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Documentation and Referral of Social Determinants of Health in New Mexico's Emergency Departments: International Classification of Disease, Tenth Revision, Clinical Modification, "Z Codes" (Z55-Z65)

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Abbreviations

SDH-Z Codes: International Classification of Diseases 10th Revision, Clinical Modification Codes which refer to social determinants of health

ICD-10-CM: International Classification of Diseases 10th Revision, Clinical Modification

Key Points

- Social Determinants of Health (SDH) Z codes (Z55-Z65) are documented in a very small percentage of emergency department visits
- The use of these SDH-Z codes in New Mexico's emergency rooms doubled from 2016 (0.6%) to 2023 (1.4%)
- There do not appear to be seasonal patterns in the use of these codes within New Mexico
- The most common primary diagnosis for visits with documented SDH-Z codes across years were related to alcohol use, examinations related to incarceration, and mental health
- The top SDH-Z code used across all years was Z59.0 or Z59.00, which are used to document homelessness
- Visits for men, persons in small metro counties, and persons with Medicaid or no insurance were more likely to have SDH-Z codes documented with their emergency department visit.
- Visits with SHD- Z codes resulted in higher total charges than visits without SDH-Z codes
- Visits with SDH-Z codes were less likely to be for ambulatory care sensitive conditions than visits without SDH-Z codes.

Introduction

Social determinants of health can be broadly defined as “economic and political structures, social and physical environments, and access to health services,” that play a role, at least partially, in the etiology of health behaviors, health outcomes, disease progression, and mortality[1]. In the United States (US), the emergency department is a place where the most acute illnesses and injuries are treated. However, in the United States the emergency department is often also used as the only point of contact with the health system for persons with no insurance, underinsurance, or other barriers to accessing primary care[2]. Unlike many other healthcare settings including primary care, the Emergency Medical Treatment and Labor Act of 1986 (EMTALA) “made emergency care unique within the US health care system by requiring equal evaluation and treatment of all persons presenting to an emergency department (ED), regardless of their ability to pay”[3]. As such, the emergency room is a place in which persons experiencing poverty and other social determinants of health often interact with the healthcare system.

In 2015, the Institute of Medicine added codes to the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) to document social and behavioral domains with patients’ clinical records[4]. These codes, which we refer to as “SDH-Z Codes” include information on housing, unemployment, education and literacy, food insecurity, social environment, and financial instability (Table 1)[4]. Nationwide studies of the adoption of these codes in emergency department settings show from 2016 to 2023, these codes are documented in 0.6% to 1.21% of emergency department visits[5, 6].

Previous research demonstrates that documentation of social determinants of health using SDH-Z codes in emergency department settings likely remains an undercount of persons experiencing these problems, when compared to surveys[7]. Within New Mexico, recent research from the New Mexico Department of Health showed that the SDH-Z code for homelessness undercounted the number of persons experiencing homelessness when compared with records that mentioned homelessness in addresses or other text[8].

New Mexico consistently ranks among the poorest states in the nation[9]. However, in comparison with other states New Mexico has comparable rates of persons experiencing homelessness as other states[10, 11], and comparable state level prevalence (approximately 14%) persons experiencing food insecurity to other US States[12]. In 2023, New Mexico was the state with one of the highest percentages of Medicaid enrollees of any state[13], a group which has higher rates of poverty, unemployment, and food insecurity. Given this, in this analysis we aimed to examine the use of SDH-Z codes in documentation of emergency department visits. Our overall goal is that this information will be used to improve the care and ultimately the health outcomes of individuals presenting with these problems in emergency departments within New Mexico. Our objective in this analysis is to use two complimentary datasets including

information on all emergency department visits within New Mexico to document descriptive statistics and temporal trends on the adoption of these codes in New Mexico.

Methods

Study Population

This research was primarily conducted using two large complementary datasets comprised of emergency department visits in New Mexico, which are the New Mexico Emergency Department Dataset and the New Mexico syndromic surveillance dataset. These two datasets provide different and complementary information covering the majority of emergency department visits within New Mexico.

New Mexico Emergency Department Dataset

The New Mexico Emergency Department Dataset is a dataset of ED encounters within New Mexico, which includes 45 diagnostic codes containing Internal Classification of Disease, Tenth Revision, Clinical Modification (ICD-10-CM) codes pertaining to the ED visit level. The dataset is visit level, meaning that if a person visited an emergency room multiple times within a year, they would have multiple records within the dataset. For each visit, the dataset also includes variables containing patient demographics, payment type, disposition (where the patient went after the ED), and total charges for the visit, among other information. For the New Mexico Emergency Department Dataset, we analyzed trends in time over eight years (2016-2023) and performed a sub analysis on 2023 data to compare SDH-Z code use across descriptive variables and diagnostic code groupings. The New Mexico Emergency Department Dataset contains records from all emergency departments within New Mexico with the exception of the Three Indian Health Services emergency department and the one Veterans Affairs Emergency department, as federal facilities are not required to report to the New Mexico Department of Health.

