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What Can A Healthcare Shift-Matching Platform Tell Us About Gig Economy Labor?

Disclaimer: *This case study is based on data provided by a real healthcare firm. The data has been edited to ensure anonymity, where the firm is referred to under a fake alias as 'Health-Exchange' throughout, as per the conditions of data sharing.*

Summary

Health-Exchange connects healthcare professionals with open shifts at medical facilities, providing flexibility for caregivers, and staffing solutions for providers. This study examines a sample of data on 'shift offers' recorded between July 2024 and January 2025 to professionals on their platform, examining to what degree workplaces were able to meet their staffing needs. These results are drawn in parallel to the gig economy across other industries, specifically Uber's ride sharing model, uncovering trends that might be applicable to the gig economy as a whole. It was found that the status of Health-Exchange's current marketplace faces challenges due to an oversupply of workers, where imbalanced power in the marketplace gave employers more leverage, resulting in lower pay, reduced worker engagement, and subpar allocation. To achieve sustainable growth, Health-Exchange should focus on balancing worker supply and workplace demand, strategically targeting workplaces located in places with high talent density, while consistently surveying worker demographics to maximize platform value for all users.

About Health-Exchange

Health-Exchange's online marketplace addresses the need for flexible staffing in the healthcare industry. By connecting healthcare professionals with open shifts at facilities, Health-Exchange offers caregivers greater control over their schedules and competitive compensation. Simultaneously, the platform provides healthcare facilities with access to a pool of qualified professionals, ensuring they can maintain adequate staffing levels. Their app enables facilities to post available shifts, allowing qualified professionals to find and claim them.

Introduction

The argument for the decline of the typical '9-to-5' in favor of flexible work has never been stronger than it is today. Across a wide range of industries, more effort has been made to put power back in the hands of the worker, and digital platforms that connect professionals with temporary work, often as a side 'gig' is a primary driver of this shift.

We have come to know this segment of the workforce as the 'gig-economy' and as recently as 2022, over ⅓ of Americans identified as self employed. [1] Already cemented as a cornerstone in its own right of the

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[1] McKinsey & Company, "Freelance, Side Hustles, and Gigs: Many More Americans Have Become Independent Workers," *McKinsey Future of America*, [August 22, 2022]. Accessed [February 16, 2025]. https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/future-of-america/freelance-side-hustles-and-gigs-many-more-americans-have-become-independent-workers.

American workforce, the segment as a whole is expected to experience steadily compounding annual growth at an estimated 16.18% between 2024 & 2032, tripling from a current market size of $555 billion, to $1,847 billion. [2] The gig-economy has been most commonly segmented into 4 sectors: Asset-Sharing Services, Transportation, Professional Services, and Bespoke or Miscellaneous Goods. In the last ten years, software leaders have emerged in each of these sectors, profoundly impacting the American labor market and transforming how people worldwide view work. Within the gig economy, asset-sharing platforms such as Airbnb facilitate the short-term rental of personal property, while bespoke service platforms like Etsy enable the sale of used, refurbished, or custom-made items. Both models generate income by leveraging physical assets.

Health-Exchange, operating in the highly competitive professional services sector, shares a key characteristic with transportation platforms like Uber: the work facilitated by these platforms, whether ridesharing, food delivery, or healthcare staffing, does not require workers to provide physical assets to generate value. Because of their theoretically lower barrier to entry than other gig work, these platforms should be wary of turnovers from workers on their own platforms to another. For example, assuming someone is a full-time healthcare professional with a car, what is stopping them from choosing to drive with Uber over picking up an extra shift every week on Health-Exchange and vice versa? About 40% of the gig economy is estimated to be casual earners, those who seek supplementary income by choice, and not necessity. [3] Making the choice easier for workers is essential to growing and maintaining a robust user base.

These platforms as products function as a crucial medium for workers to access potentially untapped primary or supplementary income. Hence, the digital product must be flexible enough to accommodate both the demands of employers and the preferences of workers, regardless of whether those workers are committed freelancers or casual earners. Part of having a good product is understanding why people would still choose an alternative. This analysis of Health-Exchange seeks to understand how shift times and rates are influenced by changing supply and demand dynamics, examining trends in these variables for all stakeholders, while comparing its attributes to that of the gig-economy's goliath, Uber.

