



COLORADO'S NURSING FACULTY SHORTAGE

What it is and why you should care

\$1.00: invested in nursing
faculty supports...

\$3.50: employer recruiting
cost savings

\$4.35: nursing salary
income

\$9.75: health care
services



COLORADOCENTER
for Nursing Excellence

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EXECUTIVE SUMMARY

Imagine Colorado's health care system as a collection of tall buildings scattered all across the state. In these buildings are millions of residents spending \$30 billion each year on health care services at 12,000 facilities. Also within these buildings are 225,000 health care employees, the largest group of which is 50,000 nurses.¹

Living deep within each building's foundation, supporting all parts of the health care system, are the 300 full-time and 650 part-time nursing faculty which staff Colorado's 35 schools of nursing. These faculty graduate 1,900 new nurses each year. Colorado needs 3,000 new nurses each year. A consistent in-state supply of nurses is critical, for next to teaching, nursing is one of the least mobile professions.²

In spite of their small numbers, a growing shortage of nursing faculty is threatening Colorado's capacity to educate nurses. Fifty-three percent of full-time faculty are over 55. Fifty-six faculty are already over 65. Retiring at forty-five per year, if they are not replaced, the capacity of our nursing schools will drop by 25% in five years.

Unfortunately, the national nursing faculty pipeline is broken. New nursing graduates are avoiding academic careers. Equivalent clinical careers pay 25-50% more than academia, the cost of acquiring nursing faculty degrees is cost-prohibitive, and faculty working conditions are increasingly unattractive to young professionals.

Without the faculty necessary to educate our own nurses, all of Colorado's health care employers will be forced to recruit nationally for new nurses, increasing health care costs. Given that the additional costs of recruiting out of state are about 63% of a nurse's salary, the annual cost to Colorado health care employers of recruiting 3,000 out of state nurses would be more than \$100 million.³

Every dollar invested in nursing faculty returns at least \$10.00, for a return on investment of over 1,000 percent. One dollar invested in nursing faculty supports \$8.00 in health care services and saves health care employers \$3.50 in nurse recruiting costs.

Solving the nursing faculty shortage will take behavior and priority changes by leaders from academia, health care, government, and existing and potential new nursing faculty themselves. The good news is that the number of required new faculty per year is relatively small, on the order of 75 individuals per year.

Solving the faculty shortage is well within the resources of a state that spends \$30 billion a year on health care. Not solving this issue will increase Colorado health care employer expenses by tens of millions of dollars per year.

Why Should I Care?

Without the faculty necessary to educate our own nurses, all Colorado health care employers will be forced to recruit nationally for new nurses, resulting in increased costs and restricted access to health care.



“WHAT IS COLORADO’S NURSING FACULTY SHORTAGE AND WHY SHOULD I CARE?”

If you are interested in the ability of Coloradans to access health care, and the cost of that care, then you also should be interested in Colorado’s nursing faculty shortage. The points below summarize why; the following chapters provide the supporting narrative.

- 1. Who are Colorado’s nursing faculty?** Colorado has 950 faculty members at 35 schools of nursing: 27 percent full-time and 73 percent part-time. It takes one full-time-equivalent faculty (a mix of full-time and part-time) to graduate six nurses. The cost of all of Colorado’s 950 nursing faculty is less than 1% of Colorado’s statewide nursing payroll. Nursing faculty are high-return investments in Colorado’s health care infrastructure.
- 2. Why are nurses important?** Filling one in four health care positions, Colorado’s 50,000 nurses are the largest health care occupation. On average, one nurse supports \$117,000 in health care services per year.
- 3. Does Colorado face a nursing shortage?** Yes. For the next 20 years, Colorado will need an average of 3,000 new nurses per year. This includes 1,500 to replace retiring nurses (35 percent of Colorado’s nurses are over 55) and another 1,500 to support population growth, increased patient access due to health reform, and the growing health care needs of an aging population.
- 4. If Colorado needs an additional 3,000 nurses per year, how many do we graduate?** Colorado’s schools graduate 1,900 nurses/year; thus there is an annual gap of 1,100 nurses.
- 5. Is Colorado’s ability to educate nurses in danger?** Yes. More than half of the state’s full-time faculty are over 55, retiring at the rate of 45 per year. The state and national pipeline of new faculty is much smaller than what is needed. Without backfilling faculty, Colorado’s ability to graduate nurses shrinks every year, creating a potential 50 percent drop in education capacity over ten years.
- 6. Why is it important that Colorado have nursing schools?** Without our own ability to educate nurses, health care employers would have to annually recruit 3,000 out-of-state

nurses. Compared with recruiting in-state nurses, national recruitment is twice as expensive and success is uncertain. This means increased health costs, and crippling difficulties among small and rural health care providers.

- 7. What is the return on investment (ROI) for supporting nursing faculty?** Every dollar invested in nursing faculty returns over \$10.00, for an ROI of over 1,000 percent. Each dollar invested in a nursing faculty full time equivalent (FTE)⁴ supports \$8.00 in health care services and saves health care employers \$3.50 in nurse recruiting costs.
- 8. Invisibility and lack of a reason to care are the first barriers to solving the faculty shortage.** The faculty shortage and its implications for Colorado health care are largely invisible to key leaders and the public. The shortage is undefined in terms of data, timing and impact, and there is no visible rationale justifying a solution.

This document provides a detailed problem description and an analysis of the ROI to the state as a whole and to health care employers for solving the nursing faculty shortage.
- 9. What is behind Colorado’s nursing faculty shortage?** The answer to this important question is covered in the following sections. The nursing faculty supply pipeline is broken, but it can be fixed. If it is not fixed, then there will be significant negative implications for access to and the cost of health care in Colorado.

The Cost of Nurse Recruitment ...

The cost to Colorado’s health care employers of recruiting 3,000 nurses out of state would be more than \$100 million per year.



*“For want of a nail the shoe was lost;
For want of a shoe the horse was lost;
For want of a horse the battle was lost;
For the failure of battle the kingdom
was lost — All for the want of a
horse-shoe nail.”*

Success or failure in replacing 45 retiring nursing faculty per year will impact the cost of and access to health care in Colorado.



I. INTRODUCTION: “FOR WANT OF A NAIL...”

Colorado’s schools of nursing are the primary source of the next generation of Colorado nurses, graduating 1,900 registered nurses in 2010.⁵ Given that 35 percent of Colorado’s 50,000 nurses are over the age of 55, the vitality of our nursing schools has never been more important.

Just to replace retiring nurses will require at least 1,500 new nurses per year, not counting the 1,500 additional nurses necessary to support population growth, aging demographics, and health care reform.⁶

Unfortunately, the ability of Colorado’s schools of nursing to educate the nurses of the future is significantly at risk, all “For want of a nail ...” In this case, the proverbial nail represents a shortage of nursing faculty that form the foundation of Colorado’s nursing education system.

To understand the impact of a nursing faculty shortage, at least two questions have to be clearly answered: “What is the nursing faculty shortage?” and “Why should anyone care?” In spite of the attention within nursing communities given to the nursing faculty shortage, this issue is often drowned out by competing demands for support from public, academic, and health care leaders.

To gain support for responding to the faculty shortage, the rationale for resolving the nursing faculty shortage has to be well defined, strategic, publicly visible and associated with an economic and health care return-on-investment (ROI).

Colorado has about 950 nursing faculty: 27 percent full-time and 73 percent part-time. Fifty-four percent of full-time faculty and 36 percent of all faculty are over 55, and retiring at an average rate of 45 individuals per year. When combined with faculty turnover, the state needs a pipeline of at least 75 new faculty per year for the next decade. (See Appendices 1-4 for additional faculty information).

Without significant attention, Colorado’s ability to educate nurses will drop by 25 percent in five years and 50 percent in ten years. A shortage of nursing faculty will certainly increase health care

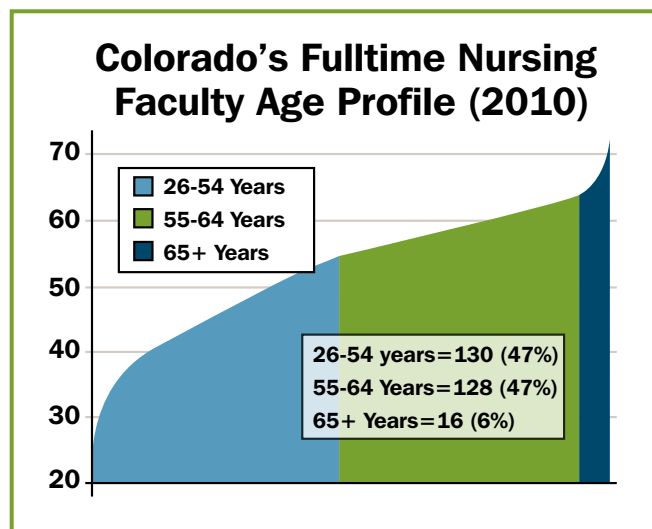
costs, probably reduce the capacity of Colorado’s providers to deliver health care, and possibly reduce the attraction of Colorado as a place to live and work.

During 2008-2010, 31 nursing programs submitted detailed faculty information to the Colorado State Board of Nursing. Based on this data, this report is intended to provide a comprehensive understanding of Colorado’s faculty shortage challenges.

There are multiple barriers to developing the next generations of nursing faculty: low pay, more attractive clinical career paths, delayed entry into academia, overwhelming work load, and lack of capacity to educate new faculty.

For additional insight into nursing faculty recruitment and retention, see the excellent work done by the Colorado Health Institute, most recently the 2009-10 Colorado Nursing Faculty Supply and Demand Study.⁷

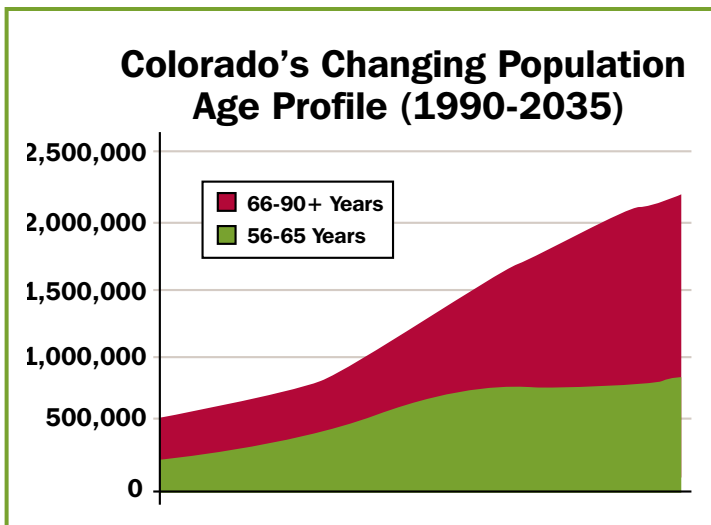
Success or failure in replacing nursing faculty retiring each year over the coming decade (45 per year on average) will determine the ability of Colorado to educate 19,000 newly licensed nurses over the coming decade, the ability of all Coloradans to access health care and the cost of that care.



II. THE PROBLEM: HEALTH CARE DEMAND UP, NURSING FACULTY AND NURSING SUPPLY DOWN

A. The Increasing Need for Health Care Services in Colorado

A fundamental reason to care about nurses and nursing school faculty is that they are essential building blocks in the infrastructure that provides health care to Coloradans. With more than 50,000 employed registered nurses in Colorado, nurses are the largest health care occupation, with more than four times as many nurses as physicians.⁸ Due to state population growth, changing demographics, health care reform and nurse retirements, the state will need more than 3,000 new nurses each year for the coming 20 years just to stay even.



For decades, Colorado was the lucky recipient of significant “Baby Boomer” in-migration, contributing to the state’s steady growth by 100,000 residents per year from 1990 to 2010. As these Baby Boomers turn 65, they will significantly accelerate the growth of the over-65 population (see graph).

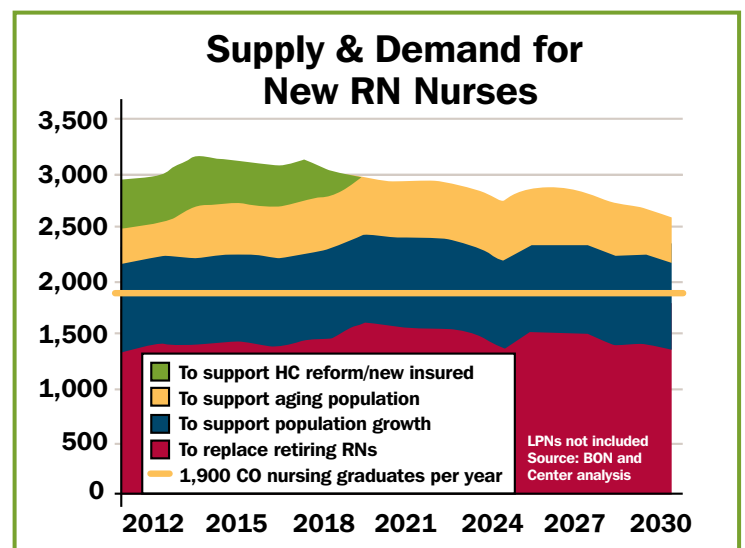
In 2010, 10 percent of the state’s population was over 65; this increases to 14 percent in 2020 and 17 percent in 2030. In addition to this powerful shift, the absolute growth of the population from its current 5.2 million to 6.3 million in 2020 and 7.4 million in 2030 also will fuel the increased demand for health care services. Colorado is the fifth fastest-growing state, and even in a recession added 87,500 residents between 2010 and 2011.

