

CHARACTERIZING SOCIAL DETERMINANTS OF
HEALTH DATA EXTRACTED FROM EHR
FLOWSHEETS IN A SMALL HEALTH SYSTEM

By

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CERTIFICATE OF APPROVAL

This is to certify that the Master's Capstone Project of

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Has been approved

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ABSTRACT

Social determinants of health (SDoH) are becoming more recognized for their influence on health and illness. However, SDoH information capture within the electronic health record (EHR) is still in early stages, with clinical workflows and data standards undefined. Recent studies of SDoH data quality have found variations in format, structure, and utility. This study aimed to characterize at a high level SDoH data from a small regional health system. Data was assessed relative to recognized domains for SDoH data capture, data quality attributes of completeness and plausibility, and for patterns related to organizational and clinical workflows. Data completeness was found to be low when measured at the levels of patient and encounter. However, there was clear evidence for increasing data capture over the study timeframe. Meaningful conclusions about SDoH data plausibility were not clear, though there is potential for further study in this area. Clinical guidelines for data capture and data standards are needed to ensure that SDoH data effectively support clinical care, population health, care coordination, and research.

INTRODUCTION

Social and behavioral factors are increasingly recognized in the clinical literature for their influence in health and disease. In the 1990's and early 2000's, public health researchers were early developers of a large body of evidence regarding the influence of social factors on health, apart from medical care(1). These factors have come to be referred to as social determinants of health (SDoH). In 2005, World Health Organization (WHO) launched the Commission on Social Determinants of Health. This commission was tasked with synthesizing global evidence regarding the effect of SDoH on health

inequity. In 2008 the commission released an in-depth report wherein they described SDoH as the “conditions in which people are born, grow, live, work, and age” which are “shaped by political, social, and economic forces.”(2).

In an extensive 2014 report, the National Academy of Medicine (NAM) (formerly the Institute of Medicine) recognized inadequate attention by the US healthcare system to “major determinants of health and illness”. NAM also highlighted the insufficient capture of this information in most EHRs(3). The 2014 report summarized the contribution of social and behavioral factors to health disparities, poor health outcomes, and unsustainable healthcare costs. It also explicitly established formal recommendations for the addition of social and behavioral domains to the EHR, including specific measures for each domain. The NAM recommendations outline the potential of social and behavioral information in the EHR to support improvements in poor health status and unsustainable health spending(3).

EHRs provide essential information not only to health care providers for patient care, but also to healthcare organizations and researchers regarding population health and clinical care effectiveness. While it’s recognized that unmet basic needs in areas of food security, housing, transportation, and medication can complicate healthcare access and outcomes, effective integration of this information in the EHR may be difficult. Two general challenges emerge with respect to adding SDoH data within the EHR for patient care and secondary data purposes. First, clinician information needs with respect to patient SDoH have not been well defined and may differ depending on patient complexity, provider type, and setting(4,5). Second, EHR data reflects the workflows,

information needs, and data structure specific to patient care. These data quality attributes may not match data quality needs for secondary use.

Clinician information needs for care delivery are closely intertwined with clinician workflow, and tie directly to data input for documentation, and retrieval to inform patient care. Patient SDoH information must therefore be effectively selected, modeled, and presented in the EHR interface to match clinician information needs and workflow(4). Few studies have been conducted to define SDoH workflow processes pertinent to the EHR, although those efforts have grown in recent years(4–7). Differing responsibilities among clinicians and medical specialties lead to different views about what SDoH information should be collected, who should enter this data into the EHR, and how this data should be used to inform patient care(7). However, standardized and consistent methods of SDoH data collection are vital to ensure data quality and utility(5,8,9).

As noted in the NAM 2014 report, SDoH information is critical to not only patient care, but also population health efforts and effectiveness research. The manner in which EHR data is defined, captured, and processed influences data quality(10). Secondary research and population health initiatives making use of EHR data may not have control over initial data collection and processing that influence EHR data quality. Differing data quality requirements for these downstream uses may not align with EHR data quality for patient care. EHR data quality concerns may include the following: Data may be incomplete due to a lack of data entry during patients visits, or visits may be spread among different EHRs; EHR data reflect clinical concepts and meanings specific to patient care, which may not translate effectively for secondary uses; Data quality

problems may result from data entry errors, processing, extraction, and transformation; EHR data is unlikely to meet rigorous study protocol requirements traditionally found in clinical research. Research and population health initiatives hoping to use EHR data should take steps to understand these potential shortcomings and assess and prepare the EHR data for the secondary use(10–13).

In addition to research and population health uses, healthcare institutions rely on data quality to uphold standard of care and business processes. The Institute of Medicine defines high quality data as “data strong enough to support conclusions interpretations equivalent to those derived from error-free data”(14). Data quality is a business asset for a learning healthcare system to deliver high quality, low-cost care(15), thus hospitals and healthcare systems have a stake in supporting data quality efforts. Patient safety, care quality, and data-driven decision making all depend on transparency and responsibility regarding EHR data fitness for use(16).

SDoH Data Quality

Efforts to characterize the quality of EHR SDoH data have found that format and structure vary widely, with limitations in data quality and utility(5,7,17,18). A recent systematic review of 76 articles examining clinical SDoH data quality found the most common quality issue was data plausibility (accuracy), followed closely by data completeness(17). Organizations hoping to use SDoH data should take steps to understand potential data shortcomings to better support clinician information needs and secondary data use for population research.

This study aimed to characterize at a high level SDoH data captured in EHR flowsheets within the Samaritan Health Services EHR. Study aims included: 1) Classify

flowsheet rows into SDoH domains relative to published SDoH domain recommendations(3); 2) Assess data quality attributes of completeness and plausibility following published EHR data quality frameworks(11,19) and / or SDoH data capture recommendations(3); 3) Analyze SDoH documentation patterns with respect to clinical roles.

