

Protecting the Best Patient Care in the Country:

**Local Choices v. Statewide
Mandates in Massachusetts**



ACKNOWLEDGMENTS

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BW Research Partnership is a full-service applied research firm specializing in economic and workforce research, customer and community research, strategic planning, and evaluation services, with clients across the world. BW Research is a recognized leader in employment research, regularly producing official employment estimates for federal and state agencies, nonprofit organizations, academic institutions, and private industry. BW Research has offices in Massachusetts and California.

Founded in 1989, Mass Insight Global Partnerships is a Boston-based consulting and research firm that builds strategic alliances between higher education, industry and government in the New England region. Through leadership groups and research supported by partners, Mass Insight brings together expertise in communications, publications, policy research and public opinion to shape public-private actions and launch innovation partnerships. The firm has for over a decade run an annual healthcare leadership briefing for its partners on cost and quality issues based in part on the Mass Insight/ODC public opinion survey report produced each spring.

EXECUTIVE SUMMARY

The following study conducted by BW Research Partnership and Mass Insight addresses three main areas of questioning with regards to the proposed Mandated Nurse Staffing Ratios, or MNSRs: (1) what are the costs and other financial impacts of the proposed MNSR ballot initiative, (2) to what extent is the MNSR feasible to implement across all hospitals in Massachusetts, and (c) how will the MNSR impact care at both hospital and non-hospital healthcare facilities across the Commonwealth. The research team examined impacts to staffing, wage inflation, recruitment and turnover costs, employer competition, as well as additional costs to education and training using a mixed-methodology approach that synthesized data across several sources—PatientCareLink, the Bureau of Labor Statistics (BLS), and Economic Modeling Specialists Intl (Emsi), and comprehensive surveys and interviews with healthcare leaders in Massachusetts.¹

Massachusetts' healthcare system is powered by the most talented professionals in the nation² and is home to some of the highest rated hospitals.³ Implementation of MNSRs would disrupt this successful approach by limiting flexibility and limiting the ability of providers to hire the most qualified candidates available, at a time when the state is lowering the cap on healthcare spending for 2018 and the federal budget will lead to significant cuts to healthcare programs. Some estimates suggest that Massachusetts could lose more than \$12.5 billion in Medicaid funding each year if the Trump Administration's FY 2019 budget is approved as drafted.⁴

The data suggest that a one-size-fits-all statewide implementation will be a costly and poor allocation of resources, leading to greater inequity in the provision of care, less local access to healthcare, and reduced patient choice. Furthermore, hospitals may be forced to hire less experienced and educated RNs, which would likely offset any quality and safety improvements that the proposal's sponsors believe would follow from MNSR adoption. Where staffing challenges exist, an approach in which local care teams craft solutions in the context of available resources would likely be more efficient and cost-effective than a one-size-fits all mandate that might produce lower qualified and inexperienced RN staffing. **Doctors and nurses at the bedside are best able to tailor solutions to local needs**, which best protects and supports patients as well as critical healthcare programs, achieving the goal of improved healthcare at lower costs.

¹ Quotes in the callout boxes herein come from the interviews and surveys with hospital and nurse leaders in Massachusetts.

² See <https://www.nursingschoolhub.com/cutting-edge-nursing/>, <http://www.castleconnolly.com/about/news.cfm>.

³ Source: <https://health.usnews.com/best-hospitals/rankings>.

⁴ See Schneider, A., "Administration's Budget Proposal Includes \$1.4 Trillion in Medicaid Cuts," Georgetown University Health Policy Institute, Center for Children, Feb. 12, 2018; Kaiser Family Foundation, "Medicaid in Massachusetts," available at: <http://files.kff.org/attachment/fact-sheet-medicaid-state-MA>.

Specifically, this study includes the following **three key findings**:

1. **Implementation of the proposed MNSR will be expensive, with additional costs to the healthcare system totaling \$1.31 billion⁵ in the first year and over \$900 million per year thereafter and approximately \$100 million in increased direct state spending in the first year and \$20 million annually thereafter.** Increased costs include the salaries for the **5,911 Registered Nurses (RNs) required by the proposal**, together with resulting recruitment, training, and turnover costs, wage inflation caused by increased competition, and new software and other technology for managing staffing ratios (acuity tools).
2. **A statewide “one-size-fits-all” mandate is not feasible.** Implementation of MNSR will require hiring 5,911 RNs within 37 business days to comply with the initiative; more than 160 RNs per business day. In addition to nearly eliminating any ability to employ rigorous quality control in hiring, the pace of change will likely result in widespread penalties, program cuts, and wasted healthcare resources at a time of declining federal support and lowered healthcare spending targets in the state. Even without the compressed implementation timeline, MNSRs are still the wrong solution, resulting in down-skilling and limiting local access and equity of care.

The healthcare industry already faces significant nursing shortages, with a current vacancy rate of roughly 5.3%⁶, or at least 1,200 RNs. Data indicate that to comply with the proposed MNSR, hospitals will need to hire more than 4,500 RNs for compliance alone, while also filling all existing vacancies. This means that in just two months, Massachusetts’ will need to supply 5,911 new RNs across the state’s healthcare system to both relieve the current nursing shortage and meet the MNSR. This would occur during a time of record unemployment and an environment that has already seen wage inflation for RNs of about 2% per year since 2013, bolstering the pay of RNs which already earn the third highest average wage of any state.⁷

For additional perspective, in a typical year, Massachusetts’ healthcare providers hire roughly 5,500 new RNs across the entire state over an entire year; this includes regular turnover and churn, replacing retirements, and annual position growth across hospitals, clinics, physician offices, schools, and other settings. With MNSR implementation, this number would likely more than double with the additional RNs that would have to be hired. **The feasibility of filling these positions over several years would be challenging and doing so in less than two months is likely impossible.**

⁵ Note that this figure is even higher than the \$881 million annual estimate released earlier this year by the Massachusetts Hospital Association.

⁶ <http://patientcarelink.org/wp-content/uploads/2016/08/MHA-ONL-2015-Nursing-Survey-Highlights.pdf>.

⁷ <https://connectrn.com/7-reasons-nurse-massachusetts/>.

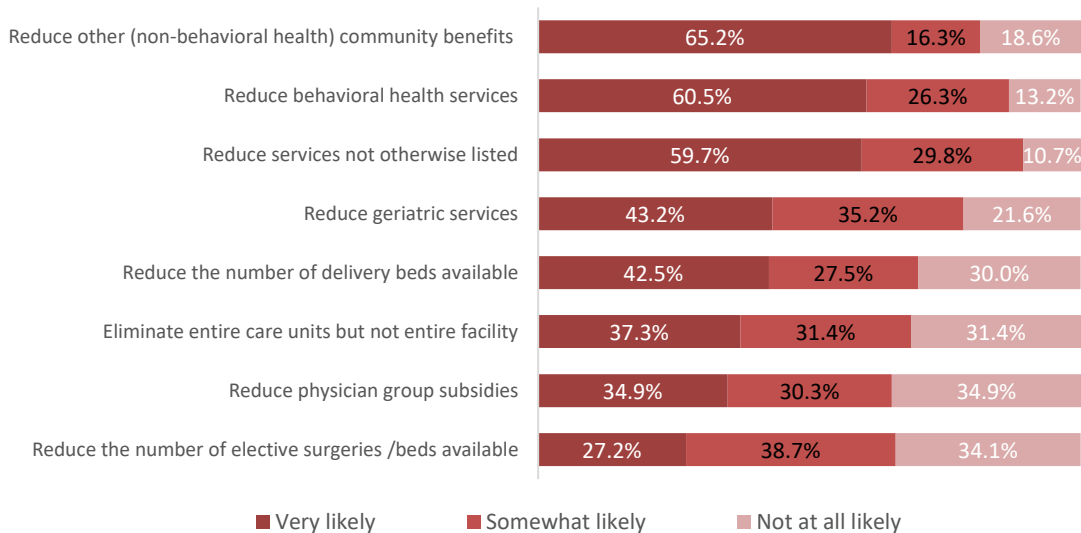
3. **Implementing the MNSR will likely both reduce quality of care and increase inequality in care provision.** It is likely that the MNSR will impact the quality of care by increasing the number of inexperienced RNs in patient care. Put most simply, hospitals have no choice but to hire less experienced RNs, and given the volume of required hiring, little to no time to evaluate candidates. Educational attainment and experience are key factors for hospitals when hiring RNs. **Nine in ten hospital leaders report that they prefer or require prior experience and/or a bachelor’s degree for RNs.** In fact, more than seven in ten RNs working in Massachusetts have a bachelor’s degree or higher. To meet ratio compliance, most hospital representatives—seven in ten—noted that they would resort to hiring less qualified or experienced RNs, and 41% indicated this would be their primary approach to meet staffing requirements. Even if hospitals were to maintain their preference for highly-educated RNs, **the state’s educational institutions only produce about 3,400 bachelor’s degree graduates each year.** Furthermore, the costs of implementation and unavailability of skilled RNs will result in reallocation, as they migrate from community health centers and other healthcare providers to hospitals, affecting those most in need of healthcare services. Hospitals report that they will either reduce services to reallocate resources to their core services or close certain units altogether. **These reductions and closures will result in longer wait periods, fewer patient options, unequal care, and public health concerns.**

“
In trauma centers we refer to the
Golden Hour
which refers to the significantly better outcomes when we can treat tissue injuries within one hour of trauma. We are really concerned that these ratios could mean that some specialty beds will have to close, and care may be more than an hour away for residents outside of Boston.”