Data & Methodology

The data sourced from Health-Exchange represents a ternary relationship between records pertaining to shifts, workplaces, and workers within the Health-Exchange marketplace. In essence, it is a list of compiled shift offers that have been presented to workers who browse for shifts on the mobile app. Workplaces first list shifts on the platform, attaching information about the shift's location, duration, as well as an adjusted pay rate for the time of viewing. Workers see this when browsing for shifts, where these details are available. This group of data constitutes a single shift offer, and workers then have the option to work the shift by booking it. If the worker changes their mind, they can cancel their booking, leaving the shift open to another worker to pick up, and the healthcare facility itself has the right to delete the shift if it deems that staffing is no longer needed.

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[2] Business Research Insights, "Gig Economy Market," Market Report, [February 5, 2025]. Accessed [February 17, 2025] https://www.businessresearchinsights.com/market-reports/gig-economy-market-102503.

[3] Emma Charlton and Claudio Schwarz, "What Gig Economy Workers Want," World Economic Forum, [November 22, 2024]. Accessed [February 19, 2025]. https://www.weforum.org/stories/2024/11/what-gig-economy-workers/.

Although each row in the data set represents a single shift offer being 'viewed', the same shift can be offered to multiple workers. When workers view shifts, the database generates a shift offer, which is a rate offered to a specific worker at a specific time. Therefore, each row in the data table represents a view with a specific pay rate offered to a specific worker. That offer is either claimed or not claimed, and can subsequently be canceled, deleted, or worked.

The data was loaded via MySQL Workbench into a local connection, and transformed to identify patterns across different attributes. The creation of intermediary tables was leveraged for aggregation to answer core questions about allocation rate, participation, and distribution. Visualization was derived from these intermediary tables using python via the pandas library for manipulation, and the matplotlib library for charting in jupyter notebooks. For further description of the dataset, an edited dictionary has been provided below.

| Label	Definition
shift_id	Unique identifier for a shift.
worker_id	Unique identifier for a worker.
workplace_id	Unique identifier for a workplace.
shift_start_at	Time shift starts (UTC).
shift_created_at	Time shift was posted to the marketplace (UTC).
offer_viewed_time	Time worker viewed the shift offer (UTC).
pay_rate	Hourly rate offered to workers for the shift.
slot	Timeslot of shift (noc == overnight).
claim_time	Time shift was booked by a worker (UTC).
cancel_time	Time shift was canceled by the worker (UTC).
delete_time	Time shift was deleted by the workplace (UTC).
worked_true	True or False if the shift was worked.

Results

The data evaluated consisted of 250,000+ shift offer records that took place over 6 months between July 2024 & January 2025. Across this 6 month period, the marketplace sample showed a distinct 19,900 shifts posted via 132 workplaces, offered to 10,291 workers.

With regard to workplaces, if a workplace posted more unique shifts than the duration of the data collection period (in days), we considered them a heavy user, as this implies they posted at least one shift per day on average. Just over 20% of the 132 workplaces in the data set matched this profile, contributing to over 70% of the distinct shifts posted to the platform.

With regard to workers, gross estimated annual earnings were calculated per worker by summing the pay rate multiplied by a shift's duration for all shifts worked. Because the data was collected over roughly a half year period, this number was then doubled to reach an annualized estimate. The range between the top 10

earners in terms of annualized earnings was $34,604 to $60,118. Another point of consideration is that only 12% of the platform's over 10,000 workers actually engaged in work through the period.

