

Can a Medical Society Really Address Workforce Economics? Opportunities, Limitations, and Risks

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November 10, 2022

CMSS | Council of Medical
Specialty Societies

CMSS Annual Meeting 2022
Specialty Societies: Stronger Together



American Society of
Anesthesiologists™

I have no disclosure\$.

Topics To Be Covered

- ❖ Workforce Economics
- ❖ Data Sources
- ❖ Research Questions
- ❖ Prospecting Perspectives

Can a medical specialty society really address workforce economics?

**IT
DEPENDS**

Declare the past, diagnose the present, foretell the future.

— Hippocrates

Workforce Economics – It’s Not Rocket Science...

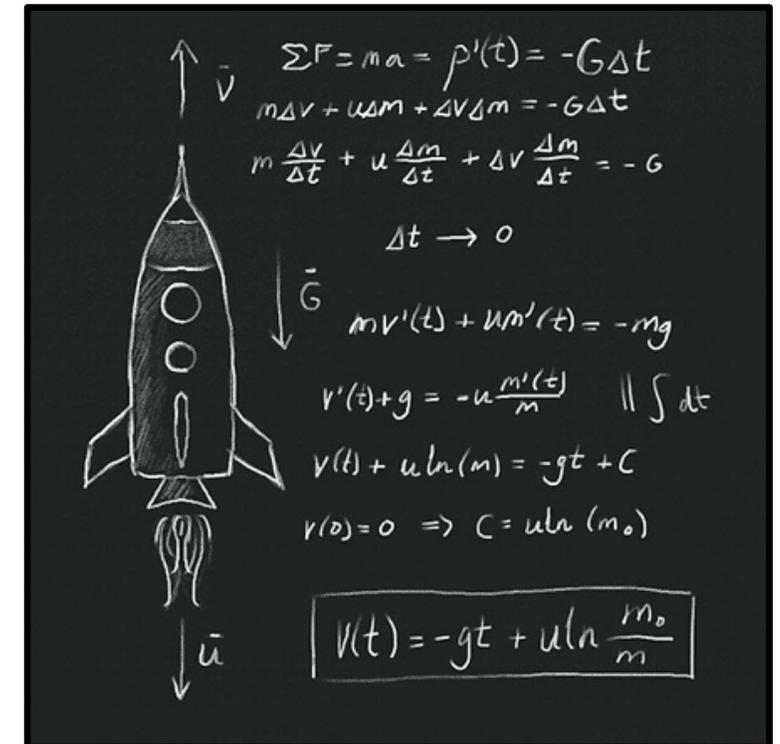
It’s Much More Challenging!

Supply

- Medical school graduates and incoming residents
- Changing work-life integration preferences and/or productivity
- Retirement preferences and other attrition
- Regulatory (broad)
- “Price” (compensation)

Demand

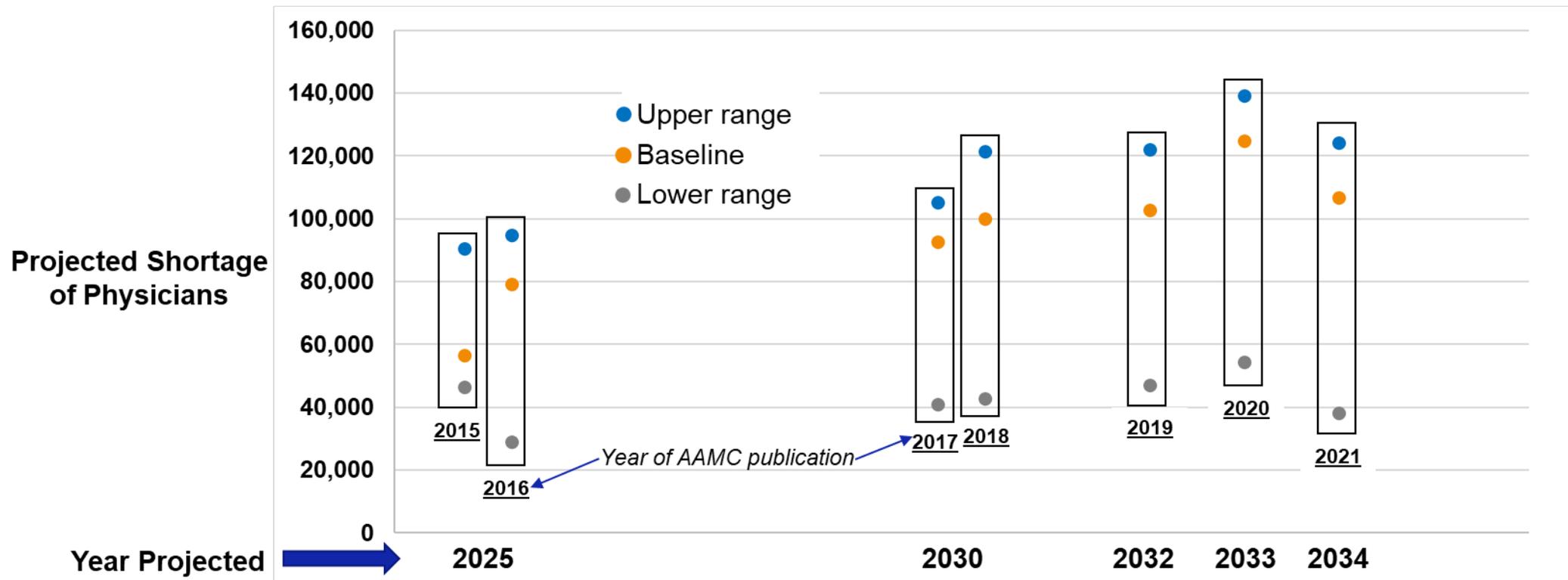
- Population demographics and health status
- Technology (equipment, Rx, IT)
- Substitutes (& their price)
- “Price” (payment for services by consumers and other payers)



The Oft-Quoted AAMC Projections of Physician Workforce Shortages

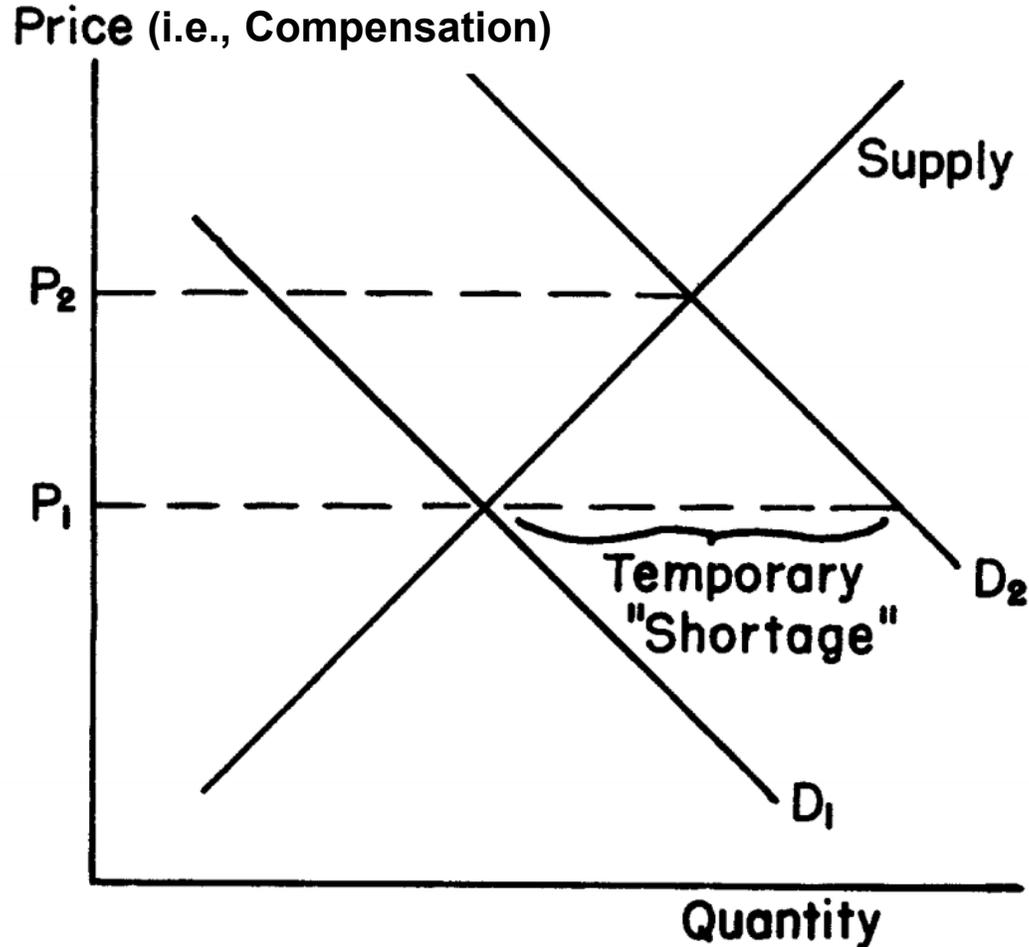
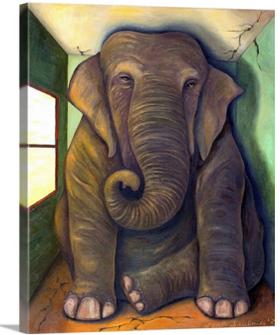
Waiting for the 2022 publication

In each of its publications on physician workforce projections, the Association of American Medical Colleges (AAMC) **assumes that physician supply and demand are in equilibrium at the beginning of the projection period**, except for primary care and mental health designated health professionals' shortage areas. Shortages (or surpluses) only occur “in the future.”