New Mexico Syndromic Surveillance Dataset

Syndromic surveillance is an innovative near real-time surveillance system that uses electronic patient data to categorize visits into specific health syndromes using key terms and clinical codes. This allows the New Mexico Department of Health (NMDOH) early detection and situational awareness capabilities around a host of emerging public health conditions like foodborne outbreaks or heat-related illnesses. While syndromic surveillance is a valuable tool, it is important to understand its limitations. The data is not meant to characterize the true burden of disease in New Mexico. The information below details key considerations when interpreting this data. Syndromic data is transmitted via HL7 (Health Level Seven) ADT (Admission, Discharge, and Transfer) messages from participating facilities on NMDOH servers. De-identified data is then sent to the cloud-based BioSense Platform hosting the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), which is used for timely monitoring.

- Participating Facilities: NMDOH receives data from most non-federally funded hospitals and a limited subset of urgent cares and clinics within New Mexico. Currently, 100% of eligible emergency departments are

either transmitting live data or are in active engagement with NMDOH. Coverage of inpatient and outpatient visits is expanding across the ESSENCE system.

- Excluded Populations: The system does not include patient data from Indian Health Services (IHS) and Veterans Affairs (VA) hospitals. It also does not capture individuals who died before reaching a hospital (e.g., EMS runs) or those treated at facilities that are not currently reporting syndromic data to the state.

Measures

Social Determinants of Health Z Codes (New Mexico Emergency Department Dataset and NMSS)

In 2016, social determinants of health Z codes were added within the ICD-10-CM system, ranging from Z55 to Z65. These codes document problems related to education and literacy (Z55), problems related to employment and unemployment (Z56), occupational risk factors (Z57), problems related to physical environment (Z58), problems related to housing and economic circumstances (Z59), problems related to social environment (Z60), problems related to upbringing (Z62), other problems related to primary support group, including family circumstances (Z63), problems related to certain psychosocial circumstances (Z64), and problems related to other psychosocial circumstances (Z65) (Table 1)[4].

Sociodemographic Descriptive Variables

We describe visits with documented SDH-Z codes using age, and sex (male vs female). We also describe these visits using regions (northwest, northeast, metro, southeast, southwest) and urban/rural county designations recommended by the New Mexico Department of Health (metro, small metro, mixed urban/rural and rural)[14] . We compare discharge disposition in the New Mexico Emergency Department Dataset using the following four categories: Missing (no disposition recorded), routine discharge, transferred to another facility, left against medical advice, admitted as an inpatient to this hospital, and expired/died. In the surveillance data, we were further able to expound on these categories, describing visits with SDH-Z codes using an expanded discharge disposition groupings. In the New Mexico Emergency Department Dataset, we describe visits with SDH-Z codes by the following categories of primary payment associated with the visit: Missing (np payment source recorded), private insurance, Medicaid, Medicare, other federal plan (IHS/ VA Etc.), self-pay, county indigent fund or charity, and other. In New Mexico Emergency Department Dataset, we also compare total charges for visit across visits with documented SDH-Z codes and visits without.

Ambulatory Care Sensitive Conditions and Primary Diagnostic Code Groupings (2023 Sub Analysis)

We describe visits with documented SDH-Z codes using primary diagnoses related to ambulatory care sensitive conditions as defined by a list of ICD-10-CM codes used to identify conditions that, had these conditions been treated in ambulatory care settings like primary care and urgent care, a visit to the emergency room may have been avoided. These conditions include conditions like cellulitis, dental conditions, and vaccine preventable diseases. A comprehensive list of these conditions and the ICD-10-CM codes we used to describe them is listed elsewhere[15]. We also describe visits with documented SDH-Z codes across categories of major diagnostic groupings according to ICD-10-CM categories. A list of these major diagnostic categories and their associated ICD-10-CM codes can be found on the Centers for Medicare and Medicaid Services website[16].

