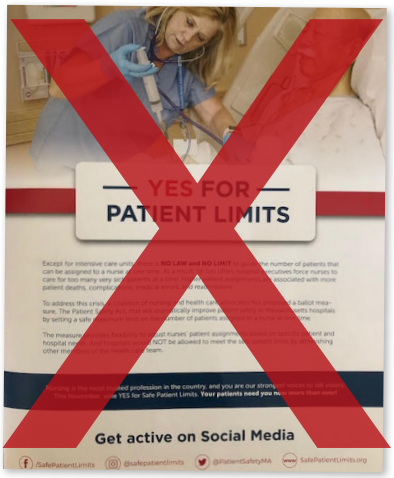
COALITION TO PROTECT PATIENT SAFETY

TRUTH BEHIND UNION MAILER

Recently a nurses' union sent a misleading marketing pamphlet to Massachusetts nurses.



Our coalition takes facts seriously. We asked our Research Committee, led by American Nurses Association Massachusetts President and nurse scientist Donna Glynn, PHD, RN, ANP, to dig into the claims made. Take a look at the the truth behind these erroneous claims.

No Scientific Research

The bottom line: **there is absolutely no scientific research to support these specific staffing ratios and, in fact, many of the studies that the union cites contradict their assertions.** Take, for instance, the 2008 study that states:

> **"there's no scientific evidence to support specific nurse-patient ratios"**
> **Unruh, L. (2008). Nurse staffing and patient, nurse, and financial outcomes. AJN The American Journal of Nursing, 108(1), 62-71**

Nurses Say NO

That's why the Organization of Nurse Leaders, American Nurses Association Massachusetts, the Massachusetts Association of Colleges of Nursing and the Infusion Nurses Society's New England Chapter are **all voting NO.**

ANA MASSACHUSETTS AMERICAN NURSES ASSOCIATION

ONL Organization of Nurse Leaders
Advancing a culture of health.

INS INFUSION NURSES SOCIETY
SETTING THE STANDARD FOR INFUSION CARE®

MASSACHUSETTS ASSOCIATION OF COLLEGES OF NURSING

What follows is a comprehensive review of the undocumented claims in the MNA mailer and the facts, including citations. Find all the details at NursesSayNo.com

UNION CLAIMS

"Dozens of research studies, published in the leading medical/nursing journals, show beyond a doubt, that patient care suffers greatly when nurses are assigned too many patients by hospital executives. Furthermore, these same studies indicate that patient care improves dramatically with safe patient limits."

FALSE

FACTS

The union cites dozens of articles on their website that they claim support their argument. However, a careful review of each and every study shows that in most cases, the union misrepresents or misstates the research findings. They must cherry-pick facts because **nearly every meta-analysis and systematic review of the research literature on nurse staffing and patient outcomes concludes that no causal evidence exists to demonstrate that increasing nurse staffing unanimously and unequivocally improves patient outcomes in all settings for all conditions[7].** The vast majority of research on the subject explains that there are many factors that relate to patient safety and outcomes above and beyond just staffing numbers and that consideration for local context should be included in nurse staffing decisions. **In fact, many of the authors whom the union cite to promote their ballot measure have actually published about the dangers and shortcomings of imposing mandated staffing ratios! Here is what some of them say:**

"There's no scientific evidence to support specific nurse-patient ratios" (Unruh, 2008)[8]

"Fixed minimum RN-to-patient ratios implemented in California did not provide the expected patient safety benefits" (Kane, 2007)[9]

"Rigid adherence to mandated nurse-to-patient ratios might hinder the quality of care" (Stone, 2003)[10]

"Except for intensive care units, there is NO LAW and NO LIMIT to guide the number of patients that can be assigned to a nurse at one time."

WRONG

In Massachusetts, **hospital nursing staff and nurse managers work together to determine appropriate patient assignments based on patient acuity, the skills and competency of each specific nurse, and other related factors,** including variations in patient volume due to it being flu season, for example, or the need to handle multiple victims from a serious accident. It is a flexible system that empowers staff and decision-makers, who best know the needs of unique patient populations, the knowledge and expertise of hospital staff, and local resources available.

