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# USING SPATIAL VIDEO AND SPATIAL VIDEO GEONARRATIVES TO UNDERSTAND HOMELESSNESS:
# EXAMPLES FROM TULARE COUNTY, CALIFORNIA (58 pp.)

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The continuing rise of homelessness in the United States has sparked the attention of media, society, and academics, including geographers. There are many perspectives on homelessness, but this thesis will focus on the complexity involved in living in a mostly rural county, including topics such as sense of place and daily activity, all considered through a socio-spatial lens. The addition of fine-scale geographical data collection in the form of spatial video and spatial video geonarratives will contribute a greater understanding of the challenges faced by the homeless community.

This research project will pose two overarching questions, can geographies of homelessness be identified through spatial video and spatial video geonarratives (SVG) data collection and how do these explain/contradict existing theories regarding the homeless? Secondly, can these spaces and places be contextualized using the SVG method so that we gain a better understanding of the challenges the community faces, leading to more cohort sensitive intervention strategies? This thesis is part of an ongoing collaboration with Tulare County Health and Human Services Agency (TCHHSA).

*Keywords:* homelessness, spatial video, spatial video geonarratives

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# INTRODUCTION

On a single night in January 2018 approximately 552,830 people experienced homelessness in the United States (HUD, 2018 Point-In-Time (PIT) Report). Although overall homelessness across the United States has decreased by approximately 15% since 2007, the 2018 counts of persons who are homeless revealed a 0.3 percent increase or 1,834 people over 2017 counts (HUD, 2018 PIT Report). Half of the homeless population in the United States live in just five states with California and New York having the largest share (HUD, 2018 PIT Report). The 2018 Report revealed that for the third year in a row, the United States saw an increase in the number of unsheltered with approximately 35% of the homeless population reported as unsheltered or living in areas unsuitable for human habitation, such as on the streets.

## Point-In-Time Surveys: How the homeless are counted

The United States Department of Housing and Urban Development (HUD) uses Point-In-Time (PIT) Surveys, conducted during the last ten days in January, to gather a snapshot of the number of homeless living in the United States. The PIT counts are conducted by 398 Continuums of Care (CoC) nationwide. The CoCs report data for sheltered and unsheltered individuals. For those individuals living as unsheltered (not in temporary or permanent shelters) volunteers take the surveys to the streets. The PIT Survey is not an absolute measure of homelessness, but rather measures the trend of homelessness in a region and across the nation. While the PIT Survey counts those individuals visible on the streets and staying in shelters, it does not count those living doubled up (living with family or friends), couch surfing or precariously housed, such as living in motels/hotels or in cars, campers (HUD, PIT Report, 2018). It also does not count

individuals in certain institutions such as hospitals and jails that might have been homeless before being institutionalized (National Law Center on Homelessness and Poverty, 2017). Unfortunately, this leaves a large portion of the homeless uncounted for and therefore invisible. This "invisible population," represents a large portion of the homeless living in rural areas and hidden spaces (Cloke, et al, 2001; Jackson & Shannon, 2014). Even the "street homeless" can be undercounted as PIT strategies vary by location, with some using events that attract the homeless to perform the counts (missing those who don't attend), or field teams not knowing the location of all camps or feeling unease in them leading to variability and lack of reliability in reporting (National Law Center on Homelessness and Poverty, 2017; National Alliance to End Homelessness, 2010; Troisi, et. al., 2015; Hopper, et. al., 2008; Schneider, et. al., 2016). So, while the overall rise has spiked both societal and academic interest in the conditions of homelessness, there remain considerable data deficiencies

Historically, interviews and surveys have been used to fill these data gaps and more generally provide a better understanding of what it means to be homeless. GIScience can also contribute to this dialogue, especially in the light of the current trend towards more contextualized data collection and analysis (Kwan, 2018). While "context" can be interpreted in different ways, here (and more generally from the perspective of health geography) we suggest it means collecting socially insightful data that can be combined with or even replace more traditional data (Curtis, et al., 2018b). Relatively little is known *spatially* about the homeless situation including the geographical dimension of the day-to-day activities and social spatial networks of the homeless (Curtis, et al., 2018a). In this thesis, we will address homelessness using a spatially contextualized approach, by not only identifying key places within the homeless communities, but by enriching these with nuance, explanation, and interpretation. This research will build on

current and previous work on marginalized cohorts and fine scale spatial data collection (Curtis, et al.; 2015, Schuch, et al., 2017; Curtis, et al., 2018a; Curtis, et al., 2018b). It will also explore a largely underreported area of homelessness, those living in more rural counties. This thesis should also provide insights that can be used to inform service providers on how the homeless community is counted and served.

# CHAPTER ONE

# AN OVERVIEW OF WHAT IS HOMELESSNESS

The following overview will provide operational definitions and theoretical perspectives commonly utilized in understanding homelessness. There are many perspectives on homelessness, but this thesis will focus on the societal and individual factors that result in homelessness; sense of place, activity space and how these perspectives can be used with existing spatial data to further contextualize the homeless spaces. The addition of fine-scale data in the form of spatial video and spatial video geonarratives to existing theories will contribute a greater understanding of the challenges faced by the homeless community, leading to more specific and targeted intervention strategies.

## Homelessness

Depending on the field of study, homelessness can be defined in a variety of ways. This geographical study will cite the most widely used definition. The term homeless is simply the absence of a stable residence, which is a place to receive mail and designed for regular sleeping (Robertson, et al., 1985, Wolch, et al., 1988, Green, et al., 2013, Burt, 2003). In turn, a homeless individual is someone who sleeps in public or private places not designed for regular sleeping, including temporary shelters (HUD, 2018).

Other terms associated with the word homeless include intermittently (short-term) and chronically (long-term) homeless. Intermittently homeless individuals are often described as

short-term residents at emergency shelters and as staying with friends and family (i.e. couch surfing) (Green, et al., 2013), while chronic homelessness is defined by HUD as having spent more than twelve months on the street in one's lifetime ("McKinney-Vento Homeless Assistance Act," 1987). Chronic homelessness can create a new set of social and personal crises that perpetuate the existing societal and individual factors that resulted in homelessness. Wolch, et al. (1988) refer to this as a vicious cycle, the culture of chronicity, which results when the individual and societal factors that precipitate into homelessness are left untreated. This cycle of homelessness is often impossible to escape making the development of intervention and prevention strategies key to reducing homelessness (Wolch, et al., 1988, Law and Wolch, 1991).

## Factors Resulting in Homelessness

Homelessness is a complex social problem with a variety of underlying social and individual factors, which can leave a person vulnerable to the cycle of homelessness (Cutter, et al., 2000, Aday, 1993, Rogers, 1997, and Padgett, et al., 2011). Social factors are things that impact the livelihood of a person, which in connection to homelessness include; high unemployment, low availability of affordable housing, and poor public education (Kawash, 1998, Pleace, 1998, Law and Wolch, 1991, Mago, et al., 2013).

Individual factors often associated with or contributing to forms of homelessness can include; sexuality, age, mental and physical disabilities and illnesses, family breakdown, and addictions (drugs, alcohol and gambling) (Kawash, 1998, Mago, et al., 2013). Drug and alcohol addiction among the homeless can cause contention amongst researchers because some think that it further stigmatizes the homeless population (McNaughton, 2008; Buchanan, 2004; Davidson, et al., 2011). However, the National Coalition for the Homeless (NCH) (2017) reports that substance abuse is the leading cause of homelessness. Further evidence of this strong connection between

substance abuse and homelessness comes from the Substance Abuse and Mental Health Services Administration (SAMHSA) (2003) which estimates 38% of the homeless population are dependent on alcohol and 26% are dependent on drugs. Post (2002) reports that two-thirds of their homeless clients reported having a mental illness, drug or alcohol problems within the last thirty days. Broken relationships, job loss and loss of housing can all be considered potential pathways to substance abuse and eventually lead to homelessness (NCH, 2017). In turn, homelessness can cause an individual to turn to alcohol and drugs as a coping mechanism (NCH, 2017). Addiction and mental illness often co-exist as a form of negative coping and self-medication can be argued as partly being a function of a lack of healthcare and available treatment options, particularly for those who are already homeless and struggling (Post, 2002; NCH, 2017). Homeless individuals struggling with mental illness and addiction also experience additional obstacles to recovery, such as increased risk for violence and victimization and frequent cycling between the streets, jails and emergency rooms (Fisher and Roget, 2009). Again, these connections are often hard to quantify and for some are considered controversial, which justifies the need for more contextualized ways to collect data that informs rather than stigmatizes.

Early in the 20th Century much of the research on homelessness focused on individual factors with less attention connecting these to societal situations. However, McNaughton (2008) asserts that individual and societal factors are tightly interwoven making it important to incorporate more broader social, structural, cultural and emotional situations into the analysis of homelessness, including how long they stay homeless and how they form their homeless-related social networks and activity spaces. For example, homeless control measures including ordinances that criminalize the existence of homelessness often cause and perpetuate a landscape

of marginalization (Kushel, et. al., 2005; Amster, 2008; Aykanian and Lee, 2016; DeVerteuil, 2006, Reese, DeVerteuil & Thach, 2010; Speer, 2016; Curtis, et. al., 2016). Enhanced enforcement policies such as sweeps do little to address the homeless situation, but instead redistribute this population to outlying areas creating an almost constantly moving landscape (Shannon, et. al., 2009).

