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Department of Health Care Access and Information

Agenda Item 8:

Supply & Demand Modeling for California's Health Workforce

Presenter: Eric Neuhauser, Branch Chief, Research and Evaluation, HCAI

Objectives

- Introduction to HCAI modeling
- Supply and Demand Modeling Assumptions
- Overview of Modeling Dashboards
- Key Findings for Behavioral Health
- Key Findings for Nursing

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Why the supply and demand models were created

Health and Safety Code Section 128051 requires HCAI to collect, to the extent available, all of the following data:

- The current supply of health care workers, by specialty.
- The geographical distribution of health care workers, by specialty.
- The diversity of the health care workforce, by specialty, including, but not necessarily limited to, data on race, ethnicity, and languages spoken.
- The current and forecasted demand for health care workers, by specialty.
- The capacity of educational programs to train new healthcare workers, including details on slots, enrollment, attrition, and wait times.

The primary purpose of this section is to support the state's efforts in health professions development by providing detailed, reliable information about the healthcare workforce.

Assumptions are a critical component of modeling & we will ensure our assumptions are as data-driven as possible

Every model has assumptions; no model is completely assumption-free

However, they are **informed by available data and expert insights**; assumptions are not speculation

They can **fill gaps where complete data is unavailable** or impractical to collect

They can **simplify complex systems** to enable calculations that would otherwise be unwieldy

They **enable forecasting scenarios** by providing levers that can be adjusted

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How our assumptions are supported

- We ensure that each core assumption is backed by clear rationale and validated with credible sources.
- This approach ensures assumptions are not speculative—they are grounded in evidence, logic, and authoritative sources.

Assumption	Rationale	Supporting sources
RNs[1]: group RN, CNS[2], PHN[3], and PMHN[4]	All count toward ratio when providing direct patient care, and: only ~6% of PHN work in a public health setting, CNS provide direct care and expertise (akin to what a RN unit educator or manager might do), and majority of psych staffing needs are met by RNs given low PMHN count	CA BRN[5] 2022 Survey of RNs (Chu & Spetz, 2024); CA BRN 2010 Survey of CNS (Spetz et al., 2010); Dr. Joanne Spetz; expert interviews

[1]RN: Registered Nurse
[2]CNS: Certified Nurse Specialist
[3]PHN: Public Health Nurse
[4]PMHN: Psychiatric Mental Health Nurse
[5]BRN: Board of Registered Nurses

How HCAI created these products

Utilize licensing data and care delivery trends broken down by role or role group to create supply projections by Full Time Equivalent (FTE).

FTEs used in conjunction with actual reported average patient care hours and employment rates to determine supply and demand at the provider level.

Models consider the current and potential future demand for each role or role grouping based on capacity and utilization rates, as well as provider-to-population ratios based on setting[1].

[1]Inpatient met/unmet demand and outpatient met/unmet demand calculated for Behavioral Health model. See public methodology documentation for additional details.

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Model role groups included based on role similarity and scope of practice

