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INNOVATION LANDSCAPE SERIES

Solving Shortages: How Technology Can Help Meet California's Immediate Health Workforce Needs

The health care safety-net system, a patchwork of programs and providers that serve Californians with low incomes, faces unique challenges in recruiting and maintaining its clinical staff due to workforce shortages and inequitable distribution of health care providers across California. To address these shortages, many health care systems serving patients living on low incomes turn to the temporary workforce to fill their needs. Staffing agencies play an important role in supporting these health care organizations with recruitment, given that many have few resources to maintain a temporary provider pool or a sizeable human resources (HR) department. In recent years, technology-enabled staffing services have emerged and addressed some limitations of traditional staffing agencies, including limited transparency and high cost.

This paper reviews the barriers to hiring providers in this specific sector of the health care system, the role of the temporary workforce, and the emergence of technology-enabled staffing companies as a potential alternative to traditional staffing agencies. This landscape analysis is intended to inform investors and entrepreneurs invested in or working on these issues to help them understand the unmet needs and opportunities ripe for tech-enabled innovation. It is also intended to help provider organizations encountering these challenges to understand the emerging class of technology solutions that may meet their needs.

To understand the recruiting and HR needs of safety-net organizations, the authors conducted a literature review, interviewed five leaders of technology-enabled staffing companies, and talked with HR executives from 13 safety-net organizations. Among the HR executives, seven were hospital leaders (either county hospitals or private nonprofits) and six were executives at multisite clinics. Six of the organizations are located in the Central

Valley, five in Southern California, and two in Northern California. While this sample size is small, the organizations represent a range of size and location (geographic, and rural vs. urban), as well as varying degrees of temporary workforce needs, and thus provide information likely applicable to the workforce recruitment practices and experiences of similar organizations throughout California.

The data for this paper were collected before the COVID-19 pandemic. The impact of the pandemic appears to have increased the need for temporary workers. Although there are limited data, initial reports and interviews conducted for this paper indicate that the use of temporary workers has increased. One recent study of traveling nurses found that at the height of the pandemic, job postings for temporary nurse positions had tripled and increased faster in places facing extreme pandemic conditions.¹ While it is still early to predict lasting changes, the COVID-19 pandemic highlighted the continued importance of the temporary workforce in the delivery of health care.

About the Authors

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Background: Workforce Shortages in the Safety Net

Workforce trends nationwide point to a growing shortage and inequitable distribution of providers. In California, the shortage of primary care providers (physicians, nurse practitioners, and physician assistants) is expected to become worse over time, with some regions expected to face greater shortfalls than others.² While the supply of registered nurses (RNs) is actually projected to be slightly higher than demand through 2035, some RN job categories are projected to experience shortages, especially for experienced nurses who work in clinical specialties such as critical care, emergency, and perioperative nursing.³

These shortages and the inequitable distribution of the clinical workforce are most acute in rural areas and in the safety net. A number of factors make it particularly challenging to recruit providers; these factors fall into four main categories as detailed in Table 1: professional, sociocultural, structural, and workplace.

Over the long run, there are many strategies that government organizations, training institutions, and even safety-net organizations can take to address workforce shortages. (For more information on recommended workforce strategies, see the 2019 California Future Health Workforce Commission report). However, the need to address the challenge is immediate, and utilizing the temporary workforce is a common short-term solution.

Leveraging the Temporary Workforce

Leveraging contract or temporary providers can serve as a stopgap measure that enables health care facilities to maintain consistent levels of staffing when care teams are lean, such as when there are unfilled vacancies, staff absences, turnover, or during high-census periods when patients outnumber staff available to provide services. Doing so can reduce the risk of staff burnout and ensure consistent quality of care.⁴ The temporary workforce also allows health care facilities to maintain their patient volumes, which can reduce revenue losses when faced with a shortage of providers.

There are models for leveraging temporary RNs and temporary physicians and advanced practice providers. The three main models for temporary RNs are (1) an internal per diem pool maintained by the health care organization, consisting of employees who do not work a regular schedule and who are called to work directly by the employer; (2) agency-employed temporary nurses, who are assigned to single shifts or short-term assignments for multiple shifts; and (3) traveling nurses, who are agency-employed and assigned for longer periods of time (typically a minimum of 6 weeks, and often 13 weeks). Physicians, nurse practitioners, and physician assistants in the temporary workforce are usually employed through agencies as “locum tenens:” temporarily for a few shifts or for an extended period.

