

Tricks of the Shade:

Heat Related Coping Strategies of Urban Homeless Persons in Phoenix, Arizona

by

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## ABSTRACT

This research is about urban homeless people's vulnerability to extreme temperatures and the related socio-spatial dynamics. Specifically, this research investigates heat related coping strategies homeless people use and how the urban environment setting impacts those coping strategies. Semi-structured interviews were conducted with homeless people in Phoenix, Arizona during the summer of 2010. The findings demonstrate that homeless people have a variety of coping strategies and the urban environment setting unjustly impacts those strategies. The results suggest a need for further studies that focus spatial environmental effects on homeless people and other vulnerable populations.

## DEDICATION

This work is dedicated to my friends and family.

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## INTRODUCTION

Homeless people living in a climate defined by high temperatures are vulnerable to heat-related morbidity and mortality. High temperatures are common during summertime in Phoenix, Arizona, and the lived experience of homeless people is an important topic. The relationship between human health and extreme temperatures is a complex medical, social, and environmental issue. (McGeehin & Mirabella, 2001) Snow and Anderson's research suggests the general behavior of homeless people can be responses to environment, economic, and prevailing social norms and their behaviors need to be examined from the perspective of their adaptations to the environment (Snow & Anderson, 1993) Coping strategies homeless people use on one day may not work the next, consequently; they are creatures in a constant flux dealing with extreme temperatures and trying to figure out their next move. (Snow & Anderson, 1993)

This research is about socio-environmental problems homeless person struggle with in Phoenix, Arizona. I investigated problems homeless people face from excessive temperatures during Phoenix summer, their heat-related coping strategies, and the how the urban setting impacts them. During the Phoenix summer, homeless people are exposed to extreme temperatures above 110 (F) according to the National Weather Service. Homeless people have limited protection from excessive temperatures and few resources to help them cope. The Maricopa County Department of Public Health advises Phoenix residents to drink extra water and get to an air conditioned space during extreme temperature days. Such heat-related coping mechanisms are taken for granted by non-homeless people. Homeless people are an isolated and marginalized segment of the population in the United States who constantly struggle for basic survival. Their heat-related coping strategies are limited in part because they occupy the bottom rung of America's socioeconomic ladder. They don't own any private property with air-conditioning. Homeless people also lack personal property



such as water, sunscreen lotion, or clothing to cope with extreme temperatures. The urban setting also encumbers homeless people's heat-related coping mechanisms. Homeless people must confront harsh ordinances, space restrictions and hostile or indifferent law enforcement. They also grapple with diminished rights to public property where they can be denied access to publicly-owned air-conditioned spaces. They also must endure land-use policies that attempt to relocate them to undesirable areas.

In light of these problems, I formulated the following research questions 1) What are the heat-related problems that homeless people face during the Phoenix summer? 2) What heat-related coping strategies do people use? 3) How does the urban environment limit homeless people's heat-related coping strategies through laws that reduce available public space and proscribe life sustaining conduct? This writing presents answers to these questions. I begin by showing the human health problems associated with excessive temperatures through vulnerability theory. Next, I provide background literature on illness and death cause by extreme temperatures and the "new urban environment." In the following section, I begin to outline how the "new urban environment" causes homeless people to lose public space to live and how laws hamper their heat-related coping abilities. I show these examples of the "new urban environment" in Phoenix, Arizona along with a brief snapshot of homelessness in Phoenix. Then, I explain my methodology, present and discuss my findings. I conclude this writing with suggestions for future research and policy recommendations for Phoenix, Arizona.

### **Vulnerability Theory**

Extreme temperatures are a significant human health problem that poses risks for heat mortality and morbidity. This section utilizes vulnerability theory to outline the problems that homeless people face from excessive temperatures. The heat-related vulnerability of homeless people is defined by their risks to extreme temperatures and

limited coping strategies due to the urban environment and their socio-economic status. Kelly and Adger (2000) describe vulnerability as having two parts: risk and the capacity to cope. Risk is determined by exposure to hazards. A person's capacity to cope is determined by their socio-economic status. Kelly and Adger claim that vulnerability of people can be increased if recovery from a hazard is slow. The concept of vulnerability is better understood within "architecture of entitlements." The "architecture of entitlements" is the socioeconomic status and institutional factors that influence degrees of vulnerability (Kelly & Adger, 2000). Cutter (1996) echoes these statements, by arguing that "social vulnerability is partially the product of social inequalities;" that the factors that shape a social group's susceptibility to harm correspond to their ability to respond. Romero-Lankao (2008) demonstrates that higher income groups have higher adaptive qualities and means to migrate from places of risk. Cutter and Boruff (2003) also discuss vulnerability as a hazard of place, which is conceived as both a biophysical risk as well as a social response, within a specific area. Consequently, municipal governments, public health agencies, quality of housing, transportation options, and other institutional barriers affect vulnerability.

Vulnerability theory applies to homeless people because the homeless population conforms to factors that make them vulnerable to heat-related morbidity and mortality. Homeless people are most at risk of heat mortality and morbidity because there are most exposed to extreme temperatures while their coping strategies are diminished. Previous research on extreme temperatures has shown that human vulnerability to heat-related mortality is amplified by being elderly, living in urban areas, having diabetes, being less educated, social isolated, lacking access to air-conditioned spaces (O'Neill & Ebi, 2009). Johnson and Wilson's (2009) research demonstrates that poverty combined with low educational attainment correlates with death more than any other vulnerability measure. They also suggest that people with less than a high school education, belonging to a minority group and the very young and very old are vulnerable to heat mortality. (Johnson & Wilson,

2009) The populations most at risk from extreme temperatures are those living in affected areas that are already sick, elderly, and homeless. (Romero-Lankao, 2008) They lack the capacity to avoid the direct or indirect impacts by having such means as good quality houses and strong social networks to rely on. (Romero-Lankao, 2008) The vulnerability of homeless people to excessive temperatures is established by their risk for exposure and limited ability to cope.

### **Heat Risks**

All persons are vulnerable to heat-related morbidity and mortality. The Spatial Hazard Event and Loss Database (SHELDUS) lists county-level casualty information for 18 natural hazards types during the years 1960-2000 in the United States. According to the database, heat and drought deaths rank highest in natural hazard types such as floods, thunderstorms, and hurricanes at 19.6%. Severe summer weather deaths rank second highest at 18.8% and winter weather deaths third highest at 18.1% (Borden & Cutter, 2008)

The risk of heat-related morbidity and mortality for a population is affected by local demographics, socio economic class, their underlying diseases, weather variability, physiologic acclimatization, and local adaptations. (Knowlton et al., 2009) Johnson and Wilson (2009) found that urban poverty is a significant risk factor in heat-related death and urban poverty needs to be a factor in ascertaining the degree of vulnerability to heat. Heat morbidity and mortality is increased within specific social and economic contexts. Factors that influence this increase are the quality of housing, amount of vegetation in the urban areas, availability of social programs and access to health care. The risk of heat mortality is increased for those without access to air-conditioning or without access to shaded areas. (O'Neill & Ebi, 2009) Heat morbidity and heat mortality are also influenced by individual risk factors such as the presence of diabetes, emphysema, and nervous system disorders. (O'Neill & Ebi, 2009)

Homeless people's risk of heat morbidity is increased by the substances used by homeless, chemical dependence, and pre-existing medical conditions. Many are dealing with alcoholism, mental illness, and use LSD, amphetamines or antipsychotic drugs or tricyclic antidepressants. (Sebastian, 1985) Homeless people may have medical conditions such as cardiovascular disease that increases their risk of heat morbidity and mortality. (Ruddell et al., 2010) Homeless people typically don't have access to health care and may have pre-existing medical conditions they are unaware of or unable to get treatment for or may take medications that increase their risk to heat-related illness. Lastly, homeless people over the age of 65 are at even greater risk because they don't have efficient body thermoregulation typical for those of increased age (Johnson & Wilson, 2009)

Homeless people's risk to heat-related illness is greater because they generally lack access to weather forecasts, social ties, and connectedness with family members. Klinenberg's study of the 1995 Chicago heat wave, which killed 800 people, revealed that the isolated and reclusive life of the elderly population created a gap in public knowledge about heat waves. The author defined living alone as: living without people in the household, being isolated, having limited social ties, and being reclusive as largely confining oneself to their household. (Klinenberg, 2002) This finding corresponds to homeless people, as they share these risks.

