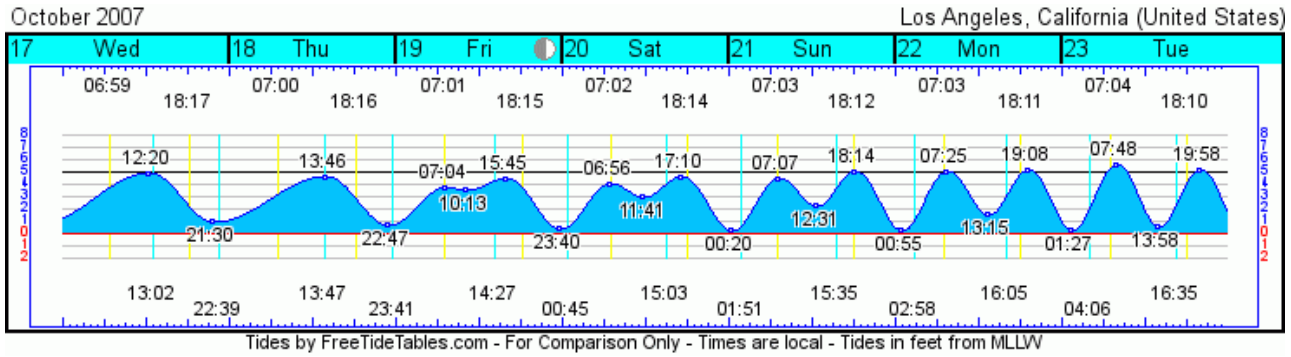
State Water Resources Control Board
Beach Water Quality Workgroup
May 14, 2008

The Human Tide: Beach Attendance and Bathing Rates for Southern California Beaches



Presented by:
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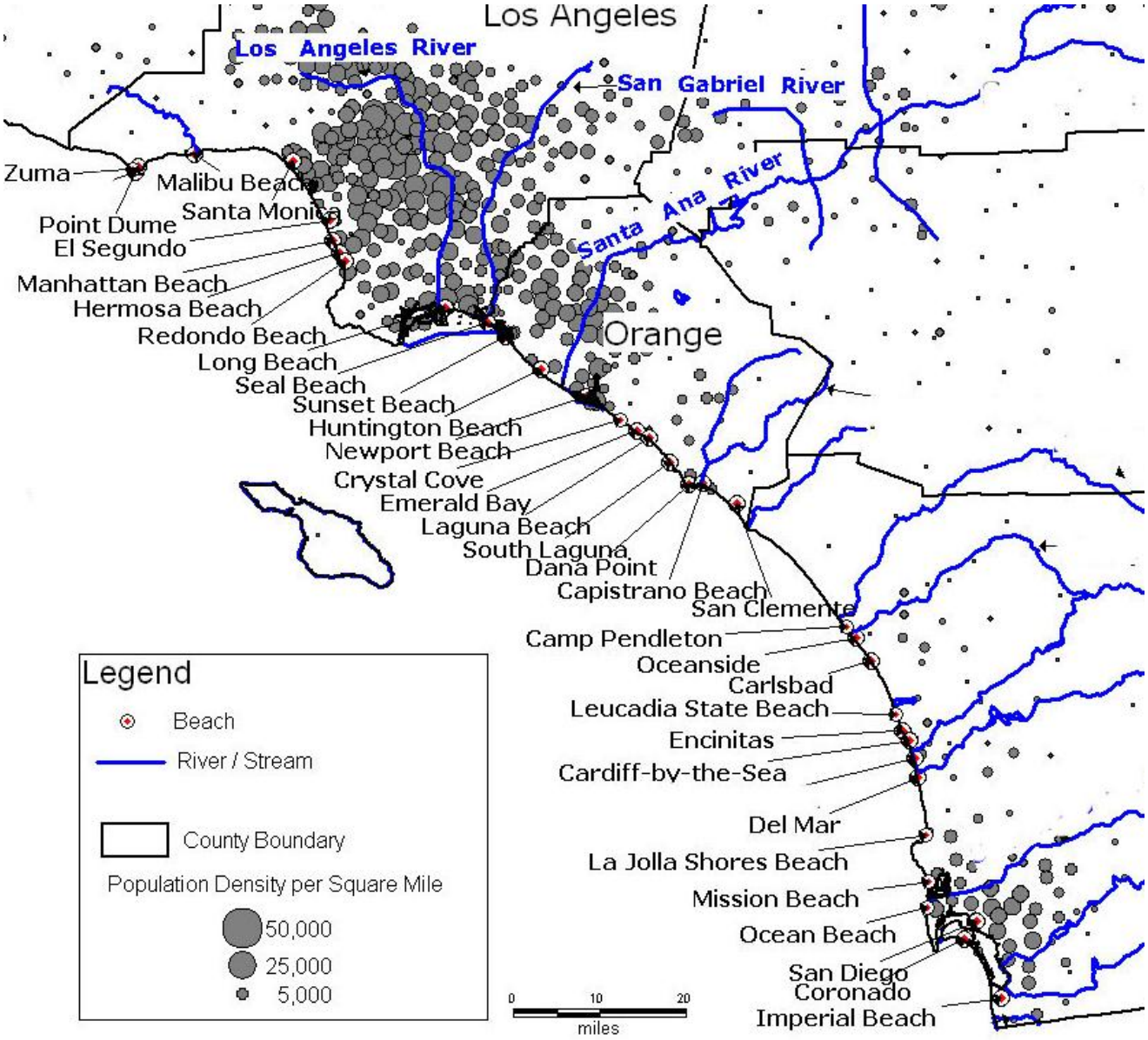
Coastal Water Research Group

