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Department of Health Care Access and Information

Agenda Item 8:

Maternal Health Workforce Supply and Demand Modeling and Strategy

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Agenda

- Strategic Intent and Vision of the Model
- Defining Maternal Health and Proposed Care Team
- Overview of Supply and Demand Methodology and Proposed Outputs
- Project Timeline



Strategic Intent for the Model



Goal

- To equip policy leaders and decision makers with a **granular, equity-focused tool** that identifies statewide maternal health care workforce gaps and pinpoints subcounty-level access issues

Output

- A comprehensive tool that HCAI and other partners can use to inform policy decisions and resource allocation, as well as a public-facing interactive dashboard and downloadable dataset for external use, with methodology documentation on HCAI's Open Data Portal
  - Similar to previously published models: Behavioral Health, Nursing and will also include **scenario modeling** and **access to care analysis**

Strategic Vision for the Model

Sub-County Granularity

- Detect maternal care team shortages with greater detail
  - By looking beyond county or regional data, which often conceal neighborhood-level access problems and disparities between urban and rural areas



Multifaceted Access

- Incorporate real-world obstacles like:
  - Drive time to birthing facility
  - Drive time to provider
- Integrate indicators of concordant care
  - Race & ethnicity
  - Language spoken



Team-Based Care

- Assess optimized combination of core maternal health care team members for care delivery
  - Based on pregnancy stage, geography, risk
- Determine which additional extended care team members should be incorporated in future efforts



Scenario Modeling

- Model various scenarios such as:
  - Medi-Cal acceptance rates
  - New training and education programs
  - Workforce mix / % midwife-attended births





Defining Maternal Health Care and Proposed Care Team

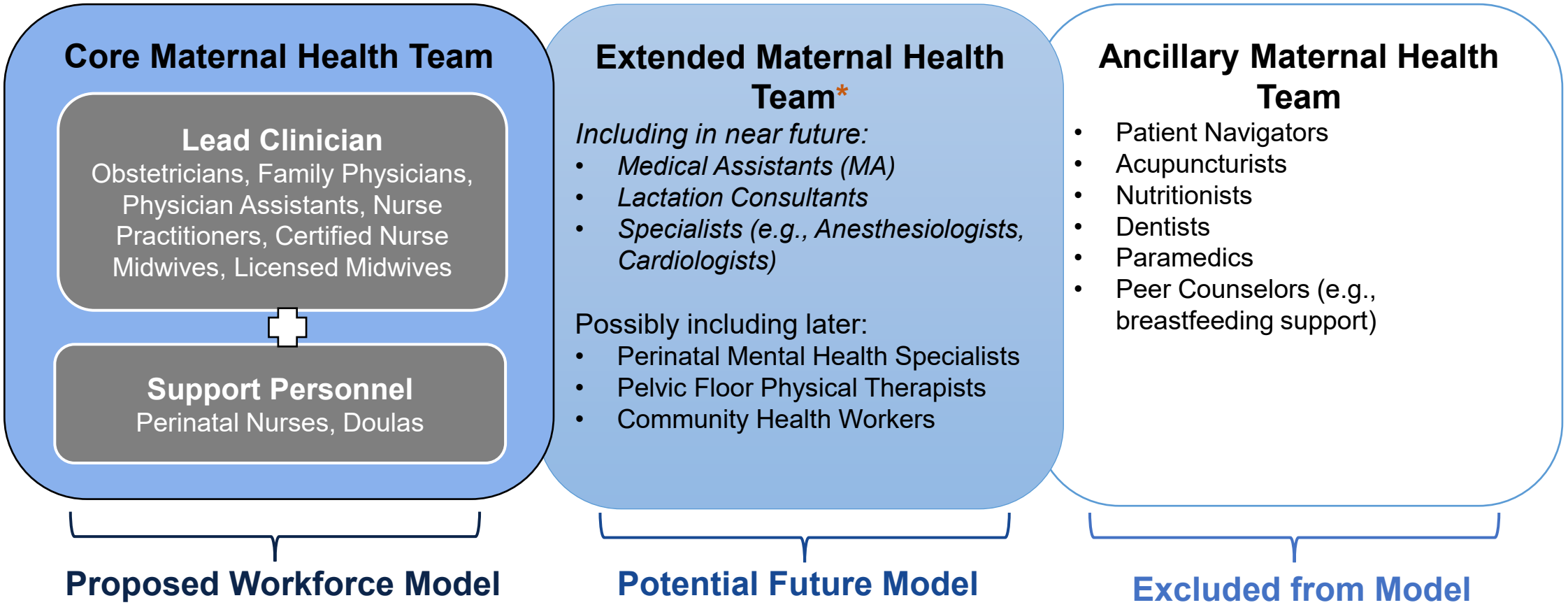
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Defining Maternal Health Care