With regard to distribution, a single distinct shift garnered an average of just 13 views. However, a vast majority of shifts - about 75% - were actually viewed 13 times or less. According to the median, a distinct shift was only viewed 3 times. Since the distribution of shift views was so positively skewed, visualizing the percentage of shifts worked as offer views increased may have led to a misrepresentation of the data.
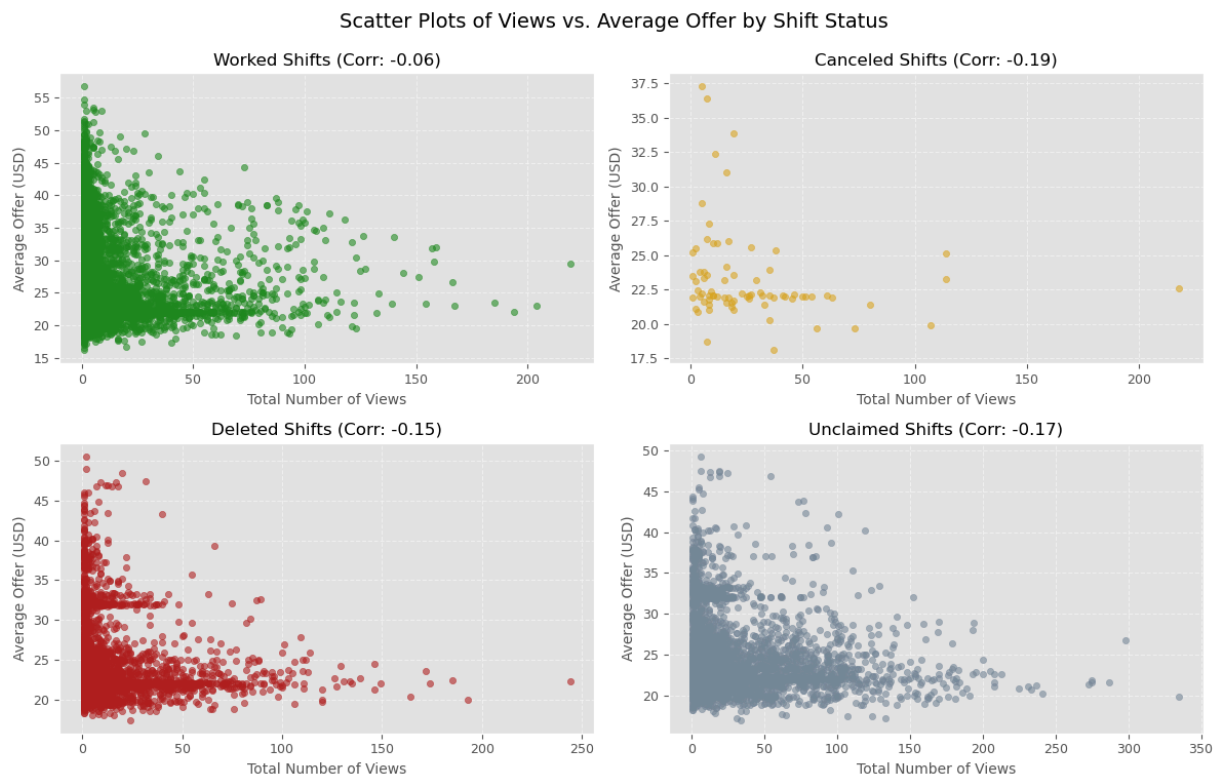
[Figure 1]

When grouping shifts by their final status: whether the shift was worked, canceled by the worker, deleted by the workplace, or unclaimed, we observe a weak negative correlation between the number of views a shift received, and the average rate offered for that shift [Figure 1]. This was done through conditional data manipulation of the 'worked_true' column in the original table to form the derived attribute for views. The average offer attribute was derived by averaging the variable rate displayed for the target shift, each time it was presented to a worker.

