



## CHAPTER 6

### Develop a Data Strategy

As you initiate PRAPARE data collection, it is important to develop a strategy and system for reporting your data in a manner that can be effectively communicated to providers, community partners, payers, policymakers and other stakeholders to promote community transformation and other related efforts. Your strategy should include plans to meet your organizational vision and goals as well as considerations to integrate PRAPARE data into a larger national data warehouse to contribute to a critical mass of data for effective delivery system transformation.

The ability to perform data analyses and reporting is essential for organizations to manage the health of their patients and enhances their capacity to make more evidence-based decisions. This chapter provides strategies and sample tools to help you in developing the data strategy including sample reporting templates and data integration planning.

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# Building a Data Strategy

After you collect PRAPARE data, what will you do with it and how can you use it to add value to your practice? Start by developing a data strategy to understand how best to organize the data so that you can make informed decisions and help you achieve your intended organizational goals.

This data strategy serves as a roadmap and plan to define what to do with your data, how the data will help achieve your organizational goals, as well as who will access it, the content that you will share to make the most out of the data, and how to support these activities. The following is a checklist of steps to consider in developing a data strategy.

## Seven Steps for Developing a PRAPARE Data Strategy

### STEP 1

#### OUTLINE PRAPARE DATA GOALS

##### DETAILS

- Work with key leadership/staff to identify organizational objectives for PRAPARE data collection.
- Identify your specific objectives with data collection.
- Define your target audience.
- Define baseline as basis for measuring success.
- Ensure alignment with your organizational vision.
- Start with the end in mind: Always focus on your endpoint throughout implementation.
- Be sure to use participatory process: engage clinic staff and all relevant stakeholders in planning / strategy early on.

##### EXAMPLES

- *Use data to improve at least one key PRAPARE social determinants of health barrier X for the general adult patient population at the community level.*
- *Baseline is 1000 referrals per month.*
- *Increase referrals for barrier X by at least 25% above baseline after 6 months.*

## STEP 2

### ASSESS PRAPARE DATA CAPACITY AND INFRASTRUCTURE

#### DETAILS

- People: Assess IT/data, leadership, and other staff and organizational data culture. Leverage existing partners and collaborations.
- Process: Assess existing processes and initiatives (e.g. validation). Determine where efficiencies are possible.
- Technology: Assess data aggregation, reporting, and analysis tools, resources, systems

#### EXAMPLES AND SOURCES

- View the [Center for Care Innovation's Data Analytics Capability Assessment](#) for examples of assessing data analytics capacity in the three key areas of people, processes, and technology.

## STEP 3

### DEVELOP AND IMPLEMENT PRAPARE DATA ROADMAP

#### DETAILS

- Conduct roadmap or workplan mapping on how you will achieve your objectives.
- Who, what, why, when, resources, risks, contingencies?
- Organization:
  - What specific measures will be used?
  - What data sources will they come from?
  - How will the data be organized? Integrated in what systems?
- Access and Sharing:
  - Who will have access? How will you report and share data?
- Validation:
  - How will data be validated to ensure accuracy and consistency?
- Analysis Plan:
  - What analyses will you run? How will the analyses lead to your goals? How will you report data to understand whether your goal was met?

#### EXAMPLES AND SOURCES

- See the [Sample Workplan Table](#) in Chapter 3 of the PRAPARE Implementation and Action Toolkit for a customizable template that lays out roles, responsibilities, and progress.
- See the table on the following page for suggested roles and responsibilities for different staff involved with the data workplan.
- See the [Sample Data Strategy Worksheet](#) from the Center for Care Innovations to help build your data strategy.

