



2018
Technical Documentation
for *Licensure and*
Workforce Survey
Data Analysis



Addressing Nurse Workforce Issues for the Health of Florida

www.FLCenterForNursing.org

Contents

Background 3

Data Extract 3

Data Cleaning..... 5

Nurse Placement in Counties and Regions 5

Identifying the Potential Nurse Workforce..... 6

Survey Response Rates and Bias Analysis 8

Estimation of the Actual Nurse Workforce 9

Conclusions and Limitations of the Data Sources 12

References 13

Appendix A: 2016-2017 Workforce Survey Questions..... 14

Appendix B: County Composition of FCN Regions 17

Technical Documentation for Licensure and Workforce Survey Data Analysis

Background

The Florida Center for Nursing (Center) was established in 2001 to address issues related to nurse supply, demand, and shortage in this state. The nurse licensure database maintained by the Florida Board of Nursing (FBON) is one important source of information on the state's nurse supply. The licensure database contains the most complete information available in the state specific to the regulation of nurses. Information includes the number of licensed nurses, their eligibility to practice, demographic characteristics, and their distribution across the state of Florida.

Licensure data collected by the FBON do not include information about the work behavior of nurses. This limits their usefulness for strategic labor force planning. Data do not indicate whether nurses are working (either in or outside the field of nursing), how much they work, or in what setting. Because the Center is primarily interested in the amount of nursing *labor* provided in Florida, in contrast to the number of Florida nursing *licenses* that are held, licensure data are cleaned and subset to isolate nurses who could reasonably be practicing nursing within the state of Florida. We call this subset the *potential nurse workforce*.

In 2008, the Center began working with FBON and Medical Quality Assurance (MQA) to integrate a voluntary Workforce Survey into the online renewal process for nurses. The Workforce Survey generates important data for workforce analysis, such as work status, hours worked, and highest degree held. Using a unique file number as an identifier, workforce survey data are merged with licensure data so that members of the *potential* nurse workforce can be counted as *actually working* in nursing, if they indicate that they are.

A substantial majority of renewing nurses participate in the Workforce Survey each year, but a number of cases still lack workforce data. In addition to those who do not complete the voluntary survey during renewal, nurses newly licensed in Florida are not exposed to the Workforce Survey until they renew their licenses for the first time.¹ The Center uses information that we have about these non-respondents (e.g. practicing address and demographic characteristics) to estimate employment status and comparisons to survey participants, when possible. This document provides technical details about the process of merging, cleaning, and estimating values for some cases using weighting and imputation techniques based on licensure and Workforce Survey data.

Data Extract

In 2006, the Center and FBON reached an agreement whereby licensure data is regularly provided to the Center as a data extract (a static file) drawn from the dynamically changing licensure database. This extract includes records for each nursing license held in Florida by Registered Nurses (RN), Advanced Registered Nurse Practitioners (ARNP), Clinical Nurse

¹ In the 2016-2017 cohort, together these groups comprised approximately 29% of the potential nurse workforce. Renewing nurses who did not participate in the survey comprise 16.7% of the potential workforce, and newly licensed, clear and active nurses represent 12.6% of the potential workforce.

Specialists (CNS), and Licensed Practical Nurses (LPN). Each record contains information on license type (RN, ARNP, CNS, or LPN), license status (e.g., active, suspended), date of birth, gender, race/ethnicity, year of initial licensure in Florida, application type (i.e. examination or endorsement), and mailing and/or practicing addresses.

An extract of Workforce Survey data is provided to the Center as a separate file along with the monthly licensure data extract. The questionnaire used is presented in Appendix A. Because nurses renew biennially, it takes two years of renewals to amass a complete cohort's survey data from all renewing nurses choosing to take the survey. Renewal cycles are based on the licensee's expiration date of either April 30th or July 31st.² In even years (e.g. 2016), approximately two-thirds of RNs and ARNPs are expected to renew between January and July. In odd years (e.g. 2017), the remaining one-third of RNs and ARNPs renew from January through April and all LPNs renew from March through July.

