



# Preparing for the Baby Boomer Boom

**Are Hospitals Ready to Meet the Needs of  
the Largest Demographic Entering the  
Healthcare System?**



# From Beds to Staff: Resource Management Challenges When Caring for Older Patients

## The U.S. population is aging. Fast.

The number of people in America aged 65 and over has grown rapidly since 2010, and they now account for more than 34% of the U.S. population.<sup>1</sup> The median age in the U.S. has also increased to 38.4—the highest it's ever been. In fact, so-called baby boomers are one of the largest population groups in the country, second only to millennials.<sup>2</sup>

Meanwhile, people are living longer. The United States Census found that, by 2060, life expectancy is expected to rise by about 6 years, from 79.7 to 85.6.<sup>3</sup>

While longer lifespans are great, they can pose challenges for hospitals and Integrated Delivery Networks (IDNs), which must plan accordingly to accommodate surges of older patients. These challenges are exacerbated by two extenuating circumstances.

### Lack of Space

Many hospitals simply do not have enough room to house growing numbers of elderly patients. As a result, many facilities are considering expanding or building new hospitals.<sup>4</sup>

But that's challenging, too. Building a hospital has always been costly—even more so when construction takes place in major metropolitan areas. But resource and supply chain constraints have made construction projects even more expensive and extended the time it takes to complete a build.<sup>5</sup> Today, hospitals can take several years to build, which is why administrators attempt to anticipate needs in two to five years. Given extended timelines and costs, it's imperative they get the size of the facility right and not over or underestimate it.



Much of the United States' older population lives in rural areas, which have been hard hit by hospital closures. There have been hundreds of rural hospital foreclosures since 2005—and the numbers continue to increase.<sup>6</sup> The remaining facilities in these areas are becoming stretched even thinner.

## Lack of Staff

Put simply, there may not be enough staff to meet the needs of aging patients. The American Association of Colleges of Nursing estimates that 1 million nurses will retire by 2030.<sup>7</sup> Meanwhile, hundreds of thousands of employees have left the healthcare industry since February 2020.<sup>8</sup>

Exacerbating the situation is the fact that nursing schools have turned down applicants due to the shortage of teachers and sites. According to The Journal of Nursing, “In 2020, 80,000 qualified applicants were turned away because of these constraints. Some health systems are forming partnerships with schools to help alleviate this problem, but it is still early days.”<sup>9</sup>

How will hospitals and IDNs best care for the large influx of patients to come?



**If trends hold, more than 6.5 million individuals will permanently leave their healthcare positions within five years, while only 1.9 million people will step in to take their place<sup>10</sup>—a deficit of 3.2 million workers.**

## The Impact Aging Patients are Having on Hospitals

The average length of stay (ALOS) for people 65 and over is around five days.<sup>11</sup> Longer ALOS costs hospitals more and can cause greater inefficiencies.

However, older adults are more than twice as likely to require hospitalization and more complicated care from cardiologists, endocrinologists, and other specialists.<sup>12</sup>

The average inpatient room rate is estimated to be \$3,199 a day for an individual.<sup>13</sup> That rate suggests extraordinarily high per-patient costs that hospitals must recoup.

# Maximizing Resources Through Proactive Master Planning

Given these challenges, hospitals and IDNs risk not having enough resources to handle all the older patients entering their systems. Without the proper resources, they will not be able to provide the type of care these patients require.

To provide the appropriate amount of care, hospitals and IDNs must accurately plan for a future in which influxes of older patients will be the norm. To meet demand, they must be able to accurately estimate the number of ICU beds they will have available, how many nurses will be required at a given time, and other factors.

Part of the way they do this, particularly over the long-term, is by employing a “master plan” process. Master plans are living documents by which hospitals determine future needs. Hospitals use their master plans to optimize their current spaces, plan their expansions or consider new facility construction projects.

But hospital planning is a 30-year investment with costs that can stretch into the billions. New construction or expansion requires approval from

citizen and local community leaders and an accurate prediction of future patient volumes. In other words, modifying, expanding, or building for the future is a complex endeavor.

As such, hospitals must be able to right-size their capacity and census planning—and not just for the immediate future. Planning must take place weeks, months, and even years in advance. If they can do this, hospitals will be able to predict space and resource requirements and accommodate surges during peak periods (like influenza season), while still accurately capacity planning for the present.

Current processes are insufficient to meet these needs, however. Instead, new technologies and approaches must be considered, allowing hospitals and IDNs to deliver efficient and effective care to their evolving (and aging) community.

**“Baby boomers...are projected to retire later and live longer than previous generations. (They) experience higher rates of obesity, hypertension, high cholesterol, and diabetes than previous generations. These chronic conditions require expensive treatment and care.”<sup>14</sup>**



# Current Patient Flow Processes Won't Solve Census and Staffing Challenges

Preferably, hospitals should be able to optimize staffing levels and calculate the number of beds that will be available in the short, mid, and long terms. Unfortunately, that's difficult to do with current processes:

**Manual census planning** is rife with potential risks, including human error, and is enormously time-consuming. Plus, it is often focused exclusively on short-term census planning—trying to predict which patients will move through the hospital and need services or beds within the next few hours.

