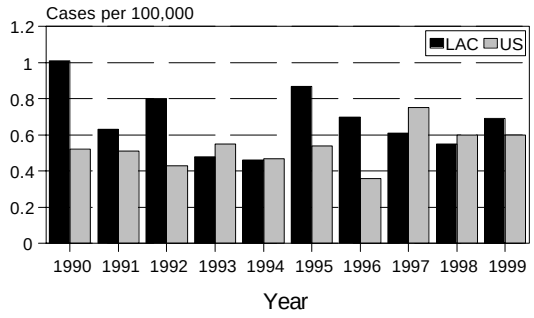
MALARIA

CRUDE DATA	
Number of Cases	63
Annual Incidence[a]	
LA County	0.69
California	0.66
United States	0.61
Age at Onset	
Mean	37
Median	33
Range	5-91 yrs
Case Fatality	
LA County	0.0%
United States	N/A

[a]Cases per 100,000 population.

Figure 57

Malaria
Incidence Rate by Year
LAC and US, 1990-1999



ETIOLOGY

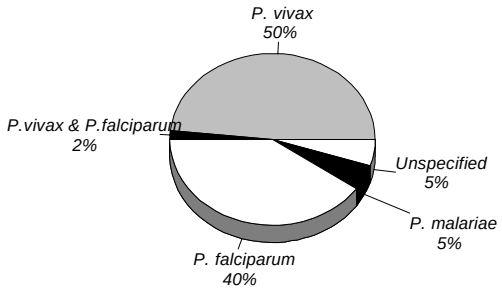
Human malaria is caused by four species of the genus *Plasmodium*: *P. vivax*; *P. falciparum*; *P. malariae*; and *P. ovale*. Malaria is acquired from the bite of an infective female *Anopheles* mosquito.

DISEASE ABSTRACT

The incidence rate of malaria in Los Angeles County (LAC) increased slightly in 1999 (Figure 57). There was an increase in the number of malaria cases overall, from 50 in 1998 to 63 in 1999. Foreign travel by US residents who acquired malaria decreased from 1998 to 1999, dropping from 78% of cases to 62% of cases. However, there was an increase of malaria cases among recent immigrants and visitors to the US. In 1998, 11 of 49 (22%) malaria cases were among people who had recently immigrated or were visiting, compared to 38% in 1999.

Figure 58

Malaria Cases by Species
Los Angeles County, 1999
N=63



STRATIFIED DATA

Species Frequency: The infecting malaria species was identified for 60 cases (95%) (Figure 58). Most cases were infected with *P. vivax* (49%), or *P. falciparum* (40%). There were three cases (5%) of *P. malariae* and no cases of *P. ovale*. There was one case of a dual infection with *P. vivax* and *P. falciparum* (2%). There were three unspecified cases (5%).

Seasonality: Since Malaria is not transmitted locally, peaks and valleys in incidence probably correspond to the seasonal nature of travel. The winter months of December and January and the spring months of March and April saw the most reported cases of malaria. August and November were the months with the fewest cases (Figure 59).

Age: Malaria incidence was greatest among adults aged 15-34 years and least among children aged 0-4 (Figure 60). Incidence in individuals aged 15-34 and 45-54 was twice the incidence among the same age group in 1998. There was a substantial drop in incidence in adults aged 55-64 compared to 1998. The reasons for these changes may be affected by the age of travelers.

Sex: The rate ratio of male-to-female cases was 2.5:1.

Race/Ethnicity: Malaria incidence (both for total cases and LAC residents) was highest among African nationals/Black Americans and Asians (Figure 61). Most cases with exposure in Latin America were immigrants and individuals visiting the US, or whose residency status was unknown.

Location: The West Valley district had the most cases (11) of malaria countywide; Inglewood and Southwest both had eight cases and the West district had seven cases.