Data used for the current analyses intend to represent all renewals and new licenses between January 1, 2016 and December 31, 2017. Data extracts are received by the Center on the 21st of every month. For analyses of the 2016-2017 cohort, the Center compared and combined December 2017 and January 2018 extracts to best represent the population of licensees as of December 31st.³ This cutoff represents the transition to the next biennial renewal cohort, beginning on January 1 of the next even year (e.g. 2018).

The licensure data extract was merged with Workforce Survey data collected during 2016 and 2017 using an MQA generated file number as the unique identifier to join records. Though surveys are completed throughout the two-year period, we treat survey data as representing the best possible estimate of a nurse's work status at the end of the renewal cycle. Each record in the potential nurse workforce is assigned an estimated work status (using their practicing address provided through the MQA renewal process when survey responses are not available). A full-time equivalent (FTE) value is estimated for all survey respondents and weighted to more closely represent the total population, including non-respondents. Thus, the merged dataset contains the best possible estimate of the workforce as of January 2018.

² With the exception of Temporary Military Active licenses which expire exactly one year from the date received. Nurses practicing in the state of Florida with non-expired temporary military licenses are included in this sample.

³ The December 21st data extract is the primary source of data. To avoid excluding any renewal records and survey responses between December 21st and December 31st, data from the January extract are incorporated when a) no record is found for that nurse in the December file or b) the nurse's license or active status changed between December and January. In both situations, only nurses whose records indicate a license expiration date consistent with the current cohort of interest are included. For instance, 2016-2017 renewals should have an expiration date of 2018 or 2019. Any nurses whose expiration date was after July 31, 2019 as of the January data extract was excluded from the sample and will be analyzed with the next cohort. This approach provides the added benefit of capturing renewals and new licenses through the end of the calendar year of the renewal cohort, allowing for inclusion of new licensees graduating in December, and allows nurses who missed their renewal deadlines an additional five to seven months to complete renewal for inclusion in the sample. This approach is new as of the 2018 reporting cycle and may affect response rates.

Data Cleaning

Licensure data are first cleaned for implausible dates of birth and initial licensure. The data contain some records with clearly inaccurate birth years dating back to the 19th century. The lower limit for age was placed at 18 and the upper limit is 97. Nurses whose birth years place their age outside of this range were recoded as missing.

Dates of initial licensure are also inspected for implausible dates. In particular, some records indicate initial license dates of January 1, 1901, a value which represents missing data in the MQA licensure file. Frequencies of original licensure dates were explored to identify these, and any other potential implausible dates to be recoded as missing. In the current data set, the earliest plausible date of initial licensure was the year 1951, representing nurses that have been continuously licensed for 66 years. An important note regarding this attribute is that initial licensure dates may be “reset” if nurses allow their licenses to expire but later become licensed again in the state. Since it is not possible to tell whether this has happened to nurses in the licensure extract we receive, the measure must be interpreted with caution. Average tenure as a nurse in Florida may be underestimated by these data.

Missing data generated by cleaning procedures are typically minimal. In the 2016-2017 cohort, only 21 of the 426,555 records in the December/January licensure data extract had an original licensure date of January 1, 1901, and approximately 40 records indicated implausible ages beyond the upper or lower limits. Naturally occurring missing data also exist for other variables in the licensure database.⁴ Approximately 1% of the records were missing data on gender. Similarly, 1% of cases were missing data on race/ethnicity.

Nurse Placement in Counties and Regions

Stakeholders depend on local data for nurse workforce planning, so the Center provides as much detail as possible at regional and county levels. We use both Workforce Survey data and address information from the licensure database to identify nurses who report living and/or working in the state of Florida.⁵ Nurses with Florida addresses are placed into counties, Regional Workforce Boards, and larger regions of the state consisting of multiple workforce boards. There are 67 counties and 24 Regional Workforce Boards, a classification used by Workforce Florida, Incorporated for workforce planning and outreach efforts. See Appendix B for a map of Florida showing the regions into which each county falls.