Table 1. Characteristics of Rural Practices and the Safety Net That Contribute to Provider Shortages

PROFESSIONAL	SOCIOCULTURAL	STRUCTURAL	WORKPLACE
<ul style="list-style-type: none"> ▶ Greater breadth and depth of medical knowledge required due to scarcity of in-house subspecialists ▶ Professional isolation ▶ Lack of role models and mentors ▶ Fewer clinical education and professional development opportunities 	<ul style="list-style-type: none"> ▶ Fewer career opportunities for spouses/partners ▶ Challenges with work-life balance ▶ Community expectations that extend beyond clinical role ▶ Cultural barriers and language differences ▶ Fewer social and cultural opportunities in the community 	<ul style="list-style-type: none"> ▶ Limited financial resources for recruitment due to dependence on patients who are more often uninsured ▶ High demand for care due to demographics of safety-net and rural populations and retirements in the current aging workforce ▶ Transportation and accessibility challenges 	<ul style="list-style-type: none"> ▶ Lack of clinical infrastructure (e.g., lack of administrative and clinical support, resources, and equipment) ▶ Heavier workloads ▶ Greater bureaucratic demand (e.g., higher Medicare and Medicaid populations and associated required paperwork) ▶ Lower pay than urban, private hospitals

Sources: Ines Weinhold and Sebastian Gurtner, “Understanding Shortages of Sufficient Health Care in Rural Areas,” *Health Policy* 118, no. 2 (Nov. 2014): 201-214; and Xiaoming Zhang et al., “Physician Workforce in the United States of America: Forecasting Nationwide Shortages,” *Human Resources for Health* 18, no. 1 (Feb. 6, 2020).

The use of a temporary workforce is increasing overall, and in the health care sector in particular, it is used to meet the needs of people who are underinsured and/or living with low incomes. A complementary publication to this brief (*Solving Shortages: A Snapshot of the Temporary Workforce in California's Safety-Net Hospitals and Clinics* [PDF]) presents statistical information on the use of temporary workers in hospitals and clinics in California. The analysis indicates that safety-net hospitals are more likely to utilize temporary RNs, and of those safety-net hospitals that use temporary RNs, most are in rural areas or are critical access hospitals.⁵ Safety-net clinics are more likely to utilize contract or temporary advanced clinical providers, like physicians, than other types of contract providers, including RNs. Further, the top quartile of safety-net clinics that use contract provider full-time equivalents utilize the vast majority (96.3%). These findings are generally supported by published literature. One study found that on average, one-third of Federally Qualified Health Centers (FQHCs) in the US utilized temporary providers between 2013 and 2017; 59% of these health centers were large FQHCs and 39% were located in rural areas.⁶ It was estimated that 45,155 RNs worked in temporary positions in 2019 and that this number would grow 10% to reach 49,637 by 2025 across the US.⁷ In 2018, 2.7% of RNs living in California reported that they worked with a temporary or traveling agency for their primary job.⁸

The Role of Staffing Agencies in Recruiting Temporary Workers

Data and interviews suggest that many safety-net and rural facilities rely on staffing agencies and recruiters to assist with the hiring of temporary providers due to those facilities' limited scale, resources, and administrative personnel. Staffing agencies are search-and-recruit firms that help to match candidates and open positions. Health care organizations less able to maintain an internal pool of nurses, physicians, and other providers may call on a staffing agency to coordinate the recruitment of temporary providers.

Staffing agencies enable health care employers to access a large network of passive and active candidates. The

health care organization receives a list of prescreened candidates from a professional recruiter responsible for the early stages of the recruiting process, which may include identifying candidates, verifying credentials, conducting initial interviews, and checking references. This enables the health care organization to maintain a leaner and more focused human resources team.

From the employer's perspective, the main disadvantages of staffing agencies are costs, trust in the agency's credentialing process, the challenge of managing multiple staffing agencies to ensure that recruited staff possess the appropriate experience and skills, and the lack of transparency in pricing and candidates referred.⁹

Because agencies are not intimately familiar with a health system's needs, agency nurses can be assigned to units that do not match their experience or skill level — either to units that demand more complex skills than their competence, where nurses may not know how to operate equipment and/or lack the confidence to deliver effective patient care or to less-complex units, where their skills are underutilized.¹⁰ This mismatch can contribute to a negative working environment for both temporary nurses and their permanent counterparts. Moreover, staffing misplacements can negatively impact the quality of patient care and perpetuate workplace inefficiencies.