One exception is the ICU law, where Massachusetts hospitals and nursing staff members must adhere to rigid staffing formulas. **The result has been increased wait times for admission and transfers between units; increased boarding of patients in emergency departments and post-anesthesia care units; and separation of families (particularly of sibling babies in neonatal ICUs) - all to comply with an inflexible, one-size-fits-all mandate[1].** It is a flawed law that shows why the majority of nursing organizations and researchers reject the nurses' union claim that mandated, rigid staffing ratios should be imposed hospital-wide.

"Higher patient assignments are associated with more patient deaths, complications, medical errors and readmissions."

FALSE

Numerous studies have looked at the association between nurse staffing and patient outcomes and **not one has ever documented a causal relationship showing that lower patient assignments directly produce better patient outcomes, whether measured by rates of patient deaths, complications, medical errors, readmissions or any other basis[2].** Moreover, even among the subset of studies that argue for increased nurse staffing, the **vast majority do not recommend mandatory, fixed ratios as would be imposed in Massachusetts by the nurses' union ballot measure.** To the contrary, many of these studies (including ones cited by the union) specifically state the need for flexibility in staffing to meet the individual needs of hospitals and patient populations, and/or acknowledge mandated staffing ratios would be cost prohibitive and stress the importance and influence of other factors that could be addressed instead of ratios[3]. Research findings from California, the only state with mandated nurse-to-patient ratios, have shown that improvements in patient outcomes have not been observed across many studies[4].

"The measure provides flexibility to adjust nurses' patient assignments based on specific patient and hospital needs."

FALSE

Far from being "flexible," the ballot measure **would impose mandated at-all-times ratios that take decision-making power away from hospital nursing staff and could pose a danger to patient care where patient and staffing needs can change up or down from moment to moment.** For instance, a hospital that was experiencing a large number of flu patients or victims of a multi-car crash could not treat additional patients if that would put them below the legally mandated number of nurses, even temporarily. This could result in extremely long wait times or other patients being directed to other hospitals. A strict one-size-fits-all mandate would also ignore the complexities of patient care including, the competency and skill level of individual nurses, care needs of individual patients, and other factors.

"And hospitals would NOT be allowed to meet the safe patient limits by diminishing other members of the health care team."

WRONG

The nurses' union claims their ballot measure will not force cutbacks in the ranks of other hospital workers who are not registered nurses, but it cannot repeal the laws of economics. Fourteen hospitals in the state are already operating the red. **An unnecessary, arbitrary and harmful mandate that requires increased spending in one area must inevitably force hospitals to raise prices for services and/or find savings elsewhere, by cutting programs, services, units, beds, or worse, closing altogether.** This is what happened in California when it became the first (and only) state in the nation to enact mandated staffing ratios[6]. And California's staffing law is less restrictive than the Massachusetts proposal.

"Each additional patient per nurse was associated with 7% higher odds of readmission for heart failure, 6% higher for pneumonia and 9% higher for myocardial infarction patients."

WRONG

The study[11] that is the source for this claim actually examines the effect of comprehensive nurse work environments, not just nurse staffing, on hospital readmission rates. The study argues that readmission rates are strongly associated with a host of elements that the union fails to mention in its desire to promote mandated nurse staffing ratios. According to the study's authors, **"changing the work environment in ways that provide more administrative support for nursing, promote better nurse-physician relationships, and empower nurses to have a stronger role in the decision-making process,"** would all contribute to producing better patient outcomes, including fewer readmissions. The study also cautions that some factors it did not attempt to measure (and which may be outside hospital control), like access to primary care and poverty, likely also contribute to readmission, a policy challenge that **"will require a range of interventions"** to tackle successfully.

"There is a 20% lower risk that a patient will die within 30 days of having general surgery at a hospital with above average nursing levels."

FALSE

This claim seriously distorts the 2016 study[12] identified by the nurses' union as its source. The study's authors argue that excellent nursing environments may be "associated" with better outcomes, but they do not attribute these better outcomes solely or even specifically to nursing levels (which are not the only factor in determining "excellent nursing environments"). Additionally, the authors explicitly state that their study did not control for other factors that could impact outcomes—such as available technology or type of hospital (e.g., academic medical center vs. community hospital)—and acknowledge that, in fact, the hospitals they examined varied significantly in these regards. The authors themselves conclude that, "[t]hese results d**o not suggest that improving any specific hospital's nursing environment will necessarily improve its value."**

"For every patient added to a nurse's workload, the likelihood of a patient surviving cardiac arrest decreases by 5% per patient."