The licensure database contains two sets of address fields used to place nurses into Florida regions/counties: a mailing address (where nurses wish to receive mail from the FBON) and

⁴ In the past, the Center’s analyses of previous cohorts included cases with non-missing values for a given variable. The current analysis attempts to include cases with missing values, when possible, to most accurately represent the proportion of participants with a given characteristic. Inclusion of cases with missing values are notated in the report, when applicable. This may impact comparisons of previous years.

⁵ In previous versions of the Workforce Survey, participants were asked to provide their practicing and/or home counties. In these instances, survey data would supersede address data from the licensure file. However, efforts to minimize respondents’ time spent on the Workforce Survey resulted in the elimination of this question. Thus, regional and county information is based entirely on the practicing or mailing addresses provided at renewal. Since it is unknown how recently the address fields in the licensure database have been updated, the accuracy of regional placement should be interpreted with caution.

a practice address. When nurses provide valid practice location information, they are placed according to the county in which they are employed. In all other cases, nurses are placed according to the county in which their mailing address is located. Licensees with no valid mailing or practicing address information are coded as missing in their regional placement, but remain in the sample if they hold an active Florida license.

This procedure maximizes the accuracy of placement for describing workforce distribution as much as can be expected despite data limitations. Address data do not allow a clean analysis of where nurses live and work, although they do allow identification of nurses who report working or receiving mail outside of Florida. Since mailing addresses may be a home residence or a work location – wherever the nurse wishes to receive mail from the FBON – precision is difficult to obtain for nurses who do not have valid and distinct addresses in both fields. Since many nurses are likely to commute from one county to another in order to work, county placement is probably least accurate for describing the distribution of the nursing workforce. More accuracy is probable in larger geographic areas since the areas are more likely to encompass both work and residence locations.

Additionally, many records contain incomplete address data and data entry errors, such as zip code values that do not match their reported city and/or state. When possible, many of these errors are manually fixed in the data cleaning process to place addresses into the correct counties. Each licensee’s recorded zip code is compared against a SAS statistical software lookup table of zip codes which matches the data extract as closely as possible.⁶ In the cases where given zip codes are invalid, additional address information provided is used to lookup the most likely county match. The process typically creates a county placement for several hundred Florida addresses which were previously unplaced and may have otherwise been dropped from the sample as having no valid Florida address.

Identifying the Potential Nurse Workforce

A multi-step process is used to generate a subset from the total file representing the potential nurse workforce: those eligible to work as nurses and providing a Florida address. First, nurse records are dropped if their license and active status indicate that they do not *maintain a Florida license*,⁷ (e.g. retired, delinquent, suspended). Next, nurses who are living and/or working out of state are dropped, including nurses who provided non-Florida mailing and practice addresses (n = 50,837), as well as those who provided a Florida mailing address but indicated an out of state practicing address (n = 2,464).

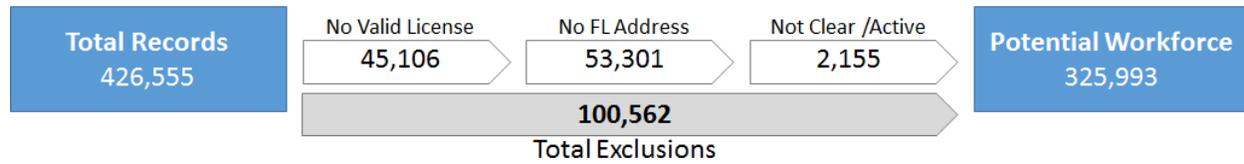
In addition to having a Florida mailing and/or practicing address, nurses’ licenses must be clear and active in order to be included in the potential nurse workforce. Records indicating any other status (e.g. inactive, conditional, obligations) are removed from the sample. Figure 1 details the number of licensees excluded in each step of this process for the 2016-2017 cohort (includes renewals and newly licensed nurses). The categories for removal may not be mutually exclusive (e.g. someone without a Florida address may also have an inactive

⁶ Zip codes change over time but are reasonably steady in the short term. SAS makes new zip code lookup tables available quarterly at <http://support.sas.com/rnd/datavisualization/maponline/html/misc.html>

⁷ Based on the Florida Department of Health, Medical Quality Assurance (2018) definitions of license statuses

license), therefore counts of nurses removed at each stage may not encompass the true counts of every nurse with a given status.