## Rural Homeless

Most of the homelessness literature focuses on small, location intensive studies of environments that are known to sustain homeless populations, such as the local *Skid Row* (Marr, et. al., 2009). This study will focus on one of the less researched areas, homelessness in a more rural county where services and resources may be more dispersed. As previously mentioned, we know relatively little about what it means to be homeless in a day-to-day context, because homeless individuals often try to become invisible so as not to challenge their excluded position in society (Cloke, et. al., 2002; Cloke, et al, 2007). However, unlike urban homeless populations, rural areas offer more places to hide and fewer places to concentrate making them far less visible (Cloke, et al, 2007; Cloke, et al, 2001). Rural homeless individuals are often not found sleeping on the streets or in parks, but rather they couch surf, live doubled up with friends or family, sleep in barns, hedgerows, orchards, picking fields, in cars, campers and RV, abandoned buildings, tents, or in hotels/motels (Cloke, et al, 2001; Jackson & Shannon, 2014; Post, 2002; Skott-Myhre, et al., 2008). These individuals are often not included in PIT counts and reports, because they are hard to spot, not considered homeless and/or do not use available services or stay in shelters (HUD, PIT Report, 2017). The PIT count is often done the last week in January when it is cold and the homeless are in shelters, making them easier to count (National Law Center on homelessness and Poverty, 2017). But if shelters are full, are limited or non-existent, as is often

the case in rural areas, then people will more likely be couch surfing or doubled-up, staying with friends and family (First, 1994; National Law Center on homelessness and Poverty, 2017). This creates a data gap which has left many of the rural homeless invisible, which in turn can minimize the problems and challenges faced by this population (Skott-Myhre, et al., 2008). Therefore, when defining homelessness flexibility is needed, particularly when it comes to the typical situations the rural homeless face daily (Karabanow, et al., 2014; Jackson & Shannon, 2014; Skott-Myhre, et al., 2008).

This invisibility has also allowed rural communities to ignore the existence of the homeless population within their community. Rural communities often have an idyllic nature about them and hold a set of social-cultural norms far different from their urban counterparts (Cloke, et al., 2001). This "Leave It to Beaver" innocence leads to ignorance of the homeless plight, anti-homeless rhetoric and a lack of homeless policies. As a result, local discourse and political messaging may deny that homelessness is a rural issue (Cloke, et al., 2001). Anti-homeless policies often include criminalization and stigmatization of homelessness, the 'blame the victim' mentality while stigmatization of mental illness and substance abuse also lead the homeless population to sink further into the shadows and outskirts of town, leaving them to fend for themselves (Post, 2002).

Services in rural areas such as; shelters, medical, food, public transit, emergency services are often nonexistent, severely limited, and geographical isolated with little coordination and connection (Skott-Myhre, et al., 2008; Karabanow, et al., 2014; Cloke, et al., 2007; Jackson & Shannon, 2014; Cloke, et al., 2001). The services that are available tend to be under-staffed, under-resourced, run centrally, sometimes unwelcoming, and difficult to access (Skott-Myhre, et al., 2008; Farrin, et al., 2005). Other barriers include; lack of transportation, lack of health

insurance, inaccessible/inadequate mental health & substance abuse services, lack of temporary shelters or shelters accepting pets, lack of child care, and community resistance to homeless service centers and ordinances designed to criminalize the homeless (Post, 2002; Jackson & Shannon, 2014). All these barriers can prevent someone from utilizing the available services and ultimately missing out on finding permanent housing. Systematic discrimination and unfriendly services providers can also leave an individual feeling unworthy and unwilling to seek out the services they need to obtain employment, legal and social services, and educational opportunities, again all potentially leading to permanent housing (Jackson and Shannon, 2014).

## Unique Causes of Rural Homeless

The structural and individual causes of homelessness spin an intrinsic web that is well documented in the literature. The literature also links increased levels of poverty in rural areas to increased levels of homelessness (Fitchen, 1992; Aron & Fitchen, 1996; Karabanow, et al, 2014; Post, 2002; First, et al., 1994; Patton, 1998; Shamblin, et al., 2012). The causes of poverty include; high unemployment, underemployment (low-wage, seasonal, temporary jobs), rising rents, shortages of affordable housing, single-parent homes, decline in public assistance, domestic violence, lack of affordable healthcare, and in-migration from urban areas (gentrification) (Jackson and Shannon, 2014; Karabanow, et al, 2014; Fitchen, 1992; Cloke, et al, 2001; Post, 2002; Skott-Myhre, et al., 2008; Beer, et al., 2003; Vissing, 1999; NRHA, 1994, National Coalition for the Homeless, 2019). These structural causes can be compounded by individual situations such as mental illness and/or addiction and vice versa. Drug and alcohol addiction have particular problems in poor rural communities which often lack the needed and necessary resources to combat addiction resulting in the culture of chronicity described by Wolch and colleagues (1988) (Jackson and Shannon, 2014).

## Activity space

The length of time an individual spends on the streets and the factors resulting in homelessness impact the formation of his or her activity space. Activity space is a term often used to define the local areas in which individuals habitually move about during the course of their daily activities (Arcury, et al., 2005, Sherman, et al., 2005, Martinez, et al., 2014, Cooper and Tempalski, 2014). However, it is often difficult to operationalize a homeless individual's activity space, because they do not have the traditional anchor points of home or work. Interestingly the homeless are also highly mobile (Rowe and Wolch, 1990, Wolch et al., 1993). The activity space of a homeless individual includes; encampment location, where they go to receive medical care, hot meals, showers, social services and even where they buy and use drugs.

In this thesis activity space represents the spatial movement component of an individual's day-to-day lived experience (Golledge and Stimson, 1987) and will be used along with spatial video geonarratives (SVG) to add personalized contextual units to the space (Kwan, 2008).

## Social Networks

When an individual enters homelessness, their existing social networks are broken, but are replaced with new networks which are closely tied to activity space. The new networks an individual form within their activity spaces influence their daily activities, behaviors, and overall health (Wenzel, et al., 2012). Homeless individuals form two distinct types of social networks, homed and homeless (Rowe and Wolch, 1990). The homed networks include homed (non-homeless) family and friends and also homeless social service providers (Rowe and Wolch, 1990). Dear and Wolch (1988) and Wolch (1988) recognized that homed networks form "hubs" of social support networks paired with housing and treatment services that can serve the

homeless in a coordinated way. Building on this theory, Harris and Rhodes (2013) recognized that the service "hubs" also create a landscape of structural interventions to the social and individual factors resulting in homelessness including; mental health services, HIV services, NARCAN distribution and use, and clean needle exchange programs.

The homeless social network is made up of homeless individuals including; friends, family, spouses, lovers, and informal communities based in street encampments (Rowe and Wolch, 1990). The homeless network can be a network of support and stability or one in which individuals engage in risky behavior. Risk causing behaviors includes; injection drug use, violent crime, and unsafe sex (Rowe and Wolch, 1990, Wolch, et al., 1993, Wenzel, et al., 2012, Green et al., 2013). Green, et al. (2013) also discovered the type of social network formed was dependent on whether an individual was chronically or intermittently homeless, making carefully coordinated service "hubs" a key factor in reducing chronic homelessness. It should be possible to link these social network theories with geographical analysis to identify geographical patterns and space-time experiences of homeless individuals. In this way these individual layers of qualitative data can be added to the physical geography forming a sense of place, adding further context to the issue of homelessness.

Sense of Place/Space

The idea of geography begins with place. Place is a key element for adding context and meaning to lived experiences, behaviors and actions and it is central to understanding how people are affected by their environment (Cutter, 2003, Cresswell, 2004, Cooper, et al., 2014). Understanding place can facilitate a researcher's understanding of local knowledge as well as the social, physical, and emotional context (Carpiano, 2009). Place is also where the homeless individual develops social networks and activity space. The sense of place is a key component of

the lived experiences, behaviors, actions, and health of an individual (Cutter, 2003, Cresswell 2004, Wenzel, 2004, Wenzel, et al., 2012, Cooper, et al., 2014). Understanding how the landscape stimulates an individual's spatiotemporal experiences is important in understanding how they meet their daily needs, where they set up their encampments, and form their social networks (Kwan, 2013, Wolch, et al., 1993). Therefore, it is important to examine all these aspects that contribute to a person's everyday experiences as they unfold within the landscape and over space and time. Pairing sense of place with activity space is necessary in understanding how individuals form social networks and how they move through these spaces and places during their day-to-day routine.

## Time-Space Structure

While spatial research can focus on location, place and space to contextualize individual geographies, Kwan (2012a) realized that there is also uncertainty in aspects of space and time with data, which she refers to as the uncertain geographic context problem. In their work on social networks Rowe and Wolch (1990) developed the time-space model that combines the social network and activity space, and how it varies across space and time during the day for the homeless. The time-space structure has been applied to a variety of homeless related projects (Rowe and Wolch, 1990, Wolch et al., 1993, Wolch et al., 1993), as well as more broadly in health geographics (Sarfraz, et al., 2012) and recording minority experiences (Kwan, 2008). Kwan (2012b, 2008) suggests moving beyond the physical location to movement, from place to mobility and from space to space-time to determine how they impact contextual influences. This move towards a time-space structure has allowed researchers to further understand an individual's daily routine (Kwan, 2013, Wolch, et al., 1993).

Contextualizing homelessness with GIS

Unique experiences, activity spaces, social networks, and daily routines, all combine to create individual geographic landscapes. New geographic methods can help tease out these landscapes, imbuing them with visual and emotional context. To do this, Kwan (2012b) suggests accurately constructing activity space by collecting detailed space-time data to contextualize the physical space in which an individual's day-to-day activities occur. Methods such as those that combine GPS and GIS, including spatial video (SV) and spatial video geonarratives (SVG), can also be used to understand not just physical places but their emotional attachment (Kwan, 2008). GPS and GIS technologies have been used in a variety of projects including Kwan, et al.'s (2012) study of smokeless tobacco, Gulliver's and Brigg's (2005) work to evaluate exposure to traffic-related pollution using GIS and activity diaries, Kwan's and Ding's (2008) use of geonarratives in their study of Muslim women living in Columbus, Ohio, and Curtis et al.'s (2015) study of tuberculosis in the homeless using SV and SVG. These types of technologies can also be used to capture daily space-time trajectories (Hagerstrand, 1970, Kwan, 2004, Kwan and Ding, 2008, Lee and Kwan, 2011). The key to these studies is that more traditional approaches (GPS and GIS) are combined with other novel data collections that can help provide context, including feelings and emotions, giving us a more detailed story about the place and person being studied.