Source: AAMC. *The Complexities of Physician Supply and Demand: Projections from 20XX to 20XX.*

The Missing Elephant



“A shortage exists when the number of workers available (the supply) increases less rapidly than the number demanded **at the salaries in the recent past**. Then salaries will rise, and activities which were once performed by (say) engineers must now be performed by a class of workers less well trained and less expensive.”¹

¹Blank DM, Stigler GJ. *The Demand and Supply of Scientific Personnel*; Chap. II, p. 2. (New York: National Bureau of Economic Research, 1957)

Source of figure on left: Arrow KJ, Capron WM. Dynamic shortages and price rises: the engineer-scientist case. *Quarterly Journal of Economics*. 1959. 292-308.

Endogeneity and Simultaneity

Testing for endogeneity

$$\Rightarrow y = \alpha + \beta_1 X + \beta_2 Z_1 + \epsilon$$

1st: $X = \delta_0 + \delta_1 z_1 + \delta_2 z_2 + \delta_3 z_3 + \gamma$

$\Rightarrow \text{endo}$

$\Rightarrow \text{endogenous}$

$$y = \alpha + \beta_1 X + \beta_2 Z_1 + \gamma_0 \gamma + u$$

$\gamma_0 > 0$ $H_0: \gamma_0 = 0$

- Despite the challenges, the development of a model requires an explicit articulation of assumptions about future supply and demand forces – an excellent exercise for any medical society or group interested in understanding health care workforce dynamics.

“The gist is that each of the variables in a forecasting equation for physician manpower ... is a function of numerous other variables. In a full-fledged health manpower model, an attempt is made to estimate empirical approximations to these functions. Next, one attempts to obtain projected values for all the variables in these functions. Upon insertion of these values into the estimated functions, one can then obtain predicted values of the variables.

It turns out that refinement of this procedure beyond the rudimentary level soon leads one into complex simultaneous equations models. I am not aware that a satisfactory model of this sort has yet been estimated.”

Source: Reinhardt UE. The GMENAC forecast: an alternative view. *AJPH*. 1981;71:1149-1157. Minor edits by the Center for Anesthesia Workforce Studies (CAWS) for brevity and clarity.

Common Workforce Supply Data Sources

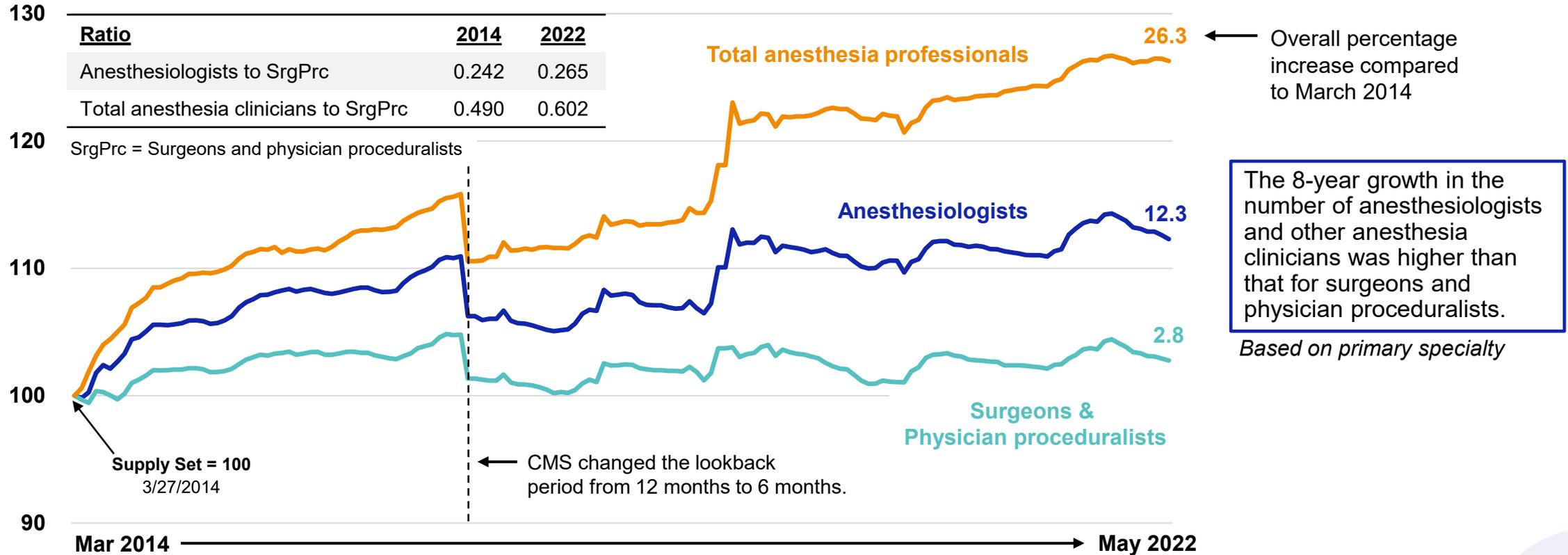
1. Centers for Medicare & Medicaid Services (CMS)
 - a. Doctors and Clinicians National Downloadable File (NDF)
 - b. National Plan & Provider Enumeration System (NPPES)
2. American Medical Association (AMA)
 - a. Physicians List as provided by Medical Marketing Service (MMS)
3. American Board of Medical Specialties (ABMS)
4. Federation of State Medical Boards (FSMB)
 - a. Physician Data Center
5. NRMP Matching Program[®], or *The Match[®]*
6. *YOUR* Membership Database

Selected Questions CAWS* Has Addressed

- What are the supply trends in the number of anesthesia professionals and what is ASA’s “market share” of anesthesiologists? By age, gender, state, group practice type/size, and subspecialty?
- Where do the clinicians new to the workforce practice? By state, rurality, type of hospital, type of group practice?
- What are the trends in the number of clinicians that leave the workforce?
- What are the trends in group practice consolidation?
- What are the trends in group practice affiliation with hospitals and health systems?
- What are the trends in *traveling/part-time/1099* clinicians?

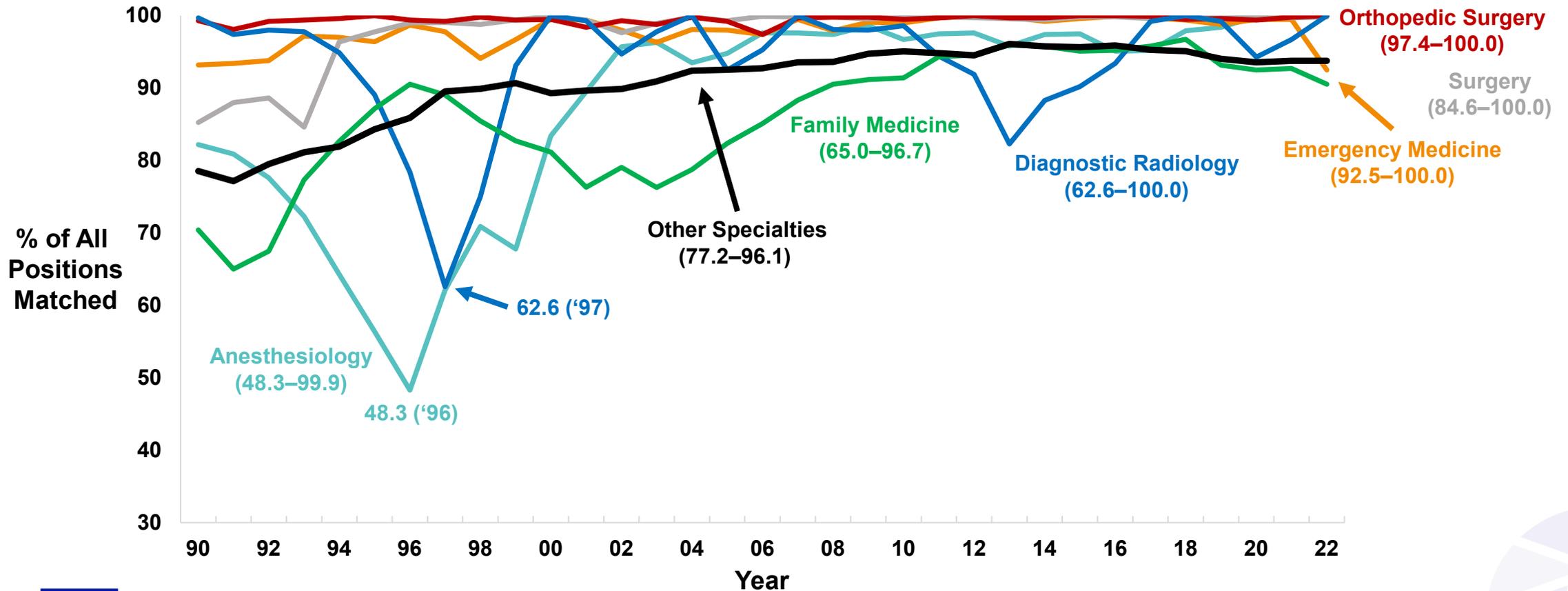
*Center for Anesthesia Workforce Studies

Specialist Supply Trends (based on Medicare participation)

