A Model for Improving Health Care Data Analytics

How to Ignite a Data-Driven Culture and Strengthen Safety Net Organizations' Data Analytics Capability

SAFETY NET ANALYTICS PROGRAM (SNAP) RESPONDS TO AN URGENT NEED

The dramatic transformation of the health care sector in recent years has created tremendous opportunities as well as challenges for health centers and safety net clinics. Because of the widespread adoption of sophisticated electronic health records (EHRs) and the proliferation of digital technologies, the safety net has access to a wealth of new patient data. Emerging value-oriented reimbursement models require safety net providers to use that data in new ways to improve quality and reduce cost.

Embracing the use of data at all levels of an organization has become a prerequisite for achieving superior performance; and yet, many health centers do not have the capability to harness the full power of their data. This is due, in part, to a lack of analytic software and tools specifically designed for health centers as well as staff adequately trained in analytics. However, potentially the greatest challenge for health centers is the lack of a shared data-driven culture.

In a data-driven culture, data are recognized as "currency" and organizations focus on improving their data analytics capabilities—i.e., how to gather, manage, review and use data to inform organizational strategy and decision-making—in order to serve more patients, more efficiently, and with more targeted care.

The Safety Net Analytics Program (SNAP) was created to help safety net organizations develop a data-driven culture and to strengthen the people, processes and technology behind data analytics. SNAP engaged 20 grantee teams to grow and develop individual awareness and skills about data management practices with the ultimate goal of enhancing their organizations' overall data analytics capabilities (Exhibit 1 on the following page). The 14-month program took a developmental approach to improving the many factors that impact data analytics capability, recognizing that each center may have a different starting point and may have different priorities for further development.

This brief describes the achievements of SNAP and provides lessons for safety net organizations, funders, and technical assistance providers engaged in enhancing data analytics. Resources, tools and instructional content from the Safety Net Analytics Program have been brought together as a video learning series, Building a Data Driven Culture, available at www.datadrivenculture.org.

Exhibit 1
SNAP Program Goals

For participating individual team members at each organization:

- Improve awareness, knowledge and skills about data analytics and the factors that influence capability
- Apply knowledge and skills at their organizations
- Implement a meaningful data analytics project as a way to apply program lessons

For participating safety net organizations:

- **Leadership and Strategy**: Enhance data analytics leadership and strategy across the organization
- **Governance**: Develop or strengthen governance structures—i.e., the orchestration of people, processes and technology—to guide the use of data and maximize their value to the organization
- **Performance improvement**: Improve ability to develop, analyze and use performance measures
- **Skills and Roles**: Enhance skills of data services and technology staff
- **Tools and Technology**: Acquire or optimize use of tools and/or technology that support data analytics

Qualitative and quantitative assessments suggest that SNAP participants and their organizations successfully and enthusiastically achieved many of these goals. Most grantees reported significant development in analytics capability and credit the program with igniting a new passion for leveraging data as a strategic asset. Key program impacts are detailed later in this brief and a series of case studies explore individual grantee accomplishments in greater detail.