Dwight RH, Brinks MV, SharavanaKumar G, Semenza JC, Beach attendance and bathing rates for Southern California Beaches, *Ocean and Coastal Management*, 2007, 50:847-858

Huntington State Beach vs. Crystal Cove State Park

1: Accessibility
2: Amenities

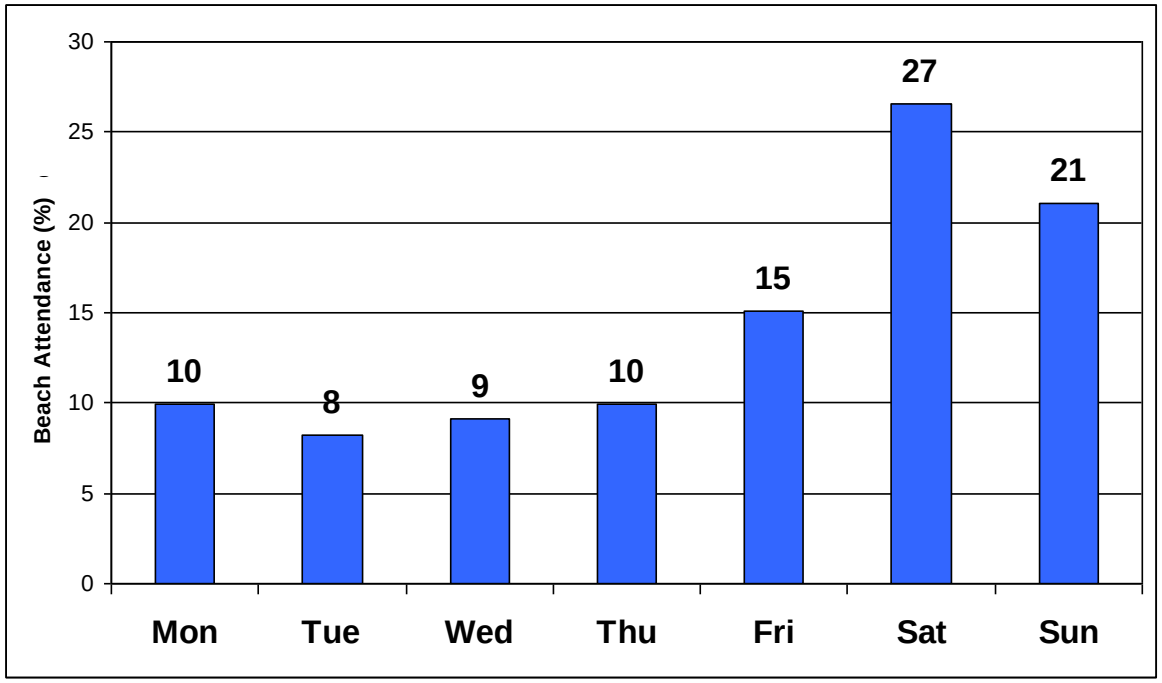

Los Angeles
Los Angeles River
San Gabriel River
Santa Ana River
Zuma
Malibu Beach
Santa Monica
Point Dume
El Segundo
Manhattan Beach
Hermosa Beach
Redondo Beach
Long Beach
Seal Beach
Orange
Sunset Beach
Huntington Beach
Newport Beach
Crystal Cove
Emerald Bay
Laguna Beach
South Laguna
Dana Point
Capistrano Beach
San Clemente
Camp Pendleton
Oceanside
Carlsbad
Leucadia State Beach
Encinitas
Cardiff-by-the-Sea
Del Mar
La Jolla Shores Beach
Mission Beach
Ocean Beach
San Diego
Coronado
Imperial Beach
Legend
Beach
River / Stream
County Boundary
Population Density per Square Mile
50,000
25,000
5,000
0
10
20
miles

- Beach Attendance Data
  - ***How much data was collected?***
    - 5 years of daily attendance data was collected from 75 beaches in Southern California (2000-2004).
  - ***Who collected the data?***
    - Lifeguards (76%); Parks Departments (16%); Environmental Health Departments (8%)
  - ***How was the data collected?***
    - Direct observations (73%); Parking, hotel, camping receipts (19%); Electronic counters (8%)
- Beach Bathing Event Data
  - ***What's a "bather"?***
    - Bather defined as an individual actively engaged in recreational water-contact (swimming & surfing).
  - ***How much data was collected?***
    - 3 years of daily data collected at 2 beaches.
      - Del Mar beach, San Diego
      - Oceanside beach, San Diego
  - ***Who and how was the data collected?***
    - Data was collected by lifeguards through direct observation.