Correlation coefficients displayed above each scatter plot generally all follow this negative trend, and a weak negative correlation appears consistent between shift statuses; as a shift is viewed more, it generally pays less. It may indicate a need by the platform to advertise these shifts to workers as their lower rates make them seem less attractive. This is further supplemented by the median number of views per shift organized by shift status [Figure 2]. Worked shifts received the least views, suggesting they were quickly accepted by workers upon receiving shift offers, as opposed to higher medians for canceled and unclaimed shifts.

total_num_views	
shift_status	
Canceled	17
Deleted	7
Unclaimed	18
Worked	2

[Figure 2]

shift_status	Canceled	Deleted	Unclaimed	Worked
shift_slot				
am	0.5%	16.6%	21.6%	61.4%
noc	0.2%	16.3%	15.2%	68.2%
pm	0.4%	20.8%	17.3%	61.5%

[Figure 3]

The sample data as a whole produced an allocation rate of 63%, meaning nearly ⅔ of the posted workplace shift needs were fulfilled by workers on the platform. This rate fluctuates in tandem with a multitude of factors, one of those being whether the shift is an AM, PM, or overnight shift (denoted as 'noc' [Figure 3]). In general, cancellations were very infrequent, displaying high worker reliability. Overnight shifts looked to be popular both with employers as well as workers, since overnight shifts constituted the highest allocation rate of any shift category at 68.2%, despite only making up 23% of shifts posted.

Rates & Peak Times
As previously mentioned, there is reason to believe that shifts which accumulate more views, or have been offered to more workers, will pay slightly less than shifts that have accumulated less views. Furthering this, worked shifts also had the highest median 'average offer' compared to other statuses [Figure 4].
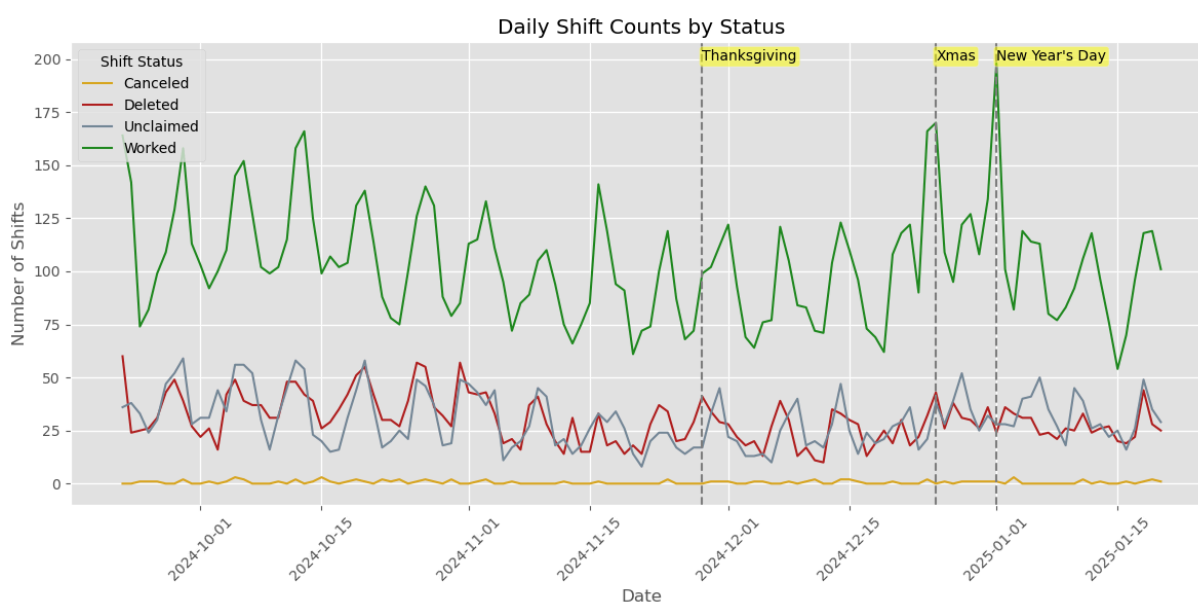

[Figure 4]

While the box plot reveals outliers with abnormally high offer rates for both worked and unworked shifts, the interquartile range is notably larger for worked shifts, indicating greater pay variability. Workers in the upper quartile, particularly above the 75th percentile, generally received higher offers for completed work.

This disparity in the distribution, along with the presence of outliers, supports the use of the median offer rate for further analysis as it is less sensitive to these extreme values.