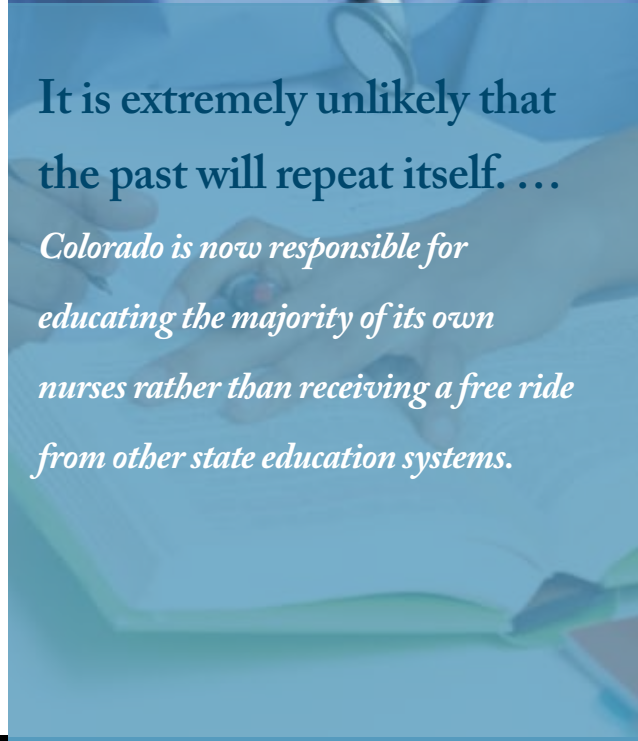
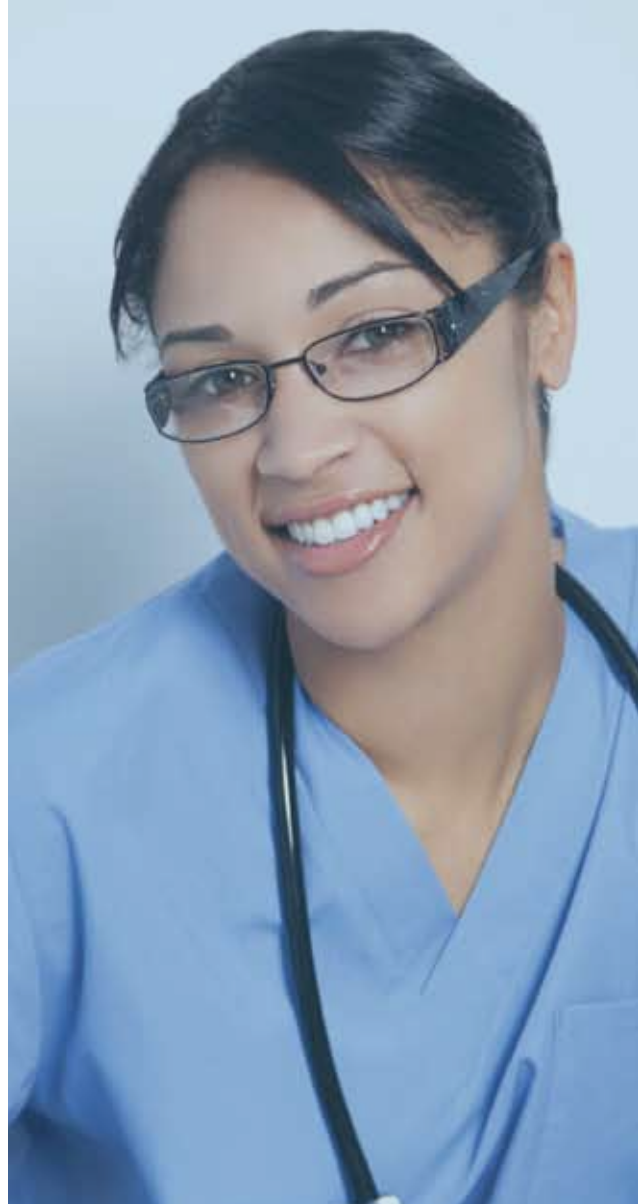
Given that over-65-year-old individuals use on average 300 percent more health care services per person than do younger populations, this demographic shift has profound implications for the overall demand for health care in Colorado.⁹

Colorado has 8.3 registered nurses per 1,000 residents (less than the national average of 8.6 nurses). To keep this ratio of nurses to population stable, every year the state will need 834 new nurses to support its additional 100,000 residents.¹⁰ Finally, the impact of health reform cannot be forgotten. By 2015, more than 540,000 Coloradans will be newly insured, an increase of 13 percent in the state’s insured population.¹¹ This very significant increase in insured individuals will unavoidably increase the demand for health care, especially nursing-intensive preventative and chronic care services.

B. Colorado’s Growing Demand for Colorado Nurses

Given that nursing schools and their nursing faculty are the primary sources of future generations of Colorado nurses, it is important to frame any discussion of nursing faculty with an understanding of nursing supply and demand. The demand for new nurses over the coming twenty years will be driven by at least four factors: backfilling for retiring nurses, nurses needed to support Colorado’s average population growth of 100,000 new residents per year, support for the 540,000 Coloradans who will access health care due to reform,





and providing for the increasing health care needs of a significantly older population. Based on conservative assumptions, the nursing supply and demand graph provides an estimate of how these nursing workforce demand factors play out over the coming twenty years.¹²

The supply of new nurses comes from two sources: graduates of Colorado's schools of nursing (averaging 1,900 annually), and in-migration of nurses educated in or leaving nursing jobs in other states. Helping to understand the past sources of Colorado's current nursing workforce, a Colorado Health Institute 2008 survey of 12,500 nurses indicated that 57 percent of licensed Colorado nurses had received their nursing education outside of Colorado.¹⁴

For decades, Colorado has been able to recruit and employ nurses without having to support the expense of investing in their education. Looking forward, however, it is extremely unlikely that the past will repeat itself.

Given that every state in the country is facing an increasingly serious nursing shortage, as well as education budget shortfalls, it is unlikely that Colorado will continue to be a beneficiary of other states' educational generosity. For a host of reasons

(including their own nursing faculty shortages), other states simply will not produce a surplus of nursing graduates, and it is likely that they will increasingly tie financial aid to commitments for in-state work as a nurse. In a dramatic change from the past, Colorado will increasingly be responsible for educating its own nurses.

For purposes of this analysis, the assumption is that Colorado will be able to maintain the 2009-2010 level of 1,900 annual nursing graduates.¹⁵ This is a critical and debatable assumption, given education budget pressures and the nursing faculty shortage issue. However, there is no evidence-based rationale to make a different assumption.

Even if schools of nursing are able to maintain their current 1,900-nurse annual graduation rate, the state still faces an average annual shortage of 1,100 nurses. A nursing shortage is defined as the gap between nursing demand and the number of in-state graduates. The graph below indicates the annual nursing shortage between 2012 and 2030. (See Appendix V).

In theory, the nursing shortage can be reduced if: (a) schools of nursing are given the resources to expand; (b) state population grows at a significantly lower rate than projected; or (c) currently uninsured individuals are prevented from

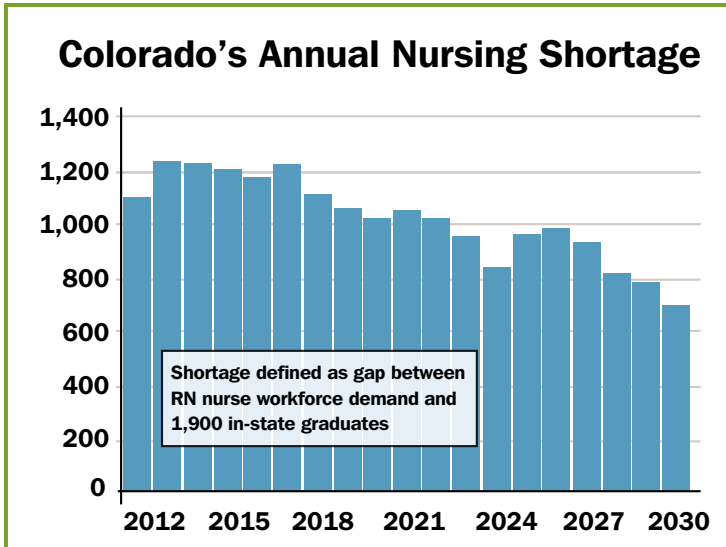
Colorado Nursing School RN Graduates ¹³	
2010	1,879
2009	1,890
2008	2,000
2007	1,811
2006	1,735
2005	1,599
2004	1,276
2003	727
2002	717

It is extremely unlikely that the past will repeat itself. ...

Colorado is now responsible for educating the majority of its own nurses rather than receiving a free ride from other state education systems.

Nurses... Nursing School Faculty Why should I care?

accessing additional health care as a result of health reform. All of these 'solutions' seem unlikely. Accordingly, the only remaining source of nurses to fill this workforce gap will be recruiting nurses from out of state.



Given the fact that every state in the country is projecting a severe nursing shortage, Colorado's ability to recruit an average of 1,100 nurses annually on a steady basis for the next ten years seems expensive at best.¹⁶

Nurses, Mobility, & Rural Communities

Underlying the challenge of responding to a nursing shortage is the labor mobility of nurses, i.e., nurses' propensity to move from one state to another in search of employment. Current research is not encouraging. A 2011 study found that 88 percent of newly licensed nurses took their first nursing jobs in the states where they received their nursing degree, with a slightly smaller percent (85%) for nurses with BSN degrees.¹⁸

Further analysis draws an even tighter circle: 53 percent of nurses are employed within forty miles of where they attended high school.¹⁷ A parallel analysis of a 5 percent U.S. Census household sample yields a similar result: excluding teachers, 84 percent of professional workers with a Bachelor's degree were more likely than registered nurses to leave their state of birth.¹⁸

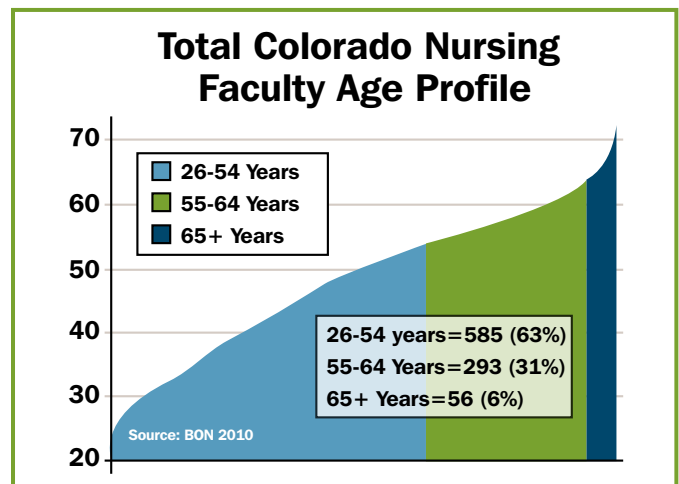
This insight into the lack of nursing workforce mobility indicates a significant out-of-state nursing recruitment challenge for Colorado, but especially for rural Colorado. Nursing is very much a "grow your own" profession, and this increases the need to resolve the nursing faculty shortage.

C. The Shortage of Nursing School Faculty

As described previously, over the coming decade Colorado will struggle to meet a significant and unavoidable increase in the demand for health care and thus for nurses. To meet that demand, nursing schools must (at a minimum) maintain their current ability to graduate nurses, and hopefully to expand that capacity.

This brings us to the central focus of this report: the issue of nursing faculty shortages. There is nearly a straight-line relationship between the demand for nurses and the need for nursing faculty. For regulatory and educational reasons, it is not possible to increase the supply of new nurse graduates without increasing the supply of faculty.

As context, the graph below portrays the 2010 age profile of all of Colorado's school of nursing faculty. Thirty-seven percent of all faculty are over 55; 53 percent of full-time faculty are over 55. Nationally, the picture is the same.¹⁹ There is currently at least an 8 percent national shortage of nursing faculty, translating to a nationwide need for 2,500 additional faculty.²⁰ This amount understates the educator shortage because it addresses only budgeted positions, not the additional faculty positions needed to increase enrollment sufficient to accept additional qualified applicants. (See Appendix VI)



One significant side note is that this analysis of nursing faculty demand is based on the current mix of two-year (ADN) and four-year (BSN) nursing student graduation patterns. Any acceleration of demand for BSN over ADN nurses will significantly increase the need for nursing faculty. Not only does BSN education require two additional years of education (requiring additional faculty), but the student-faculty ratio in BSN programs tends to be smaller.

In order to more fully understand the future demand for nursing faculty and its implication for the education of new nurses, two case studies have been developed. The first case study projects Colorado nursing faculty requirements under the current, status quo situation, requiring the need to recruit about 1,100 nurses from out of state per year. The second case study projects the impact of expanding nursing school capacity by 25 percent, reducing out-of-state recruitment to about 500 per year.