**TABLE 6.1. Suggested Staff Roles and Responsibilities for Data Workplan**

<b>EHR Lead</b>	<ul style="list-style-type: none"> <li>• Notifies informatics lead when changes are made to EHR</li> <li>• Lead on data mapping</li> <li>• Promotes documentation amongst staff that adheres to mapping</li> </ul>
<b>Clinical Informatics Lead</b>	<ul style="list-style-type: none"> <li>• Governance lead – decision maker for data systems and operations</li> <li>• Develop and lead data infrastructure</li> </ul>
<b>Data Analyst</b>	<ul style="list-style-type: none"> <li>• Review reports to monitor data trends</li> <li>• Identify errors and serve as point person for identified errors</li> <li>• Troubleshoot and resolve</li> <li>• Support collaboration between QI/operations/finance</li> </ul>
<b>Quality Improvement (QI) Lead</b>	<ul style="list-style-type: none"> <li>• Make data actionable for rest of staff (QI projects, storytelling)</li> <li>• Work with analysts and clinical informatics to develop and support data infrastructure</li> </ul>
<b>Finance</b>	<ul style="list-style-type: none"> <li>• Link clinical quality to revenue</li> <li>• Collaborate on revenue-generating activities such as insurance contracting</li> </ul>
<b>Operations</b>	<ul style="list-style-type: none"> <li>• Utilize data to inform decision making</li> <li>• Support execution of data hygiene practices</li> </ul>
<b>Compliance</b>	<ul style="list-style-type: none"> <li>• Protects security of data</li> </ul>

**STEP  
4**

**CONDUCT PRAPARE DATA ANALYSIS**

**Data Analysis** is the process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making.

**DETAILS**

- Run descriptive analysis on all data to observe trends.
- Use Excel or other data analysis software.
- Run analysis in a way that will address your goals and objectives.
- Were results validated?
- Share findings with staff. Were results consistent with staff expectations?
- Compare to current baseline data.

**EXAMPLES**

- *Transportation was found to be the largest barrier.*
- *Compare data for transportation interventions before vs after PRAPARE implementation.*

**TABLE 6.2. Six Steps for PRAPARE Data Analysis**

<p><b>1</b> What is your analysis question?</p>	<ul style="list-style-type: none"> <li>Refer to your roadmap about the measures you are using for your analysis.</li> <li>Questions should be measurable, clear, and concise</li> </ul>	<ul style="list-style-type: none"> <li>How is social determinant risk correlated with hypertension at 7 health centers nationally?</li> </ul>	<p><a href="#">Presentation on Whether Social Determinant Risks Are Correlated with Hypertension</a></p>
<p><b>2</b> How will you measure it?</p>	<ul style="list-style-type: none"> <li>Time frame? (e.g., hypertension diagnosed in the last year or currently diagnosed)</li> <li>Unit of measure? (e.g., ICD, CPT, lab, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Used hypertension definition from UDS since already in use</li> <li>Prepared data reporting template in excel for all clinics to populate</li> <li>Trained health centers on how to complete uniformly</li> </ul>	<p><a href="#">PRAPARE Data Documentation</a> with ICD-10 Z codes, LOINC codes, SNOMED codes</p>
<p><b>3</b> Gather the data and validate</p>	<ul style="list-style-type: none"> <li>Where will data files be sent and stored?</li> <li>Conduct queries for data validation.</li> <li>Keep a log with data collection dates and source notes.</li> </ul>	<ul style="list-style-type: none"> <li>Data template (no PHI) sent to PRAPARE project manager.</li> <li>Queries automatically included in data template</li> <li>Kept a log with data collection dates and source notes.</li> </ul>	<p>PRAPARE Data Reporting Template and Validation Process</p>
<p><b>4</b> Conduct the analysis</p>	<ul style="list-style-type: none"> <li>Conduct descriptive analyses</li> <li>Find data trends, outliers, variation, correlations</li> </ul>	<ul style="list-style-type: none"> <li>Conducted descriptive analyses.</li> <li>Assessed data trends, outliers, variations, correlations</li> </ul>	<p><a href="#">PRAPARE Trend Analysis Presentation</a></p>
<p><b>5</b> Interpret results</p>	<ul style="list-style-type: none"> <li>Does the data answer your original question? How?</li> <li>Does the data help you defend against any objections? How?</li> <li>Limitations or any angles that you haven't considered?</li> </ul>	<ul style="list-style-type: none"> <li>Having hypertension was correlated with PRAPARE Tally Score.</li> <li>Interpretation: The higher the number of PRAPARE risks, the more likely patients have hypertension.</li> </ul>	<p>Questions to ask clinic staff to interpret results</p>
<p><b>6</b> Evaluate outcomes and next steps</p>	<ul style="list-style-type: none"> <li>Was your original PRAPARE data goal achieved?</li> <li>Was the planning effective? Lessons learned? Next steps?</li> </ul>	<ul style="list-style-type: none"> <li>Lessons: Patient-level data will yield stronger results, include more queries</li> <li>Next Steps: Do the same assessment with patient-level data to triangulate analyses, and with other conditions (e.g. diabetes). Also look at mitigating factors of enabling services to provide very important context!</li> </ul>	<p><a href="#">Checklist for Evaluating Outcomes in Population Health Planning Checklist</a> developed by the Victorian Healthcare Association</p>