"Not only are we measuring and validating the data, we are refining it, improving it and it's really leading the improvement process. It is a big focus of the board and the executive staff. Every health center and staff are looking at their own data."
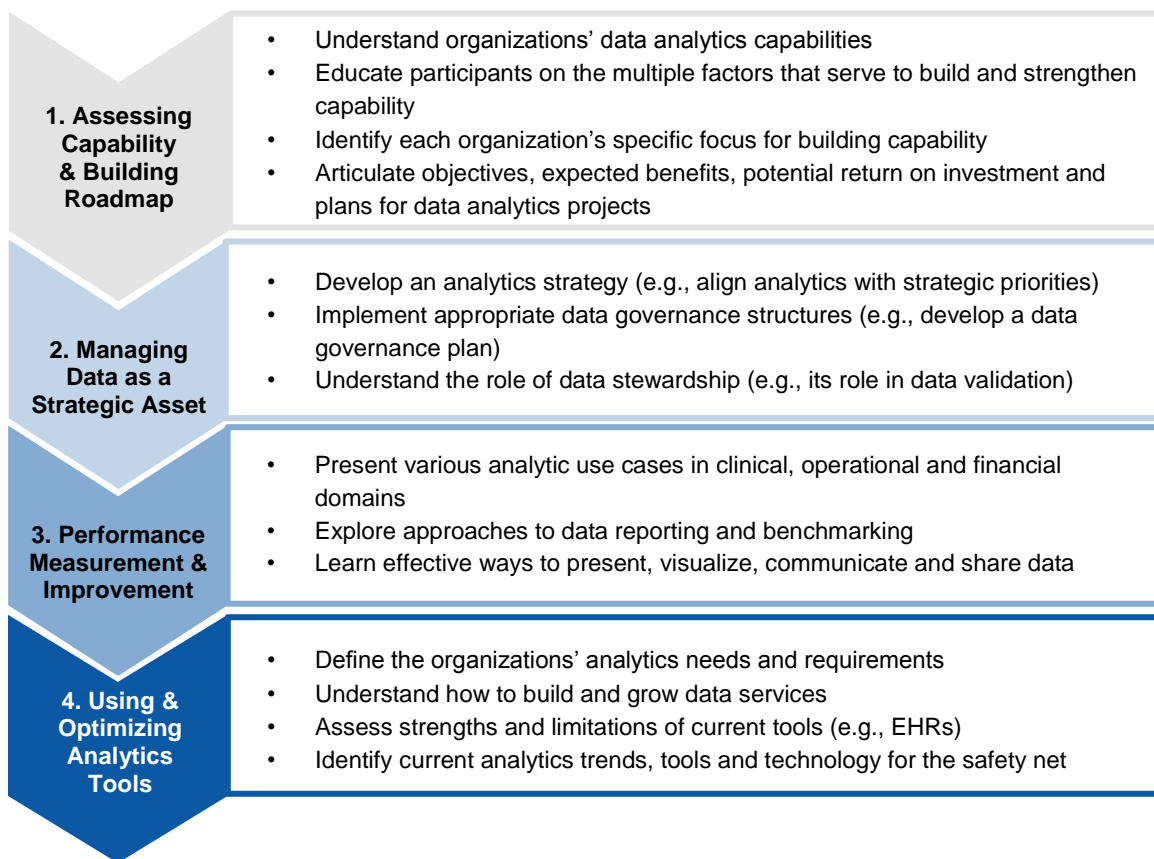
– SNAP Grantee

MULTI-LEVEL APPROACH TO BUILDING ANALYTICS CAPABILITY

The SNAP team developed a mixed-methods learning model with two high-level objectives in mind:

1) Provide thought-leading training and coaching from industry experts on current best practices and future direction in data analytics, and do so in a way that is tailored to safety net health care environment; and

2) Challenge SNAP organizations to apply learnings in hands-on projects that would advance their data analytics capability.
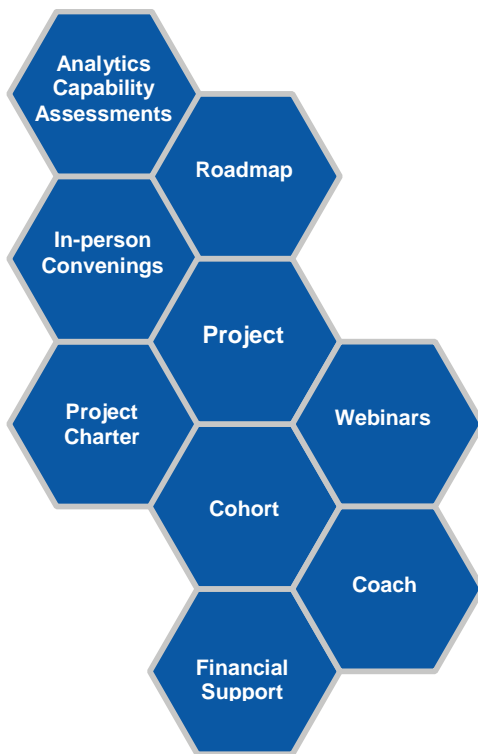
To achieve these objectives, SNAP staff developed a four-module curriculum (Exhibit 2). The first module served to initiate grantees into the program while the next three modules provided core learning, knowledge dissemination and skill building. The content covered in these modules drew upon information from national experts in health care analytics, which the SNAP team tailored for safety net organizations. While grantees' needs and context shaped elements of the content, SNAP staff designed the model with the intention of repackaging and sharing it more broadly with other organizations across the safety net. Following the four curriculum modules, grantees and the SNAP staff reflected on grantees' individual growth in the program and overall progress toward program goals to determine the most impactful approaches to building capability.