The areas most affected by reduced services and unit closures include **maternal health, seniors, substance use disorder, and behavioral health patients.** In fact, community health benefits provided by hospitals would be among the most impacted element of the healthcare system; these are **critical for low-income individuals, ethnic minorities, and immigrants.** While the federal government requires all nonprofit hospitals to develop charity care programs to assist low income patients access healthcare services, in Massachusetts the Attorney General has issued guidelines for nonprofit acute care hospitals that outlines expectations on providing charity care as well as direct community-based programs to improve the overall health of the hospital’s service area. It is important to note that community benefits programs are not reimbursed by any third-party payer and are provided by hospitals out of its general operating budget. Therefore, the ability to support community-based services is based on the hospital’s ability to allocate funds from its operating budget without having to support new unfunded mandates like the nurse staffing ratios. In FY 2016, the community benefits reported by acute care hospitals totaled \$648

million, including \$41 million in free or discounted care provided directly to patients.⁸ In recent years, community benefits have been critical to supporting community-based resources such as funding programs to fight the opioid epidemic and improve access to behavioral health clinicians. The current survey found that 65% of hospitals will very likely reduce non-behavioral health community benefits and 61% indicated they will very likely reduce behavioral health services.

Likely Hospital Responses to Mandatory Nurse Staffing Ratios

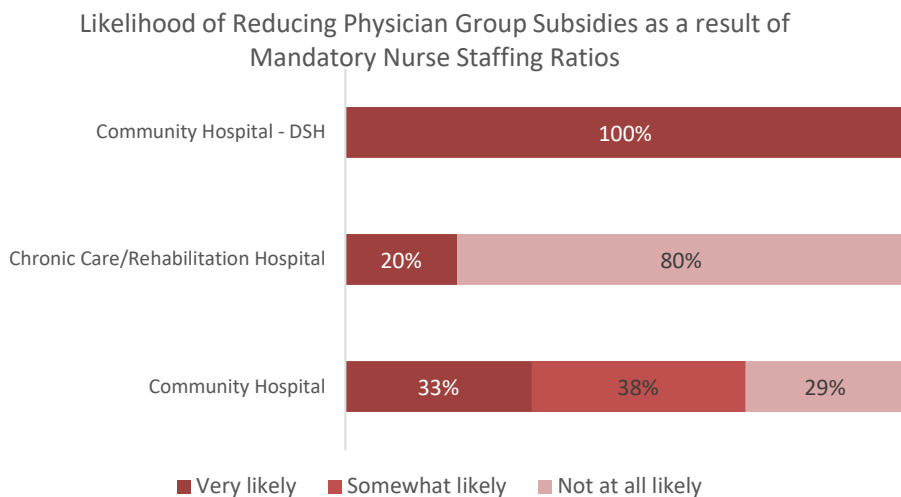


ADDITIONAL FINDINGS FROM THIS STUDY

In addition to the specific areas of care that will be impacted, several regions are also more likely to be hard hit by the proposed MNSR. Communities outside of Boston and Worcester, such as the Cape and Islands, MetroWest, and Western Massachusetts are all at risk of losing entire facilities. For individuals in these regions, the closure of acute care hospitals will leave them with nowhere else to go and will result in longer wait times, long-distance travel, and emergency room bed shortages. If unable to retain RNs in these lower population areas, hospitals may have to even resort to closing more profitable units, such as medical surgery units. Loss of revenue from these could affect the financial stability of the entire regional healthcare system. Furthermore, as hospitals often subsidize local physician group practices, the diversion of hospital resources to fund MNSR costs will also likely result in a loss of physician groups, which will further exacerbate the shortage of primary care

⁸ Note: these numbers do not include data from every hospital, so the total can be much larger.
 Source: <http://www.mass.gov/ago/news-and-updates/press-releases/2017/2017-06-07-hospitals-community-benefits-2016.html>.

doctors⁹ and specialists who provide specialized treatment and diagnostics at a substantially lower cost than the hospital system.¹⁰ The Massachusetts Department of Health reports that 107 Massachusetts municipalities – 30% of all cities and towns statewide – have no primary care physicians.¹¹ Together with the federally defined Health Professional Shortage Areas (41% of Massachusetts), the status quo for “rural and underserved” locations in Massachusetts, “patients struggle to access convenient and timely primary care, making it harder to access preventive care and stay healthy... mak[ing] it increasingly difficult for our state to contain health care costs in a system that is restructuring to rely more heavily on primary care.”¹²



Aggressive hiring requirements will create competition among employers, resulting in wage inflation

across both new hires and existing RNs. Increased employer competition combined with already significant RN shortages will have the effect of raising wages, as demand outpaces supply. Following the MNSR implementation in California, RN wages increased by 7-9%.¹³ In Massachusetts, these wage increases are expected to affect not only new hires, but existing RNs as well, with the exception of the more than 20,000 RNs represented by the Massachusetts Nurses

Projected Mean Wage for RNs in 2019		
Scenarios	Mean Wage (2019 US\$)	Change from 2018 (%)
MNSRs	\$94,052	3.55%
Baseline	\$92,348	1.68%

⁹ <https://www.mass.gov/files/documents/2016/07/tf/massachusetts-health-professions-data-series-physicians-2014.pdf>.

¹⁰ See generally, <https://hbr.org/2013/10/the-strategy-that-will-fix-health-care>.

¹¹ Source: <https://www.mass.gov/files/documents/2016/07/tf/massachusetts-health-professions-data-series-physicians-2014.pdf>.

¹² Phillips, K., “Mass. = Primary Care Doctor Desert,” Commonwealth Magazine, 2016, available at: <https://commonwealthmagazine.org/health-care/ma-primary-care-doctor-desert/>.

¹³ The Bureau of Labor Statistics Occupational Employment Statistics Data.

Association under existing bargaining agreements.¹⁴ It is important to note that the average wage of RNs in Massachusetts already far exceeds the national average for RNs by 21% and is 44% higher than the average wage for all jobs in Massachusetts.¹⁵

Based on BLS data and California’s experience, it was assumed that RN wages in Massachusetts would increase by twice as much as the wage average growth rate from the years prior to the MNSR implementation. Thus, the research team estimated that RN wages in Massachusetts will increase by 3.55% in 2019, though there is evidence to suggest that because of the strict implementation timeline and lack of flexibility in the regulation, this is likely a low estimate. In total, the cost of new RN hiring and wage inflations to the industry sums to roughly \$872 million.

Rapid hiring will also increase the cost of recruitment and turnover. Recruitment costs on average are roughly \$14,600 per RN vacancy. Increased hiring activity and employer competition will likely cause disruptions to other hospitals and care providers—each of the 5,911 new hires may result in exits, and thus additional new hires, at other facilities. The cost of these turnovers is significantly higher than recruitment alone due to productivity losses and other costs such as overtime, temporary or visiting nurses, and reduced elective patient flow. The average cost of turnover is more than \$42,000. Recruitment costs alone would increase by \$86 million for all hospitals to meet the MNSR – from an annual baseline of \$53 million to almost \$140 million in 2018. These, in addition to turnover costs, results in another \$335 million in additional costs for the healthcare system. To avoid penalties, hospitals and other care providers will have 37 business days to comply with the initiative, meaning hiring approximately more than 160 RNs per business day. California, on the other hand had approximately 5 years, from 1999 when the AB 394 was passed until 2014 when it became mandatory to follow the mandatory staffing requirements.

Total Costs Associated with Hiring New RNs	
Type of Cost	Total Recruitment Cost
Recruitment Costs	\$86,162,371
Turnover Cost	\$249,074,359
Total Cost	\$335,236,730

The research shows that the MNSR will be costly and difficult to implement, resulting in significant strains on the region’s healthcare system. These aggressive hiring requirements will ripple throughout the state’s economy, with the effect of increasing costs for the region’s healthcare system and its consumers, when Massachusetts has already the second highest health care expenditures per capita in the country (31% above the national average) and the state continues its effort to decrease healthcare spending.

¹⁴ It appears that MNSRs may negatively impact wage parity in the short-term among Massachusetts Nursing Association members, as existing collectively bargained agreements would have to be renegotiated when those legally binding agreements expire before wage increases could occur for those RNs.

¹⁵ Source: Economic Modelling Specialists International (Emsi) 2018.1 Class of Worker data.

Applying conservative estimates and a mixed-method methodological approach, the research team found that the price tag of this ballot initiative amounts to about **\$1.31 billion in the first year and over \$900 million per year thereafter** to the healthcare system and approximately \$100 million in direct state spending—a bill to be paid by residents in the form of higher insurance premiums, copayments, and taxes. While the goal of the initiative is to improve the quality of healthcare for both patient and provider, it is likely that the MNSR will have adverse effects like reducing the quality of care and eliminating important services, thus offsetting any benefits that the initiative’s sponsors believe may be achieved from the proposed changes.

Type of Cost	Total Costs
Wages and Benefits	\$871,907,399
Recruitment Costs	\$86,162,371
Turnover Cost	\$249,074,359
Training Reimbursement	\$45,597,256
Acuity Costs	\$58,000,000
Sub-Total	\$1,310,741,386
Additional State Spending	\$100,000,000
Total	\$1,410,741,386

I. INTRODUCTION- PROPOSED NURSING STAFFING RATIO

BW Research Partnership and Mass Insight Global Partnerships were commissioned by the Massachusetts Health & Hospital Association to estimate the economic impacts of the mandated nurse staffing ratios (MNSR) as proposed by ballot initiative. The Safe Patient Limits Ballot Initiative, which was certified by the Attorney General on September 2017, proposes setting a maximum limit on the number of patients assigned to a Registered Nurse, based on the argument that there are no current requirements for hospitals in Massachusetts to provide a specific level of nursing care in areas such as the emergency department, medical-surgical floors, maternity units, or psychiatric units. The certification approval indicates the initiative has passed constitutional standards and can now be brought to voters in November of 2018, pending the outcome of legal challenges.

