Clarify
Health Institute

Z-Codes or Zzzzzzzzz-Codes

Assessing the Effectiveness of Capturing Social Determinants of Health Factors in Claims Data

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There is growing evidence that social and environmental factors significantly impact an individual's physical health status, health outcomes, and longevity. These social and environmental characteristics can vary broadly, spanning issues like housing and transportation, education, income, employment status, family and social networks, and the impacts of structural racism. External factors can interact with physical health, improving or worsening the likelihood and severity of medical events. These characteristics, collectively referred to as social determinants of health (SDoH), are increasingly a focus not only for public health agencies but also for health systems, insurers, and policymakers at all levels of government.

However, collecting, standardizing, and applying SDoH data is a challenge for the healthcare industry. These data should reflect the clinical, social, and environmental realities of patients, and collection needs to be done without adding administrative burdens on providers or inadvertently harming their relationships with patients. Today, providers use Z-codes, a special group of codes provided in ICD-10-CM, to indicate negative social and environmental factors likely to impact patient healthcare utilization and outcomes. They are a health insurance claims-based source of SDoH data.

In this brief, the Clarify Health Institute, the research arm of Clarify Health, documents trends in Z-code reporting, leveraging an observational, national sample of insurance claims from commercially insured and Medicaid populations. While potentially valuable for the identification of patient SDoH characteristics, Z-codes are critically underreported on claims, rendering them impractical as a standalone source of SDoH data.

Z-Code Diagnoses for SDoH

In 2016, the ICD-10-CM coding system was modified to include a range of diagnosis codes from Z55-Z65, which are used to report the presence of non-clinical factors that are known to influence health outcomes, ranging from homelessness to environmental exposures to psychosocial issues. These "Z-codes" represent a potentially important, readily available, claims-based measure of SDoH that have the potential to be analyzed to better understand the rate of social risk drivers in a particular patient population.

Z-codes represent a potential to collect rates of social risk drivers ranging from homelessness to environmental exposures to psychosocial issues

When appropriately documented, Z-codes are a valuable channel for providers, social workers, case managers, and population health analysts to communicate the context of their patients' course of disease and treatment. However, Z-codes are not considered medical diagnoses themselves, and therefore are not currently considered in calculating provider reimbursement, meaning providers are not incentivized to code them. As a result, Z-codes are poorly documented and often not reported.

Z-Codes in Claims Data

CMS released a report in 2021 which showed that Z-codes are largely unreported in Medicare fee-for-service (FFS) claims. By 2019 (the last reported year), the rate reached just 0.11% of claims for Parts A & B, representing 1.59% of continuously enrolled beneficiaries.

CMS found that code Z59.0, which indicates homelessness, was the most frequently reported Z-code. When examined further, "Black and Hispanic beneficiaries appear overrepresented among those with Z59.0 code claims, as do male beneficiaries, beneficiaries dually eligible for Medicare and full-benefit Medicaid, beneficiaries with [a disability] as their original reason for Medicare entitlement, and beneficiaries who are less than 65 years of age."

Code Z59.0, which indicates homelessness, was the most frequently reported Z-code

The other four most frequently reported codes in the Medicare population included:
- Disappearance and death of a family member (Z63.4),
- Problems related to living alone (Z60.2),
- Problems related to living in a residential institution (Z59.3), and
- Problems in relationship with spouse or partner (Z63.0).

The Clarify Health Institute analyzed Z-codes in a national, non-Medicare, adult population totaling 214 million patient years from 2018–2021, as shown in **Figure 1** below. The analysis sample, present in Clarify Health's payer-complete insurance claims, included all adults 18 years and older insured through either commercial insurance (157 million patient years) or a Medicaid managed care plan (57 million patient years).
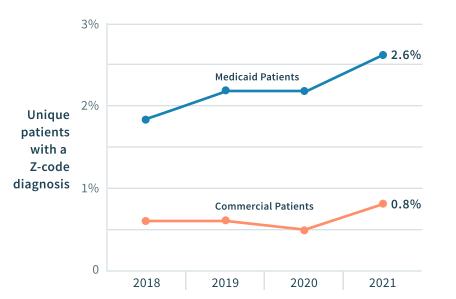
FIGURE 1: ANNUAL PERCENTAGE OF UNIQUE PATIENTS WITH A Z-CODE DIAGNOSIS BY PAYER TYPE (2018-2021)

Z-codes are substantially under-reported among patients with commercial and Medicaid coverage

We find that Z-codes are substantially under-reported in non-Medicare populations, largely matching the findings by CMS for the Medicare population. As illustrated in **Figure 1**, and as anticipated for a lower-income population, reporting rates are higher in Medicaid claims (1.1% of claims representing 2.6% of patients) compared to commercial claims (0.4% of claims representing 0.8% of patients).

