Hospital Public Interest Review: Evaluation of a Proposal for Expansion of Licensed Bed Capacity at Regions Hospital

August 27, 2018

Hospital Public Interest Review – Regions Hospital

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August 27, 2018

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To the Honorable Chairs and Ranking Members:

Minnesota Statutes, Section 144.552, requires that any hospital seeking to increase its number of licensed beds, or an organization seeking to obtain a hospital license, submit a plan to the Minnesota Department of Health (MDH) for review and assessment as to whether the plan is in the public interest. During the months of November 2017 through February 2018 Regions Hospital submitted information on a proposal to expand licensed bed capacity by 100 beds at their existing hospital campus in Saint Paul, Minnesota.

As you may recall, in the submission of MDH's preliminary findings to the Minnesota Legislature on May 1, 2018, we found the **proposal to add 100 licensed beds to Regions Hospital to not be in the public interest**. As part of our preliminary finding, we communicated that, although we did not review alternative proposals to the one submitted, there might have been aspects of the proposal that could be in the public interest.

The enclosed report represents MDH's final findings from the comprehensive public interest review of the initial proposal from Regions hospital; it does not include analysis of the smaller, 55-bed expansion that the Legislature approved in May 2018. As we expected, the finding from our preliminary findings, that the proposal to add 100 licensed beds to Regions Hospital in Saint Paul, Minnesota is not in the public interest, has not changed with the conclusion of our analysis. Nevertheless, the final report includes additional depth on a number of items that were not highlighted in the preliminary findings:

- An analysis of the proposal's potential impact on hospitals not in the immediate vicinity of Regions Hospital, including their finances and inpatient volume;
- Additional information on emergency department closures and surge capacity;
- The potential impact of new beds on hospital workforce in the Twin Cities metropolitan area;
- More extensive analysis of uncompensated care provided by Regions Hospital; and
- More complete synthesis on the views of the affected parties (public comments).

While the Legislature has already acted on the request for a moratorium exception by Regions Hospital, we wanted to highlight a discussion in the conclusion of the report about potentially unintended consequences of the moratorium law. This discussion, which reflects to some extent on the deliberations in response to MDH's preliminary findings, may be of help should the Legislature wish to give this issue more consideration in the future.

If you have questions or concerns regarding this study, please contact Stefan Gildemeister, the State Health Economist, at 651-201-3554 or stefan.gildemeister@state.mn.us. All materials related to this public interest review, including the public comments, are available online: www.health.state.mn.us/data/economics/moratorium/regions/

Sincerely,

Jan K. Malcolm
Commissioner
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Section 1: Overview of Hospital Public Interest Review Process

Since 1984, Minnesota law has prohibited the construction of new hospitals or expansion of bed capacity at existing hospitals without specific authorization from the Legislature.[1] As originally enacted, the law included specific exceptions to the moratorium on new hospital capacity. More exceptions were added over time, and the statute currently includes 27 exceptions.

In 2004, the Minnesota State Legislature established a procedure for reviewing proposals for exceptions to the hospital moratorium statute.[2] Under this policy, hospitals that seek an exception to the moratorium must submit a plan to the Minnesota Department of Health for the completion of a "public interest review."

The law requires that the Minnesota Department of Health (MDH) review each plan and issue a finding on whether the plan, as proposed, is in the public interest. The statute directs MDH to consider all relevant factors but take into account, at a minimum, five specific factors:

- **Factor 1**: Whether the new hospital or hospital beds are needed to provide timely access to care or access to new or improved services;
- **Factor 2**: The financial impact of the new hospital or hospital beds on existing acute-care hospitals that have emergency departments in the region;
- **Factor 3**: How the new hospital or hospital beds will affect the ability of existing hospitals in the region to maintain existing staff;
- **Factor 4**: The extent to which the new hospital or hospital beds will provide services to nonpaying or low-income patients relative to the level of services provided to these groups by existing hospitals in the region; and
- **Factor 5**: The views of affected parties.

The statute requires the Minnesota Department of Health to complete a public interest review within 90 days of a complete application; it allows for up to six months for a review if there are extenuating circumstances present. Public interest reviews cannot start until necessary application materials are complete. Authority to approve exceptions to the hospital moratorium still rests with the Legislature.

This document and additional information about the proposal under review for an exception to the hospital construction moratorium, as well as documents related to previous reviews by the Department, are available online: (www.health.state.mn.us/data/economics/moratorium/).

[1] Minnesota Statutes, section 144.551.
[2] Minnesota Statutes, section 144.552.

Section 2: Regions Hospital Proposal for an Expansion of Hospital Beds

In November 2017, Regions Hospital submitted initial information to the Minnesota Department of Health (MDH) to conduct a public interest review on their proposal to add 100 licensed hospital beds at an existing facility in Saint Paul. The proposal described how the project would address a perceived growing demand for inpatient care in the Twin Cities East Metro area. In the months following the initial proposal, Regions provided additional information and points of clarification in response to questions MDH raised about the application. On March 1, 2018, MDH received sufficient information to begin a public interest review of the Regions proposal.[3] All information and analyses contained in this report are specific to the initial proposal to add 100 licensed hospital beds at Regions Hospital; this public interest review does not include an analysis of the smaller, 55-bed expansion approved by the Legislature in May 2018

Regions Hospital

Regions Hospital is a 454-bed nonprofit hospital that provides inpatient and outpatient health care services across the spectrum of care. Among its service portfolio, Regions Hospital delivers highly specialized services, including a level 1 adult and pediatric trauma center, and one of two hospital burn programs in Minnesota verified by the American College of Surgeons. The facility also acts as a safety net hospital for for indigent patients – it delivers the largest volume (in dollars) of uncompensated care after Hennepin County Medical Center in Minneapolis – and operates as both a teaching hospital and regional trauma center for the largest populated area of Minnesota (the Twin Cities metro area). In exchange for providing charity care and other community benefits, the hospital receives subsidies by the local, state, and federal government through tax expenditures.[4]

Regions Hospital is part of the vertically integrated health care system, HealthPartners, that operates 90 primary care and physician specialty clinics (including HealthPartners Central Minnesota Clinics, Park Nicollet Clinics, Physicians Neck and Back Clinics, and TRIA Orthopaedics), 22 urgent care centers, 19 dental clinics, a short-term rehabilitation center, and the following six other acute care hospitals:

- Amery Hospital & Clinic in Amery, WI
- Hudson Hospital in Hudson, WI

[3] The proposal and substantiating information is available online: www.health.state.mn.us/data/economics/moratorium/regions/

[4] Nonprofit hospitals such as Regions benefit from six general tax exemptions including property taxes, sales taxes, state and federal income taxes, the ability to borrow at lower rates for bond interest, and the ability of donors to deduct contributions from state and federal taxes.

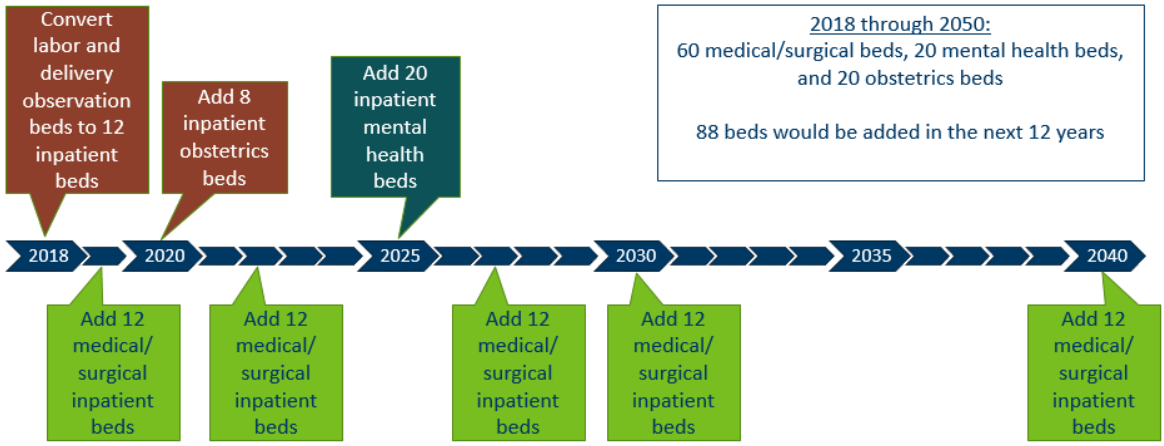
- Lakeview Hospital in Stillwater, MN
- Methodist Hospital in St. Louis Park, MN
- St. Francis Regional Medical Center in Shakopee, MN (partial ownership)
- Westfields Hospital in New Richmond, WI

HealthPartners delivers health insurance services through a nonprofit health maintenance organization (HMO), a third-party administrator, and a for-profit commercial health insurance company.

Project Description

The proposed expansion would add beds to hospital units which offer medical/surgical care, mental health care, and obstetric care. In the proposal, Regions would incrementally add 60 medical/surgical beds, 20 mental health beds, and 20 obstetrics beds (including 3 bassinets) between 2018 and 2040 as shown in Figure 1 below. Most of the beds, 88 of 100, would be added in the next 12 years (by 2030) and are intended to serve the current primary service area including Saint Paul, the surrounding suburban areas, and parts of western Wisconsin.

Figure 1: Proposed Timeline for Regions Hospital Bed Expansion



The Regions proposal included demand forecasts through 2050 based on two modeling approaches: one was produced by Regions Hospital, the second was commissioned from Wipfli Consulting. Both models separately estimate bed need for medical/surgical, mental health, and obstetric care, generally by building on age-specific rates of hospitalizations and expected growth in populations.

The models target an average occupancy rate for medical/surgical beds of 85 percent and for mental health of 95 percent. They assume that the market share for Regions of the East Metro patient population would remain unchanged. Other than through applying a “discount factor” to the growth assumptions, neither model attempts to explicitly account for the potential effect of changes in practice patterns, technology, or medical science on rates of hospitalization.

Regions Model 1 applies population projections from 2015 through 2050 by age to an estimate of utilization to project mental health and medical/surgical bed need.

- The model reduces utilization rates by 0.5 percent (half percent) discount every five years.[5]
- The model uses similar assumptions for mental health, but applies a cap at 20 beds, as that is the physical space available.
- For obstetrics beds, Regions stated that the request was based on improving patient flow, and providing a level of care (couplet care) that would provide better outcomes for mother and babies.

Regions Model 2 statistically models the relationship between population growth and utilization to estimate bed need separately for medical/surgical, mental health, and obstetrics.

The same population projections as the first model (through 2050) are used.
Utilization is estimated by observed inpatient discharges and inpatient days per 1,000 between 2012 and 2016.
This model also includes rehabilitation beds, as well as observation beds that do not require a license.

As shown in Table 1, both models project similar need through 2025, then diverge, with the second model projecting more limited bed need through 2040. The second model suggests limited need for obstetrics beds.