Exhibit 2
SNAP Curriculum

1. Assessing Capability & Building Roadmap
- Understand organizations' data analytics capabilities
- Educate participants on the multiple factors that serve to build and strengthen capability
- Identify each organization's specific focus for building capability
- Articulate objectives, expected benefits, potential return on investment and plans for data analytics projects

2. Managing Data as a Strategic Asset
- Develop an analytics strategy (e.g., align analytics with strategic priorities)
- Implement appropriate data governance structures (e.g., develop a data governance plan)
- Understand the role of data stewardship (e.g., its role in data validation)

3. Performance Measurement & Improvement
- Present various analytic use cases in clinical, operational and financial domains
- Explore approaches to data reporting and benchmarking
- Learn effective ways to present, visualize, communicate and share data

4. Using & Optimizing Analytics Tools
- Define the organizations' analytics needs and requirements
- Understand how to build and grow data services
- Assess strengths and limitations of current tools (e.g., EHRs)
- Identify current analytics trends, tools and technology for the safety net

To support the learning and uptake of this curriculum, SNAP provided a comprehensive set of supports to grantees (Exhibit 3 on the following page). Each component was regularly evaluated and improved throughout the project in response to participants' feedback and evolving program priorities. Grantees offered generally positive feedback to program staff on the components, frequently citing the importance of having a structured approach to learning and applying new techniques and ideas in data analytics.

Exhibit 3
SNAP Support

Analytics capability assessments – A pre- and post-program assessment to establish a baseline and monitor progress on data analytics capability-building for each grantee.

Roadmap – A tool for monitoring developmental progress on the priority data analytic capabilities selected by each grantee.

In-person convenings – Three one-day meetings held at the beginning, middle and end of the program for organizations to learn from industry experts, network, learn from and share with peers, and participate in focused workshops and learning groups.

Field Project – Specific, grantee selected project to help apply program knowledge and content to grantee organizations.

Project Charter – A tool that documents the rationale, objectives and desired outcomes for the applied learning field project at the organization.

Webinars – A series of 14 online educational and training offerings on selected topics that support data analytics capability-building or illustrate analytic use cases.

Cohort – The 20 grantees participating in SNAP that form a collective peer learning experience.

Coach – Individualized support provided throughout the project, including quarterly check-in calls, "office hours" and reviews of the roadmap and project charter.

Financial support – Each grantee received $20,000 for time spent participating in SNAP as well as travel reimbursement for the in-person convenings.

SNAP PARTICIPANTS – SMALL AND LARGE ORGANIZATIONS

SNAP supported 20 grantees with 18 finishing the program. Grantees included a mixture of safety net organizations throughout California. Within each grantee organization, SNAP required a multi-disciplinary team of about four to five team members, including:

- A **senior/executive-level sponsor** who could commit resources to the project, advocate for its importance in a time of competing priorities, and tie analytics capability to the organization's strategic plans and priorities.
- A **project manager** who oversaw the functional area(s) the project affected and ensured that skills and recommendations from the capability-building roadmap were implemented and spread internally. The project manager served as the main point of contact for SNAP and ensured that the team worked together throughout the program to accomplish their objectives.

SNAP GRANTEES

- Asian Health Services
- CommuniCare Health Centers
- Community Health Alliance of Pasadena (CHAP)
- Ole Health
- Contra Costa Health Services
- Golden Valley Health Centers
- La Maestra Community Health Centers
- LifeLong Medical Care
- Maxine Hall Health Center
- Mendocino Coast Clinics

- Mendocino Community Health Clinic
- Native American Health Center
- Northeast Valley Health Corporation
- Salud Para La Gente
- Santa Cruz Community Health Centers
- Santa Rosa Community Health Centers
- Tri City Health Center
- Venice Family Clinic
- West County Health Centers

- A **clinical care team member,** such as a nurse or provider, who could provide a frontline perspective on using data in the process of care delivery. This team member helped ensure the project impacted care delivery processes in the most effective way and supported adoption of new workflow approaches.
- An **individual responsible for quality improvement and/or data analysis processes** and programs in the organization. This team member supported the team and project with required data and analysis to monitor project impact. This team member also helped ensure that relevant analytics skill and capability-building were adopted and sustained by the organization.
- One individual who was responsible for **health information technology management**. This team member provided EHR content and workflow expertise and ensured alignment of the project with internal health IT projects for optimal impact.