Figure 1 2016-2017 Licensees Excluded from Analysis, by Reason



In addition to those excluded for not maintaining a valid Florida nursing license, residing and/or working outside of Florida, or not maintaining a Clear/Active license status, newly licensed nurses were also excluded from analysis of survey data. As mentioned above, newly licensed nurses are not overtly exposed to the Workforce survey until they complete their first renewal. As a result, characteristics of newly licensed nurses were explored separately from those renewing their licenses.⁸ Table 1 highlights these exclusions, in addition to those previously described, by rank.

Table 1. 2016-2017 Exclusions and Potential Nurse Workforce, by Rank

| | All Florida Licensees | Excluded | Newly Licensed | Renewal Workforce |
|--------------|-----------------------|----------|----------------|-------------------|
| RN | 319,598 | 78,043 | 32,559 | 208,996 |
| ARNP | 29,642 | 5,222 | 834 | 23,586 |
| LPN | 77,131 | 17,261 | 7,698 | 52,172 |
| CNS | 184 | 36 | 7 | 141 |
| Total | 426,555 | 100,562 | 41,098 | 284,895 |

In the 2016-2017 cohort, the average age of excluded nurses was 50.9. Approximately 69% were white, and about 88% were female. The clear and active newly licensed nurses were slightly more likely to be male (14.3%), substantially less likely to be white (48.1%), and much younger than those excluded, with an average age of 35.6. These differences are consistent with what would be expected of a younger, and increasingly diverse cohort of new nurses. The population of clear and active nurses included in the renewal cohort for analysis of the renewal cohort reflect similarities to those excluded from analysis. Overall, 88% of the renewal cohort was female, 63% were white, and their average age is approximately 49.1.

⁸ Because some newly licensed nurses may have been excluded for license or address reasons in a prior step, the number of newly licensed nurses excluded from the potential workforce for analysis purposes may not represent the total number of new nurses licensed during this renewal cycle.

Survey Response Rates and Bias Analysis

The online Workforce Survey was available for completion between January 1, 2016 and December 31, 2017. Nurses who renewed their licenses during this time were given the option to complete this survey during the online renewal process.⁹

Table 2 shows the response rates for the 2016-2017 Workforce Survey by renewal group (the grouping based on the nurse’s expiration date)¹⁰ and license type. Overall, a substantial majority of renewing nurses (81%) participated in the survey¹¹. The first and fourth renewal groups had slightly higher response rates compared to groups two and three. Similarly, ARNP/CNS nurses and LPNs participated in the survey at higher rates than the overall sample. RNs had the lowest response rate (79%) compared to the other nurse types.

Table 2. 2016-2017 Nurse Workforce Survey Response Rates, by Renewal Bucket and Rank

| Renewal Bucket | Renewed | Completed Survey | Response Rate (%) |
|---------------------------|----------------|------------------|-------------------|
| Group 1 (exp. April 2018) | 50,298 | 42,204 | 83.9 |
| Group 2 (exp. July 2018) | 79,773 | 64,344 | 80.7 |
| Group 3 (exp. April 2019) | 102,652 | 78,762 | 76.7 |
| Group 4 (exp. July 2019) | 52,172 | 45,157 | 86.6 |
| License Type | | | |
| RN | 208,996 | 164,460 | 78.7 |
| ARNP/CNS | 23,727 | 20,760 | 87.5 |
| LPN | 52,172 | 45,157 | 86.6 |
| Total | 284,895 | 230,377 | 80.9 |

These substantially high response rates increase the generalizability of the survey responses to the overall population of renewing nurses. However, to examine potential patterns of bias, we compared characteristics of survey respondents to those that did not participate in the survey (Table 3, next page).

Nurses who participated in the survey are more likely to be white, compared to non-participants, and a slightly higher proportion of non-participants are male. Survey participants were about seven years older, on average, than those that did not take the survey. Participants have also held a Florida nursing license for approximately twice as long as non-participants, on average. Differences between average age and years licensed in Florida were statistically significant between groups ($p < 0.001$), although significance may

⁹ In 2008, the Florida Board of Nursing began mailing postcard reminders for license renewal, instead of paper renewal forms. The vast majority of nurses have been renewing their licenses online since this time, as paper renewal forms must now be specially requested.

