Since The Florida Center for Nursing’s (Center) report in 2008 on the economic benefits of resolving the nursing shortage, the landscape of Florida’s nursing shortage has dramatically changed. The recession has prompted nurses to return to work, work longer hours, and delay retirement. Consequently, the number of nursing vacancies decreased by about one-half, from 13,494 in 2007 to 7,178 vacant RN and LPN full-time equivalent positions (FTEs) as of July 2009. However, nursing turnover has remained high, and there were an estimated 29,500 separations from nursing positions in 2008-2009. The Center projects the nursing shortage will begin to increase dramatically in 2014, and without improvements in retention and increases in the number of new graduates, the nursing shortage may be more than 50,000 RN FTEs in 2025. This projected nurse shortage could have a dramatic effect on Florida’s estimated state and local tax revenues, reaching $220 million dollars in tax revenues that would not be earned in 2025 because over 50,000 nursing positions are predicted to be vacant. High turnover in nursing has other significant negative economic effects, as the turnover itself is costly for employers. The estimated economic impact of nurse turnover in Florida in 2009 was $1.4 billion.

Economists explain the concept of “full employment” as a situation not of zero unemployment but rather where the labor market is in equilibrium, times of unemployment are short, everyone who wants to work is working at his or her desired capacity, and the vacancy rate is between 3 to 5 percent. Vacancy rates can never reach zero as employees naturally retire or experience career transitions. There will be some baseline level of unemployment as people search for the job that best fits their skills. By these measures, it would seem that national RN employment is currently at the full employment level, as the American Hospital Association has estimated the RN vacancy rate to be 4 percent in 2010. Indeed, the Center’s current supply and demand forecasts indicate that both RN and LPN supply and demand are approaching equilibrium through 2013. However, beginning in 2014, the combined factors of an improving economy, full implementation of healthcare reform, aging of the nurse workforce, and aging of Florida’s population will act together to dramatically increase both the demand for nurses and the nursing shortage through 2025.

Benefits of resolving the coming nursing shortage are not purely economic in nature, but are intertwined with multiple health and social benefits to patients. Several studies have shown that a lower nurse to patient ratio is associated with fewer adverse outcomes in hospitals and in long-term care nursing homes. Adding more RN FTEs in acute care hospitals has been shown to decrease patient mortality, which in turn increases the patients’ future productivity. Clearly, resolving the nursing shortage has far-reaching positive implications.

**Economic Benefits of Filling Current and Future Vacancies**

The Center surveyed hospitals, skilled nursing facilities, home health agencies, hospices, and public health departments for information on the number of nurse vacancies as of July 2009, and estimated the number of vacant FTE positions in our forecast report. We used salary data
from the Florida Research and Economic Database\textsuperscript{12} to estimate the combined annual earnings of these vacant positions. A tax burden of 7.4 percent of combined per capita income\textsuperscript{13} was used to estimate the state and local tax revenues on the combined earnings. The estimations shown in Table 1 indicate that over $30 million in revenue could be collected if these vacant nursing positions were filled.

**Table 1. Estimated Impact of Filling Vacant Licensed Nurse FTEs as of 2009**

<table>
<thead>
<tr>
<th>Nurse Type</th>
<th>Estimated # of Vacant FTEs</th>
<th>Average Annual Salary for These Vacancies</th>
<th>Estimated Combined Annual Earnings</th>
<th>Estimated State and Local Tax Revenues on Combined Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN</td>
<td>5,916.7</td>
<td>$60,492.91</td>
<td>$357,918,393.60</td>
<td>$26,485,961.13</td>
</tr>
<tr>
<td>LPN</td>
<td>1,261.1</td>
<td>$40,091.84</td>
<td>$50,559,819.42</td>
<td>$3,741,426.64</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>7,177.8</strong></td>
<td><strong>$408,478,213.02</strong></td>
<td></td>
<td><strong>$30,227,387.76</strong></td>
</tr>
</tbody>
</table>

In addition to estimating current tax revenues from vacant nursing positions, we projected tax revenues in conjunction with the projected RN FTE shortage through 2025 (assuming per capita tax burden remained unchanged). The Center’s worst-case shortage of 50,321 RN FTEs translates to $226 million in state and local tax revenues that would not be collected because of the vacant positions (see Figure 1). Of course, if these positions were filled and the nursing shortage abated, this revenue could be collected annually by state and local Florida government agencies.