Table 1: Regions Hospital's Forecasted Shortage of Medical/Surgical and Mental Health Beds

Year	2025	2030	2035	2040	2045	2050
Regions Model 1	17	41	57	67	76	76
Regions Model 2	17	32	46	59	71	82

Source: Regions Hospital Proposal to Add 100 Licensed Beds. For Regions Model 2, obstetrics beds are not included in the table – the projected need for obstetrics beds is 1 in 2030, 2 in 2035, 3 in 2045 and 4 in 2050.

Materials supplied to MDH indicated that Regions Hospital has been using more beds to provide care for a growing patient population in recent years.[6] For example, the hospital went from operating 422 beds in 2014 to using all 454 licensed beds in early 2018. This growing volume of inpatient care caused the emergency department to close to new ambulance arrivals on 146 occasions and not accept new mental health patients on 237 occasions in 2017. There was also very high occupancy in medical/surgical units of the hospital, placing further strain on

[5] This model assumes that hospitalization may decrease, but the length of stay will increase, leading to a very limited reduction in bed days.

[6] All application materials can be found on the following Minnesota Department of Health website: http://www.health.state.mn.us/data/economics/moratorium/regions/index.html

patients waiting in the emergency department to be admitted. These access restrictions likely caused delays in patients getting from the emergency department to inpatient beds, caused patients to seek care at another hospital, or may have caused patients to postpone care.

In addition to relieving pressure on limited inpatient capacity, Regions Hospital is seeking to expand their licensed bed capacity to change their obstetrical care delivery model. This would take the form of adding a very small number of beds for expected population growth, new inpatient “couplet” rooms where infants needing inpatient-level care would stay with mothers, and converting observation beds used for labor and delivery to inpatient beds that would not add to overall capacity.

Section 3: Evaluation of the Proposal

MDH evaluated the Regions proposal to add 100 hospital beds in Saint Paul by focusing primarily on the five factors specified by Minnesota Statutes, section 144.552 and listed on page 6. In addition, we considered the context of the current inpatient hospital environment in the East Metro area of the Twin Cities, and the potential effects this proposal may have on the cost of health care.

Factor 1: Is there is a need for new hospital beds to provide timely access to care or new or improved services?

In considering the proposal's impact on access to inpatient hospital care for the people of Minnesota, MDH reached the following conclusions:

1. The forecast of inpatient bed need would benefit from employing a shorter time horizon of five to ten years. This would help limit the impact of considerable uncertainty about long-term trends in inpatient hospital care;
2. Other hospitals in the service area have considerable bed capacity available to address surging growth in inpatient care. This unused capacity takes the form of available beds operated at lower occupancy rates and unused licensed bed capacity, a portion of which can be brought online without major modifications; and
3. While 100 beds appear disproportionate relative to MDH's model result for bed capacity needs at Regions Hospital, there are existing operational challenges that a smaller number of inpatient beds could help resolve.

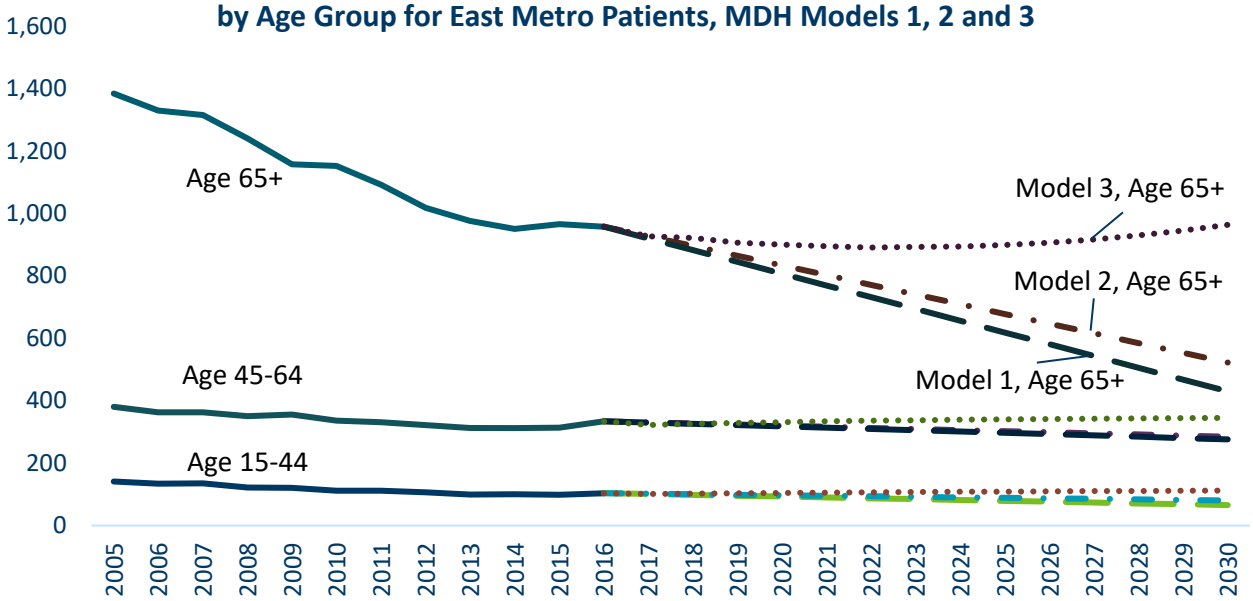
Projected Future Need for Inpatient Hospital Beds

Inpatient hospital bed need is impacted by typical input factors such as change in population demographics, the broader economic environment and the prevalence of chronic conditions. Although like all projections modeled bed need would be associated with uncertainty, these factors are reasonably easy to predict by drawing on historical data.

However, the impact of other factors, like variations in clinical practice patterns; adjustments in care delivery induced by technology, including pharmacological treatments; and changes brought on by evolution in payment mechanisms and cultural norms, are much more difficult to predict and subject to greater uncertainty. To reduce the potential for error, hospital expansion projects typically constrain their forecasts to a five to 10-year horizon. Our own analysis, in which we modeled three different scenarios for future bed needs in the East Metro area, shows that even shorter-term models are highly sensitive to the choice of assumptions and likely imprecise.

For example, MDH ran three projection models for the East Metro region of the Twin Cities Metropolitan Area,[7] with different assumptions for inpatient hospital utilization for specific age groups.[8] Small changes in how we assumed practice patterns would change – expressed in changes in utilization rates –led to large differences in bed need in each year beyond the initial base year, and none of these models account for external factors with the potential to have downward impacts on inpatient bed need, such as changes in the economy, in payment policies, and anticipated effects of technology (Figure 2).

Figure 2: Historical and Projected Medical/Surgical Patient Days per 1,000 by Age Group for East Metro Patients, MDH Models 1, 2 and 3



Source: MDH/Health Economics Program analysis of hospital discharge data and data from the Minnesota State Demographic Center.

Two of the models developed by MDH suggest only very limited need for additional medical/surgical capacity (two beds) by 2027 at a target occupancy rate of 80 percent, five percentage points lower than the 85 percent target applied by Regions.[9] The third model, which

[7] Hospitals included in the East Metro are Woodwinds Health Campus, Lakeview Hospital, Fairview Ridges Hospital, United Hospital, St. Joseph's Hospital, St. John's Hospital, Regions Hospital, and University of Minnesota Medical Center – Fairview.

[8] Model 1 assumes average annual change of inpatient days per 1,000 people derived from the previous 10 years. Model 2 uses a median rate of change of inpatient days per 1,000 people in the previous 10 years. Model 3 is a historical time-series regression model that uses a particular statistical technique to account for the assumption that historically observed trajectories of reductions in hospital use will not continue indefinitely.

[9] Literature suggests target occupancy for medical/surgical beds should be between 80 and 85 to allow for adequate patient flow; MDH chose the lower bound for our two models to be more conservative in our approach.

we consider the weakest for methodological reasons,[10] uses time series regression to constrain historical assumptions about contraction in utilization; it projects growth in demand requiring the addition of 54 medical/surgical and mental health beds[11] to achieve 85 percent occupancy by 2027. The two separate models commissioned by Regions hospital forecast a need for between 32 and 41 medical/surgical and mental health beds by 2030, which for the nearer term falls within the range of bed need described by MDH's models.

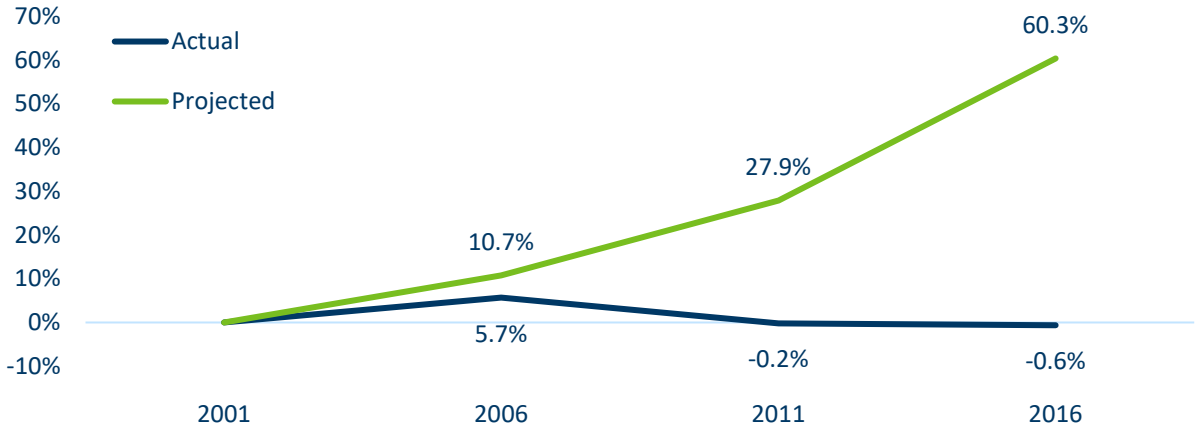
More importantly, by focusing primarily on demographic trends (population growth) as a driver for bed need (with small adjustments for the potential that rates of use would decline), the proposal likely significantly overstates future bed need. As a face-validity test of the assumptions in the Regions Hospital proposal, we applied the assumption from the proposal about bed need for people 65 years and older, the population with the highest rates of growth and hospitalization, retroactively. For this, we projected population growth from 2001 and age-based rates of hospitalization discounted at 0.5 percent every five years to estimate expected 2016 bed need.

As Figure 3 shows, the projected bed days based on the assumptions in the Regions Hospital proposal far outpaced actual medical/surgical bed days for people over 65 (by about 60 percent). Looking across all types of hospitalizations and ages, projections with these assumptions would have suggested a need for more beds across the East Metro, when available beds actually fell during this period (by 37 beds). This demonstrates the complexity of using current utilization to project future utilization – while utilization rates remained similar through five years, they began to diverge sharply by 10 years, as they were unable to predict a recession and the expansion of outpatient care.

[10] Precision of time series regression increases with the volume of available historical data. Our simulation had only twelve years of historical data on hospital be days available, which substantially limits the precision of the projections.

[11] This assumes a maximum of 20 additional mental health beds as stipulated in the Regions application materials.