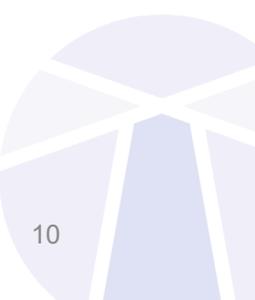


Source: Calculations by CAWS based on NDF

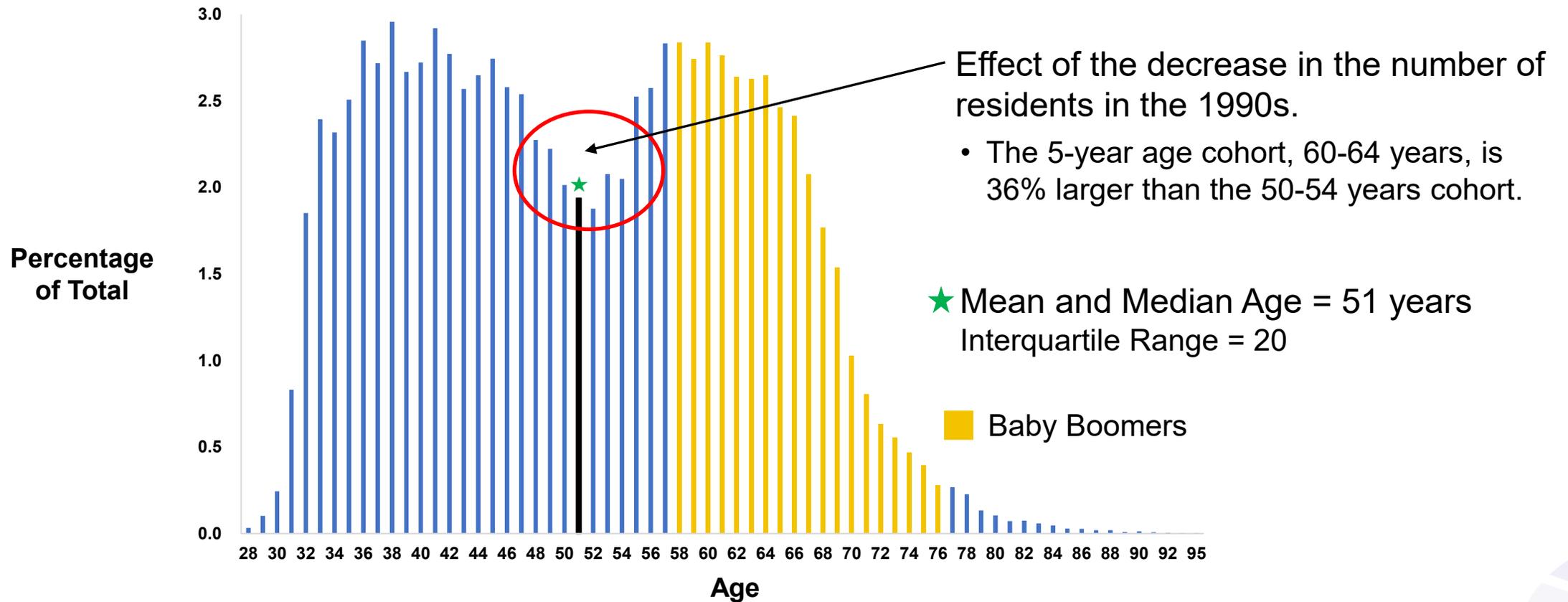
Percentage of PGY-1 Residency Positions Filled in Selected Specialties, 1990–2022



Source: CAWS analysis of NRMP



Age Distribution of Anesthesiologists, 2022



Source: Developed by CAWS based on AMA data as of 12/31/2021

Impact of New Anesthesiology Residency Programs

- The table shows the incremental number of anesthesiologists that would be added to the supply based on an average program size of 12 residents, for varying number of programs and years the programs remain operational.
 - This analysis assumes no attrition from the programs.

# of New Programs	Number of Years New Programs Remain Open									
	4	6	8	10	12	14	16	18	20	
4	192	288	384	480	576	672	768	864	960	
5	240	360	480	600	720	840	960	1,080	1,200	
6	288	432	576	720	864	1,008	1,152	1,296	1,440	
7	336	504	672	840	1,008	1,176	1,344	1,512	1,680	
8	384	576	768	960	1,152	1,344	1,536	1,728	1,920	
9	432	648	864	1,080	1,296	1,512	1,728	1,944	2,160	
10	480	720	960	1,200	1,440	1,680	1,920	2,160	2,400	

Source: Analysis by CAWS

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You/We Are Not Alone

Healthcare workforce lost 333,942 providers in 2021

- Moly Gamble (Twitter) October 24, 2022

Based on an analysis of medical claims, Definitive Healthcare found that the physician specialties hit hardest by workforce exits are:

- internal medicine (-15,000 providers)
- family practice (-13,015)
- clinical psychology (-10,874)
- chiropractic (-10,662)
- psychiatry (-8,629)
- optometry (-8,292)
- **anesthesiology (-7,459)**
- pediatric medicine (-7,330)
- emergency medicine (-5,530)

Sources: <https://www.beckershospitalreview.com/workforce/healthcare-workforce-lost-333-942-providers-in-2021>
<https://www.uschamber.com/workforce/understanding-americas-labor-shortage>



Top 10 Specialties Who Dropped from Medicare

Specialties	Average (2017-2019)		2020			2021		
	Number of Drops	Percentage of Specialty	Number of Drops	Percentage of Specialty	Percentage Increase in Drops from Avg. 2017-19	Number of Drops	Percentage of Specialty	Percentage Increase in Drops from Avg. 2017-19
<i>Physician Specialties:</i>								
Anesthesiology	1,232.3	3.4	1,779	4.8	44.4	1,845	5.0	49.7
Family Medicine	3,296.7	4.1	4,130	5.0	25.3	4,579	5.6	38.9
Internal Medicine	2,903.0	3.7	3,770	4.7	29.9	3,894	4.8	34.1
Psychiatry	1,637.0	7.3	2,195	9.5	34.1	2,352	10.5	43.7
Obstetrics/Gynecology	1,375.7	4.5	1,753	5.8	27.4	2,142	7.1	55.7
<i>Non-Physician Specialties:</i>								
NAs and CAAs	1,114.3	2.7	1,813	3.9	62.7	1,909	4.0	71.3
Nurse Practitioner	3,522.7	3.3	5,555	3.9	57.7	6,614	4.3	87.8
Physician Assistant	2,466.0	3.7	3,266	4.3	32.4	3,950	4.9	60.2
Physical Therapy	2,747.0	5.2	4,060	6.8	47.8	3,834	6.9	39.6
Chiropractic	1,838.0	4.6	1,916	4.9	4.2	1,992	5.2	8.4

Source: Based on the data sources and methods described in this article. CAA=certified anesthesiologist assistant; NA=nurse anesthetist

*Excludes two physician specialties with more than 2000 drops in 2021: (1) Pediatric Medicine because of variability in these physicians billing Medicare and (2) Emergency Medicine because of reporting inconsistencies in the NDFs.

Source: Miller T. Responses to 2 Workforce Questions from Curious Readers. *ASA Monitor*. 2022;86(11):1,7-8

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Number of Anesthesia Professionals Who Dropped from Medicare, 2017-2021

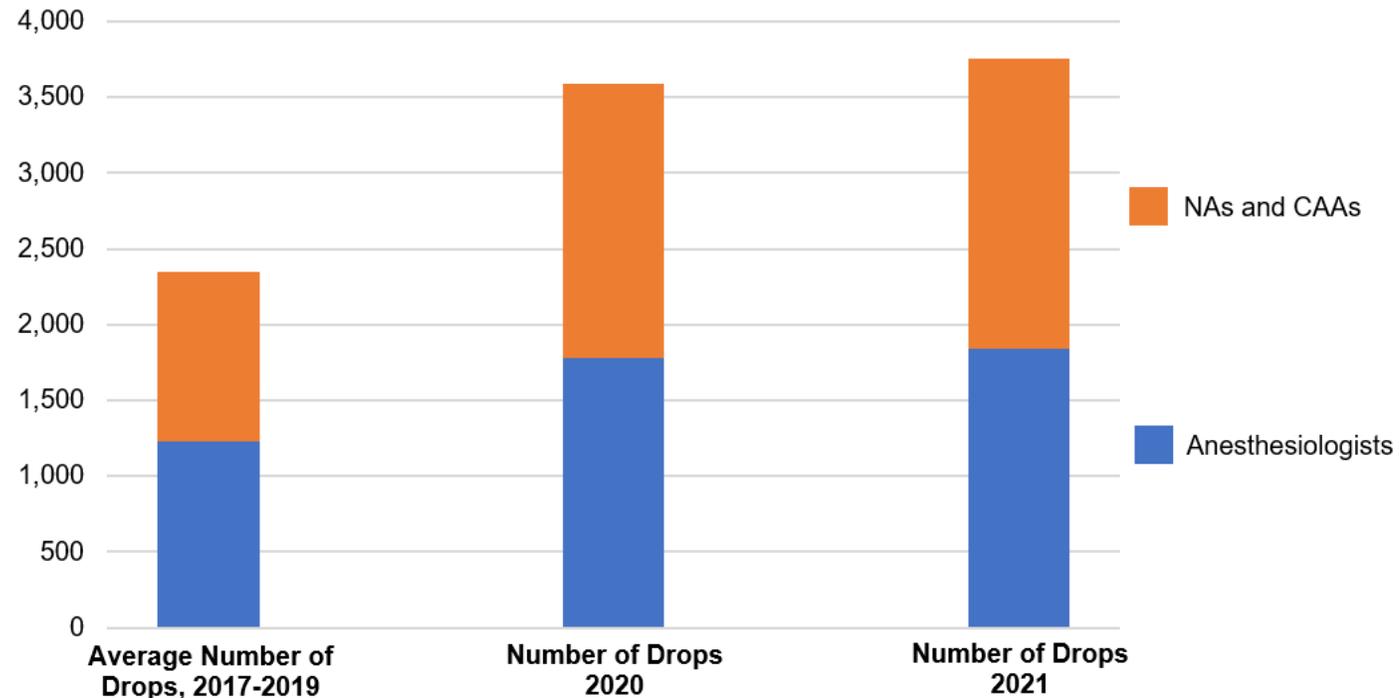


Figure 1. Number of Anesthesia Professionals Who Dropped from Medicare Billing.
Based on the data sources and methods described in this article.
CAA=certified anesthesiologist assistant; NA=nurse anesthetist

