

To: California Healthcare Workforce Policy Commission **Date:** April 16, 2012

From: Debra Gonzalez, GISP
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Subject: Registered Nurse Shortage Area Update

The results displayed in this report are from the Registered Nurse Shortage Area (RNSA) analysis completed in October 2011. The 2010 data used are from the Board of Registered Nursing (BRN) and the Office of Statewide Health Planning and Development (OSHPD).

Background

In February 2007, the California Healthcare Workforce Policy Commission (Commission) formally adopted staff recommendations for the creation of a Registered Nurse Shortage Area (RNSA). The method for determining the RNSA is a function of the number of licensed nurses (supply) and patient volume (demand). The previous analysis performed used 2009 data and was on a county basis. Taking into account that the Legislature (and current literature) has determined that California, as a whole, is a nursing shortage area, final designation is determined when a county (1) lacks a general acute care hospital (GAC) and a long-term care (LTC) facility and (2) is above the mean ratio of available nurses to patient volume. The ratio is the total number of bed days for GACs and LTC facilities multiplied by .08 and divided by the number of registered nurses (RNs) in the specific county. The mean is calculated by the sum of the ratio for each county divided by 58; the number of counties in California. The counties with ratios greater than the mean are considered designated. The Commission uses the RNSA as only one of many factors to determine Song-Brown funding for nursing education programs. The RNSA does not in itself determine funding or funding levels. In February 2008, the Commission stipulated that this method be reviewed annually, rather than every two years to provide insight into the latest science and current literature affecting the nursing workforce.

The Commission needs a quantitative, repeatable and meaningful way of ranking applications whose past graduates and training facilities operate in areas of unmet need (e.g. Song-Brown nursing shortages). The adopted RNSA, using counties as the analytical unit, serves well under this rubric. The RNSA does not in itself determine funding or funding levels, but is one of the factors used by the Commission.

Methodology

Three factors are used in defining nursing shortages: (1) California counties (as the geographic unit of analysis), (2) California registered nurse data of all active licenses by

county from the Board of Registered Nursing (BRN)¹, and (3) the patient day and census data from all LTCs and GACs from OSHPD.²

OSHPD maintains data on patient volume for GACs and LTCs. These data are maintained on the OSHPD Automated Licensing Information and Report Tracking System (ALIRTS) and available on the OSHPD website as data products. These GAC and LTC locations employ nearly 70% of the total nursing workforce in California. No current data exist on patient volume for the other 30% of the workforce.

OSHPD facility census³ data for 2010 were obtained by county. There are more licensed bed days in LTCs than GACs in California and LTCs only account for 5% of the registered nurse workforce.⁴ Therefore, a scale factor representing the percent of the nursing workforce at LTCs in this function was applied to ensure the census data were not skewed.⁵ A total census was created by summing the two numbers and a ratio was used of census divided by registered nurses for each of the 58 counties.

Ratio Equation:

$$\frac{\sum (\text{CensusDaysGAC} + [(\text{PatientDaysLTC}) * 0.08])}{\text{RNCount}}$$

Where:

CensusDaysGAC is the number of days a patient is occupying a bed in General Acute Care Hospitals in 2010

PatientDaysLTC is the number of days a patient is occupying a bed in Long-Term Care Facilities in 2010

RNCount is the number of licensed, active registered nurses per county in 2010

Limitations

This designation methodology has two limitations. First, only about 70% of the nursing workforce is accounted for in this function. The remaining 30% of the workforce is employed at schools, home health agencies, and other facilities, for which no ratio of average daily census or population served can be readily analyzed.⁶ Second, nurses and patients both travel outside county boundaries to give and receive care. However, we are unable to obtain data on commute patterns by occupation at this time due to confidentiality constraints regarding the release of healthcare providers' Social Security Numbers.

¹ Source: 2010, Department of Consumer Affairs, Board of Registered Nursing, County Count Summary for Clear Licenses.

² Source: 2010, Office of Statewide Health Planning and Development, Healthcare Information Division (HID) Data Products. <http://www.oshpd.ca.gov/HID/DataFlow/index.html>

³ Census Day Totals are a measure of service delivery. This value is the sum of the number of days that a given bed was occupied by a patient. Each night healthcare facilities take a census of patients in each bed. The census is kept by bed type (Acute Respiratory Care, Burn, Coronary Care, Intensive Care, Intensive Care – Newborn Nursery, Perinatal, Pediatric, Rehabilitation Center, and Unspecified General Acute Care). The GAC Census Days are the sum of the census for each of the nine GAC bed designations. A similar number is obtained for Long-Term Care Facilities.

⁴ 5% of the RN workforce is at LTC facilities, while 64% of the RN workforce is at GACs.