MATERIALS AND METHODS

This study was designated as exempt by the SHS Regional IRB (IRB22-008), with waiver of IRB oversight by Oregon Health & Science University (STUDY00023896). Data for this study came from the Samaritan Health System (SHS) EHR system.

Data

Although some SDoH data exists for inpatient encounters, consultation with the SHS Research Department indicated the majority of SDoH flowsheet data stems from the outpatient setting. NAM recommendations for SDoH data capture also focus on the outpatient setting(20). Thus, the SDoH dataset was limited to relevant outpatient visit types.

The extracted dataset included all SDoH measure responses for three EHR outpatient encounter types (Office Visit, Appointment, and Initial consult) composed of 194 EHR visit types from June 2019 through December 2021, for patient ages one to 100. Four NAM recommended domains (race/ethnic group, education, residential address, census-tract median income(20)) were excluded from the dataset but are commonly collected and stored elsewhere in the EHR. Final extracted data elements are show in Table 1.

Table 1. Included SDoH data elements in extracted dataset.

De-identified Patient unique key	
Patient age in years	Measure source instrument (EHR Template)
De-identified Encounter unique key	Display name Measure value
Encounter date	Measure comment
Encounter department	Recorded Time
Department specialty	Entry Time
Encounter type	Role/title of person taking data
Visit type	Role/title of person entering data
Measure name	Measure value list (possible text responses) with corresponding coded number value.

Analyses

Measure questions were compared to published SDoH domain recommendations. Summary counts of SDoH measure responses were computed and analyzed relative to each NAM SDoH domain as well as each source instrument that generated the data within the EHR. To characterize data with respect to clinical workflow patterns, response counts were computed by encounter department and specialty, as well as the professional role of the person recording measure responses.

To provide an initial assessment of the data quality attribute of plausibility (accuracy), a subset of measures offering ‘Never’ as a response option were analyzed for contradictory responses. Data was first limited to patients who had answered ‘Never’ to at least one alcohol frequency measure and who had more than one response for this measure. This subset of measure responses was analyzed temporally for ‘Never’

responses occurring after non-Never responses. Other extreme deviations in alcohol frequency over time were also noted.

An additional assessment of plausibility was made by comparing MyChart data with that entered in the EHR by SHS staff. This comparison was made across all SDoH measures, comparing within-measure responses for those recorded by the patient via MyChart, and those recorded in the EHR by someone other than the patient.

RESULTS

Results were evaluated and summarized with respect to study aims and pertinent data groupings. This includes groupings at the level of SDoH domain, patient, encounter, clinical role, as well as flowsheet structure within the EHR.

SDoH Data Captured at the Domain Level

Total flowsheet rows numbered 342,175 (total unique SDoH measure responses). The dataset studied covered seven of the twelve NAM recommended EHR domains, as well as three additional domains not included in the NAM 2014 recommendations (Table 2). The three additional domains outside of NAM 2014 recommendations were transportation needs, housing stability, and food insecurity.

SDH Data Captured at the Patient Level

SDH measure response data was found in only 194 of 2139 EHR visit types, though not all patients within these 194 visit types had SDH data. The proportion of unique patients having SDH data captured from June 2019 through December 2021 was 26.4% of the 201,987 patients within these same EHR encounter / visit types (n=53,386, Figure 1, left). For all EHR outpatient visit types (office visit, appointment, initial consult) 20.6% of patients had SDH data captured (Figure 1, right). Figure 1 shows this

data for individual years. For patients having SDH data, Figure 2 shows the distribution of patient ages by decade. Figure 3 shows the proportion of SDH measure responses by age decade.

SDoH Data Captured at the Encounter / Visit Level

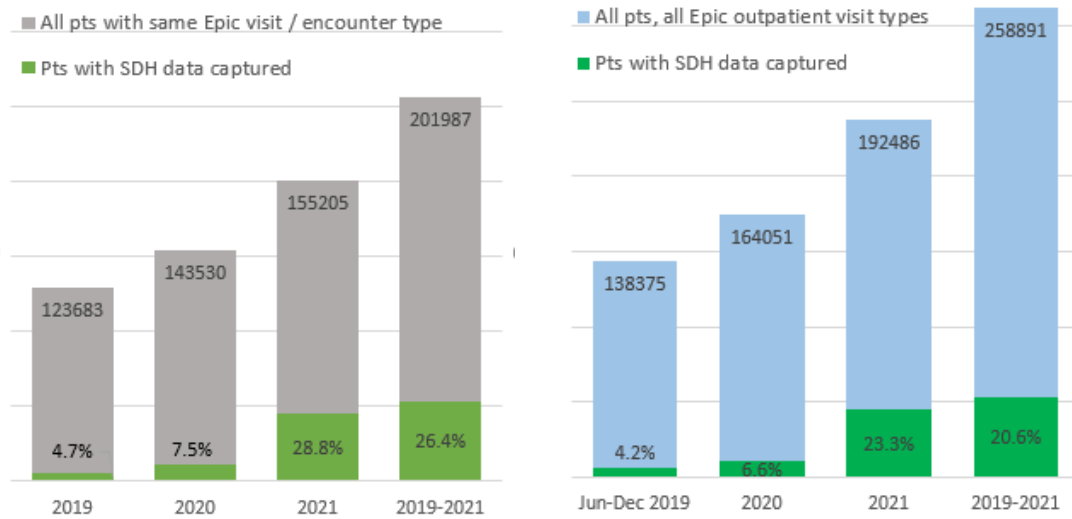
The number of unique patient encounters having SDoH measure response data captured was 81,914 (June 2019 through December 2021). The number of encounters of the same visit type, with or without SDoH data over the same period was 1,792,059. So SDoH EHR data was captured during 4.6% of equivalent outpatient encounter and visit types from June 2019 through December 2021 (Figure 4).