- Incorporates prenatal care, intrapartum care (labor and delivery), and postpartum care services (through 12 weeks)
- Using evidence-based guidelines and assumptions for care
  - By pregnancy stage
  - By risk-level
  - By birth setting



Care Teams for Maternal Health



*Subject to data availability

Proposed Care Team for Maternal Health

- Based on clinical recommendations (ACOG, NASEM), state and national maternal health experts
- Team composition will vary depending on **maternity care stage, risk, health care setting,** and **geography type**

Physician (MD, DO)
- Obstetricians (OB)
  - Maternal-Fetal Medicine Specialists (MFM)
- Family Medicine

Certified Nurse Midwife (CNM)

Nurse Practitioner (NP)
- Women's Health
- Family Health

Physician Assistant (PA)
- OB/GYN
- Family Medicine

Licensed Midwife (LM)

Registered Nurse (RN)
- Neonatal Health
- Women's Health
- Family Health

Doula

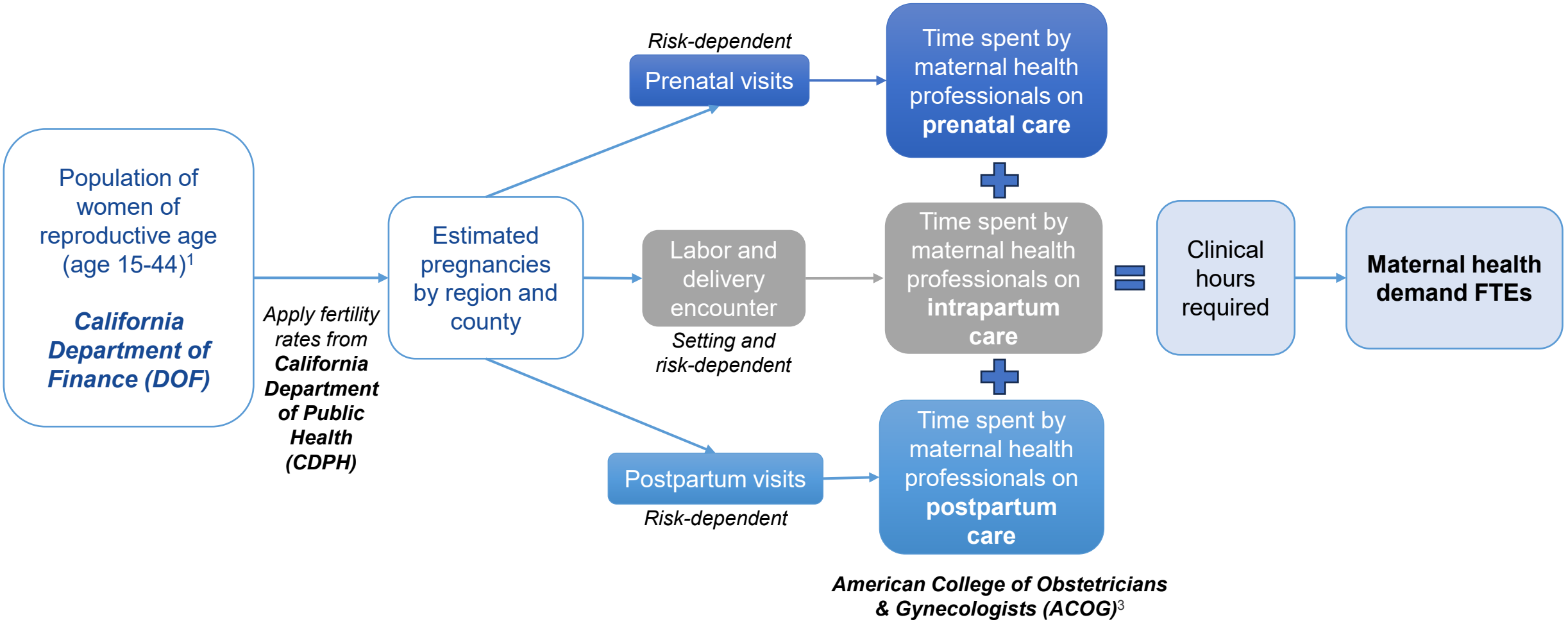
American College of Obstetricians and Gynecologists (ACOG)
National Academies of Sciences, Engineering, and Medicine (NASEM)
Medical Doctor (MD), Doctor of Obstetrics (DO)