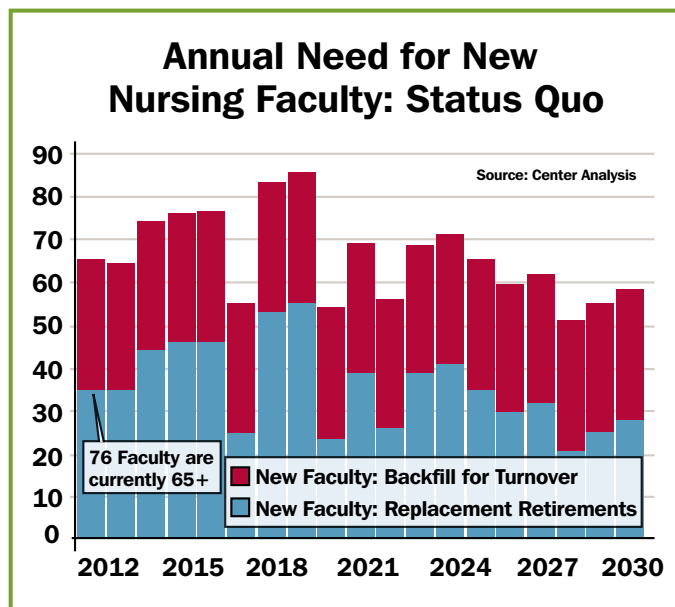
Case Study 1: Status Quo, No Change in Nursing School Capacity

The first case study maintains the current capacity of Colorado's schools of nursing, and assumes that health care employers will need to recruit approximately 1,100 out-of-state nurses per year for the next twenty years. For the state's current situation, how many new nursing faculty will be required, and when?

The two most common reasons nursing faculty leave their positions are retirement and moving to clinical employment.²¹ If the goal is to maintain current capacity, then the central questions are when will current faculty retire, and what will be the level of normal (non-retirement) faculty turnover.

Assuming that faculty retire at age 65 and a very conservative 3 percent annual turnover rate, the status quo graph above projects the annual need for new nursing faculty. In addition, 56 current faculty are over 65; they could retire at any time. Overall, an average of 45 nursing faculty will retire each year over the coming twenty years.

Anecdotal information indicates that faculty retention is a serious issue, for faculty can receive significantly greater (30%+) salaries in clinical practice than in teaching occupations. However, at this point data is inadequate to clearly project how many faculty members leave for other employment. A very conservative estimate of 3 percent annual turnover indicates schools need to recruit 30



new nursing faculty each year to backfill the individuals that leave teaching positions. The reality is that turnover is probably much higher. The graph above illustrates the need for new faculty under the status quo.

Driving health care demand ...

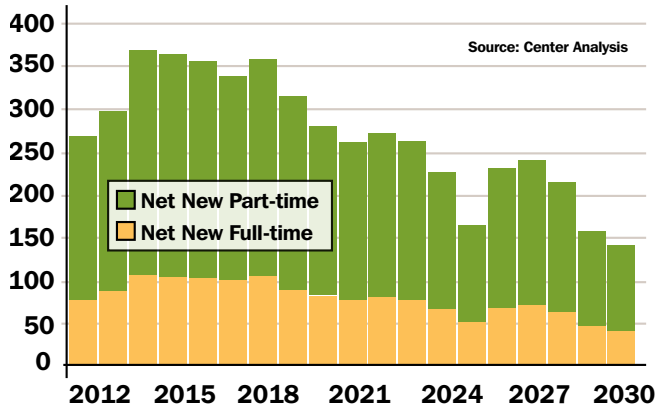
- ... Population growth
- ... Aging demographics
- ... Health care reform

Case Study 2: Expand Nursing School Capacity by 25 Percent

The second case study expands nursing school capacity so that Colorado health care providers would not have to recruit more than 500 out-of-state nurses each year, thereby saving recruiting costs and reducing turnover. This also implies an increase in the availability of nursing student clinical placement capacity, but that is another issue. Assuming that Colorado health care employers would recruit no more than 500 new nurses each year from out-of-state, Colorado nursing schools would have to increase their graduation capacity by 500 per year.

To graduate an additional 500 nurses each year requires 85 FTE faculty. The central question then is how many net additional

New Nursing Faculty Required to Reduce Out-of State Recruiting to 500 Nurses/Year



nursing faculty would be needed, above and beyond the status quo Case Study One?

The chart above indicates that an average of 250 additional full and part-time faculty would be required to graduate enough nurses so that health care employers would not have to recruit more than 500 per year. The ROI on this investment in additional faculty is conservatively estimated to be a positive 178 percent.²²

To successfully expand nursing school capacity by 500 graduates, the current very tight supply of nursing student clinical placement capacity would also have to be expanded, but discussing that challenge is beyond the scope of this paper.

There are many other characteristics that define faculty, and many other lenses that are useful to understanding faculty trends. Please see the Appendices to explore the composition of Colorado's nursing faculty with respect to teaching status, academic degrees, age profiles, and retirement exposure.

D. Colorado's Nursing Faculty Retirement Challenge

Because of multiple factors, the age profile of Colorado's nursing faculty is skewed toward the older end of the age spectrum, creating a large retirement exposure. Nursing faculty enter academia much later in life than other academic disciplines.

Colorado nursing faculty indicated in 2009 that they became faculty after an average of fifteen years of clinical practice²³. On average, nursing faculty receive their doctorates at age 46. In contrast, the median age of all research doctoral awardees was 34 years.²⁴

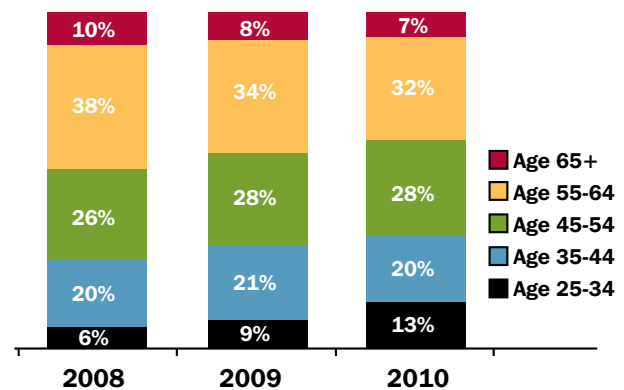
Nursing faculty also take twice as long to complete their doctorates than candidates in other fields. This slower pace is attributed to the fact that nurses often pursue their studies while still working full-time. Median time elapsed between entry in a graduate program to completion of the doctorate in nursing was almost twice that of other fields, 16 vs. 8.5 years, respectively.²⁵

As a result of these factors, nurses are slower to obtain teaching positions, have a shorter teaching career, and some are teaching well beyond the normal retirement age (currently there are 56 Colorado faculty over 65). The overall result is an older faculty population, as indicated in the graph below.

What is disturbing is that the 55-64 ten-year age cohort has 293 faculty, whereas all of the younger ten year cohorts are much smaller. There are only 261 faculty in the 45-54 cohort, 189 faculty in the 35-44 cohort, and 121 in the final 25-34 cohort. Each year, the nursing faculty age cohorts are smaller and smaller. The clear conclusion is that the shortage is going to get much worse.

The discrepancy between the age profile of nursing faculty and other academic professions was supported by the 2008 Carnegie nursing faculty study. "Whereas 35% of US academics and 29% of health science faculty are over the age of 54, fully 48% of nurse educators are age 55 and over."²⁶

All Colorado Nursing Faculty Age Profile (2008-2010)



More recently, the American Association of Colleges of Nursing report on 2010-2011 salaries of nursing faculty indicated that the average ages of PhD-prepared nurse faculty holding the ranks of professor, associate professor, and assistant professor were 60, 57, and 51 years, respectively. For master's degree-prepared nurse faculty, the average ages for professors, associate professors, and assistant professors were 58, 56 and 51 years, respectively.²⁷

Just to stay even, Colorado's schools of nursing will have to recruit an average of 45 new full-time and part-time faculty to replace retiring faculty each year for at least the next 10 years. This number increases to at least 75 faculty per year when including normal faculty (non-retirement) turnover.

This graph below illustrates Colorado's short-term (within 5 years) retirement exposure, as seen through different lenses. With respect to position status (full-time or part-time), the most serious retirement exposure is for full-time faculty, with 71 able to retire within five years.

Sorting faculty by academic degree, the greatest exposure is for faculty with doctorate level degrees, with 36 percent over 60 years old, followed by MSN-degreed faculty at 20 percent.

The retirement exposure as a percent is about even between BSN and ADN schools, with 20 and 18 percent, respectively. In terms

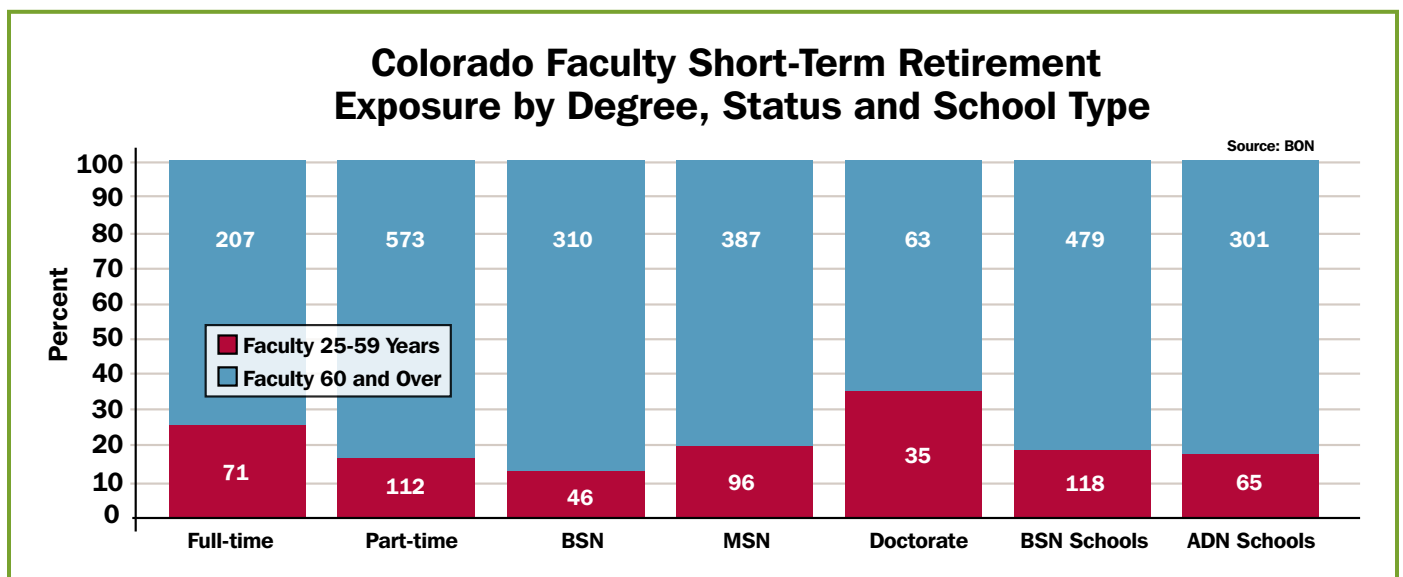
Colorado's nursing shortage:

1,100 per year ...

To avoid the need to recruit nurses from out of state, Colorado would have to increase the capacity of its nursing schools by 50 percent for the coming twenty years.

of absolute numbers, however, there are far more faculty teaching in the BSN schools that are close to retirement.

Given that it takes an average of fifteen years for most to acquire the advanced degrees necessary to teach, this overall retirement exposure is a serious concern justifying immediate response. Given the very significant time lag necessary to develop master's and doctorally prepared nursing faculty, if Colorado waits until the problem is acute, it will then be too late to respond. At that point, the only possible response will be to significantly reduce nursing school capacity and dramatically increase out-of-state nurse recruiting.





III. THE HEALTH CARE IMPACT OF A NURSING FACULTY SHORTAGE

Given all of the issues facing health care in Colorado, why should public, academic and health care leaders pay attention to a nursing faculty shortage? All Baby Boomer academics are aging and retiring, what's so important about nursing faculty? The most straightforward answer is that without the nursing faculty required to locally educate nurses, all of Colorado's health care organizations will be forced to recruit and compete nationally for 3,000 new nurses per year, which will increase health care costs and potentially limit capacity.

In spite of the fact that they do not directly provide health care services, Colorado's school of nursing faculty have a significant and larger-than-life impact on the ability of Coloradans to access health care and the cost of that health care. Colorado's 950 nursing faculty are at the top of an essential health care sector workforce "supply chain", graduating 1,900 new nurses each year.

One nursing faculty full-time-equivalent (FTE) graduates at least six new nurses each year, who in turn support more than \$720,000 in annual health care services. As a result, nursing faculty are essential and a high-impact investment in the state's health care system, supporting a sector that employs 1 out of every 8 Colorado employees and has a \$12 billion annual payroll. The annual payroll of all nursing faculty is less than 1% of the state's total nursing payroll.²⁸

The following eight analyses indicate that the positive financial and health care return on investment (ROI) on an investment in faculty is very high, ranging from 350% to 1,330%, varying with different underlying assumptions. In contrast, insufficient faculty investment results in a negative ROI up to -1,490% and the inability to provide health care services which lead to lost revenue. Given the variation between associate and baccalaureate schools, rural vs. urban, master's vs. doctoral faculty, and many other factors, this research explores the ROI of an investment in nursing faculty under different assumptions.

While there are many benefits to be gained from an effective health care system, this research uses health care expenses as a rough surrogate for health care benefits. Accordingly, total Colorado health care expense in 2009 was \$25 billion (removing the non-nursing related expenses of medical durables, dental and prescription expenses).

In 2009, Colorado employed 210,000 employees in its hospital, ambulatory and residential health care sectors, of which 38,000 (18%) were registered nurses. With the conservative assumption that all health care employees (janitors to nurses to surgeons) are responsible for an equal contribution to the provision of health care

What's 1%, anyway?