Table 2. NAM recommended SDoH domains with representation in dataset studied.

NAM Domain (Adler 2015)	Represented in dataset	Number of measures in dataset
Financial-resource strain	yes	1
Stress	yes	1
Depression	yes	2
Physical activity	yes	2
Tobacco use	no†	
Alcohol use	yes	3
Social connection or isolation	yes	6
Intimate-partner violence	yes	4
Race or ethnic group	no†	
Education	no†	
Census-tract median income (geocoded)	no†	
Residential address	no†	
SHS Additional Domains addressed	Number of measures in dataset	
Transportation Needs	2	
Housing Stability	2	
Food Insecurity	2	

†Collected within the organization but not included in dataset studied.

Figure 1. Percentage of patients with SDoH data captured during outpatient visits, June 2019 through December 2020.



Visit counts show at column top.

Left: Denominator = All EHR office visits, appointments, initial consults, and visit types having SDoH data. Right: Denominator = All EHR office visits, appointments, initial consults, all visit types.

Figure 2. Patient age distribution by decade for patients with SDoH data captured, June 2019 through December 2020.

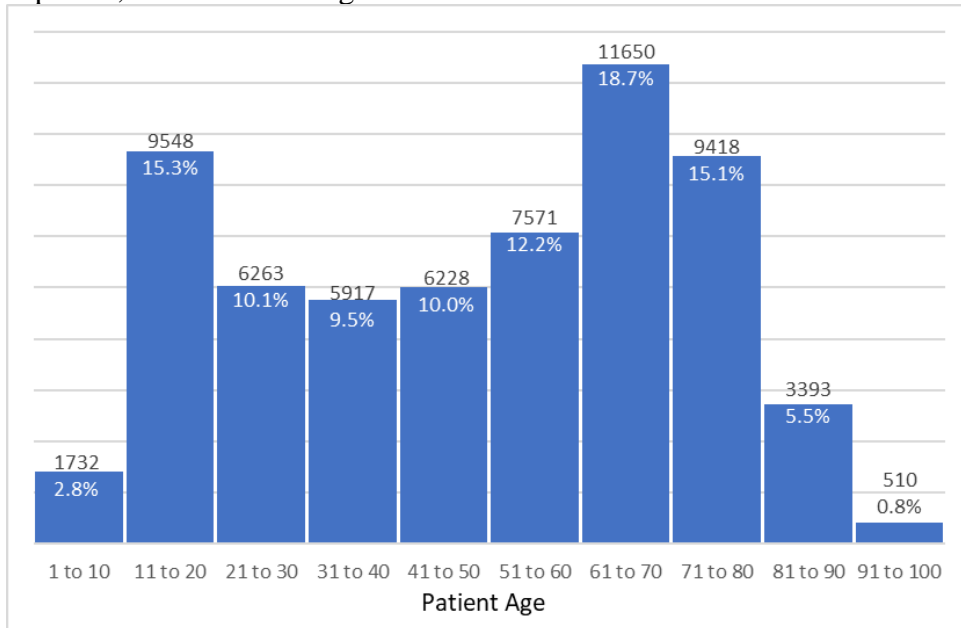


Figure 3. Proportion of total SDoH measure responses by patient age decade, June 2019 through December 2021 (n=342,175 measure responses).

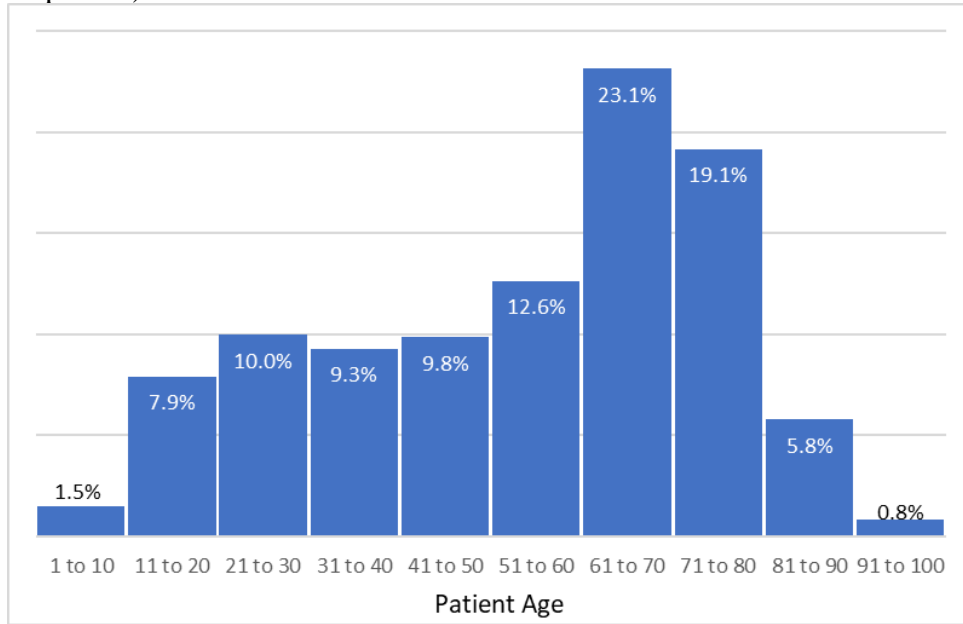
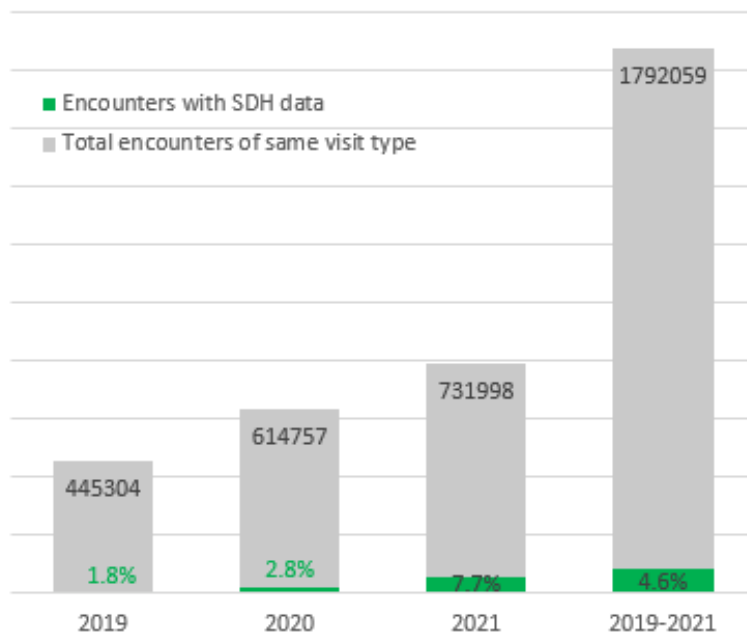