### **Coping with Excessive Temperatures**

Homeless people's coping strategies are diminished by the urban setting and their socioeconomic status. Homeless people lack private housing with air-conditioning. They can be denied access to public air conditioned spaces such as businesses or government buildings. They lack shaded places due to an absence of vegetation in urban settings. Homeless people can be excluded from spaces in the city. Homeless people are targets for harsh laws and ordinances that limit their access to public spaces. Anti-camping laws

prohibit them from shaded areas in parks. Local law enforcement can require homeless people to move along from public spaces and force them to be in areas without shade or air conditioning. Urban settings also subject them to land use policies that attempt to concentrate or disperse them into locally undesirable areas. (Garnett, 2007) These areas may be located next to industrial businesses or landfills. (Garnett, 2007) These factors greatly diminish places of refuge homeless people can utilize to cope with heat-related illnesses and mortality caused by excessive temperatures.

I have demonstrated that homeless people living in climate defined by high temperatures are vulnerable to heat-related morbidity and mortality. The identification of homeless people as a vulnerable population should stimulate more research about heat-related problems they confront and heat-related coping mechanisms they use. This author knows of no study to explicitly focus on homeless person's heat-related coping strategies. Amster has studied impacts of the urban environment on homelessness, but further research should focus on how the urban setting influences homeless people's heat-related coping strategies.

## BACKGROUND LITERATURE

### **Heat-Related Morbidity and Mortality Studies**

In this section I argue a need to refine excessive temperature studies to obtain a better understanding of heat-related problems homeless people are struggling with. There are difficulties in accurately identifying the number of homeless people affected by heat-related morbidity and mortality. Current heat studies investigate the number of heat-related mortalities after the occurrence of extreme temperatures and heat waves. Heat-related morbidity and mortality studies typically rely on death certificates and hospital records for data. (O'Neill & Ebi, 2009; Yip et al, 2008) There is difficulty in accurately recording the number of heat-related mortalities and difficulty in identifying decedents as homeless people.

(Yip et al, 2008) Homeless people don't typically utilize hospitals for heat morbidity and, thus little understanding can be gained about homeless people from hospital records.

I argue that homeless people's heat morbidity is a significant problem that requires study. Knowing more about heat morbidity can improve public health services for people including efforts to reach homeless people. Heat morbidity is identified by physiological effects. These effects include dizziness, weakness, fatigue, heat exhaustion, cramps, and fainting; to multi-organ failure. (McGeehin & Mirabella, 2001) Heat morbidity receives less attention in heat studies than heat-related mortality, but previous research suggests the elderly, young children, the mentally ill, and people taking medications are at risk for heat morbidity. (O'Neill & Ebi, 2009) Previous research also suggests that extreme temperatures and heat waves cause long term health issues after temperatures decrease. Survivors of heatstroke have been shown to suffer from persistent organ dysfunction and are predictive of 1-year mortality. (McGeehin & Mirabella, 2001; O'Neill & Ebi, 2009) Improved knowledge of heat morbidity and its long term affects should be used to improve resources available to aid homeless people.

Accurately documenting homeless people's heat-related mortality is important because current figures are likely underreported. (Yip et al, 2008) Heatstroke is the most acute illness directly attributable to heat (Achieving a body temperature over 105 degrees Fahrenheit). (McGeehin & Mirabella, 2001) However, heat-related deaths are difficult to measure. Excessive temperatures can cause deaths indirectly by exacerbating pre-existing health conditions, such as respiratory and cardiovascular illnesses. (Knowlton, 2009; Ruddell, 2010) Some sources put heat-related deaths in the United States at 4780 between the years of 1979 and 2002. (O'Neill & Ebi, 2009), while other studies estimate (for roughly the same years) 8,015 deaths were directly caused by the heat. (Johnson & Wilson, 2009) The criteria for heat-related deaths needs be refined. The true number is most likely much

higher because the number indirect deaths caused by extreme heat is difficult to measure.  
(Yip et al, 2008)

### **The New Urban Environment**

In this section I demonstrate that the “new urban environment” results in loss of public space, exclusion, and laws that negatively impact homeless people’s heat-related coping mechanisms. I show the “new urban environment,” shrinks the amount of public space available for homeless people and criminalizing homelessness. Ferrell notes an urban area is the interplay of policies, spatial dynamics, cultural processes and power relationships. He argues that contemporary space battles are a public negotiation of identity and are the expression of justice and injustice. (Ferrell, 2001) I argue the “new urban environment” is the result of social and political processes that affect the social identity of the homeless people and redefines public space in urban areas. I show that the “new urban environment” seeks a socially homogeneous identity free of homeless people and manifests urban renewal projects and homeless campuses which are examples of land use policies intending to disperse or concentrate homeless people in undesirable sections of urban areas. These land-use policies reduce the amount of legally livable space available to homeless people in urban settings and promote the urban identity that is without homeless people. The “new urban environment” is supported by revanchism. Revanchism supports the socially homogeneous identity with laws and ordinances that exclude homeless people from the urban setting. The laws exclude homeless people and proscribe their life sustaining conduct. In addition, homeless people’s lack of private property confines them to these diminishing public spaces, and renders them powerless to property owners.

The new urban environment is a social and political process which changed the social identity of homeless people. Revanchism is a political component that helped change the social identity of homeless people. Revanchism is the mixture of revenge and reaction

and denies the belief that the government bears some responsibility for ensuring a decent minimum level of daily life to its population. That political assumption has been replaced by a vendetta against those considered lazy, welfare mothers, immigrants, people of color, and homeless people. The vendetta against homeless people is expressed as laws against them. (Smith, 1997) Smith notes that laws based on social identity determine how people are treated. Thus, unjust laws on undesirable populations are accepted.

The beginning of the “new urban environment” came after the end of Skid Row Districts. Skid Row Districts were the historical home for homeless people across the United States, including Phoenix, Arizona. Skid Rows formed after the American Civil War and were most known for their Single Room Occupancy, (SRO) living accommodations. They have been long considered dangerous areas full of disorder, known for bars, burlesque shows, and prostitutes. Skid Row Districts served to concentrate homeless people into an area and reduce their visibility. (Garnett, 2007) Skid Rows formally ended in the 1980s which eliminated low-cost housing and increased the number of homeless people on the streets. (Garnett, 2007) As the visibility of homeless people increased, political processes began to alter the social identity of homeless people.

Snow and Mulcahy (2001) argue that as the visibility of homeless people has increased they too became symbols of incivility and disorder. Neil Smith (1997) argues that homeless people began to be identified as misfits, lazy, bums, and they became synonymous with symbols of crime. Politicians and mainstream society embraced this identity which furthered homeless people’s marginalization and they became victims of social injustice. Additionally, former Skid Row Districts became spatialized symbols of disorder. (Ferrell, 2001) Politicians took advantage of these shifts and sought to restore “order” to these areas. They advocated the restoration of economic vitality in these areas would solve all its social



ills. (Smith, 1998) Homeless people are considered a blight on the area that simply have no place in the “new urban environment.”

