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KNOWLEDGE SERIES

July 2020

Scenario Planning: How to be Resilient in Design and Operations

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Executive Summary

The spread of the coronavirus across the United States did more than expose the nation's health system's challenge in responding to a pandemic. It revealed a deficiency in the planning of the physical infrastructure that left organizations unable to pivot operations in a manner that didn't threaten the integrity of the organization. From a practice that put a premium on just-in-time supply management to a focus on efficiency that aligned with population health practices and fewer patient beds, organizations were forced to close revenue-generating operations to conserve supplies and protect those coming to their facilities as well as staff from the possible spread of the virus. On a national level, the American Hospital Association estimated the 2020 closures to cost more than $202 billion from March 1 to June 30. From surge capacity to staff health and wellness, the stress caused by the pandemic seemed to be amplified by a master planning process that didn't accommodate scenarios outside the normal range. To make organizations more resilient, both operationally and financially, the planning process must change so that the physical demands of a health crisis doesn't adversely impact an organization's ability to meet the demands for community health, overall.

Introduction

In 2012, Rush Medical Center in Chicago opened a new 14-story, 830,000-square-foot tower that was designed based on the experience coming from the Sept. 11 attacks and following anthrax scares in 2001. Understanding how a mass casualty event could overwhelm a hospital, the design put flexibility at the center of its goal, expanding beds by 133 percent, converting entire floors for negative pressure air flow, converting ambulance bays for into triage units and a decontamination area, and turning the hospital's large atrium into a new emergency room for non-infectious patients with access to oxygen, medical gases, and electricity hidden in the atrium's large columns.

When the COVID-19 pandemic hit the Chicagoland region, that visionary planning put Rush Medical Center into a unique position to pivot its normal operations into a surge mode within 11 days of the first patient who presented with symptoms of the coronavirus (Guarino, 2020). The organization's efforts were complemented by the Army Corp of Engineers who turned McCormick Place, a massive convention center, into an alternative care site with 3,000 patient beds.

A case study in designing for flexibility, Rush's success has also been tempered by the challenges of the marketplace and community perceptions. A shortage of personal protective equipment forced the organization to suspend nonemergent procedures, a major driver of revenues. Community fears of infection also caused a drop in emergency room visits despite the MASH-style unit established in the atrium specifically to separate patients in need of care away from those presenting with COVID-19 symptoms. The intensity of care needed for patients with the coronavirus also has taxed a staff overstretched and stressed from the pandemic.

In the first month, alone, Rush Medical Center reported losses of $43 million in revenues. In all of Illinois, a state with a significant number of critical access hospitals that also had to suspend non-emergent procedures and clinical operations, losses were estimated to reach $1.4 billion per month (Schenker, 2020). Those projections mirrored other states, where in Minnesota, home to large systems like Mayo Clinic and Essentia as well as an even larger number of critical access hospitals than Illinois, the hospital association predicted losses to reach nearly $3 billion by June 30 (Minnesota Hospital Association, 2020). Nationally, losses for canceled procedures and delayed care were to exceed $200 billion in the first three months of the pandemic, according the American Hospital Association (2020).

For large health systems as well as independent health care organizations, the financial impact of the pandemic is more than a numbers challenge. It reflects an existential crisis for an industry that, for so many in the sector, margins were already slim before the start of the pandemic. Forcing these community assets to curtail operations, the pandemic exposed deficiencies in many facets of our health care system, from a supply chain rigidly built on normal demand in the marketplace to a physical environment that reflected a shift in care from inpatient to outpatient with a corresponding drop in inpatient beds.

While some will point to a lack of supply in personal protective equipment as a main driver for the revenue losses as even rural hospitals canceled ambulatory services to conserve supplies for predicted statewide surges, other factors have come under scrutiny, from entrances and facility flow that can separate infectious patients from those who aren't to storage facilities as well as mechanical systems that can make inpatient rooms and units more flexible to community needs. More than any one factor, though, it has put the whole planning process under a spotlight as hospital and health systems administrators question how the whole health care system got here and how their organizations can be better prepared going forward.