⁵ The scale factor is 0.08. This number is the percent of the workforce at LTC facilities, in our function. It is derived from 5 (percent of nurses employed at LTC facilities) / 64 (percent of nurses employed at GACs).

⁶ CA Workforce Initiative, Center for Health Professions, UCSF. 2001. *Nursing in CA: A Workforce Crisis*.

Other methodological approaches were explored by OSHPD staff and were indicated in a separate report on March 9, 2009, "Registered Nurse Shortage Area Alternative Methodologies."

Assessment

Song-Brown staff was contacted during the year regarding the RNSA. No new data sources currently exist which would enhance or change the adopted approach.

Staff contacted Dr. Joanne Spetz, University of California, San Francisco (UCSF), The Center for the Health Professions, to inquire about any new methodologies relating to measuring nursing shortages. Dr. Spetz reviewed the methodology and results offering observations and suggestions to consider for future analysis. She notes since the measure of need for RNSA is based on hospital and long term care volume, the RN data should count RNs most likely to work in those settings and not count advanced practice RNs. Dr. Spetz makes several observations about problematic areas of California: In the Bay Area, San Francisco is showing as a shortage area but San Mateo is not, yet RNs travel from Marin or San Mateo to work in San Francisco. According UCSF employer surveys, San Francisco is not an area with shortage currently. Dr. Spetz questions why counties with "no facilities" are automatically designated shortage areas. She questions this aspect of the methodology because even if there are RNs in counties with no facilities, RNs would not be hired. In addition, Dr. Spetz offers the UCSF employer survey as part of OSHPD analysis once the county level data is robust enough to be utilized for the RNSA analysis.

Results

The results from the last adopted approach are displayed in a separate memo, "Registered Nurse Shortage Area Update" on April 21, 2011.

This analysis was performed by using the current methodology of counties as the analytical unit. The mean ratio for counties was 44.88. In the county analysis, 28 counties were designated as RNSAs. Since the February 2010 Commission meeting, designation status has changed for four counties. Del Norte, Lake and Riverside Counties have gained designation. Sutter County lost designation.

Alpine County and Sierra County are automatically designated since there are no counts for Long-Term Care Facilities (LTCs) or General Acute Care Hospitals (GACs). (See map on page 8)

Table 1 on Page 4 illustrates the RNSA listed alphabetically by county, where *LTCPatient* is the patient days for long-term care facilities, *GACCensus* is the patient census days for general acute care hospitals, *BRNCount* is the number of registered nurses per county from the BRN, *Ratio* is the ratio of each county derived from the Ratio Equation, and *Designated* is whether that particular county has been designated according to the mean. The mean is calculated by the sum of the ratio for each county divided by 58; the number of counties in California. Table 2 on Page 5 ranks the counties by ratio. A map is also included on Page 8 to show the county designations. *Note: the yellow highlighted rows in Tables 1 and 2 indicate the four counties whose designation status has changed since the last RNSA update in February 2010.

Table 1 – RNSA Listed Alphabetically by County; Mean Designation Cutoff >44.88

County	LTCPatient	GACCensus	BRNCount	Ratio	Designated
Alameda	1645910	614425	13092	56.99	Yes
Alpine	0	0	9	0.00	Yes
Amador	41203	7601	308	35.38	No
Butte	339968	118438	2333	62.42	Yes
Calaveras	33702	5114	443	17.63	No
Colusa	30621	3106	54	102.88	Yes
Contra Costa	883902	353087	11218	37.78	No
Del Norte	26419	8001	222	45.56	Yes
El Dorado	77411	31736	2180	17.40	No
Fresno	956370	383515	7574	60.74	Yes
Glenn	26132	1116	98	32.72	No
Humboldt	123317	46655	1399	40.40	No
Imperial	81654	47864	878	61.95	Yes
Inyo	28135	2742	179	27.89	No
Kern	513581	324497	5171	70.70	Yes
Kings	97692	36654	869	51.17	Yes
Lake	77721	14154	454	44.87	Yes
Lassen	0	4007	218	18.38	No
Los Angeles	11848304	4765336	70888	80.59	Yes
Madera	135636	105901	863	135.29	Yes
Marin	309820	84641	3373	32.44	No
Mariposa	0	793	137	5.79	No
Mendocino	78367	21442	758	36.56	No
Merced	229511	54677	1148	63.62	Yes
Modoc	0	789	47	16.79	No
Mono	0	1591	99	16.07	No
Monterey	312561	148503	2921	59.40	Yes
Napa	239097	59194	2122	36.91	No
Nevada	125546	24868	1310	26.65	No
Orange	2169995	1151329	24974	53.05	Yes
Placer	325341	161481	4572	41.01	No
Plumas	18400	4089	161	34.54	No
Riverside	1395191	669787	16553	47.21	Yes
Sacramento	1119840	632963	12360	58.46	Yes
San Benito	0	7286	332	21.95	No
San Bernardino	1354571	819632	17081	54.33	Yes
San Diego	2598381	1219544	28540	50.01	Yes
San Francisco	423018	539950	7395	77.59	Yes
San Joaquin	856413	232822	4966	60.68	Yes

