

Heat-related illness and deaths in Riverside County.

Key Findings

- An average of 42 heat-related hospitalizations occur annually in Riverside County.
- Deaths with heat-related causes listed as the primary cause are rare in Riverside County.

Introduction

During the summer months, many areas in Riverside County experience extreme heat conditions. In response, warnings are targeted at those at highest risk and those engaged in high-risk activities such as strenuous physical labor or sports when not properly acclimated to the ambient temperatures. The elderly, young children and people with chronic health problems or disabilities are populations most vulnerable to heat-related illness and death.

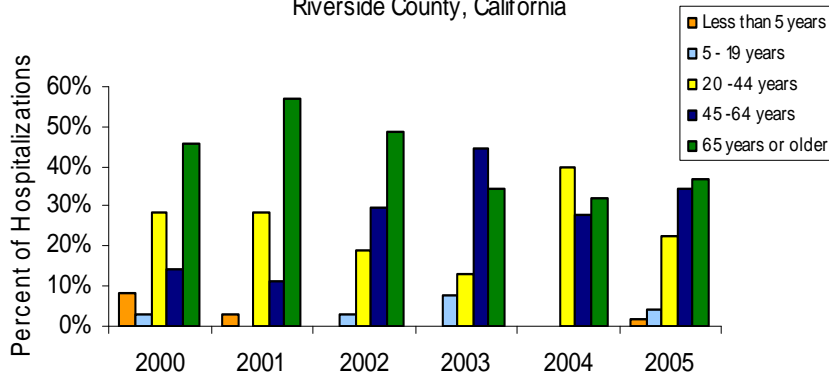
Background

Temperatures within Riverside County are typically greater than 100 degrees Fahrenheit during the summer months, prompting concern for those at-risk or those living without air conditioners or other means of escaping the extreme heat. In response, cooling centers have been made available to seniors as well as those living in areas susceptible to sustained extreme heat conditions. Health alerts are always sent to the media during these periods to alert the public and provide recommendations for avoiding heat-related injury.

Incidence of heat-related hospitalizations

Exhibit 1

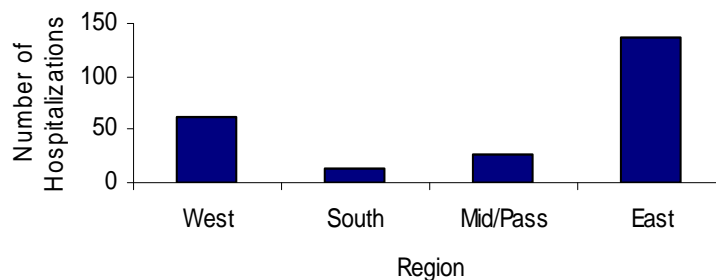
Annual Heat-related Hospitalizations by Age Group
Riverside County, California



In Riverside County, there were 249 total heat-related hospitalizations reported from 2000 to 2005, with an annual average of 42 hospitalizations. A large percentage of these hospitalizations were among adults aged 45 years or older, one of the populations most vulnerable to extreme heat.

Exhibit 2

Cumulative Heat-related Hospitalizations by Region,
Riverside County, California, 2000 - 2005



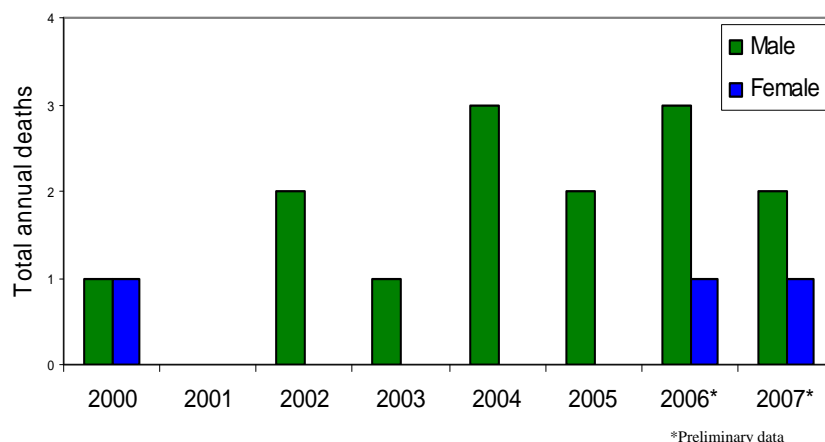
The desert areas experienced the greatest number of extreme high temperature days annually. Therefore, as expected, the majority of reported heat-related hospitalizations were from the East or Desert Region of Riverside County.