Behavioral Health

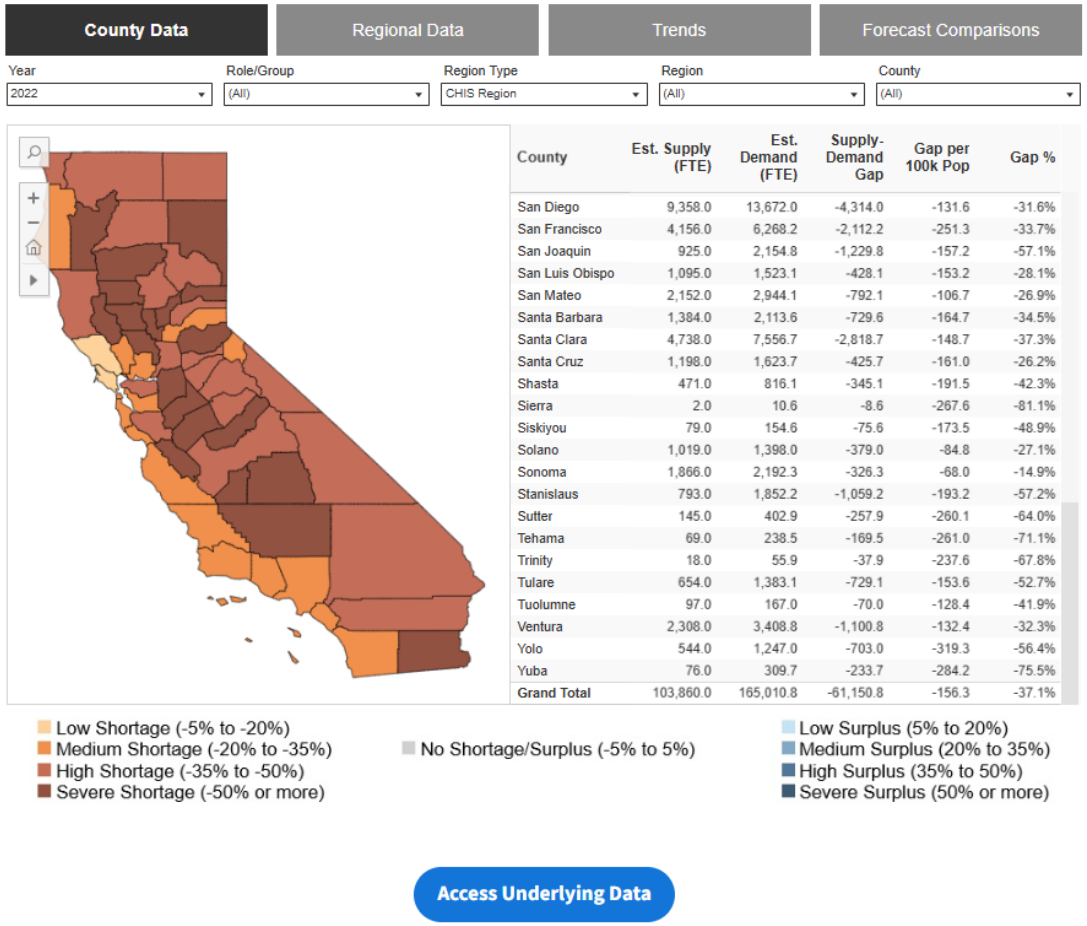
- **Associate Level Clinicians**: Associate Clinical Social Worker (ACSW), Associate Marriage and Family Therapist (AMFT), Associate Professional Clinical Counselor (APCC) and Registered Psychological Associate (RPA)
- **Non-Prescribing Licensed Clinicians**: Licensed Clinical Social Worker (LCSW), Licensed Marriage and Family Therapist (LMFT), Licensed Professional Clinical Counselor (LPCC), and Psychologist (PSY)
- **Psychiatrists**: Physician and Surgeon (MD) and Osteopathic Physician and Surgeon (DO) with a specialty in Psychiatry

Nursing

- **Nurse Anesthetist:** Nurse Anesthetist (NA)
- **Vocational Nurse:** Licensed Vocational Nurse (LVN)
- **Registered Nurse Group:** Registered Nurse (RN), Certified Nurse Specialist (CNS), Public Health Nurse (PHN), and Psychiatric Mental Health Nurse (PMHN)

Supply and demand modeling for California's health workforce – dashboards & datasets

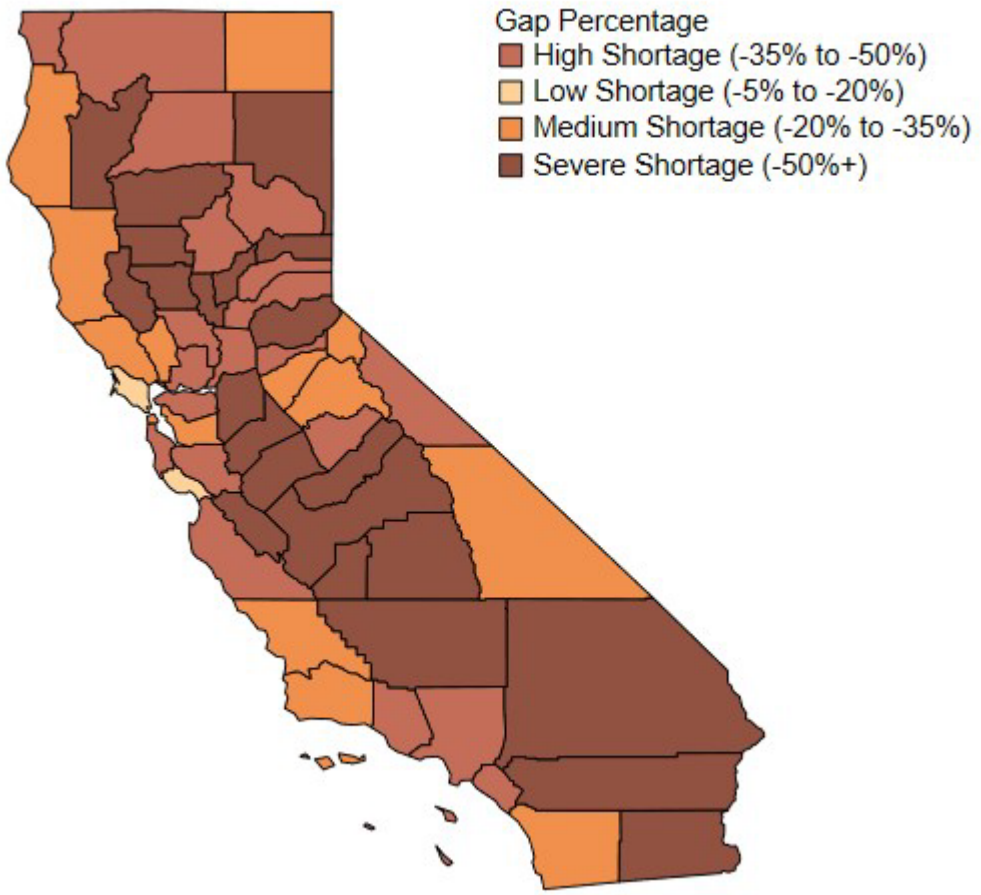
- **Interactive data visualization that provides role- and geography-specific views of workforce supply and demand.**
  - Breakdowns by CCC[1] Region, CHIS[2] Region, Job First Region, Labor Market Region and County level
- **Highlights current and projected gaps and identifies where shortages are most acute—enabling users to better understand workforce challenges and make data-informed decisions.**
  - Data available for 2022-2033
- **Underlying data and comprehensive methodology documentation are publicly available through the Open Data Portal (ODP)**