Detailed Proposed Lead Clinicians for Care

Perinatal Stage	Risk Level	Care Setting	Lead Clinician	Geographic Considerations
Prenatal	Low-risk	Birth center, home	CNM, LM	
	Low-risk	Ambulatory care clinic	OB, FM Physician, CNM, NP, or PA	Rural geography more likely to have larger role for FM Physicians, smaller role for OB Physicians
	High-risk	Ambulatory care clinic	MFM, OB, FM Physician, CNM, NP, or PA	
Intrapartum	Low-risk	Birth center, home	CNM, LM	
	Low-risk	Hospital	CNM, OB, FM Physician	Rural geography more likely to have larger role for FM Physicians and CNMs
	High-risk	Hospital	MFM, OB, FM Physician	
Postpartum	Low-risk	Birth center, home	CNM, LM	
	Low-risk	Ambulatory care clinic	OB, FM Physician, CNM, NP, or PA	Rural geography more likely to have larger role for FM Physicians, smaller role for OB Physicians
	High-risk	Ambulatory care clinic	MFM, OB, FM Physician, CNM, NP, or PA	

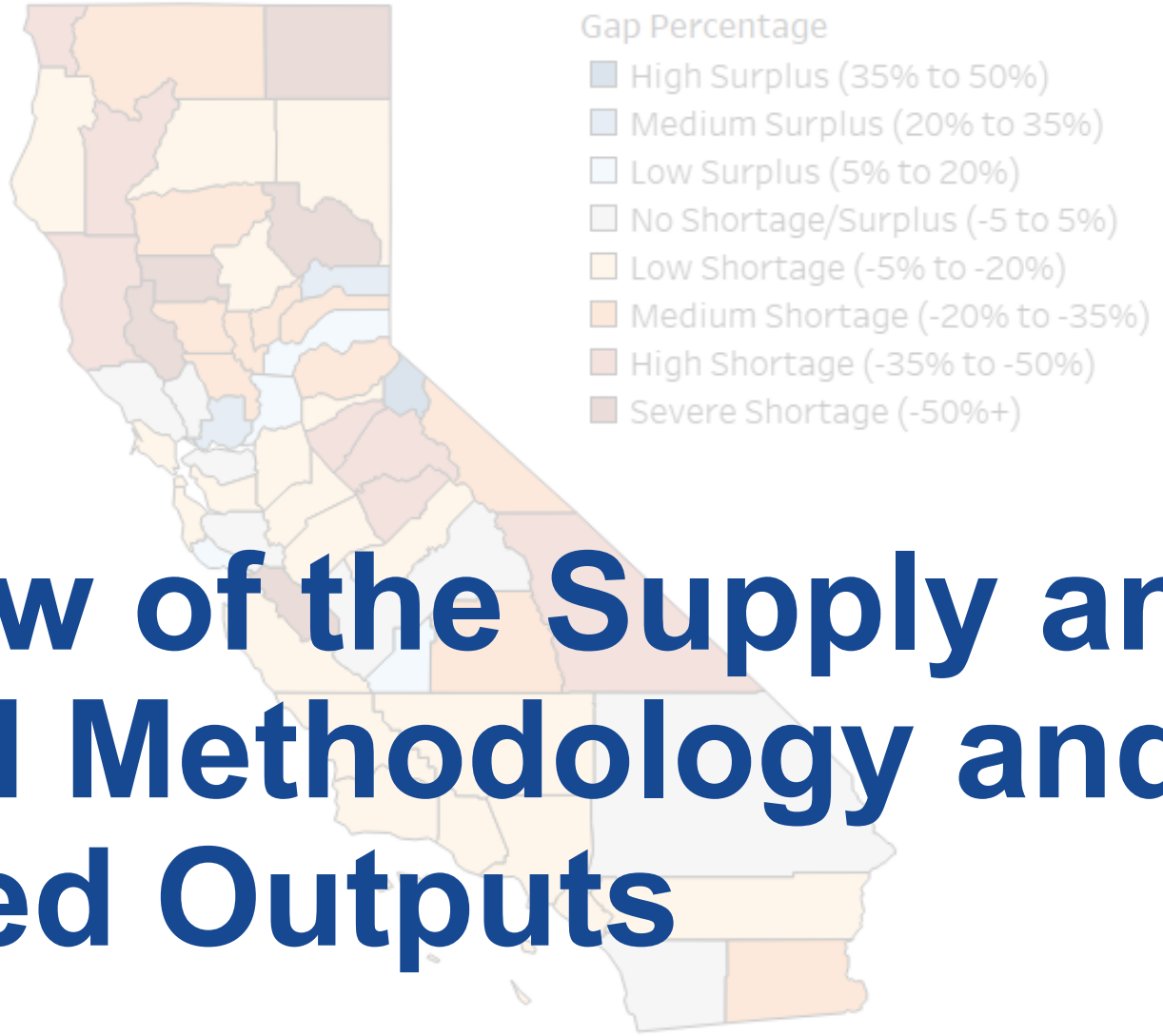
Risk considers **conditions before pregnancy, complications during pregnancy and after delivery**. Risk assessment is not conducted to establish recommendations; it is to more accurately estimate needs-differentiated care and specialized needs for high-risk pregnancies.

Proposed Maternal Health Demand Framework



[1]Age range defined by California Department of Public Health birth data documentation
[2]Department of Finance P-2C: Total Population by 5-year Age Group and Sex for California Counties, July 1 2020-2070. https://dof.ca.gov/forecasting/demographics/projections/