¹⁰ For example, nurses whose license expires on April 30, 2018 would have previously expired April 30, 2016. It is expected that these nurses would have renewed between January and April of 2016.

¹¹ It is important to note that this response rate is somewhat lower than the response rates indicated in previous cohorts. This is more likely attributed to changes in the data cleaning procedure which kept more renewing nurses in the sample, rather than an indication of a decreased participation rate.

be attributed (in part) to large sample sizes. These differences indicate that our survey data may underrepresent younger and more diverse nurses, and should highlight the importance of increasing response rates among these groups over time.

Table 3. 2016-2017 Demographic Comparison of Respondents and Non-Participants

| | Survey Respondents | Non-Participants |
|-----------------------------|--------------------|------------------|
| Race/Ethnicity | % | % |
| White | 64.5 | 57.4 |
| Black | 16.0 | 17.6 |
| Hispanic | 10.8 | 15.2 |
| Asian | 5.7 | 4.9 |
| Other | 1.9 | 2.7 |
| Gender | | |
| Female | 89.2 | 86.5 |
| Male | 10.8 | 13.0 |
| Age Group | | |
| 21-30 | 6.0 | 21.3 |
| 31-40 | 19.2 | 26.2 |
| 41-50 | 23.7 | 20.5 |
| 51-60 | 26.7 | 17.4 |
| 61-70 | 20.4 | 11.0 |
| 71 or older | 4.0 | 3.6 |
| Average Age | 50.4 | 43.8 |
| Years Licensed in FL | 16.3 | 8.5 |

Note: Proportions may not equal 100% due to missing data

Estimation of the Actual Nurse Workforce

Despite high participation rates, non-response does occur due to the voluntary nature of this survey. In order to improve the representativeness of the FTE for all renewing nurses, regardless of survey participation, we developed weights based on characteristics that were available (or estimated) for the entire potential nurse workforce (n = 284,895).¹² Weighting was incorporated into licensure and workforce survey for the first time in the 2016-2017 cohort. Some of the other states that use weighting in healthcare workforce survey analyses include Virginia (n.d.), Utah (Harris & Ruttinger, 2017), and California (Spetz, Chu, Jura, & Miller, 2017).

The first step was to determine employment status of all members of the potential workforce sample (working or not working). For survey participants, this was primarily determined by

¹² Because we have access to licensure data for the entire population of renewing nurses, and since all nurses have an equal probability of participating in the survey, weights were only created to account for non-response, rather than sampling bias (although accessibility and mobile friendliness of the survey should be explored in the future).

survey responses indicating employment, and supplemented by the state/zip code of their practicing address or hours reported when employment status was missing. For renewing nurses who did not respond to the survey, employment status was estimated exclusively by determining if they had a valid practicing address listed. While this is an imperfect method, it provides our best estimate of work status for nurses who do not participate in the survey.

In the 2016-2017 cohort, 88.6% of the renewing nurses, regardless of survey participation, indicated or appeared to be employed at the time of renewal. Approximately 87.5% of the survey participants were working, while approximately 93% of non-responders were working. This indicates that working nurses are likely underestimated among survey respondents.¹³

$$\text{Weight} = \frac{\text{Population Proportion}}{\text{Sample Proportion}}$$

When applicable, weighted frequencies were applied to survey data to improve the likelihood that the sample is representative of the population of renewing nurses, by adjusting for non-response. Weights were calculated for each working status by age group and rank. The following is an example of the weights, for renewing RN nurses:

Table 4. 2016-2017 Weights by Employment Status and Age Group, RN Nurses

| Employed by Age | Population Proportion (%) | Sample Proportion (%) | Weight |
|--------------------|---------------------------|-----------------------|-------------|
| Working | | | |
| 18-30 years old | 8.85 | 5.29 | 1.67 |
| 31-40 years old | 18.76 | 16.93 | 1.11 |
| 41-50 years old | 20.71 | 21.13 | 0.98 |
| 51-60 years old | 22.56 | 24.48 | 0.92 |
| 61-70 years old | 15.39 | 17.24 | 0.89 |
| 71 or older | 2.42 | 2.37 | 1.02 |
| Not working | | | |
| 18-30 years old | 0.27 | 0.21 | 1.29 |
| 31-40 years old | 1.08 | 1.09 | 0.99 |
| 41-50 years old | 1.56 | 1.71 | 0.91 |
| 51-60 years old | 2.56 | 2.88 | 0.89 |
| 61-70 years old | 3.93 | 4.49 | 0.88 |
| 71 or older | 1.91 | 2.19 | 0.87 |

¹³ Analyses of previous cohorts involved random selection and placement of non-responders into dichotomous employment grouping based on calculated proportions of working survey participants using a matrix of age by gender by license type (Florida Center for Nursing, 2010). Determining work status by address is a simple alternative to estimate work status, as mean imputation is better suited for item non-response rather than unit non-response (i.e. survey non-participants). This should also reduce the likelihood that individual cases are inaccurately placed although proportions should be interpreted with caution since renewing nurses may have outdated addresses.

We also used the estimated weights to identify the proportion of nurses with a given full-time equivalency (FTE) employment status.¹⁴ Survey respondents provided information on the number of hours they worked, and this information was used to assign an FTE value with the following formula:

$$\text{FTE} = \frac{(\text{hours/week} \times \text{weeks/year})}{1,872}$$

In this formula, the numerator represents the hours worked per year by the respondent, and the denominator represents the minimum hours worked in a year if a nurse represents 1.0 FTE. The typical number of hours per year used in computations like this is 2,080, which is based on 40 hours worked per week for 52 weeks. However, nurses who work 36 hours a week (i.e. three 12-hour shifts) are considered full time employees, therefore the minimum hours per year for 1.0 FTE status represents 36 hours per week for 52 weeks (1,872 hours).

Nurses working more than 1,872 hours per year were capped at 1.0 FTE, while those working fewer than 1,872 hours per year were assigned an FTE fractional value. When a nurse reported he or she was not working in nursing, their FTE was assigned a value of 0. Some additional data cleaning was required. For instance, some participants described their work status as full time, but indicated they worked 8 hours per week. When possible, records were reviewed on an individual basis to identify if any clearer estimates could be determined based on other responses.

Finally, using SAS, the weighted hot deck imputation technique was used¹⁵ to estimate employment type (full time, part time, or per diem) and hours worked per year (0 – 4160) for working survey respondents with missing data. Among the 201,655 working survey respondents, 1.3% of cases received imputed values for employment type and 1.8% received imputed values for hours worked per year.

Although the FTE value for members of the potential nurse workforce is unknown if they did not complete a Workforce Survey, the use of weighted proportions and imputed values among survey respondents increased the ability for the sample data to represent the estimated proportions of working and FTE status among the total population. In the 2016-2017 cohort, this resulted in an estimated 158,608 working nurses with 1.0 FTE, and an overall average weighted FTE of .92 for all working nurses.

¹⁴ The use of weights to estimate FTE for all renewing nurses is a vastly different approach from previous years' analyses which involved a series of mean substitutions and a reliance on categorical survey data recoded to the midpoints to represent hours worked. This shift in methodology may affect comparisons to previous years. For a full explanation of the methodology used in the past, see the Florida Center for Nursing's (2010) Technical Document.

¹⁵ Weighted hot deck imputation was considered a useful effort to minimize missing at random non-response among survey respondents without using mean substitution. While this was not the initial preferred imputation technique, it was selected based on limited computer processing power needed for more advanced technique. Similarly, more advanced techniques are mostly required for regression analyses not used in this research.