Statistical Analysis

Using the New Mexico Emergency Department data, we performed descriptive analyses to examine use of SDH-Z codes over time among emergency department visits. We examine the total percentage of all emergency department visits with SDH-Z codes by year from 2016-2023. We then examine percentages of all emergency department visits by month by year, to look for seasonal trends in the use of these codes. We compile the top five primary diagnoses (by count) for each year among visits where SDH-Z codes were documented. Of those top five primary diagnosis codes, we examine the most common SDH Z codes among the top three primary diagnostic codes for 2023. Next, we rank the top 5 SDH-Z codes by count by year for all years 2016-2023. Following that, of the top three SDH codes for 2023, we examine the top primary diagnoses associated with those SDH Z codes. Next, we provide summary statistics of the of the above descriptive variables, and groupings of conditions, comparing visits with SDH-Z codes to visits without. For this analysis, we use χ^2 statistics to assess differences between categorical variables and t-tests to assess differences between continuous variables. Finally, we performed an exploratory analysis to look at patterns within the syndromic surveillance data for records with select SDH-Z codes, to explore the potential for these data to be used to explore these topics more deeply.

Table 1. Broad categorizations and examples of problems related to SDH-Z codes, adopted from the American Hospital Association[4].

SDH-Z Code	Example problem in category
Z55 – Problems related to education and literacy	Illiteracy, low educational attainment
Z56 – Problems related to employment and unemployment	Job loss
Z57 – Occupational exposure to risk factors	Exposure to toxic agents at work
Z58 – Problems related to physical environment	Drinking water supply
Z59 – Problems related to housing and economic circumstances	Homelessness, food insecurity
Z60 – Problems related to social environment	Living alone, discrimination
Z62 – Problems related to upbringing	Inadequate parental supervision, history of neglect
Z63 – Other problems related to primary support group, including family circumstances	Death of family member, addiction in family
Z64 – Problems related to certain psychosocial circumstances	Unwanted pregnancy, discord with counselor
Z65 – Problems related to other psychosocial circumstances	Conviction, imprisonment

Part 1: New Mexico Emergency Department Data

Figure 1. Percent of emergency department visits with SDH-Z codes in any fields by year, New Mexico Emergency Department Data, 2016-2023