For many of the grantees, SNAP brought together these team members for the first time to discuss their collective role in strategically managing and using data. Thus team formation was a significant step towards formalizing an approach to improve analytics capability. These multi-disciplinary teams contributed to participants' success in the program by bringing together departments and individuals whose coordination was critical to growing the organization's data analytics capabilities. It also helped to create a critical mass of people invested in the project to help make participating in the program an organizational priority. The diverse set of roles on the team also ensured that the team could maintain project knowledge and forward momentum, even when there were staff transitions on the team. In many instances these teams formed the basis of an on-going data governance committee.

"One of the positive things that happened as a result of SNAP is that our medical assisting teams got involved in looking into the different measures that were applicable to their department and figuring out solutions on how to improve them. The data project hit beyond senior management, which was the goal."

– SNAP Grantee

APPLIED LEARNING – PUTTING NEW APPROACHES INTO PRACTICE

The program combines skill-building and knowledge dissemination with real-life application. Each participating organization selected a specific analytics project to work on in parallel with the program coursework. Participants' field projects ranged in type, but common among all of them was their alignment with and support of one or more of their organizations' strategic priorities (Exhibit 4 on the following page). Working on these applied projects along with learning about data management processes and the application of analytics in the webinars and in-person learning sessions allowed grantees the opportunity to apply what they learned and demonstrate immediate benefits for their organizations.
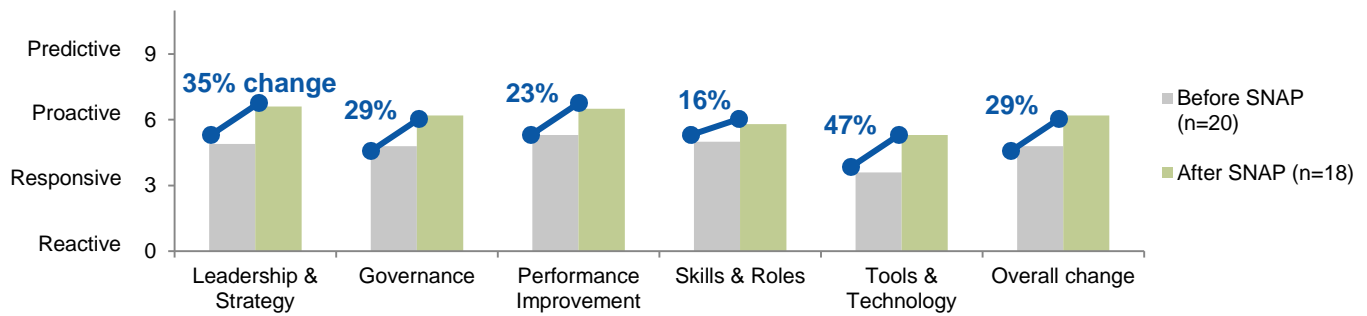
Exhibit 4
Four Types of Projects

Dashboard Development or Enhancement: Creating concise visual displays of data that support efficient and effective interpretation of data.

For example:

- Expanding use of dashboard to more functional areas or levels of staff.
- Developing new dashboards to monitor hospitalizations (e.g., inpatient care, ED visits, readmissions) in data management software.

To learn more about how grantees used and improved dashboards, refer to the accompanying case study called "Turning Data into Insights."

Predictive Models: Configuring analytic routines that employ clinical or utilization data to predict future patient care needs.

For example:

Developing a process for measuring and monitoring "missed opportunities" by care teams, and including these measures in a periodic dashboard.

To learn how a grantee developed a predictive model to identify high-risk patients using electronic data exchange with local hospitals, refer to the accompanying case study called "How Analytics Transform a Health Home Model."