One percent of Colorado's total annual nursing salary payroll is more than the entire cost of all of the state's 950 full-time and part-time school of nursing faculty.

services, the result is that the 2009 Colorado health care services per nurse was \$117,000. (See Appendix VII).

Before turning to the specifics of the ROI analyses, it is essential to understand the economic value chain that connects nursing faculty to health care services. For example, the following is the four step analytical logic underlying ROI Scenario 1.

1. Colorado's 950 nursing faculty are essential human capital investments required to produce (graduate) new nurses, at a ratio of one nursing faculty FTE to six nurse graduates.
2. Colorado's 50,000 nurses are essential to provide health care services. Dividing Colorado's \$25 billion in 2009 health care expense by all health care employees indicates that each nurse supports at least \$117,000 in health care services.
3. An investment in one nursing faculty FTE graduates six nurses, who in turn support \$704,000 in health care services.
4. The average annual expense (including taxes and benefits) of a nursing faculty FTE (\$87,500) generates \$704,000 in health care services, for an ROI of 804%.

The following eight analyses indicate that the positive financial and health care ROI from an investment in nursing faculty is very high, ranging from 350% to 1,330%, varying with different underlying assumptions. In contrast, insufficient faculty investment results in a negative ROI up to 1,490% and the inability to provide health care services and lost revenue.

Given the variation between associate and baccalaureate schools, rural vs. urban, master's vs. doctoral faculty, and many other factors, it is appropriate to examine the ROI of an investment in faculty under varying assumptions.

In addition to the economic impact, of course, there are significant non-financial and health-based impacts, but those are beyond the scope of this analysis.

Return on Investment (ROI) indicates the positive or negative financial annual return on \$1.00 in additional or reduced investment. See Appendix VII for detailed assumptions and data.

1. ROI Analysis One: +804%. This is the base, or core, ROI analysis. Given that one faculty FTE is required in order to graduate six nurses per year, by extension one nursing faculty

Eight Nursing Faculty Return on Investment (ROI) Scenarios

	Summary	ROI
Scenario 1	\$1.00 invested in faculty supports \$8.05 in general health care services.	+805%
Scenario 2	\$1.00 invested in faculty supports \$9.75 in hospital health care services	+975%
Scenario 3	\$1.00 invested in faculty supports \$4.35 in nursing salary income	+435%
Scenario 4	\$1.00 invested in faculty saves \$3.50 in employer recruiting costs	+350%
Scenario 5	Combination of 2 & 4: support hospital services and save recruiting expenses	+1,330%
Scenario 6	Close all nursing schools, recruit all 1,900 new nurses/year out-of-state	-520%
Scenario 7	Reduce school capacity by 25%, not able to recruit 475 nurses out-of-state	-1,490%
Scenario 8	Expand school capacity by 25%, recruit an additional 475 nurses in-state	+575%

supports six nurses who provide \$704,000 in annual health care services. Using these assumptions, \$1.00 invested in nursing faculty supports \$8.05 in health care expense, for an ROI of 805%.

2. ROI Analysis Two: +975%. If one restricts the analysis to consider only Colorado's hospital sector with its 78,000 employees and 26,000 nurses, then the value of health care services supported per nurse increases to \$142,000, or by extension \$853,000 for the six nurses produced by one nursing faculty FTE.

In this acute care scenario, \$1.00 invested in faculty supports \$9.75 in hospital services, for an ROI of 975%. If the value of health care services per nurse is greater than that of other health care or hospital employees, then the nursing faculty ROI will increase.

3. ROI Analysis Three: +435%. This analysis adopts the even more restrictive assumption that the only benefit that should be attributed to nursing faculty investment is the salary received by the nurses they graduate, rather than the health care services these nurses support.

Given the starting salary for a Colorado nurse is \$50,735, these assumptions indicate that \$1.00 invested in nursing faculty generates \$4.35 in nursing salary income, for an ROI of 435%.

4. ROI Analysis Four: +350%. This most conservative analysis assumes that the only benefit to having nursing faculty is that they enable Colorado health care organizations to recruit nursing graduates from in-state schools, thereby saving them the costs involved with recruiting out-of-state nurses. Research on nursing turnover costs provides insight into the cost of recruiting nurses.

Research has demonstrated that the cost of nursing turnover averages 125% of a nurse's annual salary.²⁹ Many of these costs are time-sensitive, i.e., the longer the recruiting process takes, the greater the cost. In-state recruiting takes much less time than an out-of-state recruiting process, as a result of student clinical experiences, local placement activities, no relocation process, and the ability of local nursing students to begin their job search before graduation. In addition, it is likely that in-state recruits would experience less turnover.

As a result, this analysis assumes that the cost of in-state recruiting is 50% less than out of state recruiting. Given the

Colorado average nursing salary of \$66,170, these assumptions would indicate that \$1.00 invested in nursing faculty saves \$3.50 in recruiting costs for Colorado health care organizations, for an ROI of 350%.

5. ROI Analysis Five: +1,330%. This analysis combines the ROI estimates from scenarios two and four. Assuming that nursing faculty investment generates both a hospital health care services ROI (975%) and also reduces health care employer new nurse recruiting expenses, the combined benefit of a \$1.00 investment in nursing faculty is \$13.30, for an ROI of 1,330%.

Upping the ante: from nursing faculty to nursing schools

The next three scenarios move from the level of individual faculty to the school of nursing level, exploring the aggregate impact and ROI of a school of nursing on the state as a whole and on all health care organizations. Given that academic and health care provider finances are both highly variable, these are best estimates.

6. ROI Analysis Six: -520%. This scenario assumes that all Colorado's nursing schools have been closed, and employers had to recruit 1,900 additional new nurses each year from out-of-state.

Following the logic in ROI Analysis Four, health care organizations would incur increased new nurse recruiting expenses of \$77 million per year. In addition, this analysis makes the conservative assumptions that the salaries of nurses recruited from out of state would be no more than the salary of a local graduate, and that turnover rates would be no greater for out-of-state recruits.

Determining how much would be saved by closing all nursing schools is a significant challenge, so this is a best estimate. By closing all nursing schools, Colorado academic institutions (most public, some private) would save \$27 million in faculty expense and \$3 million in facility operations expense, but they would lose nursing student tuition revenue.

Making the conservative assumption that tuition only covers 50% of the total "production cost" of a nursing education, closing all nursing schools would yield a net savings to Colorado academia of \$15 million. On the other hand, Colorado healthcare organizations would incur an additional nurse recruiting expense of \$77 million.



This analysis indicates that for every \$1.00 saved by closing the state's schools of nursing, Colorado health care and academic organizations combined would see a net increase of \$5.20 in expenses, for an ROI of negative 520%.

The net ROI in Analysis Six masks very different public and private ROI results. Academia (largely public sector) saves \$15 million, and health care organizations (largely private) incur an additional expense of \$77 million. Another way to interpret this analysis is that the ROI of keeping the existing schools open and graduating 1,900 nurses each year is a positive 520%.

7. ROI Analysis Seven: -1,490%. ROI analyses one through six assume that Colorado's nursing workforce gap would be successfully filled by out-of-state recruiting efforts. In contrast, this perhaps more real world scenario explores the impact of reducing Colorado's nursing school capacity by 25% due to a shortage of nursing faculty and of subsequently not being able to fill the resulting nursing workforce gap.

The implications of facing an annual shortage of 475 nurses over a period of years is that health care organizations would be forced to reduce their capacity, services offered and revenues.

Scenario Seven reduces nursing faculty expense, tuition and health care revenues, resulting in a net statewide loss of \$52 million. In summary, this analysis indicates that the ROI of reducing school capacity by 25% and being unable to backfill that nursing gap by out-of-state recruitment is a negative 1,490%.

Arguably the ROI would be even more negative, because health care organizations will still incur expenses as they try unsuccessfully to recruit nurses. In summary, for every dollar saved by reducing nursing faculty expense, Colorado health care organizations lose \$14.90 in health care revenues, for a negative ROI of 1,490%.

8. ROI Analysis Eight: +575%. This final scenario explores what would happen if Colorado increased the capacity of its nursing schools by 25 percent (237 faculty, 60 full-time). This expansion would graduate an additional 475 nurses per year, and thus reduce the health care provider nurse recruiting costs by \$19 million per year. The net impact is a savings of \$16 million per year, for a positive ROI of 575%.

This combined public and private net ROI amount masks very different private and public health care behavior. Academic (largely public) expenses would increase by \$3 million, but health care provider (largely private) expenses would decrease by \$19 million.

In summary, this scenario indicates that for every dollar spent to expand nursing school capacity, Colorado health care organizations would save \$5.75 in nursing workforce expenses, for an ROI of 575%. It is likely that there would also be the benefit of reduced nursing turnover, but the specific amount is not known.





IV. THE MARKET IS BROKEN: FLAWS IN THE NURSING FACULTY PIPELINE

There are flaws in the nursing faculty labor marketplace that have created significant barriers to resolving the nursing faculty shortage. These are fundamental labor market flaws that will not be solved by any amount of cheerleading, encouragement or career marketing.

Overall, the very small nursing faculty pipeline shows that women have attractive career options other than “teaching and nursing” of years long past. Another clear indicator of the faculty shortage is the rapidly increasing use of part-time faculty to compensate for a school's inability to recruit full-time nursing faculty.

Without overstating the case but at the same time avoiding rose-colored glasses, it seems remarkable that any young woman or man would choose a nursing faculty career. For a young nurse considering the choice between an academic vs. a clinical career, an academic career promises the following: substantially lower income, increasingly longer work hours, a difficult path for tenure or promotion, the need to manage teaching as well as keeping current clinically, lower quality benefits, growing classroom size, an often unsupportive faculty culture, and upwards of \$50,000 in education debt³⁰.

To supplement their faculty income, a quarter of full-time Colorado nursing faculty continue to work at least ten hours a week in clinical roles. Of those nurses that moved from clinical to academic careers, 60 percent took a substantial cut in annual salary.³¹

The ‘signals’ that the academic nursing faculty labor market sends to young nurses are that they should avoid academia and concentrate on clinical practice. Given these signals, is it any surprise that a national shortage of nursing faculty is growing dramatically? These career signals are not intentional, but the message is still unmistakable to increasingly sophisticated and educated young professionals. Another way to interpret the nursing faculty shortage is that people are behaving rationally, and following the market signals sent to them by not entering academia, but moving into clinical practices. The challenge is to reverse these negative signals.

Left unresolved, these flaws will have an unavoidable and negative impact on both Colorado’s and the nation’s ability to educate future generations of nurses. Correction of these flaws is possible, but only through significant and concerted change by innovative nursing schools, their larger academic institutions and leading health care providers. Without resolution, health care nursing workforce costs will increase and access to health care services will diminish. The following

Change the Market Signals!

The academic nurse faculty labor market sends signals to young nurses that they should avoid academia and concentrate on clinical practice. These signals need to be changed!

are the forces driving the nursing faculty shortage, and translating into negative labor market signals.

- Nurses with graduate degrees (MSN, PhD and DNP) can earn 25-50 percent more in a clinical setting than in an educational position. While an exact comparison of a nursing faculty salary with the salary received by a clinical practitioner raises the “apples to oranges” caution, it is nonetheless clear that potential nursing faculty have multiple higher paying clinical career options, and so the salary differential has a tangible impact.
 - o In 2007 the average salary for MSN prepared faculty was \$66,588, while it was \$81,517 for a nurse practitioner.³²
 - o Master’s prepared nurse faculty are paid 33 percent less than nurse anesthetists, 17 percent less than head nurses and nurse midwives, and 12 percent less than nurse practitioners and clinical nurse specialists with the same educational credentials. The differential is greater for doctorate-prepared faculty.³³
 - o Given growing education budget pressures and faculty shortages, faculty workloads are increasingly intense, belying the notion that teaching is an “easier” career path.
- Despite the national shortage, nursing faculty earn significantly less than similarly positioned non-nursing faculty across academia. At the professor rank, nurse faculty salaries average 45 percent lower than their non-nurse colleagues. Associate and assistant nursing professors earn 19 and 15 percent less, respectively, than their peers.³⁴
- Unlike other professional schools, academic nursing tends to encourage lengthy clinical experience before pursuing an academic path. Whatever the cause, nurses do not receive their graduate degrees until much later in life than their peer academics, and so their teaching careers are ten to fifteen years shorter than their non-nursing peers.
 - o On average, nursing faculty receive their doctorate at age 46. In contrast, the median age of all research doctoral awardees was 34 years.³⁵ As a result, a nurse faculty has one third fewer years to teach than other academic faculty.
 - o The average age of all Colorado’s nursing faculty is 50; this increases to 56 for doctorally prepared faculty.
- Nursing faculty are also much slower to complete their graduate work, taking twice as long (16 years) to complete their doctorate than the pace of completion in other fields.³⁶
 - o This slower pace is often attributed to the fact that nurses pursue their studies while still working full-time.
 - o Multiple studies of nursing faculty job satisfaction have detailed at length that almost 50 percent are very dissatisfied with their faculty position.³⁷ Common issues are:
 - Very long working hours managing both teaching duties as well as additional clinical practice hours to stay current and to augment the teaching salaries.
 - The often nearly impossible path to tenure, given the lack of time for research and writing.
- The educational pipeline for nursing faculty is very narrow; only a small percent of nursing schools provide research and teaching oriented doctoral training.
 - o Only 7 percent of all 1,376 U.S. nursing schools provide education-oriented doctoral degrees.³⁸ Only two Colorado universities grant nursing PhD degrees and three others DNPs.
 - o As the current cohort of nursing faculty responsible for educating future nursing PhD, DNP and MSN students retire, this pipeline promises to become even smaller.
 - o Foreshadowing the future, AACN found in 2010 that 10,223 qualified applicants were turned away from master’s programs, and 1,202 qualified applicants were turned away from doctoral programs due to lack of capacity.³⁹ In farming communities, this is called “eating your seed corn”.