Conclusions and Limitations of the Data Sources

All analyses of the Florida nurse supply based on licensure and Workforce Survey data inevitably suffer from some degree of missing or inaccurate data. The Center's process for cleaning the data, assigning nurses into counties and regions, and imputing missing data attempts to correct some of the data problems which, if left unchecked, would distort our view of the nurse supply. The exclusion process we use to identify the potential nurse workforce generates our best estimate of nurses who *could* be working in Florida, including their location in a specific region of Florida. However, it is important to reiterate that licensure data do not indicate whether nurses are working in the field of nursing or how much they work. If clean Workforce Survey data are available for a nurse, it is a straightforward process to determine whether and where a nurse practices nursing. However, due to the voluntary nature of this survey, population parameters are estimated using imputation and weighting techniques. While these efforts improve the survey data by providing statistical adjustments for non-response, the information for individual cases may not be accurate. The only way to provide completely accurate information regarding the total nurse supply in each cohort is to implement additional mandatory fields in the license renewal process. Without this, assumptions about the population must be gleaned from estimates among self-selected survey participants and address fields in the licensure database, the latter of which are known to have problems.

The incorporation of the Workforce Survey beginning in 2008 has dramatically improved data quality and facilitated our efforts to accurately quantify the nursing workforce. While there will always be at least some missing data, possessing complete workforce information on a substantial majority of renewing nurses is a huge benefit for nurse workforce analysis and planning in Florida. We are appreciative of our continuing collaboration with the Florida Board of Nursing and Medical Quality Assurance during each renewal cycle and will continue to do our part to improve the quality of the Workforce survey, while making efforts to retain the ability to provide trend analysis and maintain the National Forum of State Nursing Workforce Centers' National Nursing Workforce Minimum Dataset (2016) for nurse supply.

References

- Florida Center for Nursing. (2010). *Technical Documentation for Licensure and Workforce Survey Data Analysis*. Retrieved from https://www.flcenterfornursing.org/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=384&PortalId=0&TabId=151
- Florida Department of Health, Division of Medical Quality Assurance. (2018). *License Status Definitions*. Retrieved from <https://apps.mqa.doh.state.fl.us/MQASearchServices/LicStatus.html>
- Harris, A., & Ruttinger, C. (2017). *Utah's Advance Practice Registered Nurse Workforce, 2017: A Study on the Supply and Distribution of APRNs in Utah*. The Utah Medical Education Council. Retrieved from https://nursing.utahmec.org/wp-content/uploads/APRN_2017_FINAL.pdf
- Healthcare Workforce Data Center (HWDC). (n.d.). *HWDC Methodology*. Virginia Department of Health Professions. Retrieved from <https://www.dhp.virginia.gov/hwdc/docs/MethodologyandGlossary.pdf>
- Spetz, J., Chu, L., Jura, M., & Miller, J. (2017). *California Board of Registered Nursing 2016 Survey of Registered Nurses*. Retrieved from <http://www.rn.ca.gov/pdfs/forms/survey2016.pdf>
- The National Forum of State Nursing Workforce Centers. (2016). *Minimum Nurse Supply Dataset*. Retrieved from http://nursingworkforcecenters.org/wp-content/uploads/2016/11/National-Forum-Supply-Minimum-Dataset_September-2016.pdf

Appendix A: 2016-2017 Workforce Survey Questions

Q01: Year of Initial U.S. Licensure:

YYYY

Q02: In what country were you initially licensed as an RN or LPN?

Select Country

Q03: What type of nursing degree/credential qualified you for your first U.S. nursing license?

| | |
|---|--------------------------------|
| Vocational/Practical Certificate – Nursing | Baccalaureate Degree – Nursing |
| Diploma – Nursing | Master’s Degree – Nursing |
| Associate Degree – Nursing | Doctoral Degree – Nursing |

Q04: What is your highest level of education in NURSING?

| | |
|--|-------------------------------|
| Vocational/Practical Nursing Certificate | Master’s Degree in Nursing |
| Diploma in Nursing | PhD in Nursing |
| Associate Degree in Nursing | Doctorate of Nursing Practice |
| Baccalaureate Degree in Nursing | Other Nursing Doctoral Degree |

Q05: What is your highest NON-NURSING degree?

| | |
|-------------------------------------|--|
| Associate Degree – Non-Nursing | Doctorate in Medicine (MD, DO) |
| Baccalaureate Degree – Non- Nursing | Doctoral Degree – Other Health Discipline |
| Master’s Degree – Business Related | Doctoral Degree – Other Discipline |
| Master’s Degree – Health Related | No Degree Outside Of Nursing |
| Master’s Degree – Other | |
| Law Degree (JD) | |

Q06: Are you credentialed to practice as one of the following Advanced Practice Nurse certifications?