FALSE

The nurses' union misrepresents the implications of a 2016 study[13] in making this claim. Nowhere in the article cited by the union to back up this assertion do the authors conclude or suggest that hospitals should have minimum mandatory staffing levels as a way to improve patient care. In fact, **the authors specifically warn against misusing the data in this fashion, stating that their study does not prove a cause-and-effect relationship between nurse staffing levels and preventable deaths from cardiac arrest and cautioning "care should be taken in generalizing our research findings."** Other research has found "a good work environment" to be a bigger factor in patient outcomes, they acknowledge, meaning that **"adding more nurses without considering the work environment may be a poor investment."**

"The risk of death was increased by a factor of 3.5 when the patient to nurse ratio was greater than 2.5."

WRONG

The nurses' union takes this claim from research[14] conducted on ICUs in four hospitals in France, a country whose healthcare settings and policies are quite different. In fact, the study's authors even specifically address this, explaining that because of the differences in ICU staffing patterns around the world, larger studies involving many different countries would be needed to confirm the findings. Even taking the results of this study at face value, the study in question does not make a case for passing the so-called mandated nurse staffing ratios, as it **recommends a patient-to-nurse ratio that is actually higher than what is already the law in ICUs** (in other words, Massachusetts currently has more RNs per patient in the ICU than the study finds may be clinically necessary.) And, as with other studies cited by the nurses' union, the authors concede there may be factors not measured by their method that affected patient outcomes.

"For children with medical conditions, every patient assigned to a nurse above four resulted in an 11% increase risk for readmission; and for children recovering from basic surgeries, each additional patient assigned to a nurse increased the risk of readmission by a shocking 48%."

WRONG

These claims by the nurses' union exaggerate findings of a 2013 study[15] they cite as its source but whose authors readily admit that they were unable to account for "a number of variables that could be associated with both nurse staffing levels and readmission outcomes in our sample", including hospitals' financial resources, occupancy levels, or planned readmissions that "may either have no relationship to a prior hospitalisation or that it may be perfectly correlated as a planned readmission for ongoing therapeutic care." They also state **"[w]e cannot confirm causal relationships between nurse staffing levels in hospitals and paediatric readmissions**...we suggest additional research on both appropriate paediatric readmission measures and the relationship between nursing care delivery, nurse staffing levels and readmissions." In fact, there is no existing research showing a cause-and-effect relationship between levels of nurse staffing and patient outcomes and much of the research on whether an association even exists is mixed.[16] Most of the literature shows mandated hospital-wide nurse staffing ratios have produced little or no improvement in quality and patient outcomes in California, the only state to impose them.[17]

"California set safe patient limits in 2004 and the results have been universally positive, with better outcomes for patients. And in California, healthcare costs fall below national averages and no hospital has been forced to close because of this law."

FALSE

Far from being "universally positive" as claimed by the nurses' union, the vast majority of research looking at patient outcomes before and after California became the first and only state to have mandated nurse staffing ratios concludes there has been little to no improvement for the majority of patient outcomes measured.[18] **"The findings from the majority of these studies do not support the assumption that increases in nurse staffing would lead to better quality of care, improvements in patient safety, or increased patient satisfaction,"** a systematic review of the effects California's mandated staffing law reported.[19] What is worse, the evidence generally shows mandatory ratios in California have led to increases in costs and produced unintended consequences, such as increased wait times in emergency departments,[20] cuts to some non-nurse staffing[21] and reduced or eliminated patient services,[22] including care for uninsured people.[23] The ratios also had disproportionate effects on safety-

net hospitals which serve the most vulnerable patients and generally operate on the smallest margins.[24] And while the MNA union claims "no hospital [in California] has been forced to close because of [the nurse staffing ratio] law," ratios were certainly a factor in the 12 hospital closures that occurred shortly after the California law's implementation. California hospital leaders reported increased ED diversion rates, physicians voicing concern about disruptions to access to care, and many RNs voicing concern over lack of autonomy and lack of control over practice. The Massachusetts nurse staffing ratio proposal is even more stringent than the California law. We can expect the fallout to be more dire as well.