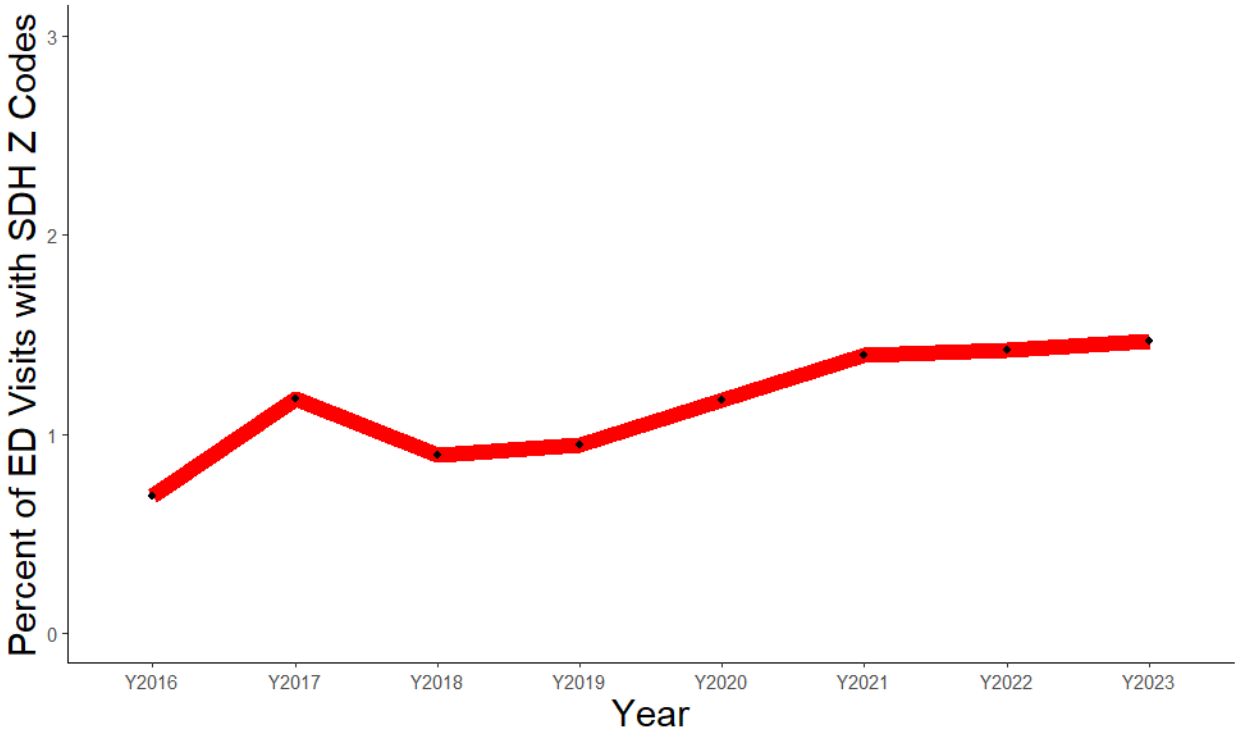

Figure 1 Discussion

Overall, **Figure 1** shows that the percentage of emergency department visits with an SDH-Z code in any of the 49 possible fields increased by more than double from 2016 (0.7%) to 2023 (1.5%). However, these numbers represent a very small percentage of the total admissions. These percentages are consistent with other research that found similar percentages of ED visits including SDH-Z codes in national samples[5, 6].

Q. What does this mean?

A. While the documentation of social needs in New Mexico's emergency departments is increasing since the introduction of SDH Z codes, the overall percentage of emergency department visits with documented social needs remains low. These data are consistent with nationwide studies.

Figure 2. Percent of emergency department visits with SDH-Z codes in any fields by year and month, New Mexico Emergency Department Data, 2016-2023

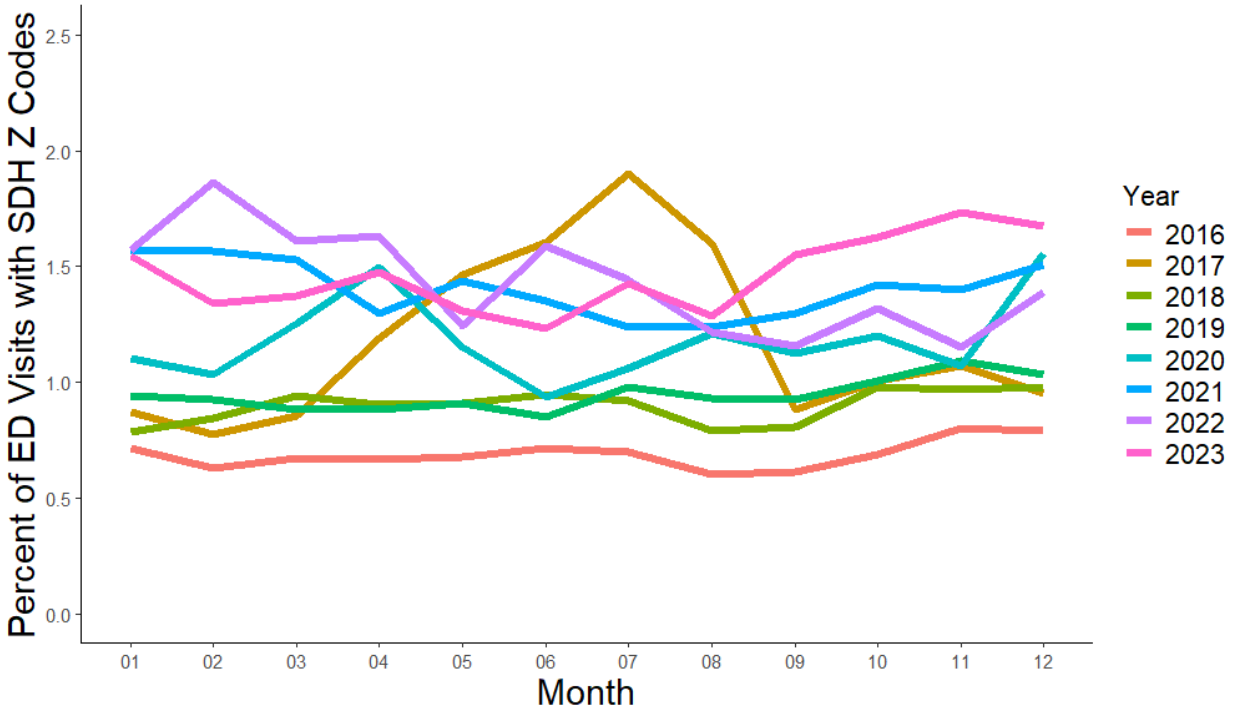

Figure 2 Discussion

Overall, **Figure 2** shows that year over year, there is not a clear seasonal pattern in when SDH-Z codes are documented. Additionally, Figure 2 shows a general pattern of increasing use of SDH-Z codes year over year, consistent with Figure 1. There appears to be a large increase in SDH-Z code use in the spring and summer of 2017 that is inconsistent with other years.

