SOCIOLOGY AND HEALTH: UNDERSTANDING NONURGENT E.R. VISITS IN HUMBOLDT COUNTY

HUMBOLDT STATE UNIVERSITY

By

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SOCIOLOGY AND HEALTH: UNDERSTANDING NONURGENT E.R. VISITS IN
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ABSTRACT

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Jimmy Valdes

In this project I examined patterns of nonurgent use of emergency rooms (E.R.’s) in Humboldt County. Secondary data was provided by the Humboldt County Department of Health and Human Services for a three month period from July to October 2010. The data was a Health Monitoring Systems electronic spreadsheet that included de-identified demographic, spatial, and chief complaint information. The analysis was an assessment surrounding the nature of nonurgent utilization of the E.R. The research question was: what is the nature of nonurgent E.R. visits in Humboldt County? The methodology consisted of first quantifying raw data using frequencies and other descriptive statistics. Secondly, spatial analysis using Geographic Information Systems (GIS) and statistics using chi square and t tests were conducted. The research structure of this study utilized a grounded theory approach. Grounded theory is a research design that uses existing formal theories to contextualize, not dictate, research questions and their relationship with empirical findings. Upon completion, the results were provided to the Public Health Branch of the Humboldt County Department of Health and Human Services.
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CHAPTER 1
INTRODUCTION

Emergency Room (E.R.) care is a growing concern in the United States (Hock et al. 2005; Oster and Bindman 2003; Sarver et al. 2002). Not only is nonurgent E.R. care becoming more prevalent nationwide, it is often jeopardizing the lives of patients who need immediate care. Ambulance gridlock, longer wait times, and increasing costs are several important reasons why researchers are addressing nonurgent E.R. care (Howard 2005; Roland et al. 2005; Gooding et al. 1996; Tyrance 1996). However, in this study I show this may not be solely due to the actions of individual patients at E.R.’s. Larger sociocultural explanations should be addressed when examining causes of increased E.R. use as a regular source of care (Hock et al. 2005; Howard et al. 2005; Gill 1999). My role as a sociology graduate student was applied not only to gain direct experience in health research, it was an opportunity to explore alternative explanations as to how and why patients are depending on emergency care for ailments they may realize are nonurgent. In the decision making process for seeking medical care, individuals often weigh in a series of considerations such as access, wait times for appointments, perceived severity of illness, and duration of condition (Garcia 2010; Hock et al. 2005; Howard et al. 2005; Starfield et al. 2005). The spatial analysis in this study revealed that there may be different needs of residents in the county, depending on the where they live geographically. The rates of nonurgent E.R. use varies by area in the county, and the
northern zip code tabulation areas (ZCTA) show a need to perhaps focus efforts towards those areas, along with the areas within Eureka, the most populated city in the county (Humboldt County Community Needs Assessment 2008).

In this study I investigate utilization patterns of nonurgent emergency room (E.R.) visits in Humboldt County. I draw on data from the Humboldt County Department of Health and Human Services and my work as an intern during my Sociology MA program at Humboldt State University. Epidemiology investigates the distribution and determinants of disease in order to reduce the numbers of sick populations (Ashengrau and Seage 2008; Oakes and Kaufman 2006; Cockerham 2004; Conrad 2001; Berkman and Kawachi 2000). In this study, the epidemiologist, who works for the Public Health Branch of the Humboldt County Department of Health and Human Services, wanted to better understand the underlying reasons for the large number of nonurgent E.R. visits in order to help streamline emergency care in the county. My research greatly contributes to this effort by using statistical and spatial analysis to examine the EpiCenter dataset. EpiCenter is a Health Monitoring Systems software program used to collect emergency room data in the county.

I examined both age and gender as key variables in the EpiCenter dataset. Much health research in the field of medical sociology explores race and income as independent variables in health research (Oakes and Kaufman 2006; Marmot and Wilkinson 2006; Cockerham 2004; Conrad 2001; Berkman and Kawachi 2000; Cockerham et al. 1998;
Shah-Canning et al. 1996). However, the EpiCenter dataset did not contain these variables. A mixed methods approach was used in this study to examine the patterns of nonurgent E.R. use in the county (Berg 2009; Cope and Elwood 2009; Dillman et al. 2009; Mclean Report 2009; Onwuegbuzie 2007; Zimbardo 2007).

Medical sociology is a way of looking at the health outcomes of groups of people from a sociological lens (Cockerham 2004). This type of research contains epidemiological components as it explores how and why some populations are more sick than others. Medical sociology utilizes a holistic approach to explain health phenomena from the individual patient, to the role of large institutions in the administration of health en masse (Oakes and Kaufman 2006; Cockerham 2004; Conrad 2001; Berkman and Kawachi 2000). This field of research is inherently complex. One has to look at the myriad of variables involved in explaining how and why populations are more or less sick. My research added an additional element of complexity, given that it attempts to explain a phenomenon that includes the role of medical institutions, availability of health care, access to primary care, along with a set of other important considerations when attempting to explain nonurgent E.R. use (Conrad 2001; Maclalcon 1997; Navarro 1993; Gerhardt 1989). The definition of nonurgent in health research is also subjective, and heavily disputed around what distinguishes urgent from nonurgent (Howard et al. 2005; Sarver et al. 2002; Gill 1999).
Through this research, I gained valuable experience working as an intern with the Humboldt County epidemiologist. My work with the Public Health Branch was an invaluable opportunity to interact with health professionals with vast knowledge of the research involving my direct interests. The epidemiologist was especially important in this project, as he guided me through the contrasting styles and methods between public health and sociology. For example, public health researchers tend to utilize confidence intervals and measure health outcomes as determinants of health and illness (Ashengrau and Seage 2008). I worked in an official capacity as an intern for the Public Health Branch, which allowed this relationship to be possible. Explaining nonurgent E.R. visits involves a myriad of problematic decisions, such as how exactly to define nonurgent, and how to construct the series of methodological considerations in the study.

My research question in this thesis was: what is the nature of nonurgent E.R. visits in Humboldt County? The dataset included all E.R. visits in Humboldt County from July to October 2010. It was a secondary dataset, provided by Humboldt County Public Health. Cases were recoded into dichotomous categories of urgent and nonurgent in order to structure the following analyses in the study. A single exploratory hypothesis was used: there is a difference between the characteristics of nonurgent and urgent E.R. patients.
CHAPTER 2
LITERATURE REVIEW

Defining Medical Sociology

For this study I drew primarily from medical sociology literature (Kaplan 2007; Oakes and Kaufman 2006; Marmot and Wilkinson 2006; Cockerham 2004; King 2002; Berkman and Kawachi 2000; Straus 1999; Cockerham et al. 1998). Medical sociology is defined as the “research and analysis of the medical environment from a sociological perspective” (Cockerham 2004:16). The juxtaposition of sociological theory and practice with health is what characterizes the field in relation to this study on nonurgent E.R. visits. Medical sociology research often applies the World Health Organization’s (WHO) definition of health as complete social, physical, and mental well-being (WHO 2011; Conrad 2001). This definition extends beyond absence of illness or injury, and includes a larger context of one’s functionality as a measure of health. The emphasis on social forces is what characterizes medical sociology, where it is argued that these forces are important in understanding the determinants of health (Straus 1999).

Medical sociologists often scrutinize the labeling of illness of groups as current distinctions between healthy and ill (Kaplan 2007; Berkman and Kawachi 2000; Straus 1999). For example, a landmark study in 1959 by Margaret Clark found that many Mexican Americans in the southwest United States had experienced such frequent
coughing and diarrhea that these ailments were considered “normal” (Cockerham 2004:159). They were able to continue with their daily activities, and did not consider their conditions to be signs of illness. This is characteristic of labeling theory, which denotes the differences in how one group defines deviant (in health framing) behavior from other groups (Cockerham 2004). This is why the WHO definition of health remains effective; health and illness are often relative terms depending on how groups define their states of functionality. In the *Journal of Health and Social Behavior*, Shim (2010) developed the notion of cultural health capital (CHC) as a way to further explain the capability of patients to interpret their situations as a means of optimizing their relationships with health professionals. In Shim’s analysis, cultural health capital was important for the patient to know how one’s knowledge and abilities can contribute to, or inhibit successful utilization of the U.S. healthcare system.

**Dispositional vs. Situational Conceptualization of Health**

Medical sociology utilizes a general binary approach in framing its role in health research (Gerhardt 1989). Talcott Parsons (1978) developed health and illness as possessing both organic and sociocultural elements. Whereas organic (physiological understandings of) health is perhaps over represented in the United States, sociocultural health and illness delineates one’s contribution to the normative expectations of a larger economy and achievement-based society - an underrepresented aspect of health (Gerhardt
1989). From this perspective, the labeling of one as ill disrupts social conformity and expectations of role performance. Sociologically, this deviation from social normative behavior is important in understanding how the sick role is treated in society (Conrad 2001; Maclalan 1997; Navarro 1993; Gerhardt 1989). Given the importance in addressing both organic and sociocultural elements of health, a sociocultural investigation is instrumental in contextualizing an analysis on health.

Pierre Bourdieu expanded on these sociocultural interpretations of health by developing the concept of habitus. Habitus is defined as the cognitive structures of how people deal with their social world (Seidman 2008; Cockerham 2004; Ritzer and Goodman 2004). The normalizing experiences, rituals, and other daily practices groups internalize as normal activity comprises this concept. In terms of health in the United States, this indicates the social activities which contribute to the individualistic, competitive nature of a performance-based society; being ill means being unable to perform an appropriate habitus (Shim 2010:3). Bourdieu calls this hysteresis, where one’s social orientation lies in contrast to a set of normative behaviors (Ritzer and Goodman 2004:520).

It is important to mention the applicability of habitus to other theoretical developments. In the Stanford Prison Experiment (SPE), social psychologist Philip Zimbardo found that the power of situations can often dictate patterns of behavior
(Zimbardo 2007; Oakes and Kaufman 2006; Marmot and Wilkinson 2006; Conrad 2001; Berkman and Kawachi 2000). During the six days of the SPE, the randomly selected sample of young male college students playing either a prisoner role or prison guard role yielded a highly oppressive environment in which guards had internalized the roles of dominators over prisoners. The habitus for both guard and prisoner took only several days to solidify, and their newly-acquired social identities were based on how they understood impression management for their respective roles (Zimbardo 2007; Goffman 1959). The context of sociocultural understanding (opposed to an organic one), shows that the construction of meaning and its attributed role expectations can have a dramatic impact on how reality, especially towards health, is defined and managed across different social groups (Cockerham 2004).

Postcolonial Interpretations of Health

Current institutional perspectives of health and illness in the U.S. are largely a result of the legacy of cultural and racial domination (Robinson 2004; King 2002; Airhihenbuwa 1995). Nicholas B. King calls the evolution of Western medicine as part of a larger effort to establish an “ideology of empire” (King 2002:765). Civilizing missions of colonialism included medical rationalizations in order to isolate social groups based on arbitrary cultural differences. This developed into what is known as the emerging diseases worldview, where morbidity is framed as a dichotomous struggle of good
against evil (King 2002; Yadavendu 2001; Airhihenbuwa 1995; Navarro 1993). Ideas such as “development” and “progress” have also been used to differentiate cultures on a larger, global scale (Airhihenbuwa 1995:4). Inherent in the cultural exchanges in relation to managing health en masse is the power of the market economy. Airhihenbuwa (1995) identifies the spurious relationship of cultural value to that of market value in terms of the capability to better manage the provision of care. In other words, intrinsic in a cultural perspective of health is a larger aesthetic and ethical value that is largely linked to economic capital (Conrad 2001; Navarro 1993).

It is important to understand the relationship of capitalism and healthcare in the U.S. Our current economic system depends on the perpetual privatization of social relations (Robinson 2008). The process of intensive enlargement, which is the tendency to commodify social activity that has not previously been market-centric, is a means of expanding capital flow in order to continue the consumptive demands of our market economy (Robinson 2008). The result is the utilization of for-profit institutions. From a health care perspective, an example is hospitals, where tax-supported government hospitals help bridge the gaps in coverage, such as in emergency care (Howard et al. 2005; Cockerham 2004; Tyrance et al. 1996; Olson 1994). However, the U.S. Census Bureau estimates that 50 million Americans are currently without health insurance - which highlights increasing health externalities (those who do not have access to
adequate care) in a commodified health structure (U.S. Census 2010). In fact, health care costs are the primary cause of personal bankruptcy in the U.S., while the health industry remains one of the largest as a branch of the medical-industrial complex (Navarro 1993).