**Figure 1. Florida’s Projected RN FTE Shortage and State and Local Tax Revenues, 2010-2025.**
Economic Benefits of Reducing Nurse Turnover

Employee turnover is inevitable, since individuals retire, change jobs to advance careers, and find positions that better fit their interests and goals. Some turnover may even be desirable for employers, such as turnover that leads to new employees with fresh ideas or the loss of less competent or motivated employees.14

Excessive position turnover, however, is costly for employers in a number of ways: expense related to recruiting and hiring costs, lost productivity when positions are vacant or new employees are being trained, increased payments for overtime hours or agency personnel to fill the gap, and possibly compromised quality of care. Excessive turnover may occur because of a poor nursing work environment in individual facilities, but labor market shortages also contribute to turnover. When nurses are unavailable to fill vacant positions, existing staff must work longer and take on heavier workloads – leading to burnout, stress, and eventual turnover. Indeed, research has shown that nurses with higher workloads report an increased number of complaints from patients, poor or fair quality of care, and poor or fair work environments relative to nurses with lighter workloads.15

Estimates of per RN turnover costs are wide, ranging from an average of $36,56716 to $88,000.17 A logical middle point for estimation of turnover costs is one year’s salary18 To estimate the cost of nurse turnover in Florida, we multiplied the average salary by the estimated number of separations from hospitals, skilled nursing facilities, home health agencies, hospices, academic institutions, and public health departments from July 1, 2008 through June 30, 2009. The estimated economic impact of nurse turnover is shown in Table 2.

<table>
<thead>
<tr>
<th>Nurse Type</th>
<th>Estimated # of Separations</th>
<th>Estimated Cost of Turnover at One Year’s Salary Per Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNs</td>
<td>21,644.6</td>
<td>$1,294,786,546.24</td>
</tr>
<tr>
<td>LPNs</td>
<td>7,867.3</td>
<td>$119,221,906.44</td>
</tr>
<tr>
<td>Totals</td>
<td>29,512.0</td>
<td>$1,414,008,452.68</td>
</tr>
</tbody>
</table>

The combined costs of RN and LPN turnover in fiscal year 2008-2009 were estimated to be over $1.4 billion in the state of Florida alone. Reported turnover rates for RNs and LPNs are still high despite the recession, varying from an average of 16 percent in hospitals to 42 percent in skilled nursing facilities.11 Furthermore, attrition of nurses from the state and/or nursing profession remains high, as over 16,000 RNs were lost from Florida’s nurse workforce between 2008 and 2010.19 Although we recognize that turnover cannot be eliminated, nurse turnover could be decreased and the facility-level cost savings could lead to higher quality, less expensive healthcare. The Center advocates prioritizing the retention of nurses, identifying best retention practices, providing a rationale for increased expenditures related to retaining nurses, and realistically educating nursing students for the demanding nature of nursing work.
Other Economic Benefits of Resolving the Shortage

Though potentially increasing costs to hospitals, researchers have observed other non-tax related economic associations with increased nurse staffing, notably positive patient outcomes. A recent meta-analysis found that an increase of one RN FTE in intensive care units could result in a lifetime productivity benefit (present value of lifetime future earnings) of $4 to $5 billion from avoided patient deaths and adverse events. A study evaluating productivity measures found that adding 133,000 RN FTEs would save 5,900 lives per year, at a productivity value of $1.3 billion per year. Needleman reported that increased nurse staffing is associated with fewer adverse outcomes, but could cost the hospital a 1.4 to 1.5 percent net cost increase. Positive patient outcomes associated with increased staffing levels are not limited to hospitals. Increased RN time per resident in long-term care nursing homes was associated with fewer pressure ulcers, urinary tract infections, and hospitalizations.

Nursing education expansion is one method of increasing the supply of nurses. One nursing school in Texas put an estimated $110 million dollars (in 2004 dollars) into the local economy through expenditures by students, faculty, parents, the earning potential of new graduates, and university expenditures in the form of taxes and various government fees. Over 30 new nursing education programs were approved in Florida during 2009-2010, and some of these programs will begin to produce new graduate nurses in 2010. However, programs cannot be expanded infinitely, mainly because of clinical space limitations and nurse faculty shortages. The use of simulation technology, for example through the Center’s two year grant-funded project, Promoting the Use of Simulation Technology in Florida Nurse Education, is an option for addressing the limited clinical capacity faced by nursing education facilities.

The Center also emphasizes nurse retention as part of the solution to resolving the nursing shortage. Creating an improved work environment through workplace initiatives such as ergonomic improvements and shared governance can lead to enhanced retention. Improved work environments can also lead to decreased turnover, higher levels of nurse staffing, and increased employee satisfaction, resulting in a positive cycle of increased nurse retention. Our forecasts show that increasing retention by 2% is predicted to reduce the RN shortage to approximately 13,000 FTEs by 2025. Combining a 2% increase in retention and a 30 percent increase in new graduates over the next six years, the Center predicts the nursing shortage will be eliminated by 2022.
References