Source: Calculations by CAWS based on NDF

Defining Demand

- How does one define or determine the current demand for services and related physicians and non-physician clinicians providing services within a given specialty and within/for a given geography/population?
- ***Demand versus growth***: What if a hospital, health system, group practice, or physician practice company (e.g., private equity) wants additional physicians to achieve revenue or growth targets (e.g., by increasing its market share within a geography)?
- For some specialties, the demand is influenced by other physicians; e.g., the changes in demand for anesthesia services from procedural physicians.

Common Workforce Demand *Data* Sources

- Population forecasting
 - The World Bank – DataBank
 - Institute for Health Metrics and Evaluation (IHME)
 - US Census International Database
 - Demographic Analysis & Population Projection System (DAPPS) Software
- Job postings
- Medical claims and other health services utilization databases

Common Workforce Demand *Data Sources* – *continued*

Medical claims data to examine “*What was used/provided at historical prices.*”

– Medicare 

– Medicaid 



– Commercial

• FAIR Health – rarely for dissemination / publication



• Health Care Cost Institute (HCCI) – for research and publication



HEALTH CARE
COST INSTITUTE

• Merative™ MarketScan® Research Databases



– AHRQ’s Healthcare Cost & Utilization Project

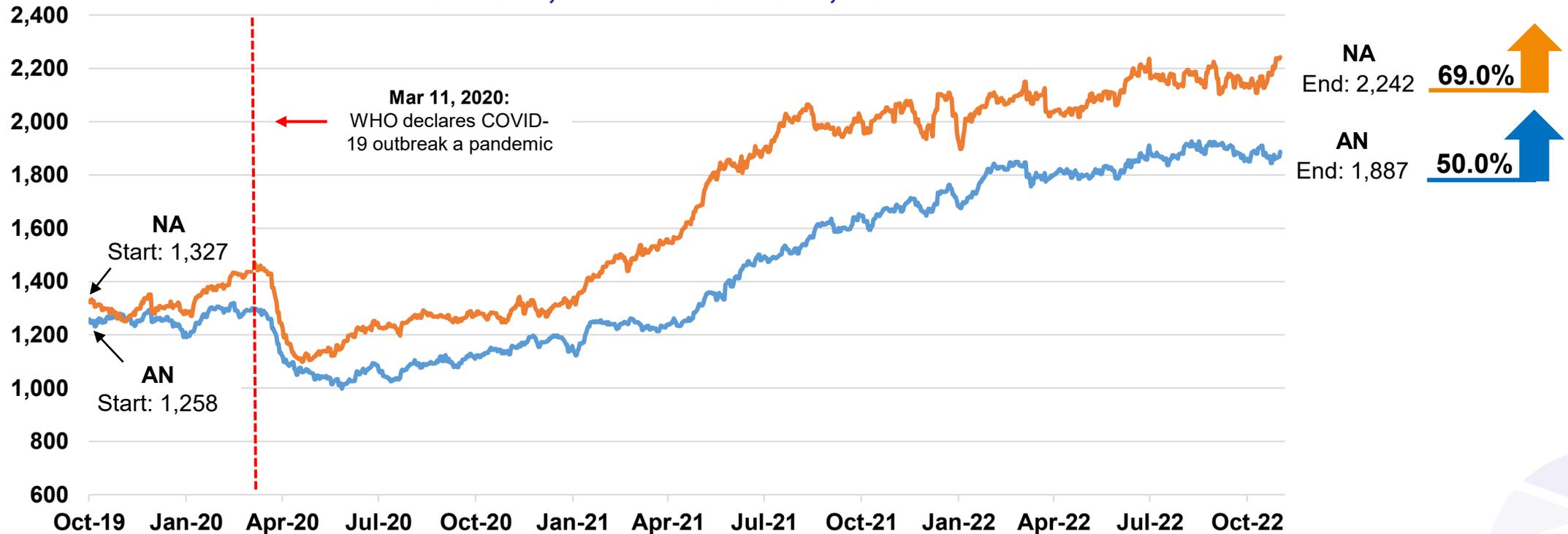


Selected Workforce Demand Related Questions

- What is the level of recruitment interest?
 - What have been the trends in inpatient and outpatient use rates for the specialty's services?
 - What have been the trends in physician to population ratios?
 - What have been the trends in physician-to-physician and physician-to-non-physician ('substitutes) ratios?
 - **What have we heard from our specialty society's membership?**
- Quantitative Analyses
- 

GasWork Job Postings for Anesthesia Professionals: Non-Recruiting Agencies, Oct 2019–Nov 2022

Non-Recruiting Agency Job Posting Trends for
Anesthesiologists (AN) and Nurse Anesthetists (NA)
October 1, 2019–November 1, 2022



Source: www.GasWork.com, an anesthesia employment resource, October 1, 2019–November 1, 2022.

Anesthesia and Procedural Clinicians

Primary Specialty	Estimated Number Mar 2022	Percentage Change Feb 2018–Mar 2022
Anesthesiologist	39,390	6.2
Nurse Anesthetist	47,329	20.9
Anesthesiologist Assistant	<u>2,492</u>	40.1
Total Anesthesia Clinicians	89,211	14.4
Interventional Cardiology, Interventional Radiology, and Cardiac Electrophysiology	8,508	26.2
Surgical Oncology	1,101	14.6
5 Specialties with Growth > Anesthesiology but < Overall Anesthesia	14,406	8.7
12 Specialties with Growth < Anesthesiology	133,562	2.6

The ratio of anesthesiologists to surgical and procedural specialists increased between October 2015 and February 2018, and between February 2018 and March 2022.

- The ratio of total anesthesia professionals to surgical and procedural specialists also increased.

These data are based on primary specialty only; each clinician may have up to four secondary specialties.