County	LTCPatient	GACCensus	BRNCount	Ratio	Designated
San Luis Obispo	268719	80014	2869	35.38	No
San Mateo	418002	190364	8142	27.49	No
Santa Barbara	340205	128987	2781	56.17	Yes
Santa Clara	1551789	738467	13914	62.00	Yes
Santa Cruz	175375	71955	2661	32.31	No
Shasta	269647	103601	2187	57.23	Yes
Sierra	0	0	28	0.00	Yes
Siskiyou	19055	8300	410	23.96	No
Solano	257725	132092	5466	27.94	No
Sonoma	464794	137574	4967	35.18	No
Stanislaus	583695	263956	4088	75.99	Yes
Sutter	126470	11567	736	29.46	No
Tehama	18115	8806	318	32.25	No
Trinity	0	1923	71	27.08	No
Tulare	454503	160918	2823	69.88	Yes
Tuolumne	42756	19942	613	38.11	No
Ventura	502611	261743	7207	41.90	No
Yolo	229850	18865	1370	27.19	No
Yuba	29775	39185	378	109.97	Yes

Table 2 – RNSA Listed by Ratio (for Counties); Mean Designation Cutoff >44.88

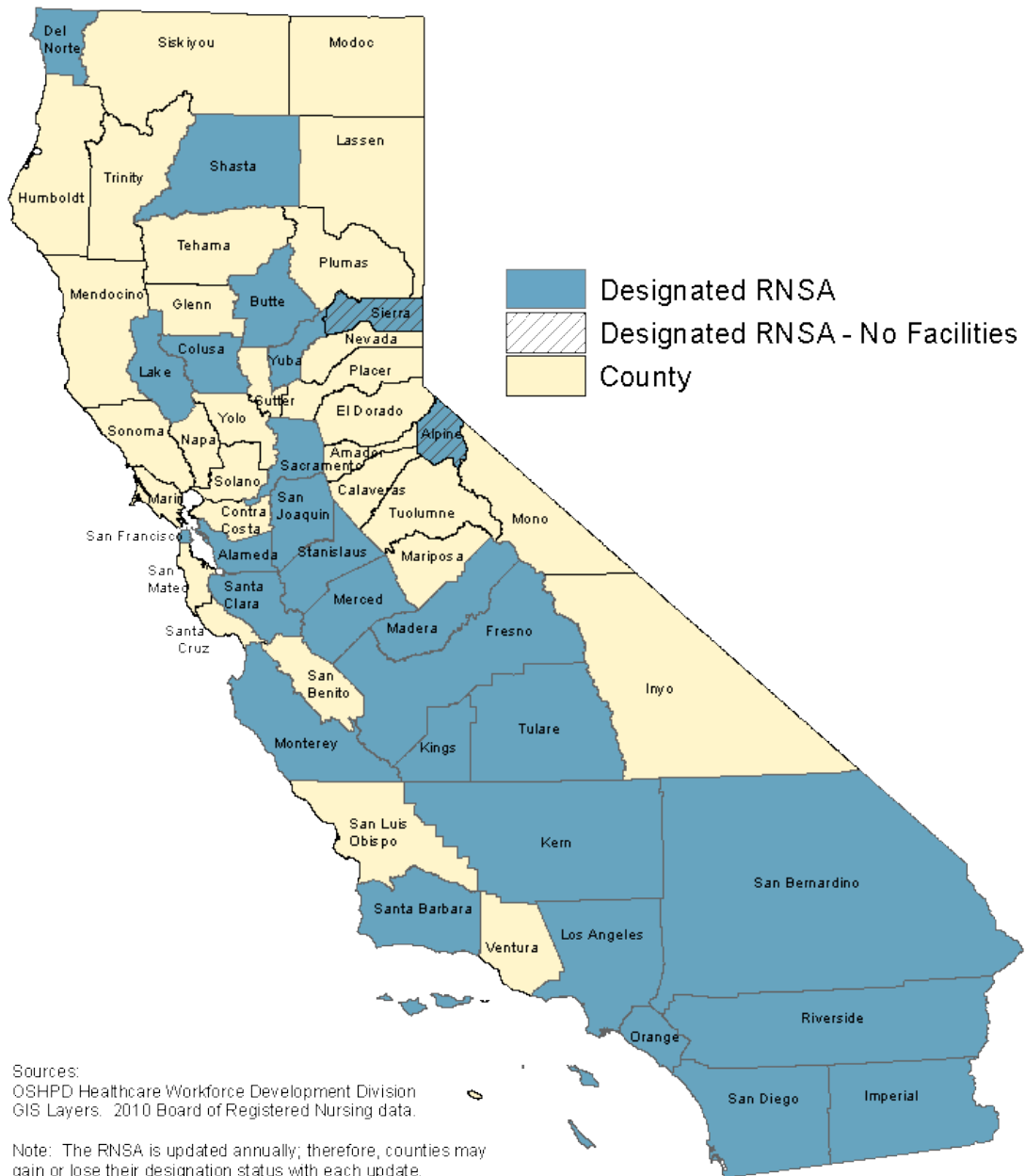
Rank	County	LTCPatient	GACCensus	BRNCount	Ratio	Designated
1	Mariposa	0	793	137	5.79	No
2	Mono	0	1591	99	16.07	No
3	Modoc	0	789	47	16.79	No
4	El Dorado	77411	31736	2180	17.40	No
5	Calaveras	33702	5114	443	17.63	No
6	Lassen	0	4007	218	18.38	No
7	San Benito	0	7286	332	21.95	No
8	Siskiyou	19055	8300	410	23.96	No
9	Nevada	125546	24868	1310	26.65	No
10	Trinity	0	1923	71	27.08	No
11	Yolo	229850	18865	1370	27.19	No
12	San Mateo	418002	190364	8142	27.49	No
13	Inyo	28135	2742	179	27.89	No
14	Solano	257725	132092	5466	27.94	No
15	Sutter	126470	11567	736	29.46	No
16	Tehama	18115	8806	318	32.25	No
17	Santa Cruz	175375	71955	2661	32.31	No