Price is dictated by supply & demand and like any other 'gig' - healthcare experiences turbulent cycles and peak times that cause demand to rise. Analyzing the total number of shifts assigned per day allows us to visualize worker demand and gain insights into peak periods.
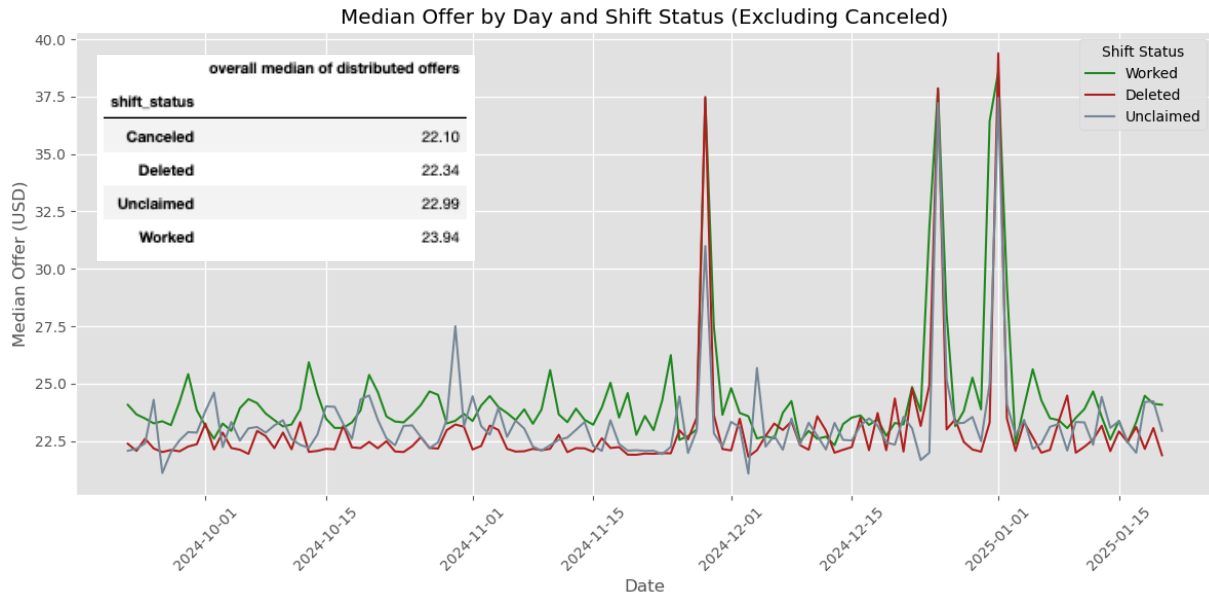
On New Year's Day 2025, a peak in worker demand was observed, corresponding with the data's highest count of worked shifts, totaling slightly more than 200 [Figure 5]. The cyclical pattern that is observed affects all shifts regardless of status, and it is a reflection of the increased demand for workers to fill weekend shifts throughout the year. In theory, this could prompt facilities into paying higher rates for workers since demand is higher.

[Figure 5]

Pay spikes could be observed in a similar cyclical pattern for workers, oscillating between the $22.50 and $27.50 range, with notable spikes seen on the three holidays marked in Figure 5: Thanksgiving, Christmas, and New Years Day. Cancellations were omitted for this visualization for clarity on the target status groups [Figure 6].

Based on the overall median rates offered per shift status in Figure 6, there is a clear regular weekend surge pricing model in place. This model typically results in a 10-20% increase in rates, depending on the level of demand. However, there appear to be periods of more significant price surges, such as on New Year's Day, Thanksgiving, and Christmas. On these holidays, rates saw a spike to nearly $40 (New Year's Day) and just over $37.50 (Thanksgiving and Christmas), representing an increase of over 60%.