Figure 3: Cumulative increase in Medical/Surgical bed days per 100,000 population 65+ in East Metro



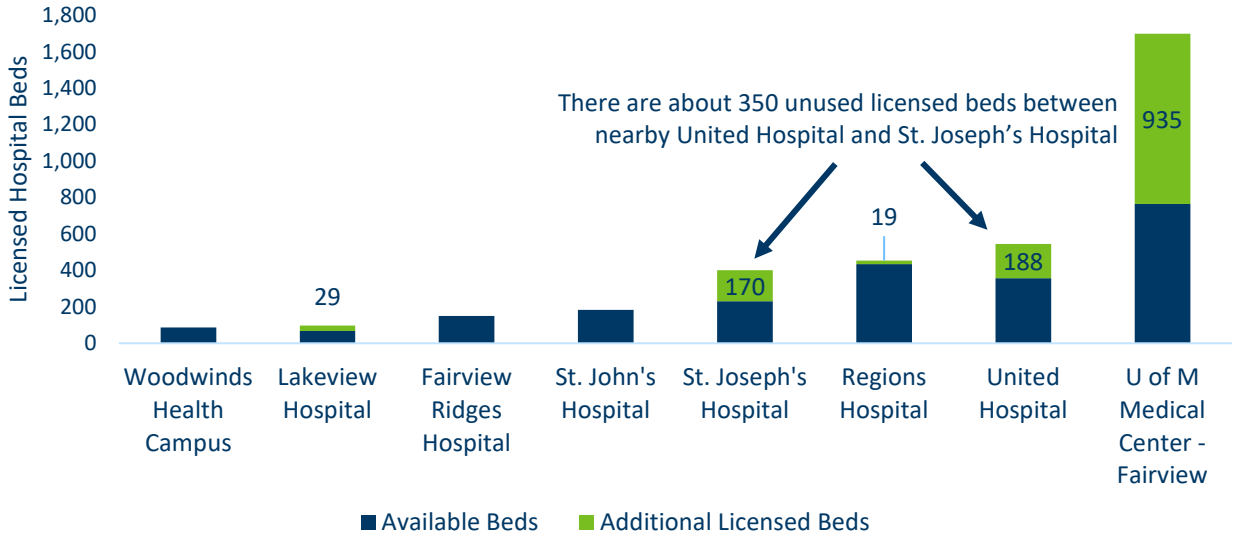
Source: MDH/Health Economics Program analysis of hospital discharge data and data from the US Census Bureau.

Additional Bed Capacity at Nearby Hospitals

Of the eight hospitals that predominantly serve patients in the East Metro of the Twin Cities, five hospitals (including Regions Hospital) either had no or only limited unused hospital bed licenses in 2016 (Figure 4). The other three hospitals included Fairview Ridges Hospital in Burnsville, St. John's Hospital in Maplewood, and Woodwinds Health Campus in Woodbury.

There were four hospitals that had significant additional bed licenses not in use. These include Lakeview Hospital in Stillwater (29 beds), St. Joseph's Hospital (170 beds), United Hospital (188 beds), and the University of Minnesota Medical Center (935 beds). Combined, St. Joseph's Hospital and United Hospital, the two facilities with the closest proximity to Regions Hospital (about two miles), had about 350 unused licensed hospital beds.

Figure 4: Available and Licensed Beds Not in Service at Hospitals Serving East Metro Patients (2016)



Source: MDH/Health Economics Program analysis of Hospital Annual Reports.

To determine how much of the "excess capacity" identified in Figure 4 is realistically available within the physical constraints of the facilities, MDH reached out to the four hospitals with excess licensed beds to determine what portion of the beds could be brought online under different scenarios.[12]

Between United Hospital and St. Joseph's Hospital, an additional 69 beds could be available on short notice without significant facility modification; an additional 124 beds could become operational with minor renovations at these two facilities along with Lakeview hospital.[13] This capacity does not represent the resources available in response to a critical incident that generates a large number of casualties with immediate inpatient needs. Under those circumstances, Minnesota's emergency response system and its coalition of regional partners would govern capacity decisions, including surge of inpatient care services.[14]

[12] Correspondence with hospitals is available online: www.health.state.mn.us/data/economics/moratorium/regions/

[13] An example of "short notice without significant modifications" would be converting an observation unit to an inpatient unit, or opening up currently closed rooms, within 24 to 48 hours. An example if minor renovations would include converting current single rooms to double rooms, or refurbishing space not currently used for inpatient care.

[14] For more information on the medical surge system in Minnesota, please visit the MDH website here: http://www.health.state.mn.us/communities/ep/surge/index.html.

Capacity Constraints at Regions Hospital

MDH found evidence of capacity constraints in medical/surgical areas at Regions Hospital, with occupancy regularly exceeding 85 percent and, at times, 90 percent. High occupancy rates can create operational challenges and have the potential to negatively affect health outcomes. In practical terms, high occupancy can result in patients being turned away or emergency department gridlock.[15,16,17,18]

One likely indicator of capacity contraints is the observed increase in the number of ambulance diversions in the East Metro. Over half of the increase in ambulance diversions between 2013 and 2017 (61.2 percent) was due to hospitals being closed for mental health services, which was not specifically reported until 2015.[19] This means, at that point hospitals did not have inpatient beds to accommodate the needs of mental health patients. The remaining increase was primarily due to hospitals' emergency departments being closed (rather than obstetrics). Most of the increase in non-mental health diversions occurred in 2017, and is partially accounted for by the severe flu season; a similar spike was seen in 2015, when there was also a severe flu season.

Prior to 2015, no ambulance diversions were noted for mental health care in the East Metro, so we are unable to determine to what extent closures were driven by mental health services prior to this time. By 2016 and 2017, nearly two in five ambulance diversions were for mental health.[20,21] Regions Hospital had 69.9 percent of ambulance closures that included mental health in 2016, with 59.8 percent in 2017; the issue of capacity constraints for mental health was also present in data provided by Regions Hospital, which indicate the majority of requests for beds they had to turn away (73.3 percent) were for mental health beds in 2017.

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[15] Boyle, J., Zeitz, K., Hoffman, R., Khanna, S., & Beltrame, J. (2014). Probability of severe adverse events as a function of hospital occupancy. *IEEE Journal of Biomedical and Health Informatics*, 18(1), 15-20.

[16] Schilling, P. L., Campbell Jr, D. A., Englesbe, M. J., & Davis, M. M. (2010). A comparison of in-hospital mortality risk conferred by high hospital occupancy, differences in nurse staffing levels, weekend admission, and seasonal influenza. *Medical Care*, 48(3), 224-232.

[17] McManus, M. L., Long, M. C., Cooper, A., & Litvak, E. (2004). Queuing theory accurately models the need for critical care resources. *Anesthesiology: The Journal of the American Society of Anesthesiologists*, 100(5), 1271-1276.

[18] Whelan, L., Burns, B., Brantley, M., Haas, T., Arthur, A. O., & Thomas, S. H. (2014). Mathematical modeling of the impact of hospital occupancy: When do dwindling hospital beds cause ED gridlock? *Advances in Emergency Medicine*.

[19] MDH/Health Economics Program Analysis of 2013 to 2015 MNTrac ambulance diversion data.

[20] Mental health was not reported as an ambulance closure reason prior to 2015.

[21] MDH/Health Economics Program analysis of MNTrac ambulance diversion data for 2017.

As noted in a report of the recent Governor's Task Force on Mental Health, the availability of these beds is often insufficient across the community. Although the level of inpatient mental health beds may contribute to this at times, diversions and waits for hospital patients are mostly an outcome of recognized system failures in the overall mental health system in Minnesota.[22] Compounding this is a growing number of pretrial jail detainees that have been court-ordered into state operated facilities such as the Anoka Metro Regional Treatment Center, limiting the beds available at that facility and placing further strain on all hospitals that provide inpatient mental health services across the state; the timeline for this change mirrors the increased ambulance diversions in the East Metro for mental health.

At this point, it is not clear to what extent East Metro area hospitals have established relationships or business models that would allow existing capacity constraints at one facility to be *fully* offset by another one. However, hospitals across Minnesota are part of an emergency response system that can respond to a major health outbreak or casualty event, to ensure that all patients are able to receive appropriate care. The MDH Center for Emergency Preparedness and Response works with hospitals throughout the state through eight regional health care coalitions to plan for incidents that may require medical surge capacity of inpatient care.[23]

Factor 2: The financial impact of the new beds on existing hospitals with emergency departments

In considering the proposal's financial impact on existing Minnesota hospitals, particularly those with emergency departments (independent of their trauma designation), MDH reached the following conclusions:

1. There has been a shift in market share of profitable inpatient hospital services such as major operating room procedures to Regions Hospital, and emerging trends in health insurance and payment may further influence flow of patient volume.
2. Certain hospitals located in close proximity to Regions Hospital are more susceptible to financial pressure from the proposed inpatient expansion.
3. The large expansion at Regions Hospital could draw patients from further outside of the metro area given HealthPartners' clinical network.

[22] See Governor's Task Force on Mental Health—Final Report 2016. Retrieved from https://mn.gov/dhs/mental-health-tf/report/

[23] For more information on the medical surge system in Minnesota, please visit the MDH website here: http://www.health.state.mn.us/communities/ep/surge/index.html.

Shift in Market Share to Regions Hospital

The financial success of hospitals is generally determined by their ability to generate enough revenue to cover fixed costs (building and equipment), fund variable costs (staffing, utilities) and produce a profit (revenue in excess of expenses). In the current payment environment, not all services produce similar levels of profitability, even when delivered at an average level of efficiency. Further, profitability for the same service may differ across payers, even across private payers, as analyses on the variation of prices within and across facilities demonstrate.[24] As such, it may be as important to understand the financial impact resulting from changes in the volume of inpatient care, as well as in service mix. Our analysis suggests the proposal has the potential to affect both mix of services across facilities over time, as well as individual hospital market share.