One pathway to collecting such contextualized nuance is by spatializing words, which is critical in exploring issues around an individual's relationship with space (Jones, et al., 2008). The go-along interview, in which individuals move through space, has been utilized by a number of scholars including Bell, et al. (2015, 2017), in researching activity spaces, Carpiano's (2009) research in understanding health and place, and Evans and Jones (2011) comparative analysis between sedentary interviews and the go-along. Kwan (2012a) noted that these types of

interviews can also record changes over time, such as changes in social networks, physical features, and changes in neighborhoods, all of which impact contextual influences (Kwan, 2012a). These types of data can be layered in a GIS or Google Earth, to build a story about a place (Jones, et al., 2008). The go-along interviews, especially paired with a video component can reveal a variety of time and space references, which can be used to paint a detailed picture of daily activity. Indeed, gathering socially insightful data based on an individual's routine, activity space, social networks, including feelings and thoughts about spaces and places allows us to more fully contextualize the map, and at the same time provide policy makers with ideas for more cohort sensitive prevention and intervention strategies.

Interestingly, marginalized populations provide wonderful subjects for these approaches as they are one of the most spatial cohorts, with in-depth, personalized knowledge of streets, alleys, buildings, parks, and other spaces and the ability to safely navigate them (DeVerteuil, 2003; Marr, et. al., 2009; Kerr, 2016). Knowing where to walk and where to sleep is vital for survival and comes from acquiring lived and shared experiences (Kerr, 2016). A street, a hidden space, a park, or an orchard all pose different challenges and we need to capture each places meaning, not just as places on a map, but through the role of context and importance that each space holds to the marginalized community (Conners, et. al., 2016; Goldenberg, et. al., 2017; Speer, 2016). Utilizing on-the-ground methods not only helps tell the story of what it means to be homeless, but also helps provide insights for site-specific policies (Shannon, et. al., 2009; McNeil, et. al., 2015). It should be the goal of researchers not to further marginalize the homeless population but create an empathetic map that balances utility and compassion.

This project will build on a growing body of research using spatial technologies combined with traditional data collection. This project will enrich the spaces and places by adding human

experiences and knowledge. Furthermore, this project will build on the success of two methods, spatial video and spatial video geonarrative method, which have previously been used to study homelessness in dense urban areas, but here will be applied to a more rural setting. We will show how context-enriched maps of activity space, social networks, and place attachment, utilizing the insights of the homeless community as a whole (providers, code enforcement and homeless), can be used to develop prevention and intervention strategies to improve the lives of the homeless community in Tulare County, California.

## Tulare County, California: A Case Study

"…tell me what it's like to be a homeless individual in Tulare County…"
"The best word that I can use is rough."

Tulare County is in the central valley of California, south of Fresno and covers an area from the San Joaquin Valley east to the southern Sierra Nevada. Tulare County's 4,824 square miles is sparsely populated with approximately 442,000 residents and contains three small to midsized urban centers; Visalia, Tulare and Porterville (U.S. Census Bureau, 2010). Visalia is the county seat and the largest of the three cities with a population of approximately 133,000, while Tulare and Porterville are much smaller at approximately 63,000 and 60,000 respectively (U.S. Census Bureau, 2010). The county is also dotted with many smaller communities including Dinuba (population ~21,500), Farmersville (~10,500), Woodlake (~7,200) and Hanford (~54,000) (HUD, PIT Survey, 2017). In 1893 the western portion of Tulare County was taken to form Kings County (Hoover, 1990). Because of this, Kings County and Tulare County are counted as one in the HUD PIT Reports.

Kings/Tulare Counties are placed in the "other largely urban" Continuum of Care (CoC) category based on the 'urban-centric' model developed by the U.S. Census Bureau and Department of Education's National Center for Education Statistics (NCES). The other largely

urban category are CoCs in which the population predominantly resides in an urbanized area within a principal city within the CoC (but the CoC does not include one of the nation's 50 largest cities) (HUD, 208 PIT Report). An urbanized area is defined as an area of 50,000 people or more, while an urban cluster has at least 2,500 but less than 50,000 people, and the rural areas encompass all other populations, housing, and territory not included in urban areas (U.S. Census, 2010). Outside of the urbanized areas Tulare County is sparsely populated and falls within the US Census Bureau's definition of rural.

Figure 1: Tulare County Population Density, 2010 shows how the majority of Tulare County's population is gathered into a few urban centers, separated by countryside, orchards, and picking fields. Without transportation, this configuration can result in real and perceived isolation for the homeless population.

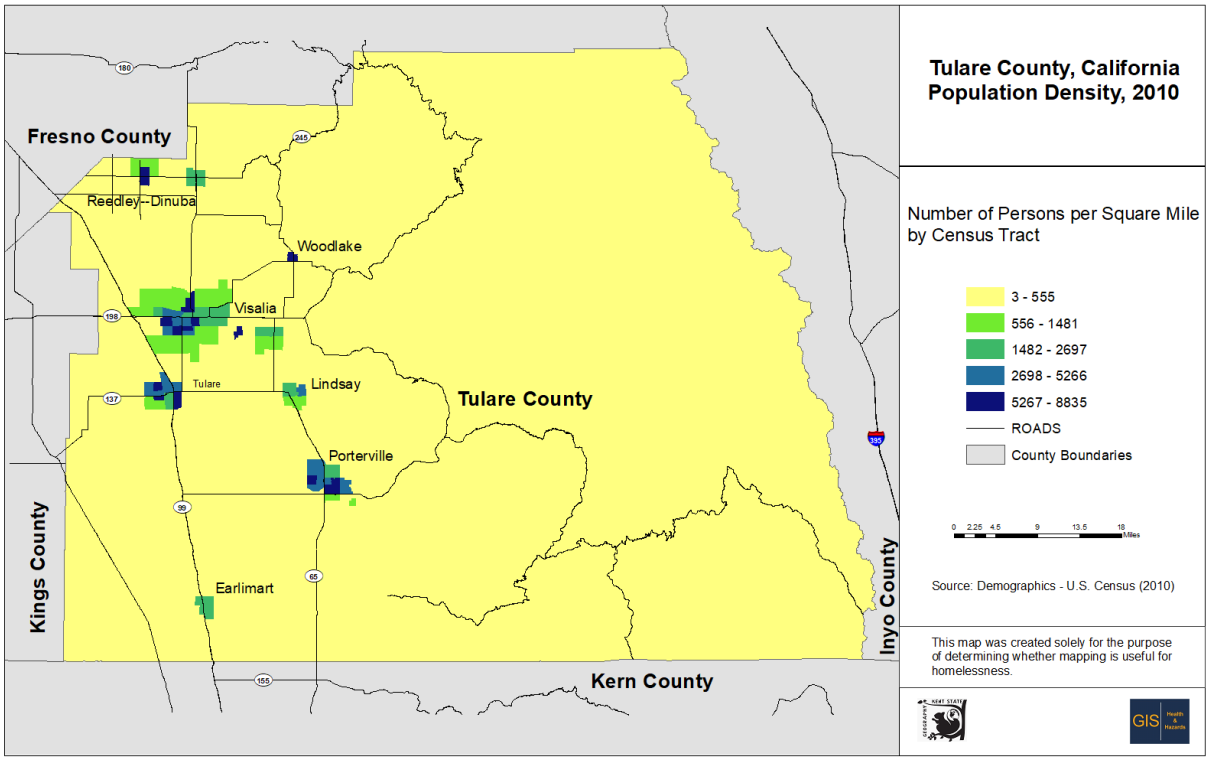


Figure 1:Tulare County Population Density, 2010

The Kings/Tulare County regions have seen increases in homelessness since 2012 (HUD, 2018 PIT Report). In 2017 California and Kings/Tulare Counties reported numbers well above the national average. California reported that 68.9%, or 89,543 individuals, of their homeless population went unsheltered in 2017. More specifically, the Kings/ Tulare Counties PIT Survey revealed that 67% of the homeless are unsheltered individuals, a 12% increase over the previous year and nearly double the national average of 35% (HUD, 2018 PIT Report). According to the 2017 PIT Survey for Kings and Tulare Counties, on any given night in Tulare County 666 individuals experienced homelessness, while Visalia is home to approximately 48% of these individuals. Approximately 0.21% of Tulare County's population is homeless, placing it above the national average of 0.18%, but below California's average of 0.32% (HUD, PIT Report, 2017). The cities of Visalia, Hanford, and Porterville exceed the national averages at 0.33%, 0.34%, and 0.24%, respectively (HUD, PIT Report, 2017). Because of Tulare County's geographical and rural nature and the way PIT Surveys are conducted these numbers may be well below the actual number of homeless individuals living in Tulare County.

Causes of homelessness in Tulare County

The causes of homelessness in Tulare County echo the national statistics but align more with those unique to rural areas. The 2017 HUD PIT Report for Kings/Tulare Counties cited unemployment (26%) as the number one cause of homelessness, followed by a lack of affordable housing (11%), a 69% increase over the 2016 Report. The California Central Valley Economic Development Corporation (CCVEDC) (2018) cited an unemployment rate of 8.6% for Tulare County, the highest in the eight county Central Valley and more than double that of California (4.1%). These factors contribute to the growing rate of poverty, in Tulare County, California, and across the nation. According to the 2017 American Communities Survey (ACS) 5-year (2013-

2017) report the average poverty level of for Tulare County is 27.1%. This is well above the 2017 averages for California (15.1%) and the nation (12.3%). As the homeless become more visible, the need to create initiatives and policies aimed at tackling the issue of homelessness becomes more urgent, but these policies often ignore the causes (Cloke, et al., 2000). Therefore, by understanding more about the causes of rural homelessness we can begin to develop better, tailor-made prevention and intervention strategies.

# CHAPTER TWO

## RESEARCH DESIGN AND METHOD

The research design and methods used for this project expand on the growing body of research which uses geospatial technologies, along with traditional data collection, to enrich the context of places and spaces through human experience. This will be achieved through the collection of spatial video (SV) and spatial video Geonarratives (SVG). SV is an inexpensive way of collecting geographical data as one moves through a study area. SV typically uses one to four GPS enabled cameras that are either mounted on a vehicle (Curtis, et al. 2013, 2015, 2016, 2018a, 2018b) or a single camera carried (Smiley, et al., 2017) throughout the study area to collect rich fine-scale geographical data. SV data can be used to create data layers suitable for visualization in Google Earth or a geographic information system (GIS). SVG data are often collected simultaneously with the SV to achieve a greater understanding of the area and topic being studied.