V. NO HELP OUT THERE: NATIONAL SHORTAGE OF NURSING FACULTY

Especially given Colorado’s history of being a beneficiary of other states’ educational largess, some might suggest that the solution is just to go “headhunting”, and recruit nurses and nursing faculty from other states. However, as indicated below by data from a sample of state-based reports, every state is facing nursing faculty shortages that promise only to become more intense.

The fundamental flaws that are affecting the supply of nursing faculty in Colorado exist in every state. There are and will be no significant “surplus states” where the “shortage states” can go prospecting to recruit their much-needed nursing faculty. Overall, the national supply of younger faculty is dropping and the overall age of nursing faculty is increasing steadily.⁴⁰

As a reference point, there are more than 35,000 nursing faculty at the nation’s 1,400 nursing schools. Fully half of them are over 55 years old.⁴¹ On a national basis, new faculty will be needed to replace both the 1,500 nursing faculty retiring each year as well as to backfill for the significant rate of faculty turnover.⁴² The table below provides information for states for which nursing faculty information was available. All of the data clearly indicate that health providers (for nurses) and nursing schools (for faculty) will be locked in a national recruiting battle for the foreseeable future. (See Appendix VIII).

	Faculty Vacancy Percent	Faculty Vacancies	Retirements within 5 yrs
AACN - NLN National	7%	1,239	12,600
Florida	12%	176	410
Indiana	6%	64	126
Louisiana	6%	32	83
Maryland	10%	30	
Michigan	6%	104	132
New Jersey	7%	42	87
New Mexico			35
North Carolina	10%	201	200
Oklahoma	15%	17	37
South Dakota		9	49
Tennessee	9%	69	
Texas	6%	156	450
Washington		116	
Wisconsin	6%	53	160

The Recruiting Battle!

All of the data clearly indicate that health providers (for nurses) and nursing schools (for faculty) will be locked into a national recruiting battle for the foreseeable future.

VI. A SOLUTION FRAMEWORK: CHANGING THE BEHAVIOR OF FIVE KEY GROUPS

In spite of its complexity, Colorado's nursing faculty shortage is a very solvable problem, given adequate attention, creativity and resources. The solution lies in multiple activities aimed at changing the behaviors and priorities of targeted individuals. Some of these solutions have already been invented, and only need to be applied with sufficient resources on a sustainable and permanent basis. As indicated by the IOM Future of Nursing recommendations released in November 2010, some solutions have yet to be invented, and require new approaches, partners and ways of framing the issue. (See Appendix IX).

The most successful solutions will address the root causes of the shortage with sustainable solutions, rather than just take a symptom-relief, quick-fix approach. According to Allen and Aldebron, "A review of the literature over the past eight years reveals the tendency of many [nursing faculty] initiatives to take a stop-gap approach. Sustainable solutions that result in a more robust nursing education infrastructure are the only answer."⁴⁴

What is frequently absent in a discussion of potential solutions is a strategic context. The nursing faculty shortage is the result of multiple, systemic problems that have developed over decades. Accordingly, solving it will take multiple, coordinated responses that are based on a coherent model of change.

Without a framework and outcomes criteria, one solution will appear to be as good as any other. The focus of this section is to briefly propose a framework for evaluating potential responses to the faculty shortage.

In summary, resolving the shortage requires sustained changes in behavior and priorities by a defined but limited number of members of five groups: existing faculty, potential new faculty, academic administrators, state policymakers and community leaders and health care system managers. Each of these five constituencies will be significantly (and negatively) affected by the faculty shortage, and each has a stake and a role in developing and supporting solutions. This is not a problem that can be solved by any single group; it will take all five.

Too many of the commonly proposed solutions incorrectly assume that this shortage will be solved by changing the behavior of existing and potential new faculty. While these two groups are necessary to any solution, their efforts alone are not sufficient.

The environment and supporting infrastructure surrounding existing and new faculty must change, and that requires action from other individuals.

According to a 2009 survey of Colorado nursing faculty, the top five strategies for deferring retirement were: increased salary (73%), modified teaching load (59%), improved benefits (58%), increased recognition from academic leadership and colleagues (55%) and increased opportunities for career advancement (39%).⁴⁵ These issues are also important for potential new faculty.

While a review of all possible nursing faculty shortage solutions is beyond the scope of this document, the following is a suggested list of the actions and behavior changes required to resolve Colorado's nursing faculty shortage.

1) Existing Faculty Actions and Behavior Change

- a) Existing faculty, especially senior faculty and school leadership, must develop and support a workplace environment that is attractive to younger, new nursing faculty with a different set of work, career and lifestyle values than their own.
- b) Designated faculty need to be responsible for recruiting a defined number of new faculty members over a defined time period.



- c) Existing faculty need to be responsible for mentoring assigned existing new faculty members.
- d) At least sixty Colorado faculty per year need to decide to teach another year past retirement, at least until the nursing faculty pipeline is significantly strengthened.
- e) Many of Colorado's doctorally-prepared faculty need to remain teaching as long as possible, well beyond traditional retirement, so that they are available to prepare the next generation of doctorate level faculty.

2) Potential New Nursing Faculty Actions and Behavior Change

- a) Seventy-five Colorado nurses each year need to enter MSN, DNP, or PhD graduate studies leading to a teaching career.
- b) Nurses currently engaged in graduate work need to stay the course to finish their degrees and become new Colorado faculty.
- c) Nurses currently engaged in graduate work need to be part of a mentoring relationship with existing faculty.

3) Academic Leader Actions and Behavior Change

- a) Academic leaders must persuade and support Colorado's doctorally-prepared faculty to remain teaching as long as possible, beyond traditional retirement, so that they are available to prepare the next generation of doctorate level faculty.
- b) Academic and public policy leaders need to increase faculty salaries so that choosing an academic nursing career becomes an economically rational and viable choice for a new generation of nursing faculty.
- c) Academic leaders need to lower the academic barriers to entry for new nursing faculty by working with clinical leaders to make a transition from clinical to part- or full-time academia less time consuming, less expensive, and easier to blend with ongoing work duties.
- d) Academic leaders need to develop and utilize programs such as the Center's Clinical Scholar program as a pipeline for future faculty recruitment.
- e) Adequate time needs to be allowed for new faculty to perform the research necessary for advancement and

tenure, or ways must be developed to provide equivalent 'credit' for clinical practice.

- f) Academic leaders need to develop a person-by-person set of actions supporting faculty retention and succession planning, such as the Center's Leaving a Legacy program.

4) State and Community Leader and Policymaker Actions and Behavior Change

- a) Public leaders need to support—politically and financially—increased faculty salaries so that choosing an academic nursing career becomes economically rational for a new generation of nursing faculty.
- b) Public leaders need to provide resources that lower the financial barriers to nurses entering graduate study (e.g., reduced tuition, education loan forgiveness).
- c) Community, business and philanthropic leadership need to sponsor new and existing nursing faculty in their community in ways that increase the retention of the new/existing faculty.
- d) Community leaders, especially in rural Colorado, need to recruit and sponsor nursing faculty in the same way that primary care physicians are recruited and sponsored. (See the National Rural Recruitment and Retention Network at www.3rnet.org).

5) Health Care Leader Actions and Behavior Change

- a) Health care leaders need to support—politically and financially—increased faculty salaries so that choosing an academic nursing career becomes economically rational and viable for a new generation of nursing faculty.
- b) Health care leaders need to provide resources that lower the financial barriers to nurses entering graduate study (e.g., student and new faculty sponsorship).
- c) Health care leaders need to sponsor new and existing nursing faculty in their community in ways that increase the success and performance of the new/existing faculty.
- d) Health care systems need to partially or fully pay for the salaries of nursing faculty, in the form of a sponsored "Professorship" or other mechanisms.



6) Academic Nursing Leadership Development and Succession Planning

- a) Far too many nursing schools are characterized by a very high level of leadership turnover; in some schools leadership turns over annually. Not only does this frequent turnover prevent effective leadership, it prevents the successful recruitment and retention of new faculty.
- b) A deliberate process of school of nursing leadership development needs to become the norm, rather than the exception. In too many cases, school or program leaders are expected to fulfill roles for which they have insufficient skills and experience. The result is frequent leadership turnover.
- c) The importance of nursing school and program leadership needs to be formally acknowledged through a conscious and ongoing program of leadership development and succession planning such as the Center's "Leaving a Legacy" program.
- d) The very significant challenges facing schools of nursing over the coming two decades will not be successfully resolved by untrained leaders who turn over frequently and who are in their leadership position because they drew the short straw or it is "their turn in the rotation".





VII. ONE RESPONSE: THE FACULTY RECRUITMENT AND RETENTION INITIATIVE SPONSORED BY THE COLORADO TRUST

In 2007, The Colorado Trust⁴⁶ commissioned the Center to explore what interventions could help mitigate the growing shortage of Colorado nursing faculty. The Faculty Recruitment and Retention Initiative (2008 - 2012) is the result of that exploration.

There are at least three core faculty challenges facing nursing schools: recruiting younger nursing faculty in a highly competitive environment, developing their teaching skills, and retaining them in light of multiple clinical career opportunities. As discussed in previous sections, the nursing faculty shortage results from interaction among many factors, and so an effective response must have multiple elements.

Based on extensive interviews with nursing leaders, the Center received funding from The Colorado Trust in 2008 to support a four-part Nursing Faculty Recruitment and Retention Initiative (RRI), working with 25 Colorado schools of nursing. Since 2008, more than 265 Colorado nursing faculty have participated in various elements of this innovative program. The design of this initiative includes four RRI elements, summarized below.

Intervention 1: Nursing Faculty Educational Loan Forgiveness.

This element is designed to reduce the financial barriers that hinder nurses from pursuing higher education and academic careers. To acquire the academic qualifications required to be faculty, a nurse must incur an educational loan burden that can be tens of thousands of dollars.

During the last three years, 96 nursing faculty have received \$691,240 in loan repayment awards from this program. In exchange for this loan repayment assistance, the participating nurse faculty have collectively committed to an additional 205 teaching-years for Colorado schools of nursing.

Intervention 2: Skills Development for Clinical Instructors.

The shortage of primarily part-time clinical instructors has been identified as a particularly intense need, and filling this gap is one of the most effective ways to free up full-time faculty to concentrate on classroom and other teaching responsibilities. Unfortunately, very few of these clinical faculty have ever had any skills development in conducting effective clinical instruction for nursing students.⁴⁷ The result is that the quality of instruction provided by these clinical faculty is often problematic.⁴⁸

The best solution?

There is no single answer or best solution. The faculty shortage results from systemic interaction among many factors, and so an effective response must contain multiple elements.

It is no surprise, therefore, that these limited teaching skills can often create frustration for the instructors and unmet student expectations.

In an effort to help fill this clinical instruction faculty gap, reduce clinical faculty turnover and improve the student clinical experience, the Center provides a five-day skills development program for nursing clinical faculty named “Clinical Scholars”.

Experience has also demonstrated that these Clinical Scholars can be enticed into advancing their education and moving into full-time faculty positions. Since the inception of the Clinical Scholar program in 2005, more than 650 nurses have completed this program. Of these, 69 staff nurses were supported by the RRI program.

Intervention 3: Success in the Classroom — Presentation Skills for New Faculty. One of the chronic challenges facing schools is developing and retaining new nursing faculty. Multiple drivers can be identified for faculty turnover, but one that surfaced during Center interviews was the lack of preparation of new faculty in classroom management and presentation skills.

All too often, in spite of their strong clinical preparation, new faculty have received little if any skills development in the practical aspects of teaching, classroom management, engaging young nursing students, and related subjects. Some would argue that the lack of teaching skills preparation for new nursing faculty is a setup for faculty and student dissatisfaction and turnover.

With the intent of exploring one defined step in helping to fill this skills gap, the Center implemented an intense hands-on, media-rich program for new faculty targeted at developing their classroom skills using extensive videotaping. Since 2008, fifty new nursing faculty have participated in this skills development program.

Intervention 4: “Leaving a Legacy” Academic Leadership Development. An insight from initial 2007-2008 interviews was that to reduce turnover and improve recruitment, the faculty culture of the nursing school needed to change by creating a formal process of new faculty

development, retention and succession planning. Of course, the only way to change the faculty environment for new faculty is to have senior faculty support and provide leadership in changing the overall culture of the school.

The result was the creation of the *Leaving a Legacy* senior academic leadership program, a three-day leadership and succession planning workshop with six months of follow up coaching.

Ongoing coaching by Center staff provided support to senior faculty's efforts to change the culture and implement succession planning. In addition, each participant was responsible for a capstone project. Fifty senior nursing faculty and nursing leaders have participated in this course and completed capstone projects within their schools.

Summary

The RRI program is in its fourth year, and so it is still a work in progress. While a formal evaluation has not been developed, the overwhelming response from program participants and academic leadership has been positive. The four RRI program elements have increased nurses' ability to become faculty and have allowed senior faculty to remain with greater job satisfaction. Together, these outcomes have helped begin the process of improving faculty recruitment and retention.

The Center and all RRI participants are very grateful to The Colorado Trust for its sponsorship of this initiative.