## STEP 5

## IDENTIFY / PRIORITIZE ACTIONS BASED ON PRAPARE FINDINGS

### DETAILS

- Identify options for actions based on PRAPARE data.
- (Re)evaluate potential community partners with similar goals.
- Consider the feasibility and sustainability of options.
- Select mix of strategies based on most feasible and best possible outcome

### EXAMPLES

- Diabetes/Hypertension - Share data and partner with health plan to invest in community health workers who can help diabetic patients reduce SDH barriers.
- Transportation is a greater issue for patients than expected, especially for those living in particular rural zip codes.
  1. *Attend or host lunch community meetings to meet with transportation related agencies.*
  2. *Share data with state transportation agency and negotiate bulk discounts*
  3. *Improve bus routes for patients in particular rural zip codes.*

## STEP 6

## ACT ON PRAPARE DATA

### DETAILS

- Ensure actions are effectively resourced and implemented
- Assign roles and accountability for implementation
- Conduct risk analysis for actions to anticipate potential problems and establish contingency plans

### EXAMPLES

- *Decision for Executive staff to share 6-months data with state transportation agency to negotiate discount rates for transportation vouchers by next month.*
- *Contingency/concurrent plan: CMO attend community meetings to meet with transportation-related agencies to establish/strengthen partnerships and discuss mutual goals.*

## STEP 7

## EVALUATE OUTCOMES AND RESTART AS NEEDED

### DETAILS

- Are original/desired PRAPARE goals being achieved?
- Is health equity being addressed?
- Was the planning effective?
- Lessons learned?
- Best practices to share?
- Consider additional PDSAs (Plan, Do, Study, Act).
- Next Steps?

### EXAMPLES

- *Successful at negotiating better rate with health plan for providing better care outcomes for patients with SDH barriers.*
- *Successful at negotiating bulk discount transportation vouchers.*
- *Lesson learned is to educate staff about community partner resources for addressing SDH, as not all staff were aware of them.*
- *Next Steps: Assess contribution of mitigating factors of enabling services – very important context.*

# PRAPARE Data Documentation, Codification, & Reporting Templates

After developing your data strategy, align any data documentation and reporting requirements with your objectives. These guidelines can help you define, organize, manage, and report your PRAPARE data.

Use the following PRAPARE Data Documentation and Reporting Template to help get started:

## Data Documentation of PRAPARE for Implementation

The [PRAPARE data documentation](#) includes coding specifications and instructions for all PRAPARE measures. It also maps PRAPARE data to existing codes (such as ICD-10, LOINC, and SNOMED codes) to provide additional data standardization. These specifications can be used to help you develop your internal PRAPARE database that can integrate other clinic data sources. For example, you can link the PRAPARE measures with enabling services or health outcomes and conduct analyses to better understand and address your patients' health.

## PRAPARE Reporting Template Sample

The [PRAPARE reporting template](#) includes:

The image consists of three vertical panels, each with a numbered circle at the top and descriptive text below. Panel 1 (dark teal) is titled '1 RAW FREQUENCY MEASURES' and describes identifying common social determinants. Panel 2 (green) is titled '2 PROCESS EVALUATION MEASURES' and describes identifying missing data and assessing feasibility. Panel 3 (orange) is titled '3 POPULATION CHARACTERIZATION MEASURES' and describes understanding patient complexity and social determinant risks.