Additionally, safety-net organizations sometimes find that staffing agencies do not understand their unique challenges and the importance of a cultural fit within the organization. Faced with these challenges, some of these organizations report feeling that staffing agencies do not always provide a strong match. Therefore, even with limited HR staff, they continue to recruit directly.

Emergence and Potential of Technology-Enabled Staffing

Technology platforms for recruiting and placing providers have emerged to address some of the disadvantages of working with a traditional staffing agency. A variety of companies leverage information technology, such as complex relational databases, machine learning algorithms, and automated query systems, to improve the

staffing process. These emerging companies offer a range of services, including these:

- ▶ **Algorithm-based “smart” matching between candidates and clients.** Several companies aim to streamline and improve the match between candidates and health care facilities by using algorithms. Typically, candidates create a profile, input their personal information (experience, education, hard and soft skills, personal and professional interests), and preferences (location, specialty, availability), and the algorithm analyzes their profile to match them with open positions posted by health care facilities. The matching algorithms are improved as users spend more time using the platform by incorporating information about the searches made by candidates and the positions that candidates click on. These platforms have different approaches in how they deliver candidates to employers.
- ▶ **Automated workflow support for clients.** Companies have developed tools to increase the efficiency of recruiting by automating portions of the process. These tools may include license verification, automated interview scheduling, in-app chat functions, and systems that track candidates from the initial screening all the way through to hiring.
- ▶ **Services that attract job seekers and increase the pool of candidates.** Some companies offer candidate services to attract them to their platform. Services can include free continuing education courses, online community groups, newsletters and blogs, and podcasts.
- ▶ **Internet and social network marketing.** Recruitment advertising on internet search platforms such as Google and within social media sites such as Facebook is an essential piece of the search and placement process. Some companies specialize in these marketing techniques while others simply integrate them into their overall platform.

Companies that leverage these technological approaches for recruitment claim to offer health care organizations a number of benefits:

- ▶ **Lower costs.** These technology platforms aim to reduce or eliminate the need to employ recruiters and marketing specialists, which can lower operational

and overhead expenses compared to traditional staffing agencies. Their intent is to drive efficiencies for their customers so that every dollar spent on recruiting can go further and be more effective. Using these platforms may help organizations either reduce costs or hire more providers for the same spend.

- ▶ **Faster placements.** They aim to offer a one-stop model where employers can complete multiple tasks on one platform. Thus, these platforms have the potential to speed up the placement process.
- ▶ **Streamlined verification.** Some companies automatically verify licenses and credentials, which can be an important benefit for employers, allowing them to focus on interviewing candidates. The early verification of licenses may reduce the amount of time between interviewing, hiring, and onboarding.
- ▶ **Increased transparency.** In some systems, employers can see how many and which candidates fulfill the positions’ requirements rather than seeing only the candidates selected by the recruiter.

The authors identified three categories of companies that offer technology-enabled staffing platforms in the provider recruitment space and interviewed five companies to learn more about their offerings. While not intended to be a comprehensive list, these companies represent a range of solutions in the market and the potential value for health care organizations facing challenging recruitment environments and limited internal HR resources. Each company has a unique approach to leveraging technology in the temporary and/or permanent placement process. Some focus on a single professional group and others focus on multiple professions. Some focus on temporary placement and others on permanent staffing. The categories and companies interviewed include:

- ▶ **Managed service providers (MSPs).** In general, a staffing managed service provider (also called a managed services program) is a company that manages specific human resources services such as staffing and recruitment for its customers. MSPs have been established for a long time and typically take responsibility for specific HR functions such as recruitment and hiring, which can benefit organizations by outsourcing this expertise that may be hard to maintain in-house,