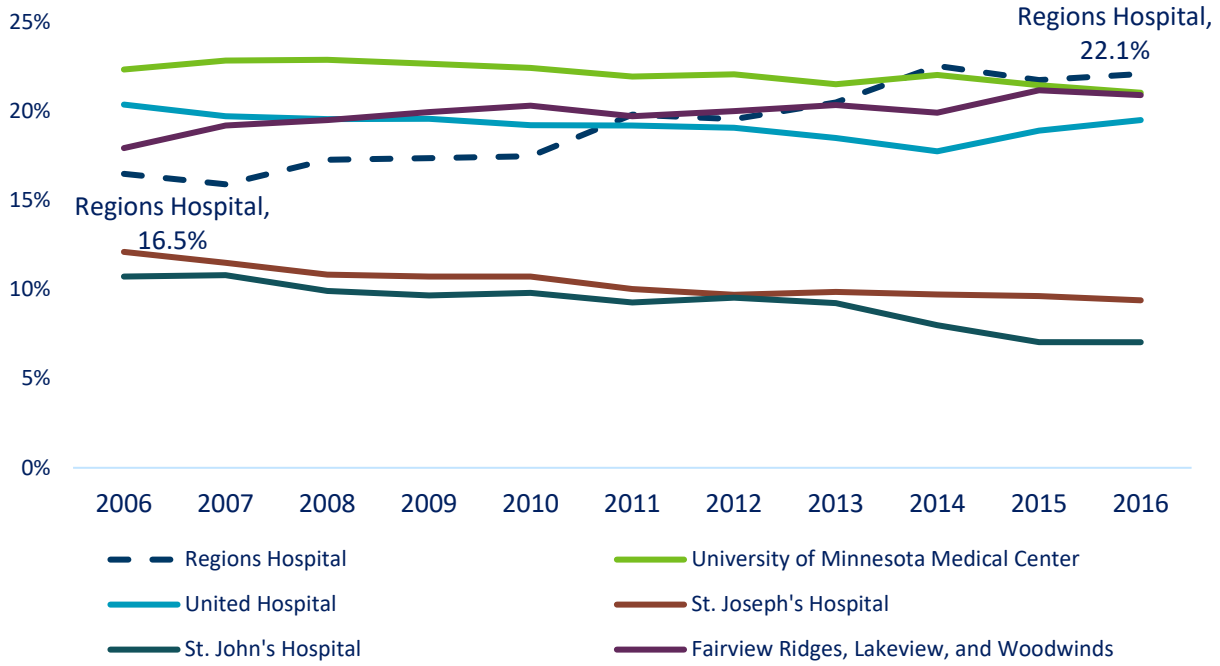
For example, data over the past ten years suggest that Regions Hospital has been gradually gaining market share of inpatient hospital stays with a major operating room procedure (increase of 5.6 percent), as shown in Figure 5.[25] These procedures are more likely to be delivered to patients with commercial insurance, and also generally result in higher average reimbursement per stay, compared to admissions without a major procedure ($18,500 vs. $7,900).[26] The proposal indicates Regions Hospital is expecting to further strengthen success in the area of delivering specialty care procedures by making investments in cardiac and neurology care. Such commercial success at Regions Hospital has the potential to result in further shifts of the share of admissions with major procedures from other East Metro facilities.

[24] MDH/Health Economics Program, "Commercial Case Price Variation among High-Volume Inpatient Treatments in Minnesota Hospitals, July 2014 – June 2015." Data Brief, January 2018

[25] MDH analysis of hospital discharge data from the Minnesota Hospital Association using methods found in McDermott, K. W., Freeman, W. J., & Elixhauser, A. (2017). Overview of Operating Room Procedures During Inpatient Stays in US Hospitals, 2014: Statistical Brief #233.

[26] Ibid. McDermott, K. W., Freeman, W. J., & Elixhauser, A. (2017).

Figure 5: Share of Discharges with Major Operating Room Procedures for Select Hospitals, 2006 to 2016



Source: MDH/Health Economics Program analysis of hospital discharge data

Regarding the trend in the overall market share of inpatient care in the East Metro area, there are a number of factors to consider. HealthPartners' health insurance functions have gained market share in the fully insured market over the past ten years. Between 2006 and 2016, HealthPartners, Inc. (a Health Maintenance Organization, HMO) and HealthPartners Insurance Company have grown their combined market share from 25.5 percent of the fully insured commercial market to 30.6 percent of the fully insured commercial market.[27,28]

By itself, the enrollment growth in the HealthPartners' insurance functions would not shift market share to HealthPartners owned providers, including Regions Hospital. However, the growing trend toward limiting health care costs through narrowing or targeting provider

[27] Market share based on fully insured premiums collected. Available data may not appropriately correct for shared policy-holders across both insurance entities. As such the marketshare data may be overstated at a point-in-time; however, that potential bias is likely not changing materially over time and should therefore not affect observations about underlying trends. At this point, reliable data on self-insured individuals is not available.

[28] MDH, Health Economics Program also analyzed Health Maintenance Organization (HMO) enrollment in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington counties for 2016 from Minnesota Supplement 6 and found that HealthPartners, Inc. held approximately 20 percent of the Medicare and Medicaid market among HMOs.

networks[29] has the potential to do so, and would be driven by microeconomic considerations as well as other factors. This could take the form of active steering through network design, as well as more passive selection of inpatient providers driven by where network clinicians have referral rights. We are not aware of any comprehensive data through which to assess whether the hypothetical potential for steering in vertically integrated systems is in fact materializing. Because of that, we are not actively considering this potential dynamic as a factor in our review.[30]

Potential Financial Impact on Nearby Hospitals

There are two hospitals, St. Joseph's Hospital and United Hospital, that would be most affected by the proposed 100-bed hospital expansion and the resulting potential for overcapacity and a redistribution of service line mix across facilities. Together, these two hospitals and Regions Hospital rely to a large extent on delivering inpatient care to patients from the immediate geographic area. For example, more than half of medical/surgical hospital stays (51.1 percent) at Regions Hospital from 2012 through 2016 were from the primary service area ZIP codes provided in application materials. United Hospital also had a similar proportion of hospital stays (51 percent) from these same ZIP codes during the same time period, while St. Joseph's Hospital's proportion of inpatient stays from these ZIP codes was even larger (64 percent).[31]

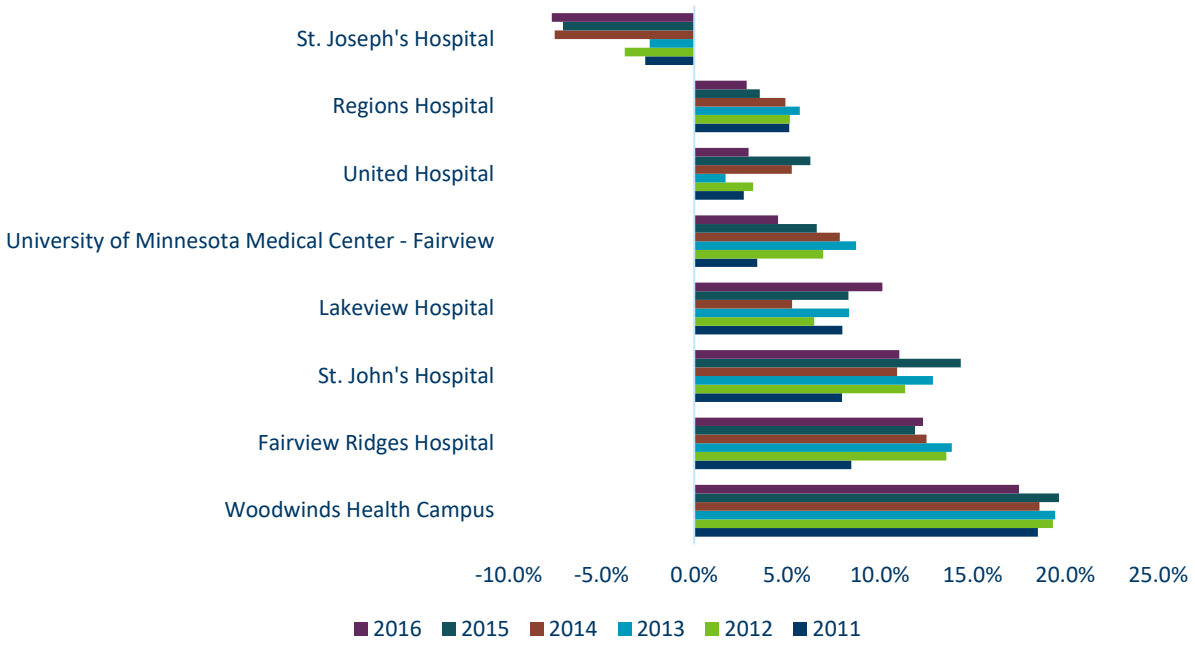
The financial exposure to the proposal could take different forms for the two hospitals most likely affected because of the difference in their current financial performance and the mix of service lines. Figure 6 shows hospital operating margins for the most recent five years for the eight hospitals that predominantly serve the East Metro area. St. Joseph's Hospital and United Hospital consistently had the lowest operating margin among this group of hospitals; the margins of Regions Hospital were at the lower end of the distribution. It is particularly notable that St. Joseph's has had negative operating margins for five years in a row. This makes the facility particularly vulnerable to shifts in the East Metro market, even though the acquisition of the hospital as part of the HealthEast Fairview merger, which was finalized on June 1, 2017, may help improve its financial performance.

[29] These may take the form of Accountable Care Organizations or value-based payment systems under which providers enter into risk-based total cost of care contracts.

[30] As part of the preliminary findings, MDH cited an analysis of small group and individual market networks which looked at which of three hospitals (Regions, United, and St. Josephs) were included. Our initial analysis concluded multiple HealthPartners networks only provided access to Regions hospital. This was incorrect; subsequent results indicate that these networks included both Regions and St. Joseph's Hospitals. This analysis is not included in the final version of this report.

[31] MDH/Health Economics Program analysis of hospital discharge data.

Figure 6: Hospital Operating Margins for Select Hospitals, 2011 to 2016



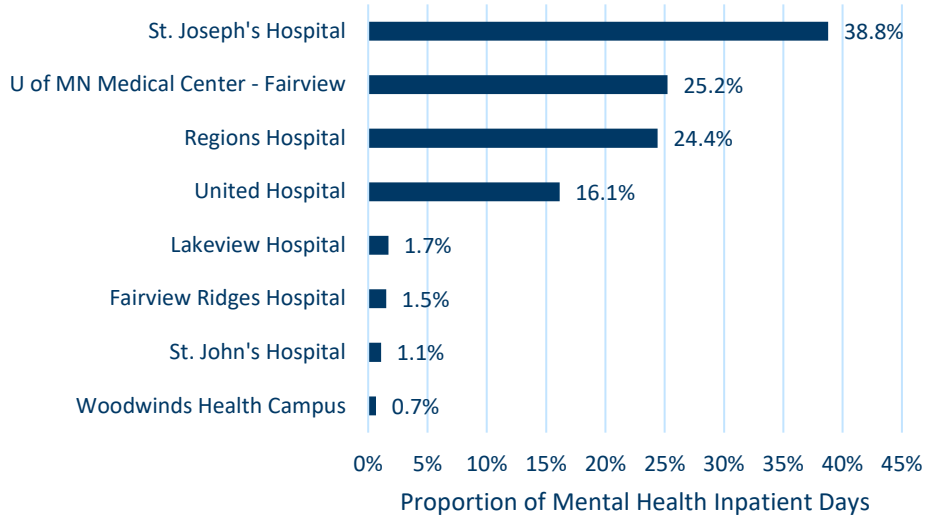
Source: MDH/Health Economics Program analysis of Hospital Annual Reports

Further, St. Joseph's relatively sizable commitment to delivering lower-profitability mental health services[32] makes it somewhat more vulnerable to changes in its share of higher-profitability admissions for procedures or the need to compete in a market with excess capacity. Even before the expansion of mental health capacity at St. Joseph's Hospital in 2017, from 78 to 105 beds, mental health bed days made up a larger portion of that facility's overall inpatient days than for their counterparts in the area, as illustrated in Figure 7. In 2016, mental health days at St. Josephs accounted for 38.8 percent of overall patient days. For the next three facilities with a large proportion of mental health bed days, the ratio was between 25.2 percent and 16.1 percent.