Exhibit 3

Heat-related Mortality by Sex Riverside County, California

Heat-related mortality

According to the Death Statistical Master Files which only supply primary cause of death, very few heat-related deaths have been reported in Riverside County from 2000 to 2007. No heat-related deaths were reported in 2001. The majority of reported deaths were residents of the East or Desert Region of the County. All of the reported deaths occurred in July and August, the months of highest temperatures, with the exception of 2 deaths that occurred in May and June 2007. Almost 50% of deaths occurred in males aged 40-49.



Complete reporting of heat-related mortality: Opportunities missed.

Recent reports of mortality related to the extreme heat wave California experienced in 2006 have questioned the adequacy of reporting. It has been suggested that extreme heat exposure, even as a contributing cause of death, is being missed in many cases and that serious underreporting has likely occurred. Preliminary examination of the Multiple Causes of Death File, which identifies underlying causes of death, for 2002 found an additional 15 cases where extreme heat was reported as an underlying cause of death. This would increase the number of deaths from 2 to 17 for 2002, leading to the belief that heat-related mortality in Riverside County may be underreported.

Future directions

To further investigate potential missed heat-related events, we plan to examine the Multiple Causes of Death data for 2003 through subsequent years specifically looking for extreme heat exposure as an underlying cause of death. Hospital discharge data will also be examined for underlying heat-related causes of hospitalization. These efforts will provide a more accurate accounting of heat-related morbidity and mortality in Riverside County.

From the desk of David Herfindahl, MD—Deputy Public Health Officer

Heat-related deaths in California are underreported. This issue is becoming a hot topic and we should not be surprised to see an increase in the number of reported deaths. The data shows that 10% of heat-related deaths are due to exertional heat stroke and tend to occur among younger (under 50 years old), healthy males performing strenuous activity and not hydrating adequately. The other 90% of people who died in the 2006 heat wave lived in socioeconomically depressed areas (zip codes of residence where more than 50% of the people live under the Federal Poverty threshold). According to the California Energy Commission, 90% of people dying due to heat issues in 2006 lived in dwellings with air conditioning that was not utilized. Possibly there was a reluctance to use air conditioning due to the high cost of electricity, the units were not working, or people did not recognize how hot it was. All of these possibilities need investigation. It is clear to me that we need to educate families and communities. Fans don't work! Cooling centers do. The high risk population — poor, elderly people living alone— need frequent contact during a heat event and should be transported to a cooling center before they become ill.

Reference

Roger Trent, *Review of July 2006 Heat Wave Related Fatalities in California*. June 2007, California DHS.

Suggested Citation

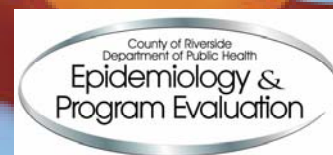
Mockus DS. *Heat-related illness and death in Riverside County*. Riverside: Riverside County Department of Public Health, Epidemiology and Program Evaluation, 2007.

Contributing Epidemiology and Program Evaluation Staff:

Danyte Mockus, MPH, PhD Candidate; Kevin Meconis, MPH; Marshare Penny, MPH; Wendy Betancourt, MPH; Phill Coon, MHSA; Rick Lopez, BS.

Acknowledgments:

Sarah Mack, MPH and David Herfindahl, MD.



4065 County Circle Drive
Riverside, CA 92503
Phone: 951-358-5557
Fax: 951-358-5348
www.rivcohealthdata.org