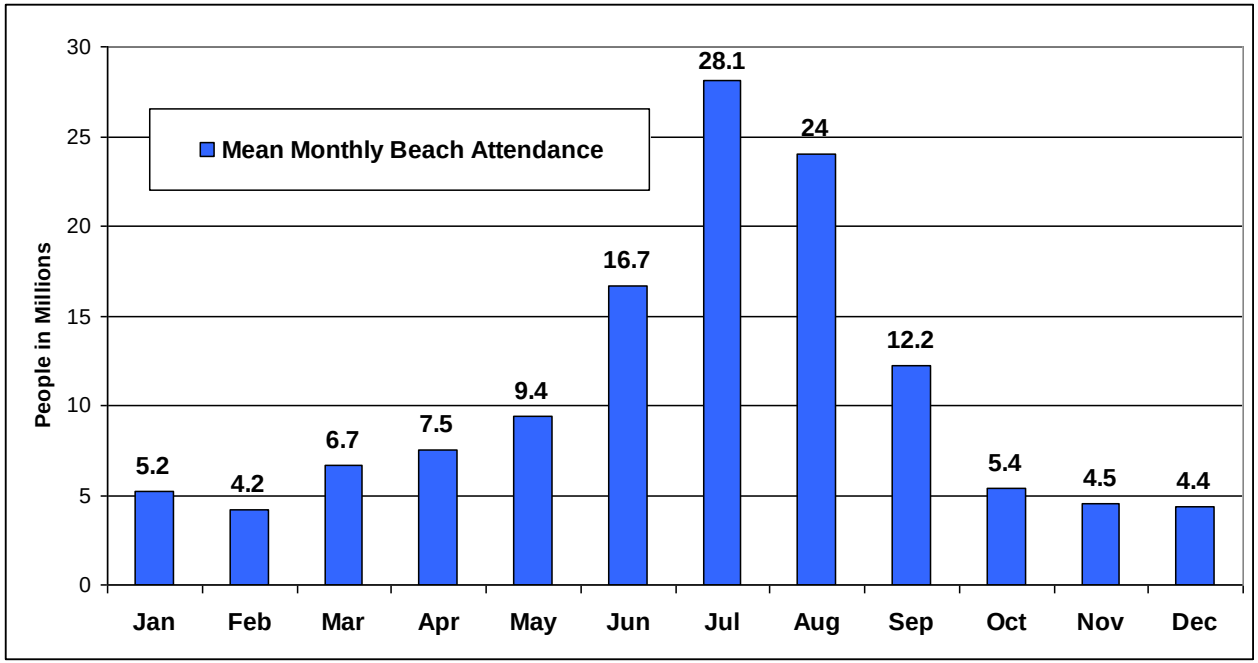
Analysis

- Daily Attendance data was analyzed over time and by location.
- Daily (Attendance) x (Monthly Bathing Rates) = Bathing Events / beach/ day.