or provide more efficiency by taking advantage of economies of scale. MSPs are increasingly evolving to integrate more technology into their product and service offerings. A number of companies specialize in health care facility recruiting, and some are subsidiaries of larger temporary placement agencies. Some MSPs also offer a vendor management system (VMS), which provides web-based software systems to manage staffing and recruitment, including storing and tracking information, and to support the recruitment and matching process. Most MSPs tap into multiple temporary staffing agencies and aggregate candidates into a single platform. MSPs usually operate in one of three ways: (1) some are also staffing agencies and recruit candidates from their own roster before offering candidates from other agencies; (2) some are staffing agencies but are vendor-neutral, meaning they source candidates from any agency, and (3) some are not staffing agencies and work with various agencies to fill positions. Many of these companies also offer workflow tools for their clients in addition to VMS software. There is a growing number of MSPs; prominent companies include [Aya Healthcare](#), [Medefis](#), [Medical Solutions](#), [MedicusOne](#). More than half of travel nurse revenue was billed through a MSP program in 2017.¹¹ The authors interviewed leadership at Medefis, which offers a vendor-neutral MSP and is a subsidiary of [AMN Healthcare](#), one of the nation's largest health care staffing companies.

- ▶ **Placement agencies that leverage internet and social network marketing.** Some traditional staffing agencies have developed sophisticated marketing strategies as a pillar of their approach. The authors interviewed leadership at [Inline Group](#), whose services include the development of dedicated recruiting web pages for each of their clients and advanced internet advertising techniques to identify and target candidates for job openings.
- ▶ **Algorithm-focused staffing agencies.** While the two previous categories of companies grew from traditional organizations, a new category of technology staffing company has been established within the past several years that leverages advanced computing algorithms to streamline temporary and permanent clinical placements in health care organizations. Often

these companies are open marketplaces where candidates can directly engage with job postings. They aim to reduce the need for human recruiters by using better data and matching algorithms. Many of these companies also offer workforce tools, candidate-focused services to draw candidates to their platforms, and internet and social network-focused marketing. The authors interviewed three companies in this category. [Incredible Health](#) focuses on permanent placements, matching nurses to positions for which they are qualified and allowing nurses to decide which jobs they want to interview for. [Nomad Health](#) has developed algorithms for matching nurses with temporary job opportunities, with each algorithm focused on a particular aspect of the matching process. [Trusted Health](#) has its own staffing needs system focused on temporary and traveling nurses, which health care facilities can use independently to recruit providers or can integrate into the human resources system they are already using.

Limitations of Technology-Enabled Staffing

While these emerging companies and technology services are promising, most are new and still encounter challenges to widespread use in this particular health care sector. Interviews conducted for this report surfaced a number of important limitations for the use of technology-enabled staffing for hiring temporary providers by safety-net organizations.

Perhaps the biggest issue is that few providers in this health care sector are aware of these platforms or use them to date, and none of the technology-enabled staffing companies identified for this report are currently focusing on safety-net organizations as a key customer segment. These companies are very early in proving their value to customers in general, and potential users express concerns about timeliness, quality of matches, comprehensiveness of services, and cost. Even as these platforms demonstrate value over time, many employers will continue to work with multiple staffing solutions to fulfill their staffing needs. The market for recruiting services in California is fragmented; even traditional agencies do not hold more than 10% of the market.

HR executives interviewed for this report said that working with a recruiting partner that can establish a relationship to understand the organization's needs is critical to help make the appropriate match. Safety-net organizations serve a diverse population of patients. Therefore, the quality of candidates is paramount, particularly because the patient population served often has complex health and social needs. Safety-net organizations that have used staffing agencies to fill temporary positions expressed the value of an established relationship with their assigned recruiter(s).

Furthermore, while a technology-enabled solution has the potential to cut the cost of recruitment by using more data and automation, these platforms still need to meet a wide variety of recruitment needs among their customers. For example, organizations that have worked with MSPs value the comprehensive list of services they offer. For these organizations, MSPs are essentially an external HR team that can assist with managing most if not all tasks associated with hiring temporary providers. This comprehensive approach usually involves working with one MSP company instead of several staffing agencies and may be particularly valuable to safety-net organizations with small HR teams but sizeable temporary workforce needs.

Last, while these technology-enabled platforms automate some parts of the recruitment process, employers must still conduct their own interviews to assess whether a candidate is truly a good fit for the organization and position. Employers are also still responsible for onboarding temporary staff and need to develop and deploy an orientation process for them.