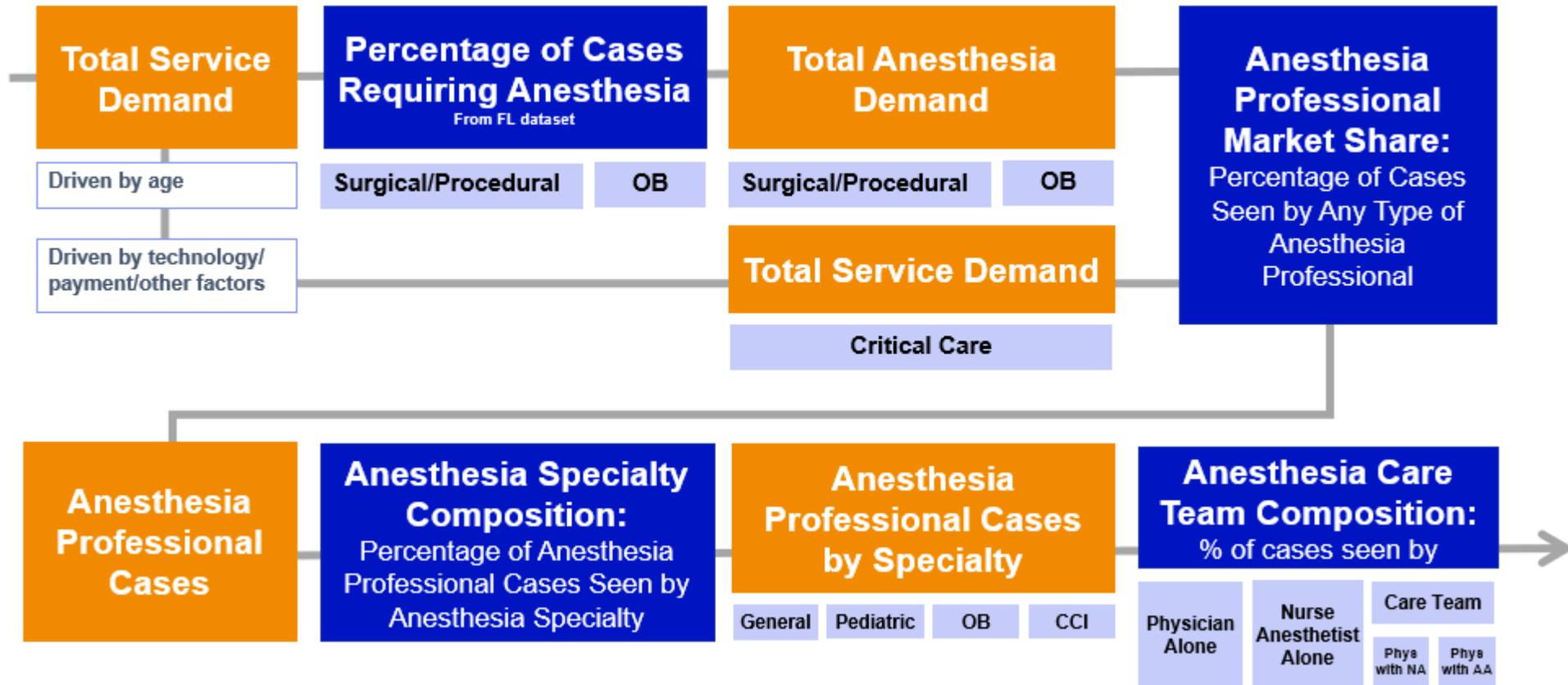
Source: Developed by CAWS based on NDF

A “Simplified” Anesthesia Demand Model

Years: Current Year, 5-Year Forecast, 10-Year Forecast

All elements below include service category/case type, age, and site of care

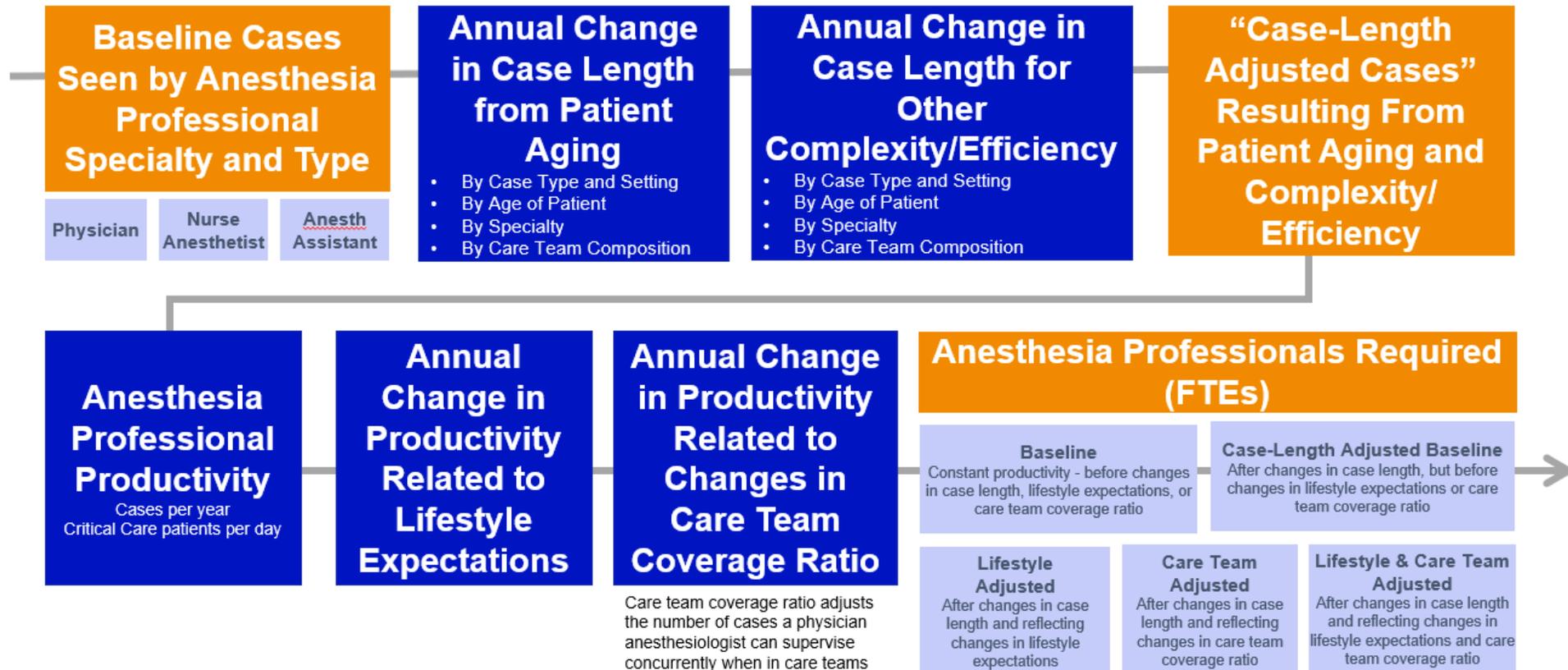
Input Output



A “Simplified” Anesthesia Demand Model – *continued*

Years: Current Year, 5-Year Forecast, 10-Year Forecast
 All elements below include service category/case type and site of care

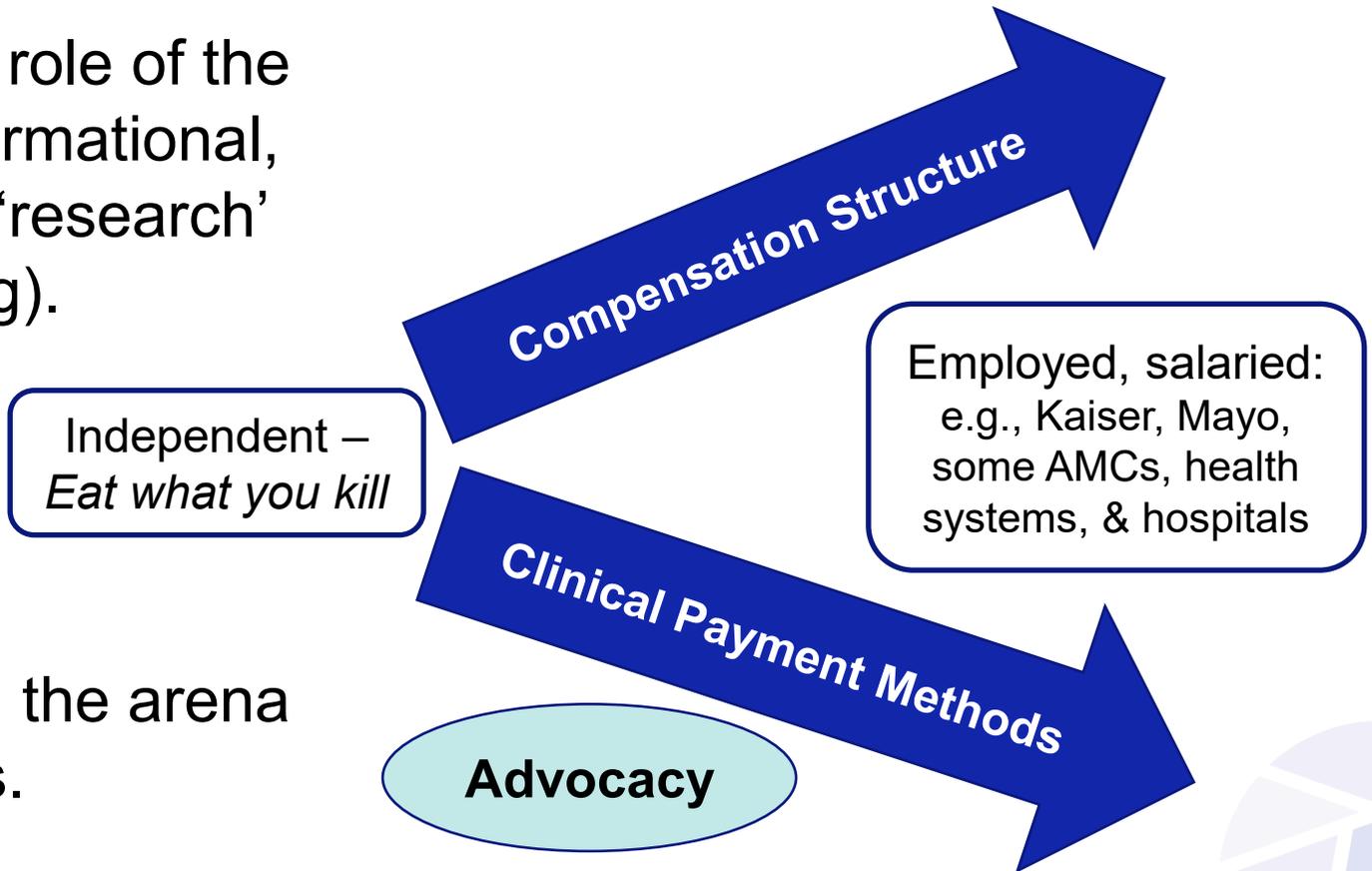
Input Output



Compensation of Professionals versus Payment for Clinical Services

Regarding **compensation**, the role of the medical society is primarily informational, and educational, with selected 'research' (e.g., modeling & benchmarking).

Advocacy takes center stage in the arena of **payment** for clinical services.



Compensation – Abundance of Poor Data?

Caveat Emptor

- The quality of published clinician compensation data varies, and the usability of the data for comparison with specific practice characteristics is limited.
- The definitions of ‘compensation’ vary.
- Different sources vary in their adjusting for potential confounding factors.

KEY:

- Report is publicly available
- ⊗ Not publicly available

- **Doximity** ○
 - Historical trends; comparisons by region and gender. Evaluates pay gaps.
 - Sample size: >40,000 physicians (2021)
 - Methodology: Self-reported. Based on physicians practicing ≥40 hours/week from various specialties.
- **Medical Group Management Association (MGMA)** ⊗
 - Compensation includes total pay, bonus/incentives, retirement
 - Productivity (work RVUs, total RVUs, professional collections and charges)
 - Benefit metrics (hours worked per week/year and weeks of vacation)
 - Sample size: 185,816 physicians (Jan-Feb 2021)
 - Methodology: Online survey

– continued...