VIII. CONCLUSION

This document should be seen as a place to start exploring the scope and impact of the nursing faculty shortage. It also illustrates some ways to secure support for solutions. Although the total volume of faculty involved is small, the disproportionate downstream ripple effect of a nursing faculty shortage in Colorado will be very significant and costly.

This is a “pay now or pay later” issue. The less expensive “pay now” solutions will focus on preventing the nursing faculty shortage. The “pay later” result will be that Colorado’s health care organizations will incur very substantial out of state nurse recruiting costs and increased nursing salaries.

Center staff hope that this document has successfully developed an understanding of the nature and scope of the Colorado’s nursing faculty shortage, why it is important to resolve, and the healthcare and economic return on resources invested in its solution. The good news is that the total number of individuals involved is small, on the order of 75 per year, 45 to replace retirements and 30 to backfill for turnover. This resolution is well within the problem-solving capacity of a state that spends more than \$30 billion annually on health care.

However, the competition for resources is too great to expect that a vaguely defined and invisible problem with no rationale for increased investment will receive sufficient support from critical decision makers and constituencies. First must come problem definition, visibility and return on investment; then and only then can the case be successfully launched for implementing specific solutions to the nursing faculty shortage.

What is important now is to build on awareness of this issue by working with existing and potential new nursing faculty plus leaders from the other targeted groups to craft and support the necessary education, community and health care sector solutions. The implications of not resolving this issue are increases in health care costs and constraints on Colorado’s ability to access to health care.

Pay now or pay later?

The less expensive “pay now” solutions will prevent the faculty shortage.

The “pay later” solutions will require employers to absorb millions of dollars in increased recruiting costs and potential nursing shortages.



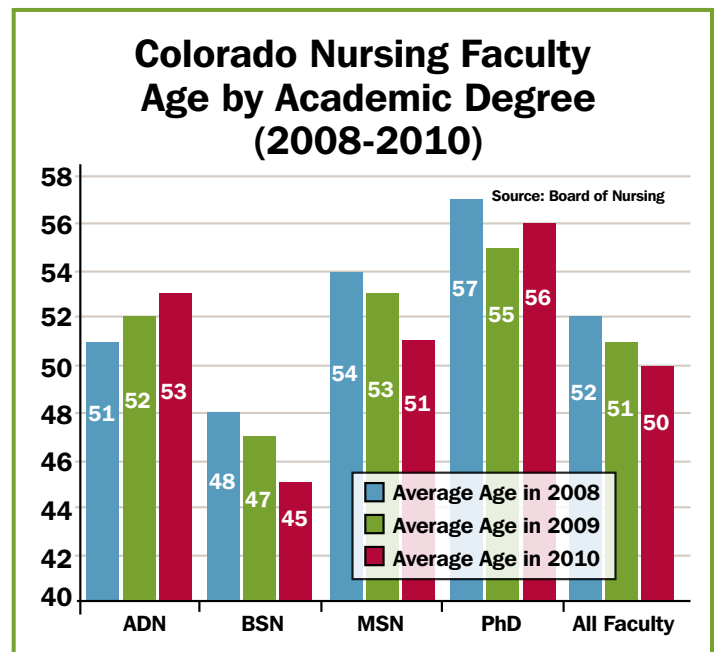
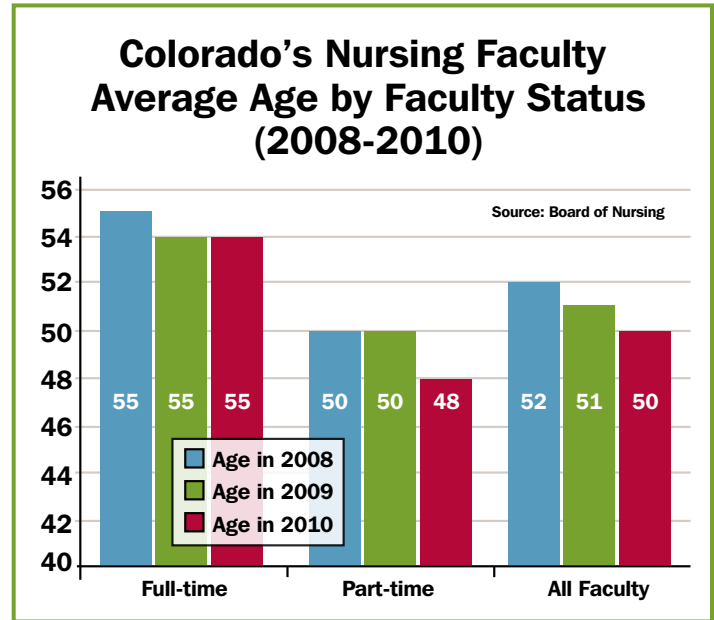
APPENDICES

APPENDIX I. NURSING FACULTY AGE PROFILE TRENDS

Continuing to explore the profile of Colorado's nursing faculty, the graphs on this page indicate that the overall age of nursing faculty is dropping, albeit slowly, from a median age of 52 in 2008 to 50 in 2011. However, different types of faculty present different age profiles.

Full-time faculty comprise the oldest cohort of nursing faculty, with an average age of 54 years old in 2010, down from 55 years in 2008. Not far behind are the part-time faculty, with an average age of 48 years, only slightly improved from the 2008 average age of 50.

Another perspective on changing faculty demographics is to explore the average age of faculty with different levels of academic preparation: ADN, BSN, MSN, and PhD. As illustrated by this graph, the aging profile indicates that PhD faculty are the oldest at 56 years old, followed by the small population of twenty ADN prepared faculty at 53 years old, then MSN at 51 and finally BSN prepared faculty with a median age of 45 in 2010. With the exception of the ADN faculty, all of the average ages are dropping at the rate of 1-2 years annually.



APPENDIX II. NURSING FACULTY TEACHING STATUS: FULL-TIME, PART-TIME AND ANIP

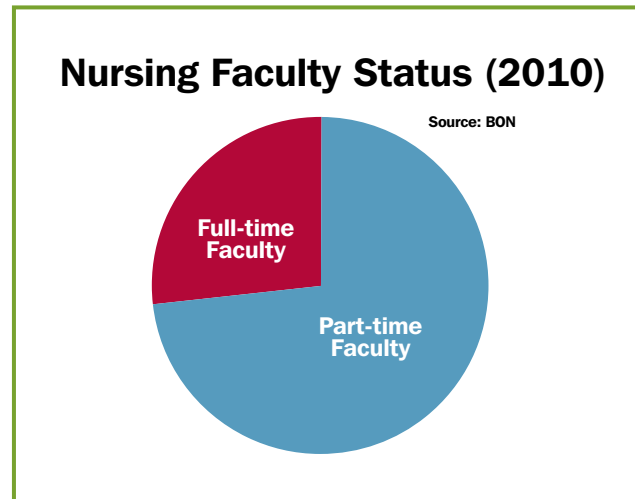
As indicated by the pie chart, Colorado's school of nursing faculty can be divided into two teaching status categories: full-time (27%) and part time (73%). The part-time category includes ANIP Faculty. (Associate Nursing Instructional Personnel, primarily clinical instructors that do not have advanced academic degrees, specifically identified by the State Board of Nursing Rules and Regulations). Many reviewers of this data were struck by how small the percentage of full-time faculty is of the total nursing faculty population.

Given that full-time faculty is the primary group responsible for the overall leadership, content development and content delivery, and maintenance of school operations, Colorado's 280 full-time nursing faculty are a relatively small population to support the state's 6,000 nursing students.

This is a bad news-good news story. The bad news of having a small percentage of full-time faculty means that losing even a few of these individuals will have a disproportionate and very negative impact on nursing education.

The good news is that Colorado academic and health care leaders can have a large, significant impact with the infusion of relatively small resources. By affecting only about 75 full-time and part-time faculty per year, Colorado leaders can effectively maintain Colorado's capacity to graduate 1,900 nurses annually, thereby saving Colorado health care employers over \$65 million per year in recruiting expenses.

In what most view as an unfavorable trend, the percent of total faculty that is full-time has been decreasing. In 2008, 30% of the state's nursing faculty were full-time. That number had dropped to 27% by 2010. In 2008, the state had 295 full-time nursing faculty; in 2010, that number had dropped to 281. This is due, in part, to the inability to recruit full-time faculty. Consequently, the positions are filled by part-time and visiting faculty.



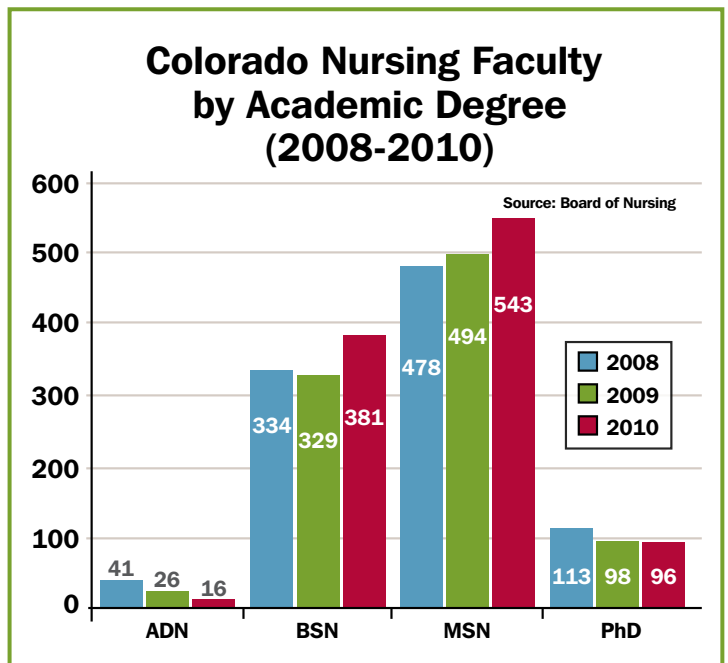
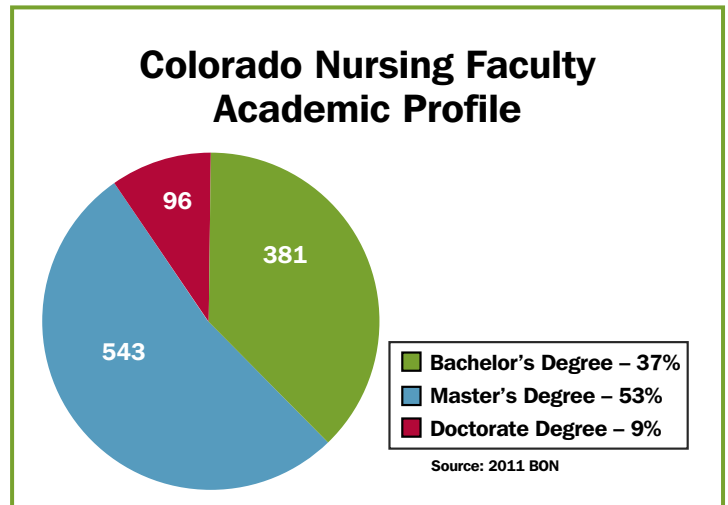
APPENDIX III. NURSING FACULTY ACADEMIC STATUS: BSN, MSN AND PHD

The issue of academic preparation for school of nursing faculty has been a topic of concern for many years, ranging from national accreditation requirements to state Board of Nursing regulations to the recently published *Future of Nursing* report by the Institute of Medicine (IOM). In general, the overall thrust of these regulations and recommendations has been to push for increased academic preparation of nursing faculty.

The most recent and dramatic recommendations were from the Institute of Medicine. IOM Recommendation Four is to increase the proportion of nurses with a baccalaureate degree to 80 percent by 2020. Recommendation Five is to double the number of nurses with a doctorate by 2020. These recommendations directly impact the nursing faculty shortage issue by doubling the number of nursing doctorates and indirectly impact faculty by increasing demand to educate more BSN graduates.

As indicated by the graph, Colorado's nursing schools' progress in moving towards these goals is mixed. Significant progress has been made in increasing the number of MSN-prepared faculty and there is one year of positive movement relative to faculty with BSN degrees. Nursing faculty with ADN degrees has been steadily dropping.

With respect to the number of PhD/DNP prepared faculty, however, the state has seen a drop from 113 in 2008 to 96 in 2010, which is a trend in the wrong direction. (Note: for ease of graphing and analysis, the various bachelors, masters and doctorate degrees have been combined into single BSN, MSN and PhD categories. See Appendix IV for detail.)



APPENDIX IV. SPECIFIC NURSING FACULTY ACADEMIC DEGREES (2008-2010)

	2008	2009	2010
AAS Degree	1	1	1
ADN Degree	40	28	18
ASN Degree	9	2	
BA Degree	3	2	3
BS Degree	5	2	1
BSCN Degree	1	1	
BSN Degree	354	337	388
Diploma	1	8	4
DNP Degree	9	10	12
DNSc Degree	2	1	1
EdD Degree	7	6	7
MA Counseling		1	
MA Degree	4	5	1
MA Psych		1	
MBA Degree	1		
MEd Degree	2	6	6
MHA Degree	1		
MHA Degree		2	2
MHS Degree	1	1	1
MN Degree	1	2	2
MNA Degree			2
MPH Degree	3	2	6
MS Degree	49	81	48
MSHA Degree	2	4	1
MSN Degree	448	412	488
MSPM Degree	1		
MSPT Degree	1	1	
ND Degree	4	11	9
NP Degree	1		1
PharmD Degree		1	
PhD Degree	95	70	76
PHN Degree		1	
PsyD Degree	1		
R Ph Degree	1		

For purposes of analysis and graphing for this report, the many different degrees that were found in the nursing school reports were consolidated into four academic categories: ADN, BSN, MSN and PhD.