"According to a recent study comparing hospitals in Massachusetts, where there is no limit on nurses' patient assignments, and in California, where such a law has been in place for nearly 14 years:

Massachusetts [has] more medical errors, higher readmissions [and] longer wait times [versus] California.

Massachusetts hospital nurses are caring for significantly more patients than their counterparts in California, and patients in Massachusetts are receiving over three hours less care per day from registered nurses than patients on the West Coast.

Nurses in California report having significantly more time to spend with patients. In California, RNs cite fewer complaints from patient and families and the nurses have more confidence that patients can manage their own care after discharge."

WRONG

Contrary to the misleading suggestions of the nurses' union, healthcare is more affordable in Massachusetts than California. The combined premium and deductible as a percentage of median state income was 7.3% in Massachusetts in 2015, versus 9.9% in California.[25]

The nurses' union appears to have **cherry-picked these false or misleading claims from a hodgepodge of different studies of varying quality,** including some co-authored by one of their own presidents, or in a couple of cases, just made them up. Massachusetts actually performs better than California on the majority of Emergency Department process measures, which are measures of timely and effective care. The union's assertion that Massachusetts has more medical errors than California is not substantiated, and medical errors generally are not considered "nursing sensitive" as there are so many factors and types of medical errors that may or may not have anything to do with nursing care. With regard to hospital readmissions measures, there is a growing consensus that hospital readmissions are largely a factor of patient characteristics, including sociodemographic factors and available resources, which are outside of a hospital's control.[26] There is no documented evidence to support the claim that simply increasing nurse staffing would result in readmission reductions.

The suggestion that California nurses have more time to spend with patients and report fewer complaints comes from self-reported data in a study that did not include Massachusetts, making the claimed comparison impossible.[27] A different study looked at patient experiences of nursing care in the two states, and we came out on top: "Massachusetts differed significantly from both California and New York on patients' self-reports regarding the quality of nursing care. A significantly smaller percentage of patients in Massachusetts reported that nurses "sometimes" or "never" communicated to them compared with California and New York. Conversely, significantly higher percentages of patients from Massachusetts hospitals reported that they

were given information about what to do during their recovery at home than patients in California and New York."[28]

"Between 1991 and 2014, Massachusetts average annual healthcare costs grew by 5.2%--well above the national average (4.9%) and the California average (4.6%)."

WRONG

Actually, **Massachusetts is doing better than both California and the nation as a whole in holding the line on healthcare spending.** According to the Massachusetts Health Policy Commission, between 2009 and 2014, Massachusetts healthcare spending grew at the 4th lowest rate in the US, while California healthcare spending grew at the 10th *highest* rate.[29] The average annual healthcare spending growth rate per capita was 2.32% in Massachusetts over the same period, well below the national trend of 3.14%.[30] Healthcare spending growth continued to be below the US average in 2015 and 2016 and in recent years, growth in spending on private health insurance in Massachusetts has been consistently lower than national rates.[31] Enacting a costly and misguided nurse staffing mandate would jeopardize our Commonwealth's recent progress on costs.

"In 2014 alone, the national average for healthcare spending was 7% greater than in California, and Massachusetts expenditures per capita were 40% greater than California spending."

FALSE

This claim is grossly misleading in that it uses a methodology which punishes Massachusetts for doing the right thing and covering more of its residents and having a strong healthcare infrastructure. Specifically, states reported as having higher spending in the study used by the MNA[31] are those that tend to have greater percentages of the population enrolled in Medicaid or Medicare, higher levels of personal income per capita and more healthcare capacity, while states with lower spending tend to have higher rates of residents uninsured. In fact, the real threat on spending is the union's ballot measure, **which would add over billion dollars a year to Massachusetts health care costs[32]**—new spending that would have to be financed through some combination of higher premiums and taxpayer payments and cuts to services.

"Nurses say Safe Patient Limits will protect patients:

63% report injury + harm to patients; 62% report longer hospital stays for patients; 71% report readmission of patients; 73% report medication errors for patients.