- Beach Attendance by Day of the Week
  - 48% of all beach visits occur on weekends



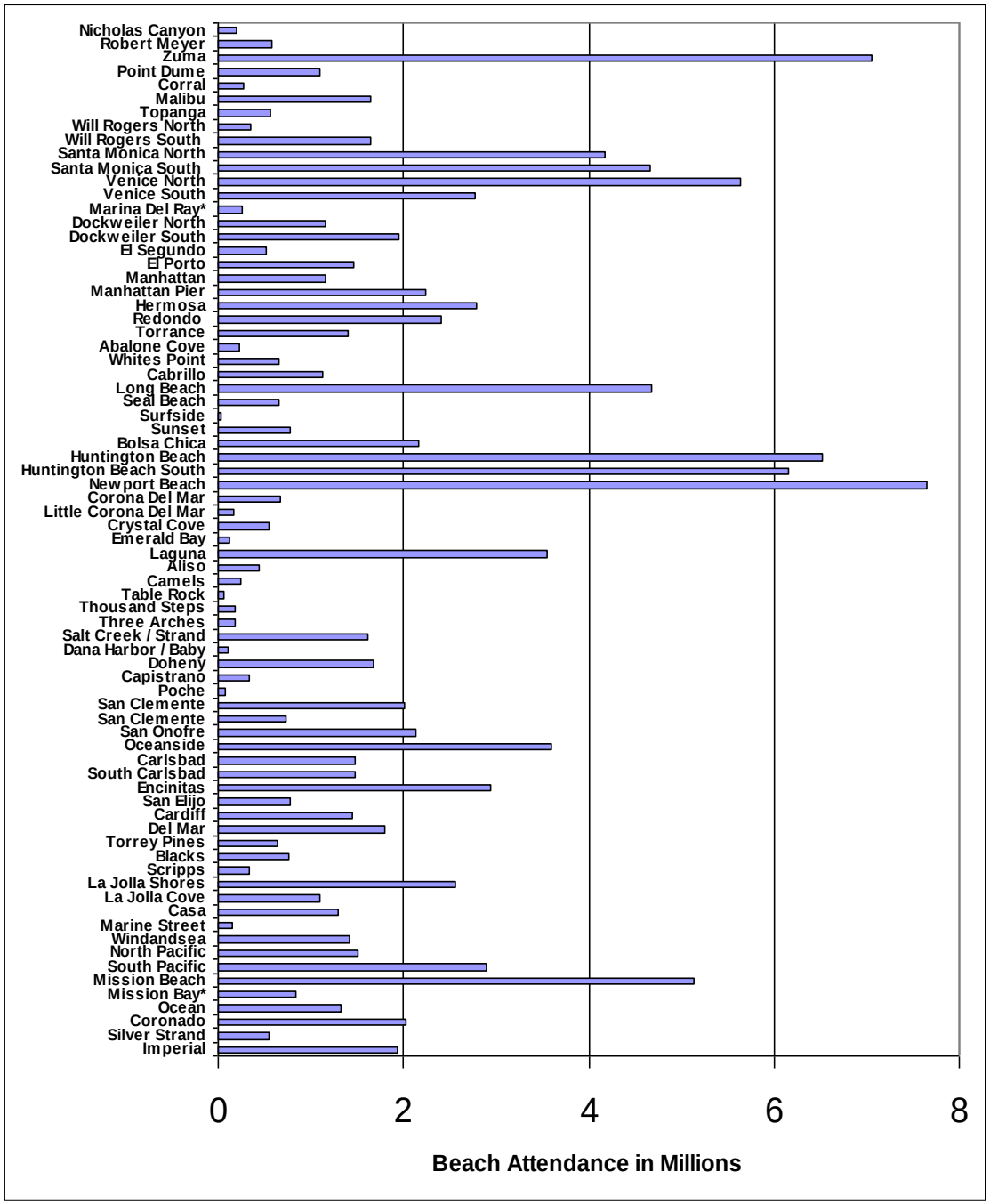
- Beach Attendance by Month
  - 53% of visits occur in the summer months