Patient Experience: Developing or enhancing data collection and timeliness of reporting processes to better understand and improve the patient experience.

For example:

Creating and automating a patient satisfaction dashboard with measures for individual providers produced within a 24-hour timeframe.

Financial & Pay-for-Performance: Linking together operational, financial and clinical data.

For example:

Integrating data from financial and EHR systems to measure and manage organization performance of value-based care programs and other payer incentives.

MEASURING IMPACT OF THE SNAP PROGRAM

Grantees along with analytics experts and their coaches used the pre-program results from the analytics capability assessment (see Exhibit 3 on page 4) as a baseline to develop goals and action steps specific to each grantee. Grantees checked in with their coaches throughout SNAP to discuss ideas for action, progress and challenges in their specific areas of focus as well as their overall improvements. By the end of the program, grantees collectively showed improvement in each of the five domains of capability, with the largest improvements in Tools & Technology and Leadership & Strategy (Exhibit 5).

Exhibit 5
Grantee Improvement in Data Analytics Capabilities

Within each of these five domains, several capability factors were identified to help grantees focus on and prioritize areas for improvement to achieve some quick wins. For example, within the Governance domain many grantees focused on promoting data stewardship and identifying a data steward for their project, then replicating this structure in other departments or projects. More broadly, though, the SNAP curriculum provided guidance on how to align the people, processes and technology that are essential to maximize the value of data for a health center (Exhibit 6). Many grantees improved how they align staff at all levels, from c-level to front line, to build a data-driven culture (to learn more about how grantees enhanced their organizations' cultures to become more data-driven, refer to the accompanying case study called *The Heartbeat Of Value-based Care: Establishing a Data-Driven Culture*).

Exhibit 6
Key Organizational Accomplishments for SNAP Grantees

People (e.g., staff, patients)	Process (e.g., workflow)	Technology (e.g., EHR software, visualization programs)
• Established a data-driven culture, which included increased staff excitement and interest in using data and enhanced staff data literacy (i.e., their ability to collect, understand, interpret and use data in a coherent, critical and strategic way) • Created new roles to support data analytics and formally incorporated data stewardship responsibilities into existing positions, job descriptions and new employee orientation • Developed trainings and orientations on data use and purpose for new and existing staff • Improved patient experience based on data, such as learnings from real-time patient survey data	• Established expectations regarding data governance and use • Resulted in greater emphasis on data quality in systems and reports • Increased use of data in discussions at meetings and in decision-making • Established an organization-wide, common language for data, particularly around data governance • More timely use of data for improvement in areas such as patient experience and reducing missed opportunities	• Developed dashboards and visualizations to share data at multiple levels and across functional areas using new tools and techniques for deeper end user engagement • Integrated data from different sources to understand interactions and collective impacts • Created self-service "data marts" to allow more end user control of data mining and exploration, freeing up analyst resources

"Before SNAP, we were making generalizations without anything to back it up. Now we've started to create a culture where we're asking for data to support decisions, and we're using data to show what changes we need to make."

– SNAP grantee

POST-SNAP – SUSTAINING CHANGE AND IMPROVEMENT

As reported in post-program interviews, many grantees have continued to sustain and spread the lessons they learned through SNAP and their project work since the program ended (Exhibit 7 on the following page). In fact, many spread what they learned while SNAP was still underway. This affirmed the importance of multiple program components in ensuring SNAP's impact was sustainable, specifically:

• SNAP content and lessons were broad enough to apply to various departments and projects in grantees' organizations
• Requiring a wide range—both functional and managerial—of representatives from the organization on the SNAP team reinforced the notion that data management is a multi-disciplinary effort

- Selecting field projects that either built upon existing organizational priorities or could be spread throughout the organization helped to embed the lessons learned

Exhibit 7
In Their Own Words –
SNAP Participants Spread Lessons Learned Throughout Their Organizations

Monitor data accuracy and integrity: "We adopted a data quality assessment process. Any time a new data source or metric is introduced, we do a quick once-over to document all the problems and potential issues that might be encountered in using that data before we incorporate it into our reports."

Design user-informed dashboards: "Instead of the medical director deciding what the dashboard looks like or what data this group needs, we go to the people who will use the data to see what they need and how they want to use it."