### **Loss of Public Space**

Homeless people are losing public spaces due a lack of private property, urban renewal projects, and homeless campuses. Spaces used and not used by homeless people are significant to understand their heat-related coping mechanisms. In *The Right to the City: Social Justice and the Fight for Public Space*, Mitchell argues that public space is one of the few spaces homeless people have at all. As homeless people lose access to public space they are losing the right to be anywhere at all. He argues that public space should be available to homeless people. (Mitchell, 2003) Low and Smith argue that public space should be available for all citizens regardless of their purpose or identity. (Low and Smith, 2006) Homeless people are blamed for disorder and land use policies are enacted to concentrate or disperse them from urban areas. (Garnett, 2007)

Housing is not a fundamental right. Homeless people have no right to be anywhere, or to have anything, and no right to keep what they have. (Baron, 2004) U.S. Supreme Court rulings have established that Americans don't have a right to property or to housing, and those without property or housing have no legal remedies for their plight. (Baron, 2004) Jane Baron frames this problem for homeless people as 'no property'. She claims 'no property' is a distinct and insufficiently understood legal category that public policy must deal with. Homeless people are not property owners. Baron writes that property rights means the owners have rights to sell their property and more importantly to exclude people from their property. This exclusion can apply to people considered undesirable e.g., homeless people. Property rights are relational and these rights establish power relationships between property owners and non-property owners. This means homeless have duties to respect the rights of property owners and liabilities to the rights of others.

Consequently, homeless people must depend on public spaces to take refuge from extreme temperatures. They also must depend on service providers to provide a place to store their personal possessions needed to cope with heat. These arguments encourage research of access to public space as it relates to heat-related coping mechanisms.

The new urban environment manifests urban renewal projects, which are touted to strengthen the economic vitality of cities; however they disproportionately impact homeless people because they require a social homogeneity without homeless people. This effectively excludes them from these public spaces and limits where they can go to cope with extreme temperatures. Former Skid Row districts are becoming 'prime' real estate for urban renewal projects. (Snow and Mulcahy, 2001) Policy makers claim that urban decline is associated with crime. Urban renewal projects are en vogue because they seek to reverse urban decline. (Snow and Mulcahy, 2001) Urban renewal projects have an element of (NIMBYism) Not-in-my-backyard. They typically involve the relocation of shelters, food banks, to other areas which are intended to exclude homeless people from urban renewal project areas. (Lee & Price-Spratlen, 2004) Neil Smith argues that urban renewal projects are undertaken to attract professionals to live, work, and play in these areas. They intend to draw shoppers away from suburbia into urban areas to increase consumer spending. Urban renewal projects often take place in former Skid Row Districts, and homeless people lose their traditional space in the city. (Lee & Price-Spratlen, 2004)

Homeless campuses shrink the amount of public space homeless can occupy. They are aimed at concentrating homeless people away from downtown business districts. Homeless campuses are land-use policies with the similar goals of urban renewal projects. Their purposes are to promote economic vitality by reducing the visibility of homeless people. The homeless campus typically centralizes services for homeless people, such as shelters, food banks, and job placement programs. (Garnett, 2007) However homeless

campuses are locally undesirable land uses, (LULU) and another example of (NIMBYism) Not-in-my-backyard. Homeless campuses represent environmental injustices, because they are placed in areas where the threat of legal challenge was minimal and discriminatory intent would be difficult to prove in court. (Garnett, 2007) Phoenix's demonstrates these policies in action with its own homeless campus located in an undesirable area. (Garnett, 2007)

### **Homeless People's Heat-Related Coping Ability and Laws**

Policy makers enact laws to support the new urban environment, which negatively impacts homeless people's heat-related coping strategies by restricting access and proscribing life sustaining conduct in public spaces. Jeremy Waldron established a connection to homelessness and freedom: "Everything that is done has to be done somewhere. No one is free to perform an action unless there is somewhere he is free to perform it." (Waldron 302) Waldron (1991) illustrates that contemporary anti-homeless laws limit access to public space and serve to "deny homeless people the right to be at all" (Mitchell 28). David Smith (1994a, 495) discusses how the criminalization of homeless behaviors denies them access to public spaces. (Mitchell, 2003)

Laws and city ordinances are being used as strategies to remove homeless people from communities and forbid them from other communities. Criminal theories of "Broken Windows" became popular after the formal end of Skid Row Districts and local governments responded with anti-trespassing and anti-camping ordinances. (Garnett, 2007) According to The National Law Center for homelessness and poverty, anti-camping and anti-panhandling laws have increased. (Low & Smith, 2006) There are anti-camping laws that target homeless people in 42 U.S. cities. (New York Times, 1995) The city of Santa Ana, California created an ordinance banning camping and the storage of personal property on public streets. (McConkey, 1996) The city of San Francisco has ordinances against trespassing, public inebriation, urinating or defecating in public, removal and possession of

shopping carts, obstructing sidewalks, and camping or sleeping in public parks. In both examples, homeless people argued they were being persecuted for simply being and sleeping in parks. They claimed they were punished for their status of homelessness. (McConkey, 1996)

Homeless people are subjected to inhumane laws that proscribe their life sustaining conduct. Anti-camping ordinances restrict homeless people access to public spaces. Statues that prohibit sleeping and other primal human activities on public (collective) property create a situation where people have no place to perform human activities like urinating, washing, sleeping, cooking, eating, and standing around. (McConkey, 1996) When behaviors such as sleeping or bathing in public spaces become criminalized without alternatives, homeless people are punished simply for the status. (Baron 2004) Such laws ignore reality and expose all homeless people to civil or criminal liability when they perform life activities such as falling asleep. (McConkey, 1996) Essentially these laws intend to spatially and culturally cleanse areas of homeless people and others who would sleep in public, trespass, and panhandle. (Ferrell, 2001) They are limited to public space due to a lack of property and property rights. There is no place in the urban setting for homeless people; there is no place to conduct their lives. They are thrust into public space with little recourse. They are residents of public space and are forced to deal with violent expulsion from public space. (Amster, 2008) These factors combine and homeless people essentially lose their space to exist, and without any space to be homeless people have a more difficult time coping, especially when confronting excessive temperatures.

### **Background Literature on Phoenix, Arizona**

This research investigated the problems associated with being homeless during excessive temperatures; heat-related coping strategies homeless people have and how the urban environment settings impact those coping strategies. Phoenix was an ideal location

for such an investigation. Phoenix has a prevalence of excess temperatures during summers, land use policies, and laws impacting homeless people. Snow and Anderson's (1993) research suggests homeless heat-related coping strategies would be learned and partly a response to service providers, laws, and the environment. In order to learn about homeless people's heat-related coping mechanisms I investigated the local network of services and constraints. Data were gathered on homeless people in Phoenix and temperatures during the summer of 2010. Research was conducted on Maricopa County's Human Services Campus, Arizona's largest homeless shelter. Information was also collected about various nonprofits assisting homeless people and the city Phoenix's Heat Relief Network. Phoenix's anti-camping ordinances are also documented.

Maricopa County is a desert climate, which includes the city of Phoenix and surrounding metropolitan area. Phoenix covers an area approximately 772 square miles in the Sonoran desert. Phoenix is a large urban area that contains industrial and waste sites. Freeways and railroads surround the region and it is underneath the main flight path of Sky Harbor International Airport, the US's 6<sup>th</sup> busiest airport. (Bolin et. al., 2005) According to the U.S. Census Bureau, Phoenix has a population just under 1.5 million.