Massachusetts is not the first state to propose MNSR, though this proposal is the most stringent. California was the first state – and notably, the only state – to implement a minimum RN-to-patient ratio for hospitals. California’s Assembly Bill 394 (AB 394) passed in 1999, and final regulations were issued to implement the law in 2003. Hospitals were required to meet the mandated staffing ratios by January 1, 2004¹⁶ - nearly five years from passage to implementation. AB 394 established specific RN-to-patient ratios for acute care, acute psychiatric, and specialty hospitals and required that no nurse could be assigned responsibility for more patients than the specific ratio at any time, under any circumstances. Notably, AB 394 lacks penalties for noncompliance and allows for increased reliance on LPNs. On January 1, 2008, California’s ratio law completed its “phase-in period” and was updated by the California Department of Health Services with new mandated minimum RN-to-patient ratios.¹⁷ Preliminary estimates of the direct cost of complying with AB 394 ranged from \$198,000 to \$2.3 million per hospital and in a comparative study, results showed that mean operating margins were lower and mean operating expenses were higher for hospitals in California than in hospitals in 12 comparison states.¹⁸

This study addresses the MNSR impacts to RN staffing, wages, acuity tools, and other direct costs of implementation, unintended consequences to other care services and providers, and direct labor costs associated with meal-time coverage, overtime and non-productive hours coverage, patient census variability, cost of recruitment, and other direct and indirect costs of compliance to the Massachusetts healthcare system. It is important to note that these additional costs associated with the proposed MNSR come at a time when the state continues to lower the statewide cap on healthcare spending and the federal budget recommends significant cuts to healthcare programs.¹⁹

¹⁶ Source: <https://www.cga.ct.gov/2004/rpt/2004-R-0212.htm>.

¹⁷ Source: <https://www.amnhealthcare.com/latest-healthcare-news/rn-to-patient-hospital-staffing-ratios-update/>.

¹⁸ Source: Reiter et al., 2012. Minimum Nurse Staffing Legislation and the Financial Performance of California Hospitals. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3337946/>.

¹⁹ Source: <https://www.beckershospitalreview.com/finance/massachusetts-sets-more-aggressive-healthcare-spending-target.html>.

Some estimates suggest that Massachusetts could lose more than \$12.5 billion in Medicaid funding each year if the Trump Administration’s FY 2019 budget is approved as drafted.²⁰

In addition to the estimated costs, the research team assessed actual feasibility of compliance including current RN staffing levels, number of existing vacancies, current overtime time usage and limits, and regional workforce supply. In a third phase of the research, the team addressed the impacts to healthcare drawn from experience in California, including down-skilling of RNs that may be required due to mandates and equity of care resulting from the most skilled and experienced RNs being hired by the employers with the highest revenues, as well as the regional impact of compliance, which may result in fewer beds available and hospital closures.

The Massachusetts healthcare system is powered by the most talented professionals in the nation²¹ and is home to some of the highest rated hospitals. Massachusetts General Hospital, for example, ranks second as the best diabetes and endocrinology hospital in the country and both Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital rank second as the best ear, nose, and throat hospitals in the nation.²² Implementation of MNSRs would disrupt this successful formula by limiting flexibility and limiting the ability of providers to hire the most qualified candidates available.

The methodology used to calculate the impacts in this report includes synthesis of existing data from PatientCareLink (PCL), the Bureau of Labor Statistics (BLS), and Economic Modelling Specialists Intl. (Emsi), as well as a comprehensive, statistically representative survey of hospitals and other care providers, executive interviews with hospital leaders, nurses, and education providers, and a customized econometric model to identify not only the number of RNs required for compliance, but also the costs and feasibility of compliance.

II. HEALTHCARE COSTS IMPACTS OF IMPLEMENTING MANDATED NURSE STAFFING RATIOS

The MNSRs proposed in the “Safe Patient Limits Ballot Initiative” (Massachusetts Nurse-Patient Assignment Limits Initiative) carries significant financial cost. To meet the requirements of the pending measure, healthcare providers across Massachusetts will be required to hire 5,911 RNs, with a majority in evening, night, and weekend positions. This dramatic, rapid increase in hiring and competition for already scarce talent will produce increased additional costs from wage inflation, recruitment and turnover expenses, and additional training. These increased financial costs will be implemented in a state with already one of the highest health care costs per capita in the

²⁰ See Schneider, A., “Administration’s Budget Proposal Includes \$1.4 Trillion in Medicaid Cuts,” Georgetown University Health Policy Institute, Center for Children, Feb. 12, 2018; Kaiser Family Foundation, “Medicaid in Massachusetts,” available at: <http://files.kff.org/attachment/fact-sheet-medicaid-state-MA>.

²¹ Source: <https://www.nursingschoolhub.com/cutting-edge-nursing/>, <http://www.castleconnolly.com/about/news.cfm>.

²² Source: <https://health.usnews.com/best-hospitals/rankings>.

country,^{23,24} unadjusted for cost of living. Proponents of the ballot initiative have used the Massachusetts' high health care costs and California's lower health care costs (unadjusted for cost of living) as an argument for the implementation of NSRs and as an example of California's NSRs success. However, California's health care costs per capita have been historically lower than the national's average and consequently these lower costs should not be attributable to the AB 304 implementation. Additionally, because the proposed ballot initiative prevents hospitals from mitigating their costs by reducing staffing levels among other areas such as support or administrative staff, the costs will be passed on to consumers in the form of higher insurance premiums, and copayments and taxes. This will likely significantly reduce the availability of healthcare services for all residents of the Commonwealth and will result in a reduction of available beds in specific areas, unit closures, and in some cases, closure of entire facilities.

To calculate the economic impacts of the proposed MNSRs, the research team performed multiple analyses to calculate the number of additional RNs required, the potential for wage inflation, and the other added costs that are associated with the measure. Without addressing capital infrastructure costs or state educational subsidies needed for training new RNs or any potential revenue losses based on hospital or unit closures, the estimated increased cost of the MNSR ballot initiative to Massachusetts healthcare system is \$1.31 billion in the first year and over \$900 million per year thereafter.²⁵

A. ADDITIONAL STAFF REQUIREMENTS

The economic impact analysis started with determining how many new RNs would be required in Massachusetts to comply with the proposed MNSRs. The research team used two different methodologies to calculate how RN employment would be impacted if the ballot measure succeeds. In the first method the team used primary data collected through PatientCareLink, which includes average daily census data by unit and shift, and the second methodology was built using publicly available labor market data for Massachusetts and California, based on California's Assembly Bill 394 which implemented a similar, but much less stringent nursing staff ratio in 2004.^{26,27}

²³ Unadjusted health care costs per capita include spending for all privately and publicly funded personal health care services and products (hospital care, physician services, nursing home care, prescription drugs, etc.). Costs such as insurance program administration, research, and construction expenses are not included in this total and are not adjusted to the local cost of living.

²⁴ Source: <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence.html>.

²⁵ Note that this figure is even higher than the \$881 million annual estimate released earlier this year by the Massachusetts Hospital Association.

²⁶ Source: Massachusetts Nurses Association: "Safe Patient Limits Ballot Initiative" Certified by Attorney General. Available at: <https://www.massnurses.org/news-and-events/p/openItem/10633> and Bureau of Labor Statistics Occupational Employment Statistics. May 2017 release.

²⁷ Source: California RN Staffing Ratio Law: <https://www.cga.ct.gov/2004/rpt/2004-R-0212.htm>.

PatientCareLink

In this methodology, the research team started by calculating the difference between *current* and *proposed* RN-to-patient ratios, which would result in the estimated total number of RNs needed for compliance.

The *current* (budgeted) RN-to-patient ratios are calculated using the average daily census by unit and data on budgeted staffing by unit and shift as reported in PatientCareLink “supplemented by MHA NSR Cost Survey.”²⁸ To calculate the *proposed* RN-to-patient ratio, the research team analyzed the proposal’s maximum RN-to-patient ratios, which vary in some unit types in the hospital based on patient acuity and applied acuity averages when applicable.²⁹

A few factors were important when calculating the required number of RNs. One is that the proposed MNSRs are expected to be met at **ALL** times, meaning that calculations must take into account factors like meal time coverage, non-productive time such as vacation and holidays, overtime, worked holidays, and patient census variability. To account for meal time coverage, the calculation was based on the federally mandated 30-minute break per RN,³⁰ which was used to estimate additional RNs in the unit to ensure the MNSR compliance. Additional non-productive time includes paid time-off, vacation and personal days, training and orientation, and turnover factors.³¹

Since the RN-to-patient estimates are based on census averages, it is important to account for patient census surges (i.e., when the number of patients is above average and consequently more nurses are needed). The census variability factor is estimated at two additional RNs per unit, based on PatientCareLink data.³²

In total, the analysis suggests a total deficit of **4,515 RNs**, including Emergency Department RNs (Table 1) to ensure compliance with the MNSRs. This deficit represents the difference between the current number of RNs and the required number of RNs (to meet the at-all times requirement and census variability) in both acute and post-acute hospitals. Additionally, hospital outpatient units could bring additional costs to the MNSR implementation, however, staffing data for these units is unavailable.

The PatientCareLink data include budgeted RN positions, meaning that they assume full staffing with no RN vacancies. The current RN vacancy rate is at least 5.3%, or a minimum of 1,200 RNs.³³ Factoring in vacancies and new RN positions requires **5,715 new RNs to be hired in less than two**

²⁸ ED compliance costs were computed using costs reported by hospitals in the NSR costs survey.

²⁹ Source: [https://ballotpedia.org/Massachusetts_Nurse-Patient_Assignment_Limits_Initiative_\(2018\)](https://ballotpedia.org/Massachusetts_Nurse-Patient_Assignment_Limits_Initiative_(2018)).

³⁰ Source: <https://www.mass.gov/guides/breaks-and-time-off>.

³¹ Based on PatientCareLink data and the MHA Hospital NSR Cost Survey, it was estimated that 17.5-20% of RNs time is non-productive time, overtime was estimated at 3.9-4.3% at 1.5 average hours worked per RN and worked holidays were assumed to be 5 per RN.

³² Source: <http://patientcarelink.org/healthcare-provider-data/hospital-data/staffing-plans-reports/2017-plans/>.