SVGs, simply put, are interviews conducted as one moves through an environment while a spatialized video is also being collected (Curtis, et al., 2015). This research method has been used in a variety of challenging environments where data is lacking or non-existent such as the comparison of different perspectives for the same space (Curtis, et al., 2018b), to capture the thoughts and emotions of those recovering from a natural disaster (Ajayakumar, et. al., 2019), understanding the health risks of the most marginalized (Curtis, et al., 2015 and Kwan, 2008), or mapping the challenges and health risks faced in oversea environments (Krystosik, et al., 2017).

This method has proven useful in revealing context and has given researchers a greater understanding of the processes that lead to the actions being studied (i.e. homelessness).

Indeed, previous work conducted by Curtis et al (2015) showed SV and SVG could be used to map out homeless environments in Skid Row, Los Angeles. Using this as a starting point, the team at Kent State began analyzing survey data and SVGs to identify overdose locations and NARCAN use among the homeless within Skid Row (Curtis, et. al., 2018a). The geonarratives were used to map hotspots and add context to the overdose situation within the Skid Row homeless community. One outcome was to allow Homeless Healthcare, a non-profit health care provider working in Skid Row, to further hone their intervention and prevention strategies by targeting high overdose locations, including understanding patterns associated with the free NARCAN kits they distribute to the homeless[1]. When SV are paired with SVG context can be added to the encampment locations and answer the questions of who, what, when and why.

The success of the research conducted within the Skid Row community using SV and SVG led to similar homeless and marginalized population studies in Akron, Ohio (Curtis, et. al., 2018b) and Tulare County, the subject of this thesis. Building on prior work in urban areas, in this thesis we develop a context-enriched map of the homeless population, their activity space, service providers, shelters, with data primarily sourced from the homeless themselves. This project will be used by the Tulare County Health and Human Services Agency (TCHHSA) and potentially other interested parties to help develop site-specific harm-reduction and strategic intervention

[1] During this period, I used SV combined with Google Earth to map street homeless camps in Skid Row homeless community. Data from the spatial videos were digitized into Google Earth and analyzed in ArcGIS to reveal concentrations of encampments and movement over time.

and prevention programs. It will also provide baseline data that can be used in future academic research to assess change.

More specifically, once a SVG has been collected, the narrative is transcribed with each comment being separated by a time stamp. To understand who is speaking the comments are also preceded by brackets (i.e. [M1]). This helps the researcher keep interviewer and interviewee comments separate and distinguishable. Figure 2 below is an example format of a transcript.

(00:56:43) [M1] They have their own spots?
(00:56:45) [F2] Right here in this little shopping center people will hold
(00:56:46) [F2] up signs because they want to be helped out, because they're
(00:56:49) [F2] hungry and homeless. And kind of
(00:56:52) [F2] I here choose a route going back to the
(00:56:54) [F2] river so you'll see people they come out
(00:56:56) [F2] for the day do their thing and get whatever
(00:56:58) [F2] they need and they're back to their
(00:56:59) [F2] spots, especially during summer it's too hot to stay out there

Figure 2: Example Transcription

The transcription is read for various themes and other data constructs. For example, typically each SVG comment is assigned to one of 4 categories: *Spatially specific*, where a precise location is identified and described; *Spatially fuzzy* meaning the comment is directed toward the general area; *Spatially inspired*, meaning the comment is inspired or spills over from the description of a location to cover more general aspatial topics (for example illicit activity or crime); or *Spatial relocation*, where a comment references another location that is not currently close by or refers to a place coming up in the ride (for example a general comment about Shelter X) (Curtis, et al., 2015 and 2018b). While driving through space, visual cues are often the main focus of a conversation, but other senses such as sounds and smells can trigger recall. In addition, these conversations often are emotive in nature, especially when the subject recalls

personal experiences that can extend back to childhood. Indeed, a narrative may sometimes recall the far past, recent past, present, future, or a mixture of these time events, sometimes even within the same comment (Curtis, et al., 2018b). Linking emotions and experiences in this way to specific places and time allows for better contextualization of a place (Fielding, 2012).

The SVGs will also be explored for topical themes, like harassment, drug use, and health. In general, this approach should give us a better understanding of the challenges faced by the homeless population within Tulare County. Homeless encampments, evidence of previous activity (trash), lines for food and other services, known drug spots, and hangout spots, can be investigated in this way to add further context to the understanding of the homeless day-to-day activities and activity spaces.

SVG data to be used for this research project are part of an ongoing collaboration with TCHHSA. Typically, each interview lasts approximately 20-90 minutes as they navigate the activity space. The SV component of the interview identifies the visible sleeping and activity spaces of the homeless populations and the SVG component adds context to these spaces. The goal of the project is to learn more about the homeless population and what it means to be homeless in Tulare County. All participants were recruited through contacts originating from the TCHHSA's relationship with local homeless support groups. Informal, in-depth interviews were conducted with two homeless service providers, three formally homeless individuals, and one code enforcement officer in Tulare County. The participants completed one to three interviews each for a total of ten interviews. Each participant was picked because of their lived experiences either serving the homeless or through being homeless.

This approach is in the spirit of other studies that use fewer, but more in-depth interviews to show how the resources of the homeless along with their providers can improve the way services are delivered to the homeless (Curtis, et. al., 2016; Collins and Loukaitou-Sideris, 2016). During the interviews, participants were asked to describe their experiences with the homeless community or as being part of the homeless community. What differentiates this method from other methods is that the interviews were not guided by a set of questions, but rather the experiences of the individual cued by the surrounding environment. As Curtis, et. al., (2018b) described, there is considerable variation in environmental cues. An environmental cue can be as simple as a house or trash near an orchard, signifying where a homeless encampment was once located, or a parking lot where they were harassed, all of which add context to the space.

> Formerly Homeless: "As a matter of fact, this is where my own mother lives right here. So I was that close when she I would stay there and hang out there (the oval) rather than here."
>
> Formerly homeless: "loud and a certain amount of harassment in that parking lot [the Walmart one too?] Oh yeah…"

Participants (if formerly homeless) were asked to describe their day-to-day activities, where they slept, camped, obtained services, hung out, canned and recycled, bathed, and places they avoided due to either harassment, policing, or both.

> Formerly homeless: "That's a park where the police to harass you [That one?] Yeah I got harassed there by the police."
>
> Formerly homeless: "Me and my wife had a camp ground over here before she left when I got incarcerated [yeah]. We'd claim all this [yeah]."
>
> Interviewer: "That was just your spot, huh?"
> Formerly homeless: "Yeah."

The interviewer would not frame the conversation, but could add directional questions "that park over there?" or ask clarifying questions such as "can you elaborate on that?" The interviews were conducted in the cities of Tulare, Visalia, Dinuba and Porterville, though the main focus was Visalia because it is home to the highest number of homeless and serves as a hub for service provision in the county.

After data collection, the SVG analysis followed the protocols described by Curtis, et al. (2018b). Each SVG is transcribed, read for themes, and then input into Wordmapper 2 (Figure 3). This software has been specifically written for geonarrative analysis. The transcription and coordinate path (extracted GPS data from the SV in CSV format) are uploaded into the software. Once the transcribed narrative and GPS have been verified (meaning the transcription has no errors, such as out-of-sync time stamps), a spatialized narrative is displayed in the Wordmapper 2 map window with the narrative being displayed in a panel to the right of the map. Themes (i.e. violence, health, crime) and keywords are added with the resulting map displaying these as yellow pins. The keywords can come from previously identified themes, from reading the narrative, or from the word cloud which displays cooccurring words.

The spatial output from the Wordmapper 2 consists of Google Earth KML files (GPS path) with colored pins representing the spatial categories, themes, and/or keywords and GIS layers where the attribute table contains the results of the search criteria. Figures 3 and 4 below show examples of the Wordmapper 2 display and the Google Earth output file. Before a final map is created it is important to spatially investigate the output file by going back to the spatial video, the geonarratives, and the Wordmapper 2 software to further refine and add themes and keywords. The final maps not only visualize contextualized spaces and places but can be linked back to the interview to add further depth (emotion, place attachment, and personal insight).