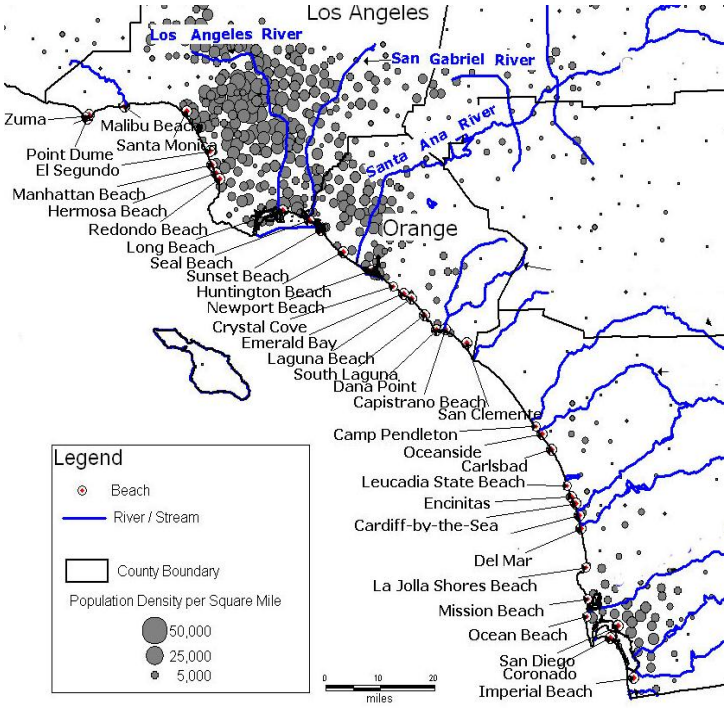


Beach Attendance Over 5 Years

- On average, over 129 million visitations occur at Southern California beaches each year.
  - NOAA (2001) = 151 million
  - US Lifesaving Association (2005) = 123 million
  - Dr. Kildow (2005) = 100 million

- Over 5 years there was a slight 5% increase in annual beach attendance.
  - Could be population increase or standard deviation.