As a result of populating this reporting template, you will have valuable data on your patients' social determinants of health that will help your organization consider strategies to address your patients' risk.

# Data Visualization and Interpretation

Data visualization and interpretation help transform the data you have into actionable knowledge and help answer the critical “Now what?” question by demonstrating how data can be used and applied to answer your key questions or address your key challenges.

Once you have developed your reporting template and populated the report, you can visualize the data by developing helpful tables and graphs that can be presented to staff and other stakeholders to better understand your patients’ risks and how your organization can use PRAPARE data to inform care, develop new interventions, and/or establish new community partnerships. Data visualization is a great way to engage and educate key stakeholders, whether staff, leadership, patients, community members, and/or policy makers.

**The following sample presentations can be used to help you get started to understand how social risks can be analyzed, cross-tabbed, or cross-referenced to produce the results for your local clinic needs.**

- [Presentation highlighting the prevalence of social determinant of health risks in a population](#)
- [Presentation showcasing the difference in social determinant of health risks between a “high risk” population and a general population.](#) This presentation also includes correlation analyses showing the relationship between the number of social determinant of health risks and the likelihood of having hypertension and diabetes
- [Demonstration highlighting how a Health Center Controlled Network in Colorado used Tableau to visualize aggregated PRAPARE data](#) from across their member health centers to highlight the prevalence of social determinant risks in their communities, key population health trends in relation to social determinants, and the impact of certain interventions.

## Discussion Questions for Interpreting Data

**The following questions can be used to brainstorm with staff after the results are presented:**

1. What initial questions do you have based on current data presented?
2. What observations across communities did you observe? Which of them are surprising?
3. What are the key takeaways that we are learning from these data snap shots?
4. What explains stark variation?
5. What other data runs would be helpful? Are you doing any already?
  - a. Other correlations between SDH factors and with individual SDH and outcomes (need patient level information): (ex: are people who are very stressed also socially isolated and/or experiencing financial barriers? Or how does educational status correlate with outcomes?)



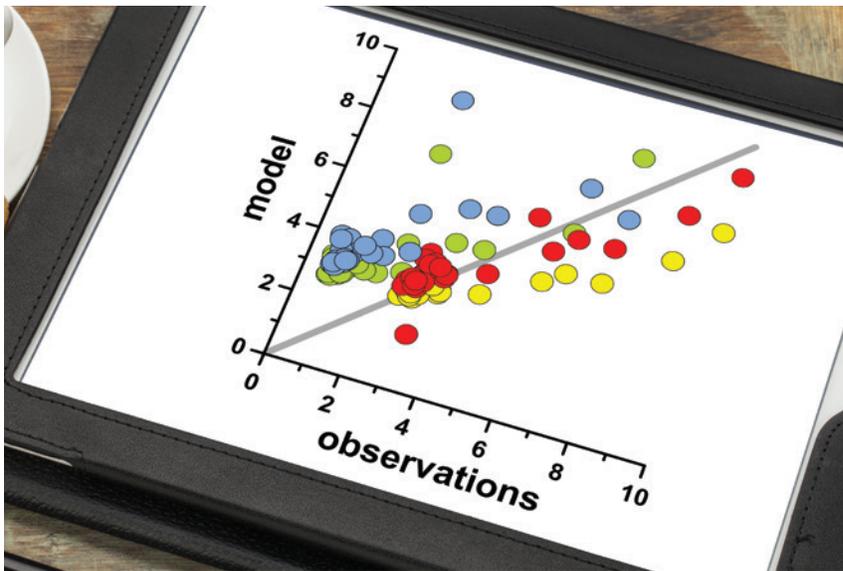
### RESOURCES

Visit the Health Information Technology, Evaluation, and Quality Center (HITEQ)’s website on [Communicating with Data](#) for more examples on how to visualize data.

