

The Hospital Nurse Staffing Survey (HNSS) assesses the size and effects of the nursing shortage in hospitals, Texas' largest employer of nurses. During the summer of 2017, the TCNWS administered the HNSS to 713 Texas hospitals. These included for-profit, nonprofit, public, and Texas Department of State Health Services-operated hospitals, as well as hospitals linked to academic institutions; military hospitals were not surveyed. The facilities surveyed were general acute care, psychiatric, special, and rehabilitation hospitals. 348 (48.8%) hospitals responded to the survey.

With the passing of House Bill 3126 from the 78th Regular Legislative Session, the Texas Center for Nursing Workforce Studies (TCNWS) was established and charged with collecting and analyzing data on demographic, educational, and employment trends of nursing professionals in Texas. Since 2004, TCNWS has administered the Hospital Nurse Staffing Survey (HNSS) on a biennial basis primarily to assess the size and effects of the nursing shortage across the state. Data from this survey are also instrumental in developing projections for the number of nurses needed in Texas now and in the future.

Survey Development

As in prior years, the TCNWS established a task force of hospital industry experts to assist in the development and implementation of the 2017 HNSS. It was a goal of the TCNWS for the task force to be comprised of nurses and stakeholders from across the state in order to ensure that every region would be represented. The HNSS task force (see Appendix A) was involved in revising the survey instrument to ensure questions were applicable to hospitals of all sizes and across all regions and that the survey was user-friendly. The task force was also involved in promoting the 2017 HNSS to the hospitals in their respective regions in order to encourage participation.

The 2017 HNSS survey instrument was similar to that of previous years, though some changes were adopted:

- The two questions related to nursing staff retention and recruitment strategies were combined into one.
- A question about interventions that would have the greatest impact on retention of nurses was added.
- The question about importance of a bachelor's in nursing education was removed.
- The question about the number of newly licensed RNs by degree was expanded to also include the number of all RNs employed by degree.
- The transition to practice section was expanded to include the types of nurses eligible for programs.

The 2017 HNSS survey instrument and its operational definitions can be found in Appendices C and D, respectively.

Survey Distribution and Marketing

The 2017 HNSS was administered to 713 hospitals in Texas. These included Texas Department of State Health Services-operated hospitals as well as hospitals linked to academic institutions. Military hospitals were not surveyed. The hospitals surveyed included for-profit, public, and non-profit facilities. The facilities surveyed were general acute care, psychiatric, specialty, and rehabilitation hospitals.

Prior to 2017, the HNSS was conducted in even years. Surveying hospitals in 2016 and 2017 may have impacted

the response rate. In the future, the survey will be conducted in odd years.

Initial distribution

Survey materials were first distributed by mail during the last week of March 2017. The materials were addressed to the Chief Nursing Officer (CNO) of each hospital. A link to the active survey was sent out by email on April 3, 2017, with an initial survey deadline of May 12, 2017. The survey was hosted by Qualtrics, an online survey

software. Hospitals were strongly encouraged to complete the survey online; however, faxed, emailed, and mailed submissions were also accepted.

Survey Extensions and Follow-up

In an attempt to boost response rates, the survey deadline was extended through July 21, 2017. The extension was announced via email.

TCNWS staff made phone calls and sent faxes throughout

the survey period to encourage hospital participation. Hospitals that started but did not complete a survey were also contacted. During this period, task force members sent out emails and made phone calls to the CNOs of hospitals in their regions explaining the importance of submitting their data.

The Texas Organization of Nurse Executives, Texas Hospital Association, Texas Nurses Association, and Texas Board of Nursing also included blurbs about the survey in their newsletters.

Survey Population

348 hospitals responded to the 2017 HNSS. The overall response rate was 48.8% in 2017 compared to 51.8% in 2016. Response rates by region ranged from 32.0% in the Rio Grande Valley to 76.7% in the Panhandle.

Responding hospitals were compared to non-responding hospitals on 3 variables: Texas region, geographic designation, and bed size category. The location of each responding hospital was compared to the overall distribution of hospitals across the state in order to determine whether there was a geographically representative sample. Respondents and non-respondents were also compared based on hospital size. Hospitals' numbers of licensed beds were recoded into size categories and analyzed to determine if the sample was representative based on hospital size. Based on our findings, respondents

to the 2017 HNSS were representative of Texas hospitals in regard to bed size category ($\chi^2(3, N = 713) = 6.4, p = 0.168$), but not region ($\chi^2(7, N = 713) = 48.2, p < 0.001$) or geographic designation ($\chi^2(3, N = 713) = 15.9, p = 0.001$). Therefore, we consider the results generalizable to all hospitals in Texas based on bed size category, but not region or geographic designation. For this reason, analyses by region and geographic designation are not included in the 2017 HNSS reports.

Although results are not generalizable based on region and geographic designation, the survey population is still similar to that of previous years' surveys. Each region and geographic designation had a response rate of at least 32.0%. For these reasons, we consider results of the 2017 HNSS to be comparable to those of previous surveys.