The relationship between lower and higher-profitability services likely has tipped further towards the former with the noted increase in mental health inpatients in 2017. At the same time St. Joseph's Hospital vulnerability to changes in patient mix has likely increased further.

[32] Mental health days at St. Joseph's Hospital accounted for 38.8 percent of total days, but only 22.0 percent of revenue.

Figure 7: Inpatient Mental Health Days as a Proportion of Total Patient Days, 2016



Source: MDH/Health Economics Program analysis of Hospital Annual Reports. 'Mental health' also include chemical dependency services.

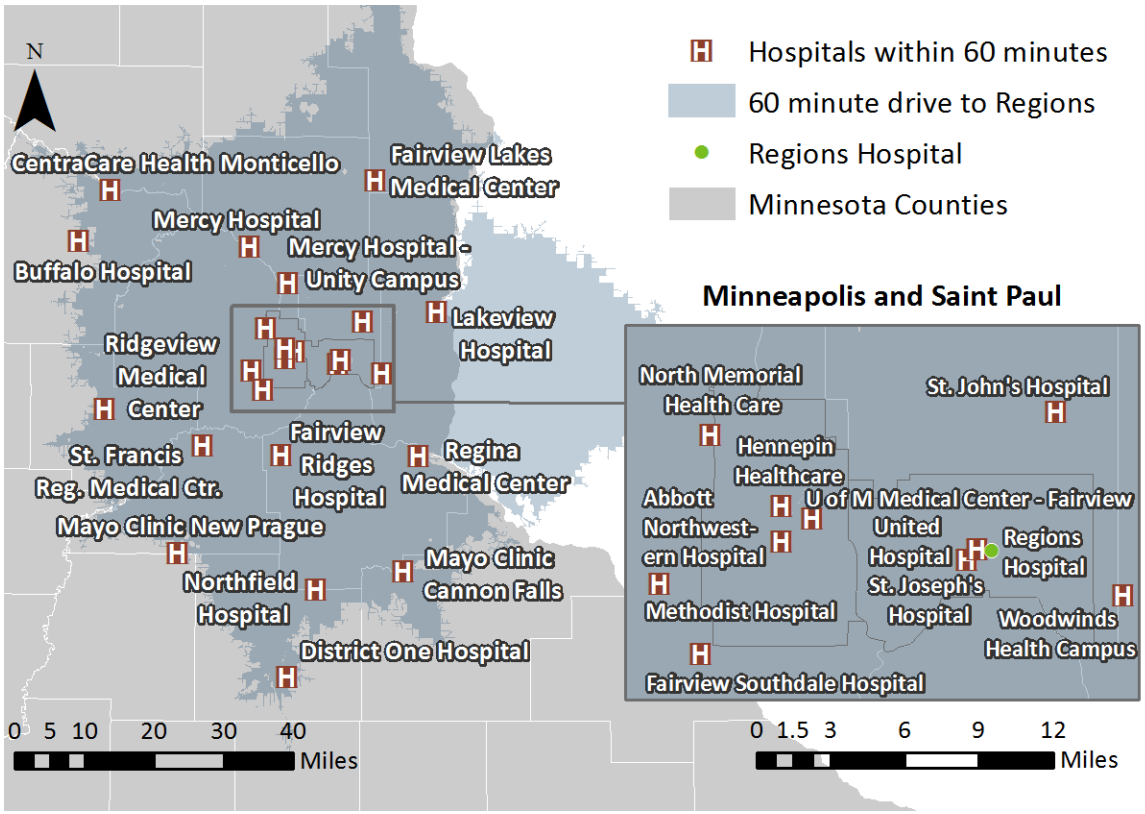
Potential Financial Impact on Hospitals Outside of the East Metro Area

While the proposed 100-bed expansion at Regions Hospital would likely most impact the two Saint Paul hospitals that primarily serve the East Metro area, there are a total of 23 hospitals within a one-hour drive of Regions Hospital (see Figure 8) that could experience an impact. These facilities serve areas of the state (Dakota, Ramsey, and Washington County) from which Regions Hospital currently derives about 14 percent of admissions – more than two-thirds (67 percent) of hospital patient days at Regions Hospital were from the East Metro; another 16 percent of hospital admissions at Regions were from Wisconsin.[33]

Analysis of historical trends show that Regions Hospital's share of inpatient volume beyond the eight hospitals serving the East Metro has increased over the past 10 years. In 2006, 1.8 percent of hospital patient days for Minnesota residents outside the East Metro took place at Regions and 83.4 percent took place at hospitals within an hour of Regions. Ten years later, Regions Hospital held 2.1 percent of the market. The proposed 100-bed expansion at Regions Hospital would likely add to a shift in market share, yet the individual impact on non-east metro hospitals within an hour of Regions, as shown in Appendix C, should be modest, given the limited magnitude of the current exposure and historical shift in market share.

[33] About 2 percent were from other states outside of Minnesota or from an unknown origin. All analyses mentioned here are for medical/surgical patients only.

Figure 8: Hospitals Within a 60-minute Drive to Regions Hospital



Source: MDH/Health Economics Program geospatial analysis using ArcGIS.

Factor 3: The staffing impact of the proposal on existing hospitals with emergency departments

The addition of the proposed 100 licensed beds at Regions Hospital would result in adding approximately 940 full-time-equivalent (FTE) employees at the facility, with positions added over the course of implementation. According to the plan supplied by Regions, 60 percent of the additional staff would be registered nurses, nursing assistants, or other technicians; an additional 10 percent would be professionals, including physician assistants, physical therapists and pharmacists, and other contracted professional medical staff. The remaining FTEs would include management, clerical, administrative and service staff such as dietary staff and housekeeping.

In their application, Regions Hospital expressed no concern about their ability to attract and retain the employees necessary to fully staff the new beds. However, the proposal also did not include specific detail (e.g., a staffing plan) about the strategy the facility would be using to attract or retain new staff. At the same time, the comments received from other hospitals on the proposal did not indicate any concerns about how the new beds would impact their

staffing; rather, the focus was on the magnitude of the project and its overall impact, not on the shifts in staffing.

The evidence from empirical information on the health care workforce appears somewhat inconclusive:

The vacancy rates for Registered Nurses, for both the Twin Cities and the state as a whole, were slightly below the statewide average vacancy rates (last quarter of 2017).
The vacancy rate, however, is higher than previous years.[34]
There is somewhat of a maldistribution of nurses in the Twin Cities metropolitan area compared to the state overall, as judged by the volume of admissions and the population. For example, about 55 percent of the Minnesota population resides in the Twin Cities metropolitan area, while registered nurses working in this area account for 52 percent of all nurses.[35]
Further, admissions to Twin Cities metropolitan area hospitals account for 60 percent of all Minnesota admissions, 12 percentage points above the share of nurses working here.

Factor 4: The extent to which the new hospital beds will provide services to non-paying or low-income patients

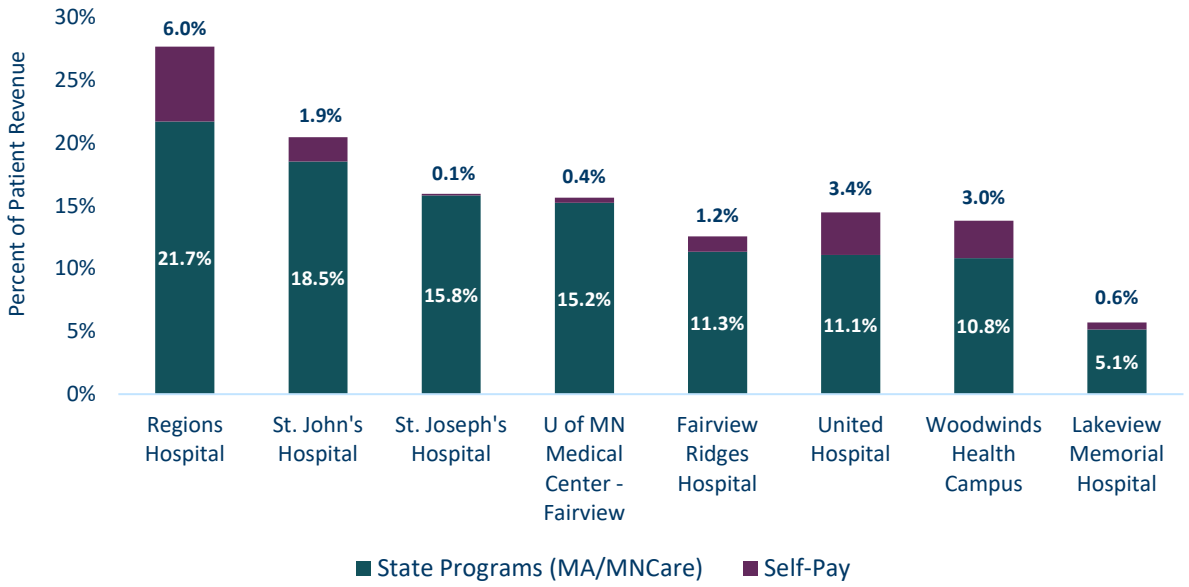
Regions Hospital acts as the Ramsey County safety-net hospital. While Regions Hospital no longer receives any direct funding from the county, part of their charge is to serve the full population of the county and deliver services as a Level 1 Trauma Center. In that role, Regions Hospital has provided substantial services to both non-paying and low-income patients.

For example, as shown in Figure 9, about 28 percent of 2016 revenues at Regions Hospital came from either self-pay patients, that is patients who did not have an insurance payer, or from a public payer on behalf of enrollees in Minnesota health care programs. This is higher than other hospitals serving East Metro patients.

[34] Vacancy data has increased for all occupations as the economy has improved. As of the fourth quarter of 2017, the statewide vacancy rate was 4.2 percent for all jobs, and 4.0 percent for registered nurses (RNs). Vacancy data retrieved May 18, 2018 from https://mn.gov/deed/data/data-tools/job-vacancy/.

[35] Minnesota Department of Health (MDH) geocoding and analysis of February, 2017 Minnesota Board of Nursing mailing address data. Percentages based on 82,951 valid Minnesota addresses.