[3]American College of Obstetricians and Gynecologists https://www.acog.org/clinical/clinical-guidance/clinical-consensus/articles/2025/04/tailored-prenatal-care-delivery-for-pregnant-individuals

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Overview of the Supply and Demand Methodology and Proposed Outputs

Maternal Health Supply & Demand Model Framework

⚙ SCENARIO "WHAT-IF" DIALS

Change an input → outputs shift (e.g., births, midwife-attended %, new training programs)

DATA INPUTS & CALCULATION

① SUPPLY INPUTS *Who provides maternal care*

- Roles: MD · DO · NP · PA · Nurse Midwife (NM) · Licensed Midwife (LM) · RN · Doula
- Provider address and geography
- Concordance: Race/Ethnicity, Language
- From DCA/RDC Licensure data + HCAI Survey

② DEMAND INPUTS & CLINICAL PARAMETERS

Who needs maternal care

- Population: CA women aged 15-44 (CA DOF)
  - Race/Ethnicity, Language (Census)
- Births and fertility rates (CDPH)
- Guidelines for prenatal, intrapartum, postpartum care (ACOG)
- By risk level, care setting, geography

③ MODEL ENGINE *How and what we calculate*

- *Demand:* Population × Care Frequency = Visits → Hours → FTEs
- *Supply:* Convert licenses → FTEs
  - De-duplicate to top-of-license
- Geocode to Region / County / Sub-County (MSSA)
- Forecast using Machine Learning
- **Supply FTEs – Demand FTEs = Gap**

RESULTS & MEANING

④ OUTPUTS *What we find*

- Historical & current FTE supply vs. needs-based demand FTEs
- Projected FTE supply vs demand
- Provider gaps by role