³³ Source: PatientCareLink: MHA-ONL 2016 Nursing Survey Highlights. Available at: <http://patientcarelink.org/wp-content/uploads/2017/11/MHA-ONL-2016-Nursing-Survey-HIGHLIGHTS-TO-POST-ON-PCL.pdf>.

months. MNSRs would clearly exacerbate the current nursing shortage, which is currently highest in Psychiatric units (7.8%) and in Emergency Departments (7.5%).³⁴

Bureau of Labor Statistics

The research team conducted an alternate methodology to validate the PatientCareLink results, using Occupational Employment Statistics (OES) data from the Bureau of Labor Statistics (BLS) to analyze California’s employment trends between 2000 and 2004, the latter being the year of California’s MNSR implementation. In that year, RN³⁵ employment in California increased by 8.19%, after averaging less than half a percent annually in the three years preceding. Given that the annual preceding Massachusetts RN growth rate is currently nearly four times higher than it was in California, it can be reasonably assumed that should the proposed MNSRs be approved, RN employment will grow by at least this much.³⁶

According to the most recent data from the Bureau of Labor Statistics, Massachusetts RN positions have grown on average 1.14% since 2014.³⁷ Using this annual average growth and assuming the 1,200 open vacancies are filled, there will be a total of 85,962 RN positions in 2019, assuming no changes are made to the current nurse staffing ratios. If the MNSR-driven growth rate (8.19%) that was experienced in California is applied to Massachusetts, a total of 91,873 RN positions are expected in 2019, a difference of 5,911. It is important to note that the remaining estimates assume that hospitals will be able to successfully hire more than 2,000 additional RNs prior to implementation in 2019, to account for growth and filling current vacancies. Including this hiring in the result would increase costs by another \$243 million, bringing the total cost to the healthcare system to over \$1.55 billion.³⁸

As demonstrated below, the two independent calculations produce a highly congruous result, with a difference of only 196 RNs (3.4%). The difference is largely attributable to the limitations of PatientCareLink data and the exclusion of hospital-affiliated outpatient centers.

Table 1: Additional RNs Required in MA for MNSR Compliance in 2019 using PatientCareLink and MHA NSR Cost Survey data

Methodology	PatientCareLink	BLS
Additional RN Required	5,715	5,911

³⁴ Source: Ibid.

³⁵ Registered Nurses: SOC 29-1111.

³⁶ This is a conservative estimate, as the three-year average growth rate in California preceding implementation was significantly lower than the three most recent years in Massachusetts.

³⁷ Calculations performed using data from Occupational Employment Statistics Data from the Bureau of Labor Statistics (BLS), May 2017 release.

³⁸ *Id.*

B. WAGE INFLATION

Putting aside the projected program impact of the proposal on the overall healthcare system, hospital-based hiring of 5,911 additional RNs over the long term would be a difficult challenge. To do so in less than two months is likely impossible. For perspective, approximately 6,000 RNs are hired in total across all care settings in Massachusetts over an entire year, which includes regular turnover and churn, replacing retirements, and annual position growth at hospitals, clinics, physician offices, schools, and other settings. Such a rapid increase in hiring would encourage significant wage inflation.

As with calculating the number of RNs required with the passage of MNSRs, the research team applied two separate methodologies for estimating wage inflation. Each relies on the California experience, which must be noted, had a five-year implementation period, allowed LPNs to be included in the ratios, and lacked penalties.³⁹ As a result, it is likely that the wage inflation in Massachusetts would be higher than the provided estimates, should the proposed MNSRs be enacted.

Survey Data

The research team first analyzed RN wage data from the academic literature.⁴⁰ Following the MNSRs implementation, wages in California increased by 7 to 9%⁴¹ and similar changes were expected to occur in Massachusetts if the MNSRs were approved. It is expected that wages would increase at a higher rate for new RN hires than for existing, hired RNs.⁴² Thus, the team estimated that for existing RNs wages would increase by 3.5% and for new RNs wages would increase by 7% following the implementation of MNSRs (Table 2).

Table 2: Expected Wage Growth from MNSRs Implementation

Registered Nurses	% Wage Increase from MNSRs
Existing RNs	3.5%
New RNs	7.0%

The competition for RNs would certainly impact wages at non-hospital settings as well. For the purposes of this analysis, the research team assumed that a small portion of the most experienced

³⁹ Source: <https://www.bizjournals.com/sacramento/blog/kathy-robertson/2012/10/no-nurse-ratio-penalties-veto-brown-cali.html>

⁴⁰ Source: https://healthforce.ucsf.edu/sites/healthforce.ucsf.edu/files/publication-pdf/5.1%202008-06_Californias_Nursing_Labor_Force_Demand_Supply_and_Shortages.pdf, p.78.

⁴¹ Ibid.

⁴² We make this assumption based on the time it would take time to renegotiate enforceable collectively bargained contracts for existing RNs.

and valuable RNs (2% of all non-hospital RNs) would require wage parity with their hospital peers in order to stay in their current setting. The research team then assumed that 10% of RNs in non-hospital settings would require current parity (an 8% raise), while 58% would experience wage inflation of 4% and 30% would experience wage inflation of 3%. These data were then applied to the lower mean wages paid to non-hospital RNs to determine the economic cost to non-hospital healthcare settings of wage increases due to competition sparked by MNSRs.

The resulting estimated new RN salaries, wage inflation, acuity tools, census variability factor, and indirect costs from MNSRs using this methodology is almost \$900 million across the entire healthcare system. This figure excludes recruitment and turnover costs.

BLS Data

A second analysis used OES data from the Bureau of Labor Statistics to estimate average RN wages in 2019. Since the latest data release was for year 2017, the average wage growth from the previous three years was applied to 2017 data to calculate the projected RN wages in 2019 in Massachusetts.

In California, wage growth preceding MNSR implementation was higher than the current rate of growth in Massachusetts and the MNSR implementation resulted in overall doubling of RN wage inflation in California in the year of implementation (2004) – 7.5% in a single year.⁴³ Thus, to calculate how the MNSR would affect RN wages in Massachusetts, the research team assumed that the same doubling would occur in MA if the MNSR were approved. The wage inflation used for this analysis, therefore, is 3.55%, or double the growth rate from the previous years, rather than 7.5%, though there is evidence to suggest that because of the strict implementation timeline and lack of flexibility in the regulation, 3.55% is likely a low estimate and that if wages grew by the 7.47% rate as they did in California, it would increase wage inflation costs by more than \$400 million to \$1.3 billion.

Wage inflation from MNSRs would likely result in an increase of about \$1,700 to the mean annual wage for all RNs, regardless of care setting, to \$94,052 compared to \$92,348 per year. In addition to the wages, fringe benefits are 24% of the annual wages based on BLS data (Table 3).⁴⁴

Table 3: Project Mean Wage for RNs in 2019 in Massachusetts

Scenarios	Mean Wage (2019 US\$)	Change from 2018 (%)
MNSRs	\$94,052	3.55%
Baseline	\$92,348	1.68%

⁴³ Bureau of Labor Statistics Occupational Employment Statistics. May 2017 release.

⁴⁴ To note that fringe benefits include fixed and relative costs, so even if the rate remains the same, as wages increase, the total fringe benefit costs increase as well.

C. RN RECRUITMENT AND TURNOVER COSTS

Typical recruitment and turnover costs for RN positions, include referral bonuses, headhunter fees, new hire training, and (in the case of turnovers) temporary staffing, among others. Given the volume of hiring that would be required over a two-month period by the MNSR proposal, actual costs would likely be higher than the current averages, so the recruitment and turnover costs reported herein are likely again conservative in nature.

In a recent survey of Massachusetts hospitals, employers report that recruitment costs average \$14,577 per filled RN vacancy. This is in line with a report from The American Federation of State, County, and Municipal Employees, given the higher labor costs and lower unemployment rate in Massachusetts⁴⁵. The added recruitment expense to hospitals to meet the MNSRs is therefore approximately \$86 million, in addition to the roughly \$53 million spent on RN recruitment by hospitals in Massachusetts annually.

These new hires will cause substantial disruptions to other hospitals and care providers throughout the state. There is currently very limited additional available supply from existing nursing schools to meet the need, so fierce competition among employers and significant turnover will result. It is likely that each of the 5,911 RN hires will produce multiple additional exits and hires. For the purpose of this analysis, however, we have assumed only one exit per hire, which may significantly undercount the economic costs of turnover to the healthcare system—especially given that hospital employees report that 94% of their recent hires had at least 1 year of experience.⁴⁶

Turnovers are much more expensive than recruitment because of the lost productivity and cost to cover the vacancy. This comes in the form of overtime, temporary/visiting nurse hires, and reduced elective patient flow. Massachusetts hospitals report that the average cost of turnover is \$40,968, on the low range of the \$38,900 to \$59,700 provided by the 2017 National Health Care Retention & RN Staffing Report by NSI Nursing Solutions Inc.⁴⁷ Based on a weighted average of RNs employed in hospitals (64%) and non-hospitals (36%), the research teams calculated average turnover costs of \$42,139 per RN (Table 4).

Table 4: Recruitment and Turnover Cost per RN

Recruitment Cost per RN	Turnover Cost per RN
\$14,577	\$42,139

⁴⁵ Available at: <https://www.afscme.org/news/publications/health-care/solving-the-nursing-shortage/the-cost-of-failure>.

⁴⁶ Data are drawn from a recent BW Research survey of healthcare employers in Massachusetts.

⁴⁷ Available at: <http://www.nsinursingsolutions.com/Files/assets/library/retention-institute/NationalHealthcareRNRetentionReport2017.pdf>.

Based on the 5,911 new RNs that will need to be hired, the MNSR proposal will cost the healthcare system more than \$86 million in recruitment costs and \$249 million in turnover costs for a total of more than **\$335 million** (Table 5).