Epidemiology

This study utilizes an epidemiological framework as a subcomponent of medical sociology. Epidemiology is defined as the study of distribution and determinants of states of health in populations, as well as the study to control health problems (Aschengrau and Seage 2008; Conrad 2001; Berkman and Kawachi 2000). Traditional epidemiological research focuses more on the core elements of population, disease frequency, distribution, determinants, and means by which to control disease (Aschengrau and Seage 2008). Social epidemiology, using a similar lens, focuses primarily on social milieu in explaining and managing health and illness (Oakes and Kaufman 2006; Berkman and Kawachi 2000). One example of the differences between epidemiology and social epidemiology is from a study on variation of cholesterol levels in Finland and Japan. A normal cholesterol level in Finland is much higher than what is considered normal in Japan (Berkman and Kawachi 2000). Based on research on migration, levels such as cholesterol are largely determined by social activity, and are not based on genetic predisposition (Berkman and Kawachi 2000). Social epidemiology focuses mostly on those variables which are indicative of social interactions, as its study
analyzes how social activity can determine prevalence of health or illness (Oakes and Kaufman 2006; Cockerham 2004; Conrad 2001; Berkman and Kawachi 2000).

Another important concept in social epidemiological studies is popular epidemiology, which is defined as a participatory based research method that utilizes situated knowledge of community residents to assess regional diseases (Oakes and Kaufman 2006; Conrad 2001). This method rejects the value-neutral scientific paradigm, and includes various lay persons and community members to evaluate health. Popular epidemiology was born out of several community disputes involving illness that had support from local institutions (Beale et al. 2008; Kirby and Kaneda 2006; Conrad 2001). One instance occurred in Woburn, Massachusetts in 1986, where residents noticed unusually high rates of leukemia (Conrad 2001). After a grass roots effort, a leukemia cluster was identified and traced to an industrial waste leak into the drinking water supply. In July of that year, a federal district court jury found the W.R. Grace Corporation guilty of dumping chemicals on its property. The result was due to the collective efforts of local residents, who gathered enough evidence to demonstrate a causal relationship to a higher rate of leukemia cases (Conrad 2001). Popular epidemiology maintains a similar function to social epidemiology, in that it engages knowledge and insights from community residents to locate and mitigate sources of toxicity (Conrad 2001). Both are interested in establishing social causal relationships,
and may not focus on such measures as statistical significance to find anomalies that residents are detecting in their communities (Oakes and Kaufman 2006; Conrad 2001).

In this study, all three forms of epidemiology identified were used in order utilize respective strengths in analyzing nonurgent E.R. utilization.

Variables in Health Research

In this study I utilized the demographic independent variables of age and gender to test the differences between urgent and nonurgent E.R. visits. Life expectancy in the United States has dramatically increased, from about 47 years in 1900 to nearly 80 years in 2000 (Cockerham 2004). The most common health problems of older populations are heart disease and hearing impairment, along with other various ailments such as hypertension (Cockerham 2004). In terms of hospital utilization, older patients comprised a much higher frequency of visits than younger patients, averaging over 11 visits per year (Garcia et al. 2010; Cockerham 2004; Conrad 2001). However, these tend to reflect more appropriate visitations when compared with nonurgency and younger populations (Hock et al. 2005). A 1997 study in France revealed that younger patients were visiting E.R.’s at a higher rate (Lang et al. 1997). This was especially the case when sufficient housing and lack of social support was a factor in one’s life.

Females tend to report higher morbidity, along with more frequent lifelong usage of medical care than males (Cockerham 200; Koziol-McLain et al. 2000). When
controlling for pregnancy, these higher rates are due to a greater number of ailments in
general, where lifetime fluctuations tend to spike in early life, childbearing years, and
after age 35 (Sarver et al. 2002). The average frequency of physician visits for females is
about 6.5 visits per year, compared to 5.0 visits a year for males (Cockerham 2004).

Poverty is also another widely used variable in epidemiology-related research
(Zuckerman and Shen 2004; Petersen et al. 1998; Lang et al. 1997). Studies have found a
negative relationship between a socioeconomic status and frequency of nonurgent E.R.
visits, as the poor are more likely to take advantage of E.R. care as an access point for
their health needs (Kirby and Kaneda 2006:143; Zuckerman and Shenn 2004:181). This is
also indicative of a lack of health insurance, where patients may be working full time, yet
unable to afford private insurance if not provided by their employers (Oster and Bindman
2003). Poverty in relation to employment status is also becoming increasingly important
in determining the health outcomes of populations (Marmot and Wilkinson 2006; Leon
and Walt 2001). The cumulative stresses of lack of health coverage, as well as
maintaining individual stability in an unstable and continuously evolving economy, have
shown correlations to declining health (Marmot and Wilkinson 2006). This is referred to
as psychophysiological hyperactivity - prolonged stresses lead to greater vulnerability to
illness (Marmot and Wilkinson 2006).
Although race is a cursory variable in this study due to the limitations of the dataset, it is important to note that black persons are often identified as having more frequent nonurgent visits - often coupled with lack of insurance coverage, lack of mobility, and other contributing factors which increase their likelihood of visits (Hock et al. 2005; Shah-Canning et al. 1996; Olson 1994). However, costs of care for blacks are much lower than that of whites overall. For example, black males represent about 8 percent of total E.R. costs (Tyrnace et al. 1996:1529). This is around 0.2 percent of total national health spending. Conversely, whites account for 75 percent of E.R. expenditures (Tyrance et al. 1996:1529). It is important to recognize empirical bases in assessing how social factors, including race, contribute to total expenditures of health care - as well as how to attempt to mitigate these costs while recognizing the largely systemic causes of the nonurgent visits (Navarro 1993). Additionally, it is important to also recognize the intersection of these social variables which constitute our social milieu.

Spatial Variables in Health Research

There is growing utilization of spatial analysis when looking at community-level factors in research (Steinberg et al. 2010; Cope and Elwood 2009; Abbot et al. 2008; Zandbergen 2007; Hawthorne et al. 2006; Kirby and Kaneda 2006; Steinberg and Steinberg 2006; Parkes et al. 2003; Jones et al. 1982). Sociospatial analysis, or that which emphasizes social research within a mapping context, is particularly useful for
investigating the role of space vis-à-vis health outcomes because it considers social and spatial factors concurrently (Zandbergen 2007). In fact, it is estimated that about 80 percent of all data contains a spatial component (Abbot et al. 2008).

A human ecology approach to health analyses using sociospatial techniques helps to shed light on macro levels of environmental and anthropological decline (Parkes et al. 2003:671). For example, researchers applied a Geographic Information System (GIS) analysis to a study investigating pesticide use in two rural counties in California, and found that there were several schools that were being exposed to pesticide chemicals (Steinberg et al. 2010). Another example is a study which looked at residential instability as a determinant of hospital use (Jones et al. 1982). The researchers concluded that hospital location in a community can determine types and frequencies of services utilized (Jones et al. 1982). Kirby and Kaneda (2006) found similar results in their study on residential instability and hospital utilization patterns. Communities which show higher amounts of instability (high residential turnover and lower levels of civic networks) are also more likely to have poor health care outcomes in general (Kirby and Kaneda 2006). The variable of community, in a spatial context, was used as an independent variable by which others such as race, income, health status and insurance, and education were measured. Abbott et al. (2008) also applied a spatial component to better understand how to best meet the needs of aging populations, using GIS to make that determination.
Defining Nonurgent E.R. Visits


For this study I used the definition of urgency from an analysis in Public Health Report (Jones et al. 1982). There are generally three classifications in which the degree of urgency is measured. The first is emergent. An emergent condition is defined as a one which requires immediate medical attention, where any delay could result in loss of life or function for the patient (Jones et al. 1982). This condition is the most serious and warrants the most appropriate type of E.R. care (Gooding et al. 1996). The second is urgent, where the condition requires medical attention within several hours. An urgent condition is acute but does not need to be identified as severe (Jones et al. 1982). The
last condition is nonurgent, defined as one that is nonacute, or minor in severity. The biggest distinction between nonurgent and urgent or emergent conditions is that nonurgent ones do not require the resources of an E.R. (Hock 2005; Oster and Bindman 2003; Kushel 2002; Gill 1999). As a result, this study altogether frames an urgent condition as either emergent or urgent, employing the criteria in Jones et al. (1982). Nonurgent cases, especially the most recognizable of nonurgent cases, are the ones which researchers’ efforts are trying to address (Sarver et al. 2002). Several qualitative studies have been conducted to reinvestigate the appropriateness of how nonurgent is currently utilized. However, the characteristics of nonurgent conditions remain in place in terms of how public health research positions its prevalence (Howard et al. 2005; Koziol-McLain et al. 2000).

In a 1998 article in Medical Care, researchers applied pre-established triage criteria in defining nonurgent E.R. cases (Petersen et al. 1998). In this study, abdominal pain, chest pain, and asthma comprised the majority of nonurgent cases in the dataset. In “Usual Source of Care and Nonurgent Emergency Department Use,” researchers defined nonurgency based on criteria which didn’t meet the requirements to fulfill an urgent visit (Sarver et al. 2002). For example, an urgent visit needed to have resulted in: getting admitted, if the patient received any procedure using specialized equipment such as an electrocardiography (EKG), or if the visit was identified as an accident or injury (Sarver
et al. 2002). Hock et al. (2005) referred to nonurgent visits in terms of how acute the condition was, similar to the definitional criteria in Jones et al. (1982) (Hock et al. 2005). E.R. visits may be based on utility, and not necessarily a discrete ailment. For example, one scenario was a patient whose backpack containing prescription medication was stolen. Medication may not be important enough to warrant an immediate concern, however, the patient may not be in a position to refill their prescription for several days (Koziol-McLain et al. 2000). Defining nonurgency is not simply a matter of severity, because of the various situations in which nonurgent visits may be justified (Gill 1999).

Qualitative Research and Nonurgent E.R. Visits

Several qualitative studies have attempted to contextualize a patient-centric analysis in exploring nonurgency of E.R. visits (Howard et al. 2005; Koziol-McLain et al. 2000). Howard et al. (2005) identified five themes (using content analysis from open ended interview questions) in explaining the persistence of these visits. They found that out of 31 interviews, many patients could no longer “tough it out,” which indicates a tendency to delay treatment for chronic ailments which were gradually becoming more severe over time (Koziol-McLain et al. 2000:558). “Symptoms overwhelming self-care measures” was the second theme, denoting a crescendo point when self-care was no longer working, and effecting the individual’s ability to function (Koziol-McLain et al. 2000:559). The most common predominant symptom in this particular study was pain,
especially when it had affected sleep and work (Koziol-McLain et al. 2000:559).

“Calling a friend” was the third theme, where patients had most often discussed their ailments with friends or family before making the decision to visit the E.R. “Nowhere else to go” was the fourth theme. Interestingly, 43 percent of patients were referred to the E.R. by other health care providers. In one interview, a patient recalled difficulty in affording dental work, which prompted the E.R. visit (Koziol-McLain et al. 2000:559).

“Convenience” was the final theme, where life circumstances, such as work schedules or child care had affected a patient’s ability to see a physician during certain hours of the day (Koziol-McLain et al. 2000:558).

Howard et al. (2005) identified three themes that emerged in their qualitative analysis. Open ended interviews were also administered in this study of 30 participants. The first was a referral from their primary care physician’s office, where the doctor’s offices would recommend patients to visit the E.R. due to inability to see them (Howard et al. 2005). The second theme was the difficulty in scheduling a doctor’s visit in a timely manner. Patients had reported that it often takes from several weeks to several months to be seen by their doctor, and that depending on severity of their condition, they found it much more convenient and appropriate to visit the E.R. to be seen that day. The final theme was also related to timeliness of care, noting that even with appointments they sometimes would have to wait for hours at their doctor’s office - only to be seen
briefly by the doctor. Work restrictions and family also played a role that intensified the urgency of response, where the thought of care taking weeks or months was (understandably) unreasonable (Howard et al. 2005).