Compensation – *continued*

– Medscape ○

- Comparable to Doximity
- Physician work quality; job satisfaction
- Sample size: 13,064 (Oct 2021-Jan 2022).
- Methodology: Survey limited to Medscape and MDedge member physicians.

– Merritt Hawkins ○

- Detailed and comprehensive; broad regional trends (includes signing bonuses); employment setting trends
- Strong source for residents/fellows
- Sample size: 2,458 (Apr 2020-Mar 2021)
- Methodology: Surveys conducted by Merritt Hawkins/AMN Healthcare's physician staffing companies

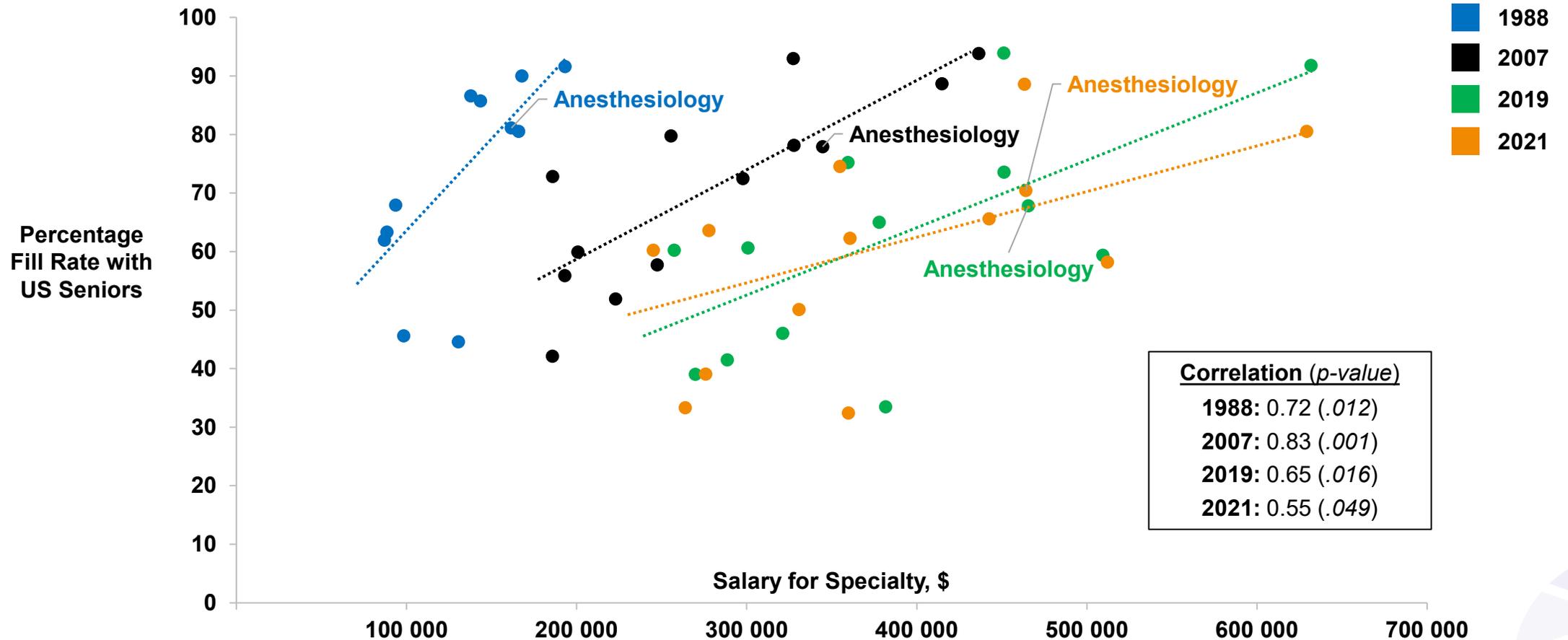
– Salary.com / ZipRecruiter.com ○

- General profile of specialties; regional and national data
- No historical trends; no context on reported compensation
- Sample size: Not disclosed
- Methodology: User reported data

– Modern Healthcare ⊗

- Annual release of average/median compensation for selected specialties, reported by almost two dozen consulting firms and associations. Numbers in parenthesis are surveyed physicians and active survey dates.
 - AMGA (189,503 – Jan-Apr 2020)
 - ECG Management Consultants (75,000 – Jan-Dec 2020)
 - Gallagher (75,414 – Jan-May 2021)
 - Jackson Physician Search (389 – Jan-Dec 2020)
 - The Medicus Firm (2,464 – Jun-Jul 2020)
 - Merritt Hawkins (see summary)
 - MGMA (see summary)
 - Pacific Companies (5,578 – Dec 2020-Apr 2021)
 - Pinnacle Health Group (55 – May-Jun 2020)
 - Sullivan Cotter (Jan-Apr 2021)
 - Broad survey (159,405 providers)
 - Medical groups (256,424)

Percentage of Positions Filled with US Seniors vs Salary by Specialty, 1988, 2007, 2019, and 2021



Source: Analysis by CAWS based on: Ebell MH. Future salary and US residency fill rate revisited. *JAMA*. 2008;30(10):1131-1132.

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Specialty-specific Workforce Studies

All concluded shortages.

Specialty	Strategy/Conclusion
Cardiovascular Narang 2016. <i>JACC</i> ; 68:1680-9	<ul style="list-style-type: none">• Focus on disease prevention• Effectively use care team• Alter training pathway
Endocrinology Vigersky 2014. <i>JCEM</i> ; 99:3112-21	<ul style="list-style-type: none">• Expand fellowship positions• Provide more E&M codes• Obtain payment for telehealth, etc.• Truncate training duration• Disseminate best practices
Neurology Dall 2013. <i>Neurology</i> ; 81:470-8	<ul style="list-style-type: none">• Increase supply of neurologists• Increase supply of NPs and other extenders• Develop innovative ways to deliver care and improve productivity
Oncology Erikson 2007. <i>JOPASCO</i> ; 3:79-86	<ul style="list-style-type: none">• Expand fellowship positions• Increase use of nonphysician clinicians• Increase role of primary care physicians• Redesign service delivery

Specialty-specific Workforce Studies – *continued*

Specialty	Strategy/Conclusion
Pathology Robboy 2013. <i>Arch Pathol Lab Med</i> ;137:1723-32	<ul style="list-style-type: none">• Substantially increase the number of residency positions, otherwise pathologist numbers will decline steadily beginning in 2015• Developed an interactive modeling tool to analyze scenario-based physician workforce supply and demand (Gupta 2015. <i>Academic Pathology</i>)
Physical Medicine & Rehabilitation Hogan 1996. <i>Arch Phys Med Rehabil</i> ;77:95-9	<ul style="list-style-type: none">• Some pockets of surplus in selected geographic areas• Increase communication to inform the market of the role and advantages of physiatry
Rheumatology Battafarano 2018. <i>ACR</i> ;70:617-26	<ul style="list-style-type: none">• Develop and implement national and regional strategies, including a dynamic patient and provider web site, rheumatology-specific EMR tools, multidisciplinary disease management approaches, integrating rheumatology curricula into primary care residencies.• Decreasing insurance barriers and health care regulations may facilitate solutions to offset the shortage and maldistribution

All concluded shortages.

Incorporating Compensation Proxies



$$\Pr(Q = q, A = a) = \left[\frac{1}{\sigma_{CS}} \phi \left(\frac{q - X^S \beta^S - \mu_{CS}}{\sigma_{CS}} \right) \left(1 - \Phi \left(\frac{q - X^D \beta^D - \mu_{CD}}{\sigma_{CD}} \right) \right) + \frac{1}{\sigma_{CD}} \phi \left(\frac{q - X^D \beta^D - \mu_{CD}}{\sigma_{CD}} \right) \left(1 - \Phi \left(\frac{q - X^S \beta^S - \mu_{CS}}{\sigma_{CS}} \right) \right) \right] \times \phi \left(\frac{a - E[A|X^D, X^S, p]}{\sigma_A} \right) / \sigma_A$$

Where for $j = \{S, D\}$

$$\mu_{Cj} = \frac{\sigma_{QjA}}{\sigma_A^2} (a - E[A|X^D, X^S, p])$$

$$\sigma_{Cj} = \sigma_{\varepsilon j} \left(1 - \frac{\sigma_{QjA}^2}{\sigma_{\varepsilon j}^2 \sigma_A^2} \right)^{.5}$$

$$\sigma_{QjA} = Cov(\varepsilon^j, h((X^D \beta^D + \varepsilon^D - X^S \beta^S - \varepsilon^S)/p))$$

$$\sigma_A^2 = Var(h((X^D \beta^D - X^S \beta^S)/p)) + \sigma_v^2$$



$$E[Q^D | q, x^D, x^S, A] = E[Q^D | q, x^D, x^S] + \frac{\sigma_{Q^D, A}}{\sigma_A^2} (a - E[A | q, x^D, x^S])$$

$$E[Q^S | q, x^D, x^S, A] = E[Q^S | q, x^D, x^S] - \frac{\sigma_{Q^S, A}}{\sigma_A^2} (a - E[A | q, x^D, x^S])$$

I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

IZA DP No. 12129

Improving Estimation of Labor Market Disequilibrium Using Shortage Indicators, with an Application to the Market for Anesthesiologists

Matthew Baird
Lindsay Daugherty
Krishna Kumar

January 2019

So What?