Table 5: Total Costs Associated with Hiring New RNs

Type of Cost	Total Recruitment Cost
Recruitment Costs	\$86,162,371
Turnover Cost	\$249,074,359
Total Cost	\$335,236,730

D. EDUCATION AND TRAINING

Following the disruptive recruitment, turnover, and replacement, significant vacancies will still exist, likely at non-hospital care settings such as long-term care, behavioral health centers, home healthcare organizations, and community clinics. These employers, which are unable to compete in a highly-competitive, high-wage environment, are likely to face significant shortages and will seek to hire new graduates of public and private nursing schools across the region.

The most recent data show that Massachusetts RN hiring from retirements and other exits and new positions is 6,076 per year and that on average there are 6,285 annual educational completions in Massachusetts, including approximately 1,850 Associate’s degrees in nursing (ASN) and 3,400 bachelor’s degrees in nursing (BSN) (Table 6).⁴⁸ The MNSR proposal will leave a shortfall of 5,702 RNs that will need to be educated. If we assume a mix of public and private and 2- and 4-year programs, the resulting cost to the healthcare system is \$45.6 million in training reimbursement.⁴⁹ This is in addition to \$432 million in privately borne educational costs and \$68.4 million in educational subsidy costs to the state government.⁵⁰

Table 6: Average Annual Educational Completions in Massachusetts for RNs

Programs	Annual Educational Completions
Associate's degrees	1,850
Bachelor's degrees	3,400
All other awards	1,035

⁴⁸ Economic Modeling Specialists, Inc., 2018.1 Class of Worker Data from IPEDS. Remaining completions are MSN, PhD, and other awards.

⁴⁹ Calculations are based on average costs of public and private 2- and 4-year universities in Massachusetts.

⁵⁰ These figures assume that 1,000 graduates from neighboring states are hired in Massachusetts.

E. ACUITY TOOLS

Acuity tools are software programs and devices that ensure flexible scheduling and compliance with MNSRs. While most hospitals have some acuity tools in place, the additional costs of purchasing and implementing acuity tools in each unit is significant, at approximately \$58 million across the entire system, according to a survey of hospital leaders administered in the second quarter of 2017.⁵¹

F. STATE GOVERNMENT

In addition to the costs to the private healthcare system, the state will also face approximately \$100 million of new required state government costs in the first year and approximately \$20 million annually thereafter. This is due to increased costs of at least \$30-40 million for compliance with MNSRs at state-funded hospitals (including wage inflation),⁵² and more \$65 million in tuition subsidies for the required increased enrollment in ASN and BSN programs at public colleges and universities (including community colleges). In addition to direct costs around hiring nurses in state facilities, both the Department of Public Health and the Health Policy Commission will need larger budgets to hire enforcement staff (per the law) and additional infrastructure, in the form of classrooms and lab space would further increase state government spending on healthcare, already a major line item in the annual budget. Nonetheless, more research will need to be conducted to determine the full costs of implementation for the State.

TOTAL ECONOMIC IMPACT

The total increased cost of the implementation of the proposed ballot initiative to the healthcare system in Massachusetts is conservatively estimated at \$1,310,741,386 in the first year and over \$900 million per year thereafter⁵³ and approximately \$100 million in the first year and \$20 million annually thereafter in direct state costs, including additional wages and benefits expenditures, recruitment, turnover, training reimbursement costs, and acuity costs. Adding the 1,200 existing RN vacancies to the calculations would increase costs by another \$243 million, bringing the total cost to the healthcare system to over \$1.55 billion. **Additionally, if the implementation more closely mirrors the outcomes in California, the cost would swell to more than \$2 billion in additional costs.**⁵⁴ The measure would also add nearly a half-billion in education and training costs, borne by private individuals.

⁵¹ The \$58m represents only the acuity tool costs of MHA members who took the survey. Actual implementation costs may be much higher.

⁵² This figure is based on the new RNs required by ratios, wage inflation, and recruitment costs for the 1,082 current RNs working in state hospitals per BLS data.

⁵³ Note that this figure is even higher than the \$881 million annual estimate released earlier this year by the Massachusetts Hospital Association.

⁵⁴ This is estimated by applying the higher 7.47% average RN salary growth rate and the filling of the 1,200 existing vacancies alone.

III. IMPACT TO CARE

In addition to the enormous costs of implementation, there is ample evidence to suggest that MNSRs will result in dire unintended consequences that reduce the accessibility and quality of care in Massachusetts. These impacts would be felt across the state, though would be most acute in specific regions of the state and specific care settings – also critically impacting the overall economic impacts to the state.

As previously reported, the likelihood that Massachusetts hospitals will be able to hire 5,911 RNs in less than two months is likely impossible. More time is not the answer; if the measure passes and MNSRs are implemented as proposed, hospitals will face the difficult decisions of how to reduce or eliminate specific services to maintain compliance with ratios. **In California, some hospitals had to close units and growth rates for uncompensated care among County and for-profit hospitals decreased following the implementation of the State’s MNSRs, even with five years to prepare.**⁵⁵

“ In trauma centers we refer to the **Golden Hour** which refers to the significantly better outcomes when we can treat tissue injuries within one hour of trauma. We are really concerned that these ratios could mean that some specialty beds will have to close, and care may be more than an hour away for residents outside of Boston.”

Hospital leaders were clear that there are no good options. One even stated that “there is no way to effectively plan for Armageddon.” This is not mere hyperbole – many hospitals face the elimination of programs that provide important community benefits and have been years in the making.

This report examines three potential unintended consequences, though there are likely many more. These include: 1) reducing RN qualifications; 2) reducing or eliminating specific care units across Massachusetts; and 3) major regional closures that will impact large communities of care in Massachusetts.

A. IMPACTS TO QUALITY

Massachusetts is globally recognized as a leader in quality healthcare. Hospitals in the Commonwealth practice on the cutting edge of medical treatments and have highly-qualified staff caring for patients from all around the world. Hospitals here are selective, and for good reason; **the**

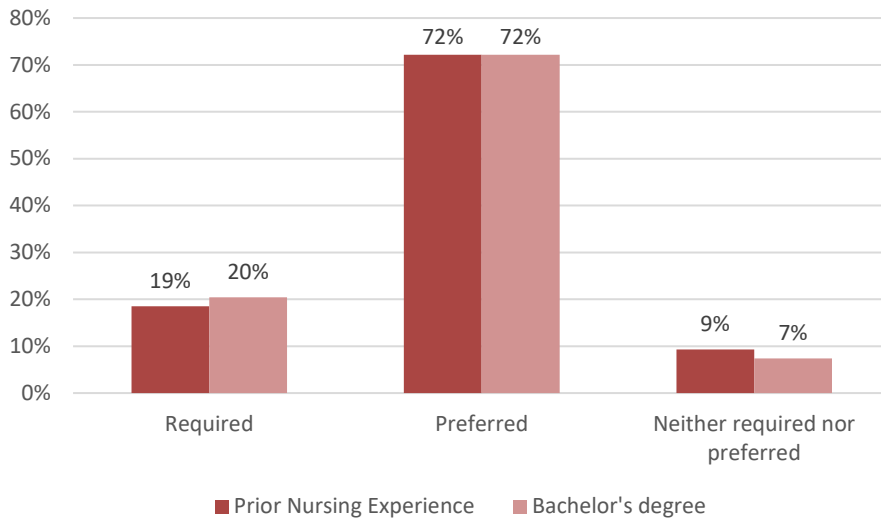
⁵⁵ Source: Reiter et al., 2012. Minimum Nurse Staffing Legislation and the Financial Performance of California Hospitals. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3337946/>

academic literature clearly supports that hiring RNs with a bachelor’s degree in nursing (BSN) likely improves patient outcomes.⁵⁶

Massachusetts hospitals clearly recognize the value of education and experience. Ninety-one percent of surveyed hospital leaders say that they either require or prefer prior experience – and 84% of new hires have 2 or more years of prior nursing experience.

Bachelor’s degrees have been the preferred requirement in hospitals– 93% report that they either require or prefer a bachelor’s degree in nursing for applicants for open RN positions and 91% of their new hires over the past year have a BSN. Today, more than 70% of all RNs working in Massachusetts hospitals have a BSN or more.

Figure 1: Importance of Prior Experience and Education for Applicants for Open Positions⁵⁷



Hospitals recognize, however, that the preference for experience and education that lead to better patient care cannot continue if the proposed MNSRs are implemented. Fully 70% of hospitals report that hiring less experienced or less educated RNs would be at least part of their response to MNSRs, with 41% reporting it as their primary response to meet such new staffing requirements.

Even if hospitals attempt to maintain their preference for a BSN, the supply simply will not keep up with the demand, as Massachusetts institutions of higher education produce only about 3,400 BSN graduates per year,⁵⁸ well short of even keeping pace with the number of retirements and other openings annually. While proponents of the measure suggest MNSRs will improve patient safety, the

⁵⁶ See Belgen, et. al.

⁵⁷ Source: Data are drawn from a recent BW Research survey of Hospitals in Massachusetts.

⁵⁸ Economic Modeling Specialists, Inc., 2018.1 Class of Worker Data.

down-skilling of RNs suggests any such gains would be likely to be offset or even worsened by passage.⁵⁹

B. IMPACTS TO SPECIALTY CARE

Another critical consequence of the implementation of the MNSR proposal is the impact to specialty care units that would become cost prohibitive to operate. Such difficult decisions would clearly have to be made, as both the costs of implementation and the availability of skilled RNs to ensure safe and quality care would require resources to be allocated to core services. These reductions and closures would result in longer waiting periods for appointments, fewer patient care options, greater inequity of care, and potentially catastrophic public health concerns.