These qualitative results show the anthropocentric context of how researchers can begin to look at ways of mitigating nonurgent visits. The situations vary by patient and also include personal circumstances which influence one’s decision to seek emergency care. For example, one of the interviews in the Koziol-McLain (2000) study reveals the sociocultural milieu in which patients interpret their current states of health. Margaret, a 39-year-old woman, had described her relationship problems in addressing her urinary tract infection and why she had visited the E.R. on a Monday at 2 in the morning (Koziol-McLain 2000:559). These examples shed light on the amount of pain and suffering a patient may be undergoing in their lives in their decisions to seek emergency care.

Adequately defining the boundaries of urgency and nonurgency is a complex effort, often changing across varying research designs (Koziol-McLain et al. 2000). In one study, 89 percent of patients in an E.R. reported their ailments as urgent, while health professionals reported the same cases as only representing 11 percent of urgent cases (Gooding et al. 1996). In general, health professionals even possess differing interpretations of urgent and nonurgent visits (Starfield et al. 2005; Oster and Bindman 2003; Gill 1999).
E.R. as Safety Net

The emergency room is often referred to as a health safety net of society, in response to dramatically increasing admissions over the last several decades (Howard et al. 2005; Tyrance et al. 1996; Olson 1994). The safety net concept encompasses not only the notion that the E.R. functions as a source of accessible care, it also refers to the larger sociocultural shortfalls in the inability for policy makers to manage adequate care for Americans en masse (Hock et al. 2005). Research is revealing a greater reliance on E.R use as a means for people to receive care, at times in lieu of navigating the arduous process of finding affordable and accessible primary care (Gill 1999).

The safety net of E.R. use lies within a context of a legal mandate which ensures all American citizens have access to emergency care at all times (Centers for Medicare and Medicaid Services 2011). The Emergency Medical Treatment and Labor Act (EMTALA) was enacted in 1986 as an extended civil right to all citizens who require emergency care, regardless of financial standing (Hock et al. 2005). The act requires hospitals to either stabilize the patient, or transfer the patient to another facility which can properly treat him or her (Centers for Medicare and Medicaid Services 2011). Because of this mandate, coupled with other factors such as a widening gap of uninsured Americans, less primary care physicians, and closing facilities, E.R. use is covering more
nonurgent conditions (Hock 2005; Howard et al. 2005; Starfield et al. 2005; Sarver et al. 2002; Olson 1994).

There are several crucial reasons why nonurgent E.R. visits are a short term and long term concern for health practitioners. First is the danger of overcrowding, which delays the care of other patients who may be in a serious state of ill health (Garcia et al. 2010; Hock et al. 2005; Kushel et al. 2002; Gill 1999). A 2010 National Center for Health Statistics study on E.R. usage found this to be the case, also noting that E.R. overcrowding is intensified by the decreasing numbers of E.R.’s across the country (Garcia et al. 2010). From 1958 to 2000, the number of E.R. visits in the U.S. have increased an estimated 600 percent, while from 1994 to 2001, over 500 E.R.’s have closed (Hock et al. 2005). These numbers continue to rise, where nonurgent visit estimates range from 14 percent up to 82 percent (Gill 1999; Petersen et al. 1998; Gooding et al. 1996; Tyrance et al. 1996; Olson 1994).

Another critical result of overcrowding is what is known as ambulance diversion, when ambulances are forced to change the location of the hospital in patient transport due to a lack of facility space and staff (Hock et al. 2005). This is especially dangerous to a patient who may be in dire need of immediate care when nonurgent cases are the reason why the overcrowding happened. When multiple E.R.’s are diverting ambulances, this could have an even more disastrous affect on the patient, due to “ambulance gridlock,”
which is a series of simultaneous ambulance diversions in a region (Hock et al. 2005:273).

In addition to the difficulties of E.R. access because of nonurgent cases, it also important to note several other impacts. The cost of E.R. care can be higher than that of primary care, causing economic hardship on facilities that are often in danger of closing due to operating costs (Gill 1999). Also, E.R.’s are not designed to handle patients with chronic illness. This interrupts the need for ongoing relationships with primary care physicians, who can better ensure continuity of care (Hock 2005; Starfield et al. 2005; Koziol-McLain 2000). Uninsured Americans are included in the conceptual development of a health safety net (Hock et al. 2005; Howard et al. 2005; Starfield et al. 2005). Several studies found that uninsured patients visit E.R.’s because of their availability, and not necessarily severity of illness (Howard et al. 2005:430). Over 50 million Americans, or one in six, currently do not have health insurance (US Census 2010). Insurance coverage constitutes a growing gap in health care, in which emergency care is substituting more suitable forms of care as “the poor man’s doctor” (Jones et al. 1982:450).

Humboldt County Community Health Profile

I utilized two reports that specifically examined health outcomes relating to Humboldt County (CHSP 2010; HCCNA 2008). First, the California Health Status
Profiles 2010 (CHSP) is an annual report that displays various sets of public health data such as vital statistics, morbidity tables, crude rates, and age-adjusted rates or percentages (CHSP 2010). It serves as an effort to meet the Healthy People National Objectives Challenge set forth by the U.S. Department of Health and Human Services. This effort seeks to increase health outcomes, reduce health disparities, and ensure preventative access is reaching all Americans (CHSP 2010). This study utilized the main sections of the CHSP report, which show a county-by-county comparison of both mortality indicators and morbidity indicators per 100,000 population. Interestingly, the report results show very low county rankings in several of these indicators. For example, Humboldt County ranks last (58th of 58 counties) in the following age-adjusted rates: death (deaths due to all causes), female breast cancer, Alzheimer’s disease, strokes, liver disease, unintentional injuries, and drug induced deaths (CHSP 2010). Additionally, there are indicators which rank Humboldt County near last, including cancer (55th), colorectal cancer (57th), liver disease (57th), suicide (52nd), and numbers of children in poverty (38th) (HCSP 2010). The CHSP is an effective tool in looking at the health of Humboldt County residents in comparison to the rest of the state, as well as nationally. Current data in this report shows a need to reassess how and why these rankings are so far behind many other counties in the state.
The second study that looked specifically at county data is the 2008 Humboldt County Community Needs Assessment (HCCNA). HCCNA functions to provide documentation to various communities in the county in order to assess areas where organizations are working to improve the health and well-being of Humboldt County residents (HCCNA 2008). It is a compilation of data from the California Health Interview Survey (CHIS), California Center for Rural Policy (CCRP), and the 2007 Community Health Assessment (CHA). The HCCNA contains 46 separate summaries, each reflecting a different component of community health. For example, certain summaries focused on specific types of conditions, such as alcohol or drug treatment, while others were focused geographically to specific communities. Over 30 summaries had stated medical care as a topic of discussion (HCCNA 2008). Adequacy of care was also one of concern, which has implications for utilization patterns in three separate county emergency rooms (HCCNA 2006).

Dental care was also a theme in the HCCNA, with residents voicing concerns of both coverage and affordability (HCCNA 2008). In Summary 43 of the report, the researchers discussed the efforts of Tri-County Independent Living, a nonprofit organization which serves those with disabilities (HCCNA 2008). Of the 1,300 questionnaires administered by the organization, dental coverage was one of the top priority areas reported. Drug and alcohol abuse was also an important element of the
HNNCA. Emergency room cases were specifically addressed, supporting local efforts to mitigate these cases. One summary noted that up to 75 percent of child abuse cases are related to alcohol and drug abuse (NCCNA 2008:54).

The CHSP and HCCNA are instrumental complements of the existing literature in this study, as they help to contextualize the specific health outcomes of the region. From a national perspective, the health data in Humboldt County falls far below the national objective levels, indicated in each ranking table. More details will be discussed in the proceeding chapter in terms of how these statistics relate to the overall assessment of nonurgent E.R. visits.
CHAPTER 3

METHODS

This study was framed in a mixed methods approach. Mixed methods can generally be defined as the employment of various research methods which triangulate and contextualize data (Berg 2009; Cope and Elwood 2009; Dillman et al. 2009; Mclean Report 2009; Onwuegbuzie 2007; Zimbardo 2007). These include quantitative, qualitative and spatial analyses of secondary data along with field based participant observation (Cope and Elwood 2009; Johnson and Onwuegbuzie 2004; Maciejewski 2002; Nurminen 1999). The methodological component of this study began with the preliminary data collection process. To establish a context for the study, I worked as an intern for the Humboldt County epidemiologist from July 2010 to May 2011, in which I was tasked to explore a secondary dataset of emergency room visits in the county. My research question, developed collaboratively with the epidemiologist, was: what is the nature of nonurgent E.R. visits in Humboldt County? Through my internship I generated the following general hypothesis: there is a difference between the characteristics between nonurgent and urgent E.R. patients. The differences would be measured in terms of variables utilized in the statistical tests (see Table 1 for a description of variables). This singular hypothesis remained two-tailed, in which I had predicted there was a difference, and not a particular (positive or negative) direction of difference between variables (Weiss 2008; Babbie 2007; Field 2005; Healey 2005).
Sample Description

The data I used for this study was collected from the three major hospitals in Humboldt County: Saint Joseph, Mad River, and Redwood Memorial hospitals. All three hospitals input key information into an EpiCenter software computer program following each E.R. visit (see Table 1). I was able to acquire the data under the supervision of both the Humboldt County epidemiologist and the Humboldt State University Institutional Review Board (approval number 10-129). Since I was collecting a secondary dataset from the Humboldt County Department of Health and Human Services, specifically with the Public Branch, I was able to complete my analysis with the prior knowledge that the data had already been removed of any identifiable information, and there was no potential harm to subjects involved in this research. Additionally, my research was approved upon managing the dataset on a secure server on the HSU campus.

The Humboldt County Public Health Branch maintains a database of E.R. visits, from which I was able to extract the three month data for my analysis. This is an electronic record, as all data is in the EpiCenter secure software system (HMS 2009). EpiCenter software is a Health Monitoring Systems database. Access to the information is restricted by a username and password. The capabilities of this software mostly support epidemiological research around identifying anomalous health activity such as
disease outbreaks and bioterrorism (HMS 2009). My dataset reflects a three month span of these E.R. visitations, and was in the electronic form of an Excel spreadsheet.

Table 1: Description of Variables

<table>
<thead>
<tr>
<th>Humboldt County EpiCenter E.R. Variables for Analysis (N = 16,090)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Gender of Patient (Male or Female)</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Age of Patient (0 – 109 years of age)</td>
</tr>
<tr>
<td>Facility</td>
</tr>
<tr>
<td>Hospital Patient Attended (Saint Joseph, Mad River, or Redwood Memorial Hospital)</td>
</tr>
<tr>
<td>Date</td>
</tr>
<tr>
<td>Date of Visit (28July-28October 2010)</td>
</tr>
<tr>
<td>Zip Code of Residence</td>
</tr>
<tr>
<td>Patient Zip Code of Residence (Humboldt County)</td>
</tr>
<tr>
<td>Classifier</td>
</tr>
<tr>
<td>Categories of Illness, Selected by the Operator (HMS 2009)</td>
</tr>
<tr>
<td>Syndrome Classifier</td>
</tr>
<tr>
<td>Free Text Field (where operator free types the patient’s chief complaint)</td>
</tr>
</tbody>
</table>

Establishing Urgency and Nonurgency

One of the largest challenges in this study was being able to frame the research question and hypothesis into a structure which was consistent (Hock 2005; Sarver et al. 2002; Gooding et al. 1996; Tyrance et al. 1996; Jones et al. 1982). The initial dataset contained a variable entitled “Classifier” (see Table 1). During discussions with the epidemiologist, this classifier category acted as a proxy measure for determining whether a visit was urgent or nonurgent. EpiCenter classifiers are the specific categories of illness
hospital staff enter in the software when the patient arrives at the E.R. For example, if a patient visited the E.R. with complaints of abdominal pain, a staff person would select the “Gastrointestinal” classifier.