While overall Z-code reporting rates remain very low, some Z-codes are almost never reported. As shown in **Figure 2**, these include coding for problems related to education and literacy (Z55), occupational exposure to risk factors (Z57), and problems related to certain psychosocial circumstances (Z64); none of these codes were reported at a rate of even 0.1% of patients. Even the most frequent SDoH code sets are reported less than what we would fully expect from population-based estimates for problems related to employment and unemployment (Z56), problems related to housing and economic circumstances (Z59), and other problems related to primary support group, including family circumstances (Z63).

FIGURE 2: REPORTING PREVALENCE OF ICD-10 Z-CODES IN A NON-MEDICARE ADULT PATIENT POPULATION (2021)

ICD-10 Code	Description	% of All Patients	% of Commercial Patients	% of Medicaid Patients	Unique Patients (N=39.5M)
Z63.X	Other problems related to primary support group, including family circumstances	0.45%	0.37%	0.61%	176,885
Z59.X	Problems related to housing and economic circumstances	0.37%	0.08%	0.94%	144,042
Z56.X	Problems related to employment and unemployment	0.27%	0.14%	0.51%	104,956
Z65.X	Problems related to other psychosocial circumstances	0.17%	0.06%	0.37%	65,307
Z62.X	Problems related to upbringing	0.16%	0.08%	0.32%	63,315
Z60.X	Problems related to social environment	0.11%	0.07%	0.21%	44,784
Z64.X	Problems related to certain psychosocial circumstances	0.07%	0.02%	0.17%	28,525
Z55.X	Problems related to education and literacy	0.04%	0.02%	0.08%	14,657
Z57.X	Occupational exposure to risk factors	0.03%	0.03%	0.02%	10,299

There is also substantial variation in the rate of Z-code reporting by provider type (e.g., hospitals, physician groups, home health agencies, etc.), as shown in **Figure 3**. Inpatient hospital facilities are the most likely provider type to report Z-codes, but still report Z-codes in less than 5% of encounters. Ambulatory surgical centers are the least likely provider type to report Z-codes.

FIGURE 3: DIFFERENCES IN Z-CODE REPORTING BY PROVIDER TYPE (2021)

Claim Provider Type	% of All Claims Reporting any Z-code	% of Commercial	% of Medicaid
Inpatient facility	4.5%	2.2%	6.6%
Telehealth	2.9%	1.7%	3.2%
Home professional	2.3%	0.5%	1.9%
Home health agency	1.0%	0.8%	0.6%
Outpatient professional	0.7%	0.1%	1.2%
Outpatient facility	0.4%	0.2%	0.7%
Office professional	0.3%	0.3%	0.5%
Emergency room professional	0.2%	0.1%	0.2%
Ambulance	0.1%	0.1%	0.1%
Ambulatory surgical center	0.1%	0.1%	0.1%
Other provider types (hospice, hospice professional, independent lab, inpatient professional, other facility, other professional, SNF, SNF professional)	0.3%	0.1%	0.5%
All providers	0.7%	0.4%	1.1%

Inpatient facilities, telehealth, and home health providers are most likely to report Z-codes

Advancing Collection of SDoH Data

The last few years have seen a significantly increased focus on collecting more, and better information on SDoH. Unfortunately, reality has failed to match aspiration because of the inherent difficulty of collecting this information at scale. Instead, what has emerged is a patchwork of efforts that have had varying levels of success. The biggest challenge of all is collecting person-level information on SDoH, for example, via Z-codes.

Z-codes represent a key source of person-level SDoH characteristics which can, with the right incentives in place, be routinely collected at scale from our existing health information infrastructure. They could then be used by policymakers, hospitals, payers, patients, and other stakeholders to improve health outcomes across diverse socioeconomic groups of patients. However, as we illustrate, at their current rate of reporting, they cannot fulfill these goals. CMS and other payers should incentivize reporting of Z-codes during medical encounters, particularly for at-risk populations such as patients who are experiencing homelessness or have unstable housing.

Z-code reporting alone however, will not be a panacea for addressing important SDoH data gaps. Area-level estimates of SDoH factors incorporating metrics such as the area deprivation index, measures related to food access, and economic indicators like unemployment and poverty rates can also provide valuable insights around the overall needs of local clinical populations. Some organizations are seeking to leverage patient-level SDoH data from consumer marketing data sources to augment available information in claims and clinical data. Taking an all-of-the-above approach to SDoH data, including but not limited to Z-codes, will allow further progress in our national efforts aimed at promoting better health outcomes and equity.

About the Clarify Health Institute

The Clarify Health Institute is the research arm of Clarify Health, an enterprise analytics and value-based payments platform company. It leverages Clarify's data assets, including claims, clinical, and social determinants of health data across 300 million patient journeys to shine a light on important healthcare issues and explore trends. It provides industry leaders, policymakers, academic researchers, the media, and the public unprecedented access to data-driven healthcare insights.

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