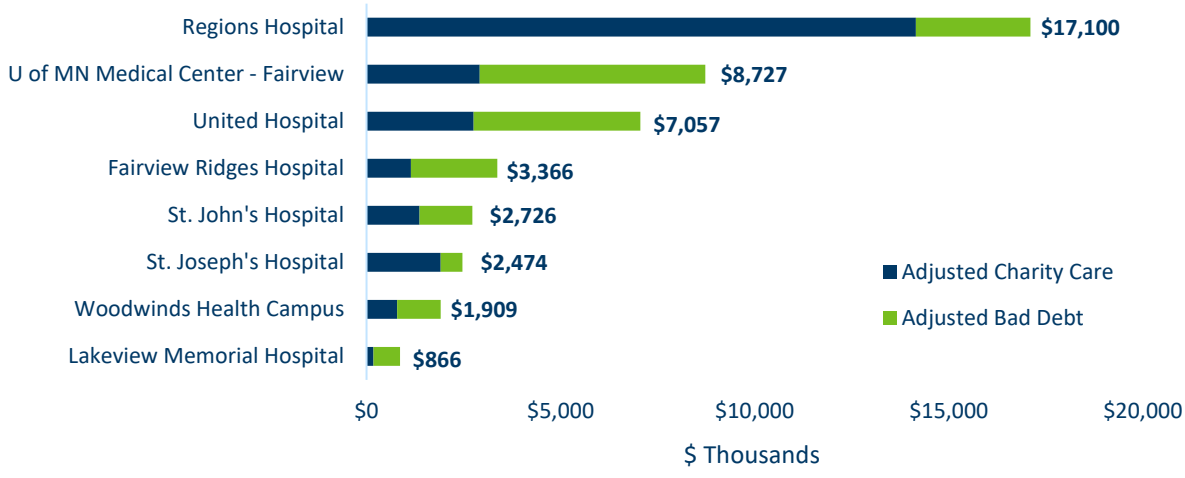
Figure 9: Percent of Revenues from State Public Programs and Self-Pay Patients, 2016



Source: MDH/Health Economics Program analysis of Hospital Annual Reports. MA is Medical Assistance (Medicaid), MNCare is Minnesota Care

Similarly, among the eight facilities serving East Metro residents, Regions Hospital devoted a larger share of operating expenses to uncompensated care, or care for patients that for a variety of reasons remains unreimbursed (2.4 percent compared to values ranging from 0.6 percent to 1.5 percent). As shown in Figure 10, Regions Hospital provided over $17 million in uncompensated care in 2016, of which more than 80 percent was charity care.

Figure 10: Uncompensated Care at East Metro Hospitals in 2016



Source: MDH/Health Economics Program analysis of Hospital Annual Reports. Uncompensated care has been adjusted by a cost-to-charge ratio.

In addition, Regions Hospital is a signatory to the agreement between the Minnesota Attorney General and Minnesota hospitals under which uninsured patients are eligible for discounts similar to those granted to health insurance companies. Consistent with requirements of the Internal Revenue Code (Section 501(r)) and state law, Regions Hospital also maintains a written financial assistance policy[36] for uninsured and otherwise eligible patients. In the proposal Regions Hospital affirms that non-paying and low-income patients would be served consistent with existing practices.

Factor 5: The views of affected parties

To invite the view of individuals; organizations, including other hospitals; and other stakeholders, MDH took the following steps:

1. Posted a notice of the Public Interest Review in the March 19, 2018 State Register, requesting public comment;[37]
2. Sent a letter to all acute care hospitals in the Twin Cities metro area requesting public comment;[38] and
3. Sent an e-mail to neighborhood groups in the vicinity of Regions Hospital seeking public comment.[39]

All letters received are posted on our website, and also compiled in a separate document, Appendix D, available with this report.

Synthesis of Public Comments

In total, MDH received 103 written public comments from a wide variety of Minnesotans. The comments were about evenly divided between those who supported the proposal (47), and those who opposed or expressed some concerns (55). As shown below, community groups, professional trade groups, organized labor, local public officials, patients and patient advocates, health care providers (most of whom provide care at Regions hospital), competing health systems, and supporters of St. Joseph's Hospital (most associated with the Sisters of St. Joseph of Carondelet) were the originators of comments on the proposal.

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[36] For more information on the 501(r) hospital discount, please visit the IRS website here: https://www.irs.gov/charities-non-profits/charitable-organizations/new-requirements-for-501c3-hospitals-under-the-affordable-care-act

[37] Minnesota State Register, Volume 42, Number 38, Page 1127.

[38] Letter to 24 Twin Cities Metro area hospitals is available on our website, http://www.health.state.mn.us/data/economics/moratorium/regions/docs/hospadminltr.pdf.

[39] An e-mail providing information about the opportunity for public comment was sent on Monday, April 2, 2018 to the Frogtown Neighborhood Association, CapitolRiver Council District 17, Dayton's Bluff Community Council, Payne Phalen District 5 Planning Council, Capital Area Architechtural and Planning Board and the Capitol Heights Block Club.

The support from community groups, trade groups, and local public officials centered on the promise that the proposed expansion would improve access to important services, such as level 1 trauma and burn center, limit delays in the emergency department, increase economic activity, and help to better meet the needs of an aging population. The commenters also noted that their support relates to the fact that Regions Hospital provides culturally sensitive care and already is an active participant in the local community.

Similarly, the providers (mostly physicians) who wrote letters of support noted high occupancy and emergency department boarding at Regions that would be alleviated by the additional beds. They appreciate the safety-net role that Regions plays, and also believe that the new beds will assist with training new clinicians and support continuity of care.

The comments from competing health systems, including Fairvew Health Services, Allina Health, and Hennepin Health, noted a need for mental health beds. Some also expressed concern about the magnitude of the proposed bed increase and the projections from which it was derived, suggesting that the unusually long projection window could lead to overestimating future demand. Some comments also expressed concern that the large proposed expansion would put other nearby hospitals at financial risk.

About half of the public comments were specifically concerned about the impact of the proposed expansion on St. Joseph's Hospital. These letters, most of which were from members of the Order of St. Joseph of Carondelet, the founders of the facility 165 years ago, noted the history of the hospital, and that many in the community, especially the poor and people with mental illnesses, relied on its existence. Individuals in this group also expressed concern that the Legislature would make a determination on a moratorium exception without the benefit of findings from the Public Interest Review.

The comments received by MDH complement the data collected and analyzed in the public interest review. They highlight Regions Hospital's role as a safety-net provider and community member, while also noting concerns for how a large expansion such as the one requested would impact surrounding hospitals.

List of Individuals and Organizations Submitting Public Comments

The following is a list of individuals and organizations we received public comments from. Some individuals and organizations provided more than one comment.

Community Groups, Professional Trade Groups, and Organized Labor

- AFSCME Council 5
- Capitol River Council (Saint Paul District 17)
- Emergency Physicians Professional Association
- Hmong Health Care Professionals Coalition
- Minnesota Chapter American College of Emergency Physicians

- Saint Paul Area Chamber of Commerce
- Saint Paul Building and Construction Trades Council
- Saint Paul Promise Neighborhood
- SEIU Healthcare
- Sisters of St. Joseph of Carondelet
- Teamsters Local Union No. 120

Public Sector Officials and Organizations

- Todd Axtell, Saint Paul Chief of Police
- City of Saint Paul
- Dakota County Public Health
- Dakota County Sheriff Timothy J. Leslie
- Ramsey County Board of Commissioners
- Ramsey County Sheriff Jack Serier
- Washington County Attorney Pete Orput

Patient Advocate Organizations

- Alzheimer's Association
- Minnesota Brain Injury Alliance
- Minnesota Coalition Against Sexual Assault

Health Care Providers

- Dr. Felix Ankel
- Dr. Macaran Baird, UM Physicians
- Sonja Batalden, CNM
- David Busch
- Dr. Peter Cole
- Dr. David Dries
- Gillette Children's Specialty Healthcare
- Dr. Bret Haake
- Dr. Kealy Rae Ham
- Craig Harvey, Pharm D
- Rachel Herring
- Dr. Kurt Isenberger
- Dr. Sunny Kaul
- Dr. Matthew Layman
- Dr. Michael Loushin
- Dr. Michael McGonigal
- Dr. Mary Nesvig
- Park Nicollet Health Services
- Cathy Scoville
- Dr. Steve Stanfield
- Dr. Susan Truman

Competing Health Care Systems or Other Health Care Providers

- Allina Health
- Fairview Health Services
- Hennepin Healthcare
- St. Croix Regional Medical Center
- WestSide Community Health Services

Individuals, Including Patients

- Marvin Roger Anderson
- Margaret Belanger, CSJ
- Sister George Ann Bohl
- Sister Ruth Brooker
- Sister Mary Fran Carter, CSJ
- Linda Crosby, CSJ Consociate
- Lois Dalsin
- Nancy Davis, CSJ
- Sister Patricia De Blieck, RN, BSN, MSN, CNM
- Agnes Foley, CSJ
- Carol Geisler, PhD, Consociate
- Dr. Mary Ann Hanley, CSJ
- Anne Hannahan, RN, Consociate
- Sister Suzanne Herder, CSJ
- Sister Ansgar Holmberg, CSJ
- Kathleen Holmberg
- Sister Diane Hunker, CSJ
- Sister Jane Hurley, CSJ
- Sister Agnes Iten, CSJ
- Sister Ann Michele Jadlowski
- Catherine E. Jenkins, CSJ
- Bridgette Kelly, CSJ Partner in Mission
- Laurie Kelly, CSJ
- Liz Kerwin, CSJ

- Kathleen Klietz
- Sister Mary Clare Korb, CSJ
- Sister Sylvia Krawfcyk, CSJ
- Sister Mary Lamski, CSJ
- Sister Ann William Leach, CSJ
- Margaret McRaith
- Mary Kaye Medinger, CSJ Consociate
- Sister Kathleen Niska
- Judith Oberhauser, CSJ Consociate, Chaplain
- Meagan O'Brien
- Sister Carol Podlasek, CSJ
- Margaret Preston, CSJ
- Carolyn Puccio, CSJ, MA, LP
- Dr. Karen Quaday
- Marty Roers
- Kathleen Ryan
- Anglea Schreiber, CSJ
- Sister Mary Herbert Seiter, CSJ
- Ann Clare Smith, CSJ
- Sister Susan Smith, CSJ
- Florence Steichen, CSJ
- Susan Streff, CSJ
- Jennifer Tacheny, Partner in Mission
- Christine Treanor, CSJ Consociate
- Sister Jill Underdahl, CSJ
- Joanne Wieland, CSJ
- Joan Wittman, CSJ Consociate
- Jane VanDyke
- John VanDyke