THERE'S A SHORTAGE!

- Good for thi\$ physician!
- Incentives for efficiency and innovation.
- Substitutes become more attractive.
- Preferred bias?
 - To expand US medical schools and avoid risking harmful effects of a shortage on population health.

THERE'S A SURPLUS!

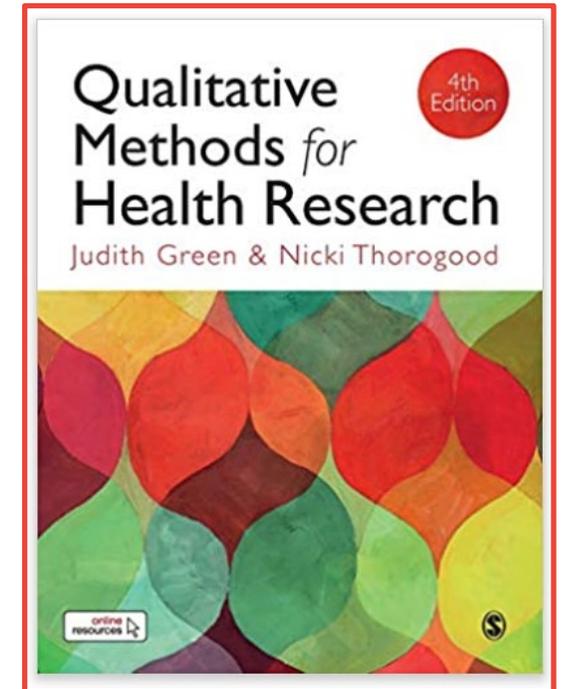
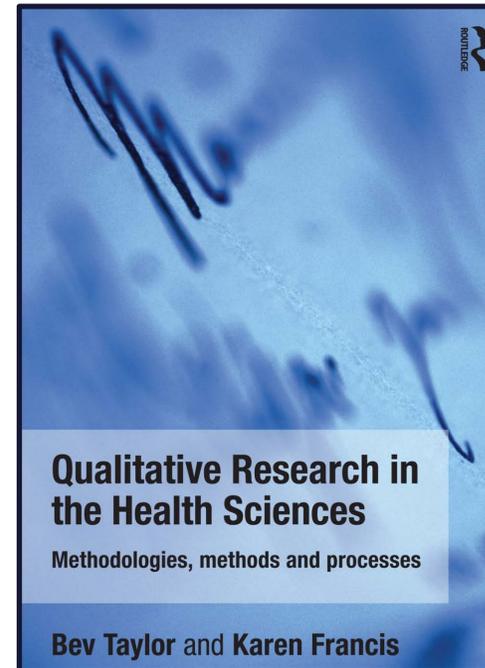
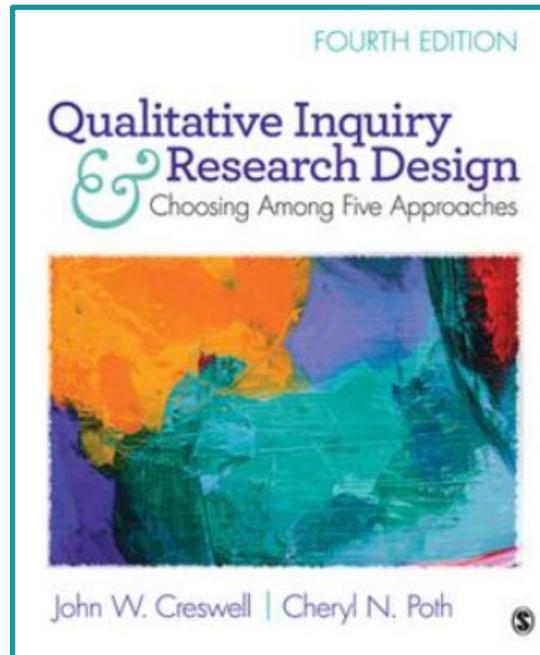
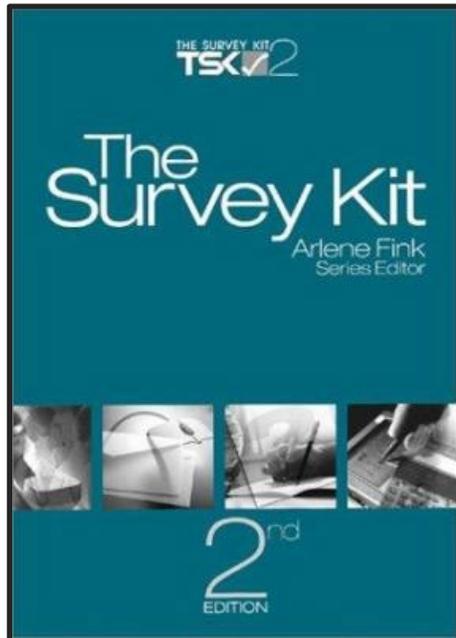
- Downward pressure on compensation.
- Incentives to expand scope and demonstrate value.

“As on so many other areas of the real world, the views of economists on this matter cancel one another out.”

- Uwe Reinhardt

Qualitative Research Resources

Methodological rigor and transparency as critical as in traditional quantitative research.



The ASA Workforce Summit – June 2022

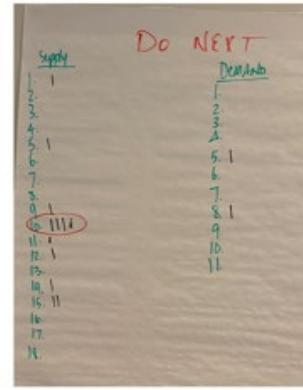
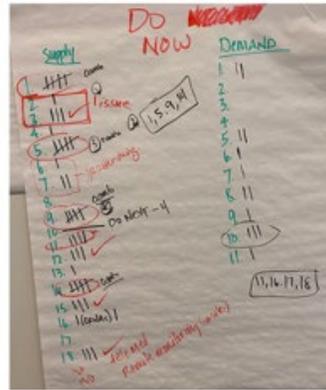
Representatives from a range of practice types and perspective.

- Information Sharing:
 - DATABOOK
 - Summary of interviews of key informants
- Brainstorming and Prioritizing
- Initial Effort-Time-Return Analysis
- Preliminary Action Steps

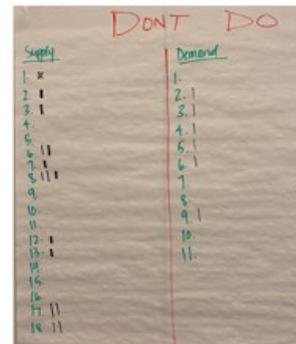
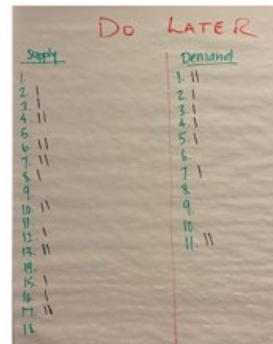