**Current methodologies are inadequate.** Monte Carlo simulations and other mathematical algorithm models do not consider all possible interdependencies and the complexities of a typical hospital environment, especially when increasing numbers of systems and data points come into play.

**There's only so much data scientists and nurses can do** during periods of high patient volume. They, along with other staff, will likely find themselves in catch-up mode and struggling to keep pace with demand.

The answer: predictive analytics and digital twins, which hospitals can use to get both real-time information on current census needs and proactively plan future capacity and staffing.

How can hospitals optimize their resources to provide excellent care to older patients who need it the most?





# Predictive Analytics: The Power of Prediction

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Using predictive analytics, hospitals can leverage data to forecast future hospital capacity and census planning needs in a much more accurate and efficient manner than manual methods.

Predictive analytics and what/if scenarios allow for the ability to reference past information from electronic health records, create different levels of impact (i.e., “What if the flu creates a 10% jump in our census? How do we staff accordingly to meet that surge?”), and test out different plans. Hospitals can then plan staffing levels for the most likely case—but also prepare for the worst possible outcomes.

## What are predictive analytics?

Predictive analytics is a form of AI that continually takes raw, historical data and applies it to machine learning algorithms to provide actionable intelligence that can be used for census planning. The more information the system ingests, the smarter it becomes—and the more accurate the recommendations it provides.



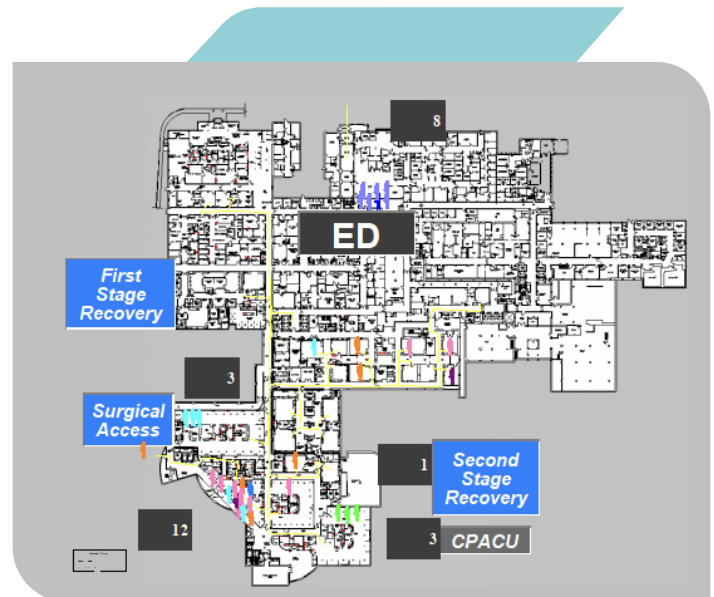
# Digital Twins: Accurately Modeling Hospital Capacity

Predictive analytics can be paired with digital twins to create powerful and accurate insights into both the current and future states of a hospital's census. Think of a digital twin as a replica of the hospital – a virtual environment for data and processes.

## The Power of Twins

By creating a digital twin of a hospital—or even multiple hospitals, as would be the case with a hospital network (Integrated Delivery Network, or IDN)—healthcare providers can get a global view of census and capacity, including details like:

- How many patients are currently in the hospital
- How they're entering and exiting the hospital
- How quickly they're moving through the hospital
- Where they're likely to go next
- What the long-term future needs may be for master planning
- How long they're likely to stay in the hospital
- Predictions on what the census will be in a few hours, a few days, or months ahead
- How different what/if scenarios could impact the hospital



A visual representation of patients as they move through a hospital.

## What is a digital twin?

A digital twin is a virtual replica of a physical object or system—for example, a hospital facility, or the components of that facility and its processes (exam rooms, hospital rooms, and patients). Digital twins can be automatically updated from electronic medical records or other information systems as patients flow into and through the hospital, giving providers near real-time census status views along with future census predictions.