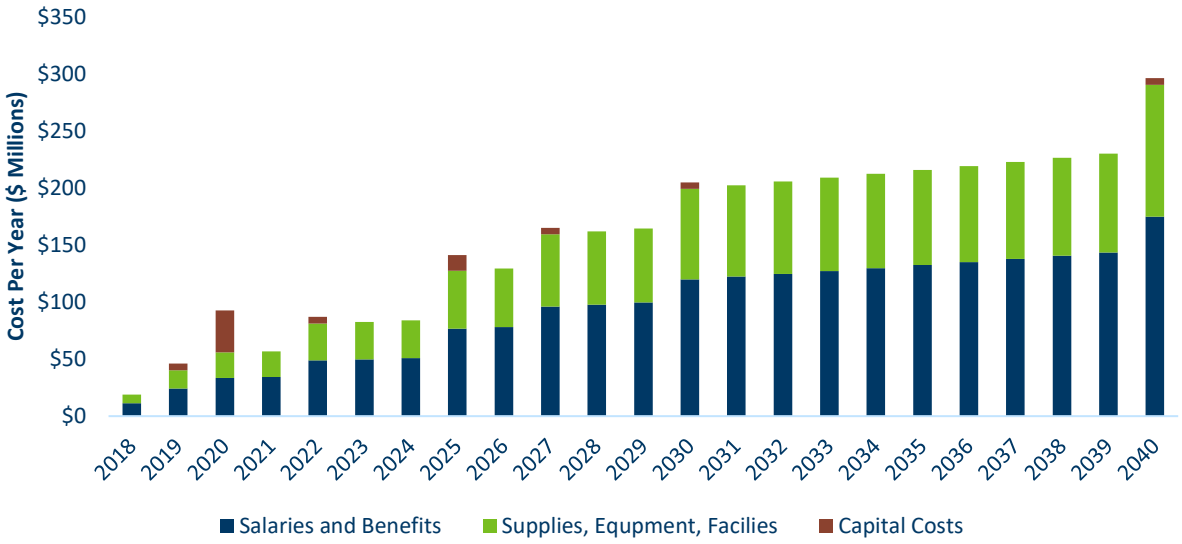
Section 4: Finding

The purpose of the hospital moratorium is to limit investment in excess hospital capacity as one method to constraining health care cost growth. As the proposal indicates, the addition of 100 beds at Regions Hospital, independent of whether it represents excess capacity, will increase health care costs. While we were unable to determine the exact capital costs, we estimate the direct costs of adding 100 beds to Regions Hospital to be over $3.5 billion between 2018 and 2040. These estimated costs could be distributed as follows:

- $2.2 billion for salaries and benefits
- $1.4 billion for supplies and equipment
- $80 million for building renovation, improvements, and a new birthing center.

As shown in Figure 11, the majority of the capital costs would occur in the first 10 years of the expansion, while staffing costs would increase as more beds are added.

Figure 11: Estimated Direct Costs Associated with Adding 100 Licensed Beds to Regions Hospital, 2018 to 2040



Source: Regions Hospital Additional Information Response; Minnesota Department of Health analysis of Capital Expenditure Reports (capital costs only). In years where no annual costs were available, salaries and benefits were increased by 2 percent per year and other supplies were increased by 1 percent per year.

The academic literature indicates that the use of hospital beds has the potential to create its own demand for services, whether intentional or not.[40] In other words, in addition to the costs

[40] See for example: Delamater, P. L., Messina, J. P., Grady, S. C., WinklerPrins, V., & Shortridge, A. M. (2013). Do more hospital beds lead to higher hospitalization rates? A spatial examination of Roemer's Law. *PLoS One*, 8(2),

to expand capacity and operating, there is the potential for greater inpatient bed use that would contribute to greater health care spending. There are also studies that find different or more inconclusive results,[41] and the relationship between supply of beds and demand for inpatient care has yet to be demonstrated through a causal link; however it is that premise of the relationship between inpatient beds and health system costs, and the impact of new capacity on competitors, that motivate the public interest review.

By design, our analysis was a static one, in that we did not look at how the proposal would interact with the larger economic considerations of medical care systems (e.g., further vertical or horizontal consolidation) or state or federal policy changes. We have also not explored how the proposal would affect other factors that drive utilization (e.g., efficiency and effectiveness in diagnosis and treatment) or may contribute to pricing inefficiencies (e.g., the variation in hospital prices[42]).

Finding: Adding 100 Beds at Regions Hospital is Not in the Public Interest

Based on our review, in which we considered the proposal, the literature, and our analysis of available data, MDH finds the proposal to add 100 licensed beds to HealthPartners' Regions Hospital in Saint Paul, Minnesota **is not in the public interest** for the following reasons:

1. The forecast of inpatient bed need in the proposal likely overstates actual future need by not robustly accounting for factors that may affect future rates of hospitalizations such as continuing shifts of care to outpatient or other settings, aided by technology, and general economic conditions. Because forecasts are highly sensitive to assumptions, the inability to include all of these factors in the forecast creates substantial uncertainties, which are compounded over the long forecast horizon chosen in the proposal (greater than 30 years).

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e54900; Ginsburg, P. B., & Koretz, D. M. (1983). Bed availability and hospital utilization: estimates of the "Roemer effect". *Health Care Financing Review*, 5(1), 87; Pasley, B. H., Lagoe, R. J., & Marshall, N. O. (1995). Excess acute care bed capacity and its causes: the experience of New York State. *Health Services Research*, *30*(1 Pt 1), 115 and Shwartz, M., Peköz, E. A., Labonte, A., Heineke, J., & Restuccia, J. D. (2011). Bringing responsibility for small area variations in hospitalization rates back to the hospital: the propensity to hospitalize index and a test of the Roemer's Law. *Medical Care*, *49*(12), 1062-1067.

[41] See for example: Conover, C. J., & Sloan, F. A. (1998). Does removing certificate-of-need regulations lead to a surge in health care spending?. *Journal of Health Politics, Policy and Law*, 23(3), 455-481; Rohrer, J. E. (1990). Supply-induced demand for hospital care. *Health Services Management Research*, 3(1), 41-48; and van Doorslaer, E. K., & Van Vliet, R. C. J. A. (1989). "A built bed is a filled bed?" An empirical re-examination. *Social Science & Medicine*, 28(2), 155-164.

[42] MDH/Health Economics Program. (2018). Commercial care price variation among high-volume inpatient treatments in Minnesota hospitals, July 2014-June 2015. Accessed May 23, 2018 from: http://www.health.state.mn.us/data/apcd/docs/pricevariation.pdf.

2. Adding 100 beds to Regions Hospital has the potential to negatively impact the financial performance of other east metro hospitals by changing the distribution of services at those hospitals and reducing their market share. Over time and under today's prevailing payment systems, the resulting financial pressure has the potential to lead to divestments from lower-revenue services, such as inpatient mental health services, and force competition over brand, technology and service lines. These investments have the potential to lead to unneeded duplication of more profitable services and technologies in the community, thereby raising the underlying costs of care.

3. The proposed increase in licensed beds would occur in a market with existing overcapacity in licensed beds. This means the proposal would add considerable resources to the health care system, likely in the range of several billion dollars, to establish and operate *additional* excess capacity in the market.

While MDH finds the full proposal – to add 100 licensed beds at Regions Hospital through 2040 – is not in the public interest, we recognize there are challenges at the facility that could be addressed with additional inpatient bed capacity. The Legislature may have considered these challenges already in their deliberations about granting an exception to the moratorium to Regions Hospital during the 2018 legislative session:

- Our analysis shows that there are currently bottlenecks in service delivery at Regions Hospital that lead the hospital to operate, at times, at unsustainably high levels of occupancy. This results in diversions of patients from the facility, and may contribute to temporary closures of the emergency department. Although there are likely a range of reasons for these bottlenecks, with some unrelated to the availability of physical bed capacity, the addition of a limited number of licensed beds for medical/surgical care could relieve some pressure at Regions Hospital and support care delivery.
- We observe limits in mental health capacity across the spectrum of care delivery that manifest in inpatient capacity constraints; indeed, 60 percent of diversions from Regions Hospital, and two out of five ambulance diversions in the East Metro were related to mental health beds not being available.[43] The addition of new licensed inpatient beds solely dedicated[44] to mental health before 2025 would help address related constraints felt across the community, including currently at Regions Hospital.
- Regions Hospital was planning to break ground this spring on replacing the obstetric unit on its campus. Although this is not explicitly part of the proposal, because on its own the obstetric unit would not expand bed capacity, Regions is seeking additional obstetrics beds under the proposal to fully implement its service strategy. The addition of would

[43] MDH/Health Economics Program Analysis of 2013 to 2015 MNTrac ambulance diversion data.

[44] With some exceptions, licensing practices and regulations do not generally determine conclusively for which service lines beds will be used. The requirement to obtain certification under the Centers for Medicare & Medicaid Services excluded psychiatric unit designation may be one path for the Legislature to consider; however, this designation has not widely been sought be hospitals.

strengthens Regions Hospital ability to compete in a critical revenue area with minimal added health system costs.

Section 5: Concluding Comments

Concern about overcapacity and increases in health care costs led the Minnesota Legislature to end the Certificate of Need (CON) law and create the licensed hospital bed moratorium in 1984. The CON law did not appear to sufficiently control facility investments, and the moratorium on new beds was seen as a more robust alternative, albeit one intended initially as a temporary solution.

Although 27 exceptions to the moratorium since 1984 have added about 560 beds at select Minnesota facilities,[45] licensed beds in the state have actually fallen (by 921 beds) since 1996, due to hospital closures and changes in practice patterns.[46] It is difficult to assess how bed capacity in Minnesota might have looked without the moratorium law, but it is likely that the law, through its levers of the public interest review and the potential for public policy deliberations about investment projects, acted somewhat as a barrier to inpatient capacity growth (and related health care costs). To some extent, it may have also discouraged new entrants to the Minnesota hospital market from non-profit or for-profit operators, although some providers gained market entrance through acquiring ownership of existing facilities.

However, as this public interest review, in particular, but also earlier ones demonstrate, the implementation of Minnesota's inpatient hospital bed moratorium law also created challenges that derive from inconsistencies across public policy and unintended consequences:

1. **The moratorium effectively froze in place the number, location, and distribution of hospital beds.** Because it created an incentive to not delicense unneeded hospital beds, even for closed system hospitals, the moratorium established an imbalance between hospital providers with substantial unused licensed capacity and others without. This creates a competitive disadvantage under which some projects are subject to the public interest review and decision-making by the Legislature, while other equally large capacity changes move forward without an assessment of their impact on the market, on health care access, or on health care costs.
2. **Public policy deliberations to consider exceptions to the moratorium rarely address broader geographic alignment of services.** The consideration of exceptions to the hospital bed moratorium law, aided by the public interest review process, have resulted

[45] This considers exemptions added through the 2017 legislative session.

[46] Many surgeries that required a lengthy hospital stay are now done as outpatient procedures; less invasive techniques, such as laproscopic surgery, has also helped to reduce time in the hospital, or eliminate it. Advances in prescription drugs may also as well impacted hospital use, as the experience with the recently released new Hepatitis C medications demonstrate.

in legislative deliberations over the alignment of physical bed capacity with patient needs and, in the context of mental health inpatient proposals, issues concerning capacity requirements beyond inpatient care. Because they were tied to specific proposals at a particular geography and service delivery design, these deliberations have typically not been able to incorporate question of statewide service alignment with population needs across the spectrum of patient care and service lines. Public interest considerations over large investment projects that will invariably add to the underlying cost of care may benefit from such a broader perspective.