Traditional Group Facilitation Tools

Supply

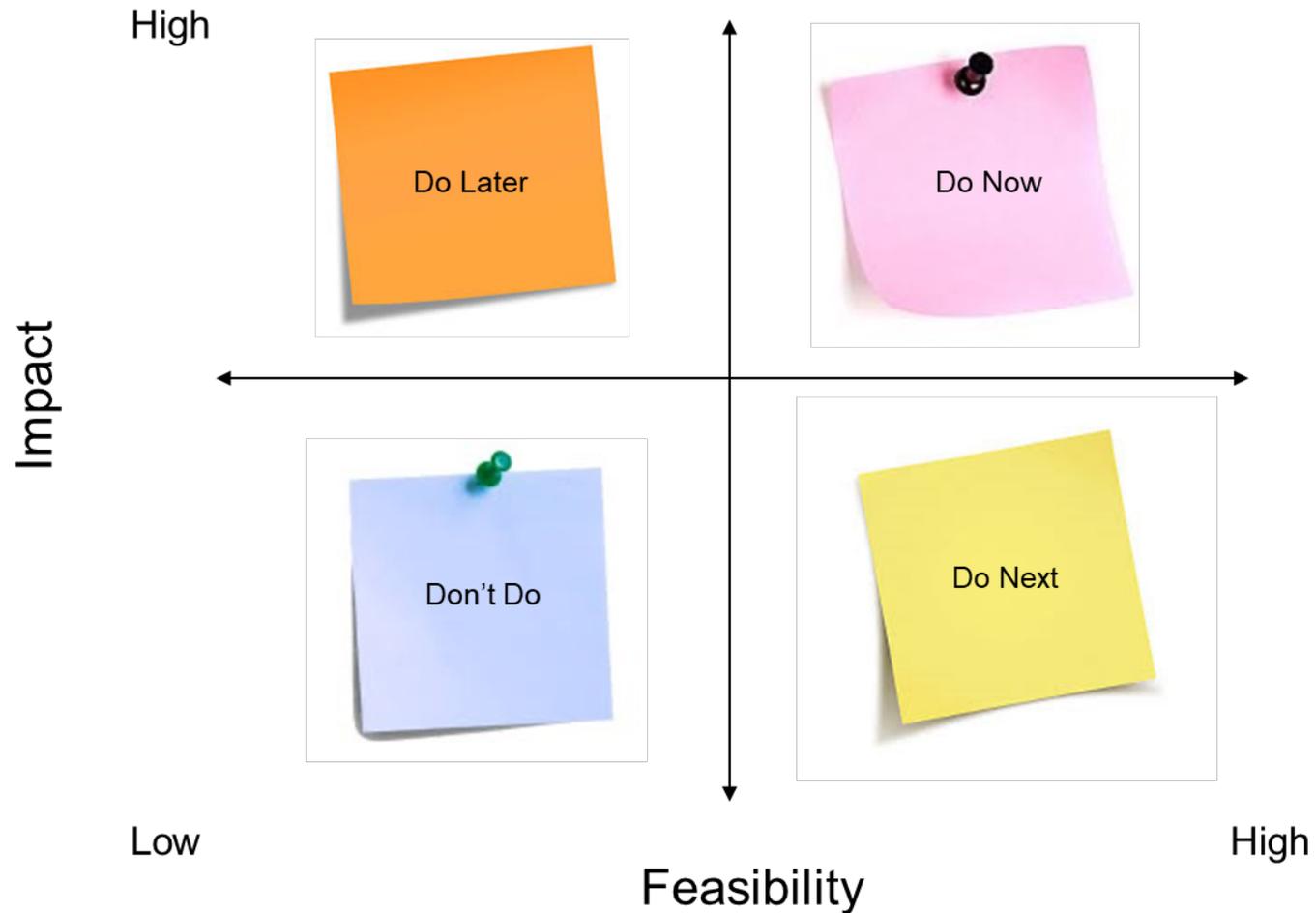


Demand



- ① New training paradigms. (1, 5, 6, 7, 9, 14)
 - ② Non traditional - roles, workforce, culture (2, 3)
 - ③ RATIOS. Licensing, Tech, Telemed. (11, 16, 17, 18)
 - ④ What is mod. sedation, how use other resources. (10)
- WF - culture - lot of toxicity in OR.
in paper - examples.
- ⑤ NORA - D1
 - ⑥ Efficiency in OR →

The Ubiquitous (and Effective) 2 x 2 Matrix

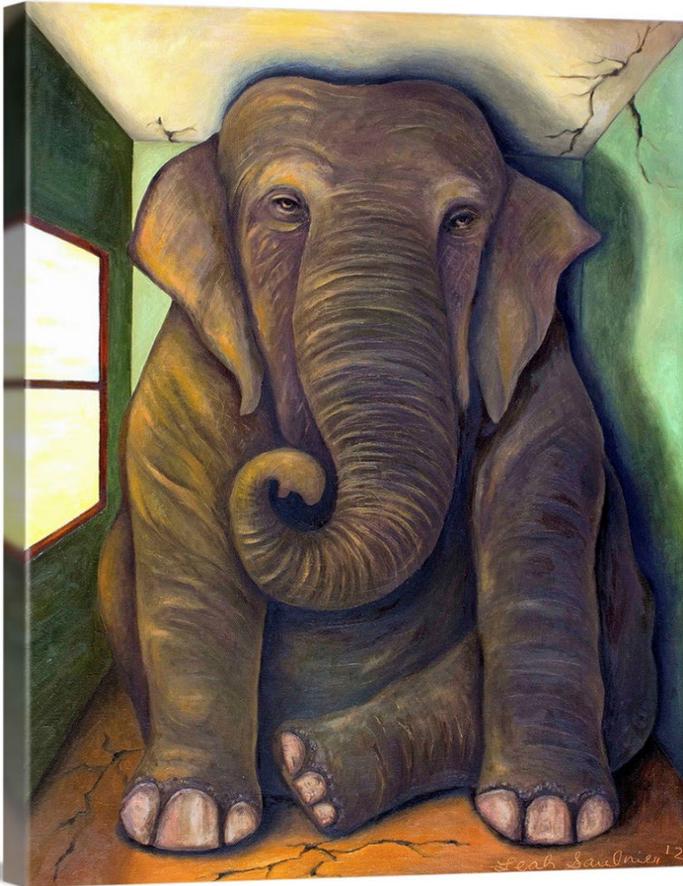


Workforce Supply and Demand Workgroups

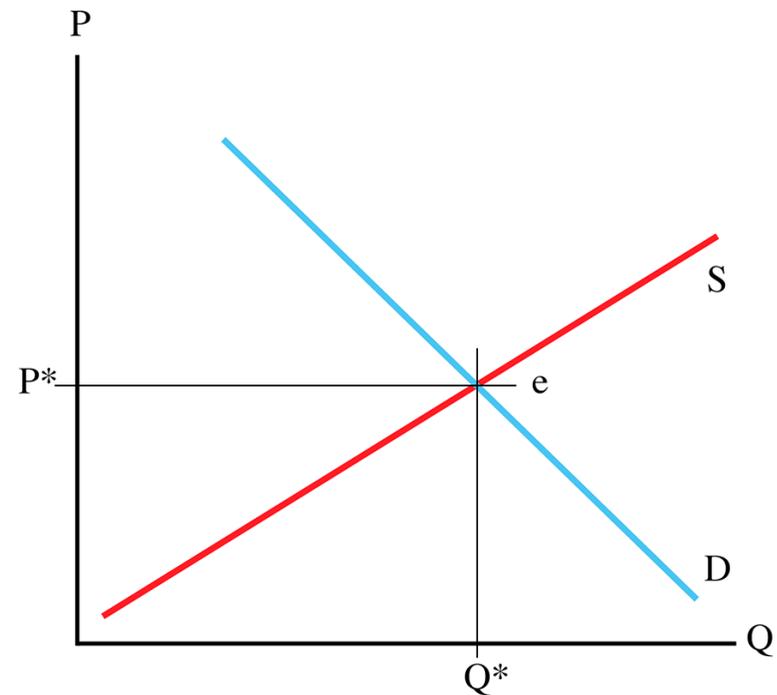
Preliminary

Area To Be Addressed	Example of Potential Initiatives
SUPPLY	
❖ New Training Paradigms	Group practice-community hospital partnerships to establish new residency programs under sound economic model
❖ Harnessing the Workforce Potential	Creativity and flexibility in matching clinician preferred work environment (work-life balance) with practice opportunities
DEMAND	
❖ Staffing & Efficiency in the Operating Room (OR)	Establish set of OR metrics meaningful to anesthesia, surgery, and health system leadership
❖ Use of Anesthesiologists, Non-OR Anesthesia, and Sedation Models	Optimization of resources and buy-in across affected specialties and health system leadership

Still Missing, Appropriately



- Some really big things should be left to the marketplace.



Summary

- ❖ Effective strategies to address workforce economics are difficult to identify and more challenging to implement.
- ❖ Historical supply data seem to be reasonable and informative.
- ❖ Projections of supply and demand (and associated shortages and surpluses) are helpful in identifying and articulating shared assumptions, but their reliability is questionable.
- ❖ Issues related to payment for clinical services may be effectively addressed via advocacy; however, compensation structure initiatives are likely limited to information and benchmarking.
- ❖ Data and research are necessary but not sufficient. The strategy development **process** is as important as the **product** (data and models).

APPENDIX

Selected URLs, References, and Contact Information

References and URLs

- Miller TR. Goldilocks, the Devil, and Physician Supply and Demand. *ASA Monitor*. September 2021; 85(9):14-15. <https://doi.org/10.1097/01.ASM.0000791576.56945.56>
 - Cooper RA, Getzen TE, McKee HJ, Laud P. Economic and demographic trends signal an impending physician shortage. *Health Affairs*. 2002;21:140-154.
 - Cooper RA. Perspectives on the physician workforce to the year 2020. *JAMA*. 1995;274:1534-1543.
 - Reinhardt UE. Health manpower forecasting: the case of physician supply. In *Health Services Research Key to Health Policy*, edited by Eli Ginzberg. 1991; Cambridge, MA: Harvard University Press.
 - Reinhardt UE. The GMENAC forecast: An alternative view. *AJPH*. 1981;71:1149-1157.
 - Rosenblatt RA, Lishner DM. Surplus or shortage? Unraveling the physician supply conundrum. *West J Med*. 1991;154:43-50.
 - Schwartz WB, Mendelson DN. No evidence of an emerging physician surplus. *JAMA*. 1990;266:557-560.
 - Schwartz WB, Sloan FA, Mendelson DN. Why there will be little or no physician surplus between now and the year 2000. *NEJM*. 1988;318:892-897.
 - Tarlov AR. Estimating physician workforce requirements: The Devil is in the assumptions. *JAMA*. 1995;274:1558-1560.
 - US Department of Health and Human Services: Report of the Graduate Medical Education National Advisory Committee to the Secretary, Vol I. September 1980. Hyattsville, MD: DHHS Pub. No. 81-651, 1981.

References and URLs – *continued*

- Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) <https://hcupnet.ahrq.gov/#setup>
- CMS Limited Data Set (LDS) Files <https://www.cms.gov/Research-Statistics-Data-and-Systems/Files-for-Order/LimitedDataSets>
- CMS Medicaid Datasets <https://data.medicaid.gov/datasets>
- FAIR Health <https://www.fairhealth.org/data>
- Health Care Cost Institute (HCCI) <https://healthcostinstitute.org/>
- Merative™ MarketScan® Research Databases <https://www.ibm.com/products/marketscan-research-databases/databases>

There are many more!

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