Preliminary investigations into this variable showed that many cases were without a classifier. The assumption was that those cases which did not contain a formal classifier (unclassified) could be considered nonurgent. However, further exploration of the data showed that there were many unclassified cases which met the criteria for being labeled as classified. The management of the dataset which would establish a consistent and accurate measure of urgency required a recoding process that drew heavily on data management techniques typically used in social research (Babbie et. al 2007, Field 2005; Kerr et al. 2002).

The Recoding Process

Recoding is a technique that manipulates variables to expand a researcher’s range of analysis possibilities (Babbie et. al 2007:103). The recoding process was instrumental to assigning the variables to be both consistent and mutually exclusive. The EpiCenter classifiers contained many subcategories of each classifier (HMS 2009). For example, abdominal ailments contained multiple categories, in which vomiting, nausea, pain, and others were separate subcategories of the abdominal classifier. In my analysis, all classified cases which were abdominal in nature were recoded into one large, exclusive
category of “Abdominal.” This was repeated for each category, so that other ailments such as “Injury,” “Neurological,” and “Violence” were independent of one another. I identified a total of twenty six categories, into which all classified cases could be assigned (see Appendix A).

The second step of recoding was employed to determine what the differences were between classified and unclassified E.R. visits. In this step, I realized that there were many cases in which unclassified cases could be associated with an existing EpiCenter classifier. For example, there were shortness of breath and chest pain cases which could be reassigned into the same category of the “Respiratory” classifier. I decided, upon careful examination of the entire dataset, to begin the recoding process which combined all similar ailments into one major category. I used existing major EpiCenter codes as the default categories, and placed all related ailments into those categories. This evolution of the data no longer utilized classified or unclassified visitations as a measure to establish urgency of visit.

The total number of cases which I identified to be nonurgent was much lower than the initial measure of unclassified visits (from 35 percent of unclassified visits to 12 percent of nonurgent cases in the entire dataset, see Figure 1). The inherent danger in the recoding process was the amount of discretion that was used. There are likely cases in which urgency or nonurgency was recoded into a less appropriate category. However,
the benefit of recoding far outweighed the errors which may have affected the test results 
(Babbie 2007; Field 2005; Gooding et al. 1996). Thus, the organization of the research 
was adjusted to suit an analysis of discretionary interpretation of urgent and nonurgent, 
and not the initial dataset organization of classified and unclassified.

Grounded Theory

Grounded theory can be defined as a type of analysis that uses existing literature 
and theories to help guide research, but allows the researcher’s data to ultimately generate 
theory (Glaser and Strauss 1967). The generated theory can then be compared with these 
existing frameworks in order to assess, modify, reject, or verify other theories (Glaser and 
Strauss 1967). Also, a new theory could be generated if appropriate. The creators of 
grounded theory felt that too much reliance and credibility was placed on existing, 
deductive approaches of social research that looked only to verify results within 
predetermined frameworks (Berg 2009; Glaser and Strauss 1967). In this analysis, a 
mixed methods approach was employed, within a grounded theory framework which 
doesn’t force my hypothesis or research question into strict guidelines. My hypothesis 
was used as a way to arrange a particular flow of research, but not dictate the results if 
they showed to deviate from what I initially hypothesized.
Qualitative Analysis

Qualitative analysis is an important sociological technique because it enables the researcher to first establish what categories are best able to be measured (Berg 2009; Cope and Elwood 2009; Howard et al. 2005; Koziol-McLain et al. 2000). Content analysis is a systematic interpretation of data in order to identify particular themes and meanings in research (Berg 2009). This type of analysis was utilized twice during my research. First, it was used to identify manifest content in order to better understand the urgency of E.R. in my dataset. Second, it was used to generate specific themes which emerged from the nonurgent section of the dataset. This process is typically used in conjunction with a qualitative software program. Conducting an open coding style with the original spreadsheet in Excel enabled an exploratory style of analysis, while continuing to maintain rigorous coding frames to ensure the codes were both exclusive and exhaustive upon completion (Berg 2009; Babbie 2007).

Quantitative Analysis

Once qualitative coding was conducted to identify nonurgent themes, I developed the urgent and nonurgent categories for quantitative analysis (Glaser and Strauss 1967). Quantitative analysis is a method of research in which numerical testing is used to make a prediction about the relationship between two or more variables (Babbie 1998:280; Field 2005:2). What differentiates quantitative methodology from qualitative is its ability of
results to be generalizeable to a larger population (Field 2005). However, results are contingent upon a careful and deliberate selection process, deciding which variables should be statistically analyzed, and what logical inferences can be drawn from the test results (Field 2005). This was achieved by selecting particular variables to be run in a statistical software package. The software used for this research was PASW Statistics 18.0, also referred to as SPSS or the Statistical Package for the Social Sciences (Field 2005; Kerr et al. 2002; Monette et al. 1998).

The two major statistical tests that were utilized in this study were chi-square and \( t \)-tests (Weiss 2008; Babbie 2007; Field 2005; Healey 2005). Chi-square is defined as a type of statistical estimation that measures the probability that the relationship between variables is by chance (Babbie 2007). This is in the form of cross tabulations where non-numerical variables, known as categorical variables, are used. In this study, the only numerical variables available were age and zip code. In order to test the other variables, particularly gender of patient and hospital visited, it was important to establish a model in which nominal variables could be tested while the dichotomous variable of urgency and nonurgency remained dependent. The second set of statistical tests were \( t \)-tests. \( T \)-tests are defined as a type of statistical test in which the dependent variable is numerical, where calculations are made to measure the probability that the observed difference in means is from sampling error (Babbie 2007). In this study, age comprised the dependent
variable in this test, where mean age was compared vis-à-vis urgency and nonurgency. One could draw conclusions based on the differences between mean ages if statistical significance was achieved at $p < .05$ (Field 2005). This was also the same measure of significance for the chi-square tests (Babbie 2007).

**Spatial Analysis**

Spatial analysis was also employed in this study. Although it served a secondary role in this analysis, it is important to note the value of looking geographically at studies which involve populations (Cope and Elwood 2009; Abbott et al. 2008; Beale et al. 2008; Hawthorne 2007; Kirby and Kaneda 2006; Steinberg and Steinberg 2006; Parkes et al. 2003; Jones et al. 1982). Applying mapping technology to a study can yield unexpected results, as themes which may not have been noticed prior to generation of spatial analysis can visually emerge (Cope and Elwood 2009). Additionally, including mapping capabilities can complete the triangulation process of mixed methods, where understanding a geographic location helps the reader visualize where and how the methodological results affect which area. This is also instrumental for epidemiological studies which often look for both incidence and prevalence in health monitoring (Aschengrau and Seage 2008; Beale et al. 2008).

The maps used in this study were developed using several steps. The software used was Esri ArcMap 9.3.1. The zip codes of Humboldt County were extrapolated as
default base maps in the mapping files of the Esri software. A spreadsheet was created in Excel which listed the rates of nonurgent E.R. visits by calculating how many visits occurred within each zip code. Each number was divided by the population of the zip code area using the U.S. Census zip code tabulation areas (ZCTA) (Census 2010). I used population numbers from the most recently available Census (2000). Each of these calculations was multiplied by 10,000, to illustrate the rates of nonurgent utilization per zip code and per 10,000 population. These final calculations were carried out in Excel, and later added to ArcMap by joining the geographic reference of zip code in the spreadsheet with the mapping zip codes in the software (see Appendix B). Symbology for the maps classified data into five categories of rates in increments of 50 visits per 10,000 people. Four separate maps were completed to show an overall rate of utilization in Humboldt County, as well as respective rates per facility visited.

Field Based Participant Observation

My internship with the Humboldt County epidemiologist was an important part of determining how the methods were to be structured. For example, public health research often utilizes confidence intervals and rates of illness, whereas medical sociological studies apply tests of significance (Aschengrau and Seage 2008; Oakes and Kaufman 2006; Berkman and Kawachi 2000). While I was framing the statistical tests and spatial analysis for the study, I discussed them with the epidemiologist in terms of how best to
approach the sociological interpretation of the public health issue of nonurgent E.R. prevalence. These were important insights into the differences in methodology between disciplines, and also forced a dialogue about how best to generate the statistical tests and maps. My participant observation experience reconciled many differences in these research approaches, and allowed for a practical mixed methods experience. Biweekly meetings at the Public Health Office ensured that both the epidemiologist and I were comfortable with the length of time required to generate the results and discussion, as well as with the applicability of the results.
CHAPTER 4
RESULTS

Comparing Urgent and Nonurgent E.R. Visits

This chapter looks at the results of the statistical tests, themes identified in the set of nonurgent cases, and the mapping results as rates of nonurgent E.R. use per zip code tabulation area (ZCTA). Chi-square statistics were computed to determine if urgency of E.R. visit varied significantly by gender and hospital facility. Independent samples t-testing was used to identify whether the mean age of E.R. patients differed significantly from nonurgent care patients. Following this step was a process of coding in which I identified which specific themes emerged out of the set of nonurgent cases. Finally, further statistics were calculated using these themes as dependent variables, where age, gender, and facility were independent variables. The tests were run to investigate any significant difference in characteristics (age, gender, and facility) between urgent and nonurgent patients.

Key Findings

The research question in this study was: what is the nature of nonurgent E.R. visits in Humboldt County? This was operationalized by a general hypothesis that there was a difference between the characteristics between nonurgent and urgent E.R. patients. Following the mixed methods results of this study, we see that there are indeed differences in demographic characteristics, facility utilization, and rates of utilization by zip code of residence. Nonurgent dental cases were found to be from a younger
population of patients. Miscellaneous ailments, such as pregnancy testing and soreness was also found to be most prevalent among younger patients. Medicine requests were more often from men, which was likely to occur at Saint Joseph Hospital. Lastly, physical requests were from younger patients. These results show the strongest relationships to nonurgent visitations following the statistical tests. Level of significance, effect sizes, and odds ratios were calculated to determine which of these were noteworthy as the strongest predictors of nonurgent cases. From a spatial context, patients who had reported Eureka as their home zip code used emergency rooms at a much higher rate than the rest of the county, followed by Blue Lake and Fortuna when looking specifically at Mad River and Redwood Memorial hospital.

Figure 1 shows a stacked bar graph which separates urgency of visit by month. July and October are truncated due to the data collection period from July 28th to October 28th. In this dataset, only August and September reflect full monthly data. In August, urgent visits were much more frequent than nonurgent ones. Roughly five percent of cases were due to nonurgent visits in August 2010, which is consistent with the volume of nonurgent cases in September and October 2010. Overall, the data from Figure 1 illustrates a large difference between the number of urgent and nonurgent cases. The trend from August to October 2010 reflects about a 6:1 ratio of visits of urgent to nonurgent. Although five percent of cases per month appears negligible, the actual
numbers reflect over 500 nonurgent cases per month. In total, a three month span of E.R. visitations show that there were nearly 2,000 nonurgent cases.