County	Est. Supply (FTE)	Est. Demand (FTE)	Supply-Demand Gap	Gap per 100k Pop	Gap %
San Diego	9,358.0	13,672.0	-4,314.0	-131.6	-31.6%
San Francisco	4,156.0	6,268.2	-2,112.2	-251.3	-33.7%
San Joaquin	925.0	2,154.8	-1,229.8	-157.2	-57.1%
San Luis Obispo	1,095.0	1,523.1	-428.1	-153.2	-28.1%
San Mateo	2,152.0	2,944.1	-792.1	-106.7	-26.9%
Santa Barbara	1,384.0	2,113.6	-729.6	-164.7	-34.5%
Santa Clara	4,738.0	7,556.7	-2,818.7	-148.7	-37.3%
Santa Cruz	1,198.0	1,623.7	-425.7	-161.0	-26.2%
Shasta	471.0	816.1	-345.1	-191.5	-42.3%
Sierra	2.0	10.6	-8.6	-267.6	-81.1%
Siskiyou	79.0	154.6	-75.6	-173.5	-48.9%
Solano	1,019.0	1,398.0	-379.0	-84.8	-27.1%
Sonoma	1,866.0	2,192.3	-326.3	-68.0	-14.9%
Stanislaus	793.0	1,852.2	-1,059.2	-193.2	-57.2%
Sutter	145.0	402.9	-257.9	-260.1	-64.0%
Tehama	69.0	238.5	-169.5	-261.0	-71.1%
Trinity	18.0	55.9	-37.9	-237.6	-67.8%
Tulare	654.0	1,383.1	-729.1	-153.6	-52.7%
Tuolumne	97.0	167.0	-70.0	-128.4	-41.9%
Ventura	2,308.0	3,408.8	-1,100.8	-132.4	-32.3%
Yolo	544.0	1,247.0	-703.0	-319.3	-56.4%
Yuba	76.0	309.7	-233.7	-284.2	-75.5%
Grand Total	103,860.0	165,010.8	-61,150.8	-156.3	-37.1%

[1]CCC: California Community Colleges
[2]CHIS: California Health Interview Survey