Q. What does this mean?

A. There does not appear to be a seasonal pattern in the documentation of SDH Z codes in New Mexico's Emergency Departments from year to year

Table 2. Top Primary Diagnostic Codes for ED Visits Containing SDH-Z Codes, Ranked by Count by Year, New Mexico Emergency Department Dataset, 2016-2023

Rank	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023
1	Alcohol abuse with intoxication, unspecified. (F10.129) (n=503)	Alcohol dependence with intoxication (F10.229) (n=784)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=498)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=405)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=440)	Encounter for other administrative examinations (Z02.89) (n=465)	Encounter for other administrative examinations (Z02.89) (n=554)	Suicidal Ideation (R45.851) (n=500)
2	Alcohol dependence with intoxication (F10.229) (n=310)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=480)	Alcohol dependence with intoxication (F10.229) (n=150)	Encounter for other administrative examinations (Z02.89) (n=210)	Suicidal Ideation (R45.851) (n=234)	Contact with and (suspected) exposure to COVID-19 (Z20.822) (n=454)	Suicidal Ideation (R45.851) (n=457)	Encounter for other administrative examinations (Z02.89) (n=429)
3	Major depressive disorder, single episode, unspecified (F32.9) (n=142)	Suicidal Ideation (R45.851) (n=270)	Suicidal Ideation (R45.851) (n=142)	Alcohol dependence with intoxication (F10.229) (n=164)	Other stimulant abuse, uncomplicated (F15.10) (n=159)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=366)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=390)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=425)
4	Suicidal Ideation (R45.851) (n=127)	Major depressive disorder, single episode, unspecified (F32.9) (n=140)	Major Depressive Disorder, Recurrent, Severe without Psychotic Features (F33.2) (n=137)	Suicidal Ideation (R45.851) (n=146)	Alcohol dependence with intoxication (F10.229) (n=158)	Suicidal Ideation (R45.851) (n=315)	COVID-19 (U07.1) (n=254)	Sepsis, unspecified organism (A41.9) (n=237)
5	Major Depressive Disorder, Recurrent, Severe without Psychotic Features (F33.2)	Other chest pain (R07.89) (n=135)	Alcohol dependence with intoxication, uncomplicated (F10.220) (n=136)	Major Depressive Disorder, Recurrent, Severe without Psychotic Features (F33.2) (n=120)	Encounter for other administrative examinations (Z02.89) (n=157)	COVID-19 (U07.1) (n=234)	Sepsis, unspecified organism (A41.9) (n=179)	Homelessness (Z59.00) (n=170)

Table 2 Discussion

Table 2. shows that among all emergency department visits with SDH-Z codes, the most common primary diagnoses were consistently related to alcohol use, dependence, and intoxication, especially across year 2016-2019. Other common primary diagnoses were related to mental health conditions including suicidal ideation, and major depressive disorders. In later years "Encounter for other administrative examinations (Z02.89)" emerged as a common primary diagnosis among persons with documented SDH-Z codes. This code is often used for "Encounter for examination for admission to prison," "Encounter for examination for admission to summer camp," "Encounter for immigration examination".

Q. What does this mean?

A. SDH Z Codes are most commonly documented among individuals with a primary diagnosis related to alcohol use or mental health. This trend is consistent across years

Table 3. Top SDH-Z Codes by counts among persons with "Suicidal Ideation (R45.851)", "Encounter for other administrative examinations (Z02.89)," and "Alcohol abuse with intoxication, unspecified (F10.129)" as their primary diagnosis, New Mexico Emergency Department Data, 2023

Primary diagnosis code	Top Z code by count
Suicidal Ideation (R45.851)	Homelessness (Z.59) (n=150)
Encounter for other administrative examinations (Z02.89)	Imprisonment and other incarceration (Z65.1) (n=246)
Alcohol abuse with intoxication, unspecified (F10.129)	Homelessness (Z.59) (n=244)

Table 3. Discussion

Table 3 shows that among the top three primary diagnoses where SDH-Z codes were documented listed in Table 2, the top code SDH-Z code documented for visits with a primary diagnosis of "Suicidal Ideation (R45.851)" was "Homelessness (Z.59)", the top SDH-Z for visits with a primary diagnosis of "Encounter for other administrative examinations (Z02.89)" was "Imprisonment and other incarceration (Z65.1)", and the top SDH-Z for visits with a primary diagnosis of "Alcohol abuse with intoxication, unspecified. (F10.129)" was "Homelessness (Z.59)". Overall, this shows that for two of the three leading primary diagnoses across all years for ED visits with SDH-Z Codes, the most common code among those Z codes was for homelessness. Additionally, another common primary diagnosis including SDH-Z codes, "Encounter for other administrative examinations (Z02.89)" most commonly includes "Imprisonment and other incarceration (Z65.1)". Taken together, these data show common uses of SDH-Z codes in New Mexico's emergency department data.