Figure 1: E.R. Visits in Humboldt County from July to October 2010 (N = 15,984)

Males and females were equally likely to visit Humboldt emergency rooms for urgent ailments $\chi^2(1) = 2.049, p > .05$ (see Table 2). There was also a similar distribution
of nonurgent visits between males and females, with both around 12 percent. In terms of age, nonurgent patients were significantly younger than urgent patients \( (M = 35.10, SE = 0.43) \) \( (M = 39.47, SE = .019) \) \( t(2782) = 9.234, p < .001 \). Saint Joseph Hospital was the most frequently utilized E.R., possessing over 60 percent of all nonurgent cases. It manages significantly more nonurgent cases than the other two facilities \( \chi^2 (2) = 15.893, p < .001 \).
Table 2: E.R. Visits in Humboldt County by Gender, Age, and Facility (N = 15,984)

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean or Percent</th>
<th>Chi-Square or t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7506</td>
<td>47.0</td>
<td>2.049</td>
</tr>
<tr>
<td>Urgent</td>
<td>6618</td>
<td>88.2</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>888</td>
<td>11.8</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8478</td>
<td>53.0</td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>7412</td>
<td>87.4</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>1066</td>
<td>12.6</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>9.234***</td>
</tr>
<tr>
<td>Urgent</td>
<td>14030</td>
<td>39.5</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>1954</td>
<td>35.1</td>
<td></td>
</tr>
<tr>
<td>Facility</td>
<td></td>
<td></td>
<td>15.893***</td>
</tr>
<tr>
<td>St Joseph</td>
<td>9737</td>
<td>60.9</td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>8469</td>
<td>87.0</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>1268</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Mad River</td>
<td>3455</td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>3062</td>
<td>88.6</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>393</td>
<td>11.4</td>
<td></td>
</tr>
<tr>
<td>Redwood Memorial</td>
<td>2792</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td>2499</td>
<td>89.5</td>
<td></td>
</tr>
<tr>
<td>Nonurgent</td>
<td>293</td>
<td>10.5</td>
<td></td>
</tr>
</tbody>
</table>

***p < .001 (two-tailed)
Themes of Nonurgent E.R. Visits

Following the preliminary exploration of data, qualitative coding was conducted. The results showed eight themes which have emerged from the open coding process. Table 3 lists the specific themes, along with the coded description of themes. Pain, Dental, Infection, Misc, Urinary Tract Infection (UTI), Medication, Physical, and Constipation comprise the individual themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Coded Description of Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Chronic pain, nonurgent pain, mild back pain, injuries with no trauma</td>
</tr>
<tr>
<td>Dental</td>
<td>Dental pain, cracked tooth, unable to be seen by dentist, impacted wisdom tooth, toothache</td>
</tr>
<tr>
<td>Infection</td>
<td>Skin infection, joint swelling and infection, arm, leg, hand, or toe infection, symptoms of infection for several days</td>
</tr>
<tr>
<td>Misc</td>
<td>Pregnancy test, insomnia, STD testing, soreness, ingrown hairs, minor swelling, loss of energy, weight loss</td>
</tr>
<tr>
<td>UTI</td>
<td>Burning urination for several weeks, painful urination, patient thinks they may have a urinary tract infection, recurrent UTI symptoms, yeast infection, lump in groin area</td>
</tr>
<tr>
<td>Medication</td>
<td>Ran out of pain medication, medication request, medication refill request</td>
</tr>
<tr>
<td>Physical</td>
<td>Physical, sports physical</td>
</tr>
<tr>
<td>Constipation</td>
<td>Constipation for several days or several weeks</td>
</tr>
</tbody>
</table>
Pain

Pain delineates all those cases relating to ailments of pain which have been identified as nonurgent. This theme also includes minor injuries in which the data entry from the EpiCenter dataset noted that there was no indication of trauma. This category was carefully constructed, with knowledge that pain is subjectively calculated. If any indication of serious pain was noticed in the typed description, the case was recoded as urgent. For example, back pain or chest pain which has persisted for weeks or months, or toe or finger pain with no indication of severe pain consisted of much of this category. Pain represents the largest category for which patients visit the E.R. in Humboldt County. In a three month period, 19 percent of all nonurgent cases were from patients reporting this as the chief complaint (see Figure 2).

Dental

The second theme identified was dental ailments. This included a wide variety of complications, such as general dental pain, as well as more specific ones like a cracked tooth or impacted wisdom tooth. Many of the cases had little descriptive information, indicating solely dental pain. There may be an over representation of those cases which are more severe than other ones. However, this was difficult to establish, and cases that were described as being acute were coded into an urgent category. This ailment also comprised of 19 percent of nonurgent cases.
**Infection**

Infection was the third most frequent nonurgent ailment. The criteria for the infection category is any indication of infection excluding urinary tract infection symptoms, or genital-area complications relating to infection. This includes skin, joint, arm, leg, hand, toe, or persistent ailments which are infection related. The set of data was also limited in severity of pain or seriousness of complication. However, none of the cases in this themed category show any indication of needing immediate care. Other examples of this theme include suspicion of infection due to injury, such as bee stings on the arm or foot. Some of these cases also state that is has been a nagging ailment which has been continuing for several days or weeks.

**Miscellaneous**

The miscellaneous, or “Misc” theme, was developed as a collection of nonurgent ailments which did not fit into the other seven themes identified. This includes requests for services, such as pregnancy or sexually transmitted disease (STD) tests. Soreness, ingrown hairs, minor swelling, and loss of energy are most of these nonurgent cases. There were some consistencies in this category such as testing requests. However, there were not enough to establish any salient pattern to compare with the other themes. Constipation, which has 47 cases, comprises the smallest amount of cases for an identified theme. When compiling the results of each theme, the categories were kept to
a minimum in order to establish tenable results which were mutually exclusive and also large enough in frequency to empirically test.

**Urinary Tract Infection (UTI)**

The UTI theme consists of urinary tract infection symptoms. The coded description includes burning urination, painful urination, patients suspecting of UTI symptoms. This also includes general genital complaints, such as yeast infections and lumps in the groin. This theme remains mutually exclusive to infection because it encompasses UTI-specific symptoms. With this consideration, there is the possibility of overlap between infection and UTI themes. However, both themes were scrutinized to ensure this was mitigated.

**Medication**

Medication requests were nonurgent E.R.requests for any type of medication. In many cases, a medication request was for pain. The other types were for general medications, as well as medication refills. These made up nine percent of nonurgent cases overall.
Physical

The physical theme includes those patients who requested a general health physical, or sports physical. Most were younger patients who had requested sports physicals. There was little descriptive information in the raw dataset.

Constipation

The final theme in Table 3 was constipation. This was the smallest in number, comprising of 2 percent cases. Cases included patients who had reported constipation, or similar symptoms. Any other bowel obstruction cases were recoded as urgent, so that only constipation itself was the chief complaint.
Nonurgent cases are mostly evenly distributed throughout the three month span of the dataset (see Table 5). When comparing the two months which have full data, August 2010 has about 80 more cases than September 2010, with 721 nonurgent cases to 641. UTI visits were more common in September, with 85 cases compared to 68 in August. The largest difference in cases by month was the theme of physical requests, where 93 requests of physicals in August comprised much of the 144 cases. With several minor
exceptions in physical requests, the distribution of nonurgent cases are relatively even through the months.

Table 4: Themes of Nonurgent E.R. Visits by Month (N = 1,949)

<table>
<thead>
<tr>
<th>Themes</th>
<th>Nonurgent Visits by Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>July</td>
</tr>
<tr>
<td>N / %</td>
<td>N / %</td>
</tr>
<tr>
<td>Pain</td>
<td>13 / 21.7</td>
</tr>
<tr>
<td>Dental</td>
<td>9 / 15.0</td>
</tr>
<tr>
<td>Infection</td>
<td>7 / 11.7</td>
</tr>
<tr>
<td>Misc</td>
<td>9 / 15.0</td>
</tr>
<tr>
<td>UTI</td>
<td>6 / 10.0</td>
</tr>
<tr>
<td>Medication</td>
<td>5 / 8.3</td>
</tr>
<tr>
<td>Physical</td>
<td>9 / 15.0</td>
</tr>
<tr>
<td>Constipation</td>
<td>2 / 3.3</td>
</tr>
<tr>
<td>Total</td>
<td>60 / 100</td>
</tr>
</tbody>
</table>

Variation in Nonurgent Themes

After identifying the themes of nonurgent E.R. visitations, the following analyses focused on whether there was variation in these themes by sex, age, facility, and nonurgent ailment (see Table 5). Each theme was individually tested, using urgency of visit (dichotomously coded as urgent and nonurgent) as the dependent variable. The $t$ tests were compared with the mean age of all urgent cases ($M = 39.09$, $SE = 0.208$).
Table 5: E.R. Visits in Humboldt County by Nonurgent Theme (N = 1,949)

<table>
<thead>
<tr>
<th>Themes</th>
<th>Gender</th>
<th>Age</th>
<th>Facility</th>
<th>Chi-Square</th>
<th>t Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male N / %</td>
<td>Female N / %</td>
<td>SJ Mean N / %</td>
<td>MR Mean N / %</td>
<td>RM Mean N / %</td>
</tr>
<tr>
<td>Pain</td>
<td>148 / 39.2</td>
<td>230 / 60.8</td>
<td>36.2</td>
<td>114 / 30.2</td>
<td>57 / 15.1</td>
</tr>
<tr>
<td>Dental</td>
<td>182 / 49.6</td>
<td>185 / 50.4</td>
<td>31.9</td>
<td>219 / 59.7</td>
<td>71 / 19.3</td>
</tr>
<tr>
<td>Infection</td>
<td>158 / 48.2</td>
<td>170 / 51.8</td>
<td>41.8</td>
<td>232 / 70.7</td>
<td>52 / 15.9</td>
</tr>
<tr>
<td>Misc</td>
<td>118 / 42.9</td>
<td>157 / 57.1</td>
<td>33.8</td>
<td>159 / 57.8</td>
<td>73 / 26.5</td>
</tr>
<tr>
<td>UTI</td>
<td>60 / 25.4</td>
<td>176 / 74.6</td>
<td>34.9</td>
<td>136 / 57.6</td>
<td>57 / 24.2</td>
</tr>
<tr>
<td>Medication</td>
<td>107 / 61.5</td>
<td>67 / 38.5</td>
<td>41.9</td>
<td>134 / 77.0</td>
<td>23 / 13.2</td>
</tr>
<tr>
<td>Physical</td>
<td>82 / 56.9</td>
<td>62 / 43.1</td>
<td>14.8</td>
<td>144 / 100</td>
<td>0 / 0.0</td>
</tr>
<tr>
<td>Constipation</td>
<td>30 / 63.8</td>
<td>17 / 36.2</td>
<td>48.4</td>
<td>36 / 76.6</td>
<td>1 / 2.1</td>
</tr>
</tbody>
</table>

*p < .05  **p < .01  ***p < .001  (two-tailed)

SJ= Saint Joseph, MR= Mad River, RM= Redwood Memorial
Pain

Females utilized E.R. facilities at a significantly higher rate than males $\chi^2 (1) = 7.520, p < .01$. Females made up over 60 percent of nonurgent pain cases. Specifically, they are 1.51 times more likely to visit the E.R. than males. In terms of age, nonurgent pain patients are significantly younger ($M = 36.17, SE = 0.926$) than urgent patients ($M = 39.09, SE = .208$) $t(416.061) = 3.073, p < .01, r = .15$. They also visited Saint Joseph Hospital significantly more than the other facilities $\chi^2 (2) = 9.901, p < .01$.

Dental

Nonurgent dental patients are significantly younger than urgent patients ($M = 31.93, SE = 0.616$) ($M = 39.09, SE = 0.208$) $t(454.073) = 11.004, p < .001, r = .46$. Noting the effect size, age is an important variable in understanding E.R. dental visits in the county in terms of public health implications. There was about an even distribution of nonurgent dental complaints among males and females, revealing no significant difference $\chi^2 (1) = 1.559, p > .05$. There is also no difference between these cases and which facility visited $\chi^2 (2) = 4.613, p > .05$.

Infection

Nonurgent infection patients are more likely to visit Saint Joseph Hospital $\chi^2 (2) = 18.298, p < .001$. About 60 percent of urgent visits were at Saint Joseph in general. For nonurgent patients, this rises to over 70 percent. These patients are also significantly older ($M = 41.82, SE = 1.063$) than urgent ones ($M = 39.09, SE = .208$) $t(352.530) = -$
2.522, \( p < .01, r = .14 \). This represents a medium effect. A slightly greater proportion of females reported nonurgent infection compared to males. However, there was no significant difference \( \chi^2 (1) = 0.453, p > .05 \).

**Miscellaneous**

Miscellaneous nonurgent patients are significantly younger than urgent patients \((M = 33.84, SE = 1.267) (M = 39.09, SE = 0.208) t(288.982) = 4.084, p < .001, r = .23\). This also represents a medium effect. Gender and facility were found not to be statistically significant when testing this theme and urgency of visit \( \chi^2 (1) = 1.238, p > .05, \chi^2 (2) = 1.920, p > .05 \).

