Southern Nevada Health District

Epidemiology Newsletter

Disease Surveillance and Control, SNHD

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The Intersection of Extreme Heat and Overdose Mortality in Clark County, NV

A Dual Crisis Emerges in Southern Nevada

New research highlights a growing public health concern in Clark County, where rising temperatures and increasing drug overdose deaths are intersecting in dangerous ways.

Rising Heat

Analysis of satellite data from 1984 to 2024 shows that annual average land surface temperatures in Las Vegas have increased by 7.5°F over the past four decades ($p=0.048$), reflecting a significant long-term warming trend. This analysis was conducted using Landsat satellite data processed through Google Earth Engine, enabling consistent, long-term measurement of temperature changes across the urban landscape. The results point to a clear and sustained rise in environmental heat exposure in Southern Nevada.

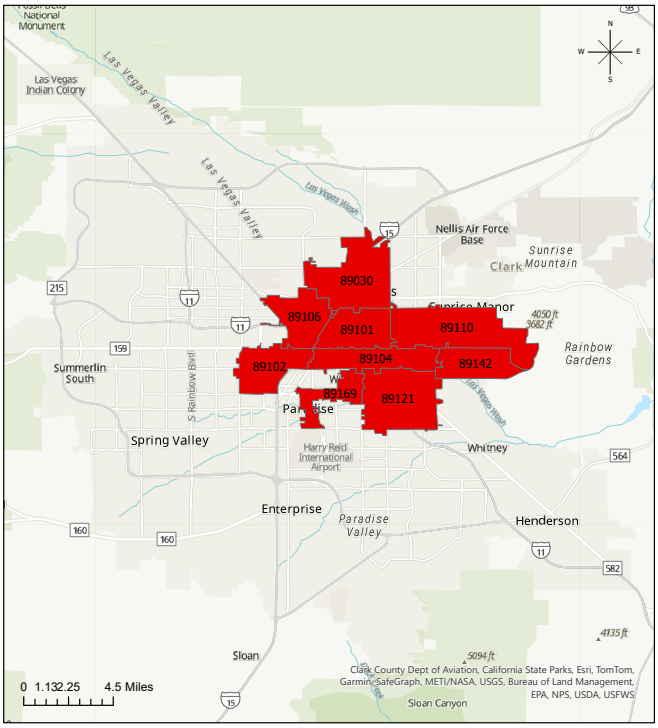
Escalating Overdose Deaths

Using death certificate data from the Nevada Electronic Death Registry System (EDRS), Southern Nevada Health District (SNHD) epidemiologists found that the age-adjusted overdose death rate (all substances) rose from 22.2 per 100,000 in 2011 to 32.0 in 2024. This increase was primarily driven by a 12-fold surge in synthetic opioid deaths and a 5-fold increase in psychostimulant-related deaths, including those involving methamphetamine.

Hot Spots Identified

To better understand the geographic overlap of these two crises, a hot spot analysis was conducted using the Getis-Ord Gi* statistic in ArcGIS Pro. This ZIP code level analysis identified nine ZIP codes with statistically significant clustering ($p<0.05$) of both heat vulnerability and overdose mortality. These high-risk areas, primarily concentrated in central and eastern Las Vegas, include 89030, 89101, 89102, 89104, 89106, 89110, 89121, 89142, and 89169, and represent communities most in need of targeted interventions. Figure 1 illustrates these findings.

Figure 1. Overlapping Hot Spots of Fatal Drug Overdose and Heat Vulnerability (Getis-Ord Gi, 99% Confidence), 2024*



Seasonal & Daily Risk

Further statistical analysis showed that overdose deaths peaked during the summer months (June–August), particularly for methamphetamine (χ^2, $p<.0001$) and all opioids combined (χ^2, $p=0.0056$), based on Chi-Square tests conducted on death certificate data from 2018 to 2024. These findings highlight a strong seasonal pattern in overdose mortality. Additionally, a Poisson regression model incorporating daily temperature data revealed that for each 1°F increase in daily maximum temperature, there is a corresponding 0.54% increase in the risk of overdose death (all substances) ($p<.0001$), underscoring the direct, day-to-day influence of extreme heat on overdose risk.

Why It Matters

These findings underscore the urgent need to integrate extreme heat into overdose prevention strategies. Public health efforts must address this dual threat through increased heat safety resources, improved surveillance, and coordinated emergency response planning. Public health needs information to make informed decision making when responding to public health threats and emergencies we are likely to encounter in Southern Nevada.

Next Steps

SNHD and partners will be exploring targeted outreach in identified hot spot ZIP codes, with a focus on increased naloxone distribution and heat-health education during high-risk summer months.

For more information or collaboration opportunities, contact the Office of Epidemiology at Delise@SNHD.org.