87% of nurses report they don't have the time to properly comfort and care for patients and families due to unsafe patient assignments.

42% of nurses report that managers often refuse to adjust patient assignments based on patient needs."

WRONG

These statistics are taken from an opinion-based survey bought and paid for by the nurses' union, which is not exactly an unbiased source.[33] Although MNA claims their survey is a scientifically valid portrait of the views and experiences of the approximately 100,000 Registered Nurses in Massachusetts, information in the fine print proves otherwise and shows MNA's survey grossly oversampled the views of its own membership. MNA has been messaging their members for 20 years around this misguided proposal, further contributing to the skewed results. MNA's press release states that 54% of survey respondents were not members of MNA, which means that 46% were MNA members. According to figures published on its own website, MNA only has 23,000 members, meaning that a truly representative survey sample should consist of more than about 23% MNA members – not 46%. Further, not all MNA members are RNs, so it's possible the correct representation of MNA members in the RN sample should have been significantly lower still than even that figure.

FOOTNOTES

[1]2018 MHA Member Survey on Impact of ICU Staffing Law

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[3]Aiken, L. H., Cimiotti, J. P., Sloane, D. M., Smith, H. L., Flynn, L., & Neff, D. F. (2011). The effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. Medical care, 49(12), 1047; McHugh, M. D., Rochman, M. F., Sloane, D. M., Berg, R. A., Mancini, M. E., Nadkarni, V. M., ... & American Heart Association's Get With The Guidelines-Resuscitation Investigators. (2016). Better nurse staffing and nurse work environments associated with increased survival of in-hospital cardiac arrest patients. Medical care, 54(1), 74; and McHugh, M. D., Brooks Carthon, M. A. R. G. O., Sloane, D. M., Wu, E., Kelly, L., & Aiken, L. H. (2012). Impact of nurse staffing mandates on safety-net hospitals: Lessons from California. The Milbank Quarterly, 90(1), 160-186; Unruh, L. (2008). Nurse staffing and patient, nurse, and financial outcomes. AJN The American Journal of Nursing, 108(1), 62-71; Hugonnet, S., Uçkay, I., & Pittet, D. (2007). Staffing level: a determinant of late-onset ventilator-associated pneumonia. Critical care, 11(4), R80; Unruh, L. (2003). Licensed nurse staffing and adverse events in hospitals. Medical care, 41(1), 142-152; Seago, J. A., Williamson, A., & Atwood, C. (2006). Longitudinal analyses of nurse staffing and patient outcomes: more about failure to rescue. Journal of Nursing Administration, 36(1), 13-21; Jackson, M., Chiarello, L. A., Gaynes, R. P., & Gerberding, J. L. (2002). Nurse staffing and health care-associated infections: Proceedings from a working group meeting. American journal of infection control, 30(4), 199-206.

[4]Serratt, T. (2013). California's Nurse-to-Patient Ratios, Part 3: Eight Years Later, What Do We Know About Patient Level Outcomes?. Journal of Nursing Administration, 43(11), 581-585.)

[5]Center for Health Information and Analysis (2017). Hospital Cost Report Data Access Tool (403 Database)

[6]Chapman, S. A., Spetz, J., Seago, J. A., Kaiser, J., Dower, C., & Herrera, C. (2009). How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. Journal of Healthcare Management, 54(5), 321-335; Serratt, T. (2013). California's nurse-to-patient ratios, Part 2: 8 years later, what do we know about hospital level outcomes? Journal of Nursing Administration, 43(10), 549-553.

[7]Griffiths, P., Ball, J., Drennan, J., Dall'Ora, C., Jones, J., Maruotti, A., ... & Simon, M. (2016). Nurse staffing and patient outcomes: Strengths and limitations of the evidence to inform policy and practice. A review and discussion paper based on evidence reviewed for the National Institute for Health and Care Excellence Safe Staffing guideline development. International journal of nursing studies, 63, 213-225; Kane, R. L., Shamliyan, T. A., Mueller, C., Duval, S., & Wilt, T. J. (2007). The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. Medical care, 45(12), 1195-1204; Lake, E. T., & Cheung, R. B. (2006). Are patient falls and pressure ulcers sensitive to nurse staffing?. Western Journal of Nursing Research, 28(6), 654-677; Lang, T. A., Hodge, M., Olson, V., Romano, P. S., & Kravitz, R. L. (2004). Nurse–patient ratios: a systematic review on the effects of nurse staffing on patient, nurse employee, and hospital outcomes. Journal of Nursing Administration, 34(7-8), 326-337; Lankshear, A. J., Sheldon, T. A., & Maynard, A. (2005). Nurse staffing and healthcare outcomes: a systematic review of the international research evidence. Advances in Nursing Science, 28(2), 163-174; Shekelle, P. G. (2013). Nurse–Patient Ratios as a Patient Safety Strategy A Systematic Review. Annals of Internal Medicine, 158(5_Part_2), 404-409.