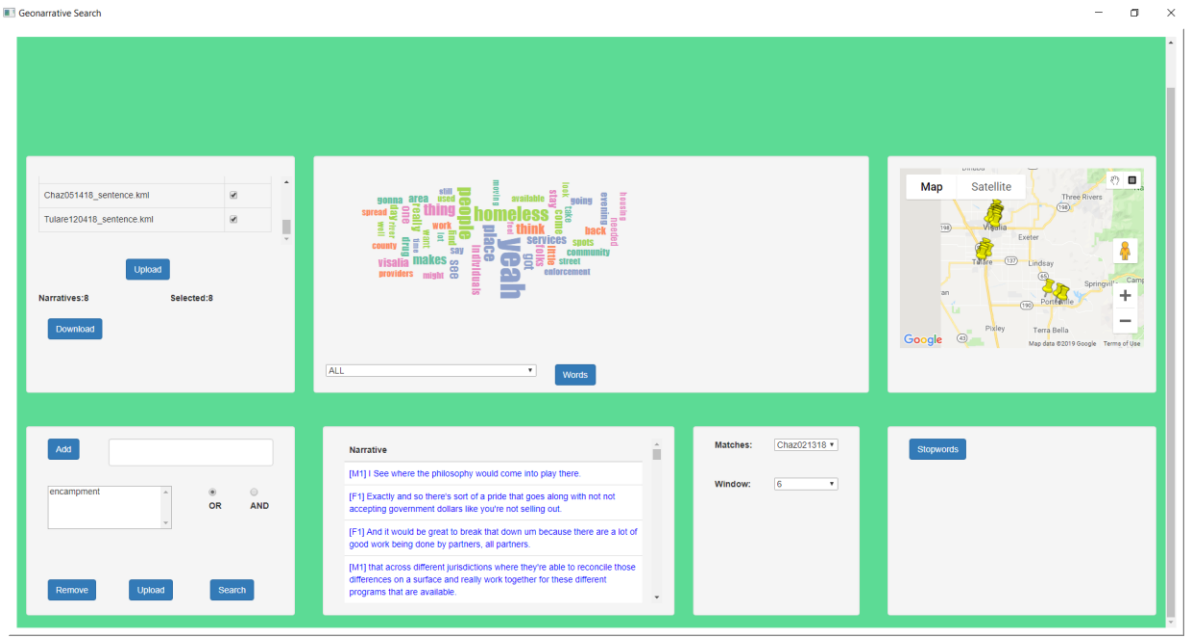


Figure 3: Wordmapper 2 Software Display Window

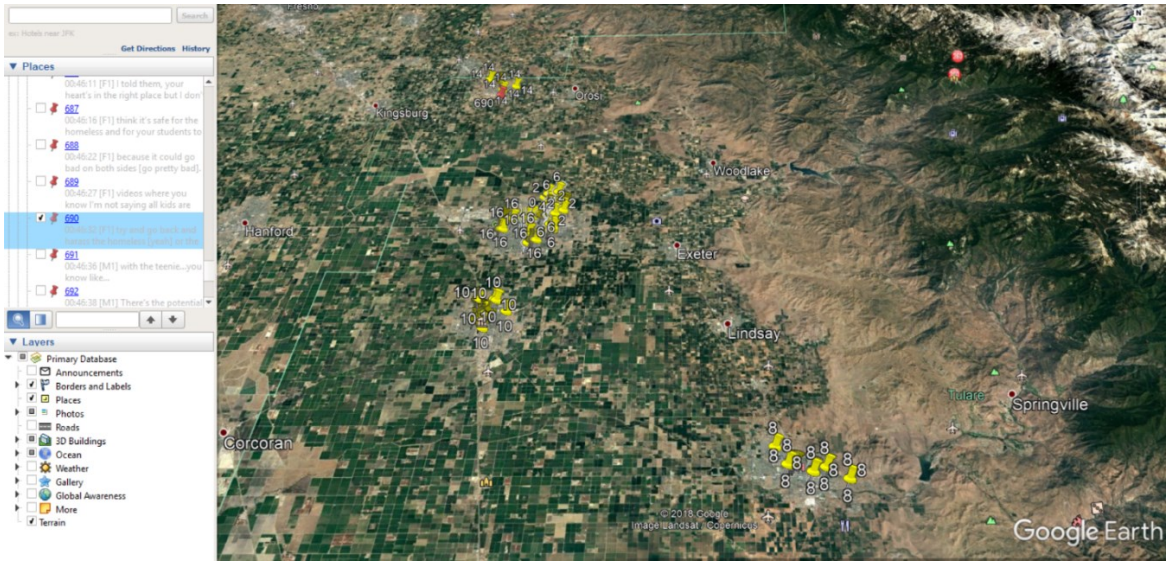


Figure 4: Google Earth Output

The analysis of the SVG was conducted in collaboration with TCHHSA with themes being important to the health department investigated, including; lack of service provisions, health and safety, violence and harassment, and illicit drug use.

# CHAPTER THREE

## RESULTS

A total of nine (9) SVG rides, plus one (1) interview were collected through 2018 until February 2019. The SVG rides include previously homeless individuals, services providers, and a code enforcement agent. These participants provide a variety of perspectives on the current homeless situation in Tulare County. Figure 5 displays the paths of the SVG rides in Tulare County.

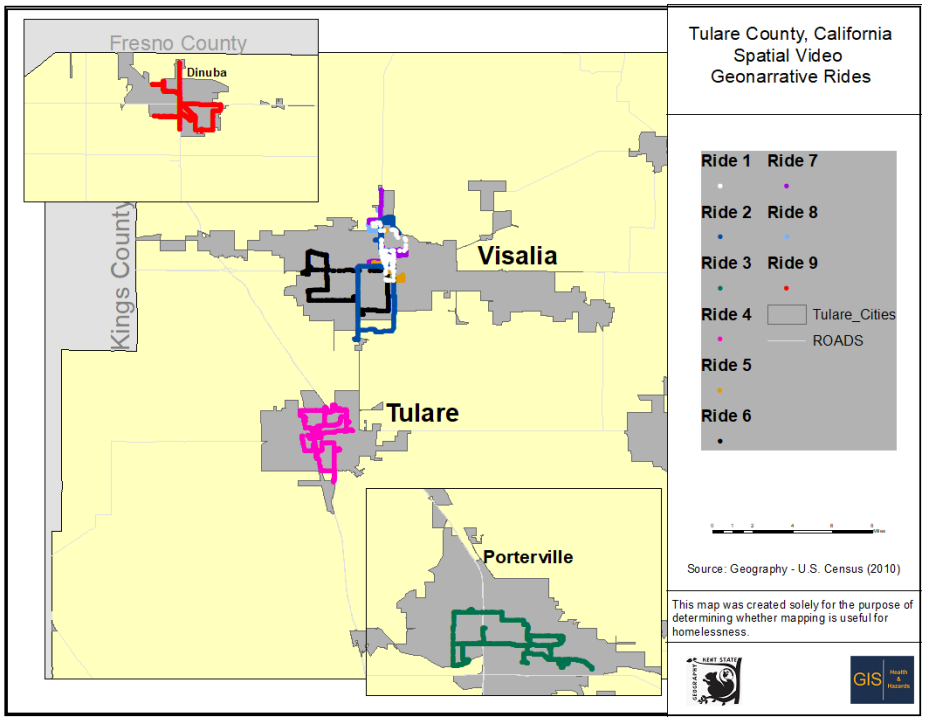


Figure 5: Spatial Video Geonarrative Rides

Several themes emerged from the interviews including; a severe lack of services, barriers to available services, lack of collaboration between existing services, lack of shelter leading to safety concerns for the homeless and a lack of understanding of the homeless community among local residents. Many of the interviewees voiced the need for a one-stop shop in Tulare County, a place where all the homeless could go to get everything they need.

> Formerly homeless: "Yeah. And in a building, I would have a place where you could get your ID or your driver's license…emergency medical stuff…You could get access to blankets, sleeping bags there would also be a shelter area where you could sleep. There would be a food section…Cuz right now you have people going all over town to try to accomplish things and it's hard on them."

> Service provider: "And so if we could have a place and it's not just where services are being offered, but a place that people can spend the day because it's gonna take many touches with somebody to get them to that space… So a place where they can get a cup of water, play a foosball game…give people a computer class, let them wash their clothes, all in one place…"

Another concern in Tulare County is the lack of an emergency shelter and affordable housing which, as a consequence, leads to more people living unsheltered. Once the social services are in place they often need to be paired with supportive services, such as drug and alcohol addiction treatment and mental health counseling, and stable housing programs (Jackson and Shannon, 2014). Services can help the homeless get back on their feet and the housing helps them stay there. Stable, affordable housing in rural areas is key to preventing homelessness (Jackson and Shannon, 2014). However, these plans also needed to be tailored, meeting the need of the individual if they are to be successful.

> Code Enforcement/homeless liaison: "What helped T*** was is he's a reader and they housed him by a library. So now he's always going to the library and reading books and all that good stuff…"

> Interviewer: "…So that seems like a big gap, you know not having accommodations for animals, some people are not being housed because they have an animal."

Putting an individual in a home they do not like or does not suit their needs is unsafe and may perpetuate homelessness (Jackson and Shannon, 2014).

> Code Enforcement/homeless liaison: "…there were other homeless people that were housed there and he's not very social, so he was like I don't want to be there, like I'm going back (to being homeless)."

The transition from living on the street or couch-surfing to permanent housing can be difficult for some individuals, with a new set of skills being required as each learns to live inside again. Service providers and the code enforcement agent mentioned in the geonarratives that over time they encountered individuals who have been chronically homeless most of their lives. Both the service provider and the formerly homeless participants voiced a need for a transitional training program in which the newly housed person is taught living skills and money management.

> Service Provider: "Yes they gotta have some type of program where go in and they can start telling okay see I don't know like just trying to transition I have it from homelessness to housing."

Another theme that emerged was how the homeless sometimes felt ostracized by service providers, "moved along" by police and code enforcement and/or harassed by residents. These negative interactions sometimes led to the homeless making themselves invisible. When these invisible spaces have few or no proximate services to help them, then there is a greater need to employ survival skills and find safe spaces in potentially harmful environments. Examples of such unsafe locations in Tulare County include under Black's Bridge, down by the river, ditches,

deserted parks, parking lots, behind shopping centers, and orchards and picking fields, rather than the safety of shelters and missions.

> Formerly homeless: "…out here in this area homeless people will stay out there…And the police love to harass that area too."
>
> Interviewer: "Looks like there's a Family Healthcare here too."
> Formerly Homeless: "Mm-hmm…and they used to sleep a lot down here, but now they patrol it more."
>
> Formerly Homeless: "Um the people that work in this area and live in this area are very unfriendly toward the homeless.…I didn't know that we, this little community here, was so insensitive and hateful towards people… But the message was clear, get out of here, we don't want you in this area."

The homeless in Tulare County are constantly on the move, either canning and recycling or being moved along by the police. They often seek out safe spaces to sleep or relax, but as service providers and formerly homeless participants noted, this is often impossible due to both subtle and overt discrimination, harassment and even racism experienced at places such as the public library, senior centers, parks, and local businesses.

> Formerly homeless: "Homeless need a place to sleep safely and you know where they're not going to get harassed."

Discrimination and harassment did not just come from residents but were also experienced at places meant to help the homeless community. These could take the form of not letting individuals pick out and try on clothing at clothing drives, removing umbrellas from picnic tables so the homeless would move on, to more overt forms such as spraying air freshener around a homeless individual and even recalibrating sprinkler systems to discourage the homeless from sleeping in public areas.

> Formerly homeless: "…um at night you'll see people sleeping on this side over here…but what the mission started doing was recalibrating their sprinkler system…"

Survival skills don't just come into play when trying to find a place to safely sleep or rest, even every day chores had to be modified. Currently, there is nowhere in Tulare County available to wash laundry. The park service removed the buckets the homeless had previously used for this chore as a subtle way of telling the homeless to "move along." The geonarratives also revealed that many of the public bathrooms and bathrooms at the local mission's lack mirrors to prevent the homeless from "primping." A consequence of these actions, not being able to wash laundry or looking their best, are that it is hard to have a successful job interview, while everyday interactions with medical care, or addiction treatment leave the individual feeling embarrassed and self-conscious.