⑤ ACCESS & EQUITY ISSUE FLAGS *What it means*

⚑ Drive time to provider (prenatal and postpartum care) > 30 minutes (urban) or > 45 minutes (rural)

⚑ Drive time to birthing facility (intrapartum care) > 30 minutes (urban) or > 45 minutes (rural)

⚑ Ratio <1 OB/GYN or 1 CNM per 1,500 population

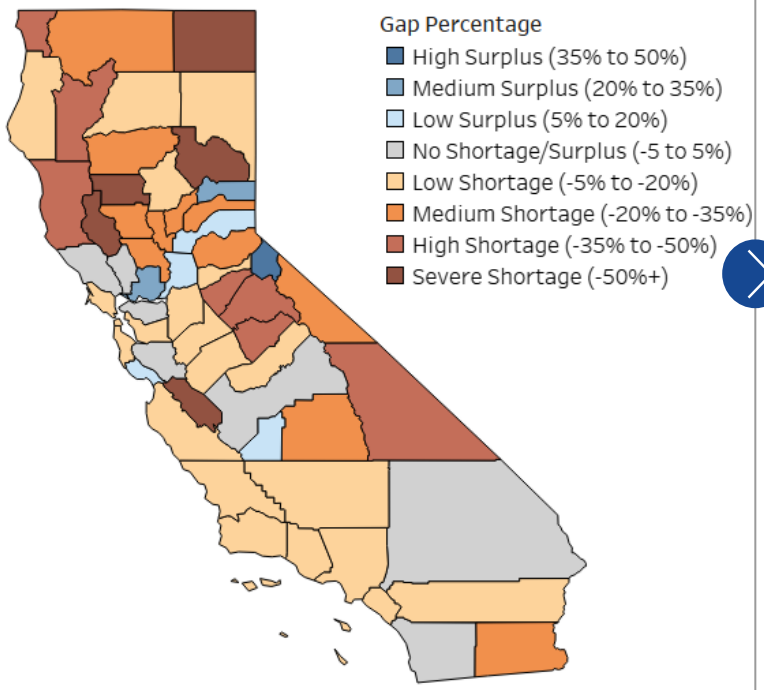
⚑ Provider to population concordance

Statewide · HCAI Region · County · Sub-County (MSSA)

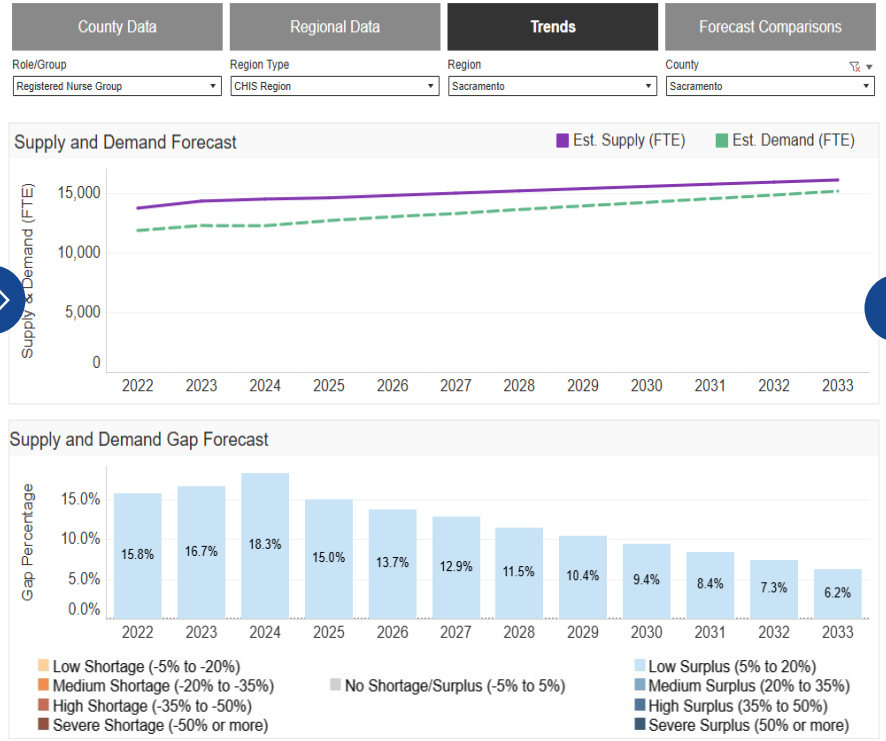
Model Outputs – Public Dashboard, Dataset & Methodology (Illustrative)