# Types of PRAPARE Data Analyses

## Correlational Analyses

PRAPARE data can be used with other clinic data sources in your population health planning efforts. For example, this [sample correlational analysis](#) assesses the link between social determinant risks identified by PRAPARE and hypertension outcomes. In this analysis, we calculated the PRAPARE “[risk tally score](#)” (explained more in the following section) which represents the total number of distinct risks that are present vs absent for an individual patient. Keep in mind that this analysis used aggregate-level data. Patient level analysis, though more time-consuming, could yield more rigorous results.



Below are steps organizations can take to submit outcomes data (e.g. diabetes, hypertension) for correlation analysis to see the relationship between social determinant of health factors and outcomes:

- 1 Compile, validate, and clean data
- 2 Conduct descriptive statistics and observe trends
- 3 Calculate the correlation ( $r$ ) between the PRAPARE social determinant of health total (“tally”) score and percent of patients who have hypertension among the designated tally score to see how the percentage changes as tally score increases (this will require the use of statistical software or Excel)
  - Only include patients who answered all of the PRAPARE questions
  - Only include percents that are not 0% in the calculation of  $r$
- 4 Create graph to help visualize the trend: display percentage of patients who have the condition as the tally score increases

View this [sample correlation analysis](#) to see these steps in a real-world example.

## Return on Investment (ROI) Analyses

In today's value-based pay environment, it is important to demonstrate a return on investment (ROI) for work related to social determinants of health. There are several ways to show ROI and how it helps meet the Quadruple Aim in terms of improving outcomes, lowering costs, improving patient experience, and increasing provider satisfaction. Examples range from evaluating the effectiveness of a program or intervention to demonstrating the value of a community partnership or staff role that is focused on addressing social determinants.



### PRAPARE ROI CASE STUDY

A health center in Missouri calculated the number of missed appointments and how much money that was costing their organization. After they administered PRAPARE with their population, they found that 1 in 4 of their patients had transportation barriers. With that PRAPARE knowledge, they implemented a couple of transportation interventions and reduced their no-show rate by 50%, which led to a significant increase in revenue for the organization and better care for their patients.



### RESOURCES

[Commonwealth Fund ROI Calculator](#): This online tool enables users to calculate the return on investment from integrating social services with medical care, based on user-inputted data about the population, utilization, and costs.

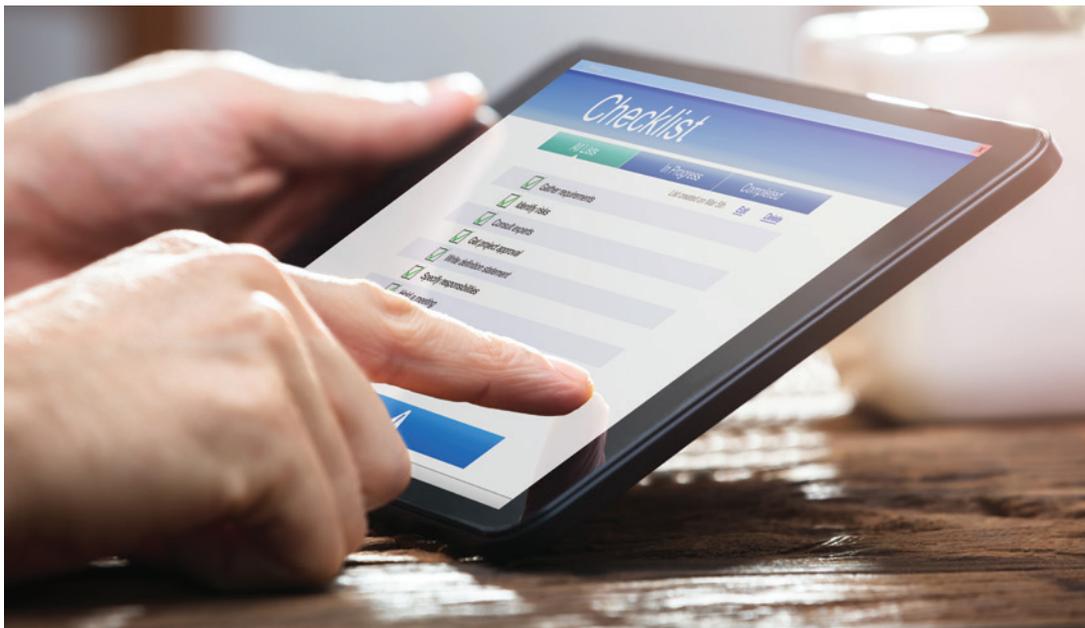
[Investing in Social Services as a Core Strategy for Healthcare Organizations: Developing the Business Case](#): A practical guide to support investments in social services

