DATA ON THE EDGE

A PERFORMANCE IMPROVEMENT GUIDE TO ADVANCING HEALTH EQUITY

For health care organizations committed to addressing health equity, deploying targeted strategies is essential for meaningful and measurable improvement. Each local community faces unique challenges, with a diverse and extensive range of needs that make it impossible to address them all. With limited resources, a data-driven and strategic approach offers the precision needed to prioritize specific improvement opportunities to maximize impact, drive meaningful change and advance health equity.

Powered by Vizient® Data and Digital Platform

To learn more, check out Vizient data resources on page 5.

One of the tools available to support targeted strategy development for health equity is the patent pending Vizient Vulnerability Index™ (VVI), which, at the neighborhood level, identifies social needs and obstacles to care that may influence a person's overall health. The index uses nine domains of social needs (clean environment, economics, education, health care access, housing, neighborhood resources, public safety, social environment and transportation) to determine a vulnerability index by zip code. An area with a vulnerability index (ie, VVI value) greater than 1.0 is considered an area with high vulnerability, and a VVI value less than 1.0 signifies low vulnerability. (Visit the VVI web page or see page 5 to learn more.) The Vizient Vulnerability Index can help identify strategies to foster impactful growth in health equity and also uncover revenue opportunities, as shown in the following analyses.

Inequity Exists in Access to Scheduled Surgeries

Vizient Vulnerability Index™ Scheduled Procedure Analysis

INPATIENT PROCEDURE UNDERUTILIZATION FOUND IN HIGH SOCIAL NEEDS ZIP CODES

Service Line	Procedure	Utilization Rate	% Difference Between Average and High VVI	% Difference Between Low and High VVI
Ortho	Primary Hip Replacement	29.8	9%	15%
Ortho	Revision Hip Replacement	3.4	16%	19%
Neuro	Shunt Surgery/Hydrocephalus Surgery	1.9	11%	22%
Neuro	Endovascular Procedure—Cerebral	2.0	10%	24%
CV	Transcatheter Valve Procedure	13.5	15%	23%
CV	Surgical Valve Procedure	4.1	27%	37%
Cancer	Maintenance Chemo-Radiotherapy	3.3	27%	38%
Cancer	Hysterectomy	2.5	6%	31%

UTILIZATION VARIES BY VVI ACROSS MARKETS

Example: Surgical and Transcatheter Valve Procedures, Surgical Volume per 10K Population

	High	Average	Low
PHOENIX	19.0	25.3	30.9
DALLAS	13.6	17.3	20.5
MIAMI	15.0	18.9	25.0

Note: High VVI defined as zip codes with an overall VVI score that is ≥1.0, where overall vulnerability is at least one standard deviation above the national mean. Low VVI defined as zip codes with an overall VVI score that is ≤–1.0, where overall vulnerability is at least one standard deviation below the national average. **Sources:** Vizient analysis of state inpatient data, 2022. Results based on Vizient analysis of limited data sets supplied by the following state agencies, which are not responsible for the analysis, interpretations or conclusions contained herein: Arizona, Florida, New York, Texas, Pennsylvania, Virginia, Washington, Oklahoma, Maryland and Nevada. Vizient Vulnerability Index™ Patent Pending.

A recent Vizient study mapped the VVI values by zip code against a 10-state inpatient discharge data set, uncovering geographical differences in hospitalization rates for various diseases and procedures based on social determinants of health (SDOH). These 10 states represent 37% of the total US population. Insights from the study highlighted variation in scheduled surgery utilization between areas of high and low vulnerability. Specifically, there are inpatient-scheduled surgeries that had lower utilization in areas with high vulnerability, especially in cancer, orthopedic, neurosciences and cardiovascular service lines, revealing opportunities for health systems to identify and prioritize clinical areas to address inequities specific to their local market.

Surgical and transcatheter valve procedures were used as an example to investigate why there are significant differences in utilization rates by VVI value. An examination of utilization rates across three cities—Phoenix, Dallas and Miami—revealed areas with high social needs and consistently lower utilization. However, the extent of underutilization varied by geographic location. Further investigation of specific social determinants of health within the Vizient Vulnerability Index showed economic and neighborhood resource disparities were linked to a decreased likelihood of inpatient utilization for surgical and transcatheter valve procedures.

Impact of Vulnerability on Surgical and Transcatheter Valve Procedures

Sg2 forecasts 48% growth in overall valve procedures by 2029, inclusive of a 68% growth projection for transcatheter valve procedures and a 3% decline in surgical valve procedures. While patient age and acuity are key factors in determining whether a transcatheter or a surgical valve procedure is the right course of care, transcatheter procedures (eg, transcatheter aortic valve replacement [TAVR]) have surpassed surgical procedures, and this will continue as transcatheter procedures are now indicated for most patients with aortic valve disease. Surgical valve procedures are preferred for younger patients when long-term durability is a concern. Transcatheter valve procedures, an option for a majority of patients, provides an intervention that is minimally invasive, especially for patients who would be ruled out for open-heart surgery due to risk.