Figure 4. Percentage of outpatient encounters with SDoH data captured, June 2019 through December 2020. Total encounters shown at column top.



Medicare Associated Visit Types

Of the 194 EHR visit types having SDoH measure data, 11% were visit types associated with Medicare Wellness Visits (n=21). Twenty percent of all SDoH measure responses (n=68489) were from Medicare Wellness patients. Medicare patients made up 16.8% of all patients in the dataset (n=8990).

SDoH Data Captured by Clinical Specialty and Professional Role

The majority of SDoH data was captured during primary care visits, with 65.9% of SDoH data captured in family medicine practices (Figure 5). Over all specialties, patient SDoH measure responses were recorded by 54 different professional roles over the study period. Patients also entered their own responses through MyChart, though only in 2020 and 2021. The most common roles for those entering patient responses are shown in Figure 6.

Figure 5. Percentage of SDoH measure data captured by specialty, June 2019-December 2021.

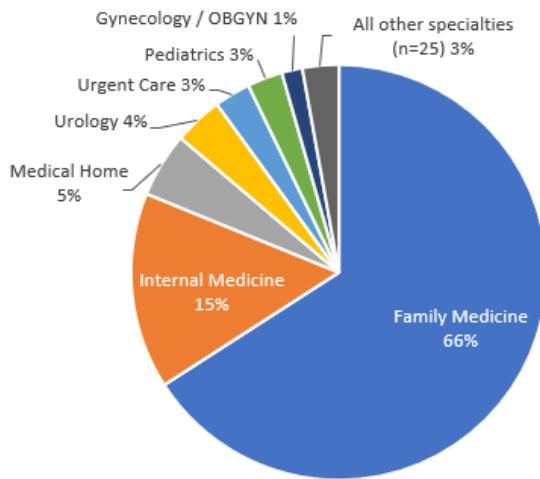
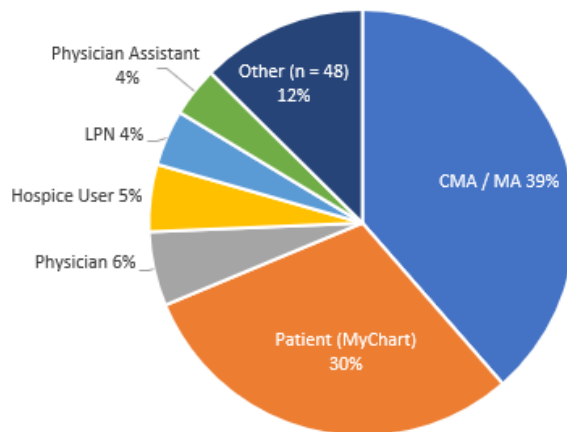


Figure 6. Percentage of SDoH measure data captured by role, June 2019-December 2021.



SDoH Data Captured by EHR Template Source

SDoH response data is generated from 25 different flow measures (patient questions) (Appendix A). Within the EHR, measures are found across 19 different EHR flowsheet templates (see second and third columns in Table 3 below and Appendix A). Total measure responses within each SDoH domain and measure are shown in Table 3. Responses for the depression domain make up the highest proportion, followed by Alcohol use.

Table 3. Total SDoH measure responses per EHR flowsheet source template generating data.

Domain	Number of flowsheet templates generating data	EHR Flow Measure Name	Response count	% of total responses
Depression	7	SOCIAL RISK FACTOR DEPRESSION INTEREST	49063	14.3%
		SOCIAL RISK FACTOR DEPRESSION HOPELESS	49023	14.3%
Alcohol use	6	ALCOHOL FREQUENCY	44108	12.9%
		ALCOHOL BINGE	17960	5.2%
		ALCOHOL STD DRINKS	15029	4.4%
Physical Activity	4	EXERCISE DAYS PER WEEK	10595	3.1%
		EXERCISE MINUTES PER DAY	9457	2.8%
Transportation	3	TRANSPORTATION MEDICAL APPT	9288	2.7%
		TRANSPORTATION DAILY LIVING	9271	2.7%
		FOOD INSECURITY WORRY	9077	2.7%
Food Insecurity	3	FOOD INSECURITY ABILITY TO PAY	9055	2.6%
		FINANCIAL RESOURCE STRAIN BASICS	9028	2.6%
Financial-resource strain	3			
Stress	3	STRESS ANXIOUS	8711	2.5%
Intimate-partner violence	3	INTIMATE PARTNER VIOLENCE AFRAID HARK	8501	2.5%
		INTIMATE PARTNER VIOLENCE HUMILIATION HARK	8480	2.5%
		INTIMATE PARTNER VIOLENCE KICK HARK	8476	2.5%
		INTIMATE PARTNER VIOLENCE RAPE HARK	8470	2.5%
Social connection or isolation	3	SOCIAL CONNECTIONS MARITAL STATUS	7503	2.2%
		SOCIAL CONNECTIONS PHONE	7503	2.2%
		SOCIAL CONNECTIONS GET TOGETHER	7437	2.2%
		SOCIAL CONNECTIONS CLUB MEMBERSHIP	7432	2.2%
		SOCIAL CONNECTIONS RELIGION	7404	2.2%
		SOCIAL CONNECTIONS CLUB ATTENDANCE	7295	2.1%
Housing stability	3	CHILDREN'S HEALTHWATCH HOUSING MORTGAGE	7027	2.1%
		CHILDREN'S HEALTHWATCH HOUSING HOMELESS	6982	2.0%