Table 4. Top SDH-Z Codes, Ranked by Count by Year, 2016- 2023

Rank	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023
1	Homelessness (Z59.0) (n=3,880)	Homelessness (Z59.0) (n=5,758)	Homelessness (Z59.0) (n=5,164)	Homelessness (Z59.0) (n=5,219)	Homelessness (Z59.0) (n=5,619)	Homelessness (Z59.0) (n=3,802)	Homelessness (Z59.00) (n=4,517)	Homelessness (Z59.00) (n=4,401)
2	Unemployment, unspecified (Z56.0) (n=303)	Unemployment, unspecified (Z56.0) (n=2,658)	Problems related to other legal circumstances (Z65.3) (n=436)	Imprisonment and other incarceration (Z65.1) (n=470)	Unemployment, unspecified (Z56.0) (n=501)	Unemployment, unspecified (Z56.0) (n=1,480)	Unemployment, unspecified (Z56.0) (n=1,655)	Unemployment, unspecified (Z56.0) (n=996)
3	Problems related to living alone (Z60.2) (n=303)	Imprisonment and other incarceration (Z65.1) (n=297)	Problems related to living alone (Z60.2) (n=226)	Problems related to other legal circumstances (Z65.3) (n=396)	Imprisonment and other incarceration (Z65.1) (n=339)	Homelessness (Z59.00) N=1,158	Imprisonment and other incarceration (Z65.1) (n=1,183)	Sheltered homelessness (Z59.01) (n=969)
4	Personal history of physical and sexual abuse in childhood (Z62.810) (n=195)	Problems related to living alone (Z60.2) (n=248)	Imprisonment and other incarceration (Z65.1) (n=224)	Other specified problems related to primary support group (Z63.8) (n=227)	Problems related to other legal circumstances (Z65.3) (n=290)	Problems related to other legal circumstances (Z65.3) (n=791)	Sheltered homelessness (Z59.01) (n=942)	Imprisonment and other incarceration (Z65.1) (n=884)
5	Other specified problems related to primary support group (Z63.8) (n=154)	Problems related to other legal circumstances (Z65.3) (n=239)	Other specified problems related to primary support group (Z63.8) (n=215)	Problems in relationship with spouse or partner (Z63.0) (n=188)	Disappearance and death of family member (Z63.4) (n=283)	Imprisonment and other incarceration (Z65.1) (n=762)	Problems related to other legal circumstances (Z65.3) (n=937)	Problems related to other legal circumstances (Z65.3) (n=675)

Table 4. Discussion

Table 4 shows that consistently across all years the most commonly documented SDH-Z code is homelessness, accounting for the majority of SDH-Z codes documented in New Mexico's emergency departments. Other common codes are related to unemployment, incarceration, and problems related to legal circumstances.

Q. What does this mean?

A. SDH Z Codes are most commonly used to document homelessness, with a small percentage of SDH Z codes being used to document other social determinants of health

Table 5. Top primary diagnosis codes by counts among visits with "Homelessness (Z59.0)" "Problems Related to employment and unemployment (Z56) and "Alcohol abuse with intoxication, unspecified (F10.129)" documented in any field, New Mexico Emergency Department Data, 2023

Leading SDH-Z codes	Top primary diagnosis code by count
Homelessness (Z59.0)	Alcohol abuse with intoxication, unspecified. (F10.129) (n=316)
Problems related to employment and unemployment (Z56)	Other chest pain (R07.89) (n=36)
Imprisonment and other incarceration (Z65.1)	Encounter for other administrative examinations (Z02.89) (n=246)

Table 5. Discussion

Consistent with Tables 2, 3 and 4, Table 5 shows that among visits where an SDH-Z code for experiencing homelessness was documented, the top primary diagnosis code was related to alcohol use. The top primary diagnosis code by count for visits where "problems related to employment and unemployment" was documented was "other chest pain" however the low number of visits with this primary diagnosis (n=36) means there is considerable heterogeneity in primary diagnoses among visits where employment problems were documented. Finally, "encounter for other administrative examinations" was the most common primary diagnostic code with visits where incarceration and imprisonment were documented SDH-Z code. This may be because evaluating prisoners in the emergency room before transfer to a correctional facility, or in other situations with prisoners in custody[17].