What is a solution that can help health care organizations adapt, survive, and be resilient? As the Rush Medical Center case study shows, the solutions go beyond facilities while also putting the physical infrastructure at the heart of the planning. The community, enterprise, and operations of a health care organization need to be factored to achieve resiliency. Operationally resilient enterprises have the organizational competencies to ramp up or slow down operations in a way that provides a competitive edge and enables quick and local process modification. Similarly, health care organizations need to alter in the face of changing scenarios, one that is not linearly focused, but dynamic in its process.

> ***"operational resilience...is the ability to alter operations in the face of changing business conditions."***

Redefining Resiliency

Resiliency in the built environment has traditionally been defined by a building's ability to survive an adverse event, whether that's an F2 tornado, a 500-year flooding event, a category 3 hurricane, or an earthquake of a varying magnitude. Regionally oriented, designing for resiliency has been more a physical exercise related to downtime and recoverability.

Resilience, though, is more than a physical state. It's also an operational state. Gartner, a business consultancy, defines operational resilience as a "set of techniques that allow people, processes and informational systems to adapt to changing patterns. It is the ability to alter operations in the face of changing business conditions (2020)." Economic studies of operational resilience break down the term into two components: disruption absorption dimension and recoverability dimension, the first being defined as the ability of an organization to maintain structure and normal operations in the face of disruptions and the latter as the ability of an organization to restore operations to a prior normal level of performance after being disrupted (Essuman et al., 2020). Applying this concept to health care, a hospital facility's ability to withstand a 175-mile-per-hour tornado would fall under recoverability, while the organizations ability to maintain continuous operations coming out of such an event would fall under disruption absorption.

Under the Triple Aim for health care developed by the Institute of Healthcare Improvement (Stiefel & Nolan, 2012), the design approach to health care facilities and campuses seeks to optimize a health system's performance by simultaneously pursuing the improvement of the patient experience, the improvement of the health population, and a reduction in health care cost. Missing from this aim has been the discussion of resiliency. As the ramifications of the coronavirus on the integrity of organizational operations are more fully understood, it brings into clearer focus a need to consider resiliency within the Triple Aim framework, evaluating how the needs of the broad community can be met while absorbing the disruption presented by a pandemic or any scenario which a health care organization would have to absorb.

From Master to Scenario Planning through Resiliency

There is a need to evolve the traditional master campus planning process to present tangible ways health care organizations can achieve resiliency in their facility under normal and extreme circumstances. Master planning as it's been practiced usually relies on observed trends to forecast a probable future. While data informed, it is a consensus-driven event that focuses on a desirable future. The cracks that have been exposed in the practice is that there is an assumption baked into the predictive modeling – that the future will be similar to the past, at least in the marketplace that the organization serves even as innovations permeate operations. Visionary and aspirational, master planning has assumed a stable environment, an assumption that overlooks how unplanned events can strain operations, not just impact facilities.

Scenarios planning is more dynamic, allowing an organization to see their future through a set of events that could impact their operations (see Figure 1). Rather than focusing on what is desirable, scenario planning explores how operations can deviate from a defined normal through the uncertain: a natural event, a mass casualty event, a physical or cyber attack on a facility, or a pandemic. While not high-probability events, these scenarios represent a strain on an organization's resources. Scenario planning puts the integrity of organizational operations