SDoH Data Plausibility

For the SDoH measure of alcohol frequency (“How often do you have a drink containing alcohol?”), measure response rows totaled 44,108 for 19,394 patients. Of these, 4481 patients (23%) had answered ‘Never’ at least once to this question and had more than one response for this measure (38% of alcohol frequency response rows). Within these, 96 patients (0.5%) had a ‘Never’ response that occurred after a non-Never response, or another notable response inconsistency with respect to ‘Never’ (366 response rows). For fewer than 20 of these patients (63 rows), the response prior to ‘Never’ was ‘Monthly or less’, which could be construed as ‘Never’. For the remaining 83 patients (0.4%), at least one measure response prior to ‘Never’ showed a more stark contrast in meaning. Responses of ‘Not asked’ or ‘Patient refused’ were excluded from these results.

Across all measures, 5,808 patients (11%) had responses recorded both in MyChart (patient-recorded) and in the EHR by someone on behalf of the patient. Within this subset, 621 patients (1%) had within-measure responses that differed between those recorded by the patient in MyChart and those recorded by someone other than the patient.

DISCUSSION

Increasing levels of SDoH data capture were found at the patient and encounter level. However, measuring data completeness is problematic due to lack of local or national guidelines. Possible inconsistencies were found within one SDoH measure, but clear patterns were not evident. The study data did represent recognized and recommended SDoH domains.

SDoH Data Captured at the Patient Level and Encounter and Visit Level

When limiting to 194 EHR outpatient visit types, SDoH data was captured for slightly over one quarter of unique patients over the study period. For all 2139 EHR outpatient visit types, slightly over 20% of patients had SDoH data captured (Figure 1). The increase in the proportion of patients having SDoH data captured over the three years is notable, ranging from 4.6% in 2019 to just under 29% in 2021 (visit type limited) and from 4.2% to 23.3% respectively (all outpatient visit types). This same trend appears at the encounter / visit level, with SDoH data captured at 1.8% of encounters in 2019, rising to 7.7% of encounters in 2021 (Figure 4).

This increase could reflect multiple factors enabling increased attention to patient social determinant information and data entry. Beginning in 2020, patients were able to enter their own SDoH information via MyChart, which could have contributed to this increase (see section below, SDoH Data Captured by Clinical Specialty and Professional Role). Also, recent implementation of a graphical tool within the provider EHR interface, the Social Determinants of Health Wheel, may have contributed to this increase by providing clinicians a visual cue and simplified data entry of patient information. The Epic SDoH Wheel contains the 10 SDoH domains represented in the dataset (Table 2), and is color coded to provide a visual cue within the EHR interface regarding patient risk level for each domain. Color indicators are based on patient measure responses, showing green for low risk, yellow for moderate risk, and red, indicating high risk or concern for the patient within that SDoH domain(21).

Overall Completeness

As yet there are no national or state-level standardized recommendations for frequency or context of patient SDoH data capture. Likewise, at the SHS organizational level, SDoH capture frequency and context (visit type) is not yet well defined. The 2014 NAM recommendation suggested a capture frequency at patient screen and follow up visits(20). The lack of standardized capture guidelines makes determination of data completeness difficult. Data completeness assesses whether data are present, or from the perspective of absent data, one definition states “The absence of data values measured over time agrees with local or common expectations”(19). Lacking any local or common expectations, we are left to measure SDoH data completeness as percentage of total outpatient encounters and / or as a percentage of unique patients, as discussed above.

Data completeness also might be assessed for different patient ages. For the present study, patient ages 61 to 70 were most represented in the dataset (18.7% of all patients), comprising 23.1% of measure responses. This was followed by patients age 11 to 20 (15.3% of all patients), however this age group represents only 7.9% of all measure response rows (Figures 2 and 3). This difference in response row proportions between the two groups could be due to multiple factors, including screening instrument recommendations for each age group, clinical context, and specialty.