Table 6. Descriptive variable characteristics in the 2023 emergency department visits stratified by presence of a Z code (ICD-10-CM, Z55-Z65) for social determinants of health, New Mexico Emergency Department Dataset

	Had an SDH-Z code (n=11,479)	Did not have and SDH-Z code (n=782,829)	P-value
Age group, n(%)			<0.001
0 to 20	847 (7.4)	165,328 (21.1)	
21 to 40	4,054 (35.3)	215,070 (27.5)	
41 to 60	4,089 (35.6)	177,657 (22.7)	
61 to 80	2100 (18.3)	169,406 (21.6)	
Greater than 80	382 (3.3)	55,230 (7.1)	
Age, mean(SD)	45.45 (18.26)	43.11 (24.77)	<0.001
Sex, n(%)			<0.001
Female	4220 (36.8)	419491 (53.6)	
Male	7251 (63.2)	363202 (46.4)	
County Designation, n(%)			<0.001
Metro	3589 (32.1)	249828 (32.9)	
Mixed	2115 (18.9)	272011 (35.8)	
Rural	204 (1.8)	42034 (5.5)	
Small Metro	5266 (47.1)	196624 (25.9)	
New Mexico Department of Health Region			<0.001
Northeast	2,659 (23.2)	119,476 (15.4)	
Northwest	2,930 (25.6)	86,374 (11.1)	
Metro	3,589 (31.3)	249,826 (32.2)	
Southeast	1,176 (10.3)	147,849 (19.0)	
Southwest	1,098 (9.6)	172,855 (22.3)	
Payment Type, n(%)			<0.001
Missing	109 (0.9)	434 (0.1)	
Private insurance	712 (6.2)	137685 (17.6)	
Medicaid	6916 (60.2)	354997 (45.3)	
Medicare	2501 (21.8)	197256 (25.2)	
Other federal plan (IHS/ VA Etc.)	130 (1.1)	23953 (3.1)	
Self-pay	840 (7.3)	43517 (5.6)	
County indigent fund or charity	20 (0.2)	1282 (0.2)	
Other	251 (2.2)	23705 (3.0)	
Disposition, n(%)			<0.001
Missing	356 (3.1)	10415 (1.3)	
Routine discharge	8741 (76.1)	665408 (85.0)	

Transferred to another facility	1579 (13.8)	48316 (6.2)	
Left against medical advice	428 (3.7)	24052 (3.1)	
Admitted as an inpatient to this hospital	319 (2.8)	30818 (3.9)	
Expired/died	56 (0.5)	3820 (0.5)	
Total charges, mean(SD)	$12,987.06 ($31,163.19)	$9,563.69 ($26,581.44)	<0.001

*P values obtained using t-tests for continuous variables and χ^2 tests for categorical variables
IHS= Indian Health Services, VA= Veteran's Affairs
*Statistical tests not performed on cells with n<10

Table 6. Discussion

Table 6 shows that visits for men, persons in small metro counties, persons in the northern part of the state, and persons with Medicaid or no insurance were more likely to have SDH-Z codes documented with their emergency department visit. The disposition of visits where an SDH-Z code was documented was more likely to be "transferred to another facility" than visits where an SDH-Z code was not documented. Finally, the mean total charges for visits with documented SDH-Z codes was higher ($12,987.06) than for visits without these codes documented ($9,563.69). The disposition is especially important for understanding how social determinants of health are addressed in emergency department settings, so for this report we used the syndromic surveillance data to further explore this characteristic. While we do not have the information in our data to know why the total charges for visits with SDH-Z codes were higher, we speculate that this is related to the higher proportion of these visits also being billed to Medicaid or self-pay, which may carry higher copayments or not cover certain charges.

Q. What does this mean?

A. Differences in the characteristics of disposition show visits with SDH-Z codes are more often transferred to other facilities than other types of discharges.

A. Differences in type of payor and total charges show that visits with documented SDH-Z codes are more likely to be billed to Medicaid or self-pay, with a higher mean total charge billed.

Table 7. Ambulatory Care Sensitive conditions and diagnostic code groupings in the 2023 emergency department visits stratified by presence of a Z code (ICD-10-CM, Z55-Z65) for social determinants of health, New Mexico Emergency Department Dataset