Phoenix is known to have extreme temperatures with average summer temperatures about 105(F). (Bolin et. al., 2005) According to the National Weather Service, the average maximum daily temperatures during the months of June through August 2010 were about 105(F). During this period temperatures peaked at 114(F) on two occasions. Phoenix temperatures are expected to increase 2-4 degrees (C) or over the next 50 years. (Baker et. al., 2003) In addition to these increases, temperatures are increasing during the summer. Temperatures recorded at Sky Harbor international airport in downtown Phoenix show that the number of daily hours with temperatures over 100 degrees (F) has doubled from 3.4 hours to 6.4 hours during the months of July and August since 1948. (Baker et al., 2003)

These excessive temperatures can cause heat-related mortality in Phoenix. Heat-related deaths in Phoenix were common during summers when daily high temperatures consistently exceeded 104(F). (Bolin et al., 2005) Arizona has the highest deaths due to heat exposure in the US. (Harlan et al. 2006). It is estimated that there are 30 heat-related deaths per year in Arizona. This is 13 times above the national rate. (Baker et al., 2003)

### **Maricopa County, Arizona Heat Study**

Yip et al. (2008) studied the impact of excess heat in Maricopa County, Arizona during the years 2000-2005. The study examined vital records from the state and county death certificates to identify the heat impacts during 2000-2005. Maricopa County had identified 136 heat-related deaths from June through September 2000-2005 according to their criteria. Over the five year period, the month of July with a mean temperature of 107.1(F), accounted for 73 deaths. (Yip et al., 2008) Of all the 136 heat deaths, 94 (76%) of these deaths could be distinguished between indoor and outdoor locations of death. Sixty-two of the 94 deaths were identified as outdoors. Homeless people, who were all found outdoors, represent 34 (55%) of outdoor deaths and 25% of all deaths. (Yip et al., 2008)

The findings of the Maricopa County heat study confirm that homeless are vulnerable to excessive temperatures during the summer. The findings of the Maricopa County study contradict other studies which show victims of heat-related mortality are overwhelmingly older adults. By contrast, in Maricopa County 21% of 136 decedents were elderly. In Maricopa County, decedents who were found outdoors were primarily younger, had outdoor occupations, or were classified as homeless. This varies from previous reports that focused on heat-related deaths in indoor environments, commonly without air conditions. (Yip et al., 2008) Common risk factors identified in cities that experience excessive temperatures are less applicable in Maricopa County. The authors show that younger people are impacted nearly as much as older adults by extreme temperatures in

Maricopa County. The Maricopa County heat study shows that even a heat-acclimated population like Maricopa County is at risk during consecutive days with excess temperatures. Yip et al found that there is a one-day lag of temperatures that may increase mortality risk for residents. High nighttime temperatures lessen the amount of time the human body has to recover from the extreme highs during the day. (Yip et al., 2008)

The Maricopa County study did not accurately record heat-related deaths among homeless people. The authors of the Maricopa County study relied on data provided in death certificates and meteorological data. (Yip et al., 2008) Death certificates underestimate heat-related deaths because they do not capture data on pre-existing medical conditions, alcoholism, or chemical dependence that could be analyzed as contributing factors that increase risk of heat morbidity and mortality. These factors are prevalent in homeless people population and increase their risk for heat morbidity and hyperthermia. Additionally, there are no systematic criteria to identify homeless people among medical examiners and physicians, so many heat-related homeless deaths may not have been counted. (Yip et al., 2008) Hospitalizations due to heat illnesses were not reported in this study.

### **Homelessness in Phoenix**

Homelessness is difficult to measure and there is little reliable information on the true number of homeless people. Homeless people are defined as people whose primary nighttime residence is either in the publicly or privately owned shelter or in the streets, in doorways, train stations and bus terminals, public plazas and parks, subways, abandoned, building, loading docks, and other well-hidden sites known only to their users. Homeless people tend to be categorized as “street people, episodic homeless, or others.” (Sebastian, 1985) There are an estimated 22,000 homeless people in the state of Arizona and about half of those people reside in Maricopa County. (Arizona Department of Economic Security 2010) In an annual effort to gather population information about homeless people, a census

was conducted in Maricopa County on January 26, 2010 by social service agencies. Several volunteers canvassed Maricopa County and counted people living on the streets, bridges, in doorways, parks, and without a home. Their total was 2,729 people living on the streets. This result is a point in time snapshot of people and does not include people in shelters or people not seen that day.

The table below provides a snapshot of the total number of people experiencing homelessness during the point-in-time count in the region.

Box 1. 2010 Homeless Street Count Results	
Street Count Total	2,729
Adults	2,493
Children (under the age of 18)	236
Non-Chronic Individuals	1,791
Chronic Individuals	615
Families	47
People in Families	142
Youth on Their Own	181

Source: (<http://www.azmag.gov/Committees/Committee.asp?CMSID=1046>)

### **Coping with Excessive Temperatures in Phoenix for Homeless People**

In the summer of 2005, there was a deadly heat wave in Phoenix. During the heat wave temperatures reached at least 110 degrees on 24 days and there was a period of 12 consecutive days with high temperatures over 110 degrees which occurred from July 16<sup>th</sup> through 29<sup>th</sup>. At least 80 deaths were attributed to the heat that year including an estimated 32 homeless people. (Meyers, 2009; Nanez 2009) It was a concern for politicians, charities and faith groups and they vowed it would never happen again. (Nanez, 2009)



In response to the 2005 heat wave, Maricopa County created The Extreme Heat Network. The project is a collaboration of the City of Phoenix, Maricopa County Health Services, nonprofits, and faith-based organizations intent on assisting elderly and homeless people cope with heat. The organization collects donations of bottled water for distribution to those in need. During the summer of 2010, the City of Phoenix handed out over 230,000 bottles of water for homeless, seniors, and other in need. Homeless shelters, service and senior centers distributed most of the water to the public. (The Arizona Republic, 2010) Drinking water is a recommended heat-related coping strategy by the Maricopa Public Health Department. This project aims to provide a steady source of water for homeless people so they can avoid heat morbidity and mortality.

The Valley United Way of the Sun is an agency that assists homeless people. This agency holds monthly meetings with heads of various nonprofit agencies, homeless shelters, food banks, outreach teams, faith-based providers and mental health service providers. During the summer their meetings focus on assisting homeless people negotiate excessive temperatures. At these meetings, leaders collaborate to improve efforts to supply and distribute bottled water to homeless people. Outreach teams coordinate their efforts deliver water, food, and hygiene products to homeless people in the Phoenix metropolitan area.

### **Maricopa County's Human Services Campus**

The Human Services Campus (HSC) was constructed for homeless people and touted as a huge advancement for humanitarian efforts for homeless people in downtown; however there was an economically driven alternative motive behind this project. (Garnett, 2007) The Human Services Campus (HSC) opened in 2005 and it is the most visible space that provides services for homeless people. It is the space for Arizona's largest shelter, day resource center, food bank, and health care for homeless people. The campus aims to transition homeless people off the streets and into housing. Maricopa County spent

approximately \$24 million dollars to relocate several service agencies in one central location. The county is hoping to move nearly 1,000 homeless people along with their accompanying mental or substance abuse issues away from the streets of downtown Phoenix. (Garnett, 2007) The county hopes the HSC will concentrate homeless people away from central business district of downtown. The county hopes this will reduce the visibility of homeless people and spur professionals to live, work, and spend money in downtown. (Garnett, 2007) The campus did not bring anything new to the area, it simply modernized the region. It removed an eyesore and concentrated homeless people away from downtown business and events. (Amster, 2008)

The relocation of homeless people on the Human Services Campus hurts their heat-related coping strategies because it limits their access to air conditioned space and shaded space and confines them in a locally undesirable area. The Human Services Campus was built in a neighborhood in downtown Phoenix called the “zone.” The “zone” has been the unofficial location for homeless people since the 1980s. (Amster, 2008) The east and west boundaries of “The Zone” are 19<sup>th</sup> avenue and 7<sup>th</sup> avenue. The north and south boundaries are Van Buren and Grant. This area is a former skid row distinct of Phoenix which is home to industrial businesses, warehouses, state and county department buildings, and a residential neighborhood. Garnett argues that Phoenix policy makers are opting for land use polices to control the homeless. He claims that the land was provided for homeless people are a locally undesirable land use, (LULU). (Garnett, 2007) The area is far from public spaces with air conditioning and shaded areas homeless people can access. The nearby governmental buildings don’t typically open their doors to homeless people. Additionally, the campus only has one air-conditioned space available to homeless people. Additionally, this building closes its doors between the hours of 11am and 1pm daily. They concentration

of homeless into areas without adequate air conditioned space and shaded space forces them to be less refuge from excessive temperature.