Median Offer by Day and Shift Status (Excluding Canceled)

overall median of distributed offers	
shift_status	
Canceled	22.10
Deleted	22.34
Unclaimed	22.99
Worked	23.94

[Figure 6]

Posting Time & Allocation

One of the biggest advantages of flexible staffing is having access to a pool of on-call skilled workers, allowing companies to save on payroll, and avoid unnecessary rounds of layoffs as a result of overhiring. This model works both ways, as workers desire employment flexibility as well. The time at which a shift is posted, and the time from that post to the actual start of the shift had a tremendous effect on the allocation rate. Workplaces on Health-Exchange seemed heavily reliant on short-notice shifts; out of nearly 20,000 shifts made available on Health-Exchange from July 2024 to January 2025, 33% were posted within 24 hours of their stated start time. Our data did not clarify whether this pattern resulted from permanent employees canceling their shifts or from the specific staffing practices of individual workplaces. For shifts posted within 24 hours of their start time, shifts observed marginally higher rates of fulfillment (i.e., shifts being worked). In other words, providing workers with more advance notice correlated with a slight increase in the number of shifts successfully completed [Figure 7] [Figure 8].
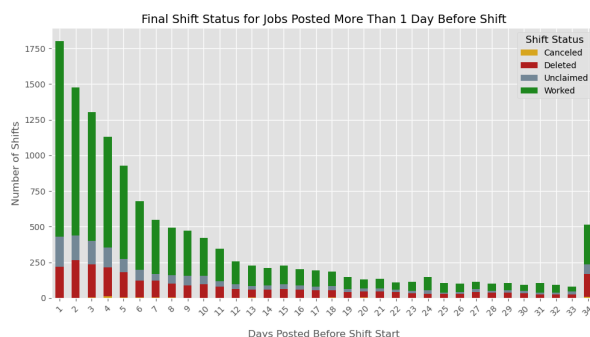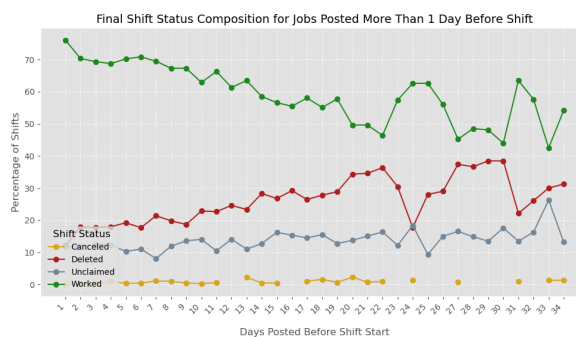

[Figure 7]
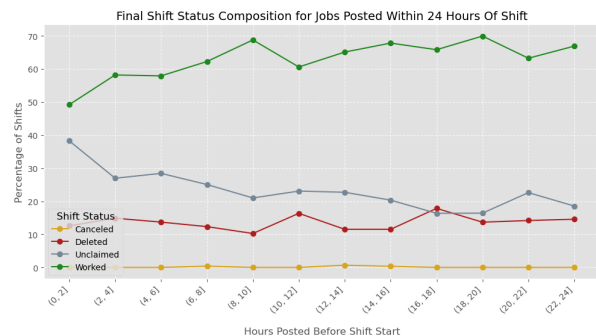
[Figure 8]

For the remaining two-thirds of shifts posted, this trend was inverted as postings are made days, rather than hours in advance. For each extra day from the start date a shift is posted on the platform, allocation

rate decreases. By the 10 day mark, allocation for shifts dips below the overall average allocation rate of 63%, and we see that shifts that were posted more than 3 weeks in advance began to dip below a 50% allocation rate [Figure 9] [Figure 10]. The timing of shift postings, as shown in Figure 9, has a direct impact on allocation. The increasing number of shifts posted closer to their start time, and the corresponding decrease in advance postings, suggests a preference for last-minute staffing solutions.

[Figure 9]

[Figure 10]

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Discussion

The demand for healthcare staffing is constantly in flux, much like the demand for rides on Uber. Health-Exchange's platform addresses this by connecting healthcare facilities (consumers) with available professionals (suppliers). The volume of shifts, the offered pay, and the ability to fill those shifts are constantly changing, mirroring the real-time fluctuations in Uber's ride requests and driver availability. In this market, power dynamics are influenced not just by the relationship between supply and demand, but also, and perhaps more importantly, by the relative proportions of consumers and suppliers.