Community health benefits will be the single most impacted element. Community benefits include charity care and direct community spending addressing community health issues like housing and substance abuse, defined as a program, grant, or initiative developed with community representatives or based on a community health needs assessment for a target population identified by the hospital through its community assessment and identified in its community benefit plan.⁶⁰

While the federal government requires all nonprofit hospitals to develop charity care programs to assist low income patients access healthcare services, in Massachusetts the Attorney General has issued guidelines for nonprofit acute care hospitals that outlines expectations on providing charity care as well as direct community-based programs to improve the overall health of the hospital's service area. It is important to note that community benefits programs are not reimbursed by any third-party payer and are provided by hospitals out of its general operating budget. Therefore, the ability to support community-based services is based on the hospital's ability to allocate funds from its operating budget without having to support new unfunded mandates like the nurse staffing ratios. In FY 2016, the community benefits reported by acute care hospitals totaled \$648 million, including \$41 million in free or discounted care provided directly to patients.⁶¹ Regretfully, since 2012 community benefit spending among hospitals in Massachusetts has been declining⁶² and the cost of implementing MNSRs will further reduce this spending, which is created to provide more equity in healthcare delivery.

⁵⁹ Source: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)62631-8/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)62631-8/abstract).

⁶⁰ Office of Attorney General Community Benefit Guidelines Non-profit Acute Care Hospitals, Commonwealth of Massachusetts. Available at <http://www.mass.gov/ago/docs/healthcare/hospital-guidelines.pdf>.

⁶¹ Note: these numbers do not include data from Boston Medical Center or Cambridge Health Alliance who is exempt from reporting, so the numbers can be much larger.

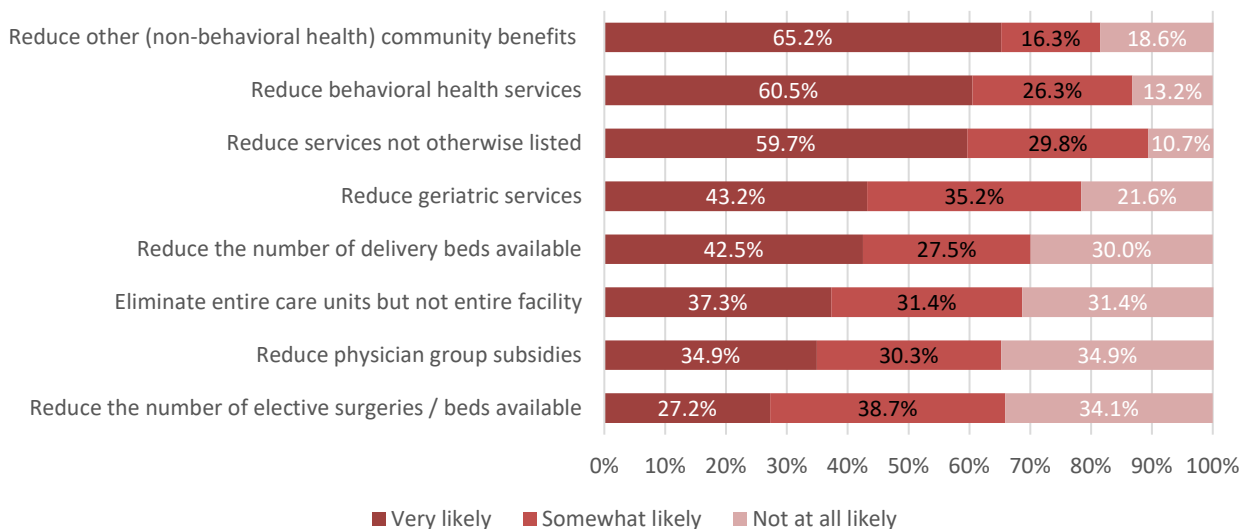
Source: <http://www.mass.gov/ago/news-and-updates/press-releases/2017/2017-06-07-hospitals-community-benefits-2016.html>.

⁶² Source: <https://www.beckershospitalreview.com/finance/community-benefits-spending-among-massachusetts-hospitals-on-decline-7-things-to-know.html> and http://www.salemnews.com/news/hospitals-community-benefit-spending-drops/article_3d9f1424-7bd6-11e7-ae21-d7cf94f95aa8.html.

In recent years, community health benefit programs have been critical in fighting the opioid epidemic and other behavioral health issues. Reducing the ability of hospitals to fund these important initiatives could not come at a worse time.

Sixty-five percent of hospitals say it is very likely that they will reduce non-behavioral health community benefits (an additional 16% say it is somewhat likely) and 61% report it very likely that they will reduce behavioral health services (26% somewhat likely) (Figure 2).

Figure 2: Likely Hospital Responses to Mandatory Nurse Staffing Ratios⁶³



Maternal health is another area that will be significantly impacted. Seventy percent of hospitals report that it is likely that they will reduce the number of delivery beds available (43% very likely) (Figure 2) due to both the inability to find qualified specialized RNs and the cost of compliance. This means that expectant mothers will be less likely to deliver at their hospital of choice, with the OB/GYN team that has supported them throughout the pregnancy.

“
 The ratios limit our ability to deal with patient census variability. We are really concerned that the experience of dividing sets of twins in the NICU for compliance could become more common with the proposed new ratios.”

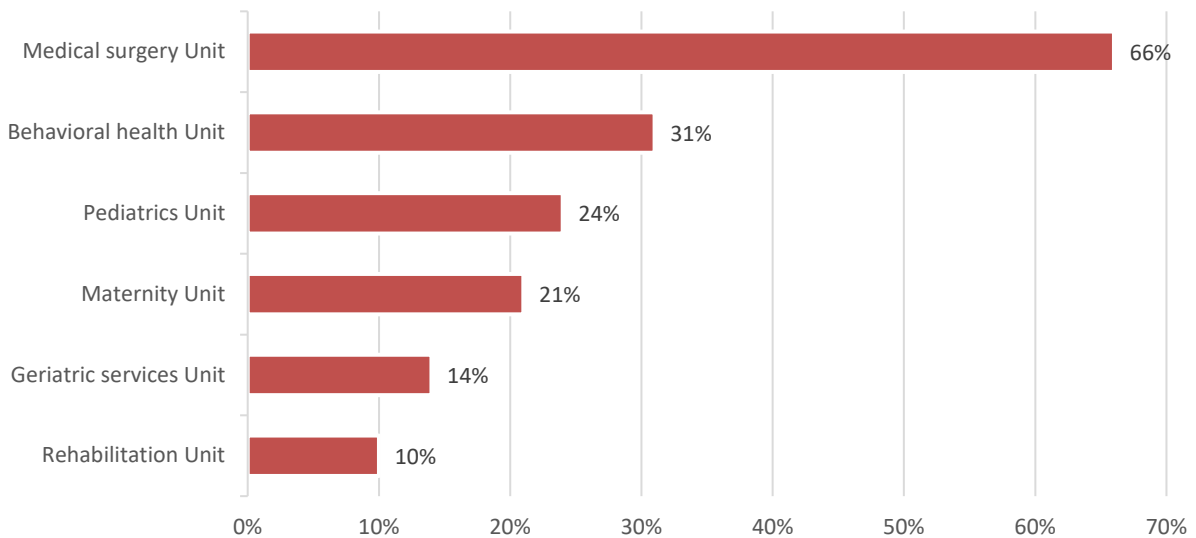
Geriatric and other long-term care are also likely to suffer. The proposed ratios make long-term rehabilitation facilities financially untenable, with no clear path for how they will continue

⁶³ Source: BW Research 2018 Hospital Survey.

to operate. These facilities operate on much lower margins and cannot absorb wage increases. With the demand for RNs resulting from MNSR implementation, long-term care facilities are most likely to bear the brunt of the vacancies with no obvious solution to where they will find RNs to hire.

In addition to long-term care, nearly 80% of hospitals report that they will reduce geriatric services (43% very likely) and almost 70% of hospitals report that they will close specific care units entirely (Figure 2). Lastly, the most impacted type of units are medical surgery units (66%), behavioral health (31%), pediatrics (24%), and maternity (21%) (Figure 3). The hospital concerns reported in the survey align with the recent closing trends experienced in the state. In 2014, North Adams Regional Hospital abruptly closed its doors, laying off 500 workers and making residents having to drive 18 miles north or 21 miles south to find the two nearest medical centers.⁶⁴ Quincy Medical Center also closed its doors in 2014, the largest hospital closure in the state in 10 years, laying off almost 700 workers.⁶⁵ In 2017, North Shore Medical Center announced that it would shut down its pediatric inpatient unit and the Southbridge Harrington Hospital approved the closing of its family birthing center as result of staffing difficulties and low birth volume.⁶⁶

Figure 3: Most Likely Impacted Units from Following Mandatory Nurse Staffing Ratios⁶⁷



⁶⁴ Source: <http://www.healthleadersmedia.com/community-rural/sudden-hospital-closure-stuns-ma-community-more-coming>.

⁶⁵ Source: <https://www.healthcarediver.com/news/massachusetts-sees-biggest-hospital-closure-in-decade/330915/>.

⁶⁶ Source: <https://www.beckershospitalreview.com/patient-flow/massachusetts-hospital-to-end-labor-and-delivery-services.html>.

⁶⁷ Source: Ibid.

C. IMPACT TO REGIONAL CARE

In addition to the statewide impacts, several regions in Massachusetts will be especially hard hit by the proposed MNSRs, especially the Cape and Islands, MetroWest, Central Massachusetts, and Western Massachusetts. There are several unintended impacts to these regions which will result in an overall lack of access to care, and in some instances, the end of tertiary care in the region.