What if areas with high VVI values had the same quality outcomes as areas with average and low VVI values?

The table below highlights variation in quality outcomes for surgical and transcatheter valve procedures across areas with high, average and low VVI values. These differences present opportunities to enhance care quality and operational efficiency.

Variation in Quality Outcomes for Surgical and Transcatheter Valve Procedures, 2022

	Surgical Valve Procedures			Transcatheter Valve Procedures		
Quality Measures	High VVI value	Average VVI value	Low VVI value	High VVI value	Average VVI value	Low VVI value
Average LOS (in Days)	12.4	10.9	10.2	3.5	3.2	3.2
Percent With ICU Stay	90%	92%	95%	32%	28%	27%
ICU Average LOS	5.6	4.6	4.2	2.4	2.3	2.4
Inpatient Mortality	5.7%	3.6%	2.7%	1.5%	1.1%	1.2%

Note: Analysis includes 65 years and older age group only. High VVI defined as zip codes with an overall VVI score that is ≥1.0, where overall vulnerability is at least one standard deviation above the national mean. Low VVI defined as zip codes with an overall VVI score that is ≤–1.0, where overall vulnerability is at least one standard deviation below the national average.
Sources: Vizient analysis of state inpatient data, 2022. Results based on Vizient analysis of limited data sets supplied by the following state agencies, which are not responsible for the analysis, interpretations or conclusions contained herein: Arizona, Florida, New York, Texas, Pennsylvania, Virginia, Washington, Oklahoma, Maryland and Nevada. Vizient Vulnerability Index™ Patent Pending.

Key Findings

- **Surgical valve procedure patients from vulnerable zip codes have higher average LOS than those from average or low VVI areas.** For patients undergoing surgical valve procedures, those from high VVI areas experience longer hospital stays—1.5 days (or 14%) more than average VVI patients and 2.2 days (or 22%) more than low VVI patients. Social support resources should be prepared for patients to help ensure smooth transitions and reduce length of stay.
- **A more consistent picture is needed for transcatheter valve procedures.** Patients from high VVI zip codes undergoing transcatheter valve procedures experience an average hospital stay of 3.5 days, almost a half day longer than average and low VVI patients. Delays in aortic disease treatment can lead to poor outcomes, with some patients on TAVR wait lists at risk of not surviving. With expected growth in transcatheter valve procedures, efficient capacity management will be essential to accommodate this demand and enhance quality of care.
- **Most importantly, differences in quality of care exist depending on geographic origin.** In high VVI zip codes, the mortality rate for patients undergoing surgical valve procedures is more than double compared to low VVI areas. Patients in low VVI areas also have a higher ICU admission rate and shorter ICU stays, likely due to increased survival.

Beyond addressing health equity, there is an incremental revenue opportunity in closing the gap.

To illustrate incremental revenue opportunities, use rate differences for surgical and transcatheter valve procedures across high, average and low VVI areas for the previously selected 10 states were analyzed alongside estimated Medicare reimbursements for these procedures.

Differences in Use Rates for Surgical and Transcatheter Valve Procedures, 2022

	Use rate (per 10K population), CY 2022					Incremental revenue per 10K population in high VVI zip codes if…	
Procedure	High VVI value	Average VVI value	Low VVI value	Difference between average and high	Difference between low and high	…High VVI use rate matched average VVI use rate	…High VVI use rate matched low VVI use rate
Surgical Valve Procedure	4.1	5.7	6.6	1.5	2.5	$77K	$122K
Transcatheter Valve Procedure	13.5	15.8	17.5	2.3	4.0	$86K	$148K

Note: Analysis includes 65 years and older age group only. High VVI defined as zip codes with an overall VVI score that is ≥1.0, where overall vulnerability is at least one standard deviation above the national mean. Low VVI defined as zip codes with an overall VVI score that is ≤–1.0, where overall vulnerability is at least one standard deviation below the national average. Incremental revenue estimates based on CMS Inpatient Prospective Payment System. **Sources:** Vizient analysis of state inpatient data, 2022. Results based on Vizient analysis of limited data sets supplied by the following state agencies, which are not responsible for the analysis, interpretations or conclusions contained herein: Arizona, Florida, New York, Texas, Pennsylvania, Virginia, Washington, Oklahoma, Maryland and Nevada. Vizient Vulnerability Index™ Patent Pending.

Key Findings

- **Use rate gaps can be closed.** Increasing volumes to drive incremental revenue can be achieved by enhancing specialist access, improving disease screening and providing transportation support for aortic stenosis patients.
- **Medicare is the primary payer class.** The payer mix for surgical valve procedures in patients aged 65 and older was consistent across all three VVI segments, with approximately 90% of patients covered by Medicare. Areas with high and average VVI values present significant opportunities for revenue and volume capture.
- **Incremental revenue can be gained.** If the transcatheter valve procedure use rate in zip codes with high VVI values was increased to match the rate in zip codes with average VVI values, the incremental revenue based on Medicare payment rates would be $86,000 per 10,000 population. Matching the rate in zip codes with low VVI values would increase revenue by $148,000 per 10,000 population.