### **Phoenix Ordinances**

The relocation of homeless people into a concentrated area has increased their visibility and accompanying beliefs of disorder, incivility, and crime. Consequently, policy makers enact anti-camping ordinances against homeless people. The city of Phoenix also enacted anti-camping ordinance making it unlawful for any person to camp in any park, preserve, building, facility, parking lot or structure. The ordinance also proscribes camping on any property that is adjunct to or owned, possessed or controlled by the city of Phoenix. The ordinance defines camping as the use of city property for living accommodation purposes. This includes sleeping, making preparations for sleep, storing personal belongings, or making any fire. The ordinance also bans using tents, shelters digging, or any cooking activities. ([www.library.municod.com](http://www.library.municod.com)) This ordinance limits homeless people's coping ability by banning them from public spaces such as parks and carrying out life activities necessary for survival such as sleeping.

### **METHODOLOGY**

Through background literature and living in Phoenix, I became concerned with the problems that homeless people have due to excessive summertime temperatures in Phoenix. I intended to answer the following research questions in this study 1) What are the heat-related problems that homeless people face during the Phoenix summer? 2) What heat-related coping strategies do people use? 3) How does the urban environment limit homeless people's heat-related coping strategies through laws that reduce available public space and proscribe life sustaining conduct? I utilized semi-structured interviews to learn about heat-related coping strategies and the corresponding socio-spatial dynamics impacting them. Interviewing homeless people was an important method for gathering data that was unlike

data gathered from shelter workers. An interview guide was used for the interviews that grouped topics together and focused on coping mechanisms for excessive temperatures. During the interviews, questions were added to suit the particular interviewee. I asked questions in a variety of ways without any particular order. This style of interviewing engendered a more genuine conversation, allowed participants to speak freely, and permitted me to expand beyond my preconceived notions. The interviews took on a unique life of their own.

I conducted 28 interviews with homeless people during the Phoenix summer between the months of May and August 2010. I used non-experimental design with a non-probability sampling strategy. Sampling of contacts began at Central Arizona Shelter Services (CASS), Phoenix's largest homeless shelter located in the Human Services Campus. I performed outreach work to learn of places homeless people frequented beyond the Human Services Campus. Outreach work consisted of service provider volunteers who drive around Phoenix and distribute water, snacks, and clothing to homeless street people. The outreach work was an invaluable experience to learn the locations homeless people frequented and a source for potential interviewees. Interviews took place at various locations, including public parks, shelters, and city libraries. Of the 28 interviews 16 were male and 12 female. The age range was from 18 to 68. A majority of the sample population were between ages 50-59  $n=11$  and ages 40-49  $n=7$ . Nobody under the 18 of eighteen was interviewed. The interviews were typically one-on-one and I did not pretend to be a homeless person. I offered snacks, water, socks, and some hygiene products to all potential contacts and provided a brief explanation of who I was and what I was doing. I gave informed consent letters and explained that they could refuse to grant an interview. Some people politely refused while some aggressively refused. Overall, six people refused to be interviewed.

The research method could be critiqued on the grounds that much of the conversation and behavior could simply have been a reaction to the researcher's presence, rather than naturally occurring behavior and patterns. (Snow & Anderson, 1993) Most of the responses to my questions seemed kind and open. My affiliation with the university as a student, could have invoked a greater sense of ease. However, this identification may have engendered a less than frank conversation.

## DATA ANALYSIS AND RESULTS

This research investigated the lived experience of homeless persons during the Phoenix summer, their daily heat-related coping mechanisms, and the impacts of the urban environment setting. Twenty-five of the twenty-seven interviews were audio-recorded and transcribed. Two people declined permission to be audio recorded, but allowed me to take fieldnotes during the interview. Text from the interviews was analyzed using *Nvivo* computer coding software to identify patterns and reoccurrences within the data. The data was organized and then categorized into themes. Themes developed from comparison of interviews. Participant meanings were linked to themes of excessive temperatures, heat-related coping strategies, and the urban environment. Brief summaries of data were completed to determine relationship between the above themes. Data analysis identified themes of excessive temperatures, water, refuge, hygiene, heat morbidity, heat mortality, chemical dependence and family.

This section summarizes the results of the analysis. The topic of the lived experience during the Phoenix summer was problematic for homeless people and they had to figure out means to negotiate with excessive temperatures and avoid heat morbidity and mortality. The lived experience was also discussed through chemical addictions that homeless people struggled with which increased their risk of heat-related illness or death. Overall, homeless people had a variety of heat-related coping strategies. The main heat-

related coping strategies that homeless people used were drinking water, taking refuge, and maintaining hygiene. Family was not found to be heat-related coping strategy. The urban environment setting limited some of these coping strategies with restrictions on where they could go and what they could do in public spaces.

People generally described the heat as very uncomfortable and others described the heat as miserable. One woman said,

“Okay, life out here on the street is rough. Uh, it might not, it might look like a piece of cake but when you’re, you’re not allowed to go anywhere, you don’t have the money, you’re limited. You are limited.”

One man said,

“The heat in Phoenix is just straight up brutal.”

One woman said,

“It’s extremely too hot.”

Another woman said,

“Last year it when it was 122, 123, yeah I stayed inside.”

One interviewee summarized how she learned to manage excessive temperatures during Phoenix summers,

“About a week after I got here, because I was busy drinking water and then I’m looking at people with their Gatorade. And I never did appreciate water until that day I passed out on Buckeye, and got the muscle spasms. Cause I, cause I looked at people and um, I see some with winter coats on and everything and I’m like Ok, how can we do this? And I’m sweating and feel my muscles cramping up. So I learned to deal with water. Every year I find something different that I need to do and that’s put

sunblock on, figure out what stays open that has air, that won't chase you out because you don't have nothing to do right then and there.”

One man summarized his day during the Phoenix summer,

“Basically my routine is my camp spot over there down the road and this library. I have to use a fountain really quick, you know what I mean? Take a rag, just try to cool off.”

Another man summarized by saying,

“Basically just stay in the shade. Uh, drink plenty of water.”

The lived experience of homeless people during the Phoenix summer was discussed with conversation about chemical addictions. Some interviewees also noted that they currently had some type of addiction whether it was alcohol or drugs. Most interviewees recalled a former alcohol addiction and almost all admitted to having some type of chemical dependence in the past. One man said,

“But the pitfalls of course are are w-which is a pitfall for all us homeless...is the drugs and alcohol. Drugs and alcohol are the biggest pitfall. Is the biggest the biggest uh, biggest thing the biggest pitfall for any homeless person.”

One woman said,

“So yeah I think drinking is a big downfall and a lot of us drink, a lot of us drink.”

Homeless people discussed excessive temperatures by relating their experiences of heat-related illness and other people's heat-related mortality. Many people were affected with heat morbidity. Heat-related illnesses were varied among people, but the most common heat illness discussed was fainting, commonly referred to as “falling out.” Most of those interviewees had lived on the streets for over one year. One conversation revealed it was fairly typical for people to faint due to extreme temperatures.

Researcher: "Okay. Have you seen a lot of people pass out?"

Male interviewee: "I'd say yeah, yeah, so..."

Researcher: "About how many would you say ballpark?"

Male interviewee: "Probably 20, somewhere around there I'd say. That happens quite frequently here, actually."

One man recalled his own experience of "falling out,"

"I had this heat stroke in downtown. Yeah. Yeah, I fell out right there. And that was due to overriding my instincts."

One woman recalled her heat-related illnesses,

"Just this year, I had three heat strokes."

Heat mortality was discussed in interviews, because it was typical for people to know of victims of heat-related mortality. One person recalled,

"There's a guy, there's a guy that, there's a guy that died over there by the shelter over there, found him dead. And another guy died in an alley over there."

Another man recalled,

"Yeah yeah, they found them dead. During the day they found them. It was about 11:30 in the morning."

One woman said,

"Lot of people died last year. A man was found dead last year." They, they left one man lying on the, um, sidewalk over there by, um, the men's um, overflow? He was just laying there in one position for



a good long time before they realized he was dead. The heat, it's... a lot of people been dying from it.”