Several community hospitals will be in clear risk of closure. The closure of an acute care hospital in any of these regions would result in longer wait times for services, long-distance (and often out-of-state) travel for in-patient hospital visits, critical shortages of local emergency room beds, and loss of local physician groups. The impact of these reductions and closures could cost the local economies in the hundreds of millions of dollars annually.⁶⁸

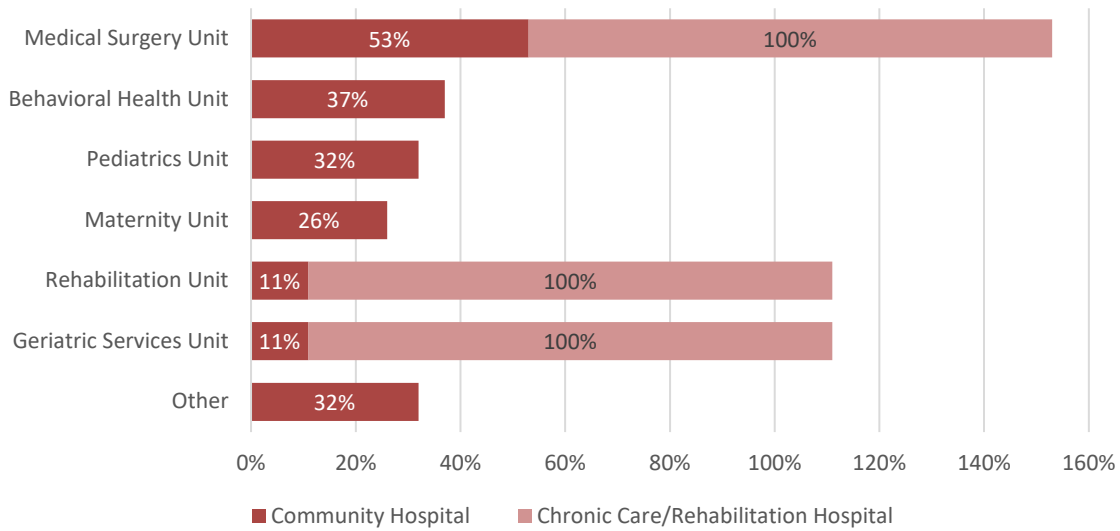
Many community hospitals outside of Boston and Worcester reported the same types of limitations in their beds in behavioral health, delivery, and pediatrics, as a result of the proposed MNSRs. However, the difficulty retaining RNs in lower population areas has an additional effect—closing more profitable units such as medical and surgical units. The loss of revenues from medical surgery and other more profitable units has a cascading impact, ultimately placing the entire regional care system in financial peril (Figure 4).

“

Boston is a world class city and appealing place to live. Our nurses often have roots nearby. We are not going to be able to attract out of state nurses to our region. We don't know what we will do.”

⁶⁸ Economic Impact Analysis for Planning (IMPLAN) and Economic Modelling Specialists International (Emsi).

Figure 4: Reported Most Likely Affected Units by Hospital Type as a result of Mandatory Nurse Staffing Ratios⁶⁹



Note: Percentage denotes the portion of those within each hospital type who selected the specific unit.

The increased costs borne by hospitals in a community setting will likely also translate to a loss of physician groups, which will further exacerbate the shortage of primary care doctors⁷⁰ and specialists who provide specialized treatment and diagnostics at a substantially lower cost than the hospital system.⁷¹ The Massachusetts Department of Health reports that 107 Massachusetts municipalities – 30% of all cities and towns statewide – have no primary care physicians.⁷² Together with the federally defined Health Professional Shortage Areas (41% of Massachusetts), the status quo for “rural and underserved” locations in Massachusetts, “patients struggle to access convenient and timely primary care, making it harder to access preventive care and stay healthy... mak[ing] it increasingly difficult for our state to contain health care costs in a system that is restructuring to rely more heavily on primary care.”⁷³ Many hospitals pay physician group subsidies to attract doctors to their communities and rounding at hospitals is also an important source of revenue to these practice groups. Many hospital leaders fear that the loss of subsidies and rounding may mean that many such physician groups leave the state (Figure 5).

⁶⁹ Source: BW Research 2018 Hospital Survey.

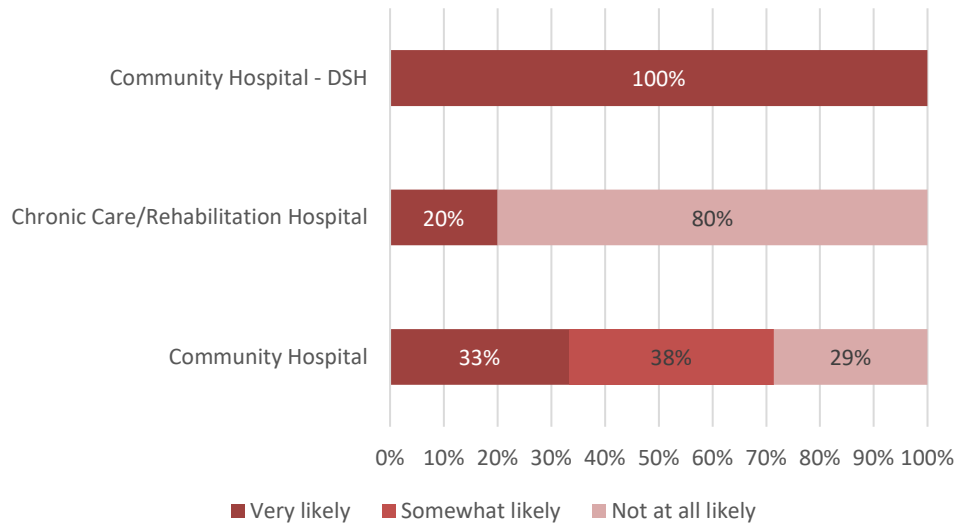
⁷⁰ Source: <https://www.mass.gov/files/documents/2016/07/tf/massachusetts-health-professions-data-series-physicians-2014.pdf>.

⁷¹ See generally, <https://hbr.org/2013/10/the-strategy-that-will-fix-health-care>.

⁷² Source: <https://www.mass.gov/files/documents/2016/07/tf/massachusetts-health-professions-data-series-physicians-2014.pdf>.

⁷³ Phillips, K., “Mass. = Primary Care Doctor Desert,” Commonwealth Magazine, 2016, available at: <https://commonwealthmagazine.org/health-care/ma-primary-care-doctor-desert/>.

Figure 5: Likelihood of Reducing Group Subsidies as a Result of Mandatory Nurse Staffing Ratios ⁷⁴



D. IMPACT TO PEOPLE LIVING IN POVERTY

The impacts of the proposed MNSRs will likely have significant impacts to low income residents of Massachusetts. Some of the impacts will be direct, as hospitals’ most likely budgetary cuts to fund new nursing positions will come from community benefit programs. These programs disproportionately benefit low income communities and communities of color.

There will likely be several additional unintended impacts to low income communities as well, including significant impacts to **three specific care areas: community clinics, home health, and nursing homes**. The data suggest that the increased direct cost from wage inflation alone to these non-covered entities will be nearly **\$28 million per year**, let alone additional staffing requirements and recruitment costs.

The impacts of MNSRs are likely to be felt hardest at the 50 community clinics, the 487 skilled nursing facilities across Massachusetts, and the 755-home health care service firms (as well as the 120 or so additional other local outpatient facilities), which serve a disproportionate number of low-income and elderly residents. Community clinics, skilled nursing facilities, and home health care services agencies will be unlikely to be successful attracting and retaining top RN talent, given the wage inflation that is likely to occur from MNSR-fueled competition. Community clinics and home health agencies in Greater Boston pay on average about 2/3 (\$25 per hour) of the staff RN wage that is paid by the larger hospitals in the area.⁷⁵ Nursing home pay is somewhat higher at about 70%.⁷⁶

⁷⁴ Source: BW Research 2018 Hospital Survey.

⁷⁵ These estimates are drawn from Glassdoor.com reporting of staff nursing salaries at areas in Greater Boston. Pay is even lower outside of Greater Boston.

⁷⁶ Ibid.

The best and most experienced RNs will be enticed by larger signing bonuses and salaries from facilities that have higher reimbursement rates and margins. This would lead to critical shortages in RN staffing, as well as down-skilling. Table 6 illustrates the communities served by the clinics in Massachusetts. Note that incomes in red are below the statewide household income level. It is highly likely that the proposed MNSRs would negatively impact individuals who rely on community clinics, skilled nursing care, and home health care agencies, creating a scenario where they will be treated by fewer RNs who have significantly less experience and education than the ones caring for them today.

Table 7: Community Clinics in Massachusetts, with Median Household Income

Community	Clinic Name	Median Household Income
Allston - Brighton	Charles River Community Health	\$57,330
Charlestown	MGH Charlestown HealthCare Center	\$90,674
Charlestown	New Health Charlestown	\$90,674
Chinatown	South Cove Community Health Center	\$39,670
Dorchester	Bowdoin Street Health Center	\$53,103
Dorchester	Codman Square Health Center	\$50,044
Dorchester	DotHouse Health	\$53,103
Dorchester	Geiger Gibson Community Health Center	\$49,683
Dorchester	Harvard Street Neighborhood Health Center	\$26,313
Dorchester	Neponset Health Center	\$53,103
Dorchester	Upham’s Corner Health Center	\$49,683
Downtown	Boston Health Care for the Homeless Program	\$59,589
Downtown	Sidney Borum Jr. Health Center	\$39,670
East Boston	East Boston Neighborhood Health Center	\$52,152
Fenway	Fenway Community Health Center	\$40,115
Jamaica Plain	Brookside Community Health Center	\$79,419
Jamaica Plain	Southern Jamaica Plain Health Center	\$79,419
Mattapan	Mattapan Community Health Center	\$47,902