> Formerly homeless: "…a lot of the homeless go there and do their laundry. They use those big buckets that the guys use, the park guys use for trash…Now most of the bathrooms don't have a bucket in 'em because the homeless were using them."

Keyword Maps *All basemaps have been removed due to the sensitive nature of the data

All the mapping and geographical analysis are based on the SVGs collected in the study. Once all data were organized for themes, contextualized maps were created. These maps are a visual representation of the written data and can help those working in Tulare County identify areas of concern. The base maps show the homeless sleeping locations, encampments, and services, including; libraries, churches, senior centers, warming/cooling centers, medical providers, and recycling centers. Secondary maps display the places the homeless avoid due to harassment and policing. Secondary maps were created to explore the topical themes (i.e. police harassment)

geographically (i.e. the oval, this parking lot). These maps also reveal the distances the homeless travel every day to earn money, utilize services, seek medical care, fulfill their basic needs and socialize. These maps also show the geographical relationship between services and health and places that were avoided. For this project the themes input into Wordmapper 2 included places where the homeless community can be found such as; encampments, services, hangout spots. Also searched for were health and safety themes including; places of avoidance due to harassment, drugs/drug use, prostitution and policing. After the keyword search, unnecessary sentences and words were eliminated before being downloaded into spatial output files, including shapefiles.

Figures 6 – 9 contain the search words: encampments, camps, services, and hangout locations. These show the degree to which the homeless population in Tulare County is isolated from the city centers, and where services are often located. For example, in the city of Tulare, the concentrations for current, previous and known encampment sites are located on the edge of town near the railroad tracks, trailer parks, and along the freeway in hotel and shopping plazas (Figure 9: Tulare Homeless Population Keyword Location Map).

> Service Provider: “They'll be out back here too, behind the KFC, by the motels...”

The maps for the cities of Tulare, Dinuba, and Porterville also reveal how poorly served these places are in terms of service provision. Dinuba has no available services for the homeless, forcing them to travel to the nearest city of Visalia which contains the largest concentration of services for the homeless (Figure 8: Dinuba Homeless Population Keyword Location Map). Many of the hangout locations are located near recycling centers, where the homeless population exchange collected recyclables for cash to purchase daily necessities. Some places were

identified as being concentrations for illicit activities such as: drugs, prostitution, and crime, one example being “the oval”. See Figure 11: Visalia Health & Safety Keyword Location Map for more details about the oval.

> Formerly Homeless: Prostitution, [prostitution], drug deals [drug deals]…heroin overdoses here, people have gotten stabbed, people got beat up, jumped...”
>
> Formerly Homeless: “…area the ovals always been the oval. The north side of Visalia has always been considered the rough part of town.”

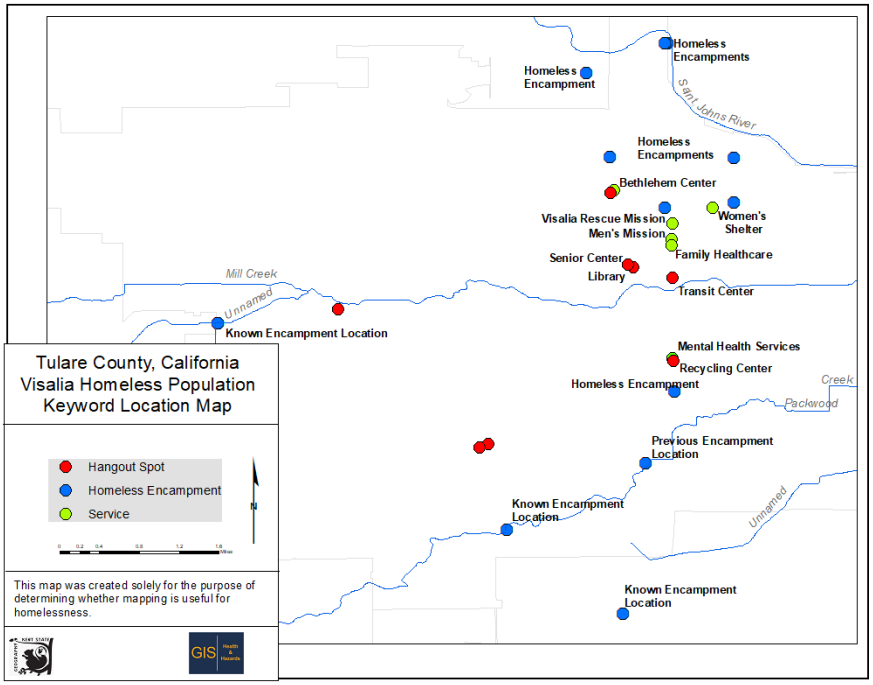


Figure 6: Visalia Homeless Population Keyword Location Map

> Service Provider: “I think in Visalia more are sort of within the city but if you're looking at other towns such as Porterville you're gonna see more on the river now there are significant encampments in in Visalia but but there's just a larger instance of people being in a variety of encampments even through the town.”