As is frequently the case, the quality of data in some reports varied from year to year and school to school.

APPENDIX V. PROJECTED COLORADO NURSE DEMAND AND SUPPLY (2011-2030)

	To replace retiring RNs	To support population growth	To support HC reform/new insured	To support aging population	1,900 CO nursing graduates per year	Total Annual Nursing Demand	Net Annual shortage	Cumulative shortage
2011	1,340	830	457	308	1,900	2,935	-1,035	-1,035
2012	1,408	830	457	297	1,900	2,991	-1,091	-2,125
2013	1,391	830	457	455	1,900	3,132	-1,232	-3,358
2014	1,415	830	415	464	1,900	3,124	-1,224	-4,582
2015	1,431	830	398	444	1,900	3,103	-1,203	-5,785
2016	1,392	830	374	480	1,900	3,075	-1,175	-6,961
2017	1,441	830	374	469	1,900	3,114	-1,214	-8,174
2018	1,472	830	208	494	1,900	3,004	-1,104	-9,278
2019	1,610	830	0	515	1,900	2,955	-1,055	-10,333
2020	1,577	830	0	511	1,900	2,918	-1,018	-11,351
2021	1,572	830	0	539	1,900	2,941	-1,041	-12,392
2022	1,565	830	0	524	1,900	2,919	-1,019	-13,411
2023	1,496	830	0	524	1,900	2,850	-950	-14,361
2024	1,366	830	0	537	1,900	2,733	-833	-15,194
2025	1,523	830	0	504	1,900	2,857	-957	-16,151
2026	1,509	830	0	538	1,900	2,877	-977	-17,128
2027	1,498	830	0	500	1,900	2,828	-928	-18,056
2028	1,403	830	0	481	1,900	2,714	-814	-18,869
2029	1,407	830	0	444	1,900	2,681	-781	-19,650
2030	1,347	830	0	417	1,900	2,594	-694	-20,344

Assumptions and data used:

1. Nursing retirements were assumed to occur at age 65, and nurse age was obtained from nurse licensing data.
2. Nurses required to support population growth assumed that the state wanted to retain its current ratio of 8.34 nurses per 1,000 population, so a need of 834 nurses was projected for each year's growth of 100,000 Colorado residents.
3. The same logic was used to generate the additional nurses needed to support health reform: The Colorado Health

Institute estimates that 540,000 additional Coloradans will access health services due to health reform, and so that amount was multiplied by 8.34 nurses per 1,000.

4. Finally, given that the over 65 population uses health care services at a rate 300% greater than the younger population according to a federal CMS analysis,⁹ the number of Coloradans turning 65 each year was multiplied by the 8.34 nurses per 1,000 ratio. This would equate to a conservative doubling of demand by individuals over 65 years old, less than the 300% indicated by CMS.

APPENDIX VI. PROJECTED COLORADO NURSING FACULTY DEMAND (2011-2030)

	Annual number of nursing faculty reaching 65 yrs	Annual faculty turnover of 3%	Cumulative need for nursing faculty
2011	76	30	106
2012	15	30	151
2013	20	30	201
2014	29	30	260
2015	31	30	321
2016	31	30	382
2017	25	30	437
2018	53	30	520
2019	55	30	605
2020	24	30	659
2021	39	30	728
2022	26	30	784
2023	39	30	853
2024	41	30	924
2025	35	30	989
2026	30	30	1,049
2027	32	30	1,111
2028	21	30	1,162
2029	25	30	1,217
2030	28	30	1,275

Notes: No school expansion is considered; faculty are assumed to retire at age 65, nursing class sizes are retained at 2011 levels; annual turnover rate of 3% is applied to the total 2010 pool of 950 Colorado nursing faculty (full-time, part-time and ANIP).

APPENDIX VII. NURSING FACULTY SHORTAGE ANALYSIS: SUPPORTING DATA AND ASSUMPTIONS

Any analysis is only as good as the assumptions and data that support it. The following is a detailed review of some of the key underlying facts and assumptions of the analysis.

Facts

1. Colorado has 950 nursing faculty: 27% full-time, 73% part-time. (CO Board of Nursing annual reports).
2. Total Colorado spending on health care: \$30 billion in 2009. This amount was reduced by the amount spent on pharmaceuticals and durables (\$5B) to generate the amount of health care services that involve nurses (\$25B). (www.kaiserfamily-healthfacts.org)
 - a. Dividing this modified total health care expenses by the number of total health care employees = \$117,000 per nurse.
 - b. Further narrowing Colorado health care expense to only hospital based expenses, employing 78,000 total employees = \$11B in 2009. Dividing this by 26,000 hospital-based nurses = \$142,000 per nurse.
3. As of 2010, the mean average annual salary of a registered nurse is \$67,282, with the minimum at \$50,735 and the maximum at \$75,556. (www.bls.org and Colorado's Department of Labor and Employment Labor Information website). This analysis uses \$65,000 as the nurse salary.
4. There is a substantial range between the lowest (\$46,000) and highest (\$127,000) annual salary for a nursing school faculty member. This analysis uses the median salary of \$70,000. This base salary is increased to \$87,500 by adding in 25% for benefits and taxes. (AACN and salary.com).
5. As of July 2011, the Colorado Board of Nursing had 60,320 licensed nurses with mailing addresses in Colorado. A nurse's working status is not part of the licensing process, but the Colorado Health Institute 2008 RN survey and the Bureau of Labor Statistics both indicate that 83% of licensed nurses are actively employed in a position which requires an active nursing license. That factor results in 50,065 RNs which are actively employed. See www.ColoradoHealthInstitute.org and www.BLS.gov.
6. Older adults consume more ambulatory care, hospital services, nursing home services, and home health care services than younger people. People age 65 and older average 706 ambulatory care visits per 1,000 people (compared to 291 visits per 1,000 people age 18-44); average 286.6 hospital discharges per 1,000 people (compared to 94.8 for ages 18-44); and constitute more than 70% of home health care patients. (Impact of Aging on the Health care Workforce. Center for Health Workforce Studies. NY. 2005). Regardless of payment source, individuals over 65 spent \$8,647 in health care; 45-64 spent \$4,647; 25-44 spent \$2,247; 1-24 spent \$1,282 per year. (Health Care Costs: A Primer. Henry Kaiser Foundation. 2007).
7. According to AACN's 2008 faculty salary survey, a nurse practitioner faculty member with a 12-month appointment earned an average \$73,765, while a nurse practitioner with the same level of education earned \$100,000 to \$120,000 annually.⁴⁹
8. For the total costs of educating one allopathic physician, the same investment of funds can educate: 14 advanced nurse practitioners, 12 physician assistants, 33 physical therapists, or 30 occupational therapists.⁵⁰
9. According to a Special Survey on Vacant Faculty Positions released by AACN in September 2010, a total of 880 faculty vacancies were identified in a survey of 556 nursing schools with baccalaureate programs across the country (70% response rate).

Besides the vacancies, schools cited the need to create an additional 257 faculty positions to accommodate student demand. The data show a national nurse faculty vacancy rate of 6.9%. Most of the vacancies (91%) were positions requiring or preferring a doctoral degree.

The top reasons cited by schools having difficulty finding faculty were noncompetitive salaries compared to positions in the practice arena (30%) and a limited pool of doctorally-prepared faculty (30%).” AACN Nurse Faculty Shortage Factsheet. (www.aacn.nche.edu).

Assumptions

1. Colorado needs 3,000 new nurses per year, based on the following facts and assumptions.
 - a. 37 percent of Colorado nurses are over 55 years old (Board of Nursing)
 - b. Colorado has 8.34 nurses per 1,000 residents; national average is 8.6 (www.kaiserfamilyhealthfacts.org)
 - c. Colorado desires to keep the nurse-to-population ratio at least at the current level. The shortage increases if we want to achieve the national nurse-to-population average.
 - d. 540,000 current Colorado residents will access health care due to health reform (www.ColoradoHealthInstitute.org). To support this expansion, it will require 2,250 new nurses to maintain current ratios.
 - e. Coloradans over 65 consume three to six times the amount of health care services than do those younger (see #6, above). Being conservative, the analysis assumes that the over-65 population uses health care at twice times that of younger populations.

To determine the nursing support required by the increasingly aging population, the number of Coloradans that turn 65 each year are treated as if one “new” person came into Colorado. Accordingly, when 40,000 Coloradans turn 65 in 2012, that creates a demand for 333 additional nurses (8.34 times times 40). (Demographics from U.S. Census.)

2. Nursing turnover and the process of hiring a new nurse presents significant costs to any organization, and has been

extensively reviewed in the literature. Because hiring an in-state educated nurse presents significantly less recruiting, travel, and vacancy costs, the cost to recruit an in-state nurse is estimated to be 63% of salary, vs. the cost of recruiting an out-of-state nurse of 125% of salary.

The largest nurse turnover cost category was that of vacancy costs, followed by orientation and training costs, newly hired RN productivity costs, and advertising and recruiting costs. These four cost categories represent more than 90% of nurse turnover costs.⁵¹

APPENDIX VIII. EVERYBODY’S HURTING: NATIONAL DEMAND FOR NURSES & NURSING FACULTY

Some might suggest that the solution is just to “go headhunting”, and recruit nurses and nursing faculty from other states. However, as indicated by the data below from a selection of states, every state is facing nursing and faculty shortages that both promise to get more intense. On a national basis, more than 1,000 current nursing faculty will retire each year for at least the next decade.⁵²

The data makes clear that health providers and nursing schools will be locked in a national recruiting battle for nurses and nursing faculty. The fact that this data is so scattered only indicates how little attention the nursing faculty shortage is receiving from policy makers.

	Faculty Vacancy Percent	# of Faculty Vacancies FT/PT	Projected Retirements w/in 5 yrs	Total Faculty FT/PT	Qualified Students Denied Admission	Projected Nursing Shortage	Data Year
AACN - NLN National	9.7%	1,280	12,500	16,600	67,563	808,106	2011
Florida	12%	124/52	410/18%	1287/975	13,609	61,146	2010
Idaho			60/25%	166/72		6,106	2008
Indiana	6%	54/10	126/12%	759/279	5,770	17,586	2010
Louisiana	6%	32	83/13%	542/200	1,353	7,410	2010
Maryland	10%	30/		408/413	1,850	17,116	2005
Michigan	6%	50/54	132/19%	697/871	1,964	18,303	2006
Mississippi			15/5%	315			2004
New Jersey	7%	42	87/9%	440/450	1,500	42,400	2006
New Mexico			35/19%	185/155	240	10,264	2009
North Carolina	10%	127/74	200/22%	1322/735		17,924	2009
Ohio			287		5,197	3,134	2009
Oklahoma	15%	17	37	148	42%	7,744	2006
Pennsylvania				2,504	1,800	16,000	2005
South Dakota		9	49/13%	141/228		1,921	2010
Tennessee	9%	69		782/426		35,300	2009
Texas	6%	108/47	450/19%	1873/619	11,217	71,000	2010
Virginia				372		23,000	2008
Washington		116		682		25,451	2010
Wisconsin	6%	53	160/17%	600/352		6,551	2006

APPENDIX IX. IMPLEMENTING THE IOM FUTURE OF NURSING RECOMMENDATIONS IN COLORADO

In November 2010, the Institute of Medicine released eight Future of Nursing recommendations, two of which are directly affected by a nursing faculty shortage. With the understanding that we are moving into possible scenarios and best estimates, the following may be useful.

1. IOM Recommendation Four is to increase the proportion of nurses with a baccalaureate degree to 80 percent by 2020. What might accomplishing this goal imply for Colorado's nursing faculty?

- a. The Board of Nursing does not ask for education levels when nurses obtain their RN license, so we do not have nurse-specific data about the educational profile of Colorado nurses. However, the CHI 2008 RN Survey found that 66 percent of Colorado RNs have completed at least a BSN.
- b. To reach the goal of 80 percent of Colorado RNs with a BSN degree would imply that roughly 11,000 current RNs would need to return to school for an additional two years of full-time education, or four years of half-time education.
- c. Assuming that these 11,000 nurses did not all return to school at once, but spread their enrollment over ten years, that would imply an increase of roughly 1,100 students per year for those schools that offer BSN degrees. Assuming that the current nursing class sizes stay constant, and also retaining the current ratio of approximately one faculty FTE for every six students, this would suggest that these BSN-degree schools would need an additional 185 FTE of full-time and part-time classroom and clinical faculty.

2. IOM Recommendation Five is to double the number of nurses with a doctorate by 2020. For Colorado to double the number of nursing faculty that have doctorate-level degrees by 2020,

it would need to increase the current number of 96 faculty with doctorates to 192 faculty with doctorates.

- a. This goal implies hiring twelve new doctoral faculty each year from 2012 to 2020, at an annual incremental and compounding cost of roughly \$900,000 per year.
 - b. Of course this goal is even more difficult to accomplish, given that 35 doctorally-educated faculty will be retiring within five years, so those retiring faculty have to be backfilled before any expansion is considered.
3. Based on the analysis in prior sections, Colorado will need to recruit 75 new faculty each year just to maintain current nursing school capacity (backfilling for 45 retirees and the turnover of at least 30 faculty). If schools wanted to fill all of the open faculty positions with PhD or DNP graduates, the following analysis may be useful.
- a. According to an American Association of Colleges of Nursing (AACN) 2010 national survey, there were 1,800 PhD and DNP graduates in 2010 (1,300 practice-focused doctorates and 500 research-focused doctorates).
 - b. Assuming that only 20 percent of the practice-focused DNP doctorates were interested in teaching, that yields a national pool of 760 faculty candidates. Assuming that Colorado could recruit in proportion to its population base (1.6% of the nation), this would suggest that the state would recruit 12 doctoral graduates per year, far fewer than the number necessary.
 - c. Unfortunately, given the intensifying budget pressures, it is not at all clear that Colorado teaching salaries will be able to compete with other states that are not so tightly encumbered, so even recruiting these twelve faculty is doubtful.