MSSAs, County and regional level shortages for all role types and years

Gap Percentages



For each role and geography level, shows **supply and demand trends and gap forecasts across all years**



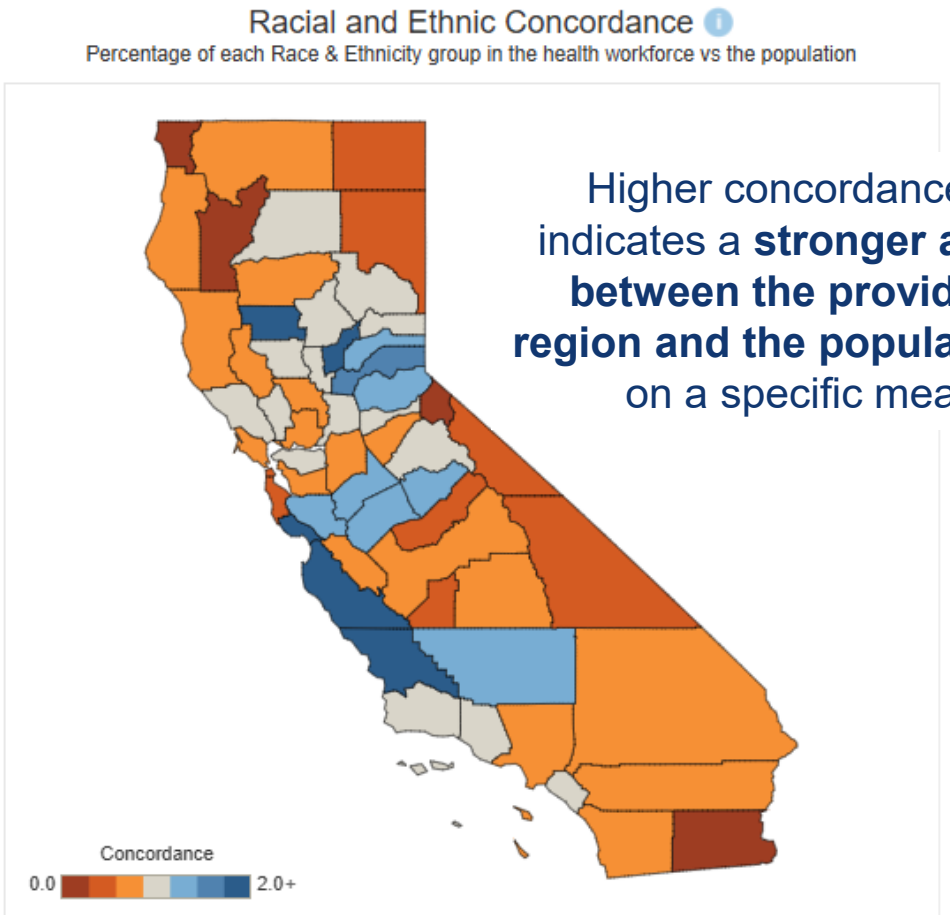
All model results and methodology documentation are publicly available on the Open Data Portal

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

Assumption	Rationale	Supporting sources
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
Provider location is based on their license record	Best available data for provider location is licensing data; will use practice address when sample sizes are large enough	DCA License Registration System; HCAI Licensure Renewal Survey
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 leverages both care settings and staffing ratios; UCSF leverages care settings
Group sets of roles	Group roles with highly overlapping scopes of care to reflect fungibility and avoid false precision	
Group RNs: 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
Group non-prescribing licensed clinicians: 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
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
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