# Digital Twins: Contingency Planning, Weeks and Months Ahead

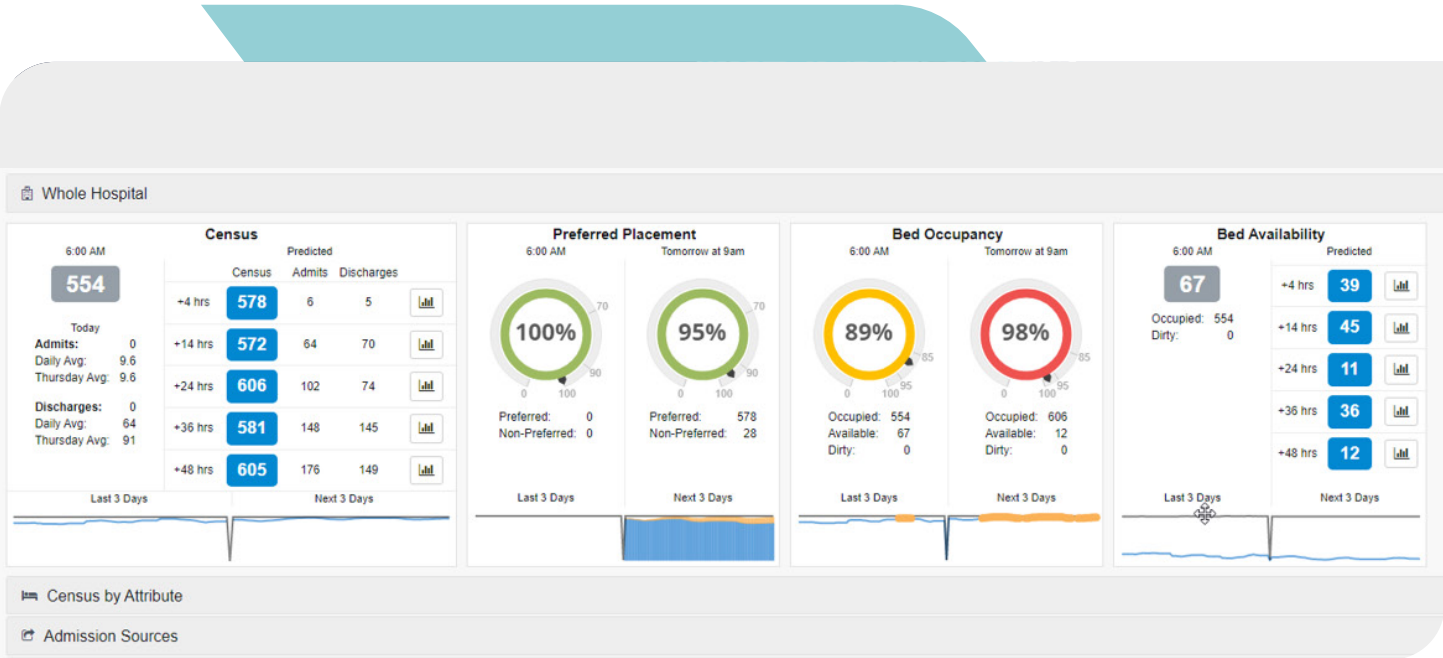
Digital twins can give accurate visual representations of how capacity needs are likely to look in the future through a process of discrete-event simulation (DES). DES is a way to simulate the behavior of a real-life process using data and create predictive models that consider all complexities and interdependencies.

For example, a nurse manager could set a timeframe to look at possible census scenarios from September to February. They can see how their hospital’s census is likely to fluctuate based on the fall and winter seasons when viruses are more likely to be prominent. In the digital twin, they can understand where patients are likely to go and how long they’ll be hospitalized.

Nurse managers can also use the digital twin for what/if scenarios. These allow hospitals to see

potential impacts and determine contingency plans. For instance, hospitals can hire for the most likely scenario, but still be prepared to staff up if the worst were to happen.

Users can adjust the timeframe as needed to look at the short-term (hours to days), mid-term (weeks to months), and long-term (months to years). Whatever the timeframe, they’ll have the power to proactively anticipate future surges and prepare for them accordingly.



An example dashboard showing projected discharges. Note the high bed occupancy flagged in red.



# Proactively Plan for the “Silver Tsunami”

The “silver tsunami” is a term that represents the aging U.S. population. As the term suggests, that population is growing in numbers every day.

Hospitals and IDNs must be ready for the wave, whether it comes today, tomorrow, next week, or next month.

They can be prepared—if they are able to:

- **Proactively plan** out the number of hospital beds, ICU units, and staff needed to accommodate surges
- **Derive insights** from data and glean actionable intelligence—making planning more accurate and census forecast meetings more productive
- **Create what/if scenarios and contingency plans** that will enable them to become more prepared, and efficient and uphold high standards of care
- **Implement a digitally driven process** that allows them to know, with minimal uncertainty, that their scenarios and plans will work as expected
- **Meet the future needs of the community** through a data-driven master plan

A proactive approach based on actual data will result in accurately planning the number of resources needed to treat older patients effectively. It will mean less stress on nurses and fewer and more productive patient bed huddles. Plus, staff will no longer be continuously playing catch-up, and fewer decisions will be based on guesswork.

At the same time, hospitals will gain significant efficiencies. They will save money by being able to accurately plan and map out resource needs in advance and ensure they have the right number of staff and beds to treat their most vulnerable patients.



**Want to learn more about how to proactively predict your hospital's census needs?**

Contact [BigBear.ai](#) today to find out how you can leverage predictive analytics and digital twins to plan for capacity surges due to COVID-19 and the flu.

# Endnotes

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