm

## MAP 8. Shigellosis
## Rates by Health District, Los Angeles County, 2001*




*Excludes Long Beach and Pasadena Data.