Key findings for Non-Prescribing Licensed Clinicians

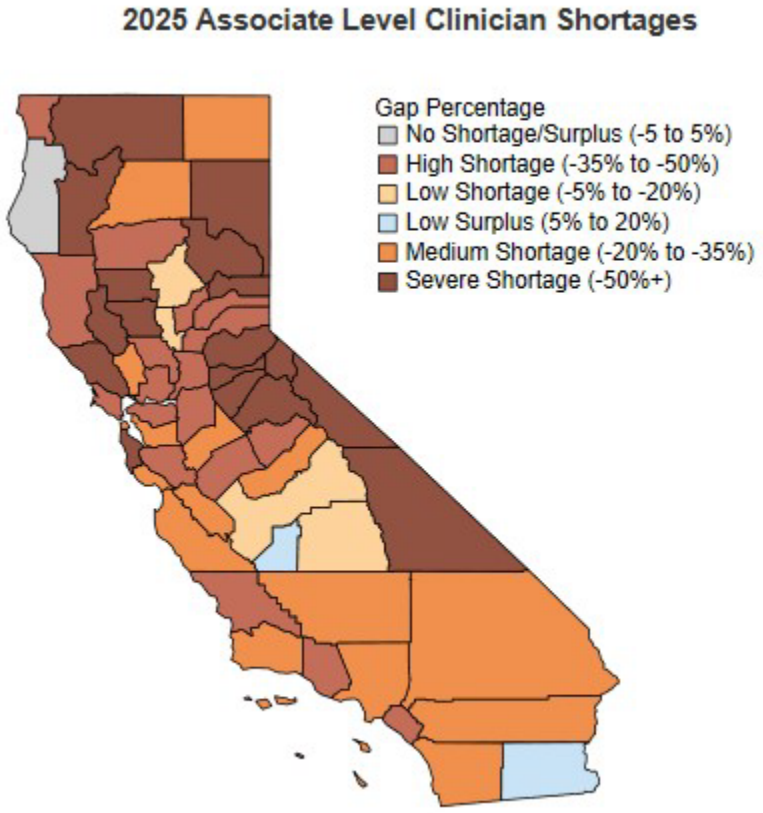


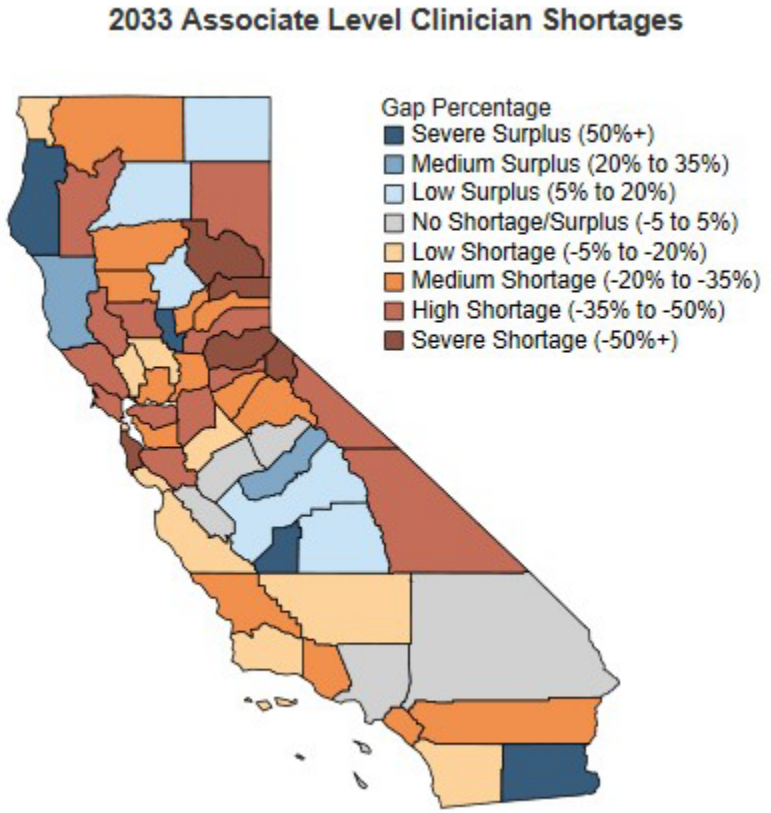
- All regions and counties are currently[1] facing a shortage of Non-Prescribing Licensed Clinicians, with 22 counties facing a severe shortage of -50% or more.
- Statewide, this represents a -40.6% shortage and an estimated need for 55,298 additional providers to meet forecasted demand.
- By 2033, it is projected that the overall statewide shortage of Non-Prescribing Licensed Clinicians will increase to just over -42%, resulting in a need for 171,413 total providers to meet future demand, nearly double the current statewide supply.