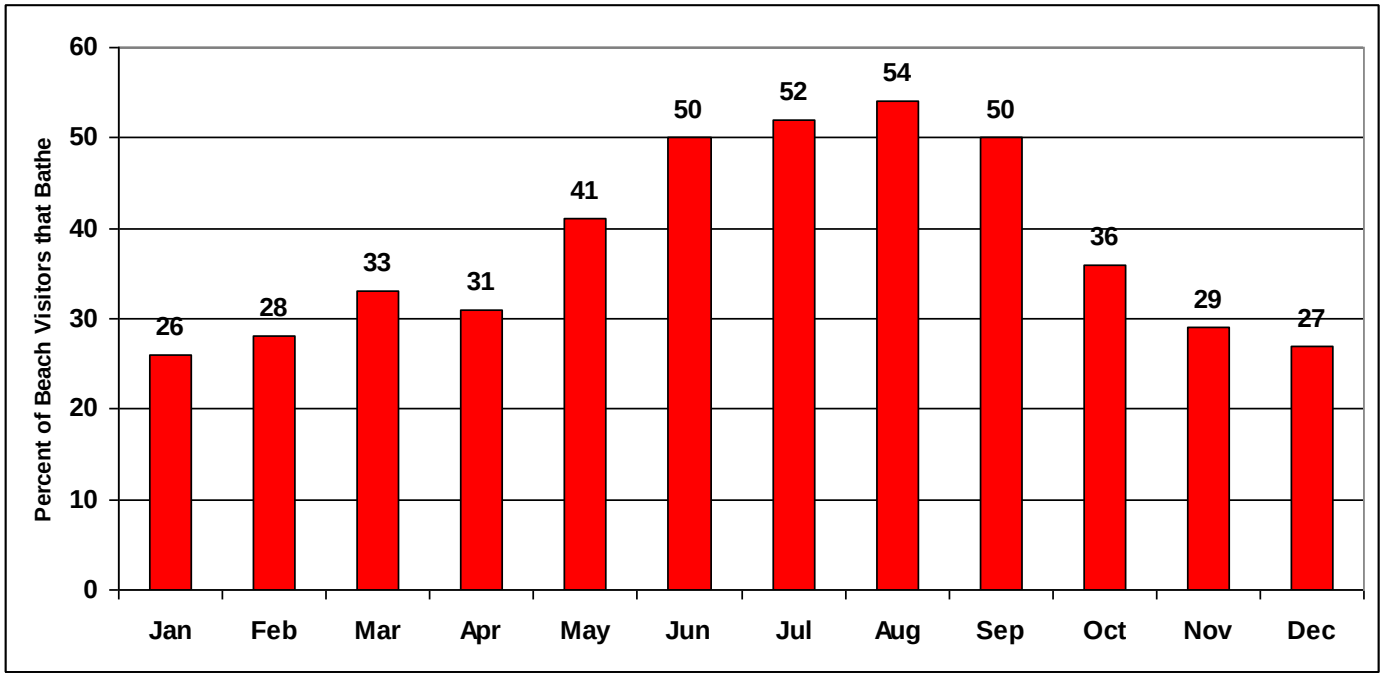




- 33% of visits at 6 of 75 beaches
- 54% of visits at 15 of 75 beaches
- Los Angeles (> 52 mill./year)
  - Zuma = 7 mill.
  - Santa Monica = 8.8 mill.
  - Venice = 8.4 mill.
- Orange County (> 36 mill./year)
  - Huntington = 12.6 mill.
  - Newport = 8.3 mill.
- San Diego (> 39 mill./year)
  - Mission = 5.9 mill.
  - Pacific = 4.4 mill.