Looking to the Future

The landscape of technology-based staffing solutions continues to grow and evolve. Companies are constantly working to craft solutions that meet the needs of their potential customers. As new companies enter the marketplace, bringing new approaches and technologies, older companies adjust their services and offerings to address the competition. For example, Nomad Health began by placing both locum tenens physicians and temporary nurses but has since narrowed its focus to registered nurses. Two of the newer entrants (Nomad

Health and Trusted Health) started with a focus on placing temporary providers but may find opportunities for growth in permanent placements while, conversely, Incredible Health, which started with a focus on permanent placements, may find opportunities for growth in the temporary placement market.

Safety-net clinics and hospitals, both urban and rural, struggle with staffing shortages. They may have more opportunities to work with emerging technology partners, given that they may be more susceptible to workforce gaps because of the professional, sociocultural, structural, and workplace factors that influence providers' decisions on where to practice. While some safety-net organizations may utilize a rotation of temporary providers as a part of a long-term staffing strategy, most turn to them to fill gaps when there are unfilled vacancies, staff absences, or significant unanticipated turnover, as well as during high-census periods such as flu season. These organizations currently turn to traditional staffing agencies or MSP companies that provide a full set of services to meet their recruiting needs.

The challenges of recruitment in the health care safety net create a unique opportunity to consider how emerging technology-enabled recruiting solutions can bring more efficiency, transparency, and lower costs to the market. Emerging technology vendors with data-driven approaches have an opportunity to accurately match the unique needs of a safety-net organization with the unique qualifications of a provider applicant. Over time, these vendors may also provide valuable support in hiring temporary and permanent providers, or even serve as viable alternatives to traditional agencies.






However, these companies have significant work to do to meet the unique needs and concerns of safety-net health care organizations and to tailor their services accordingly. This could include highlighting bilingual candidates or candidates with experience working with vulnerable and rural populations, and tailoring price points to meet the budget needs of safety-net organizations. Eventually, while technology-enabled platforms may not solve all safety-net provider staffing problems, they could potentially serve as valuable partners.

Nurse, Physician, and Other Provider Recruitment Technology Vendors

The organizations presented in Table 2 were identified as providing a technology platform for provider recruitment. This is not intended to be a comprehensive list of organizations nor an endorsement of these companies.

Rather, the goal was to give a sense of how this market is shaping up and the types of organizations addressing this unmet need. For more information, please contact each organization directly.

Table 2. Examples of Technology-Enabled Platforms Focused on Nurse, Physician, and Other Provider Recruitment

	COMPANY TYPE	TARGETED PROFESSIONS	KEY CUSTOMERS	YEAR FOUNDED	OTHER SERVICES OFFERED	LICENSE VERIFICATION
	Algorithm-focused staffing agency	Permanent nurses	Hospitals	2017	Workflow tools for clients, candidate-focused services	Yes
	Placement agency that leverages internet and social network marketing	Permanent physicians, nurse practitioners, physician assistants, specialists, nurses	Outpatient clinics, hospitals, managed care organizations, skilled nursing facilities	2007	Workflow tools for clients, candidate-focused services	Yes
	Managed service provider (and vendor management system)	Contracted providers and nonproviders	Ranges from critical access hospitals to multi-hospital systems	2003	Workflow tools for clients	No (available through optional outsourcing)
	Algorithm-focused staffing agency	Travel nurses	Hospitals	2015	Workflow tools for clients, candidate-focused services	Yes
	Algorithm-focused staffing agency	Travel nurses	Academic medical centers, acute care facilities, post-acute care facilities	2017	Workflow tools for clients, candidate-focused services	Yes

About the Foundation

The California Health Care Foundation is dedicated to advancing meaningful, measurable improvements in the way the health care delivery system provides care to the people of California, particularly those with low incomes and those whose needs are not well served by the status quo. We work to ensure that people have access to the care they need, when they need it, at a price they can afford.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

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About the Innovation Landscape Series

As part of its efforts to help promising products and services succeed and scale among California's safety-net providers, the CHCF Innovation Fund conducts high-level landscape analyses of issue areas especially ripe for tech-enabled innovation. The Innovation Fund publicizes the findings of these landscape analyses to inform other funders and customers seeking scalable solutions to challenges faced by safety-net providers.

Readers should note that these reports are not intended to be exhaustive, nor are they endorsements of the companies included in them. Finally, because solutions landscapes can evolve quickly, these reports may not fully reflect the current market.

www.chcf.org/innovationfund

Endnotes

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