Figure 59

Malaria
Cases by Month of Onset
Los Angeles County, 1999

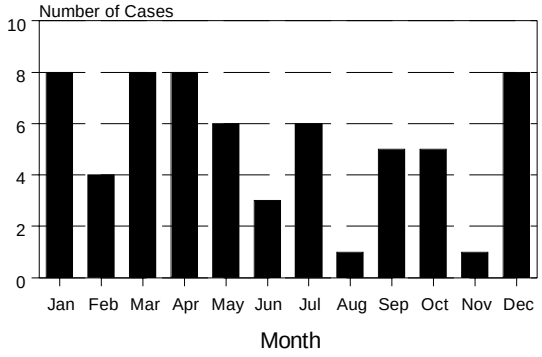


Figure 60

Malaria
Incidence Rates by Age Group
Los Angeles County, 1998-1999

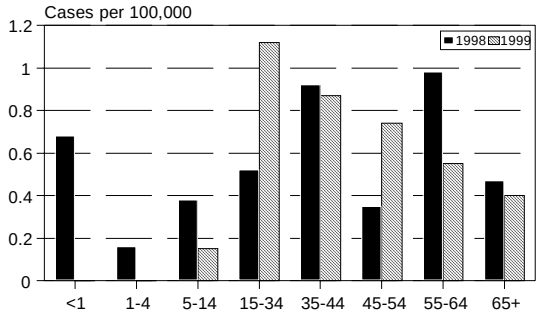
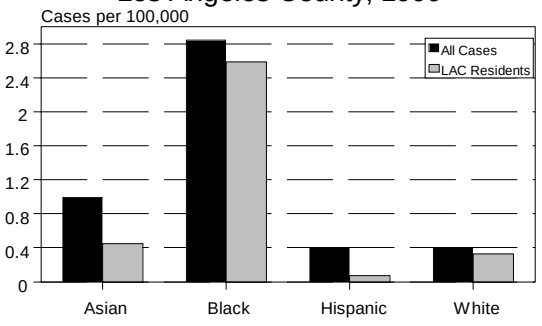


Figure 61

Malaria
Incidence Rates by Race/Ethnicity*
and Residency Status
Los Angeles County, 1999



*One case of unknown race not included

COMMENTS

Transmission of malaria locally, excluding congenital transmission and an occupationally acquired case, has not been documented recently.

Incidence rates that include cases among immigrants and foreign nationals overestimate the risk to local residents. Residency and/or reason for travel were available for 58 of 63 cases of malaria (Table 5). Sixty-two percent (39/63) of malaria cases were LAC residents who traveled abroad either for work or vacation.

Thirty-eight percent (24/63) were recent immigrants, individuals visiting the US, or those whose residency status was unknown.

Among malaria cases in US residents traveling abroad, Africa was the most common region visited and Nigeria the most frequent destination. Forty percent (25/63) of all reported malaria cases were from individuals who had traveled to or were coming from African countries. Since the early '90's blacks/African nationals have been the ethnic group with the highest incidence of malaria in LAC. Before that, immigrants/refugees from Central America and Southeast Asia made up the majority of all malaria cases seen in LAC. For cases among recent immigrants, visitors to the US, or whose residency status was unknown, Central America and Mexico were the most common regions where malaria was acquired. Fifty-eight percent of cases (14/24) who were recent immigrants, visitors to the US, or whose residency status was unknown were from Central America and Mexico.

Antimalarial prophylaxis history was available for 38 of the 39 US resident cases (Table 6). Fifteen individuals (39%) took prophylaxis, up 24% the previous year. A higher percentage of work-related cases took prophylaxis compared to tourist cases (55 vs. 39%). However, appropriateness of prophylaxis and adherence to regime was unknown.

A high percentage of US residents and recent immigrants had a previous history of malaria (Table 6). This is due in part to the fact that many were naturalized citizens and reporting that they previously had malaria in their homeland, before immigrating. A higher percentage of people traveling on business compared to vacationers had a previous history of malaria (67 vs. 39%).

Table 5. Malaria Cases by Species, Residency Status and Travel Exposure, Los Angeles County, 1999

Foreign Travel by US Residents		Recent Immigration , Residency Status Unknown, or Visit to US by Non-US Residents	
Region/Country	**Number of Cases (Species)[a]**	**Country**	**Number of Cases (Species)[a]**
Africa			
Cameroon	2 (2F)	Cameroon	1 (1N)
Ethiopia	1 (1V)	W. Africa	1 (1F)
Ghana	2 (1F,1N)		
Guinea	1 (1F)		
Ivory Coast	1 (1F)		
Kenya	2 (1F, 1M[d])		
Nigeria	12(10F,1V,1N)		
Togo	1(1F)		
Uganda	1(1F)		
Latin America			
Belize	1(1V)	El Salvador	4 (4V)[b]
Honduras	3(2V, 1F)	Guatemala	3 (2V, 1V&F)
		Honduras	4 (4V)[b]
		Mexico	3 (3V)[c]
Asia/Oceania			
India	4 (3V, 1M)	India	5 (4V,1M)
Indonesia	3 (3V)	Sri Lanka	1 (1F)
New Guinea	2 (2V)		
Philippines	1 (1F)		
Thailand	1 (1F)		
Caribbean			
Haiti	1 (1F)		
Europe			
		Armenia	1 (1V)
Unknown			**1 (1F)[b]**
Total	**39**		**24**