# Using PRAPARE for Risk Stratification and Population-Level Planning

PRAPARE can add value to risk stratification and risk segmentation efforts by incorporating non-clinical data and providing a fuller picture of patients. To facilitate these efforts, we have created a [PRAPARE Risk Tally Score](#). This risk tally score represents the cumulative number of distinct risks as defined by the literature that are present for an individual patient. At this time, this risk tally score is NOT weighted such that certain socioeconomic risks receive a higher score than others. We are currently conducting additional analyses that will allow us to establish a weighted risk score that could also be used for risk adjustment purposes. However, this risk tally scoring methodology facilitates risk stratification by allowing an organization to see the dispersion of risks. For example, what is the average number of social determinant risks that their patients face and who are the patients that face more risks? While our analyses of our various pilot organizations across seven states showed that health center patients faced an average of 4 – 7 social determinant risks, it is important to establish a baseline for your own organization to better determine who might be more “at risk”.

Several organizations have even incorporated the PRAPARE risk tally score into their own patient risk score complete with other clinical outcomes data and/or claims data to produce a more holistic risk score. These risk scores help them stratify their patient population and identify those who are “high risk”, “moderate risk”, and “at risk of becoming high risk”. These stratifications help inform the level of intervention needed as well as if resources and/or staff need to be reallocated to meet the need.

Other organizations have used PRAPARE data for population segmentation to understand and respond to needs of target populations. Oregon’s use of PRAPARE for population segmentation is highlighted in **FIGURE 6.1** on the following page.





## CASE STUDY

Read [this short case study](#) as to how a health center in Hawaii used PRAPARE data to identify high-risk patients so that they can better address their social determinants and achieve the Triple aim by preventing worse outcomes and overuse of emergency room services.

### FIGURE 6.1. Using PRAPARE for Population Segmentation Work

As you use PRAPARE data to better understand and manage your own patient population, you can share your PRAPARE data reports, risk scores, and presentations with stakeholders to start meaningful dialogue regarding larger population health planning efforts to improve the health and well-being of populations and health equity between population groups. This [population health planning checklist](#) provides step-by-step recommendations to help you get started.



\*Adapted from the Oregon Primary Care Association

# Data Sharing and Integration

As part of your larger data strategy, you may consider sharing data with others, such as your network, primary care association, state Health Information Exchange, Accountable Care Organization, etc. so that PRAPARE data can be summarized for organizations across a state or region(s) to understand commonalities that can support statewide strategies. Data can also be integrated in a larger state or national data warehouse that can support larger transformation, funding, advocacy, and other related efforts. Integration of standardized PRAPARE data is important to help build critical mass that will more effectively move the dial in our nation’s upstream community transformation efforts.

**The following are considerations to keep in mind for integration of PRAPARE into a larger data warehouse:**

CONSIDERATIONS FOR INTEGRATION OF PRAPARE DATA INTO A NATIONAL DATA WAREHOUSE		EXAMPLES
1	Determine data use for national social determinants of health data warehouse	Research, policy, or continuity of point of care
2	Determine the stakeholders	Researchers, lobbyists, policymakers, payers, clinical services, social services
3	List the data elements needed to be captured to share for each type of use and type of stakeholders	Demographic, clinical diagnosis and procedures, social services
4	Determine the type of data warehouse technology	Traditional fact and dimensions tables, big data, or both depending on implementer
5	Determine which format is suitable to transmit data	Existing data structures like C-CDA or custom data structures
6	Pick a small subset of data elements to test implementation	
7	Decide on other standardized codes to use or standardize custom codes for selected subset	ICD-10, CPT, CPTII
8	Pick a small subset of participating stakeholders to test implementation	
9	Expand both data elements and participants in controlled phases	