Defining the Range of Future Possibility

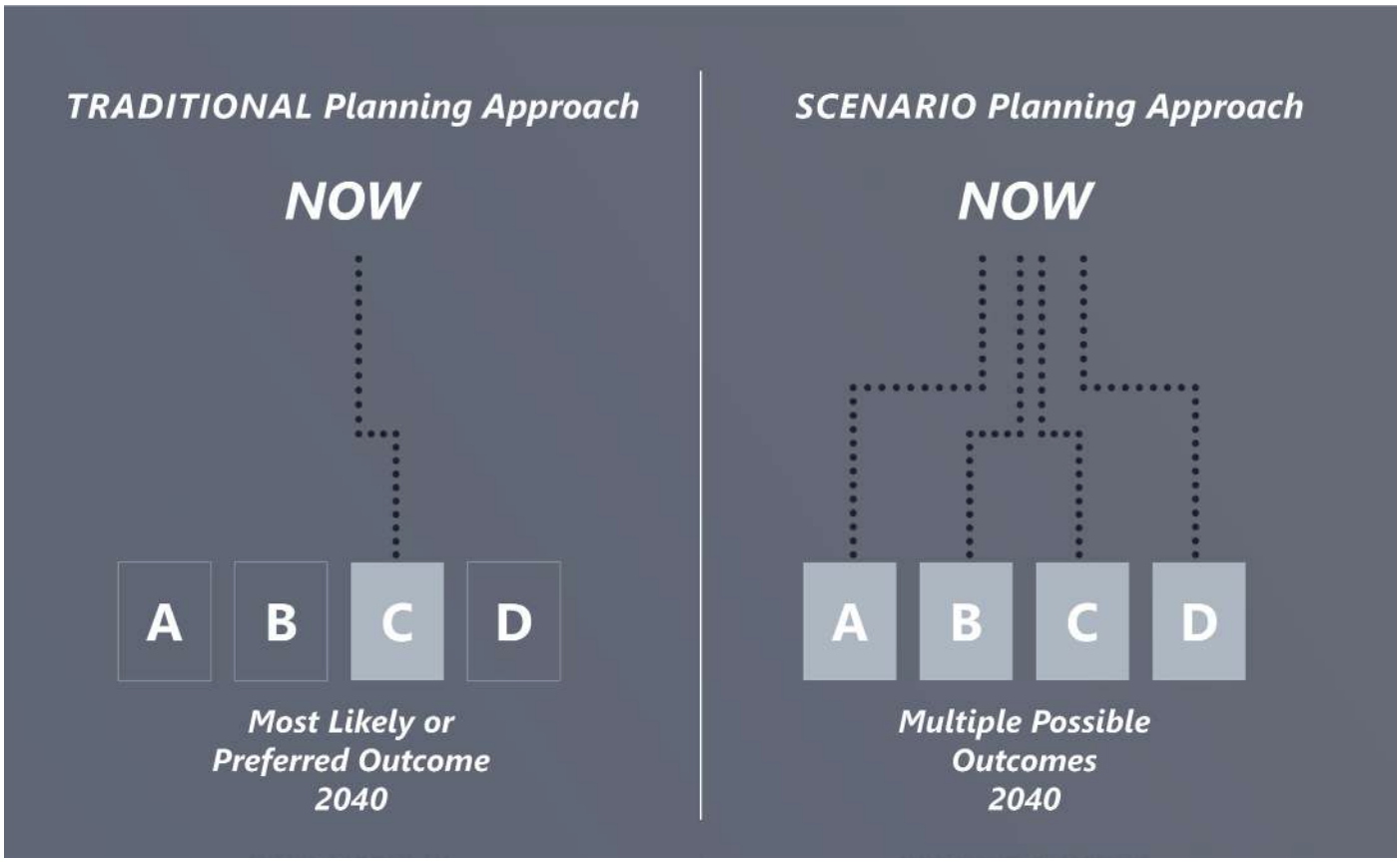

Figure 1

at the center of the planning process, giving organizations the ability to understand the possible effects these events may have on their personnel, supplies, and facilities.

Like master planning, scenario planning is an interactive process. The process, though, is structured to help organizations better understand and identify future facility and operational needs under a variety of conditions. Scenario planning reveals opportunities to shape their campuses and facilities for both normal and abnormal operations, allowing them to be resilient under a range of circumstances. It embraces a "new normal" vision to long-range planning that's more dynamic and more comprehensive in its analysis.

