



Data Analytics and Visualization Capabilities

Sustainable Healthy Communities, LLC, (SHC) is a wholly-owned subsidiary of the National Minority Quality Forum (NMQF), enjoying exclusive publishing rights to analyses conducted by NMQF for research and visualization purposes. SHC can provide customers health indices for virtually any disease in various formats, including for research collaborations, data warehouses with customized reports, and geomapping and additional data visualization products.

The big data analytics afforded by SHC products reflects a unique capability to examine near real time trends, to track health patterns over time at the patient, provider, and zip code level, to integrate distinct datasets at the patient, provider, and zip code level, to provide interactive geomaps for visualizing the geographic distribution of health, and to create reports for clients to use in advocacy, clinical trial recruitment, and commercial activities.

Table 1. Commonly Utilized Federal Datasets

Data Source	Description and Link
National Health and nutrition Examination Survey (NHANES)	NHANES is a survey research program conducted by the National Center for Health Statistics (NCHS) to assess the health and nutritional status of adults and children in the United States over time. The survey combines interviews, physical examinations and laboratory tests, including demographic, socioeconomic, dietary, and health-related questions. The examination component consists of medical, dental, and physiological measurements, as well as laboratory tests administered by medical personnel. NHANES findings can help determine the prevalence of major diseases and risk factors for diseases along with nutritional status.
Behavioral Risk Factor Surveillance System (BRFSS)	The BRFSS is a U.S. health survey that looks at behavioral risk factors. Run by Centers for Disease Control and Prevention, this telephone survey is conducted by individual state health departments.
Medical Expenditure Panel Survey (MEPS)	MEPS is a set of large-scale surveys of families and individuals, their medical providers, and employers in the U.S., providing data on the cost and use of health care and health insurance coverage.
National Health Interview Survey (NHIS)	NHIS is an annual, cross-sectional survey providing nationally representative estimates on a wide range of health status and utilization measures among the nonmilitary, noninstitutionalized U.S. population. It is designed by the CDC's National Center for Health Statistics (NCHS) and administered by the U.S. Census Bureau.

Pricing reflects raw dataset costs, analytic work, technical platforms, and technical assistance

aimed at maximizing value for the customer. Timeline for product delivery reflects the time needed to access new datasets as needed, analytic processes, and upload of datasets to the data warehouse and/or visualization platform. Typical product delivery ranges from 1 to 9 months.

GIS-based Data Visualization

- Mapping helps clarify data

AND

- Geography matters
 - Where to put resources
 - Understanding factors contributing to health
 - Working with clinicians and communities
 - Recruiting for clinical trials



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Numerous federal, state, and private datasets have been accessed and analyzed to calculate disease prevalence, demographics, service utilization, health behaviors, costs, and social determinants of health and map disease patterns, disparities, and need for the purposes of research, education, advocacy, and strategic planning. While not exhaustive, some of the most common datasets utilized are listed in the table 1. Additional datasets can and have been accessed, including related to environmental and

economic trends, as well as clinical registries, membership databases, and commercial claims data. More than 100 datasets and 2 billion patient records are housed by NMQF and/or SHC going back 12 years, with active, ongoing data retrieval supporting new studies and activities.

Medicare FFS Dataset Descriptions

An important series of datasets for our work derive from Medicare fee-for-service (FFS) administrative claims data. NMQF has a Data Use Agreement (DUA) with CMS to access research identifiable files (RIF) which contain beneficiary level protected health information. It is the comprehensive nature of the datasets along with both patient and provider identifiers that afford examination of disease, treatment, adherence, and cost of care at the patient, provider, and zip code level over time and in integration with additional datasets such as clinical registries. A description of commonly accessed files is

Note that we can access all of described in detail at:

<https://www.resdac.org/cms-provide-datasets-and-maps-at-code-level>, but not the patient

Master Beneficiary Summary segment file includes

enrollment information, presence of 27 chronic conditions, other chronic or potentially disabling conditions, and total utilization and costs of care in the hospital, ambulatory, and pharmacy setting, along with adherence data for medications paid for under part D. The