**Urinary Tract Infection**

Females are 2.53 times more likely than males to visit E.R.’s for nonurgent UTI-related symptoms (which also include groin-related medical complications). This was statistically significant \( \chi^2 (1) = 40.603, p < .001 \). UTI patients are also significantly younger \((M = 34.92, SE = 1.424) (M = 39.09, SE = 0.208) t(12424) = 2.759, p < .01, r = .02\). There were generally more cases at Saint Joseph Hospital, making up over 57 percent of cases. However, there is no significant difference in facility utilization \( \chi^2 (2) = 0.192, p > .05 \).
Medication

Males are almost twice as likely to visit Humboldt County E.R.’s requesting medication, with an odds ratio of 1.85. The difference by gender was significant \( \chi^2 (1) = 15.937, p < .001 \). In terms of E.R. facility, nonurgent medication requests are 2.32 times more likely to occur at Saint Joseph than Mad River or Redwood Memorial hospitals \( \chi^2 (2) = 22.959, p < .001 \). These requests were from older patients, with a significant difference in age \( (M = 41.87, SE = 1.114) (M = 39.09, SE = 0.208) t(185.285) = -2.453, p < .05, r = .18 \).

Physical

Age acts as a powerful determinant in understanding E.R. requests for physicals, with a patient mean age of under 15 years \( (M = 14.84, SE = .663) (M = 39.09, SE = .208) t(172.589) = 34.908, p < .001, r = .94 \). The test reveals a very strong effect between the two variables of age and nonurgent physical request, as the population is likely teenage students. These visits were also more frequent for males, with 57 percent of cases. They are 1.53 times more likely to visit the E.R. for a physical than females \( \chi^2 (1) = 6.493, p < .05 \).

Constipation

Saint Joseph is most commonly the facility which treats constipation patients at \( \chi^2 (2) = 11.820, p < .01 \), with over 76 percent of cases. Patients are 2.27 times more likely to visit Saint Joseph Hospital than the other facilities in the county. Males are over two
times more likely than female to visit the E.R. for constipation. This difference is significant $\chi^2 (1) = 5.791, p < .05$. These patients are also significantly older ($M = 48.40$, $SE = 4.494$) ($M = 39.09$, $SE = .208$) $t(46.198) = -2.071, p < .05$, $r = .29$.

Spatial Analysis Results

Figures 3 through 6 illustrate nonurgent E.R. visits in Humboldt County as rates per zip code of residence. Orick and Eureka have the highest rates of nonurgent visits per 10,000 population, followed by Fortuna and Rio Dell. Although Orick shows a high rate, this is due to the low population from the 2000 Census ZCTA. The results from the other three maps show Orick as having less than 50 visits per 10,000. This is because when calculating rates for each facility, the minimum frequency threshold of 10 visits was not met. In the total calculation, there were only 11 visits in Orick, and with a ZCTA population of 487, the statistic is perhaps less telling than the Figure 3 may suggest. Overall, the distribution of rates is higher in the northern part of the county. From Ferndale to Hoopa, there are elevated rates of nonurgent visits.

Arcata, McKinleyville, and Trinidad each possess a rate from 51 to 100 nonurgent visits per 10,000 population to Mad River Hospital (see Figure 4). Interestingly, Blue Lake maintains a relatively high rate of visits, with over 100 nonurgent visits per 10,000. Figure 5 shows rates of visits to Redwood Memorial in Fortuna. Here, we see utilization patterns similar to Figure 4, where the highest rates are in proximity to the hospital. The zip codes around the cities of Loleta and Hydesville show a rate of 51 – 100 nonurgent visits per 10,000. Fortuna and Rio Dell are higher, with rates between 101 and 150.
When looking at Saint Joseph Hospital, the two zipcodes of 95501 and 95503, both in Eurkea, are the areas in which the highest nonurgent utilization rates occur (see Figure 6). This is the area with the highest population in the county, which may explain why there may not be more variation of rates as in the other maps (HCCNA 2008).
Figure 3: Rate of Nonurgent E.R. Visits in Humboldt County per 10,000 Population (2010)
Figure 4: Rate of Nonurgent E.R. Visits to Mad River Hospital per 10,000 Population (2010)
Figure 5: Rate of Nonurgent E.R. Visits to Rewood Memorial per 10,000 Population (2010)
Figure 6: Rate of Nonurgent E.R. Visits to Saint Joseph Hospital per 10,000 Population (2010)
CHAPTER 5
DISCUSSION AND CONCLUSION

Nonurgent E.R. Visits

The ratio of urgent to nonurgent visits in this research is consistent with several previous studies (Gill 1999; Petersen et al. 1998; Gooding et al. 1996; Tyrance et al. 1996; Olson 1994). In terms of demographic variables, the results also remain consistent with the literature (Hock 2005; Oster and Bindman 2003; Sarver et al. 2002; Tyrance 1996). Controlling for pregnancy, females tend to utilize medical services more often than males (Cocke rham 2004:120-121; Koziol-McLain et al. 2000). Results from Table 2 show females utilize E.R. services at a higher rate. The age of patients in this study reflects a younger population, where the average age of urgent visits is 39.5 years, and nonurgent visits is 35.1 years. This makes intuitive sense, given the utilization of hospital services among older patients tends to be more urgent (Hock et al. 2005). This is perhaps one of the large distinctions between medical care in the U.S. and utilization patterns, where nonurgent cases are pointing towards younger people in terms of who is using emergency services for nonurgent care (Roland et al. 2005; Cockerham 2004; Sarver et al. 2002; Olson 1994).

Of the three facilities used in this study, nonurgent visits are more likely to occur at Saint Joseph Hospital. This raises interesting questions of E.R. utilization and the
homeless population in Eureka from the Humboldt County Community Needs Assessment (2008). One can see Saint Joseph Hospital as an access point, where a larger group of those who do not have adequate care use the E.R. in Eureka for health services. The social instability of such populations as the homeless perhaps explains the significantly higher amount of visits at Saint Joseph, because studies have shown a correlation between this social instability (such as high unemployment, homelessness, lower health outcomes overall) and nonurgent visits (Kirby and Kaneda 2006; Marmot and Wilkinson 2006; Kushel et al. 2002). In addition, prolonged stresses due to this instability can contribute to higher cases of E.R. for nonurgent care (Marmot and Wilkinson 2006). This is perhaps what we are seeing in Humboldt County, as unemployment rates and stability overall are concerns in communities in and around Eureka (HCCNA 2008).

Pain

The most frequent nonurgent visits were due to pain. This was following an extensive recoding process which ensured nonurgent pain was as clearly identified as possible. Many of these visits were because of back pain which had been chronic or low in severity. Gooding et al. (1996) had addressed this particular ailment, noting that back pain is often associated with a complicated set of diagnostic procedures. For example, this type of pain can also be from a list of urgent ailments, including pancreatitis or
pneumonia (Gooding et al. 1996). Often times, it is difficult for the patient, or staff, to make the distinction between urgent and nonurgent (Gooding et al. 1996). Because pain was the largest category, comprising of nearly 20 percent of all nonurgent cases, it is perhaps the ailment that may require the most attention in terms of addressing nonurgent E.R. utilization in Humboldt County. One of the dominant themes (“tough it out”) in the qualitative study from Koziol-McLain et al. (2000) was similar to this study’s results in terms of crossing the threshold to seek care. Medication request was also related to the pain theme. In fact, some of the requests for medication were for pain or an absence of available medication, which supports the 2008 Humboldt County Community Needs Assessment findings.

Dental

The next theme was nonurgent dental cases. There are correlations of results in the dataset with the HCCNA. For example, The Humboldt County Children’s Oral Health Report from 2001-2005 found several important barriers in achieving adequate dental care for children 12 and under (HCCNA 2008). These barriers included lack of early prevention and intervention, as well as a lack of adequate dental insurance coverage. The report recommended consumer priorities of improving immediate access to dental treatment and improved insurance coverage for children (HCCNA 2008). These barriers indicated in the report reflect the shortfalls in oral health of not only children, but
in younger populations en masse. One of the most statistically significant results in my research was a younger mean age of nonurgent dental visits, at 31.93 years, compared to the mean age of 39.09 years for urgent patient ages overall. Also, the 2004 Humboldt County Continuum of Care program recognized the need to address oral health with homeless populations (HCCNA 2008). We can also see the theme of “nowhere else to go” in Howard et al. 2005, as patients who visited Humboldt County E.R.’s had sometimes indicated that their dentists were unavailable, or were unable to see them in time. In Howard et al. (2005), 43 percent of patients were referred by health care providers to visit the E.R. So, although one may assume the decision was on the part of the patient, their experiences with dental (or other health care staff) need to be taken into account.

Miscellaneous

Also statistically significant were the results of younger populations and the miscellaneous theme which showed many to be for such ailments as pregnancy and STD testing. There is an indication that these conditions also correlate to some of the qualitative explanations of nonurgent visits in Howard et al. (2005) and Koziol-McLain et al. (2000). For example, patients often lack a primary care physician, or adequate medical services to help them to treat such an overwhelming health concern such as
pregnancy. The lower mean age also suggests greater life instability, where primary care may have not yet been established or is not affordable (Howard et al. 2005).

Infection

Infection cases made up the third highest amount of nonurgent visits. The most important variable in this set of statistical tests was facility, where Saint Joseph hospital was most likely to see these types of cases. Note when researchers described the theme of “symptoms overwhelming self-care measures” (Koziol-McLain et al. 2000:559). Also, timeliness of care is important when looking at such cases as infection, where waiting several weeks to treat an ailment may be clearly unreasonable (Howard et al. 2005). This offers an interesting look into the thought processes of patients, where a seemingly simple scenario of treating an infection can lead to a series of events which force one into the E.R. The urinary tract infection (UTI) category contains a similar analysis, where patients had difficulty in addressing both the timeliness of their ailment, along with other specific events in their lives which had influenced an E.R. visit (Howard et al. 2005). Researchers had described the interview of a patient who had used the E.R. to treat a UTI:

I recently just found out today—that my fiancé has another woman, and he’s been with her for awhile. Since my infection has gotten worse I just decided I better come tonight… I thought… I might
have some disease. The last six months or so we didn’t use any condoms, you know, any protection (Koziol-McLain 2000:559).

Understanding such themes as infection and UTI from this study is better contextualized when such a testimonial helps reveal what types of decisions are made prior to the E.R. visit. It is important to look at the situational factors that can influence such decisions. For example, females often note child care, or conveniences due to time restrictions because of family obligations in seeking emergency care (Howard et al. 2005; Koziol-McLain et al. 2000). Indeed, it may be well understood that an E.R. visit is nonurgent, however, the alterative is worse because of a lack of available time or resources to receive care. It is quite understandable such decisions are made; if a mother does not have the means of securing childcare, or the time for a doctor’s visit (or a visit which requires a wait of several months) it seems reasonable that the E.R. would be a better alternative.

Physical

The physical theme for nonurgent visits is perhaps the most transparent set of cases, where many of these patients were requesting sports physicals. The mean age of these patients was less than 15 years, indicating a mostly student population. All of these cases occurred at Saint Joseph hospital, comprising of 144 cases in a three month period.
Nonurgent E.R. Care as a Safety Net

It is important to address the larger context to what the results have shown in this study. Classic literature surrounding this topic sheds light on the relationship between the theoretical development and my results. Bourdieu’s notion of habitus was perhaps a factor in the decision making processes for many of the patients in the dataset, as the nonurgency of ailment often proved to have tipped the scale to intolerable. In terms of a dispositional compared to a situational factor in this decision, it is difficult to draw a distinction. One study in Colorado found that 34 percent of E.R. patients had no other access to primary care in the area (Koziol-McLain et al. 2000). In this case, hysteresis was direct, beginning with morbidity and finishing with an E.R. visit. The importance of this sociological interpretation of the labeling of habitus suggests that other situational factors may be influencing the rise in nonurgent visits. Kushel et al. (2002) see E.R. overcrowding as a result of systemic problems, where the types of conditions which favor an appropriate utilization of medical care weigh heavier on the institutional factors and availability of care than on patient decisions.

Although lack of health insurance may be seen as symptomatic of nonurgent visits, this is not usually the case. Gooding et al. (1996) found that both insured and uninsured patients have substantial nonurgent visits. They did find that E.R. misuse occurred at a higher rate from Medicaid patients than with the uninsured (Gooding et al.
The National Center for Health Statistics conclusion was that the uninsured were no more likely to visit the E.R. for nonurgent complications (Garcia et al. 2010). In another study, less than 15 percent of nonurgent E.R. cases were from the uninsured (Zuckerman and Shen 2004). Although it is important to recognize the millions without insurance, as well as how it affects health care in the United States, it may be more relevant to discuss other issues behind this phenomenon.