Engage frontline staff early and often: "We started a class every other week where informatics folks work with end users to talk about their information systems, what data they are putting out and what possibilities we have for data analysis. There is a lot of great exchange going on."

Use data to inform workflows: "We have been able to keep looking at the workflows using the same process we did with the initial measures in SNAP—adapting the workflow by making sure the data is solid and analyzing the data within our data stewardship group."

Improved internal communication and coordination: "We have been able to sustain the partnership and communication between people who are doing data efforts. The data people feel like we are a team and the CIO and providers see us as part of their teams. We're communicating more about data and why things are working in the infrastructure."

LESSONS LEARNED FROM SNAP

SNAP offers many important lessons for safety net organizations that are working to enhance their data analytics capability and for organizations that fund and support these efforts.

Lessons for Safety Net Organizations: How to Enhance Data Analytics Capabilities

- **Identify applied projects and tasks to immediately practice new skills.** As grantees learned about data management processes and roles, data integration, dashboard development, and other crucial tasks, they found it useful to have an opportunity to apply their knowledge. This helped them internalize the learnings.

- **Incorporate staff from multiple departments and positions in learning about and applying data skills.** Since all staffing levels and departments contribute to obtaining and using high-quality data, grantees valued having multidisciplinary teams who could help garner buy-in for the work and implement the needed changes.

- **Connect with and learn from other safety net organizations.** Clinics often face similar challenges and may have ideas and solutions that would work for others. Grantees most appreciated the learning and networking with other safety net organizations.

- **Stay focused on the positive aspects of data analysis.** Many individuals fear that data will be used in a punitive or negative way rather than as a positive learning experience. Leaders need to be sensitive to this apprehension and focus on using data for organizational learning and improvement.

Lessons for Funders & TA Providers Supporting Safety Net Organizations

- **Year-long grants helped grantees feel more prepared to sustain the work following the end of the program.** They mentioned that having a 14-month program allowed them time to learn, apply and begin institutionalizing the program content as individuals and as an organization. However, maintaining and enhancing data management and analytic capability is an ongoing effort. Safety net organizations may benefit from continuing technical assistance to help them stay on track beyond an initial intensive grant.

- **Target leadership with information, education and support to understand and embrace the importance of a data-driven culture and data-driven decision making.** SNAP grantees encountered challenges with gaining support and educating leaders on how to incorporate the SNAP learnings into their work. Top-level support, which is crucial for organizations to shift their mindsets and processes, can be garnered in several ways, such as supporting initiatives targeting safety net leaders or preparing materials (e.g., field briefs, blogs, videos) leadership can review on their own.

- **Target the next generation of health care staff with training on data management concepts and analytic skills, including why analytics are important, how to record them in a consistent and accurate way, and how to apply the results to their work.** SNAP grantees often reported challenges with staff-created data errors, and spent considerable time and resources conducting internal trainings, which were repeated whenever there was staff turnover. Ways the field can increase staff's data literacy are through conference sessions, advocacy for instructional criteria in California's health care education programs, or providing common onboarding materials that safety net organizations can adapt for orientations and training.

- **SNAP, like other safety net initiatives, competed for attention with other concurrent initiatives and priorities.** Funders can serve as leaders in coordinating multiple funding opportunities and programs, or providing support and resources to safety net organizations in how to successfully manage multiple initiatives.

- **Provide both financial and non-financial support to organizations.** Grantees often identified non-financial supports (e.g., coaching, networking with other grantees, learning sessions) as the most valuable aspects of SNAP. There is still much learning and skill development needed for individuals and organizations related to data analytics, so giving them access to the expertise and tools, such as mentoring or coaching supports, training programs, webinars, alumni or networking sessions, will best help them accomplish their goals.

WHERE TO FIND MORE INFORMATION

CCI has produced a video learning series, Building a Data Driven Culture, based on the content curated from the Safety Net Analytics Program. Designed for adult learners and featuring leading experts in the field, this knowledge center serves as a resource for health center staff and leaders interested in increasing their knowledge of health care analytics as well as funders, technical assistance providers and partners interested in analytic capability building. The knowledge center can be accessed at www.datadrivenculture.org.