Many interviewees noted that chemical addictions increased their risk for heat-related morbidity and mortality. Chemical addictions were found to have a negative effect on heat-related coping strategies. Responses to questions about heat mortality and morbidity were answered with some type of chemical dependence. Most did not think that heat morbidity was solely from hyperthermia, but they stated they did not know for sure. Interviewees revealed that the heat-related deaths seemed preventable and there was a mixture of blame against the victim and the service providers who allowed it to happen. Interviews revealed that chemical addictions greatly increased heat morbidity. One man said, “What I heard, they said from the heat. You know and the drugs and it was too much for them.”

One man said,

“Most my friends were alcoholics either end up with a fucking stroke or a heart attack or fucking kidney failure.”

One man said,

“I mean, that’s the thing, you know, most of the people that are homeless out here, uh, most of ‘em are in some sort of addiction or another. You know, so that plays a big role in their physical health. You know, and you combine the heat with that, and that’s where you get problems.”

One interviewee said,

“Uh, the following summer, uh, with my addiction, I was workin’ day labor just to keep up with my addiction. And uh... I mean, I had a good job. I mean, I had a long-term ticket, I was working indoors,

where it was air conditioned, but with my addiction, and livin' out in the heat the rest of the time, I just got worn down and torn down to the point where I weighed 165 pounds when I came in here.”

Drinking water during the day was the most mentioned heat-related coping strategy. Conversations about water centered on how it was obtained and how much should be consumed throughout the day. Interviews revealed that having water was important to survive the summer heat. As one interviewee confirmed,

“But, the biggest thing that I said is for the heat and that’s for anybody not not for homeless guy, but for anybody that you gotta stay hydrated.”

One man said,

“You want to be in an area where you know, you can get water.”

Homeless people noted that water was not difficult to obtain. People said they could usually get bottle water from shelters, day resource centers, and outreach workers. They also noted they could get water from public fountains, or refill cups and containers they kept. About half of the interviewees said they would refill cups or containers at convenience stores and fast food restaurants. One man said,

“But uh, it’s not hard to get water. It’s real easy to stay hydrated”

One man said,

“A lot of places give, give water. But I usually try to keep a cup with me or some kind of bottle and I’ll go to a restaurant or, or somewhere and ask them if they can fill it up for me.”

Another man said,

“I stay pretty close to Circle K, and at Circle K you have access to ice. You can get your jug and fill with ice and and fill that jug up with the ice the jug up with water.”

While people revealed there was not a great difficulty to obtaining water, they noted that people failed to drink enough water. Homeless people criticized other homeless people in a disparaging fashion for consuming alcohol or soda instead of water. They noted that they were likely having health issues. Overall, they noted that those who failed to drink enough water during the day were not taking proper care of themselves. They blamed heat morbidity on the part of the victim. One interview summed up nicely,

“The main thing about staying cool is and especially about being in the heat, what hurts a lot of these guys is they...they’ll be out in the heat, which is nothing wrong with being out in the heat if you’re drinking a lot of water. But they not drinking water. What are they drinking? They got a beer in their hand. You know or something like that or even or even a soda. Something that’s gonna dehydrate you. You know so uh uh, so they but a beer will cause you to pass out and somewhere in the sun and y-y-you can get ki- you can die from that.”

Another primary heat-related coping strategy was to take refuge from the extreme temperatures. Taking refuge meant getting out of direct exposure from the sun, which included finding shaded places or seeking some type of air conditioned space. Homeless people would typically seek out shade in public parks or on the Human Services Campus. People would seek air-conditioned space at libraries, day-resource centers, and on public transportation modes. One interviewee said,

“There’s just different places you can go. As long as you can find the shade, that’s what counts.”

Another interviewee said,

“Um, other than that it’s find me a nice shaded spot, sit back and relax like I was here.”

One woman said,

“I usually try to sit somewhere where it’s cool.”

Homeless people noted that the Human Services Campus had installed two ramadas for shade, but they were always crowded and not effective for refuge. One interviewee said,

“You go to the campus, uh, CASS campus, there’s no trees there. Nothing but sun!”

Many homeless people would cope with heat by finding shade in public parks. One interviewee said

“I just, mainly looking for a job and just trying to find somewhere to sit to stay out of the sun.

Without being hassled. So it was just, we found the park on, um, about three blocks from where the shelter’s at. And we just sat right there in front of the sun ‘cause it was too hot to move.”

One male said on the subject of seeking refuge,

“Find a park with some shade.”

Homeless people noted that people would often seek out libraries to take refuge from the heat. One man said about libraries,

“Of course what’s in the library besides books? Air Conditioning, so I might stay there.”

Another man said,

“So um, but, but during the day a lot of times I would go here to the library where it’s quiet. Nice, quiet, peaceful, you know? Read a book or, or you can get on the computer. And, um, yeah, that’s, that’s one good way to beat the heat.”

A woman commented,

Female interviewee: “We just try to find places and the majority of us either end up at the library.

Researcher: The library?

Female interviewee: “Yeah, sit there at the library ‘cause you can sit there without being hassled. As long as you don’t go to sleep.”

Homeless people would seek air conditioned space at day-resource centers. The two places most often mentioned were the Lodestar Day Resources Center (LDRC) on the Human Services Campus and the Just-a-Center located near the Human Services Campus. The Just-a-Center is a day resource center for homeless people over the age of 55. It is an air-conditioned space where people can take refuge from the excessive temperatures. The capacity of the building is approximately 60 persons, leaving many to seek refuge elsewhere. The LDRC was not known to be good space to take refuge from heat as it would close from 11am to 1pm daily. People said the LDRC filled up quickly during the summer. One interviewee said,

“So you’re forced to squeeze in the building that, uh, I’m not sure what the capacity is. That’s not a good spot either, because you got some that don’t know how to shower.”

Another woman said,

“I don’t think that’s right making people sit out there for two hours long waiting for the doors to open up when people have nowhere to go except for in there and it’s cool.”

Some people noted that they would utilize modes of public transportation including the metro light rail system to cope with excessive temperatures. One man said,

“So well w-what I do? I always try to keep a bus ticket in my hand. C-cause who has the best air in the city? T-that light rail. You gonna y-you gonna stay cool on that light rail I never I n-n-never broke a sweat on that light rail yet. I go from Glendale to Mesa. Eh, and uh, and it be one hundred and two out and ten twelve degrees outside but, I never broke a sweat. Cause that light rail’s got good air. And uh, so a lot of times I do that. I just ride that light rail; a lot of guys do that too.”

Another man said,

“Sometimes I’ll hop on the train when I don’t have any money, just to ride for the air, air conditioner, just to ride. So that’s taking the chance of getting a ticket or going to jail.”

The Phoenix Metro Light Rail travels through Phoenix, Tempe and end in the city of Mesa. The light rail travels close to the downtown business district of Phoenix. The light rail operates on the “honor system.” Riders can board the train without passenger ticket. Transit police officers randomly board trains and verify if riders have a valid transit pass. Passengers caught without a pass are fined. Some people noted that they would purchase tickets to ride while others said they did not. People who rode without a pass told me they if they were caught, they would simply ignore the fine.

One unanticipated coping mechanism was personal hygiene. Personal hygiene was described as personal appearance and cleanliness. Essentially people would try not to appear homeless. This meant they would attempt to bathe in one fashion or another. They would also be wary of walking around with backpacks. Not appearing homeless allowed them to avoid harassment and gain access to businesses. Keeping up on hygiene was sign that they have not given up hope. Maintaining hygiene was an important coping mechanism because it allowed people access to restricted private and public places. It was also a coping mechanism for self-efficacy. As one interviewee stated,

“I usually try to keep myself pretty presentable.”

One man said,

“I did my best not to appear homeless. I couldn’t beg, I couldn’t ask for money, I couldn’t panhandle, that was not happening. I couldn’t bring myself to do that.”

Another woman commented,

“The people that usually get hassled is the ones that don’t keep themselves clean.”