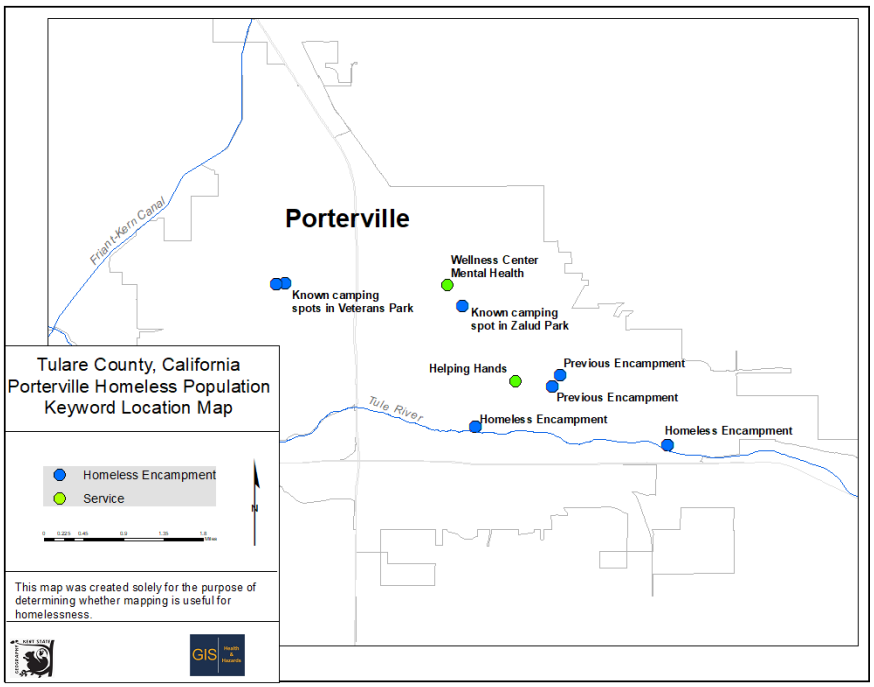


Figure 7: Porterville Homeless Population Keyword Location Map

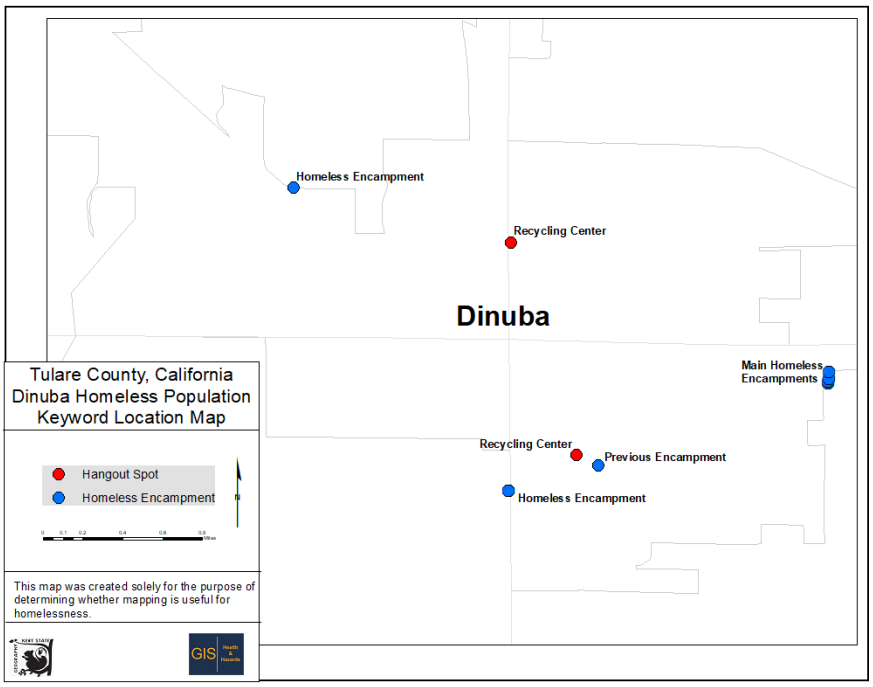


Figure 8: Dinuba Homeless Population Keyword Location Map

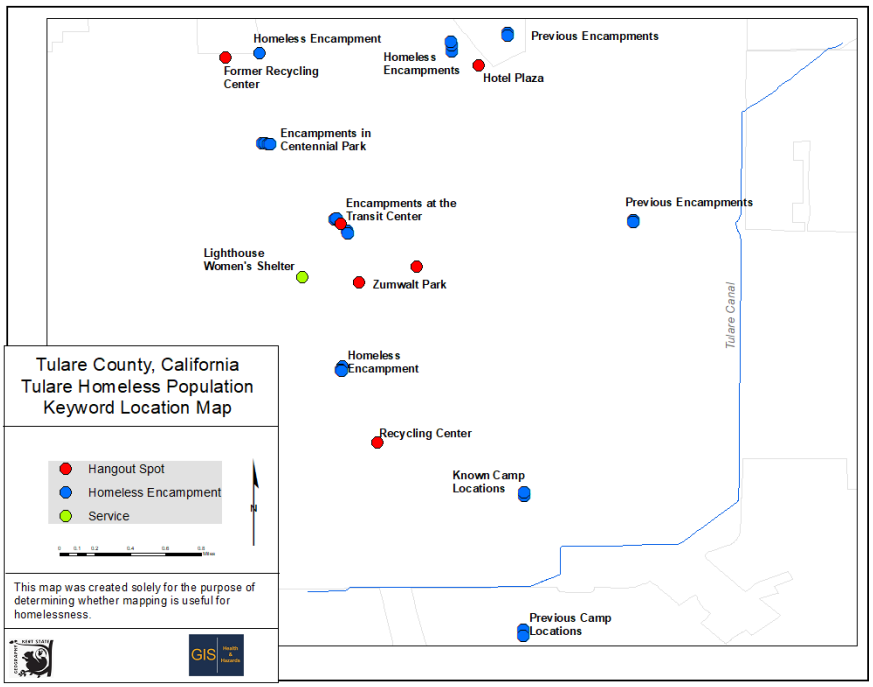


Figure 9: Tulare Homeless Population Keyword Location Map

The Health & Safety Keyword Location Figures 10 - 13 were created to show areas where the homeless camps are in relation to places that are avoided due to increased enforcement activities, harassment by police and the public, and illicit activities such as drugs, crime and alcohol. The keywords searched for these maps included: harass, hostile, dangerous, attack, assault, drugs, and bullying. These maps also included the keywords: police, enforcement, cops and sweeps. These keyword maps not only revealed areas that are thought of as dangerous for or hostile towards the homeless community, but also areas that are typically considered safe. These unsafe, safe spaces included; shopping centers, public parks, restaurants, public library, and the senior center. The lack of services combined with the overt and subtle harassment from the community and law enforcement has driven the homeless community to take refuge in unsafe places including; abandoned houses, by rivers or drainage ditches, freeway underpasses, orchards and picking fields along country roads and even dumpsters. This creates not only physical isolation, but

social isolation. It also leaves them more vulnerable to further assault and harassment, particularly women and seniors.

> Service Provider: "…like the river you can find folks there during the day they tend to stay stay in their encampments they're not um coming in for services or accessing more things that are in the community they tend feel more isolated and become isolated."

> Service Provider: "There's been a rather an assault case severe beating of a homeless woman. So it's horrible it is horrible so, yeah no encampment I guess this safe."

Some of the more isolated areas where the homeless take refuge can also be dangerous for service providers. This happened out by the river encampments in Porterville. (Figure 10: Porterville Health & Safety Keyword Location Map).

> Comment 1 from Figure 10 Service Provider: "got yeah... okay I would start... it's getting a little too... not dangerous I just don't want to take any chances of them saying why you guys come back here for…"

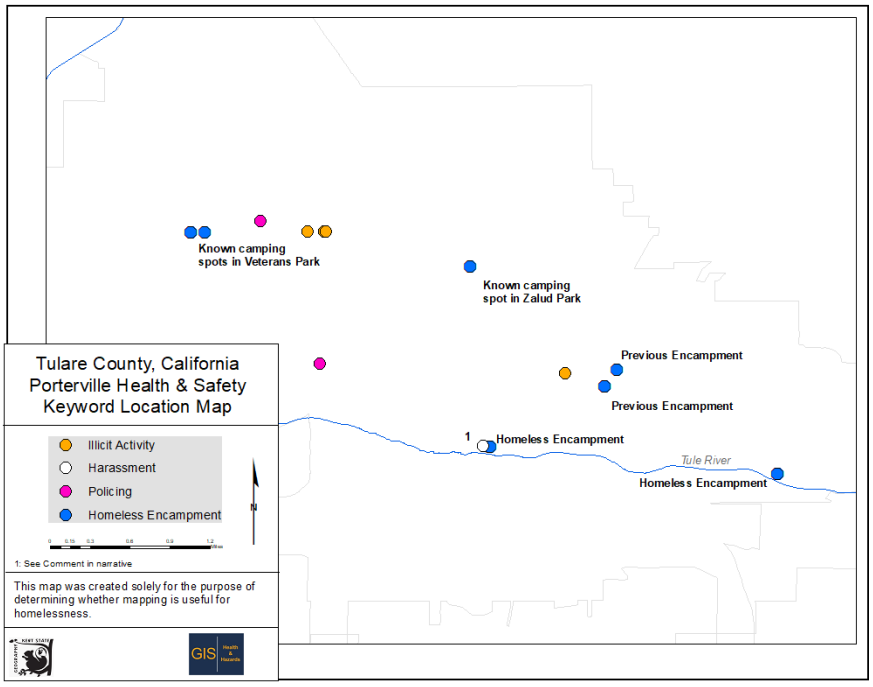


Figure 10: Porterville Health & Safety Keyword Location Map

The narratives also revealed the context around safe sleeping choices. For example, where are safe locations to sleep without being harassed by the public or moved along by the police, and where they can avoid assault and harassment. Choices include dumpsters and other hidden spaces, which is part of the reason why not many homeless individuals were spotted during the rides.

> Formerly Homeless: “Um, both because a lot of homeless people do their sleeping during the day. [I see]. Because it's dangerous for them to sleep at night [Really?]. Mm-hmm…because people attack 'em.”
>
> Service Provider: “dumps... those kind of buildings I mean things that you open up and you'll see a bedding in there [yeah]. And like I said they'll only go there at nighttime and they won't tell anybody where they're staying at [right]. Safe cuz you know because it was so they could sleep and be safe [yeah] and not be attacked…”

The maps reveal that areas that were particularly hostile towards homeless people were shopping centers, though ironically around these were also spaces for camps and hangouts. This pattern can be seen on Figure 11: Visalia Health & Safety Keyword Location Map and Figure 12: Tulare Health & Safety Keyword Location Map. Figure 11 includes a close-up view of The Oval area near the library and senior center. The Oval, which was frequently mentioned in the rides, is a popular hangout spot for the homeless but it also is identified as being a space for illicit activity, harassment and policing.

Ordinances, code enforcement and law enforcement in Tulare County, particularly Visalia, keep the homeless moving along, protecting the idyllic view that was mentioned by Cloke, et. al. (2001). The police and code enforcement keyword maps align nicely with the camp keyword maps, showing a relationship between code enforcement and homeless camps, current, known and former. The number of “previous encampment locations” on the maps is also evidence of the ordinances in place and code enforcement constantly relocating and moving people out of areas.

With no plans in place to provide housing, the homeless are always being moved on, which potentiality causes them to lose out on services and potential housing options because they cannot be located by service providers. Without a plan for housing the relocated individual often ends up back in the same spot they were removed. This can be seen in the city of Tulare where there is an overlay of homeless encampments, previous encampments and policing bubbles.

> Service Provider: "…and pushed them out of here, but just little by little they start coming back."
>
> Service Provider: "Cause see, they used to be right here, camped out here. I guess they moved them over here."
>
> Interviewer: "So I mean it seems like code enforcement does a lot of moving of people."

Tulare County does not have a widespread drug culture identified in the narratives. Rather it is contained to places like the oval, less populated parks, parking lots, and some instances in shelters. It was noted by a service provider that there are high instances of meth and heroin, because it is cheap and becoming more readily available in the county. The drugs are not being dealt by the homeless themselves, but rather dealers praying on the homeless community's vulnerabilities.

> Service Provider: "I certainly have in in shelter situations I have seen that where there is you know somebody who may be accessing a shelter that isn't as necessarily in need of shelter yet taking advantage of the people who were there."