With 132 workplaces requesting shift assistance from 10,291 active workers, Health-Exchange sees a ratio of about 1 workplace to every 100 workers. As a larger platform with a more diverse pool of consumers, Uber on the other hand sees a much different ratio. Uber had over 160 million monthly active riders and 7.8 million drivers as of Q3 2024, constituting a ratio of 20 riders to a single driver.[4]

Health-Exchange's marketplace, despite the high volume of shift postings (averaging 150 per workplace), exhibits a significant imbalance favoring employers due to a large surplus of available workers (suppliers), contrary to that of the consumer heavy Uber. This oversupply diminishes workers' earning potential, limits the impact of peak-time pay increases, and generally weakens their negotiating power. In any industry, a larger pool of workers vying for shifts gives employers greater leverage, potentially leading to lower pay rates with limited recourse for workers. This imbalance could be one possible reason for the low participation rate mentioned earlier (Only about 12% of the 10,291 workers offered shifts in the data actually worked a verified shift), as workers who enroll in the platform may feel that their time is better invested elsewhere, possibly leading to turnover. This is further complicated by the fact that 70% of shifts posted on the platform are contributed by just 20% of the workplaces present in the data. This means that in addition

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[4] Backlinko. "Uber Users: Stats, Demographics, and Growth." Backlinko, [Nov. 13, 2024]. Accessed [Feb 19, 2025]. https://backlinko.com/uber-users.

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to less potential for earnings, the selection of workplaces for workers to pick up shifts is limited. If a worker has an unsatisfactory experience at one workplace, and wants to exercise their advantage of flexibility, their pool of potential options to choose from shrinks, further increasing the chance of turnover and less shifts picked up. It should be explicitly stated that high turnover is not something that Uber is immune to, despite its explosive growth throughout the 2010s and continued into the 2020s. More than 60% of drivers who begin driving on the platform no longer continue to drive after 6 months.[5]

This low participation rate could also give insight into the demographic of workers using the platform. The low participation may suggest that Health-Exchange's worker demographic has a larger percentage of casual earners who are not as pressured to accumulate supplementary income, and hence will be less likely to settle for lower pay rates. In 2017, the Economic Policy Institute estimated that the average Uber driver worked cumulatively the equivalent of 3 months in a year[6], suggesting a driver base with a high number of reluctant and/or casual earners. Despite high turnover, it can be argued that in part because of the consumer to supplier balance, and steady access to riders, that Uber has continued to grow its user base exponentially. This explains why Uber uses uncapped surge pricing as an incentive to drivers, where extreme cases have seen drivers take a 50 times multiple on their earnings.[7] Although it has been seen that Health-Exchange workers can earn modestly more for weekend shifts and about twice as much on holidays, this multiplier is dwarfed by the potential earnings of Uber drivers under uncapped surge pricing, highlighting their differences in market leverage.

However, it would be fallacious to oversimplify the problem to a mere ratio. Factors like worker demographic, understanding how many workers are actively employed on W2 outside the platform, in addition to geographic distribution of both workplaces and workers will affect preferences towards workplace pay rates and worker's pay preferences.

Another reason why worker participation could be low is simply the timing of shifts. As seen in Figure 5, demand for shifts saw cyclical highs on weekends when more workers were likely needed. If Health-Exchange indeed does have a high casual earner population, given that about ¼ of all healthcare workers work shifts outside of the typical Monday through Friday,[8] it would not be surprising that with more data, we would find that the allocation rate does not increase on weekend shifts because workers already have full-time roles to work on those days.

The overall shift allocation rate in the data was 63% (two-thirds of shifts filled). However, this figure was likely depressed by the holiday season, a period of heightened demand in healthcare due to holiday staffing shortages, which we saw workplaces attempt to address by posting their available shifts on Health-Exchange. While metrics for worker participation and allocation were analyzed, it is important to acknowledge the temporal limitations of the dataset. The analysis presented in this paper is based exclusively on data from the second half of 2024. Without benchmarks or data from a complete year, we cannot fully assess the impact of various influencing factors.