One female said,

“I take care of what I need to take care of because if I... I didn’t, didn’t see myself coming here but I’m here. Now I gotta make the best of it to leave up out of here. So, I can’t just go out and say, Okay, I’m dirty, grubby, change me.”

I raised the topic of family as a heat-related coping mechanism. Interviewees revealed that most people did not rely on their families to cope with extreme temperatures. Often arguments had occurred in the past and some people did not speak with their family members. Most people stated they did not want to disturb their families. Indeed, most of homeless people had very little contact with their families. Some noted they would visit on holidays or stay in telephone contact. One subject noted that her daughter was staying at the shelter, but she did not have contact with her. Across interviews, most people tended not to use their families to cope with extreme temperatures due to stigma of being homeless or previous chemical abuse. One man said,

“Yeah, I got 5 brothers in Avondale and Phoenix, but they married. I don’t like to bother them. They got families you know. I call them up, but I don’t like to bother them too much.”

One man commented on his family that lived in Arizona, he said,

“I haven’t talked to them in probably um...seven years I guess.”

This section outlines examples of how the urban environment setting limits heat-related coping strategies. Public parks, libraries and business all had laws, ordinances, or rules that restricted where homeless people could go and what they could do. With regard to laws, ordinances, and police, people said that such factors were a concern for everyday life. Interviews revealed that the police enforcement was strict and people said they would avoid police detection during the day. Laws and police would force homeless people to be on the move during the day and people worried about police telling them to move on. People tried not to deal with the police. However, when people had to deal with the police, they tried to be respectful and not to cause problems with them. Homeless people reported they had to take precautions to avoid police detection. One interviewee said,

“Uh, we can’t go to government buildings or stuff like that. We tried to go to one of the shades on the government property and we got kicked off. So they do hassle you on that one.”

One woman said,

“I would have to find somewhere within walking distance that, uh, wouldn’t create too much trouble, that had shade to where I could sit. I would have to ask first before ‘cause I hate to get chased away.”

Another interviewee said,

“Well a long time ago when they used to see people downtown kinda dirty the police used to stop you. With backpacks especially they stop you. They say, where you staying where you living, let’s see some I.D.”

One female interviewee said,

“Some do hang out there but then now the police been coming chasing them out from under the bridge because sometimes that’s where some of ‘em, the majority of them sleep at.”

One female interviewee said,

“And uh, but yeah you just...common sense...you just see the police, you leave. And even if you’re not doing anything wrong. You just...you know that they’re coming cause your homeless and you’re not supposed to be where you’re at.”

Homeless people commonly referred to sleeping outside as “camping out,” and they tried to stay hidden from police. The city of Phoenix has anti-camping ordinances against sleeping in public spaces. Homeless people were said they cannot fall asleep or remain in a public park too long. One interview confirmed,

“It’s against the law if a person drowse off. I can’t help it if that does happen. I mean it’s the heat, it’s the morning, it’s late at night, whatever. It may happen, it may not happen, but the fact is... basically, if it’s 9:30, and I’ve got a pillow out, then... Okay, here’s a ticket. Illegal camping.”

One female said,



“Actually in the park about 1 o’clock in the afternoon they tell you to leave. They’ll tell us to leave at one.”

One man said,

“I was livin’ in a park, um... The city parks, they are closed to the public from 10pm until 6am. Now you learn which parks that you can be in, and which ones get patrolled heavily.”

Interviews revealed homeless people would not take refuge in businesses. They often noted that they would not be welcome for long, or that having a backpack would cause others to become suspicious. People recalled that carrying around backpacks with their possessions would arouse suspicions and unease. One man said,

I don’t carry around a lot of bags, I carry one bag.”

One female said,

“We don’t hang out in stores.”

The public library is an air conditioned space homeless people utilized for refuge. The library had rules against patrons falling asleep inside. People noted that if they were to fall asleep in the library they would be asked to leave for the day. One man said,

“You just gotta sit out there and do a little reading, most of the time these places they don’t mind you coming and reading. They don’t want you just crashing out though.”

Outreach work is one solution to the institutional barriers in place from the urban environment setting. Almost all of the interviewees mentioned outreach work. Outreach work was in the form of various nonprofits, faith based organizations, and community organizations to deliver bottled water, food, clothing, and hygienic supplies. Homeless people depended on the efforts of outreach workers and many acknowledged they were appreciative of their efforts.

One man said,

“People count on these other people that’s outside there, the churches and stuff that come, they feed ya and they give you water and they, um, that’s where I got the cooling bandanna too.”

One woman said,

“People are beautiful. Volunteer, church people, high school kids they will just drop off water.”

One interviewee said,

“Churches and stuff like that, when they have water and stuff like that they’re trying to pass out to the homeless.”

One man said,

“Um, course they’re also church organizations. Um, but then like I said, some of ‘em just pull up in a pick-up truck and start handing out sandwiches, water, um, things like that.”

Most of the interviewees, who suffered heat morbidity, typically fainting, would begin to take better care of themselves. Some of the contacts noted they learned of medical conditions as a result of fainting, and would also take better care of themselves during the summer. Some interviewees commented that medications they took caused them to take precautions to avoid heat-related illness. Most of the people over the age of 40 tended have some type of pre-existing medical conditions such as kidney problems or cardiovascular disease. They seemed to be aware they were more susceptible to heat-related morbidity or even death. All people under the age of 40 did not report any health issues and they tended to minimize the problems associated with heat. All victims of heat-related illnesses remarked they learned a valuable lesson and changed their heat-related coping strategies. People who experienced heat morbidity would often carry and drink more water. One man said,

“So I started carrying two, two or three bottles of water.”

Another man said,

“That’s why I started carrying water you know. I started going to where is nice and cool and everything.”

One interviewee recalled,

“I don’t want to be in that situation again because both my, everything stopped working, man. I had to go to the hospital. I was drinking beer and I was drinking and drinking and lying out in the heat and I felt something wrong. They said good thing I went there in time. They gave me the stress test, a little CAT scan to see if I was alright, they saw that my liver and everything just stopped working from the heat. I’m not taking no chance so I’ll be alright. That’s why I drink I lot of water now.”

One woman said,

“When I passed out that’s when I found out I had diabetes. And I, I knew I already had high blood pressure and the pills that I was taking. I never bothered reading the little paper and it states that when you take this medicine you, you’re not to be out in direct sunlight. And that was the other cause that made me fall. I’m going “Okay, that taught me a lesson. Next time I’ll read my prescriptions and then I’ll know what to do.” So, I, that’s why there’s the umbrella and the water, but mainly the umbrella. ‘Cause I, I’ve been trying to maintain that. I’ve been doing pretty good, but I still don’t trust the medication and I don’t like going out without either a hat on my head or this, uh, umbrella.”

One man said,

“The doctor told me I cannot be in the heat too much. Especially taking nitroglycerin for my heart. He says too much heat gonna get a heart attack or stroke. You really gonna wind up in the hospital is what he told me. He told me to go to CASS and stay there. Because being out in the heat with all that medicine you taking is no good for you.”

One interviewee commented that older people will notice heat-related illness problems due to her age,

“I know that if I allow myself to have a heat-related illness I’m gonna, it’s gonna be much more reaction in my body than somebody that, you know, your age. So I have to be very very careful because I don’t want to get into the hospital, you know, in this situation. With me already being homeless and, you know, so I have to, I’m very careful of that.”

## DISCUSSION

This study was conducted during the Phoenix summer to investigate the lived experience of homeless people; their heat-related coping strategies, and the impact of the urban setting. This research attempted to capture a genuine portrait of how homeless people live with heat through their risk of heat-related illness and heat-related coping mechanisms they use. The use of semi-structured interviews highlighted the voices of homeless people by allowing informants to speak freely. This writing has faithfully interpreted words of homeless people so that the reader may gain an understanding of what it is like to be homeless during the summer in Phoenix, Arizona.