Data Analysis

All data were analyzed using SPSS (version 24). Data were reviewed and notable inconsistencies were excluded from analyses. For a list of the regions and county designations, please see Appendix B.

Hospital Characteristics

Frequency counts were conducted for each variable reported in the Hospital Characteristics report. These frequencies were analyzed by region, geographic designation, and bed size category. Attention was also given to the number of hospitals with Magnet, Pathway to Excellence, and Designated Trauma Center status.

Vacancy and Turnover

The 2017 HNSS asked respondents to provide the total number of occupied and vacant RN positions in their

facility during the week of 1/23/2017-1/29/2017, one of the year's peak occupancy times. These numbers were used to calculate vacancy rates as described in the 2017 HNSS Vacancy and Turnover Report. This report describes two methods for calculating vacancy rates: position vacancy rate and facility vacancy rate. The position vacancy rate describes the proportion of all FTE positions that are vacant across a group of responding hospitals, whereas the facility vacancy rate is calculated for each facility.

Statewide position vacancy rate =

$$\frac{\text{(Sum of vacant FTE positions being recruited, on hold or frozen across the state)}}{\text{(Sum of occupied and vacant FTE positions across the state)} \times 100}$$

Facility vacancy rate =

$$\frac{\text{(Sum of vacant FTEs being recruited, on hold or frozen in a facility)}}{\text{(Sum of occupied and vacant FTE positions in a facility)} \times 100}$$

In order to calculate turnover rates, respondents provided their numbers of occupied full-time and part-time nurse positions at two points in the year (1/1/2016 and 12/31/2016) and these numbers were averaged during analysis. Turnover rates were calculated for each facility and by each nursing staff type by dividing the number of reported employee separations during this period by the sum of average full-time and part-time nurses. The median facility turnover rate was reported for the state.

$$\text{Facility turnover rate} = \frac{\text{Total Number of Separations}}{(\text{Average \# Full-time} + \text{Average \# Part-time}) \times 100}$$

Hospital Staffing

Data in the Hospital Staffing report pertain to number of nurses employed in the state. Frequency counts were used to demonstrate the magnitude of changes in staffing numbers statewide.

The HNSS also asked hospitals about their needs for interim staffing and the methods they use to fill these needs. Hospitals reported the hours and cost of interim staffing for calendar year 2017. Only hospitals that reported both cost and hours for each method were included in this analysis. Outliers were not included in the analysis. For types of interim staffing methods used, frequency counts were conducted to show the number of hospitals that reported using each type of interim staffing method. Hospitals were asked to provide hours and costs of each interim staffing method. Total hours and costs were calculated by taking the sum of hours and costs by each method. Cost per hour was calculated by taking the total cost divided by the total hours for each method.

Recruitment and Retention

Respondents were asked several questions directly related to employee recruitment for nursing positions. Hospitals were asked to indicate how long it took their organization to fill nursing vacancies by specialty area. They were also asked where they recruited - in Texas, in other states, or internationally. Hospitals responding that they recruited outside of Texas were then asked why they did so. Finally, hospitals were asked about strategies they used to recruit and retain nurses.

Respondents were also asked about the importance of four attributes when hiring RNs: past relevant nursing experience, past nursing experience in a non-hospital setting, bilingual, and a bachelor's in nursing or higher education.

Transition to Practice Programs

Responding to the Institute of Medicine's initiative to increase orientation programs for newly licensed RN graduates, the 2017 HNSS included questions on transition to practice programs. Possible program types were nurse residency, nurse fellowship, student nurse internship/externship, mentorship/preceptorship, and other. Hospitals were asked if they had a transition to practice program, to describe the model of the program and what nurses were eligible for it, indicate whether it was an employment or non-employment model, report the length in weeks, and identify outcomes related to the program. This analysis used frequency counts to describe the extent to which transition to practice programs exist in Texas hospitals.

Rural and Critical Access Hospitals and State Hospitals

Additionally, the 2017 HNSS dataset was analyzed taking into account two important subsets of Texas hospitals: rural hospitals and state hospitals. Rural hospitals were further categorized as critical access hospitals (CAHs) or non-critical access rural hospitals. CAHs are located in mostly rural areas and receive federal funding to ensure that populations have local delivery of health care. Rural hospitals are those additional facilities that do not receive the additional federal funding that CAHs receive but that are either outside of a metropolitan statistical area, have 100 or fewer beds, or 4,000 or fewer admissions. State hospitals are predominantly inpatient mental health facilities (with the exception of the Texas Center for Infectious Disease) that are operated using public funds and controlled by an agency of state government. These two categories are of special interest given their public funding mechanisms and provision of service to at-need populations.

Analyses of these two categories of hospitals were conducted using the variables of interest described above and provide for comparisons between CAHs or state hospitals and Texas hospitals at-large