The Scenario Dynamic

As an exercise, scenario planning draws its power from its ability to bring together key players of an organization to strategize their operations through a plausible and desired future state as well as the extreme events that the scenarios represent. Where master planning assumes a future state that is influenced by predicted and gradual change, scenario planning adds to the exercise the impact of unplanned and rapid change, since rapid change is where organizations are most vulnerable in their operations. Scenario planning brings into the equation other facets of is operations, from market analysis and capacity to such drivers as infection control, secure access, and technology, to understand the range of effects moving from systems normal to acute states.

The very process of developing scenarios generates deeper insight into the improbable future and helps mitigate the decision paralysis that can come from rapid disruption. By studying why scenarios can make operations better or worse, organizations are forced to consider across its operations how they can respond to be resilient. The result is that organizations test a wide range of hypotheses involving changes in those scenarios. They learn which response strategies matter, and which do not (see Figure 2).

Spotlighting each facet of an organization's operations helps teams understand both impacts and responses at an enterprise level. The planning process evolves to something more strategic. It combines the vision of where organizations want to go under

Understanding the Planning Environment

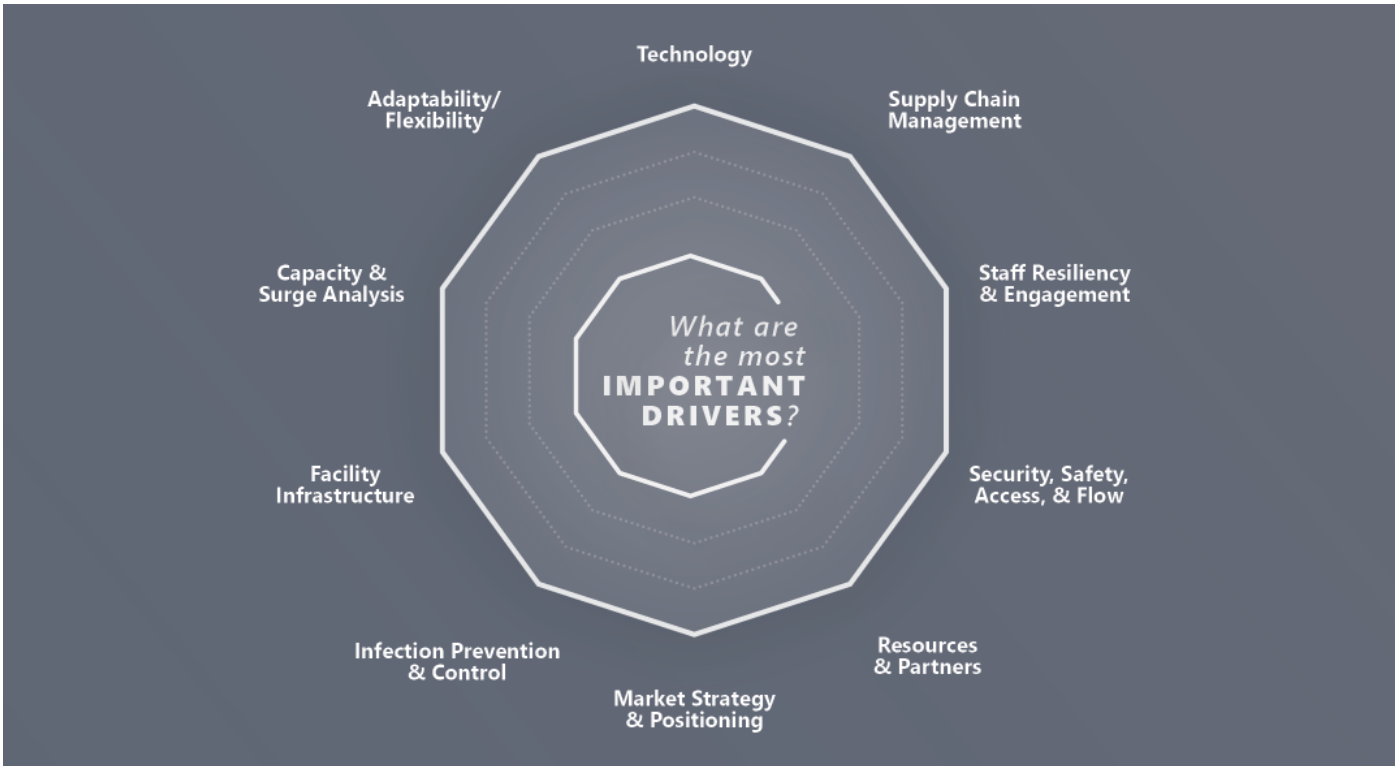

Figure 2

Scenario Planning - What Matters Most to be Resilient?

