

Investigation on the Living Conditions of Food Delivery Workers in Nanjing before and after the COVID-19 pandemic

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Abstract: Delivery personnel serve the public by delivering food and are essential to society, especially during the COVID-19 pandemic. In this study, a questionnaire survey was undertaken in Nanjing before and after the COVID-19 epidemic in order to look into the living situations of delivery workers and offer suggestions for improvement. The results indicate that food delivery workers' working hours have usually increased since the COVID-19 outbreak. The distribution of daily orders among the staff is more equitable. Changes in income are the primary effect of the COVID-19 pandemic on the food delivery industry. Changes in psychological stress, work intensity, and health conditions are the next biggest impacts. 90% of the participants either had no knowledge of or no access to additional subsidies. About 60% of the participants had no employer-provided insurance. Therefore, there is a need for future enhancements to delivery employees' social security benefits in order to better their living circumstances, raise the standard of delivery services, and support sustainable social growth.

1. Introduction

The pandemic has significantly influenced various industries, including the food delivery industry[1]. During the pandemic, the delivery workers faced a lot of challenges and changes, which had great impacts on their daily lives[2-3]. The pandemic has increased the demand for delivery workers due to the growing demand in the delivery industry[4-5]. Also, while many people lost their jobs as the pandemic caused many companies to lay off workers or suspend hiring, the growing demand in the food delivery industry provided employment opportunities. To accommodate the growing demand, many restaurants began to adopt online ordering and delivery services, accelerating the digital transformation of the delivery industry[6-7]. However, the pandemic has also had a negative impact on the delivery industry. First, the contact between the customer and the delivery staff increases the possibility of getting infected[8]. The delivery workers are still at a higher health risk, although some protective measures can be taken. Second, although the number of orders has increased during the pandemic, due to the limited operation of restaurants and the risk of being infected and quarantined, the income of delivery staff may fluctuate[9]. Third, the increasing number of orders has led to more work for the staff and increased their working pressures [10].

After the pandemic, the food delivery industry still faces some lasting influences[11]. Specifically, the reopening of many restaurants may result in a decrease in income for delivery workers, especially for those who entered the industry during the pandemic, as some people prefer to dine-in. For these reasons, employment in the

food delivery industry has become increasingly competitive, which may be the reason why some of the staff have to quit their jobs. Also, the measures taken during the pandemic brought some additional benefits to the delivery workers. However, most of the measures were cancelled after the pandemic. In addition, the social status of the staff may experience a decline, as they were widely praised during the pandemic but are now even more ignored.

Food delivery workers play an important role during the pandemic and in normal times. They are the primary service providers who deliver food to people and have a direct impact on our daily lives[12]. Therefore, it is important to pay attention to the living conditions of food delivering workers to ensure social equality and quality of life. The research investigates the living conditions of food delivery workers in Nanjing during and after the pandemic. Based on this, some suggestions are provided to improve their living conditions while improving the quality of food delivery services and promoting the sustainable development of society.

2. Methodology

2.1. Data collection

The designed questionnaire contained questions about the working hours, number of orders, income, health status, insurance and housing fund of food delivery workers before and after the pandemic. An online questionnaire platform called "Wenjuanxing" was used to send out questionnaires, and people in this kind of job were invited

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to complete them face-to-face. In addition, prizes were offered to participants to incentivize them to fill out the questionnaire more accurately. The content validity of the questionnaire was assessed by three sociology experts, and the content validity index of the questionnaire was 1 for all entries.

Ninety-three questionnaires were received from Nanjing, of which 56% were from Qixia District, 21% from Gulou District, and the rest from Qinhuai, Xuanwu (11.83%), Jianye (2.15%), Jiangning (2.15%), and Yuhuatai (1.08%) Districts, as shown in Figure 1.