There are a complicated set of changes occurring in the health care system which is both reducing E.R.’s throughout the country, and shifting from inpatient to outpatient care (Hock et al. 2005). There are fewer staff in America’s E.R.’s, and there is a growing emphasis on cost control due to the fixed costs in E.R. settings (Hock et al. 2005; Starfield et al. 2005; Gill 1999). It makes sense that the argument of nonurgent visits can be dispositionally framed, where those populations without resources are to blame for making bad judgments (Cockerham 2004). Labeling theory, which denotes the differences in how one group defines deviant (in health framing) behavior from other groups, is an interesting addition to this analysis. Because nonurgent patients are stigmatized and labeled as deviants, they are seen as causes of the larger problem of growing health care costs (Koziol-McLain 2000). The term used for them, in fact, is structured to label them as deviant by the title of “inappropriate” visitations (Koziol-McLain 2000:554). This title possesses undertones which labels nonurgent patients as
barriers to an effective, capitalism-influenced health care system (Airhihenbuwa 1995).

In fact, nonurgent E.R. visits are symptomatic of a series of reductions in access to primary care, emergency rooms in numbers, as well as timeliness of care for those who should not have to suffer with minor symptoms for weeks or months until their condition becomes one they identify as urgent (Garcia 2010; Howard 2005; Starfield et al. 2005; Sarver et al. 2002). About one-third of physicians in the U.S. are primary care physicians - highlighting the more lucrative opportunities for doctors to seek specialties (Hock et al. 2005). Again, instead of looking at the situational, or the sociocultural factors as Parsons discussed, we may miss out on how structurally-dependent nonurgent visits truly are (Starfield et al. 2005; Sarver et al. 2002; Gerhardt 1989).

The results of this study support a situational explanation of nonurgent E.R. visits in Humboldt County. The themes indentified from the dataset support not only the existing literature in terms of types of nonurgent visits, but also from a perspective of local needs from the 2008 Humboldt County Community Needs Assessment. Along with health insurance (as we have seen may show little predictive explanation in identifying nonurgent visits) it was access to health and dental care in the region that was important to many residents (HCCNA 2008). Of the 13 themes identified in the study, four of them were directly related to health (HCCNA 2008). The study also mentioned the importance of holistic health, including community and social opportunities to help residents possess
a greater sense of closeness (HCCNA 2008:3). In the Koziol-McLain et al. (2000) study, researchers found that “nowhere else to go” was an important factor in why nonurgent patients had decided to visit the E.R. (Koziol-McLain et al. 2000:559). Another qualitative study saw similar results, where work restrictions and family obligations had made nonurgent conditions become major barriers to completing important daily activities (Howard et al. 2005).

Nonurgent E.R. use differs in its analysis by chief complaint, as well as the demographic variables. In my study, only infection, medication requests, and constipation consisted of a population that was older than the mean age of nonurgent patients overall. The other five themes had lower mean ages, suggesting a need to scrutinize why younger people are using emergency services. The miscellaneous, dental, and pain categories certainly support the qualitative analyses which showed that timeliness of care, as well as access of care was important to patients (Howard et al. 2005; Koziol-McLain et al. 2000). One can see that perhaps younger populations are busier with family obligations (such as with small children and more demanding job schedules/traveling), which is reflected by the lower ages. For older patients, perhaps the Humboldt County Public Health branch should look closely at how age is associated with infection, medication requests, and constipation. For the constipation theme, we may be seeing an underutilization of primary care among older men overall, due to the higher
numbers of males (63.8 percent) and their age ($M = 48.4$ years). This supports the data which shows that women tend to access medical care more often, where constipation cases may have been resolved with an appointment prior to the days or weeks leading up to an E.R. visit. In contrast, 75 percent of urinary tract infection cases (UTI) were from women. Again, one must look at timeliness of care, in which if a female patient had such an ailment, an available doctor or appointment may not have met her immediate concern. The HCCNA showed the shortfalls in dental health, particularly among children. This might have explanatory power towards why there were 367 separate nonurgent dental cases in Humboldt County in the three month period of the study (see Table 6).

Looking again at Table 6, it is important to associate these nonurgent themes with the notion of the E.R. as a safety net, in which emergency care covers those individuals who use their services as a last resort. However, we see that this theme is a sensitive topic, where researchers and health staff often have difficulty in establishing what exactly constitutes a nonurgent visit (Koziol-McLain et al. 2000). What is consistent is the utilization of the E.R. as a safety net for those, in which we see as medical externalities, who are becoming more impacted by the reduced availability of care en masse (Hock et al. 2005). One should examine the larger sociological picture as to why so many individuals are depending on emergency services for conditions which do not require an E.R., based on the literature’s contribution of situational interpretations. Illness is a
worldview issue, in which one’s habitus is affected, and one’s ability to function grows into a larger priority than other events around him or her. In describing a help-seeking model of behavior, researchers quote a physician that addresses the hysteresis of the individual: “We have already stressed the inseparability of a patient’s illness, his self, and his world, and how any or all of these, in their manifold interactions, through an infinity of vicious circles, can bring him to his nadir of being” (Koziol-McLain 554:560). Looking at how the individual, as a social being, functions in society requires an investigation of their worldview vis-à-vis the structural availability of care that enables them to remain healthy.

Discussion of Spatial Analysis and Results

The spatial analysis component of this study shows several interesting aspects of health outcomes in the county relating to nonurgent E.R. care. Sociospatial analysis, which is a form of social research within a mapping context, was applied to measure a unique utilization pattern of these visits (Steinberg et al. 2010; Cope and Elwood 2009; Abbot et al. 2008; Zandbergen 2007; Hawthorne et al. 2006; Kirby and Kaneda 2006; Steinberg and Steinberg 2006; Parkes et al. 2003; Jones et al. 1982). Overall, the zip code of 95555, around the city of Orick, was shown to have the highest rate of nonurgent use in the county.
Figure 3 is an important overview of E.R. utilization patterns in Humboldt County. This map shows us that the rates of nonurgent E.R. visits are higher among those zip codes which are closer in proximity to the hospitals. The Arcata, McKinleyville, and Blue Lake areas each possess a nonurgent E.R. utilization rate of over 100 per 10,000 population. This corresponds with the HCCNA 2008 study from the Humboldt County Association of Governments (HCAOG) report on unmet transit needs (HCCNA 2008). Not only were certain areas of the county lacking in public transportation, the report also found a limited schedule in terms of hours of operation. One cause of nonurgent E.R. visitations is accessibility; this local report can help shed light on some possible correlations to the limited access to primary care physicians and its link with higher use of the E.R. (Koziol-McLain et al. 2000). The city of Orick was also included in this report as an area of concern for consistent regional transportation (HCCNA 2008). Orick was only one of two zip codes which exceeded a rate of 200 nonurgent visits per 10,000 population (see Figure 3).

The rural composition of the county certainly should be addressed in relation to provision of care (HCCNA 2008). In their GIS analysis of neighborhoods to promote healthy aging, researchers found both access and availability to be the most important (Abbott et al. 2008). Where access delineates one’s ability to reach a destination, availability is more related to existing services to meet the needs of a resident. An
example of a lack of both access and availability of health resources is in Blue Lake (HCCNA 2008). The zip code area of Blue Lake encompasses a rate of nonurgent E.R. use which is over 100 visits per 10,000 population. How does this relate? A 2005 community forum in Blue Lake highlighted residents’ concerns. A mobile medical van used to provide services to the area, but no longer does. Care giving for all ages was also noted as a problem. There is an inadequate supply of counseling and support groups for mental health services. There are not enough stores in the area (such as a pharmacy) to meet the needs of those who administer self care. Dental care is inadequate. The county bus no longer serves Blue Lake, and the Blue Lake Casino bus stop ends its route at 6:00pm. This reduces one’s options for a doctor’s appointment if they need to take an afternoon appointment and return using public transportation. These are all community level, spatial considerations which support the qualitative testimonials of patients who had reported such problems as access and availability in the Literature Review (Howard et al. 2005; Koziol-McLain et al. 2000).

Sociocultural characteristics within the community are more likely to determine whether sick patients, such as those in Blue Lake, identify mild ailments as urgent (Parkes et al. 2003; Conrad 2001; Maclaclan 1997; Navarro 1993; Gerhardt 1989). The results from the 2005 forum show the level of isolation of a sick patient in Blue Lake. With insufficient levels of community health care providers and dentists, no pharmacy,
limited public transportation, it becomes more clear how the decision making process for an E.R. visit becomes that of a safety net, and less of an “inappropriate” utilization (Hock 2005; Kushel 2002; Koziol-McLain 2000). How a resident in Blue Lake conceptualizes individual health is dependent on the community availability of resources for him or her to treat nonurgent ailments (including dental care) with self administration, adequate primary care, as well as a myriad of other social accommodations which must meet their needs (Hock et al. 2005; Starfield et al. 2005; Cockerham 2004; Oster and Bindman 2000). If these needs are not being met, the E.R. then becomes an alternative regardless of appropriateness of ailment. If the problem of nonurgent E.R. utilization was the result of individual patients and their corresponding judgments of illness, perhaps we would not be seeing higher rates of nonurgent visits in the locations in which residents have lobbied for more of these specific resources (HCCNA 2008).

A similar community forum was also held for residents in Eureka. Eureka shows slightly different concerns in terms of nonurgent E.R. mitigation. This is important to note due to the many nonurgent visits from patients in this location. Mental health services, substance abuse, homelessness, and joblessness were noted as concerns for residents (HCCNA 2008). The high rate of nonurgent visits at Saint Joseph hospital indicates a higher overall morbidity rate. We need to address this in a larger context as well. Recall that Humboldt County ranks worst in California in rates of: female breast
cancer, Alzheimer’s disease, strokes, liver disease, unintentional injuries, and drug-induced deaths (County Health Status Profiles 2010). We are certainly seeing this in the volume of cases in Eureka for those which relate to drug use and homelessness. Homeless populations often utilize emergency services as a safety net, and tend to have higher amount of injuries (HCCHP 2010). The 2005 Community Forum in Eureka sheds light on these concerns of residents. The data show that homelessness, drug and alcohol abuse, and health access are not just concerns; they are resulting in the worst health outcomes in California. Again, looking at a situational perspective of health, nonurgent E.R. visits are merely symptomatic of larger health inequities which should be addressed (HCCNA 2008; Hock et al. 2005).

The spatial analyses of separate areas such as in Blue Lake and Eureka show different characteristics of nonurgent E.R. use. In fact, E.R. utilization patterns differ depending on such elements as location (Beale et al. 2008; Kirby and Kaneda 2006; Zuckerman and Shen 2004). The spatial component of this study has revealed the importance of this, illustrating the need to address nonurgent visits based on geographic area. Blue Lake may need more preventative services through better access to primary and dental care, where Eureka may better be served with addressing unemployment, homelessness, and substance abuse (CHSP 2010; HCCNA 2008). The characteristics in Eureka are indicative of what is known as residential instability, and this is associated
with high unemployment, homelessness, and low civic networks which lower health outcomes (Kirby and Kaneda 2006). This instability was discussed in the Humboldt County Community Needs Assessment as a result of rising unemployment and drug use (HCCNA 2008). With the age-adjusted mortality rate in Humboldt County at 932.6 per 100,000, the highest death rate in the California, it is somewhat surprising that nonurgent E.R. cases are not more common (CHSP 2010).