[1]Based on 2025 model projections

Key findings for Associate Level Clinicians

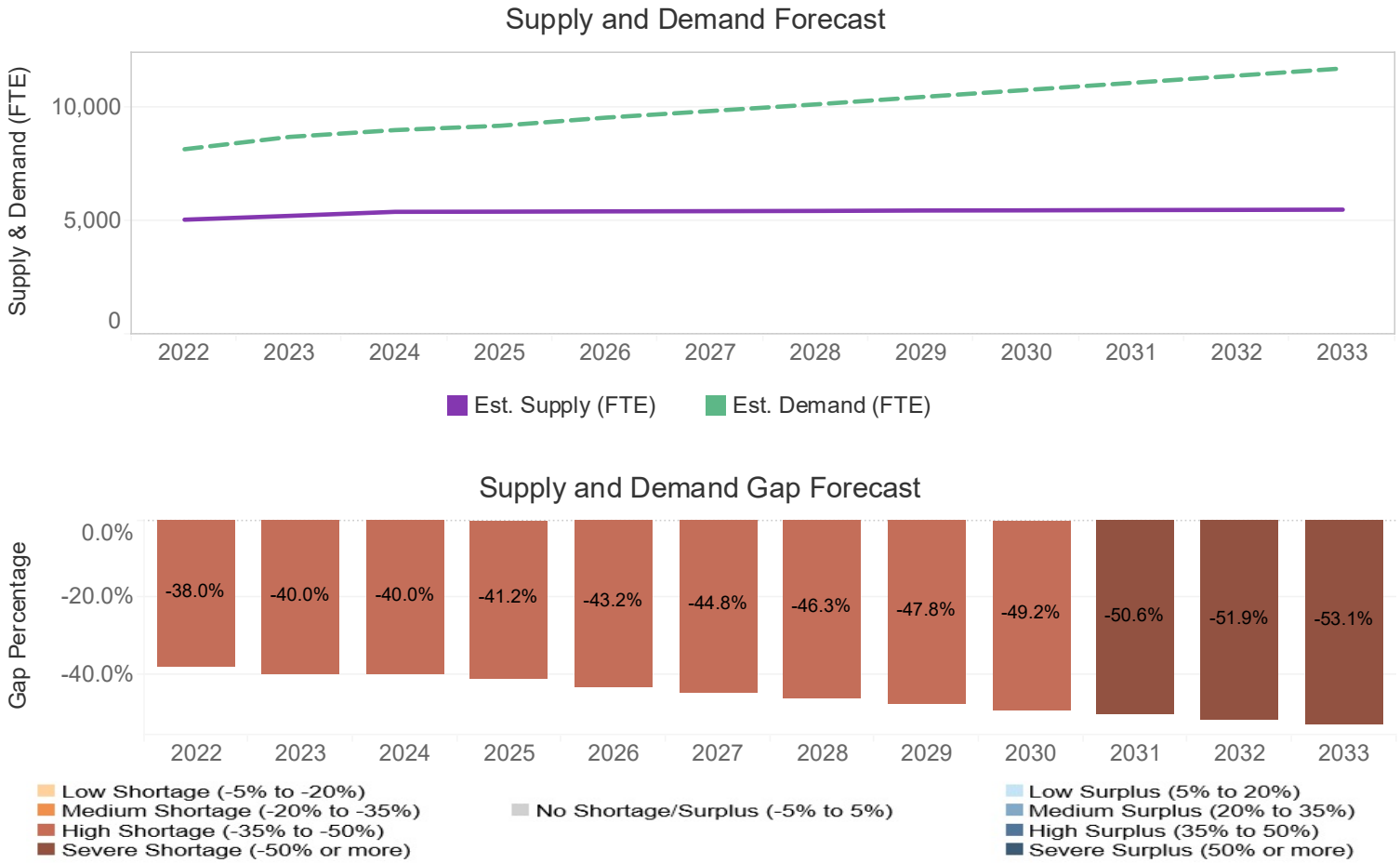
- Nearly all regions and counties are currently[1] facing a shortage of Associate Level Clinicians, with 17 counties facing a severe shortage of -50% or more.
- Statewide, this represents a -33.6% shortage and a need for 13,175 additional providers.
- By 2033, the statewide shortage is projected to decrease by half (-17.7%). However, the high mix of shortage and surplus areas indicates a potential maldistribution of providers.