[5] Lawrence Mishel. "Uber and the Labor Market: Uber Drivers' Compensation, Wages, and the Scale of Uber and the Gig Economy". Economic Policy Institute. [May 15, 2018]. Accessed [February 19, 2025].https://www.epi.org/publication/uber-and-the-labor-market-uber-drivers-compensation-wages-and-the-scale-of-uber-and-the-gig-economy/

[6] Mishel, "Uber and the Labor Market."

[7] Natasha Mikhail, "Uber's Highest Surge Price Ever May Be 50x," Business Insider. [November 20, 2014]. Accessed [February 19, 2025]. https://www.businessinsider.com/ubers-highest-surge-price-ever-may-be-50x-2014-11.

[8] Anton Konopliov. "Shift Work Statistics & Facts (2024) — Redline Digital". [June 26, 2024]. Accessed [February 19, 2025]. https://redline.digital/shift-work-statistics/

Conclusion

The growing number of both aging caregivers and individuals requiring care will exacerbate healthcare worker shortages[9], as it increases demand while simultaneously diminishing the available workforce. Health-Exchange's role in offering flexible staffing provides a much needed answer to this problem. The platform's presence in the gig economy, while offering competitive work, needs to maintain balance in its marketplace to attract and retain workers and workplaces alike. They run the risk of decreased user adoption, terminal turnover, and loss of potential talent to other digital platforms, which can provide comparably lucrative opportunities.

Prerequisite medical qualifications that act as barriers to entry in the healthcare field, make platforms like Uber an easy gateway to a steady stream of consumers who will pay for a service with high price elasticity, enticing prospective drivers. The two platforms exist in different worlds of scale, but share the commonality of democratizing flexible work. They exhibit market behavior appropriate to their industries, and such gig work platforms need a comprehensive understanding of both ends of their user base to provide an exceptional product.

Specialized focus within healthcare creates a fundamentally more complex model than other gig platforms. Health-Exchange must consider unique factors such as a worker's specific medical skills, certifications and experience, as well as the availability of those skills within the market, an aspect which was not touched upon in this analysis. This skill-matching component significantly alters the nature of the work. Having different caregivers looking for more diverse opportunities to work with specialized populations, like elderly and children, is not a one size fits all matter.

Health-Exchange sees a large number of workers flock to the platform who are advertised shifts that stem from a only handful of workplaces. For the market dynamics to stay competitive and incentivise sustained usage by both workplaces and workers, workplace enlistment should be prioritized at locations with the closest proximity to skilled labor. This will allow the worker and workplace populations to enjoy proportional growth. The platform's potential for growth hinges on achieving a competitive balance between its consumers and suppliers, yet Health-Exchange's consumer-to-supplier ratio will likely not reach Uber's. This difference is inherent to the nature of the healthcare model, as consumers can be large organizations like hospitals with multiple ongoing needs, unlike Uber's individual riders. Finding a balance appropriate for the industry where both sides benefit is key to growing adoption. Other factors that could drive targeted workplace marketing include proximity to ageing populations where healthcare needs are expected to rise, or urban centers with high income disparity where workers are more likely to pick up a side job.

A qualitative approach to understanding workers is also crucial for sustained success. Demographic data, which significantly influences worker priorities, can be used to optimize shift allocation algorithms, improving efficiency and ensuring optimal staffing. Regular market analysis, like monthly to quarterly surveys for workers and workplaces, and adaptation to those evolving preferences will drive worker retention and potentially increase workplace utilization.

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[9] C. H. Jones and M. Dolsten, "Healthcare on the Brink: Navigating the Challenges of an Aging Society in the United States," npj Aging 10, no. 1 [May 10, 2024]. [Accessed February 16, 2025]. https://doi.org/10.1038/s41514-024-00148-2.

These surveys can be further utilized to understand workplace willingness to engage in surge pricing. Understanding their price elasticity for the services flexible staffing offer, may have them consider expanding their volume of temporary workers. Surge pricing may not be the ideal model for this type of gig-work, but exploration of the ways workers can be compensated at more competitive rate for shifts that were posted on short notice, or shifts that may take place at unfavorable times, can possibly help facilities shift to more flexible staffing models, and help increase retention of workers overall.

Appendix

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