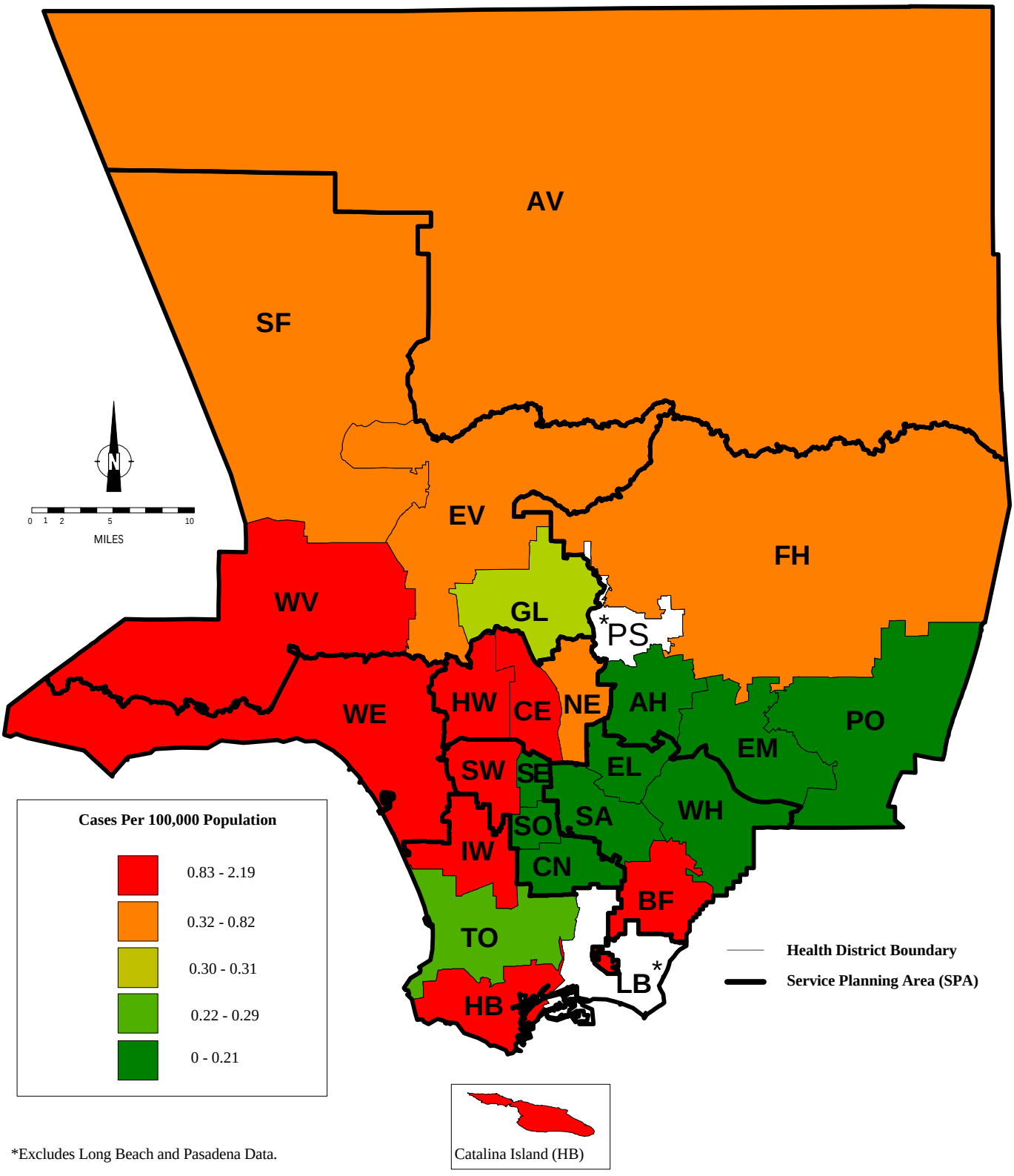
a F = *P. falciparum*, M = *P. malariae*, N = not determined, V = *P. vivax*
b One case residency status unknown
c All cases residency status unknown
d Case also traveled through South America.

Table 6. Malaria Cases by Residency Status, Reason for Travel, Malaria Prophylaxis, and Previous Malaria History Los Angeles County, 1999

	US Residents			Non-US Residents
	Total US Residents	**Travel for Work**	**Travel for Pleasure**	**Recent Immigrant or Foreign Visitor to US**
Prophylaxis (%)	15/38(39)	5/9(55)	10/28(36)	0*
Previous Malaria (%)	17/39(44)	6/9(67)	11/28(39)	7/18(39)

*Natives of malaria-endemic countries generally do not take pre-exposure prophylaxis.

MAP 6. Malaria
Rates by Health District, Los Angeles County, 1999*



*Excludes Long Beach and Pasadena Data.