Medicare Associated Visit Types

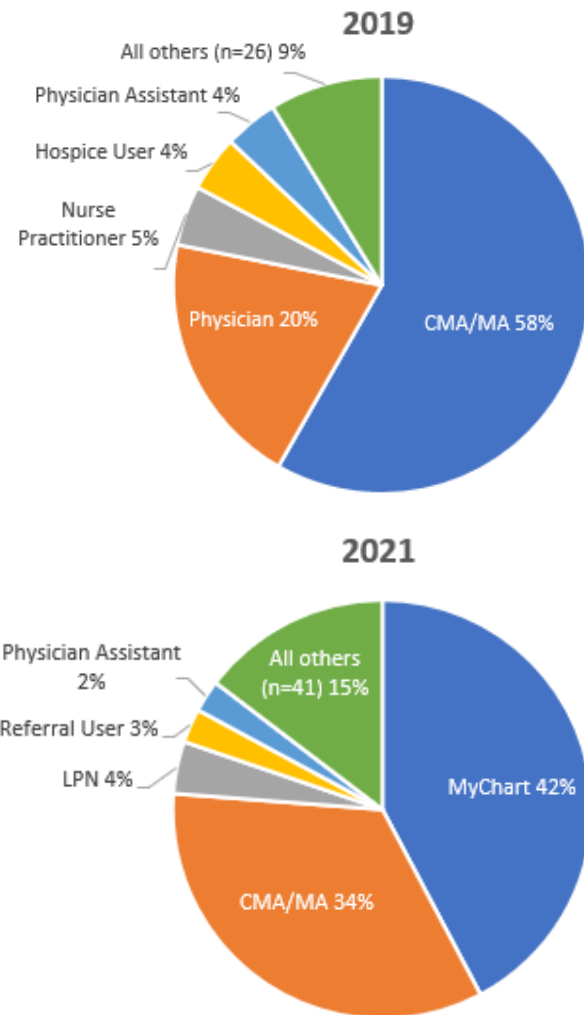
The representation of Medicare associated visit types in the dataset was notable. Eleven percent of the visit types were Medicare Wellness visits, however 20% of all SDoH measure responses came from Medicare patients. This could be due to

documentation requirements, initiatives, or provider reimbursement incentives from the Centers for Medicare and Medicaid (CMS) for Medicare beneficiaries(22).

SDoH Data Captured by Clinical Specialty and Professional Role

Close to 66% of SDoH data was captured by primary care services and clinics, followed by internal medicine at 15%. Medical assistants (CMAs / MAs) most often recorded SDoH measure responses (40%), followed by patients themselves through MyChart (30%, 2020 and 2021 only). Enabling patients to enter their own SDoH data via MyChart may have had a significant effect on both the quantity of SDoH data collected (Figure 1), and clinician workflow patterns involving EHR data entry. In 2019 when the MyChart SDoH functionality was not yet enabled, physicians ranked second, at 20%, for percentage of

Figure 7. Percentage of SDoH measure data captured by role in 2019 versus 2021 with top 6 roles denoted.



MyChart functionality to enable patient SDoH data entry was enabled in 2020.

SDoH data responses recorded. By 2021, physicians no longer were in the top 6 roles of persons recording SDoH data and ranked 9th (2%) for percentage of SDoH measure data recorded by role (Figure 7).

SDoH Data Captured by EHR Template Source and Domain

SDoH dataset measures stem from different screening instruments, for example the PHQ9, SBIRT, AUDIT-C, and HARK(3,23). Healthcare institutions may administer SDoH related measures in multiple clinical contexts. For example, a patient may answer the same measure question on different screening instruments and during encounters with different specialty providers. Screening instruments appear to be represented in the EHR as a flowsheet group template. Appendix A lists the 19 different EHR group templates for the study data, with the associated flow measure and question. Some of these group templates clearly map to individual SDoH domains. For example, two separate EHR group templates, ‘ALCOHOL USE’ and ‘AMB AUDIT’, semantically correspond to the NAM alcohol use domain (Table 2) and include 3 alcohol related measures. However, other group templates may represent multiple SDoH domains. For example, the ‘AMB SBIRT’ group template reflects the NAM domains alcohol use and depression, having 3 and 2 questions for each domain respectively (Table 4).

For secondary data uses and extracted datasets, this apparent many-to-many relationship between SDoH measures, EHR group templates, and SDoH domains may cause confusion for users who are not familiar with the EHR data model, or the clinical context and workflow associated with this data. Whether or not this, or any related redundant SDoH data capture, has data quality implications is unknown and may depend on the context of specific downstream research and population health applications.

Table 4. Example of 2 of the 19 different EHR source templates that generate SDoH data, and the different domains (here alcohol use and depression) represented by each.

EHR Source Group Template	EHR Flow Measure Name	Measure Question
ALCOHOL USE	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
AMB SBIRT	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
		Feeling down, depressed, or hopeless
	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Little interest or pleasure in doing things
	SOCIAL RISK FACTOR DEPRESSION INTEREST	

SDoH Data Plausibility

As an assessment of data quality, response data for a single SDoH measure, alcohol frequency, was analyzed for plausibility. Two percent of patients (96 of 4,481 having more than one response for this measure) showed potentially contradictory measure responses, answering ‘Never’ to the alcohol frequency question after providing a non-Never response. It is difficult to draw any meaningful conclusions regarding data quality from this small percentage of contradictory data. There is one additional alcohol measure and four social connections measures having ‘Never’ as a response option.

Further analysis of these measure responses could provide additional perspective regarding data plausibility. For measures without ‘Never’ as a response option, changes in patient responses over time would be expected, and could require considerable effort to detect inaccuracies. Additional plausibility analyses for this data could look closer at the 11% of patients having within-measure responses that differed between those recorded by the patient in MyChart and those recorded by someone other than the patient.

Towards SDoH Data Standards

SDoH data analyzed in this study was documented using EHR flowsheets. Flowsheets, being similar in structure to spreadsheets, may be rapidly implemented and highly customized within the EHR, and enable longitudinal documentation of patient data. However, flowsheet content seldomly uses documentation standards or terminologies(8,24) and may be locally encoded(9) . No standards or terminologies representing data concepts were evident from the data studied. The lack of standards may present challenges to clinical utility, long-term use, and data storage within the organization. Across organizations, variation in SDoH documentation may cause difficulties with semantic interoperability and challenge any meaningful comparisons of SDoH data across organizations(5).

Currently there are efforts by nationally represented groups to standardize how SDoH data are represented electronically. Efforts aim to standardize SDoH data for patient care, population health management, care coordination, as well as research and data exchange(9,25,26). These groups are mapping SDoH measures and responses to standardized codesets such as LOINC and SNOMED CT to support computable, exchangeable, and harmonized data within and across organizations.