North End	North End Waterfront Health	\$86,094
Roslindale	Greater Roslindale Medical and Dental Center	\$68,655
Roxbury	Dimock Community Health Center	\$30,278
Roxbury	Whittier Street Health Center	\$29,592
South Boston	South Boston Community Health Center	\$85,336
South End	Fenway: South End	\$100,674
South End	South End Community Health Center	\$59,589
Adams	CHP Adams Internists	\$48,442
Bourne	Community Health Center of Cape Cod	\$70,574
Brockton	Brockton Neighborhood Health Center	\$44,873
Cambridge	Cambridge Health Alliance Health Centers	\$82,953
Chelsea	MGH Chelsea HealthCare Center	\$49,643
Chicopee	Chicopee Health Center	\$40,876
Clinton	Edward M. Kennedy Community Health Center	\$60,755
Edgartown	Island Health Care	\$70,556
Fall River	Family HealthCare Center at SSTAR	\$34,810
Fall River	HealthFirst Family Care Center	\$34,810
Falmouth	Community Health Center of Cape Cod	\$64,509
Fitchburg	Fitchburg Community Health Center	\$50,617
Framingham	Edward M. Kennedy Community Health Center	\$51,137
Gardner	Great Gardner Community Health Center	\$46,110
Gloucester	Gloucester Family Health Center	\$63,917
Great Barrington	CHP Community Health Center	\$59,702
Greenfield	Community Health Center of Franklin County	\$49,024
Harwich	Ellen Jones Community Dental Center	\$76,221
Harwich	Harwich Health Center	\$76,221
Holyoke	Holyoke Health Center	\$38,829

Hull	Manet Community Health Center	\$72,386
Huntington	Huntington Health Center	\$34,810
Hyannis	Duffy Health Center	\$43,052
Hyannis	Harbor Community Health Center - Hyannis	\$43,052
Lawrence	Greater Lawrence Family Health Center	\$34,636
Lee	CHP Lee Family Practice	\$63,109
Leominster	Leominster Community Health Center	\$56,577
Lowell	Lowell Community Health Center	\$50,348
Lynn	Lynn Community Health Center	\$21,905
Mashpee	Community Health Center of Cape Cod	\$70,995
Methuen	Methuen Family Health Center	\$72,664
Milford	Edward M. Kennedy Community Health Center	\$73,117
New Bedford	Greater New Bedford Community Health Center	\$36,105
North Adams	CHP North Adams Family Medicine	\$38,007
Orange	Community Health Center of Franklin County	\$37,911
Peabody	Peabody Family Health Center	\$63,822
Pittsfield	CHP Neighborhood Health Center	\$45,893
Plymouth	Harbor Community Health Center - Plymouth	\$34,810
Provincetown	Provincetown Health Center	\$42,228
Quincy	Manet Community Health Center	\$73,280
Quincy	South Cove Community Health Center – North Quincy Center	\$73,280
Revere	MGH Revere HealthCare Center	\$51,755
Salem	Salem Family Health Center	\$41,109
Somerville	Cambridge Health Alliance Health Centers	\$82,593
Southbridge	Family Health Center - Southbridge	\$48,762
Springfield	Baystate Brightwood Health/Center Centro De Salud	\$16,760

Springfield	Baystate Mason Square Neighborhood Health Center	\$16,760
Springfield	Caring Health Center	\$16,760
Springfield	Health Services for the Homeless Health Center	\$16,760
Taunton	Manet Community Health Center	\$51,820
Turner Falls	Community Health Center of Franklin County	\$41,836
Waltham	Charles River Community Health	\$83,283
Wareham	Greater New Bedford Community Health Center	\$58,927
Wellfleet	Wellfleet Health Center	\$47,115
Westfield	Western Massachusetts Hospital Dental Clinic	\$63,283
Winthrop	Winthrop Neighborhood Health	\$64,848
Worcester	Community Healthlink	\$31,182
Worcester	Edward M. Kennedy Community Health Center	\$35,446
Worcester	Family Health Center of Worcester	\$31,182
Worthington	Worthington Health Center	\$77,083

APPENDIX A: METHODOLOGY

Data compiled in this report included:

- Synthesis of existing data (PatientCareLink, Bureau of Labor Statistics, EMSI, IPEDS, historical literature);
- Comprehensive, statistically representative survey of hospitals;
- Interviews with hospital leaders (4-6), nurses (4-6), non-hospital care leaders (4-6), and education providers (3-5);
- Development of a customized econometric model to identify costs and feasibility of compliance.

SECONDARY DATA

Secondary data used to create the customized econometric model to identify costs and feasibility of compliance with the MNSR included:

- The Bureau of Labor Statistics Occupational Employment Statistics. May 2017 release.
- Economic Modelling Specialists International (Emsi) 2018.1 Class of Worker data.
- Economic Impact Analysis for Planning (IMPLAN) US 535 Sectors, 2016.
- PatientCareLink Massachusetts Hospital Data.

PRIMARY DATA

The Massachusetts Health & Hospital Association's (MHA) Nurse Staffing Ratio survey was administered to a list of 67 senior staff/hospital members using an online questionnaire. Survey links for the survey were distributed via email to members by MHA leadership. The member survey was fielded between March 26, 2018 and April 10, 2018 and yielded 54 full completes. A version of the survey was also administered over the phone to a representative sample of non-hospital/non-member locations in Massachusetts. Approximately 3,800 locations were called (7,900 phone calls total) between March 26, 2018 and April 9, 2018. The non-hospital/non-member survey averaged 15 minutes in length and yielded 190 full completes.

APPENDIX B: A COMPARISON BETWEEN CALIFORNIA AND MASSACHUSETTS

California's Mandatory Nurse Staffing Ratios

California was the first state in the country to pass a law mandating minimum nurse-to-patient (RN/Pt) ratios for acute-care hospitals. California's Assembly Bill 394 (AB 394) passed in 1999, with final regulations issued to implement the law in 2003 and hospitals required to meet the mandated staffing ratios by January 1, 2004.⁷⁷ This legislation, strongly supported by nursing unions, was in part a response to a reported decline in hospitals' nurse staffing, a continuous increase of patient's severity of illness levels (acuity), and a decline of registered nurses and staffed beds in the state.^{78,79}

AB 394 established specific RN/Pt ratios for acute care, acute psychiatric, and specialty hospitals and required that no nurse (registered nurses- RNs- or licensed vocational nurses- LVNs) could be assigned to more patients than the specific ratio at any time, under any situation. The draft regulations were released in 2002 and after a long period of public comments, implemented in 2004.⁸⁰ The ratios were then updated in 2005 and again in 2008 when additional specialty units were subject to the regulations.⁸¹ Notably, AB 394 lacks penalties for noncompliance and allows for increased reliance on LVNs/LPNs. If hospitals begin to rely on LVNs to work outside their level of experience, expecting them to engage in patient assessment and surveillance, tasks for which they are not trained for, may lead to errors and poor care.

AB 394 Intended and Unintended Outcomes

Mandated NSRs are a standardized tool aimed at solving complex problems, which oftentimes bring unintended consequences. Studies have found that AB 394 led to increased nurse staffing, increased RN wages, and in some hospitals a significant decline in the amount of uncompensated care they provided. Preliminary estimates of the direct cost of AB 394 implementation ranged from \$198,000 to \$2.3 million per hospital and in a comparative study, results showed that mean operating margins were lower and mean operating expenses were higher for hospitals in California than in hospitals in 12 comparison states.^{82,83}

Although there is no empirical evidence of the mechanisms linking nurse staffing to quality of care, theoretically, increasing patient surveillance driven by increased nurse staffing may increase quality of care. Surveillance in this case would include direct patient observation, detection of a problem, and quicker response/intervention to save a patient's life. However, research on whether the

⁷⁷ Source: <https://www.cga.ct.gov/2004/rpt/2004-R-0212.htm>.

⁷⁸ Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3626342/>.

⁷⁹ Source: http://nurses.3cdn.net/a985cdaf1305cc6478_f3m6b0kw8.pdf.

⁸⁰ Source: <https://www.amnhealthcare.com/latest-healthcare-news/rn-to-patient-hospital-staffing-ratios-update/>

⁸¹ Source: <https://www.amnhealthcare.com/latest-healthcare-news/rn-to-patient-hospital-staffing-ratios-update/>.

⁸² Source: Reiter et al., 2012. Minimum Nurse Staffing Legislation and the Financial Performance of California Hospitals. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3337946/>

⁸³ Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3626342/>.

legislation improved quality of care in California have had mixed results. Some studies found significant reduction in falls, ulcers, and decrease in mortality, others found no significant improvement in deep vein thrombosis, or ulcers, and others found that from 2000 to 2007, rates of postoperative sepsis and infections due to medical care increased significantly more in California than in 25 other states.⁸⁴

Massachusetts Mandatory Nurse Staffing Ratios

The Massachusetts Safe Patient Limits Ballot Initiative, which was certified by the Attorney General on September 2017, proposes setting a maximum limit on the number of patients assigned to a Registered Nurse, based on the argument that there are no current requirements for hospitals in Massachusetts to provide a specific level of nursing care in areas such as the emergency department, medical-surgical floors, maternity units, or psychiatric units. The certification approval indicates the initiative has passed constitutional standards and can now be brought to voters in November of 2018.⁸⁵

The proposed law sets a limit on how many patients can be assigned to each RN in Massachusetts hospitals and certain other health care facilities. The maximum number of patients, like in California, vary by type of unit and level of care. Unlike California however, the proposed law with stricter ratio demands requires covered facilities to comply with the ratios without reducing its service, maintenance, clerical, professional, and other staff, making unit closures one of the few methods available to fund these new government mandates. To ensure compliance, the state Health Policy Commission would need to promulgate regulations and conduct inspections. The Commission could report violations to the State Attorney and penalties could be up to \$25,000 per violation, as well as \$25,000 for each day a violation was continued after the Commission’s notification of violation.⁸⁶

Below are the main differences between the two measures.

Table 8: Comparison between California's AB 394 and Massachusetts' proposed Mandatory Nurse Staffing Ratios

	California	Massachusetts
Use of LPNs and LVNs	Yes	No
Phase-in Time Period	Yes (~5 years)	No (37 business days)
Incompliance Penalties	No	Yes

⁸⁴ Source: Ibid.

⁸⁵ Source: [https://ballotpedia.org/Massachusetts_Nurse-Patient_Assignment_Limits_Initiative_\(2018\)](https://ballotpedia.org/Massachusetts_Nurse-Patient_Assignment_Limits_Initiative_(2018)).

⁸⁶ Source: Ibid.