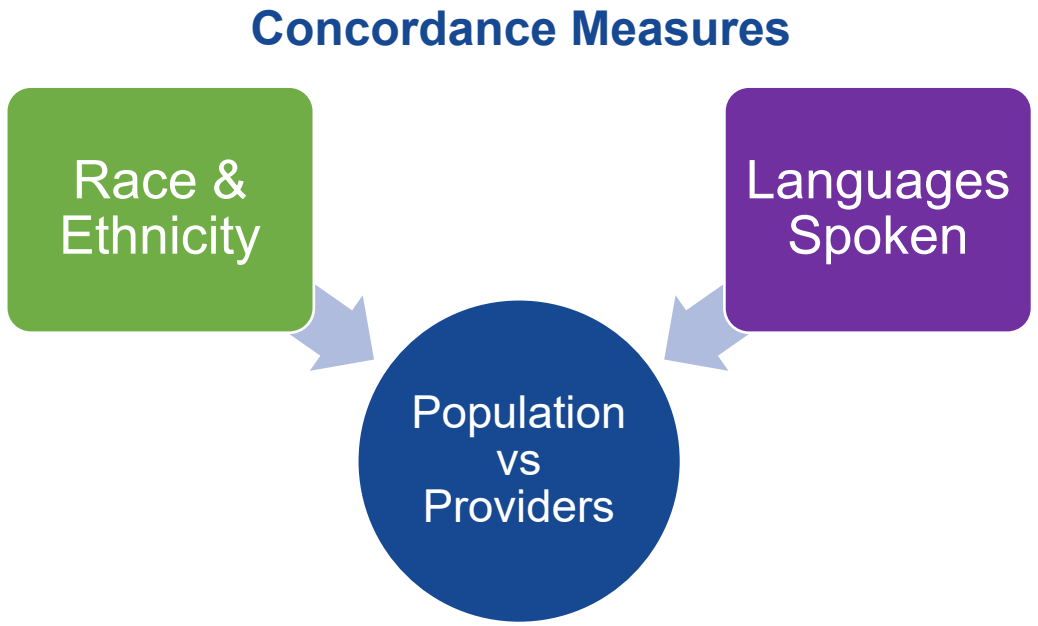
+ scenario modeling and race/ethnicity, language concordance

Model Outputs – Concordance Measures
(Illustrative)



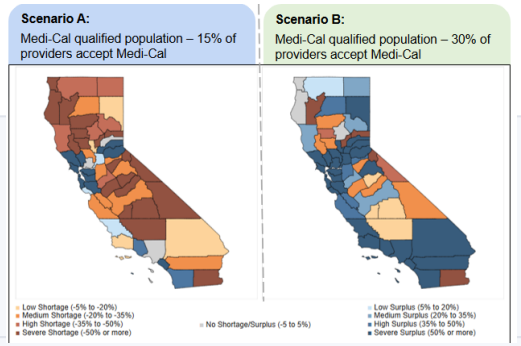
Higher concordance (≥1.0) indicates a **stronger alignment between the providers in a region and the population** based on a specific measure.

- For roles with enough data, we measure concordance between patients and providers



Modeling Scenarios (Illustrative)

Exploring key factors that shape maternal health workforce supply and access:



Medi-Cal acceptance rates

Effect of varying Medi-Cal acceptance rates (e.g., 15% of providers accept Medi-Cal vs. 30% of providers accept Medi-Cal)

New training programs

How do new training programs impact supply of maternal health providers?



Training program closures

How do training program closures impact future supply of maternal health providers?



Workforce mix / midwife-attended births

What workforce mix (e.g., X% midwife-attended births) would optimize outcomes?



Project Timeline

Pre-Work Phase (July-September 2026)

Research synthesis, data mapping, and SME assumptions gathering

Core Build (October 2026)

Technical model build begins with technical teams (HCAI and Mathematica)

Validation (November 2026)

Iterative vetting sessions and SME reviews

Council Updates (November 2026)

Provide updates at the November Council meeting

We are here

Quality Assurance (December 2026)

Testing, validation, and confirming accuracy and readiness before launch

Outputs to Inform RHT Programs (Q1 2027)

Use model outputs to inform Rural Health Transformation (RHT) programs launch

Public Release (Q1 / Q2 2027)

Public dashboard, methodology, and data publicly released



Questions?

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