[8]Unruh, L. (2008). Nurse staffing and patient, nurse, and financial outcomes. AJN The American Journal of Nursing, 108(1), 62-71

[9]Kane, R. L., Shamliyan, T. A., Mueller, C., Duval, S., & Wilt, T. J. (2007). The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. Medical care, 45(12), 1195-1204,

[10]Stone, P. W., Tourangeau, A. E., Duffield, C. M., Hughes, F., Jones, C. B., O'Brien-Pallas, L., & Shamian, J. (2003). Evidence of nurse working conditions: a global perspective. Policy, Politics, & Nursing Practice, 4(2), 120-130.

[11]Study cited by MNA: Hospital Nursing and 30-Day Readmissions Among Medicare Patients With Heart Failure, Acute Myocardial Infarction, and Pneumonia, Medical Care, January 2013

[12]Study cited by MNA: "Comparison of the Value of Nursing Work Environments in Hospitals Across Different Levels of Patient Risk." JAMA Surgery, January 2016.

[13]Study cited by MNA: "Better Nurse Staffing and Nurse Work Environments Associated with Increased Survival of In-Hospital Cardiac Arrest Patients." Medical Care, January 2016.

[14]Study cited by MNA: Patient Mortality Is Associated With Staff Resources and Workload in the ICU: A Multicenter Observational Study, Critical Care Medicine, August 2015

[15]Study cited by MNA: "An Observational Study of Nurse Staffing Ratios and Hospital Readmission Among Children Admitted for Common Conditions." BMJ Quality & Safety, May 2013.

[16]Griffiths, P., Ball, J., Drennan, J., Dall'Ora, C., Jones, J., Maruotti, A., ... & Simon, M. (2016). Nurse staffing and patient outcomes: Strengths and limitations of the evidence to inform policy and practice. A review and discussion paper based on evidence reviewed for the National Institute for Health and Care Excellence Safe Staffing guideline development. International Journal of Nursing Studies, 63, 213-225.

[17]See for example:
Mark, B. A., Harless, D. W., Spetz, J., Reiter, K. L., & Pink, G. H. (2013). California's minimum nurse staffing legislation: results from a natural experiment. Health Services Research, 48(2pt1), 435-454.
Donaldson, N., Bolton, L. B., Aydin, C., Brown, D., Elashoff, J. D., & Sandhu, M. (2005). Impact of California's licensed nurse-patient ratios on unit-level nurse staffing and patient outcomes. Policy, Politics, & Nursing Practice, 6(3), 198-210.
Burnes Bolton, L., Aydin, C. E., Donaldson, N., Storer Brown, D., Sandhu, M., Fridman, M., & Udin Aronow, H. (2007). Mandated nurse staffing ratios in California: a comparison of staffing and nursing-sensitive outcomes pre-and postregulation. Policy, Politics, & Nursing Practice, 8(4), 238-250.
Cook, A., Gaynor, M., Stephens Jr, M., & Taylor, L. (2012). The effect of a hospital nurse staffing mandate on patient health outcomes: Evidence from California's minimum staffing regulation. Journal of Health Economics, 31(2), 340-348.
Spetz, J., Harless, D. W., Herrera, C. N., & Mark, B. A. (2013). Using minimum nurse staffing regulations to measure the relationship between nursing and hospital quality of care. Medical Care Research and Review, 70(4), 380-399.
Serratt, T. (2013). California's Nurse-to-Patient Ratios, Part 3: Eight Years Later, What Do We Know About Patient Level Outcomes?. Journal of Nursing Administration, 43(11), 581-585.
Chapman, S. A., Spetz, J., Seago, J. A., Kaiser, J., Dower, C., & Herrera, C. (2009). How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. Journal of Healthcare Management, 54(5), 321-335.