Rank	County	LTCPatient	GACCensus	BRNCount	Ratio	Designated
18	Marin	309820	84641	3373	32.44	No
19	Glenn	26132	1116	98	32.72	No
20	Plumas	18400	4089	161	34.54	No
21	Sonoma	464794	137574	4967	35.18	No
22	Amador	41203	7601	308	35.38	No
23	San Luis Obispo	268719	80014	2869	35.38	No
24	Mendocino	78367	21442	758	36.56	No
25	Napa	239097	59194	2122	36.91	No
26	Contra Costa	883902	353087	11218	37.78	No
27	Tuolumne	42756	19942	613	38.11	No
28	Humboldt	123317	46655	1399	40.40	No
29	Placer	325341	161481	4572	41.01	No
30	Ventura	502611	261743	7207	41.90	No
31	Lake	77721	14154	454	44.87	Yes
32	Del Norte	26419	8001	222	45.56	Yes
33	Riverside	1395191	669787	16553	47.21	Yes
34	San Diego	2598381	1219544	28540	50.01	Yes
35	Kings	97692	36654	869	51.17	Yes
36	Orange	2169995	1151329	24974	53.05	Yes
37	San Bernardino	1354571	819632	17081	54.33	Yes
38	Santa Barbara	340205	128987	2781	56.17	Yes
39	Alameda	1645910	614425	13092	56.99	Yes
40	Shasta	269647	103601	2187	57.23	Yes
41	Sacramento	1119840	632963	12360	58.46	Yes
42	Monterey	312561	148503	2921	59.40	Yes
43	San Joaquin	856413	232822	4966	60.68	Yes
44	Fresno	956370	383515	7574	60.74	Yes
45	Imperial	81654	47864	878	61.95	Yes
46	Santa Clara	1551789	738467	13914	62.00	Yes
47	Butte	339968	118438	2333	62.42	Yes
48	Merced	229511	54677	1148	63.62	Yes
49	Tulare	454503	160918	2823	69.88	Yes
50	Kern	513581	324497	5171	70.70	Yes
51	Stanislaus	583695	263956	4088	75.99	Yes
52	San Francisco	423018	539950	7395	77.59	Yes
53	Los Angeles	11848304	4765336	70888	80.59	Yes
54	Colusa	30621	3106	54	102.88	Yes
55	Yuba	29775	39185	378	109.97	Yes
56	Madera	135636	105901	863	135.29	Yes
57	Alpine	0	0	9	0.00	Yes
58	Sierra	0	0	28	0.00	Yes

Recommendation

Since the development and implementation of the current RNSA methodology, there has not been a formal method of measuring the nursing shortage. **Staff recommends the continued use of the current methodology using the county mean as the analytical unit.**

Registered Nurse Shortage Areas (RNSAs) By County Using the Mean as the Analytical Unit



0 25 50 Miles