This research has shown that excessive temperatures pose a health risk to homeless people. Coping was done by frequently drinking water and taking refuge. Homeless people did not describe a great difficulty in obtaining water. It appears that the Phoenix and Maricopa county’s efforts to supply and distribute water helps homeless people survive the excessive summer temperatures. Homeless people utilized libraries, parks, day-resource centers, and public transportation to seek refuge from extreme temperatures. There was a marked difference in coping strategies among men and women over the age of 40, who had experienced some heat-related illness, and who had a medical condition to care for. Persons who fit this profile would typically limit their exposure to excessive temperatures and increase their intake of water throughout the day. Older people tried to avoid exposure to excessive temperatures due to the medications they were taking. Gender was not a

significant influence on experience with heat-related morbidity or coping strategies in this study.

### **Future Research**

This exploratory research has contributed to a better understanding of the lived experience of homeless persons in an urban setting as well as their heat-related coping strategies. This research also reveals how the urban setting impacts their coping strategies. Additional case studies should focus on how heat-related coping strategies are affected by the physical environment. Features of the physical environment are the local temperate zones, acclimatization, and the built environment. Additional research on Urban Heat Islands is crucial to assessing the vulnerability of an area due to excessive temperatures. Increased knowledge about the Urban Heat Island effects can create better mapping of locations and populations that are vulnerable to excessive temperatures. (Johnson & Wilson, 2009) Cities must develop a contextually based definition for excessive temperatures that begin to cause heat-related illness and mortality. These definitions will be instrumental to develop heat warning systems that can be refined to smaller geographic scales. Ideally, vulnerable populations could be reached at neighborhood level. Future research should account for global climate models that project increasing temperatures. Climate change models can be more robust and identify place based risk. (Johnson & Wilson, 2009)

Future research should also focus on refining methods to account for heat mortality as heat-related mortalities are underestimated. (Yip et. al. 2008; Klinenberg, 2002) County officials must refine their criteria to better account for homeless people's heat-related morbidity and mortality. True figures about heat mortality are necessary to better understand the risk to public health of cities. Indirect causes of heat death need to be accounted for to better understand the vulnerability of homeless people and other vulnerable

populations. Understanding the depth of this problem will begin to provide pathways for better solutions.

## **Conclusion**

This research revealed some of the complex socio-environmental-spatial interplay linked to homeless people in Phoenix. Findings show that efforts to supply and distribute bottled water, provide air conditioned space are inadequate to prevent heat illness and mortality among homeless people. The following section outlines practical and structural solutions that should be implemented.

The practical solutions that can be undertaken are increasing outreach work, providing additional air-conditioned spaces especially for people over the age of 55, and raising awareness about the risk to heat-related illnesses to homeless people. Access to water is an important resource for homeless people. While the summer campaign to collect and distribute bottled water appears to help, more work is needed to prevent homeless people from becoming victims of heat-related illness or death. Service providers should increase their outreach work efforts. Service providers could recruit additional teams during the summer to deliver water and supplies to homeless people. This research has shown along with the recommendation by Maricopa County Public Health Department, that access to air-conditioned space is another primary heat coping strategy. Service providers must focus on efforts to provide more air-conditioned places of refuge for homeless people during Phoenix summers. The Lodestar Day Resource Center on the Human Services Campus provides a large place of air-conditioned space for homeless people. However, it closes its doors daily from 11am to 1pm, which should not happen during the summer. Other buildings such as food bank serving homeless person can be made available as emergency day shelters when temperatures become excessive. Smaller day resource centers could be created for persons over the age of 55. They are the most vulnerable to heat illness and death. Lastly, service

providers must collaborate with the City of Phoenix and Maricopa County to expand their public health messages. Local government officials conduct presentations about the health risks of heat for older adults at senior centers. These presentations should be expanded to include homeless people, especially older adults in day-resource centers.

Structural solutions for the “new urban environment” are needed to ease the burden on homeless people and their heat-related coping abilities. Changes to land-use policies, laws and ordinances, and built environment will begin with changes in policy maker’s views on homelessness. Currently, homelessness is linked with crime and disorder. Such beliefs lead to the criminalization of homeless people’s life sustaining conduct and land-use policies that limit the amount of legally livable space for them. Laws that criminalize homeless peoples’ conduct increase their risk for heat-related illness and mortality and such laws should be rescinded. Laws and ordinances need to be written with more compassion for homeless people. Land-use planning should not rely on homeless campuses to relocate homelessness. Homeless campuses are an intentional ghettoization of an area and the people in it. Planners are not suited to reducing homelessness. Land-use planning should focus on reducing the effects of the Urban Heat Island (UHI) and the related health risk due to heat. The Urban Heat Island (UHI) is a result of the built environment and found in many cities across the globe. It is defined by higher temperatures between an urban space and its surrounding rural area. (Johnson & Wilson, 2009) Cities planners can reduce this effect by changing the materials in the built environment and increasing vegetation in the urban area.

Lastly, collaboration between service providers and local governments is necessary to create long-term solutions to help homeless people. Local governments should adopt policies that seek to end homelessness rather than policies that move it to undesirable areas. Society and policy makers must not abandon hope to transition homeless people off the

streets. Governments should bear their burden for creating affordable housing opportunities to transition homeless people from the streets. Without realistic housing options, people are doomed to live a life on the streets. Service providers can work in concert with transitional housing programs for homeless people. Service providers can continue to provide services to help homeless persons in transitional housing programs so they continue to receive services for chemical dependence or mental illnesses they may have. Such programs will allow people to live semi-autonomously and hopefully prevent people from becoming homeless again. These recommendations should be considered to reduce the vulnerability of homeless people to excessive temperatures in Phoenix.

This research has shown that homeless must confront an environmental problem which is made worse by institutional barriers in an urban setting. First, homeless people are vulnerable to excessive temperatures every summer without many resources to depend on. Secondly, the urban environment setting limits homeless people's access to public space and inhumane policies reduce their heat-related coping ability. This research has created a better understanding of coping strategies homeless people use, and how the urban setting hinders those coping strategies. Interviews gave homeless people an opportunity to be heard and raise awareness and empathy for the problems they confront. Hopefully this research can be utilized to improve the lives of homeless persons in Phoenix and beyond.



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APPENDIX A

INTERVIEW QUESTIONS: HOMELESS HEAT RELATED COPING STRATEGIES

Why don't you tell me a little bit about yourself?

Where you born and raised?

Any family?

Do you ever contact your family?

How long have you lived in Phoenix

How many summers have you gone through?

What is the biggest challenge you face during the summer?

- i. How do you experience the summer heat?
- ii. What do you typically do during a summer day?
- iii. How do you cope with the summer heat?

What are you biggest challenges?

How do you get water?

How do you protect your skin, i.e. where you find shade?

How do you get treatment for medical concerns?

How do you get your information about weather, extreme heat days, or heat waves?

Are people more sympathetic during the summer? If so, please explain.

Where do you go during the day?

- i. What places are available to you?

Are you restricted from certain places?

- i. How and who enforces those restrictions?
- ii. Have you ever been the target of unjust treatment by police/law enforcement?
- iii. What public spaces you use during the summer?

Have you ever receive unfair or unjust treatment by a shelter?

Have you ever known anybody who became ill or died as a result of the summer heat?

Have you have experienced problems from the heat?

APPENDIX B

CONTACT SUMMARY FORM

Interviewee:  
Gender:  
Age:  
Race/Ethnicity:  
Site:  
Date:

What were the main issues or themes that struck you in this contact?

Summarize the information you got (or failed to get) on each of the target questions you had for this contact.

Question

Information

Anything else that struck you as salient, interesting, illuminating or important in this contact?

What new (or remaining) target question do you have in considering the next contact with this site?

Source: Schutt (2006): 332, Exhibit 10.3

## BIBLIOGRAPHICAL SKETCH

Cory Sanchez, graduate student in Justice and Social Inquiry at Arizona State University. His research interests are social and environmental justice issues. He hopes to continue research on the interplay of socio-spatial and environmental problems in urban settings.