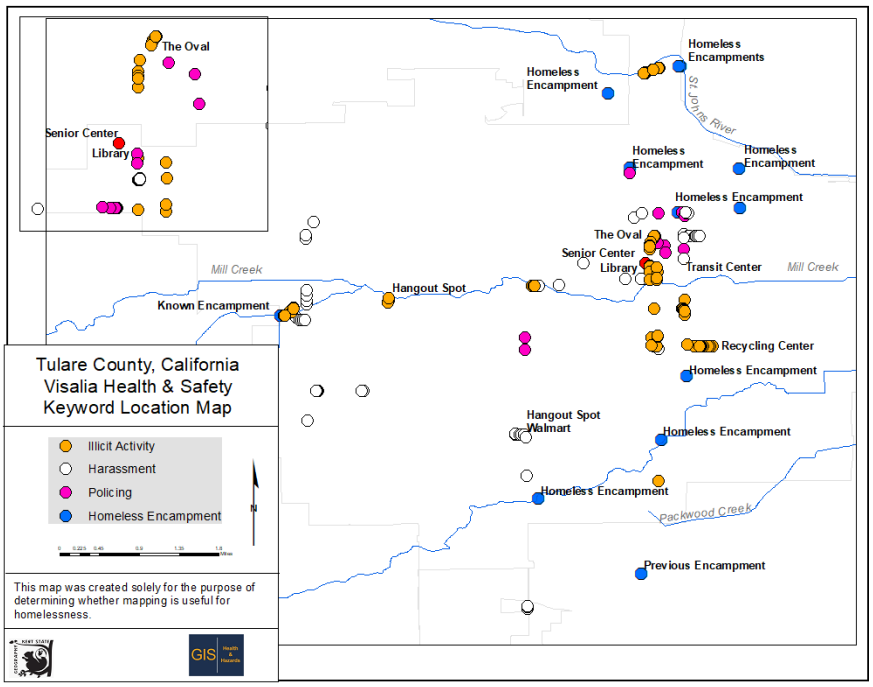


Figure 11: Visalia Health & Safety Keyword Location Map

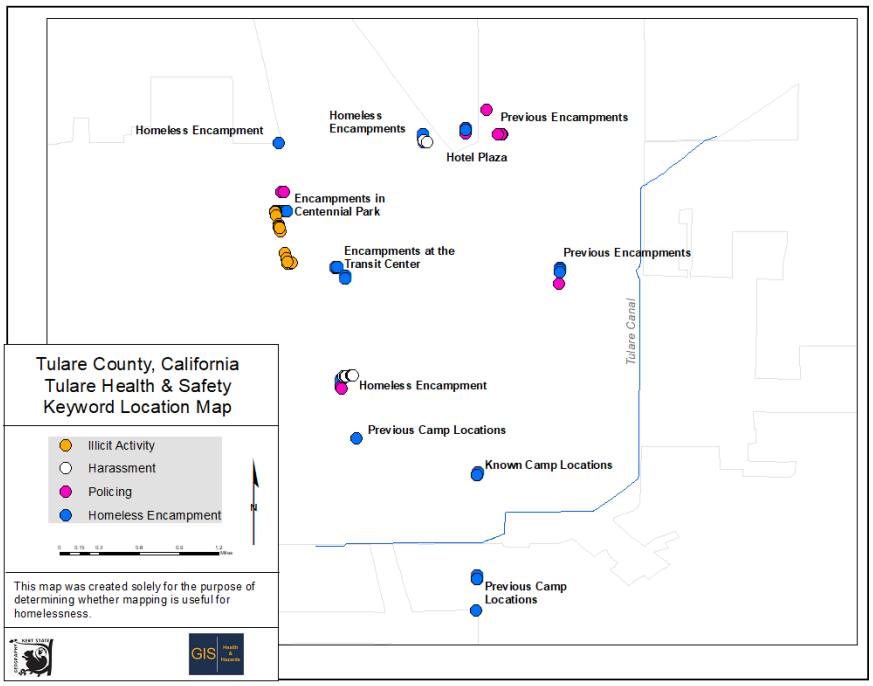


Figure 12: Tulare Health & Safety Keyword Location Map

When drugs and other illicit activities (criminal acts and prostitution) are discussed during the rides, a cooccurring narrative is how the homeless are portrayed in society and by the local community. Figure 13: Dinuba Health & Safety Keyword Location Map may have some "illicit activity" bubbles, but they represent the discussion of the common misconceptions that the homeless face every day. For example, in Dinuba when the subject was discussed it was how the code enforcement officer must deal with the common misconceptions of what it means to be homeless. They are not criminals and in some cases, they were working and going to school, but fell down on their luck.

> Interviewer: "…like what I hear are all homeless like they do drugs and they're mentally ill."
>
> Code Enforcement: "They're all drug addicts they're all criminals."

Also, the harassment bubble on the Dinuba was not an actual harassment incident, but the code enforcement officer's concern that those wanting to help, in this case a local high school club, may come back in the future and harass the homeless. This is a valid concern, because this happened in Visalia to one of the formerly homeless individuals interviewed for this project.

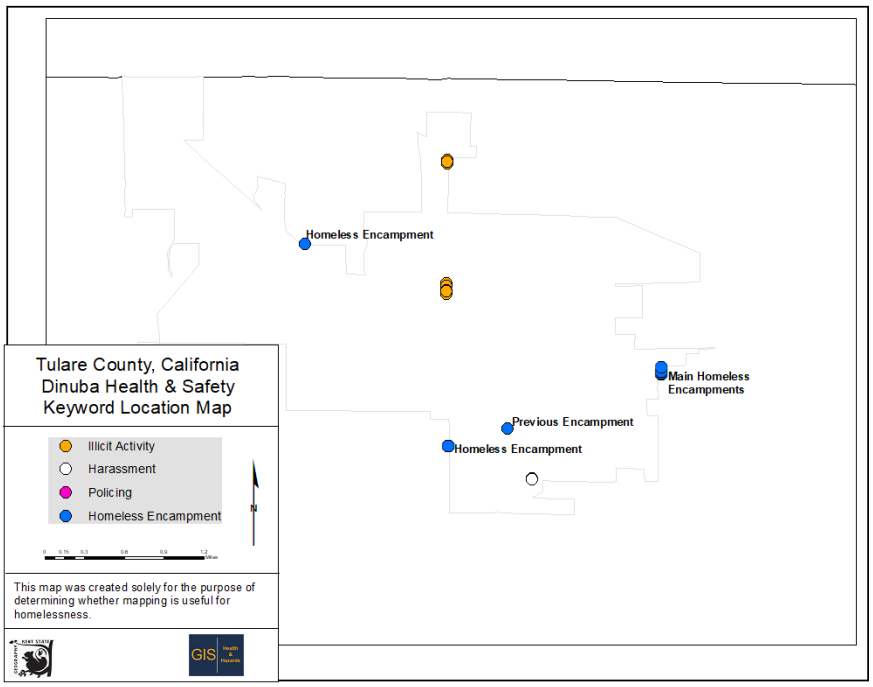


Figure 13: Dinuba Health & Safety Keyword Location Map

It should be noted that as was described in the last section, some of the keyword locations do not match with actual spaces being described for that activity. This is where referring back to the narrative is vital, so that the maps produced are not just a mapping of words, but rather a contextualizing of space.

## DISCUSSION AND CONCLUSION

From the review of the literature, the spatial video, spatial video geonarratives, that were collected with service providers, code enforcement officer, and previously homeless individuals, and the maps created from these resources we identified several approaches that could improve the lives of the homeless community in Tulare County. As described above, how an individual becomes homeless is often a tangled web of individual and structural causes and understanding

this web is important. Each individual's story is unique, and everyone deserves the opportunity to tell their story and we have an obligation to listen, and gain the knowledge and context needed to tailor a program specific to their needs. Ready-made, one-size-fits-all programs are less likely to be successful. This research project has shown that the homeless are constantly on the move and must work hard to survive in a resource-poor environment such as Tulare County. They collect cans, recycle, panhandle for cash to pay for required drug-testing, and walk or bike from their camps to services, to bathe, eat and receive medical care. Additional compassionate services can go a long way in making life easier for the homeless community in Tulare County. The severe lack of services and the need for a one-stop shop were identified by all participants as the number one concern in Tulare County. Instead of using currently developed urban models to guide homeless programs and service development, several different rural service model options could be adapted. First, Community Partnerships with a centralized database that tracks social services, housing status, and clinical and environmental factors affecting the health of people who are homeless or at risk of being homeless (Post, 2002). By getting service providers on the same page would streamline prevention and intervention programs to better serve the homeless population (Post, 2002; Skott-Myhre, et. al., 2008). Not only were limited services a problem, but finding available services was also cited by participants as an issue. A streamlined system can then pave the way for a multi-service center, one-stop shop, or Coordination Model that link unrelated resources together (Skott-Myhre, et. al, 2008). The one-stop shop can provide individuals with medical care, educational services, obtain identification, get assistance finding employment, financial management skills, and where emergency shelters are (Skott-Myhre, et. al, 2008; Jackson and Shannon, 2014). This one-stop shop would be able to provide comprehensive, individual care. Post's (2002) hub and spoke model might work for Tulare

County when combined with the one-stop shop and mobile outreach models. Visalia, home to the largest number of homeless in the county, could serve as a hub and the mobile units could create the spokes to outlying areas, such as St. John's River encampments and the cities of Dinuba, Porterville, and Tulare. An advantage to the mobile outreach units is that they would not arouse NIMBY (Not In My BackYard) sentiments that are often voiced by community members in Tulare County (Post, 2002).

All participants voiced a concern that many homeless individuals do not trust service providers, causing them not to utilize services, seek medical attention, or apply for monetary benefits. Through compassion and empathy, trust can be built between the homeless community and the service sector. When the homeless are met with an unfriendly attitude when seeking services or shelter it makes them feel unworthy and this feeling can cause them to forgo seeking out services and in turn missing out on housing opportunities (Hersberger, 2005; Jackson and Shannon, 2014). Service providers are often a homeless person's only connection to social and support services, and they should deliver support with a positive attitude (Jackson and Shannon, 2014). The feelings of empathy and compassion delivered with a positive attitude will give the marginalized hope and will provide us with the knowledge and understanding to raise them up, not bring them down.

> Formerly homeless: "What I'm finding a lot of people who are in the business of helping the homeless don't even like the homeless.…there's a certain attitude that they have of almost blaming the homeless for the condition that they are in or whatever."

> Formerly homeless: "…it's because they don't care. To them it's just a job."

Geographical studies of the homeless often reduce the homeless individual to a homogenous group "the homeless" (Rowe & Wolch, 1990; DeVerteuil et al., 2009; Green et al, 2013). This project has addressed this by including nuance, context and humanity by allowing the participants to describe their experiences in time and place in their own words (Kwan, 2008 and Kwan and Ding, 2008).

Limitations and Ethical Considerations

As geospatial technologies become more readily available and are widely used by experts and novices alike, the issue of individual privacy becomes an issue (Boulos, 2005, Mills et al 2010, Curtis et al, 2013, Curtis et al 2015). Mapping of the subject's story could potentially reveal their identity, or the filming of streets could have negative consequences for businesses or reveal the identity of people on the streets. The best remedy to this is to point the cameras down slightly so that they do not capture faces and if they do, to blur the faces, similarly to Google Street View imagery. This method utilizes video and audio recording, which can lead to privacy issues, particularly in small communities like Tulare County. Because of the rural nature of the area all the maps and descriptions are presented without street names. This helps preserve anonymity, reduce spatial stigma, and prevent any potential future harassment of the homeless community. Access is an issue and may come into play while studying the homeless population in a more rural setting like Tulare County. In many cases the homeless population stays hidden, near river banks and in the orchards and picking fields where driving is nearly impossible. These areas may also be dangerous, preventing the researcher from exiting the vehicle to film the areas. Other limitations include time of day, weather, safety, equipment reliability, and even the experience of the researcher (Carpiano, 2009). All these factors will play a role in how the temporal and spatial data are collected, analyzed and presented. This research will not be publicly displayed on

the internet and care will be taken in publication and presentation of graphics so not to reveal specific individuals or places.

This project also highlighted the limitations of time of day and weather. Although the interviews were conducted over a longer period, covering different seasons, the day-to-day weather impacted what was seen during an interview. It was noted in one geonarrative that it was raining and that is why they were not seeing as many homeless out and about. The time of day was also important. The type and frequency of social activity may differ not only by location but also throughout the day (Carpiano, 2009). Most of the interviews were conducted during normal business hours, between 9 am and 5 pm. The participants noted that the homeless were usually up early in the morning to beat the refuse services to the recyclables, which they exchange for cash to buy basic needs like food and drink. Their daily activities were also determined by the services offered. Some missions served only breakfast until 11 am, so you would not find any homeless at that spot after 11 am. Maybe another mission or church served dinner starting at 4 pm, so you would start seeing people line up at 3 pm. Although the interviews cannot be conducted 24-hours a day, this method does give more insight into the day-to-day experiences of the participant in Tulare County.

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