CONCLUSION

Although more recent SDoH domain recommendations and standards are still lacking, NAM 2014 recommended domains were represented in the patient SDoH data analyzed here. A considerably lower percentage of SDoH data was captured during 2019, however data capture in subsequent years shows a marked increase. This may be due in part to more recent availability of SDoH measure response entry by patients themselves via MyChart. Implementation of the SDoH Wheel within the EHR interface may also be enabling increased data capture by clinical staff, as well as awareness of patient social determinant status.

Challenges persist regarding the lack of clear practice guidelines and standards for SDoH capture and representation within the EHR. Present flowsheet structure may not meet downstream data quality requirements. Standards and common data models are needed to effectively support clinical activities and enable data comparisons for meaningful research and population studies.

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Appendix A. First column: EHR Flowsheet group template; Second column: Flow measures within each template; Third column: Measure question.

EHR Source Group Template	EHR Flow Measure Name	Measure Question
ALCOHOL USE	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
ALCOHOL USE	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
ALCOHOL USE	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
AMB AUDIT	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
AMB AUDIT	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
AMB AUDIT	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
AMB CRAFFT	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
AMB CRAFFT	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
AMB DEPRESSION SCREENING PHQ9	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
AMB DEPRESSION SCREENING PHQ9	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
AMB SBIRT	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
AMB SBIRT	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
AMB SBIRT	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
AMB SBIRT	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
AMB SBIRT	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
AMB SBIRT PALLIATIVE CARE	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
AMB SBIRT PALLIATIVE CARE	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
CHILDREN'S HEALTHWATCH HOUSING SCREENER	CHILDREN'S HEALTHWATCH HOUSING HOMELESS	In the last 12 months, was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?

CHILDREN'S HEALTHWATCH HOUSING SCREENER	CHILDREN'S HEALTHWATCH HOUSING MORTGAGE	In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?
EXERCISE	EXERCISE DAYS PER WEEK	On average, how many days per week do you engage in moderate to strenuous exercise (like a brisk walk)?
EXERCISE	EXERCISE MINUTES PER DAY	On average, how many minutes do you engage in exercise at this level?
FINANCIAL RESOURCE STRAIN	FINANCIAL RESOURCE STRAIN BASICS	How hard is it for you to pay for the very basics like food, housing, medical care, and heating?
FOOD INSECURITY	FOOD INSECURITY ABILITY TO PAY	Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.
FOOD INSECURITY	FOOD INSECURITY WORRY	Within the past 12 months, you worried that your food would run out before you got the money to buy more.
INTIMATE PARTNER VIOLENCE	INTIMATE PARTNER VIOLENCE AFRAID HARK	Within the last year, have you been afraid of your partner or ex-partner?
INTIMATE PARTNER VIOLENCE	INTIMATE PARTNER VIOLENCE HUMILIATION HARK	Within the last year, have you been humiliated or emotionally abused in other ways by your partner or ex-partner?
INTIMATE PARTNER VIOLENCE	INTIMATE PARTNER VIOLENCE KICK HARK	Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?
INTIMATE PARTNER VIOLENCE	INTIMATE PARTNER VIOLENCE RAPE HARK	Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner?
PATIENT-REPORTED DATA	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
PATIENT-REPORTED DATA	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
PATIENT-REPORTED DATA	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
PATIENT-REPORTED DATA	CHILDREN'S HEALTHWATCH HOUSING HOMELESS	In the last 12 months, was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?
PATIENT-REPORTED DATA	CHILDREN'S HEALTHWATCH HOUSING MORTGAGE	In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?
PATIENT-REPORTED DATA	EXERCISE DAYS PER WEEK	On average, how many days per week do you engage in moderate to strenuous exercise (like a brisk walk)?

PATIENT-REPORTED DATA	EXERCISE MINUTES PER DAY	On average, how many minutes do you engage in exercise at this level?
PATIENT-REPORTED DATA	FINANCIAL RESOURCE STRAIN BASICS	How hard is it for you to pay for the very basics like food, housing, medical care, and heating?
PATIENT-REPORTED DATA	FOOD INSECURITY ABILITY TO PAY	Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.
PATIENT-REPORTED DATA	FOOD INSECURITY WORRY	Within the past 12 months, you worried that your food would run out before you got the money to buy more.
PATIENT-REPORTED DATA	INTIMATE PARTNER VIOLENCE AFRAID HARK	Within the last year, have you been afraid of your partner or ex-partner?
PATIENT-REPORTED DATA	INTIMATE PARTNER VIOLENCE HUMILIATION HARK	Within the last year, have you been humiliated or emotionally abused in other ways by your partner or ex-partner?
PATIENT-REPORTED DATA	INTIMATE PARTNER VIOLENCE KICK HARK	Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?
PATIENT-REPORTED DATA	INTIMATE PARTNER VIOLENCE RAPE HARK	Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS CLUB ATTENDANCE	How often do you attend meetings of the clubs or organizations you belong to?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS CLUB MEMBERSHIP	Do you belong to any clubs or organizations such as church groups, unions, fraternal or athletic groups, or school groups?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS GET TOGETHER	How often do you get together with friends or relatives?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS MARITAL STATUS	Are you married, widowed, divorced, separated, never married, or living with a partner?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS PHONE	In a typical week, how many times do you talk on the phone with family, friends, or neighbors?
PATIENT-REPORTED DATA	SOCIAL CONNECTIONS RELIGION	How often do you attend church or religious services?
PATIENT-REPORTED DATA	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
PATIENT-REPORTED DATA	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
PATIENT-REPORTED DATA	STRESS ANXIOUS	Do you feel stress - tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time - these days?