	Had an SDH-Z code (n=11,479)	Did not have and SDH-Z code (n=782,829)	P-value
Ambulatory care sensitive conditions, n(%)	1361 (11.9)	130055 (16.6)	<0.001
Certain infectious and parasitic diseases, n(%)	448 (3.9)	30479 (3.9)	0.978
Neoplasms, n(%)	36 (0.3)	2766 (0.4)	0.527
Diseases of the blood and blood-forming organs, n(%)	27 (0.2)	4162 (0.5)	<0.001
Endocrine, nutritional, and metabolic diseases, n(%)	410 (3.6)	20381 (2.6)	<0.001
Mental behavioral, and neurodevelopmental disorders, n(%)	2147 (18.7)	35802 (4.6)	<0.001
Diseases of the nervous system, n(%)	248 (2.2)	18190 (2.3)	0.262
Diseases of the eye and adnexa, n(%)	41 (0.4)	7036 (0.9)	<0.001
Diseases of the ear and mastoid process, n(%)	47 (0.4)	12518 (1.6)	<0.001
Diseases of the circulatory system, n(%)	407 (3.5)	33618 (4.3)	<0.001
Diseases of the respiratory system, n(%)	541 (4.7)	70477 (9.0)	<0.001
Diseases of the digestive system, n(%)	513 (4.5)	52160 (6.7)	<0.001
Diseases of the skin and subcutaneous tissue, n(%)	393 (3.4)	24241 (3.1)	0.048
Diseases of the musculoskeletal system and connective tissue, n(%)	716 (6.2)	57852 (7.4)	<0.001
Pregnancy, childbirth, and the puerperium, n(%)	79 (0.7)	13156 (1.7)	<0.001
Certain conditions originating in the perinatal period, n(%)	1 (0.0)	565 (0.1)	
Congenital malformations, deformations, and chromosomal abnormalities, n(%)	0 (0.0)	188 (0.0)	
Injury, poisoning, and certain other consequences of external causes, n(%)	1566 (13.6)	133990 (17.1)	<0.001
Codes for special purposes, n(%)	108 (0.9)	12793 (1.6)	<0.001
External causes of morbidity, n(%)	4 (0.0)	773 (0.1)	
Factors influencing health status and contact with health services, n(%)	1171 (10.2)	25493 (3.3)	<0.001

*P values obtained using t-tests for continuous variables and χ^2 tests for categorical variables
*Statistical tests not performed on cells with n<10

Table 7. Discussion

Overall, in 2023, ED visits where an SDH-Z code was documented were less likely (11.9% vs 16.6%) to have a primary diagnostic code related to an ambulatory care sensitive condition. In 2023, visits where an SDH-Z code was documented were more likely to have a primary diagnostic code related to “Endocrine, nutritional, and metabolic

diseases”, (3.6% compared to 2.6%), “Mental behavioral, and neurodevelopmental disorders”, (18.7% compared to 4.6%) and “Factors influencing health status and contact with health services”, (10.2% compared to 3.3%). Of these, the most striking difference is in the difference in “Mental behavioral, and neurodevelopmental disorders”, between visits that included SDH-Z codes and visits that did not. Alcohol related ICD-10-CM and depressive disorders are included in this category, so this finding is consistent with other results in this report.

Q. What does this mean?

A. Visits with SDH-Z codes were less likely to be for ambulatory care sensitive conditions, and more likely to be for “Mental behavioral, and neurodevelopmental disorders”, than visits without SDH-Z codes.

Part 2. New Mexico Syndromic Surveillance Data

Exploratory information recovered from syndromic surveillance data

In our preliminary analysis of syndromic surveillance data, we identified potential avenues for further research of expanded disposition and text-based data. Specifically, we found that:

Among visits with SDH Z codes 2020-2025:

- Visits with law enforcement or incarceration related Z codes were more likely to be discharged to court or law enforcement than visits for other Z codes.
- Visits with food insecurity were more likely to be admitted to inpatient care than other visits with Z codes.
- Visits with housing/ homelessness related Z codes are more likely to be transferred to other types of healthcare institutions than visits for other Z codes.

We additionally used food insecurity as a case study to examine whether the clinical impression, triage notes, and discharge notes could be used to additionally identify social needs in this population. When we performed a simple search for records containing the words “food” and/ or “hungry”. We found 5,175 such records, and of these only 104 (2%) had a Z-code for food insecurity. This analysis demonstrates the difficulty of using text-based analysis to identify social needs, however previous analysis examining text-based fields for the word “homeless” yielded much stronger results. Our next step will be to further analyze these fields with relationship to behavioral health emergencies, with a special focus on discharge disposition and whether persons with social needs and behavioral health emergencies are referred to services within New Mexico.

Next Steps

This is the first of two reports on emergency department visits within New Mexico, and overall, these data show that SDH-Z codes are rarely used in emergency department visits. Our next step will be to produce a second more in-depth report examining the overlap between social needs and behavioral health emergencies, with a special focus on the types of services that persons with social needs and behavioral health emergencies are referred to after discharge from the emergency department.

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