3. **The moratorium law brings an increasingly narrow view to the relationship of health care investments and costs.** By focusing on health care facility investments for inpatient bed capacity, the moratorium law aims at a "big ticket" item that could contribute to overcapacity and spending growth, but represents a declining percentage of overall health care spending. Health care investments in ambulatory care centers, imaging technology and health information systems contribute substantially to growth in the underlying cost of care, and are not subject to similar review.
4. **By targeting certain health care investments and constraining related economic activity, the motorium law appears inconsistent with the regulatory philosophy underlying other aspects of health care market oversight.** Currently, Minnesota state law seems to largely rely on the market – such as it exists in health care – to govern the allocation and distribution of resources and services. While this may not necessarily result in socially desirable distributions, it represents a consistent approach to regulating the behavior of market participants. The moratorium, however, by considering in the public interest review the impact on competitors, shields market participants from certain economic interruptions, potentially stifling innovation and "creative disruption."

While the Minnesota Legislature has already taken action to address the Regions Hospital request for an exception (by approving a smaller expansion project[47]) and to specify new submission requirements under the Public Interest Review provision, it may stillwish to assess the effectiveness of the state's hospital bed moratorium in the context of broader health policy priorities and to address some of the unintended consequences and inconcistencies that have emerged over its 34 year history.

[47] Minnesota Session Laws – 2018, Regular Session, Chapter 199—HF 3202

Appendix A: Data Sources Used in Review

The Minnesota Department of Health used data from the following sources in completing this public interest review:

- **Hospital Annual Report:** All hospitals in Minnesota file annual reports with the Minnesota Department of Health. Data used in this report includes the following items:
    - *Available beds*: for the number and type of available beds (acute care beds that are immediately available for use or could be brought online within a short period of time) in the most recent fiscal year. Available beds are also separated into dedicated specialty units (i.e. mental health, obstetrics, and rehabilitation) as reported by the hospital.[48]
    - *Charity care, bad debt, and other hospital financial information:* Acute care hospitals in Minnesota file annual financial reports to the Department on overall revenue and expenses, uncollectible bills, and other adjustments. Data used in this report includes the following sources:
        - Section 1: Revenue and Expense Summary
        - Section 2: Non-Operating Revenue and Expense
        - Section 3: Patient Revenue
        - Section 4: Other Operating Revenue
        - Section 13: Primary Payer Charges Summary
        - Section 14: Primary Payer Adjustments & Uncollectibles
        - Section 21: Community Benefit Summary

- **Minnesota Hospital Association (MHA) Hospital Discharge Data**: MHA collects administrative billing data from hospitals in Minnesota and for Minnesota residents who were patients in Iowa, North Dakota, and South Dakota hospitals (Wisconsin hospitals do not provide data). The unit of analysis is the hospital stays, or discharges at short-term, non-Federal, non-State, and non-specialty, general acute care hospitals. Inpatient hospital stays were identified using the following sources:
    - Hospital billing codes developed by the National Uniform Billing Committee;
    - Medicare Severity Diagnosis Related Groups (MS-DRGs) developed by the Centers for Medicare and Medicaid Services; and,
    - Clinical Classifications Software (CCS) identify major operating room procedures that were further grouped together using definitions from the U. S. Agency for Healthcare Research and Quality.

[48] These categorizations are based on self-reported hospital data; because hospitals can designate beds to be used for specific purposes within the hospital (such as obstetrics, intensive care unit, cardiac care, etc.) there are only two specific designations on both a state and federal level (the state uses federal designations in licensing.): "excluded psychiatric units" and "rehabilitation units." Hospitals designate beds as mental health/psychiatric beds on the Hospital Annual Report that are not licensed as such under federal and state law.

- **Minnesota State Demographic Center Population Projections, Wisconsin Population and Household Projections, and US Census Bureau Population Estimates**: The following population estimates and projections were used:
    - American Community Survey, 2005-2016 (accessed March 2018)
    - Minnesota county population projections, 2015-2030 (March 2017 release)
    - Wisconsin Population Estimates 2005-2016 (2014 release)
    - Wisconsin Population and Household Projections, 2010-2030 (2013 release)

- **Capital Expenditures:** Under Minnesota Statutes 62J.17, hospitals and other health care providers are required to report board-approved expenditures of over $1 million to the Minnesota Department of Health. To estimate the capital costs of renovation and expansion associated with the request for new licensed beds, MDH used average costs of medical/surgical, obstetrics, and mental health renovations at other hospitals between 2007 and 2016.

- **MNTrac data:** This data records when hospitals are closed to ambulances, and hospitals often include the services that are closed as well. These data are voluntarily reported to by hospitals, and collected by MDH to allow for coordination in case of a large regional emergency, such as a mass casualty event. The Health Economics Program used these data to look at reasons for closure at eight East Metro hospitals betweeh 2013 and 2017.
    - *Type of Closure*: Hospitals could be closed to ambulances for different types of service. This metric counted the number of closures for each type of service; there was overlap in type of service that was closed, so looking at the data in this way was not used to assess increase in total closures. Types of closures included:
        - Emergency Room
        - Obstetrics
        - Mental Health
        - Trauma
        - Forced Open (if too many hospitals close to ambulances, they are all forced to reopen).
    - *Total Number of Closures*: The number of closures reported by each hospital in each year, regardless of type.

Appendix B: MDH Projection of Hospital Patient Days Methodology

The Minnesota Department of Health developed three estimates to model the need for additional hospital beds at Regions Hospital alone and for the following eight hospitals combined that predominantly serve the East Metro Area:

- Fairview Ridges Hospital
- Lakeview Hospital
- Regions Hospital
- St. John's Hospital
- St. Joseph's Hospital
- United Hospital
- University of Minnesota Medical Center - Fairview
- Woodwinds Health Campus

Observed Hospital Patient Day Rates

Hospitalization trends were observed for 12 calendar years (2005 through 2016). Hospital bed need was forecasted for inpatient medical/surgical care and mental health and chemical dependency separately using the same methods. Medical/surgical care excluded newborns, pediatric care, and rehabilitation services to align with hospital bed moratorium exception request. Patient age was stratified in the analysis into three age groups (15-44, 45-64, and 65 and older) to account for differences in utilization rates and geographic age structure of patient population.

The patient population for developing rates was calculated using a 'relevance index'[49] where the market share from patient days (total length of stay) in hospital discharge records as applied to the county population. For example, in the group of hospitals listed above only 11.6 percent of Hennepin County residents 65 and older are assumed to be in the patient population while 83.8 percent of Ramsey County residents from the same age group are included, because 11.6 percent of the patient days were for Hennepin county residents over 65, while 83.8 percent of the patient days were for Ramsey county residents over 65.

The analysis first considered the six counties with the most discharges from the eight hospitals, similar to models commissioned by Regions Hospital, and included the following counties:

[49] Langley, S. A., Fuller, S. P., Messina, J. P., Shortridge, A. M., & Grady, S. C. (2010). A methodology for projecting hospital bed need: a Michigan case study. *Source Code for Biology and Medicine*, 5(1) 4.

- Anoka County, Minnesota
- Dakota County, Minnesota
- Ramsey County, Minnesota
- Washington County, Minnesota
- Polk County, Wisconsin
- St. Croix County, Wisconsin

Our models also acknowledge that Regions Hospital, along with the other seven hospitals listed, do serve patients from a wide geographic area, and act as regional referral centers not only for Minnesota, but also the surrounding states. To account for this, patients from the remainder of Minnesota counties as a group were included in hospital patient day rates and population projections according to a relevance index for each year. Discharges from other geographic jurisdictions (e.g., other states or other Wisconsin counties) or unidentified locations were also added to this larger category.

Expected Hospital Patient Day Rates

The base year time period was the most recent calendar year with data availble (2016) and the projection was an additional 10 years forward (2017-2027). The baseline projection uses a population growth ratio as the target year population to base year population by age group. This population growth ratio is multipled by the base year patient days and converted into a rate per 1,000. MDH used three different models to project changes in utilization:

- **MDH Model 1**: *average* annual hospital patient day rates of change were calculated from trend data (2005 through 2016) for each age group. This rate of change is used as an adjustment factor applied to the baseline projection for each year.
- **MDH Model 2**: *median* annual hospital patient day rates of change were calculated from trend data (2005 through 2016) for each age group. This rate of change is used as an adjustment factor applied to the baseline projection for each year.
- **MDH Model 3**: autoregressive, integrated, moving average (ARMIA) time-series models using trend data (2005 through 2016) were fit for each age group. This type of regression forecasting is used because the outcome time series was serially dependent and to account for internal correlation of annual data points within the time series.[50]

[50] For another example of a similar types of analyses, see Wiler, J. L., Griffey, R. T., & Olsen, T. (2011). Review of modeling approaches for emergency department patient flow and crowding research. *Academic Emergency Medicine*, 18(12), 1371-1379 and Champion, R., Kinsman, L. D., Lee, et al. (2007). Forecasting emergency department presentations. *Australian Health Review*, 31(1), 83-90. For more information on ARIMA modeling see Hamilton, J. D. (1994). *Time series analysis* (Vol. 2). Princeton: Princeton University Press.

Shortage or Excess Number of Hospital Beds

The expected number of hospital patient days is the sum of the projected rate applied to population projections for each age group in Model 1 and Model 2, and the projected days in Model 3. The projected number of available patient days from each model are divided by the number of days in a year (365) and subtracted from a target occupancy level[51] for a given number of available beds. The models were run for Regions Hospital only, and across the eight East Metro hospitals listed.

[51] Regions assumed a target occupancy level of 85 percent for medical surgical care and 95 percent for mental health and chemical dependency. While there were practical considerations for why Regions was not adding more than 20 beds for the latter services, assuming a similar target occupancy level for mental health and chemical dependency would address concerns raised by many public comments.

Appendix C: Growth in Inpatient Days at Regions from Select Hospitals' Primary Service Areas, 2006 to 2016

Hospital	City	Regions Gain as a Percent of Total Patient Days 2016
Abbott Northwestern Hospital	Minneapolis	0.50%
Buffalo Hospital	Buffalo	0.06%
CentraCare Health Monticello	Monticello	0.40%
District One Hospital	Faribault	1.86%
Fairview Lakes Medical Center	Wyoming	2.72%
Fairview Southdale Hospital	Edina	0.67%
Hennepin Healthcare	Minneapolis	0.54%
Mayo Clinic Cannon Falls	Cannon Falls	3.17%
Mayo Clinic New Prague	New Prague	3.27%
Mercy Hospital	Coon Rapids	0.91%
Mercy Hospital Unity Campus	Fridley	0.51%
Methodist Hospital	St. Louis Park	0.58%
North Memorial Health Care	Robbinsdale	0.59%
Northfield Hospital	Northfield	1.61%
Regina Medical Center	Hastings	7.18%

Source: MDH/Health Economics Program analysis of hospital discharge data.

Note: The hospitals listed include non-East Metro hospitals within an hour drive to Regions Hospital. This analysis only included select hospitals from primary service area counties at these hospitals where Regions also experienced patient day growth, 2006 compared to 2016. Analysis excluded Regions primary service area counties.

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