Data Elements

- Multiple data sources, including Medicare claims for FFS from 2002 to 2015, Medicaid, some private payer data, data from national surveys (e.g., NHANES, BRFSS), Medical Society databases, and most recently medical records
- Aggregated at patient, provider, and zip code level, **can be** tracked over time
- Patient identification
- Provider identification and visits (physician, pharmacy, ED, hospital, LTC facility)
- Diagnoses (ICD codes and common co-morbidities in summary file)
- Treatment, including specific medications, where they were filled, and adherence rates
- Location of care
- Patient demographic characteristics
- Formulary, health plan, total costs, costs per type of care, and out of pocket costs
- Social factors (income, education, environmental quality, community resources such as hospitals, pharmacy, Y's, etc.)

some of the most provided below. the CMS data files,

data. Our analyses the provider and zip level.

File This multi-beneficiary

complete data dictionary can be found at: <https://www.resdac.org/cms-data/files/mbsf/data-documentation>.

Carrier file (physician/supplier part B claims)

contains final action FFS claims from non-institutional providers, such as physicians, physician assistants, clinical social practitioners and some free-standing as clinical laboratories, ambulance The data in the file include diagnostic procedural codes, date of service, reimbursement, provider identification, beneficiary demographic information. dictionary for this file at:

Understand Specific Physicians' Patient Profile

2013
229 Multiple Sclerosis Patients

BMDE_RACE	# BMDE	% BMDE	All Cases Cost	% All Cases Cost	Medicare	% Medicare	Medicaid	% Medicaid	Private	% Private
White	1	0%	\$1,200,000	50%	\$200,000	100%	\$0	0%	\$0	0%
Black	1	0%	\$1,200,000	50%	\$200,000	100%	\$0	0%	\$0	0%
Other	227	99%	\$2,450,000	50%	\$200,000	100%	\$0	0%	\$0	0%

BMDE_AGE	Gender	Physician	Specialty	Number of visits	Number of procedures	Number of tests	Number of injections	Number of infusions	Number of other services									
0-17	M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18-24	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25-34	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35-44	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45-54	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
55-64	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65-74	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75-84	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
85+	F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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as physicians, workers, nurse facilities such providers, etc. and Find the data

<https://www.resdac.org/cms-data/files/carrier-rif/data-documentation>.



Part D Drug Event, Part D Plan Characteristics, and Part D Formulary Characteristics Files:

include prescription drug cost and payment data, including detailed plan and formulary, total costs and patient costs. Data dictionaries can be found at: <https://www.resdac.org/cms-data/files/pde>; <https://www.resdac.org/cms-data/files/part-d-plan-characteristics/data-documentation>; <https://www.resdac.org/cms-data/files/part-d-formulary-file/data-documentation>.

Pricing Policy

Project pricing reflects a number of variables, including dataset fees (often reflecting variables and size), analyses complexity and volume, upload to warehouses and/or visualization platforms, technical assistance, number of platform users, and research collaboration. Commonly accessed datasets range from no fee (as with federal surveys) to set fees for claims data from the Federal government (e.g., Medicare and Medicaid files) ranging from 0 to \$35,000. A typical analytic and mapping product ranges from \$85,000 to \$160,000 and is developed iteratively as the client and SHC consider the program goals and needed data and analysis.

SHC Deliverables

We have had numerous clients from the pharmaceutical and device industry, health care systems, medical societies, advocacy organizations, patient groups, and research institutions. Sample questions or requests our work has been utilized for include:

- Where is a given rare disease prevalent in the U.S.?
- What services are typically accessed in a given payment system (Medicare, Medicaid, commercial) by patients with a specific disease?
- Where do patients with a specific disease and demographic profile access care?
- How do patient or provider characteristics impact care, costs, and/or outcomes?

- Which clinicians have a majority of patients from a given racial or ethnic group?
- Who are the top 10 physicians providing care for patients with a given disease?
- Where are patients with a given profile (diagnosis, co-morbidity, treatment history, demographic characteristics) geographically for the purposes of clinical trial recruitment?
- What is the prevalence, burden, and/or cost of a given disease in a specific state or congressional district?
- What is the likely cost of care for a given population based on historical trends?
- What are the results of our community health assessment in terms of population health, provider make-up, and social and environmental factors influencing health?

To learn more about SHC's data analytic and visualization capabilities or to begin designing your project request contact J'Aimee Louis at jlouis@shcllc.info and set up an appointment today!