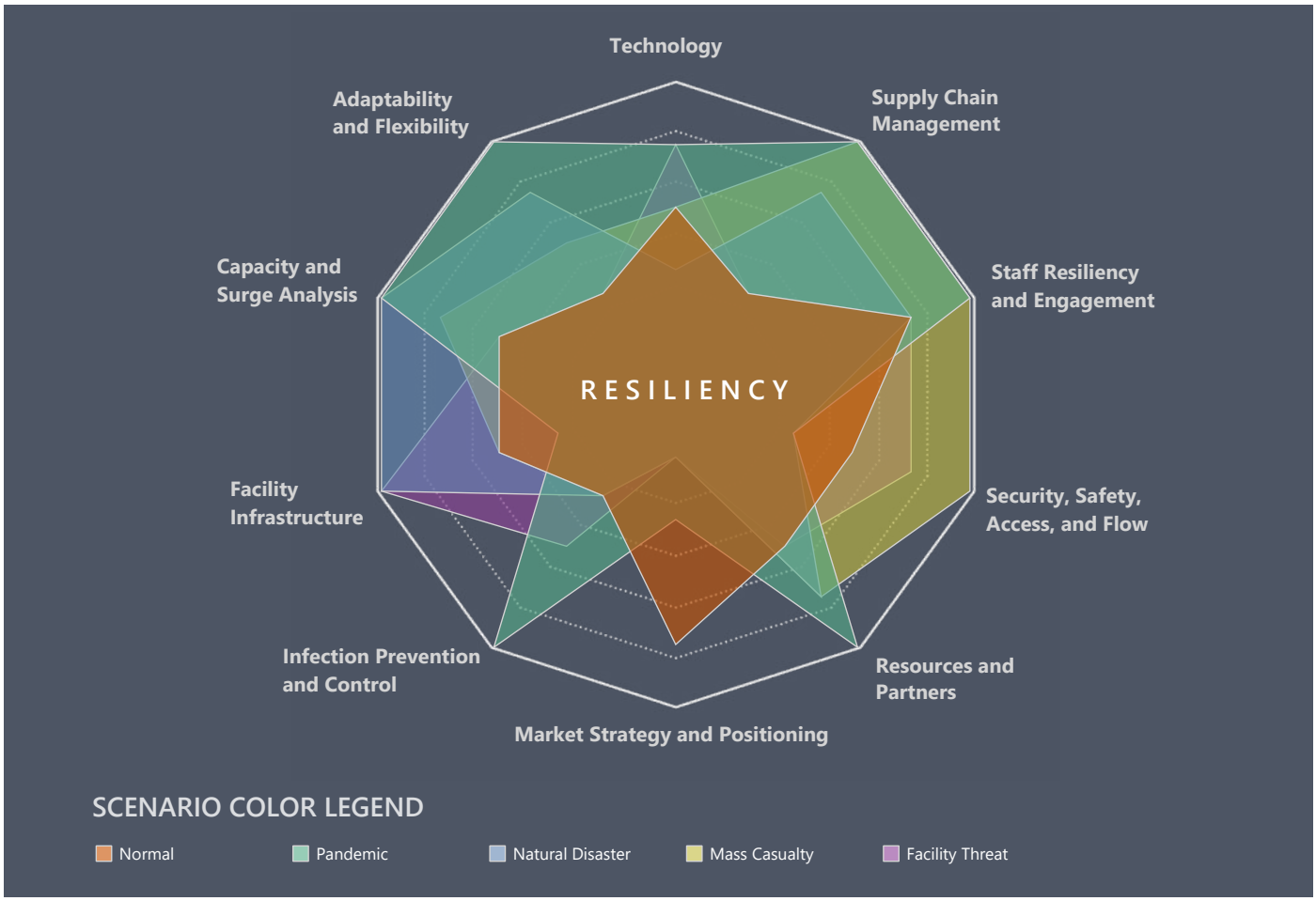

Figure 3

controlled conditions with an approach that is informed by a broad spectrum of the organization about how those visions can be resilient in the face of uncontrolled conditions. Staff whose responsibilities fall under the specific functions influencing operations are brought into the planning process, leveraging their knowledge and expertise to bring an analysis and a more data-informed approach. Scenario planning rooted in operational data, both qualitative and quantitative, allows teams to lay out alternative futures and question conventional wisdom in a master planning process.

The owner-driven data approach to scenario planning can lead to somewhat unconventional results. These have the virtue of being surprising, which makes people think. If a company's scenarios are all completely predictable (conventionally good, conventionally bad, and somewhere in the middle), they won't hold value in the face of adversity. It is important to identify all drivers and then determine the ones that are the most important to your facility. The best scenarios are built on a new insight—either something predetermined that others have missed or an unobvious but critical uncertainty.