FOOTNOTES

¹ Employment data from Colorado Department of Labor and Employment for 2011Q2. Nursing faculty data from Colorado Board of Nursing.

² Christine T. Kovner, Sean P. Corcoran and Carol S. Brewer. *The Relative Geographic Immobility Of New Registered Nurses Calls For New Strategies To Augment That Workforce*. Health Affairs, 30, no.12 (2011):2293-2300.

³ Jones, Cheryl Bland PhD, RN, FAAN. Revisiting Nurse Turnover Costs: Adjusting for Inflation. Journal of Nursing Administration. 38(1):11-18. 2008

⁴ Full time equivalent (FTE), or a combination of full- and part-time faculty. This assumes on average a faculty salary of \$70,000 per year plus 25% benefits and taxes, for a total cost of \$87,500.

⁵ Colorado Board of Nursing annual reports. Includes both ADN and BSN registered nurse graduates, not LPNs.

⁶ In the next decade, the Colorado Department of Labor and Employment projects the number of working RNs to grow by 26%. According to CDLE, to fill this need, the state will need to add 1,606 RNs annually to its workforce. It is also likely that the aging demographics plus the impact of health reform will also increase the demand for health care and nurses. See <http://lmigateway.coworkforce.com/lmigateway/default.asp> CDLE data indicate that there is a need for 711 'retirement replacement' RNs each year for the coming decade, indicating a ten-year retirement volume of 9,160. Given that as of June 2011, there were 19,956 RNs that were over 55 years old, the CDLE nursing retirement estimate is only 50% of the actual retirement expected. As of Jun 2011, there were 60,251 licensed registered nurses with home residences in Colorado. Assuming that 83% of these nurses were working (per CHI survey), that indicates that 50,008 RNs were employed in Colorado. The state's Board of Nursing license data indicates an annual retirement exposure of over 1,500 RN nurses per year for the next 20 years.

⁷ See the Colorado Health Institute's several research documents on nursing faculty, most recently 2009-2010 Nurse Faculty Supply and Demand Study. CHI's analysis is based on 2009 survey data, rather than the 2008-2010 faculty-specific data that forms the basis for this report, and it asks a broad set of nurse faculty related questions, so its coverage is much broader. See www.coloradohealthinstitute.org/Publications/2011/05/Nurse-Faculty.aspx

⁸ Colorado is one of 23 states that are currently participating in the Nurse Licensure Compact. Because the Board of Nursing does not have a way to identify how many nurses are licensed in other states and working in Colorado, it is not possible to have a precise estimate of the number of RNs that are actually working in Colorado.

⁹ Medical Panel Expenditure Survey, Agency for Healthcare Research and Quality. Statistical Brief #244. April 2009.

¹⁰ State Health Facts.org www.statehealthfacts.org

¹¹ Colorado Household Survey. Colorado Health Institute. Estimate of individuals that will receive health care. www.coloradohealthinstitute.org.

¹² The assumptions and data used to generate this graph were as follows. Nursing retirements were assumed to occur at age 65, and nurse age was obtained from Board of Nursing nurse licensing data. Nurses required to support population growth assumed that the state will retain its current ratio of nurses to 1,000 population, so an increased need of 834 nurses was projected for each year's growth of 100,000 Colorado residents. The same logic was used to generate the additional nurses needed to support health reform: The Colorado Health Institute estimates that 550,000 additional Coloradans will access health services due to health reform, and so that amount was multiplied by 8.34 nurses per 1,000. Finally, given that the over 65 population uses health care services at a rate well over twice the rate of the younger population according to a CMS analysis, the number of Coloradans turning 65 each year was multiplied by the 8.34 nurses per 1,000 ratio (as if one more person immigrated to Colorado for each person that turns 65).

¹³ Graduation data from Colorado State Board of Nursing staff tabulation.

¹⁴ See www.coloradohealthinstitute.org for the content of the 2005 RN Nursing Workforce survey.

¹⁵ Other assumptions: the number of in-state graduates leaving and the number of out of graduates grads coming in are in equilibrium; all graduates are new nurses; current FT/PT work hour trends continue; and the demand for nursing is unchanged by new health care delivery models.

¹⁶ Assuming a steady graduation rate of 1,900 per year and that all Colorado nursing graduates stay in Colorado, this recruiting volume is the difference between state graduates and the estimated annual RN demand.

¹⁷ Kovner, Corcoran & Brewer. *The Relative Geographic Immobility of New Registered Nurses Calls for New Strategies to Augment That Workforce*. Health Affairs, 30(12), p. 2293.

¹⁸ Kovner, et.al., *Newly licensed registered nurses' characteristics, work attitudes, and intentions to work*. Am J Nurs. 2007; 107(9):58-70.

¹⁹ The nurse faculty population is distinguished markedly from the rest of the academic workforce by age. Whereas only 35% of US academics, and only 29% of health science faculty, are over the age of 54, fully 48% of nurse educators are age 55 and over." The Carnegie Foundation for the Advancement of Teaching nursing education study. *Educating Nurses: A Call for Radical Transformation Special Survey on Vacant Faculty Positions*. Patricia Benner, et. al. San Francisco: Jossey-Bass. 2008.

²⁰ See www.aacn.nche.edu/media-relations/fact-sheets/nursing-faculty-shortage.

²¹ Southern Region Education Board Study Indicates Serious Shortage of Nursing Faculty. Council on Collegiate Education for Nursing. 2003. Page 11.

²² This analysis uses the current ratio of 1 full-time to 3 part time faculty.



- ²³ 2009 Colorado Nursing Faculty Study. Colorado Health Institute. 2010.
- ²⁴ Berlin, Linda E. and Sechrist, Karen R., (2002). The shortage of doctorally prepared nursing faculty: A dire situation, *Nursing Outlook*, Volume 50, Issue 2, Pages 50-56.
- ²⁵ Ibid.
- ²⁶ Kaufman, K. (2007). Headlines from the NLN. Introducing the NLN/ Carnegie National Survey of Nurse Educators: compensation, workload, and teaching practice. *Nursing Education Perspectives*, 28(3), 164-167.
- ²⁷ American Association of Colleges of Nursing. 2010-2011 Salaries of Instructional and Administrative Nursing Faculty in Baccalaureate and Graduate Programs in Nursing. www.aacn.nche.edu.
- ²⁸ Annual statewide nursing faculty payroll is estimated to be \$27 million. Annual nursing payroll for 50,000 nurses at annual salary of \$66,000 is \$4.125B. The ratio between the two is 0.7%.
- ²⁹ Cheryl, J. (2008). Revisiting Nurse Turnover Costs: Adjusting for Inflation. *Journal of Nursing Administration*, 38(1), 11-18. And Jones, C., & Gates, M. (2007). The Costs and Benefits of Nurse Turnover: A Business Case for Nurse Retention. *Online Journal of Issues in Nursing*, 12(3), 5. (Direct provider costs of turnover include recruitment, selection, and training of new staff, overtime, and use of temporary agency staff to fill gaps. An annual salary of \$65,000 is assumed.)
- ³⁰ The 2009 Colorado Health Institute study indicated that 25% of Colorado Masters-prepared faculty and 41% of Doctorate-prepared nursing faculty had needed to borrow between \$25,000-100,000 in educational loans to support their Masters and Doctorate education, required to teach nursing.
- ³¹ 2009 Colorado Nursing Faculty Study. Colorado Health Institute. 2010.
- ³² Allan, Janet D. and Aldebron, Jillian, A systematic assessment of strategies to address the nursing faculty shortage, U.S., *Nursing Outlook*, Volume 56, Issue 6, November-December 2008, Pages 286-297.
- ³³ Kaufman, K. (2007). Headlines from the NLN. Compensation for nurse educators: findings from the NLN/Carnegie National Survey with implications for recruitment and retention. *Nursing Education Perspectives*, 28(4), 223-225.
- ³⁴ Ibid.
- ³⁵ Berlin, Linda E. and Sechrist, Karen R., The shortage of doctorally prepared nursing faculty: A dire situation, *Nursing Outlook*, Volume 50, Issue 2, March 2002, Pages 50-56.
- ³⁶ Ibid.
- ³⁷ Gerolamo, Angela M. & Roemer, Grace F. Workload and the nurse faculty shortage: Implications for policy and research. *Nursing Outlook* 59 (2011). 259-265.
- ³⁸ Yordy, Karl. The Nursing Faculty Shortage: A Crisis for Health Care. Spring 2006. Robert Wood Johnson Foundation white paper.
- ³⁹ See www.aacn.nche.edu/media-relations/fact-sheets/nursing-faculty-shortage.
- ⁴⁰ "Both the percentage of faculty ages 30 to 45 and ages 46 to 60 dropped by 3 percent between 2006 and 2009. At the same time, the percentage of full-time educators over age 60 grew dramatically, from only 9 percent in 2006 to nearly 16 percent in 2009. Overall, 57 percent of part-time educators and nearly 76 percent of full-timers were over the age of 45 in 2009." Kaufman, K. (2010). Findings from the 2009 Faculty Census: study confirms reported demographic trends and inequities in faculty salaries. *Nursing Education Perspectives*, 31(6), 404-405.
- ⁴¹ The Carnegie Foundation for the Advancement of Teaching nursing education study. *Educating Nurses: A Call for Radical Transformation Special Survey on Vacant Faculty Positions*. 2008.
- ⁴² Berlin and Sechrist. The Shortage of Doctorally Prepared Nursing Faculty. *Nursing Outlook* 2002;50:50-6.
- ⁴³ Projected Supply, Demand, and Shortages of Registered Nurses: 2000-2020. HRSA. 2002.
- ⁴⁴ Allan and Aldebron. Page 295.
- ⁴⁵ See the Colorado Health Institute. 2009-2010 Nursing Faculty Study Findings. www.coloradohealthinstitute.org/Presentations/2010/2009-10-Nurse-Faculty-Study.aspx.
- ⁴⁶ The Colorado Trust is a hospital conversion foundation. See www.ColoradoTrust.org
- ⁴⁷ Kowalski K; Horner M; Carroll K; Center D; Foss K; Jarrett S; Kane. (2007) "Nursing Clinical Faculty Revisited: The Benefits of Developing Staff Nurses as Clinical Scholars." *Journal of Continuing Education in Nursing* Vol38(2) pp. 69-75.
- ⁴⁸ Horner, M.D.; Center, D.; Pulse Strauss, W.; Kowalski, K. & Foss, K. (2009) "Childbearing Families: Implementation of the Clinical Scholar Model for Clinical Teaching" *J Perinat Neonat Nursg* Vol 23 (3) 230-240.
- ⁴⁹ Yucha, C., & Witt, R. (2009). Leveraging higher salaries for nursing faculty. *Journal of Professional Nursing*, 25(3), 151-155. doi:10.1016/j.profnurs.2009.01.0.
- ⁵⁰ Association of Academic Health Centers. From Assessing Resource Requirements and Financing for Health Professions Education, by M.A. Gonyea, 1998, Washington, DC.
- ⁵¹ Jones, Cheryl Bland PhD, RN, FAAN. Revisiting Nurse Turnover Costs: Adjusting for Inflation. *Journal of Nursing Administration*. 38(1):11-18, January 2008.
- ⁵² Berlin and Sechrist. The Shortage of Doctorally Prepared Nursing Faculty. *Nursing Outlook* 2002;50:50-6.

Making the Invisible, Visible...

In spite of the attention within nursing communities given to the nursing faculty shortage, this issue is often overshadowed by competing demands for financial and policy support from public, academic, and health care leaders.

Even in the best of times, invisible or vaguely defined problems do not generate support. In tough times, there is an even greater need for visibility, focus and a persuasive problem statement. To be successful, the rationale for resolving the nursing faculty shortage has to be well defined, publicly visible and associated with an economic and health care return-on-investment.

At a minimum, two questions have to be clearly answered: “What, specifically, is the nursing faculty shortage?” and “Why should anyone care?” Stating that “many nursing faculty will retire soon and hurt our capacity to educate nurses” does nothing to distinguish this issue from other academic and health care requests for support.

To help respond to Colorado’s nursing faculty shortage, in 2008 the Colorado Center for Nursing Excellence and The Colorado Trust began a four part Nursing Faculty Recruitment and Retention Initiative, working with over 250 faculty throughout Colorado. This report builds on that experience and subsequent research based on individual faculty level data.

The Center has been able to profile the age, academic degree, teaching status and school affiliation of 1,500 nursing school faculty who taught between 2008 and 2010. This research has helped to more specifically define the nature, timing and impact of Colorado’s nursing faculty shortage, and build a case for responding to the issue.

The insights developed by this research have helped to inform the statewide dialogue, this report and a faculty shortage website co-sponsored with the Colorado Coalition for the Future of Nursing. (www.NursingFacultyShortage.org/co/). We hope this research will be helpful to nursing, academic and policy leaders in other states, as well.