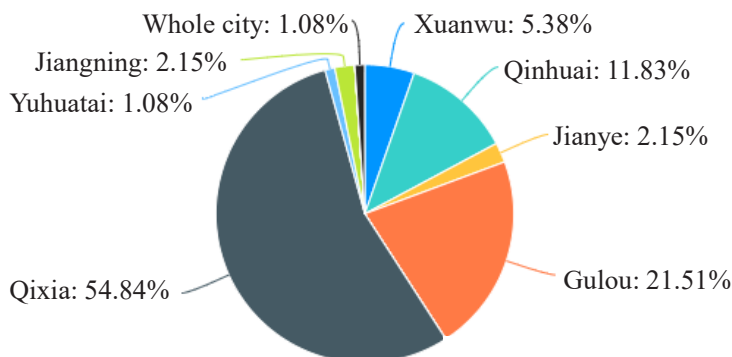


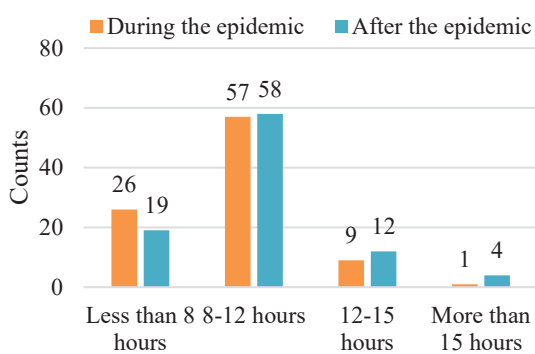
Figure 1 Distribution of delivery areas

2.2. Statistical analysis

Microsoft Excel were used for data management of the recovered questionnaires. Given that the majority of the data consisted of categorical variables, some descriptive statistical methods based on graphical visualization, such as bar charts and pie charts, were employed to compare and analyse the living conditions of the delivery workers during and after the pandemic.

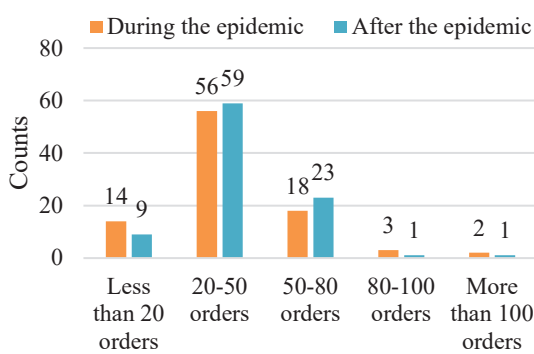
3. Results and discussion

3.1. Work status



(a) Working hours

Figure 2(a) presents a comparison of the daily working hours of food delivery workers before and after the pandemic. 26 people worked less than 8 hours a day during the pandemic, while only 19 worked after the pandemic. Only 10 people worked more than 12 hours a day during the pandemic, compared to 16 after the pandemic. Therefore, it was concluded that the working hours and workload of food delivery staff have generally increased after the pandemic. **Figure 2(b)** shows the number of orders per day during and after the pandemic. It can be seen that the counts in both tails of the order number distribution have decreased, while the counts in the middle have increased. This indicates that the order number of delivery staff is more evenly distributed, and the situation of particularly large or small order numbers was reduced.



(b) Number of orders

Figure 2 Working hours and order numbers per day during and after the pandemic

Figure 3 illustrates the monthly income of food delivery workers during and after the pandemic. **Figure 3(a)** indicates that the number of people in the highest and lowest income ranges decreased, and the number of middle-income people increased by 35.9%. **Figure 3(b)** shows that 42% of the delivery workers had a decrease in income after the pandemic and 30% had an increase in income after the pandemic. These also suggest that risks

and opportunities coexist. During the pandemic, although delivery workers have the opportunity to earn higher incomes as demand increases and they do not have to deliver food upstairs or into the community, they may also suffer from reduced income due to infection risks. As a result, the income of food delivery staff has become more balanced after the pandemic.

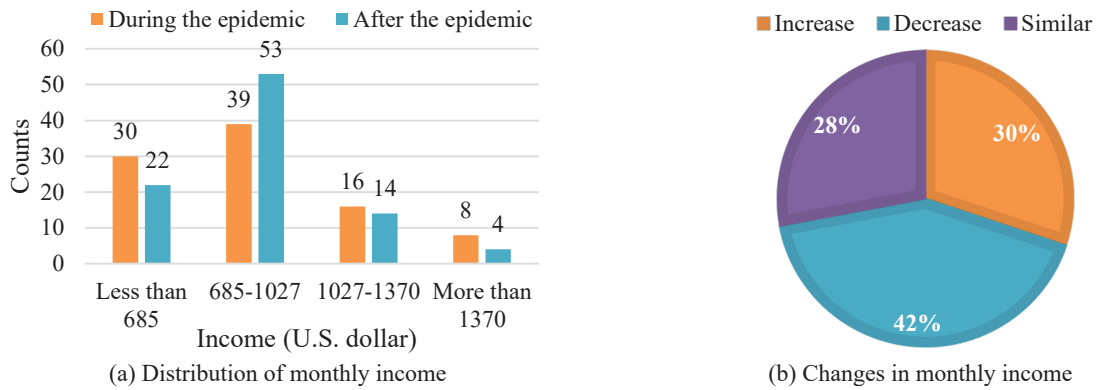


Figure 3 Monthly income during and after the pandemic

3.2. Difficulties and challenges of the work

Figure 4 presents the main difficulties and changes in delivering food during the pandemic. It can be seen from **Figure 4** (a) that 54% of delivery workers considered that the main difficulties in delivering food during the pandemic is the high risk of infection and the potentially