Scenario Planning - Isolated Normal Vs. Pandemic Scenarios

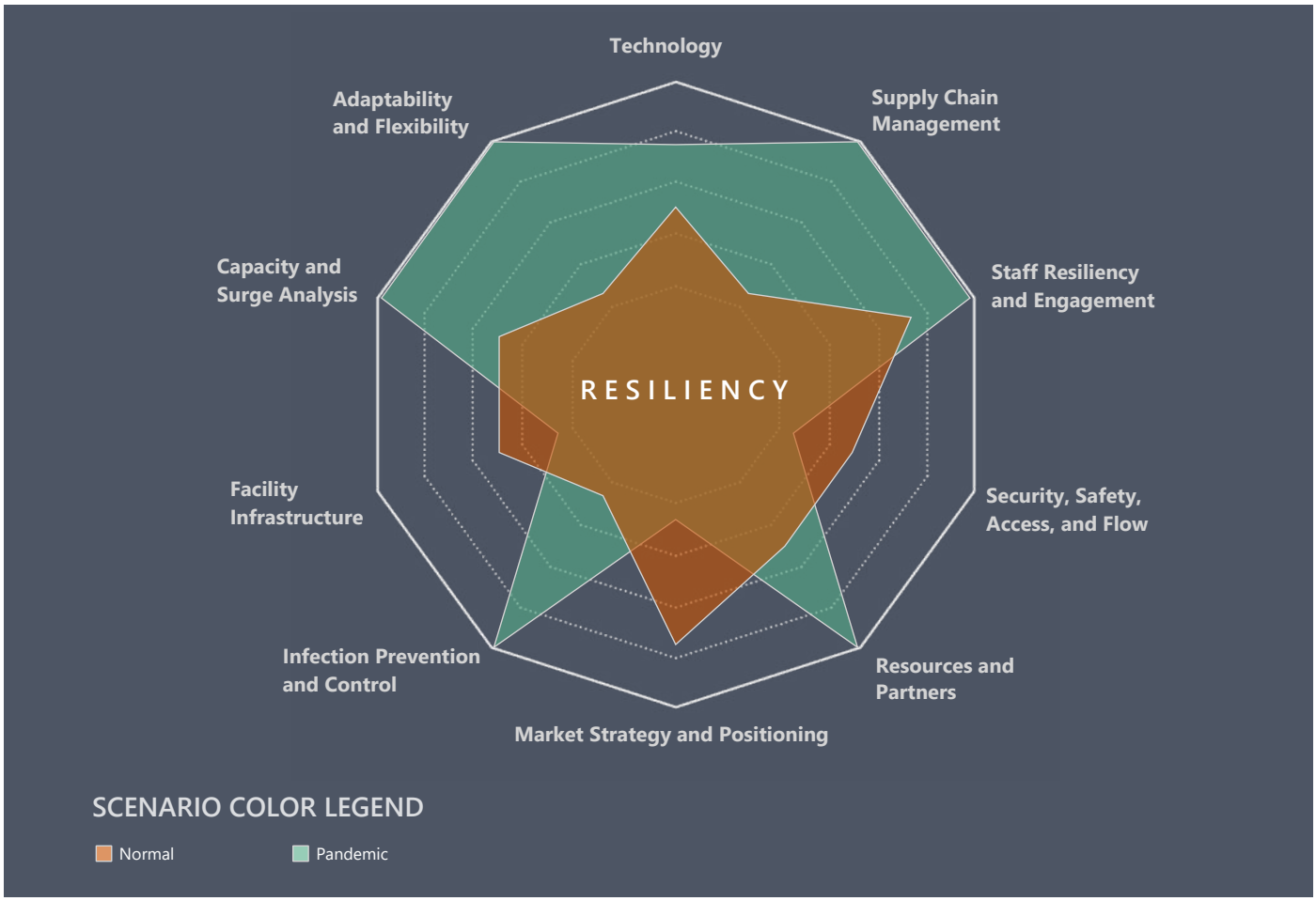

Figure 4

The scenario that is highest in probability (and under the most controlled conditions) becomes the "normal" or baseline for an organization. With such identification comes a degree of certainty attached to it, the alternatives, and the resilience of any strategy to those alternatives.

Mapped out graphically, the data associated with drivers and scenarios provide a visual aid in discussion and analysis (see Figures 3-4). The visual representations spotlight how the various facets of an organization's operations are impacted by the shifting scenarios and how those portions may be forced to pivot from a baseline normal operation. The visual representations also bring into context the relationships between the operational facets and how the ebbs and flows between the scenarios affect the entire enterprise.

As the scenarios are then overlaid to the baseline "normal" scenario, a more data-informed, consensus-driven picture emerges of where organizations should place emphasis in their planning process, which portions of the operations demand some of the most flexibility, and how best the organization can invest in their facilities and operations to resiliently manage through adverse events.

Conclusion

The extreme conditions that were once considered rare and quite unlikely have, in fact, become more and more frequent for a wide variety of reasons, most beyond the control of the health care organization. More than considered an anomaly, their likelihood gives credence to the argument that the viability and need for responsive and accessible clinical services is never more essential than when responding to the unpredictable, "non-normal" scenarios.

Embracing a general mission to serve the respective health care needs of a community and region mandates a broader perspective of operational and facility capabilities under a variety of scenarios. Flexibility, adaptability, surge capacity, security, connectivity, technology, and many other facets of operational and facility planning must become part of the long-range considerations of an organization's resiliency and sustainability to respond effectively during multiple scenarios.