[1]Based on 2025 model projections

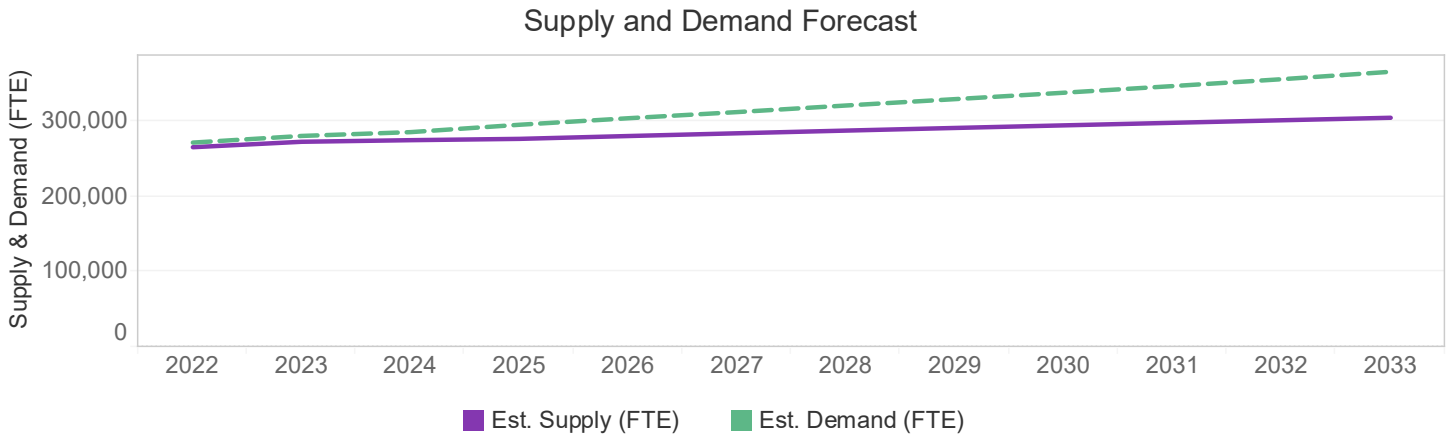
Key findings for Psychiatrists

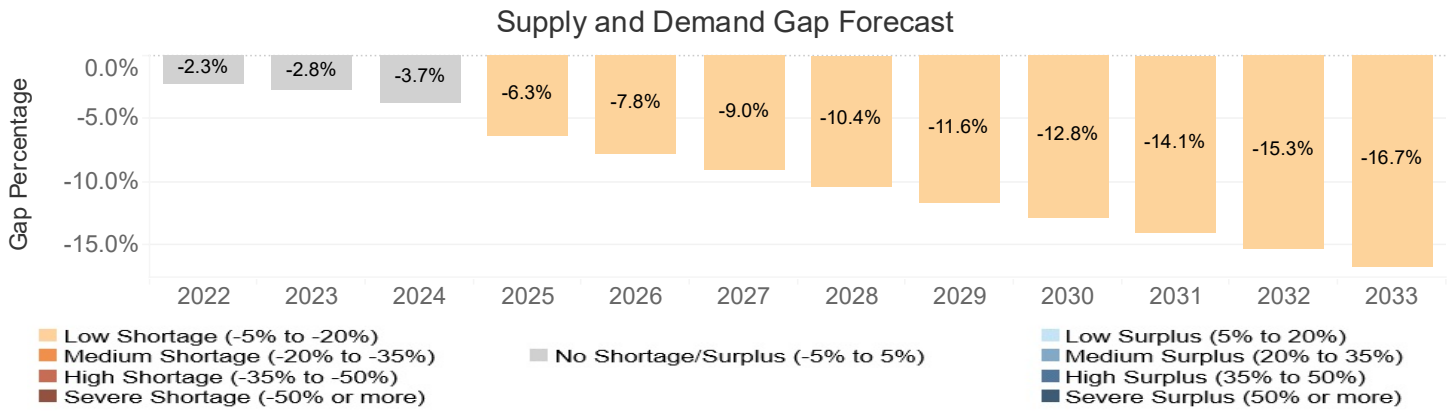


- All regions and counties are currently[1] facing a shortage of Psychiatrists, with 39 counties facing a severe shortage of -50% or more.
- Statewide, this represents an estimated need for 3,782 additional providers to meet forecasted demand.
- By 2033, it is projected that need will double to more than 6,200 additional providers required to meet forecasted demand.

[1]Based on 2025 model projections

Key findings for Registered Nurse group



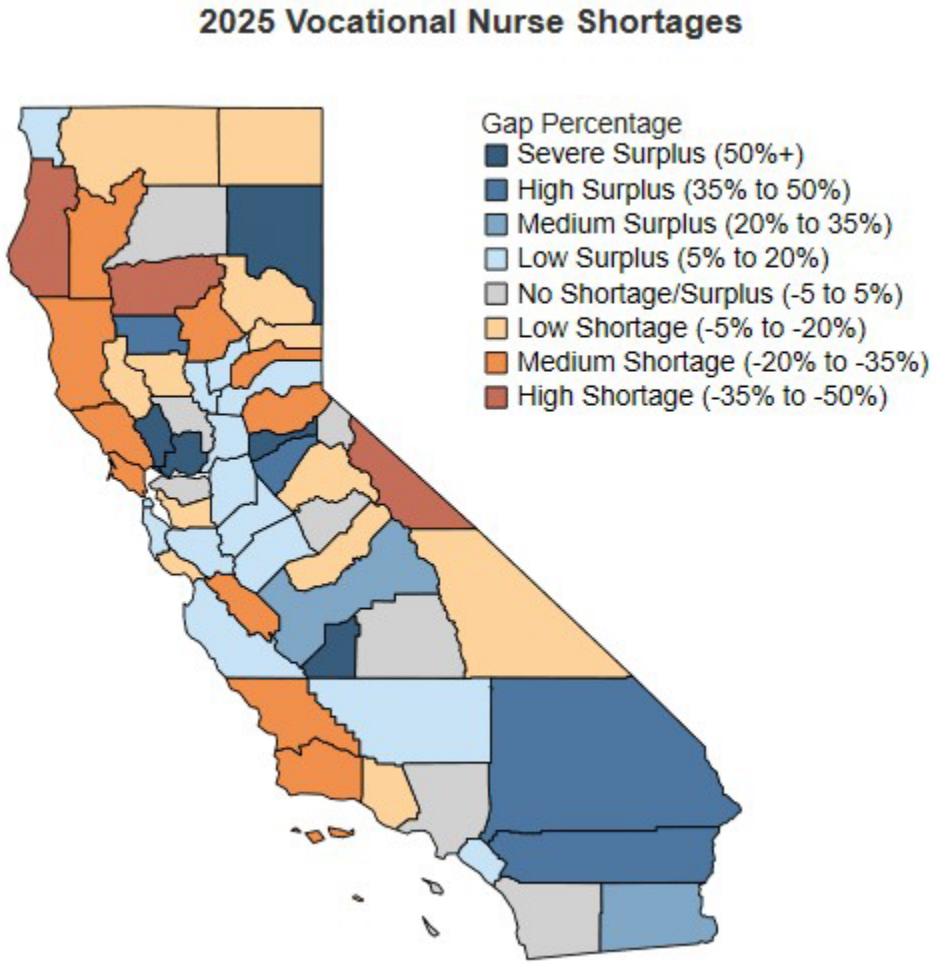


- The current[1] statewide shortage of Registered Nurses is low at just over -6%, with an estimated need for 18,793 additional providers to meet forecasted demand.
- Certain CHIS regions face a shortage of more than 25%, while others face a surplus of nearly 11%, indicating a potential maldistribution of providers.
- By 2033, it is projected that 50 counties will face a -5% shortage or more of Registered Nurses. The statewide shortage will increase nearly -17%, equaling a need for 61,141 additional providers.