[18]Serratt, T. (2013). California's Nurse-to-Patient Ratios, Part 3: Eight Years Later, What Do We Know About Patient Level Outcomes? Journal of Nursing administration, 43(11), 581-585. Some of the individual primary studies included in this systematic review are:

a) Burnes Bolton, L., Aydin, C. E., Donaldson, N., Storer Brown, D., Sandhu, M., Fridman, M., & Udin Aronow, H. (2007). Mandated nurse staffing ratios in California: a comparison of staffing and nursing-sensitive outcomes pre-and postregulation. Policy, Politics, & Nursing Practice, 8(4), 238-250.
b) Donaldson, N., Bolton, L. B., Aydin, C., Brown, D., Elashoff, J. D., & Sandhu, M. (2005). Impact of California's licensed nurse-patient ratios on unit-level nurse staffing and patient outcomes. Policy, Politics, & Nursing Practice, 6(3), 198-210.
c) Cook, A., Gaynor, M., Stephens Jr, M., & Taylor, L. (2012). The effect of a hospital nurse staffing mandate on patient health outcomes: Evidence from California's minimum staffing regulation. Journal of Health Economics, 31(2), 340-348.
d) Mark, B. A., Harless, D. W., Spetz, J., Reiter, K. L., & Pink, G. H. (2013). California's minimum nurse staffing legislation: results from a natural experiment. Health services research, 48(2pt1), 435-454.
e) Hickey, P. A., Gauvreau, K., Jenkins, K., Fawcett, J., & Hayman, L. (2011). Statewide and national impact of California's staffing law on pediatric cardiac surgery outcomes. Journal of Nursing Administration, 41(5), 218-225.
f) Donaldson, N., & Shapiro, S. (2010). Impact of California mandated acute care hospital nurse staffing ratios: A literature synthesis. Policy, Politics, & Nursing Practice, 11(3), 184-201.

[19]Serratt, T. (2013). California's Nurse-to-Patient Ratios, Part 3: Eight Years Later, What Do We Know About Patient Level Outcomes? Journal of Nursing administration, 43(11), 581-585.

[20]Chapman, S. A., Spetz, J., Seago, J. A., Kaiser, J., Dower, C., & Herrera, C. (2009). How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. Journal of Healthcare Management, 54(5), 321-335.

[21]Chapman, S. A., Spetz, J., Seago, J. A., Kaiser, J., Dower, C., & Herrera, C. (2009). How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. Journal of Healthcare Management, 54(5), 321-335; Weichenthal, L., & Hendey, G. W. (2011). The effect of mandatory nurse ratios on patient care in an emergency department. The Journal of emergency medicine, 40(1), 76-81

[22]Chapman, S. A., Spetz, J., Seago, J. A., Kaiser, J., Dower, C., & Herrera, C. (2009). How have mandated nurse staffing ratios affected hospitals? Perspectives from California hospital leaders. Journal of Healthcare Management, 54(5), 321-335; Serratt, T. (2013). California's nurse-to-patient ratios, Part 2: 8 years later, what do we know about hospital level outcomes? Journal of Nursing Administration, 43(10), 549-553.

[23]Reiter, K. L., Harless, D. W., Pink, G. H., Spetz, J., & Mark, B. (2011). The effect of minimum nurse staffing legislation on uncompensated care provided by California hospitals. Medical Care Research and Review, 68(3), 332-351.

[24]Conway, P. H., Tamara Konetzka, R., Zhu, J., Volpp, K. G., & Sochalski, J. (2008). Nurse staffing ratios: trends and policy implications for hospitalists and the safety net. Journal of Hospital Medicine, 3(3), 193-199;
McHugh, M. D., Brooks Carthon, M. A. R. G. O., Sloane, D. M., Wu, E., Kelly, L., & Aiken, L. H. (2012). Impact of nurse staffing mandates on safety-net hospitals: Lessons from California. The Milbank Quarterly, 90(1), 160-186.

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