Yes - Certified Registered Nurse Anesthetist
 Yes - Certified Nurse Midwife
 Yes - Nurse Practitioner (Any Specialties)
 No

Q07: Do you perform any nursing work as a volunteer?

Yes
 No

Q08: Do you work any hours for pay in a field other than nursing?

Yes (If Yes, Proceed To Q8a)
 No (If No, Proceed To Q9)

Q08a: If yes, which of the following best describes your non-nursing position?

Part-Time
 Full-Time
 Per-Diem

Q9: If not currently employed for pay, please select the option that best describes your status?

- | | |
|--|--|
| Seeking Work as a Nurse | Not Seeking Work at This Time |
| Seeking Work in a Field Other Than Nursing | Retired |
| | Not Applicable (I Am Employed For Pay) |

Q10: Please indicate by selecting 'Yes' or 'No' if the following statements are reasons for not seeking employment for pay (Select all that apply)

- | | |
|--------------------------------|---|
| Taking care of home and family | Difficulty in finding a nursing position |
| Disabled/illness | Other |
| Inadequate Salary | Not applicable (I am employed for pay or retired) |
| Currently enrolled in school | |

Q11: Are you actively employed for pay in nursing or in a position that requires a nursing license?

- Yes
- No

Q12: In how many positions are you currently employed as a nurse?

- 1
- 2
- 3 Or More

Q13: Which of the following best describes your main nursing position? Your main position is the one at which you work the most hours during your regular work year.

- Part-Time
- Full-Time
- Per-Diem

Q14: How many hours do you work during a typical week in all your nursing positions?

- 0-80 (hours)

Q15: Number of weeks per year that you work in all your nursing positions, including paid time off (year round employment = 52 weeks).

- 0-52 (weeks)

Q16: Please identify the type of setting that most closely corresponds to your main nursing practice position.

- | | |
|--------------------------------------|---|
| Hospital | Occupational Health |
| Nursing Home/Extended Care | Hospice |
| Assisted Living Facility | Ambulatory Care Setting |
| Home Health | Insurance Claims/Benefits |
| Correctional Facility | Policy/Planning/Regulatory/Licensing Agency |
| Academic Setting | Physician's Office |
| Community Health | Temporary/Staffing Agency |
| Healthcare Consulting/ Product Sales | Public Health |
| Urgent Care/Walk-In Clinic | Other |
| School Health Service | |

Q17: Please identify the position title that most closely corresponds to your main nursing practice position.

- | | |
|--------------------------------------|--------------------------------|
| Staff Nurse | Nurse Researcher (Non-Faculty) |
| Advance Practice Nurse | Consultant |
| Nurse Executive/Administrator | Travel Nurse |
| Nurse Manager | Case Manager |
| Nurse Faculty | Educator |
| Quality Management/Risk Management | Other-Health Related |
| Utilization Review/Infection Control | Other-Not Health Related |

Q18: Please identify the employment specialty that most closely corresponds to your main nursing practice position.

- | | |
|----------------------------|---|
| Critical Care | Public Health |
| Adult Health/Family Health | Psychiatric/Mental Health/Substance Abuse |
| Anesthesia | Rehabilitation I Non-Psychiatric) |
| Community | School Health |
| Geriatric/Gerontology | Emergency/Trauma |
| Home Health | Women's Health/Ob-Gyn |
| Maternal-Child Health | Information Technology |
| Oncology | Operating Room/Peri-Operative |
| Palliative Care | Other Acute Care |
| Pediatrics | Other |
| Neonatal | |

Q19: Please indicate by selecting 'Yes' or 'No' if the following statements apply to your nursing plans for the next 5 years. (Select all that apply)

- Work as much as now
- Reduce hours
- Increase hours
- Move into Florida
- Move out of Florida
- Leave nursing/retire
- Other/Don't know

Appendix B: County Composition of FCN Regions