Why It Matters

Advancing health equity is a strategic decision, with goals that vary by organization. This report serves as a starting place for targeted strategy development, helping organizations prioritize opportunities to improve the quality of care in neighborhoods with high SDOH needs—without compromising financial performance.

- **Take a strategic approach to health equity initiatives.** Regardless of your organization's reasons for advancing health equity, focus on the priorities that matter most to your communities, patients and business. With infinite social needs to address, this report outlines an approach to identify key opportunities and quantify outcomes that drive meaningful progress in health equity.
- **Leverage analytics to drive decisions.** By linking utilization with specific social determinants of health, organizations can pinpoint geographic disparities in the over and underutilization of inpatient care, identify key SDOH contributing to these disparities, and develop action plans for targeted health equity initiatives.
- **Include health equity in service line planning.** Bridging the gap in health equity and SDOH data is vital as social risks significantly impact those with chronic diseases. Programmatic development to improve prevention access, screening, diagnosis, treatment and chronic disease management for conditions such as heart valve disease should be prioritized for strategic focus.
- **Minimize access gaps in areas with high VVI values.** Data analytics can be leveraged to understand the patient journeys from areas with high VVI values across the system. By implementing comprehensive disease management programs across all service areas, organizations can manage patients' disease progression and ensure consistent uniform quality of care, reducing the likelihood of patients seeking surgical care from competitors.
- **Establish partnerships.** By understanding where patients from areas with high VVI values go for upstream services (eg, Federally Qualified Health Center, rural/community hospital), partnerships can be formed to provide high-quality outcomes where clinical resources are limited or case volume is low. Consolidating cases at hospitals where the number of cases performed is correlated with low mortality rate and lower LOS should be part of service distribution evaluation, as discussed in Sg2's Data on the Edge report *Quality Outcomes as a Driver for Service Optimization*.

Contributors: Karyl Kopaskie, PhD; Madeleine McDowell, MD, FAAP; Vernon Herbener; Victoria Beal; Josh Aaker, PhD; and Chad Giese.

To speak with one of our experts about the Vizient Vulnerability Index™ or advancing health equity, email membercenter@sg2.com.

POWERED BY

VIZIENT DATA AND DIGITAL PLATFORM

This report's analysis leverages the following proprietary data and analytics assets.

Sg2 Intelligence is a diverse team of subject matter experts and thought leaders who represent specialties ranging from clinical service lines to enterprise strategy. The team develops strategy-specific content in the form of editorial reports, including the Data on the Edge series, and perspective-based analytics, such as the Impact of Change® forecast.

The patent pending **Vizient Vulnerability Index™** identifies social needs and obstacles to care in neighborhoods that may influence a person's overall health. The data allow users to support social drivers of health at the neighborhood level, providing nine domains of social needs and the overall vulnerability index for each census tract and zip code across the US. Any score greater than 1.0 is considered an area of "high vulnerability." These are neighborhoods that experience specific obstacles to care greater than one standard deviation above the national mean.

Unlike other indices, the Vizient Vulnerability Index flexes to ensure the index values are location appropriate. Other indices have a single index algorithm for the whole country, while the Vizient Vulnerability Index adapts to the local relevance of each domain as it correlates to life expectancy. This allows for variation in the weighting of the domains across different geographic areas depending on what's important—the most relevant factors affecting health in Lincoln, NE, might not be the most relevant in New York City.

Vizient Vulnerability Index Domains

ECONOMICS	HOUSING	EDUCATION
SOCIAL ENVIRONMENT	PUBLIC SAFETY	HEALTH CARE ACCESS
NEIGHBORHOOD RESOURCES	TRANSPORTATION	CLEAN ENVIRONMENT

The **Vizient Operational Data Base** provides hospitals with transparent, comparative insights on the operational characteristics of hospital departments to support performance improvement, budgeting and cost reduction initiatives. It includes reliable financial and operational data that help organizations make informed decisions about employee productivity, supply usage and other areas that directly impact the bottom line.

Sg2's Impact of Change® model forecasts demand for health care services over the next decade, examining the cumulative effects and interdependencies of key impact factors driving change in utilization. Using both disease-based and DRG-based analyses, the forecast provides a comprehensive picture of how patients will access inpatient and outpatient services along the continuum of care.

The Vizient Data on the Edge series team includes Brianna Motley; Catherine Maji; Eric Lam; Alyssa Harris; Madeleine McDowell, MD, FAAP; Jen Goff; Kerstin Liebner; and Sg2 Creative Services.

vizient® | Sg2