[1]Based on 2025 model projections

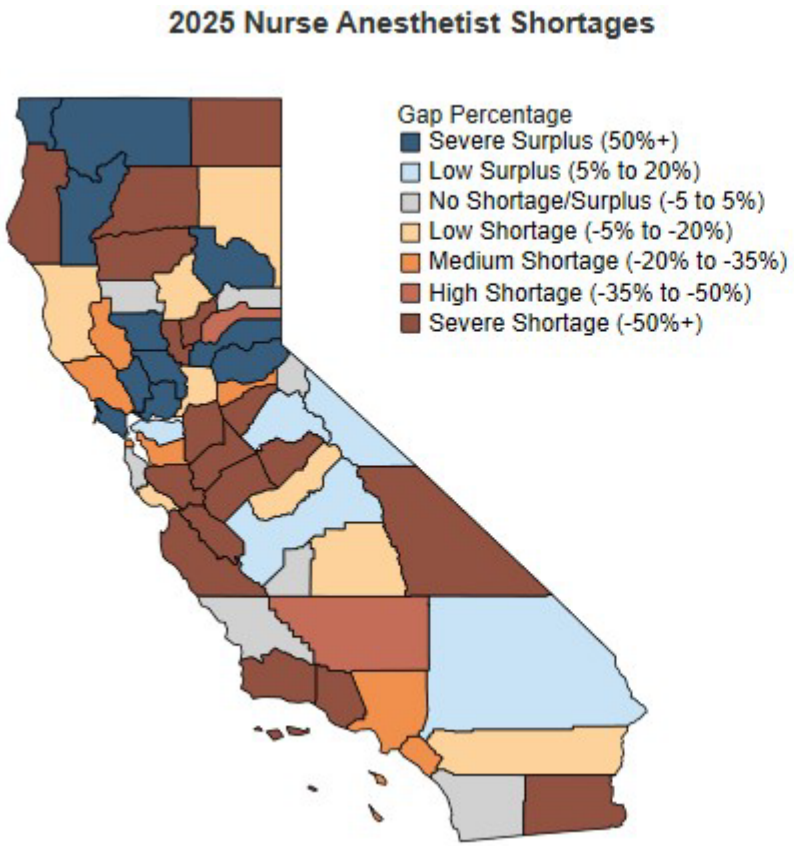
Key findings for Vocational Nurses

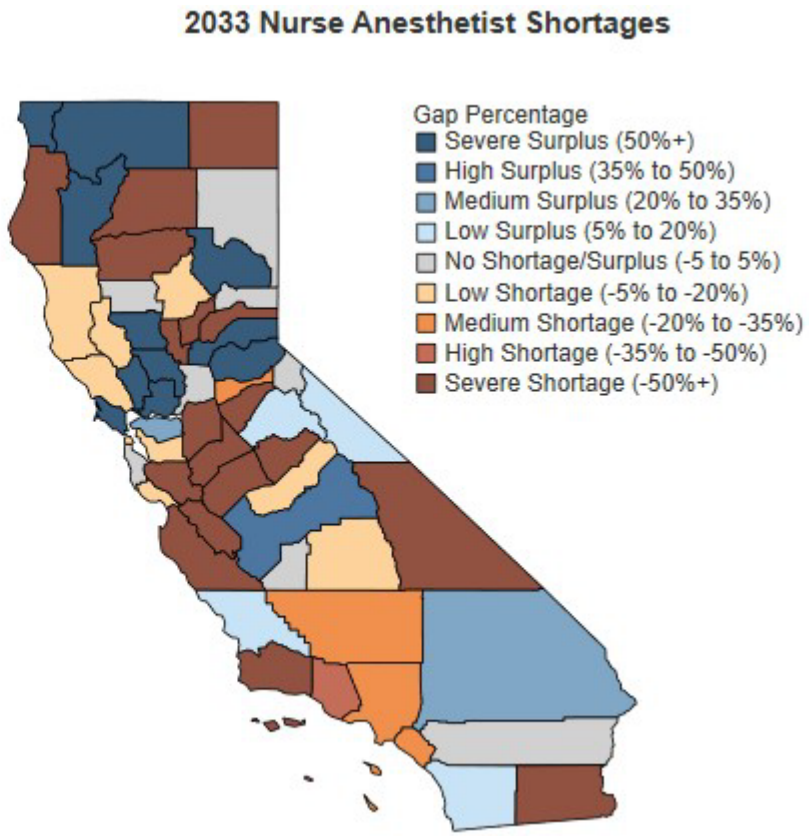
- Current projections indicate there is a low surplus of Vocational Nurses statewide (6.5%).
- However, 25 counties are facing a shortage of Vocational Nurses, while 25 counties are facing a surplus. This indicates there is a maldistribution of Vocational Nursing providers within the state.
- This maldistribution is projected to worsen by 2033.