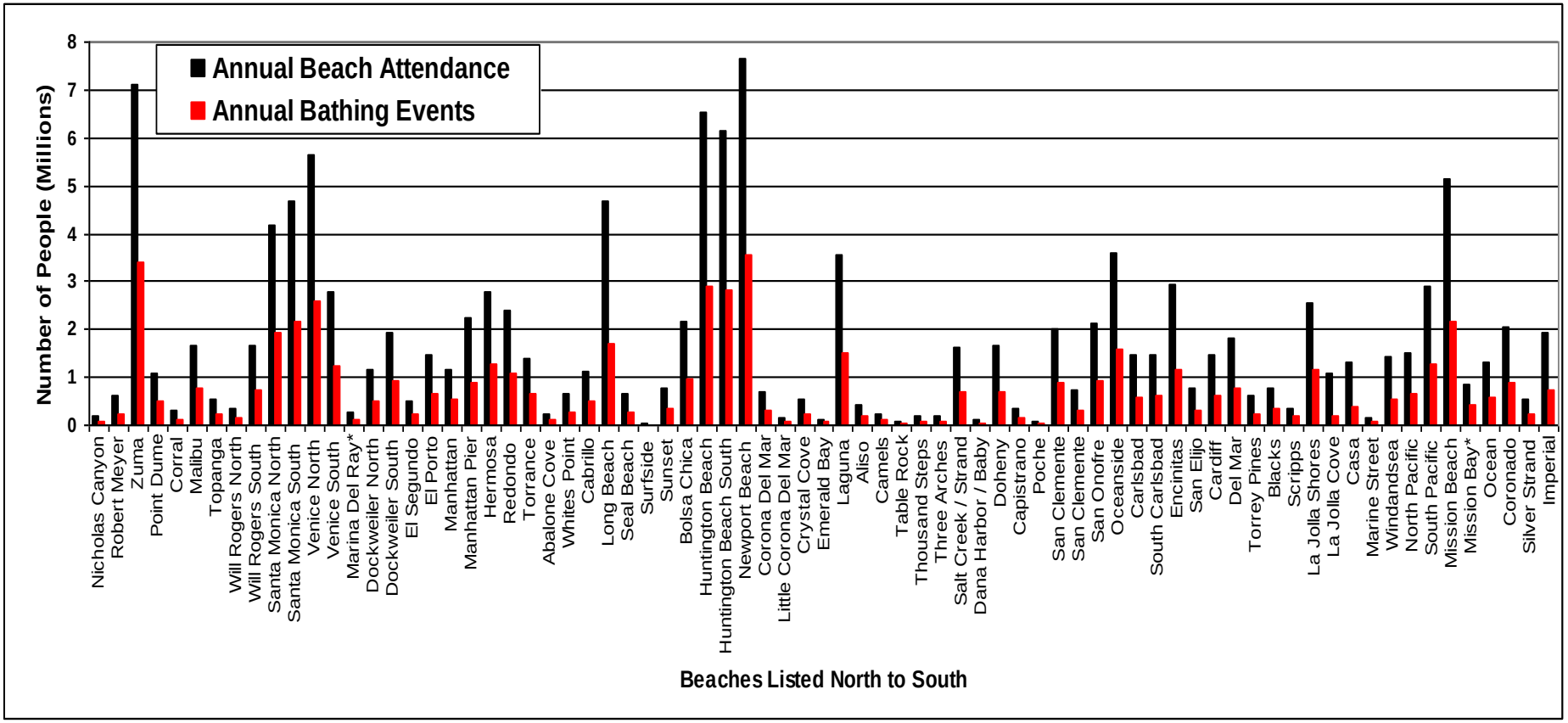
Beach Bathing Rates by Month

- Annual average = 45% of beach visitors actively engage in recreational water contact



Annual Bathing Events per Beach

- Daily (Attendance) x (Monthly Bathing Rate) = Bathing Events /beach/day.
- Over 56 million bathing events per year in Southern California coastal waters.



Data Validity

- *Attendance Data*
  - Dr. Hanneman (1997) reported that lifeguard estimates were within 10% of actual values.
  - Master thesis (JA Ryan) reported lifeguard estimates to be accurate.
  - Personal communications with the lifeguards confirm the integrity of the process and the data collected.
  - Attendance data is correlated between beaches.
  - Attendance data is correlated over time.

- *Bathing Rate Data*
  - Our annual estimate = 45% Range = (26% - 54%)
  - NOAA (2001) annual average = 47%
  - Dr. Hanneman (2004) reported range = (10% - 43%).
  - Bathing data is correlated between the two beaches.
  - Bathing data is correlated over time.

Discussion

- *What do the results tell us?*
  - The results provide a better understanding of how Southern California's beaches are being utilized by the public.
    - Distinct and consistent temporal and geographic patterns of beach usage are evident: *the ebb and flow of the human tide*.
  - The results answer these questions:
    - *How many beach visits occur in Southern California?*
    - *Which beaches do people go to?*
    - *When do people go to the beach?*
    - *How many bathing events occur in the coastal waters?*
    - *Where do people go in the water?*
    - *When do people go in the water?*
- *Who are these People?*
  - *88% of summer beach goers are California residents (Haile – 1996).*
  - *78% of summer beach goers are with their families.*
- *Who can use these results?*
  - Beach managers (cities, lifeguards, police) who decide on resource allocations and who need to know the demands on infrastructure
  - Businesses (tourism, advertisers, etc) which like to know who, when and where
  - Health officials who are charged with protecting the public from exposure to coastal water contamination.

We gratefully acknowledge the assistance of all the Lifeguard Agencies,
Parks Departments and Environmental Health Departments.