PATIENT-REPORTED DATA	TRANSPORTATION DAILY LIVING	In the past 12 months, has lack of transportation kept you from meetings, work, or from getting things needed for daily living?
PATIENT-REPORTED DATA	TRANSPORTATION MEDICAL APPT	In the past 12 months, has lack of transportation kept you from medical appointments or from getting medications?
SOCIAL DETERMINANTS - LIMITED	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
SOCIAL DETERMINANTS - LIMITED	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
SOCIAL DETERMINANTS - LIMITED	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
SOCIAL DETERMINANTS - LIMITED	EXERCISE DAYS PER WEEK	On average, how many days per week do you engage in moderate to strenuous exercise (like a brisk walk)?
SOCIAL DETERMINANTS - LIMITED	EXERCISE MINUTES PER DAY	On average, how many minutes do you engage in exercise at this level?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS CLUB ATTENDANCE	How often do you attend meetings of the clubs or organizations you belong to?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS CLUB MEMBERSHIP	Do you belong to any clubs or organizations such as church groups, unions, fraternal or athletic groups, or school groups?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS GET TOGETHER	How often do you get together with friends or relatives?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS MARITAL STATUS	Are you married, widowed, divorced, separated, never married, or living with a partner?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS PHONE	In a typical week, how many times do you talk on the phone with family, friends, or neighbors?
SOCIAL CONNECTIONS	SOCIAL CONNECTIONS RELIGION	How often do you attend church or religious services?
SOCIAL DETERMINANTS	ALCOHOL BINGE	How often do you have six or more drinks on one occasion?
SOCIAL DETERMINANTS	ALCOHOL FREQUENCY	How often do you have a drink containing alcohol?
SOCIAL DETERMINANTS	ALCOHOL STD DRINKS	How many drinks containing alcohol do you have on a typical day when you are drinking?
SOCIAL DETERMINANTS	CHILDREN'S HEALTHWATCH HOUSING HOMELESS	In the last 12 months, was there a time when you did not have a steady place to sleep or slept in a shelter (including now)?

SOCIAL DETERMINANTS	CHILDREN'S HEALTHWATCH HOUSING MORTGAGE	In the last 12 months, was there a time when you were not able to pay the mortgage or rent on time?
SOCIAL DETERMINANTS	EXERCISE DAYS PER WEEK	On average, how many days per week do you engage in moderate to strenuous exercise (like a brisk walk)?
SOCIAL DETERMINANTS	EXERCISE MINUTES PER DAY	On average, how many minutes do you engage in exercise at this level?
SOCIAL DETERMINANTS	FINANCIAL RESOURCE STRAIN BASICS	How hard is it for you to pay for the very basics like food, housing, medical care, and heating?
SOCIAL DETERMINANTS	FOOD INSECURITY ABILITY TO PAY	Within the past 12 months, the food you bought just didn't last and you didn't have money to get more.
SOCIAL DETERMINANTS	FOOD INSECURITY WORRY	Within the past 12 months, you worried that your food would run out before you got the money to buy more.
SOCIAL DETERMINANTS	INTIMATE PARTNER VIOLENCE AFRAID HARK	Within the last year, have you been afraid of your partner or ex-partner?
SOCIAL DETERMINANTS	INTIMATE PARTNER VIOLENCE HUMILIATION HARK	Within the last year, have you been humiliated or emotionally abused in other ways by your partner or ex-partner?
SOCIAL DETERMINANTS	INTIMATE PARTNER VIOLENCE KICK HARK	Within the last year, have you been kicked, hit, slapped, or otherwise physically hurt by your partner or ex-partner?
SOCIAL DETERMINANTS	INTIMATE PARTNER VIOLENCE RAPE HARK	Within the last year, have you been raped or forced to have any kind of sexual activity by your partner or ex-partner?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS CLUB ATTENDANCE	How often do you attend meetings of the clubs or organizations you belong to?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS CLUB MEMBERSHIP	Do you belong to any clubs or organizations such as church groups, unions, fraternal or athletic groups, or school groups?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS GET TOGETHER	How often do you get together with friends or relatives?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS MARITAL STATUS	Are you married, widowed, divorced, separated, never married, or living with a partner?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS PHONE	In a typical week, how many times do you talk on the phone with family, friends, or neighbors?
SOCIAL DETERMINANTS	SOCIAL CONNECTIONS RELIGION	How often do you attend church or religious services?

SOCIAL DETERMINANTS	STRESS ANXIOUS	Do you feel stress - tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time - these days?
SOCIAL DETERMINANTS	TRANSPORTATION DAILY LIVING	In the past 12 months, has lack of transportation kept you from meetings, work, or from getting things needed for daily living?
SOCIAL DETERMINANTS	TRANSPORTATION MEDICAL APPT	In the past 12 months, has lack of transportation kept you from medical appointments or from getting medications?
SOCIAL RISK FACTOR DEPRESSION	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
SOCIAL RISK FACTOR DEPRESSION	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
STRESS	STRESS ANXIOUS	Do you feel stress - tense, restless, nervous, or anxious, or unable to sleep at night because your mind is troubled all the time - these days?
AMB MEDICARE WELLNESS CHECKUP	SOCIAL RISK FACTOR DEPRESSION HOPELESS	Feeling down, depressed, or hopeless
T AMB MEDICARE WELLNESS CHECKUP	SOCIAL RISK FACTOR DEPRESSION INTEREST	Little interest or pleasure in doing things
TRANSPORTATION NEEDS	TRANSPORTATION DAILY LIVING	In the past 12 months, has lack of transportation kept you from meetings, work, or from getting things needed for daily living?
TRANSPORTATION NEEDS	TRANSPORTATION MEDICAL APPT	In the past 12 months, has lack of transportation kept you from medical appointments or from getting medications?