Objectively, master plans have traditionally been static once outlined and shared with an organization. While providing a road map to a vision, the master plan outlines an established course to development with a missing gap to the integrity of the organization's operations. The coronavirus pandemic exposed those gaps, bringing into focus how the traditional master plan has proved to be less useful when viewed through the lens of operational resiliency.

Scenario planning takes the master plan to a new level, helping organizations see their operations at the same time they are viewing their campus and facility needs. A dynamic plan, it goes beyond communicating the vision to create an ongoing dialogue between the parts of the organization that can help it maintain integrity through adversity. The plans are:

- Versatile and multi-faceted, able to provide information and operational strategies under a variety of events and circumstances.
- Continually refined and improved by eliciting dialogue and input from others.
- Open to communication with people and encourages feedback. The fluidity of the plan requires knowledge and input from all levels of the organization to identify foreseeable challenges, mitigating issues before they rise to problems.
- Made up of real time data ensuring goals and targets are on track or signal when interventions or refinements should occur.

Scenario planning helps organizations ask better questions and prepare for the unexpected. The dynamic planning process aids in the necessary pivot that our health care community needs from a master plan. By implementing a scenario planning method into the design process, organizations can maintain their focus on the Triple Aim through both a predictable future projection as well as the unpredictable and shape an organization's future emphasizing its ability to be resilient under the varying circumstances.

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