The Social Construction of Health Data

It is important to analyze the role of social construction in this study, as well as how health is framed en masse. Social constructionism is defined as a way of thinking that analyzes and critiques the social and psychological artifacts that are used to define social phenomena (Holstein and Miller 1993). There are two segments to this analysis. First, is an exploration of how social constructionism itself relates to results of the research design (Reed 2008; Callero 2003; Deetz 2000; Holstein and Miller 1993; Shotter 1993; Nencel and Pels 1991; Turner 1991; Berger 1967). The second segment is an examination of how the literature around social constructionism can be used to ensure the reader identifies the inherent dangers of how health research, specifically, does not constitute a panacea for explaining determinants of nonurgent E.R. visitations (Yadavendu 2001; Brown 1995; Fox 1994; Navarro 1993; Conrad 1992).
In many cases, science-based research utilizes constructs which are reflective of the research design, and not necessarily an objective look at test results (Deetz 2000). This can be interpreted as subjective and objective constructionism. The former delineates the forms of order, where the latter discusses the “interpretive” cognates of how data management are determined (Holstein et al. 1993). The notion of constructionism ultimately strives to raise awareness as to the subjective development of particular research characteristics. For example, when Nazi scientists were conducting research on Holocaust victims, they operated with a worldview which subjugated Jewish ethnicity (Deetz 2000). If one were to read the results from those scientists, one would notice the inherent bias in how researchers drew conclusions from a pretense of superiority. This was also addressed in the form of ethnographic research, where earlier studies on African cultures often depicted communities as uncivilized - a positioned reality from the biography of the researcher and not the subjects under study (Goodall 2000).

Stephen Turner’s 2001 article “What is the Problem with Experts?” addresses the problematic nature of constructed knowledge. He argues that expert authority figures - usually legitimized by association with elite institutions - that attempt to solve societal problems will have difficulties because of the lack of dialogical communication (Turner 2001). How research is framed is dictated by the interests, knowledge, and availability of research designs which produce the knowledge from the results. If segments of society
have no participation in the research, it becomes difficult to elaborate on how to mitigate and support their needs (Turner 2001). Often, differences between patient and hospital staff in labeling nonurgent E.R. visits occur. In one study, 89 percent of patients in the E.R. reported their ailments as urgent, while health professionals reported the same cases as only consisting of 11 percent of urgent cases (Gooding et al. 1996). Although health professionals surely have a more accurate understanding of nonurgency of ailment, this is irrelevant because the actions are on the part of the patients, not the staff. Estimates of nonurgent E.R. visits also widely vary, usually ranging from about 14 percent to 82 percent (Gill 1999; Petersen et al. 1998; Gooding et al. 1996; Tyrance et al. 1996; Olson 1994). These differences are largely due to the difficulty in establishing nonurgency (Hock et al. 2005). Once a research design has been established with a way to measure nonurgency, the results of the study reflect the construction of that measurement, and not an absolute number of nonurgent visits. This is perhaps more complicated in this type of research, due to the lack of any standard measurement for nonurgency in the literature identified for this study. The cost burden of nonurgent visits is also disputed, with some studies showing contrasting results. For example, in some cases, E.R.’s rely on nonurgent visits to cover high fixed costs (Hock et al. 2005). The point in this analysis is to reiterate the level of discretion and subjectivity involved in every study, and that a sociological interpretation of this study aims to underline the importance of recognizing limitations inherent in social research.
Policy Recommendations

Following this study, there are several areas in which public health researchers can look to reduce the frequency of nonurgent E.R. visits in Humboldt County. First is addressing the need for primary care physicians locally (Starfield, Shi, and Macinko 2005). Primary care physicians only make up about a third of physicians in the country, and this may be a source of concern in Humboldt County as well (Hock et al. 2005). Increases in primary care availability have positive benefits in reducing low birth weight, mortality rates, racial and socioeconomic disparities, as well as increasing preventative care and improving overall quality of life for many people (Hock 2005; Starfield et al. 2005; Tyrance 1996).

There has also been discussion of providing similar services as emergency rooms, but tailoring them to nonurgent patients (Hock et al. 2005). For example, having 24 hour services for patients in the form of an after-hours clinic can meet the medical needs of those patients which are having difficulty accessing primary or timely care (Howard et al. 2005). Due to the high rates of nonurgent E.R. utilization in Eureka, this might be best served at Saint Joseph Hospital. In the three month dataset for this study, there were over 9,000 E.R. visits at Saint Joseph. A 24 hour urgent care clinic may show a dramatic reduction in cases - which enable’s E.R. staff to respond to emergencies quicker. In addition to 24 hour clinics, it may be as useful to create more clinics overall in the county
In the HCCNA, access to health clinics and dental clinics were a consistent topic of discussion. Areas around McKinleyville and Blue Lake could benefit from more access to clinics, including the downtown area of Eureka.

Finally, educational material which the patient can read regarding emergency care may help reduce nonurgent visits. This can be in a booklet form for patients as they receive final paperwork from hospital staff before leaving (Gill 1999). Although the results from this strategy are mixed, the costs for small educational booklets may justify its use (Gill 1999). More importantly, this booklet could have contact information for community clinics, dentists, and other services that may better serve them in the future. Each emergency room could have a specific booklet which directs the patient to local resources which would help them in their community, as patients from more rural areas of the county may require different services than those residing in Eureka (Abbot et al. 2008; HCCNA 2008).

Limitations

This study has several limitations. First was the determination of nonurgency in the dataset. The literature identified distinctly different ways to determine nonurgency, which nullified any attempt to standardize the dichotomy of urgent and nonurgent. The syndrome classifier, which had the free text notes from E.R. staff, was heavily used to establish nonurgency. Had there been a conventional way to standardize nonurgency
with examples in the literature, this may have yielded more effective results as a comparative study. However, the recoding that was done was the next best option. The conservative recoding, which resulted in about 12 percent of nonurgent cases in the dataset, did align with more standard approximations of nonurgent visits (Gill 1999; Petersen et al. 1998; Gooding et al. 1996; Tyrance et al. 1996; Olson 1994).

The second limitation was the lack of qualitative data analysis from key informant interviews in this study. Two qualitative studies were instrumental in contextualizing nonurgency in this study (Howard et al. 2005; Koziol-McLain et al. 2000). They showed the power of testimonials, supported by such considerations as life events, economic hardship, difficulty scheduling appointments, and length of time waiting for appointments (Hock et al. 2005; Howard et al. 2005). It would have been interesting to hear directly from patients in Humboldt County about the conditions surrounding their visit. Given the high morbidity and mortality rates in the county, it is surprising that only 12 percent of E.R. visits were identified as nonurgent in the dataset. If public health officials would like to obtain more details about how to mitigate these numbers, it would be important to link the results of recent studies such as the 2008 HCCNA with interview data. This could help bridge the gap between who needs health care the most, and the amount of resources available to administer to at risk populations.
Conclusion

This study reveals that nonurgent E.R. visitations are symptomatic of a larger context of health in the U.S. (Howard et al. 2005; Tyrance et al. 1996; Olson 1994). The research question was: what is the nature of nonurgent E.R. visits in Humboldt County? An extensive recoding process was completed in order to first identify nonurgent visits from the EpiCenter data. Mixed methods analyses have showed that, in Humboldt County, nonurgent visits are around 12 percent of total visits. However, given the health outcomes in the region, the prevalence of these visits may be lower than expected. My experience with the Humboldt County epidemiologist Ron Largusa was an invaluable contribution to this study, as his expertise greatly helped to frame the research. Using a grounded theory approach to this study promoted a general area of exploration, and not a specific determinant of the methodology. The hypothesis was: there is a difference between the characteristics between nonurgent and urgent E.R. patients. The results in the study showed that age, gender, and zip codes of residence were determinants of variations in nonurgent E.R. utilization.

It is important to reiterate the relationship of these visits with other aspects of social life in the U.S. Primary care, availability of clinics, where one lives, health insurance, among other considerations are important contributors to how a patient makes decisions for him or herself (Conrad 2001; Maclaclan 1997; Navarro 1993; Gerhardt
Sociologically, it is the situational considerations that need to be scrutinized as predictors of higher nonurgent E.R. rates. An important concept in this study was how the E.R. as labeled as a safety net. Emergency care responds to patients who feel like they have no other choices in seeking care. Interestingly, there may be an over representation of quantitative-based studies which illustrate the relationships of demographic variables with utilization. The direction of future research may perhaps benefit more from understanding the decision making processes from patients themselves.

This study shows the connections between health research and larger sociocontextual issues. The examination of nonurgent E.R. visits in Humboldt County benefits from the triangulated results of quantifying, qualifying, and mapping hospital data. It is important to realize the actions of groups of people are often due to a series of considerations, as noticed in the qualitative studies about nonurgent E.R. visits (Howard et al. 2005; Koziol-McLain et al. 2000). How one defines his or her world, such as in Bourdieu’s concept of habitus, can help researchers better understand why these visits are occurring (Seidman 2008). The effort of mitigating nonurgent visits must accompany a holistic approach, because the health of a community requires collective efforts to meet the needs of each individual’s sense of well being.
REFERENCES


Steinberg, Sheila Lakshmi, Steven J. Steinberg, Jennifer L. Kaufman, and Josef Eckert. “Public Participation GIS Research and Agricultural Farmworkers in California.” Available at California Center for Rural Policy.


# APPENDIX A

## Codebook

### Categories of Classified Visits (N = 12,190)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Abdominal (gastrointestinal, including nausea, vomiting, constipation, diarrhea, blood in stool, pinworms)</td>
</tr>
<tr>
<td>2</td>
<td>Animal injuries (including bites, animal scratches, rabies, spider bites, etc.)</td>
</tr>
<tr>
<td>3</td>
<td>Arthralgia (joint pain)</td>
</tr>
<tr>
<td>4</td>
<td>Drugs (overdose, detox, alcohol-ETOH, withdrawal)</td>
</tr>
<tr>
<td>5</td>
<td>Edema (swelling)</td>
</tr>
<tr>
<td>6</td>
<td>Eyes (pain, infection, swollen, blurred vision)</td>
</tr>
<tr>
<td>7</td>
<td>Fatigue</td>
</tr>
<tr>
<td>8</td>
<td>Fever</td>
</tr>
<tr>
<td>9</td>
<td>Headache (migraines)</td>
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<td>10</td>
<td>Hemorrhaging (miscarriage, vaginal, ear, surgical site, epistaxis)</td>
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<td>ILI (cold, pneumonia, cough) (individual level intervention)</td>
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<tr>
<td>12</td>
<td>Injury (lacerations, falls (GLF), broken bones, burns)</td>
</tr>
<tr>
<td>13</td>
<td>Jaundice</td>
</tr>
<tr>
<td>14</td>
<td>Lymphadenitis (lymph nodes - swollen, pains)</td>
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<tr>
<td>15</td>
<td>Malaise (feeling ill, myalgia)</td>
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<tr>
<td>16</td>
<td>Mental (anxiety/panic attacks, suicide attempts, 5150)</td>
</tr>
<tr>
<td>17</td>
<td>MVA (injury due to motor vehicle accident)</td>
</tr>
<tr>
<td>18</td>
<td>Neurological (dizziness, seizure, tremors)</td>
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<tr>
<td>19</td>
<td>Paralysis (numbness)</td>
</tr>
<tr>
<td>20</td>
<td>Rash</td>
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<tr>
<td>21</td>
<td>Respiratory (Asthma, SOB, bronchitis, coughing up blood, ear nose throat, Chest pain, blood press, rapid heartbeat)</td>
</tr>
<tr>
<td>22</td>
<td>Shock (low blood pressure, etc)</td>
</tr>
<tr>
<td>23</td>
<td>Stiff Neck (neck, shoulder pain)</td>
</tr>
<tr>
<td>24</td>
<td>Suture, wound check</td>
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<tr>
<td>25</td>
<td>Violence (assault, rape, gunshot)</td>
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### Unclassified: Possible Urgent/Appropriate (N = 1,845)

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<td>Pain (Back, leg, arm, non-joint)</td>
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<td>Code Blue, cardiac arrest</td>
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<td>Misc (airway obstruction, catheter, return checkup, poison oak, dehydration, sent from PMD, work release, legal draw, baby crying/complications, allergic reaction)</td>
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### Unclassified: Nonurgent (N = 1,949)

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<td>Constipation</td>
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<td>54</td>
<td>Dental (pain, abscessed tooth, jaw pain)</td>
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<td>55</td>
<td>Misc nonurgent (pregnancy/std/blood tests, insomnia, ingrown toenail, lumps, soreness, redness, swollen finger, ear ache, loss of energy/weight)</td>
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<td>57</td>
<td>Infection (cellulitis, bladder, kidney, yeast, abscess, stye)</td>
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<td>59</td>
<td>Chronic pain, nonurgent pain/injury (indicates no trauma)</td>
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99   | Unknown, missing data (N = 106) |
## APPENDIX B

### Spatial Analysis Metadata

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