high quarantine costs. As can be seen from **Figure 4** (b), 53 people believed that the main impact of the pandemic on food delivery work manifested as changes in income, while 31 people perceived it as shifts in psychological stress. Additionally, 27 respondents associated it with changes in work intensity, and 24 respondents linked it to changes in health conditions.

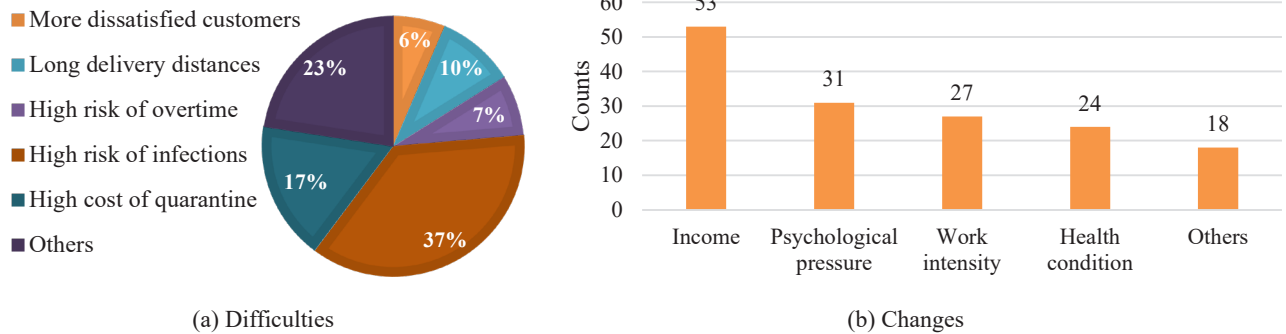


Figure 4 The main difficulties and changes in delivering food during the pandemic

Ensuring social security benefits for food delivery workers, especially during the pandemic, is crucial as they play an essential role in providing convenient and accessible food delivery services. Meanwhile, the unstable economic situation during the pandemic makes it necessary to provide adequate social security benefits to help them cope with income loss and maintain a basic living standard. **Figure 5** illustrates the social security situation of food delivery workers. It can be observed from **Figure 5** (a) that 90% of the participants did not know about or did not receive any extra subsidies. **Figure 5** (b) shows that about 60% of the participants did not receive any insurance from their employers and none of them has a housing fund. 13% of delivery workers have only employment injury insurance and 7% have only medical

insurance, both of which are important to the food delivery work and are necessary when they suffer from body dysfunctions. 5% have all five types of insurance, while the remaining food delivery workers have one or several of these social insurance components. Conclusively, the government and companies are not doing enough to ensure the social welfare of delivery workers. To improve the situation, the government should firstly ensure insurance coverage for this group, so that they can have some comfort when they encounter accidents in their daily work. Also, in order to help maintain their living quality, the subsidies for delivery workers should be increased in the event of a large-scale disaster, as this action can help them cover their daily expenses when orders are reduced.

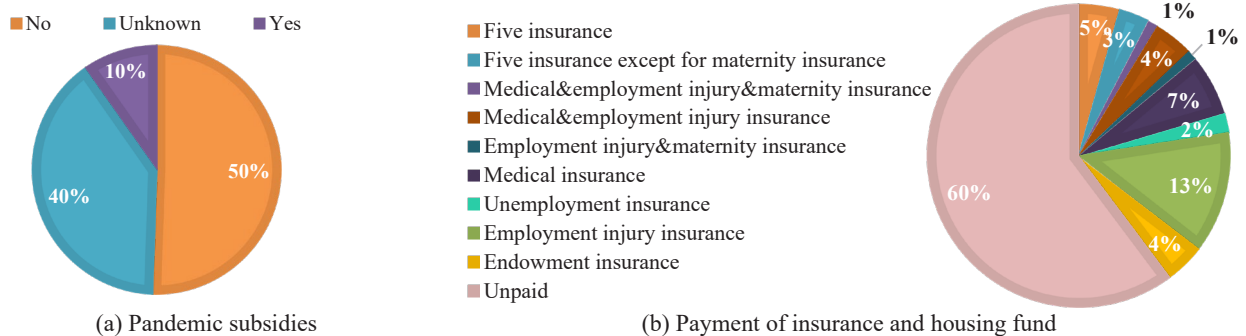


Figure 5 The social security situation of food delivery workers

4. Conclusions

This study used questionnaires to investigate the living conditions of food delivery workers in Nanjing during and after the pandemic. The main conclusions are as follows:

1) The working hours of food delivery staff have generally increased after the pandemic. The daily order number becomes more evenly distributed. The income of most delivery workers has changed, either increased or decreased. The number of people in the highest and lowest income ranges decreased, while the number of middle-income people increased.

2) Only 20% of the participants were infected with COVID-19 due to the food delivery work, which means the food delivery work did not significantly increase the pandemic risk, which may be because of the strict disinfection and protection measures in the food delivery industry.

3) The main difficulty in food delivery during pandemic is the high infection risk and quarantine cost. The main impact is changes in income, followed by changes in psychological pressure. Most of the participants (90%) did not know about or did not receive any extra subsidies during the pandemic. About 60% of the participants did not receive any insurance from their employers.

On the whole, the quality of life of food delivery workers is not as good as the government has publicized. There is still a need to improve their income, medical care and basic living allowance. The government and enterprise should take measures, such as providing basic insurance and subsidies, to improve the quality of life of food delivery workers. This will help improve the quality of their service, reduce the risk of potential infectious disease transmission, promote the sustainable development of the delivery industry, and contribute to a more harmonious and stable society.

References

1. Lin, R. (2021). The Effects of Covid-19 on the Online Food Delivery Industry. In 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021) (pp. 203-207). Atlantis Press.
2. Huang, H. (2022). Riders on the storm: Amplified platform precarity and the impact of COVID-19 on online food-delivery drivers in China. *Journal of Contemporary China*, 31(135), 351-365.
3. Puram, P., Gurumurthy, A., Narmetta, M., & Mor, R. S. (2022). Last-mile challenges in on-demand food delivery during COVID-19: understanding the riders' perspective using a grounded theory approach. *The International Journal of Logistics Management*, 33(3), 901-925.
4. Chang, H. H., & Meyerhoefer, C. D. (2021). COVID-19 and the demand for online food shopping services: Empirical Evidence from Taiwan. *American Journal of Agricultural Economics*, 103(2), 448-465.
5. Kim, J., Kim, J., & Wang, Y. (2021). Uncertainty risks and strategic reaction of restaurant firms amid COVID-19: Evidence from China. *International Journal of Hospitality Management*, 92, 102752.
6. Poon, W. C., & Tung, S. E. H. (2022). The rise of online food delivery culture during the COVID-19 pandemic: an analysis of intention and its associated risk. *European Journal of Management and Business Economics*.
7. Meena, P., & Kumar, G. (2022). Online food delivery companies' performance and consumers expectations during Covid-19: An investigation using machine learning approach. *Journal of Retailing and Consumer Services*, 68, 103052.
8. Ortiz-Prado, E., Henriquez-Trujillo, A. R., Rivera-Olivero, I. A., Lozada, T., & Garcia-Bereguain, M. A. (2021). High prevalence of SARS-CoV-2 infection among food delivery riders. A case study from Quito, Ecuador. *Science of the total Environment*, 770, 145225.
9. Parwez, S. (2022). COVID-19 pandemic and work precarity at digital food platforms: A delivery worker's perspective. *Social Sciences & Humanities Open*, 5(1), 100259.
10. Abilio, L. C., Grohmann, R., & Weiss, H. C. (2021). Struggles of delivery workers in Brazil: Working conditions and collective organization during the pandemic. *Journal of Labor and Society*, 24(4), 598-616.
11. Wang, X., Zhao, F., Tian, X., Min, S., von Cramon-Taubadel, S., Huang, J., & Fan, S. (2022). How online food delivery platforms contributed to the resilience of the urban food system in China during the COVID-19 pandemic. *Global food security*, 100658.
12. Zhang, H., Xue, L., Jiang, Y., Song, M., Wei, D., & Liu, G. (2022). Food delivery waste in Wuhan, China: Patterns, drivers, and implications. *Resources, Conservation and Recycling*, 177, 105960.