[1]Based on 2025 model projections

Key findings for Nurse Anesthetists





- Currently, 35 counties are facing a shortage of Nurse Anesthetists, with 23 counties facing a shortage of -25% or more.
- Statewide, this is a shortage of over -20% with an estimated need for 441 additional providers to meet forecasted demand.
- This shortage is projected to decrease by half (-11.5%) by 2033 as the supply of Nurse Anesthetists steadily increases over time.

[1]Based on 2025 model projections

Future work

- **Nursing model updates:**
  - Refresh underlying data sources
  - Add demographic and/or insurance overlays
  - Incorporate stakeholder feedback
- **Behavioral Health model updates:**
  - Expand professions included (LEPs, Psych Techs, PMH NP)
  - Refresh underlying data sources
  - Add demographic and/or insurance overlays
  - Incorporate stakeholder feedback

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Questions?

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Public Comment

Facilitator: Van Ton-Quinlivan, Council Chair

Each core assumption is supported by rationale and sources (1/2)

Reference	Assumption	Rationale	Supporting sources
Nursing and behavioral health			
1	**Supply-driven demand**	Focusing on facilities as sites of care enables high geographic granularity; additional data collection suggested for physician-owned clinics	Supply-driven approach taken by UCSF
2	**Provider location is based on their license record**	Best available data for provider location is licensing data; in future propose changes to survey to collect work location	DCA
3	**Demand-side sets of roles**	Group roles with highly overlapping scopes of care to reflect fungibility and avoid false precision	
4	**Use of care settings & ratios**	Enables calculation of bottoms-up demand based on facility utilization; primary research of staffing in non-hospital settings recommended to enhance assumption fidelity	HRSA leveraged both care settings and staffing ratios; UCSF leveraged care settings
4A	**Midwives: group LM and CNM**	Primary function is to attend normal pregnancy and birth	Scope of practice laws; Holly Smith, Midwifery and Health Policy Consultant at Midwifery Rising
4B	**RNs: group RN, CNS, PHN, and PMHN**	All count toward ratio when providing direct patient care, and: only ~6% of PHN work in a public health setting, CNS provide direct care and expertise (akin to what a RN unit educator or manager might do), and majority of psych staffing needs are met by RNs given low PMHN count	CA BRN 2022 Survey of RNs (Chu & Spetz, 2024); CA BRN 2010 Survey of CNS (Spetz et al., 2010); Dr. Joanne Spetz; expert interviews
4C	**Non-prescribing licensed clinicians: group LCSW, LMFT, LPCC, psychologist**	These roles all have a shared emphasis on psychotherapy and are largely fungible in statute and current staffing patterns	Board of Behavioral Sciences; Board of Psychology; California's Current and Future Behavioral Health Workforce (Coffman et al., 2018); Cal Code Regs. Tit. 22 Section 77061; expert interviews
5	**License de-duplication**	Enables conversion from total license count to total provider count	2017 Survey of NPs and CNMs (Spetz et al., 2018); expert interviews
6	**Static care team staffing**	Forecast is based on today's staffing model, which is often dependent on statute (e.g., Title 22 staffing ratios)	Neither HRSA nor UCSF model care team shifts

Each core assumption is supported by rationale and sources (2/2)

Reference	Assumption	Rationale	Supporting sources
Behavioral health			
7	**Unmet demand care team**	Limited data exists as to how the provider mix for demand not currently met may differ from the provider mix of today; suggest exploring HCAI or partner-led methods to collect data to inform	Interviews; DHCS input
8	**Unmet acute demand**	Enables demand calculation without a false ceiling due to inadequate behavioral health infrastructure; propose partnering with DHCS and health systems to develop accurate projection of BH infrastructure buildout and timeline	Prop 1 passage indicates widespread belief that current met IP/residential demand is constrained by infrastructure
9	**Role of allied health and primary care professionals**	Existing behavioral health modeling does not account for allied health or primary care; limited data or consensus on how much behavioral health care non-specialists could or should provide; propose surveying behavioral health specialists to quantify	California's Current and Future Behavioral Health Workforce (Coffman et al., 2018)
10	**Unmet demand in counties with low current supply**	Need to ensure our BH model does not reproduce existing disparities in supply – this is a mathematical approach that ensures our unmet demand is distributed in a logical way that does not produce facially inaccurate results. In the absence of this correction counties with the highest current supply (e.g., Marin) would show the greatest unmet demand, something we know to be incorrect.	