

# Evolving Food Security Challenges Facing Internal Migrants during the COVID-19 Pandemic in Chinese Cities

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## Abstract

The COVID-19 pandemic has significantly exacerbated the economic, social and political vulnerabilities of internal and international migrants and increased their food insecurity in several cities of the Global South. So far, very little attention has been paid to the dynamics of internal migrants' food security in urban China since the emergence of the pandemic. Based on the results of an online survey conducted in the cities of Wuhan and Nanjing in early 2020 and a review of secondary materials, this paper identifies the major phases of China's COVID-19 containment policies and evaluates their effects on the food security of internal migrants through these various phases. Our paper shows that internal migrants in Chinese cities experienced the pandemic-induced food insecurity differently than other urban residents, marked by higher levels of food insecurity and increased food expenditures due to highly restricted mobility and disproportionate income losses. Sudden changes in urban food environments contributed to sharp increases in migrant food insecurity at the beginning of the pandemic. In the later phases, food insecurity was established as a more enduring condition, as the pandemic-induced downturn of the national and local economies led to higher unemployment, and decreased incomes. The limited access of migrants to pandemic support and relief measures also shaped their precarious food security status. Improving the food security of internal migrants in Chinese cities requires structural changes focused on the generation and expansion of economic opportunities for this cohort, combined with improved social protection.

## Keywords

China, COVID-19 pandemic, food security, internal migrants, and precarity

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## Cover Photo

Food delivery persons picking up orders from a fast-food restaurant in Nanjing during the lockdown in early March 2020.

Credit: Imago/Alamy



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## Introduction

Shortly after its unfolding in early 2020, the COVID-19 pandemic transformed from a public health crisis into an omnibus crisis affecting multiple sectors of economy and society, highlighting the systemic vulnerabilities of our modern world. The pandemic profoundly disrupted the economic, social, and institutional infrastructures that have underpinned human security, especially food security. The global economy underwent a 5.2 percent contraction in 2020, triggering the deepest recession since the end of World War II (World Bank 2020). For many persons, households, and communities, the pandemic era represents a harsh new age in which their livelihoods became daily struggles, producing new challenges to human security that may have negative repercussions for years to come. According to the United Nations global food security and nutrition report for 2022, the number of people affected by hunger and food insecurity increased by 150 million to 828 million in 2021 since the outbreak of the pandemic (FAO et al 2022). This significant development has negative implications for meeting SDG 2 (“Zero Hunger”), of ending hunger and achieving food security of the UN Agenda for 2030. As a key dimension of the new challenges forged by the pandemic, food insecurity has become widely prevalent among multiple vulnerable groups, including low-income individuals and households, informal sector employees, casual workers, unemployed persons, women and children, internal and international migrants, and asylum-seekers and refugees (Crush and Si 2020, Nardon et al 2022).

Another notable development is that the pre-existing institutional barriers shaping insufficient access to food among migrants have been exacerbated by the pandemic in two ways. Internal and international migrants, among many other marginal social groups, found themselves more food insecure through the pandemic era due to increases in food prices and other living expenses, reduced mobility due to containment measures, reduced job opportunities, increased precarity of informal businesses, and weak access to government supports. The pandemic also sheds light on the importance of migration for food security by revealing the dependence of migrants’ left-behind families on food remittances. By disrupting regular migration patterns and the economic environments on which migrants rely for their livelihoods and incomes, the COVID-19 pandemic has significantly deteriorated the food security of both migrants and their families in the sending areas (IOM and WFP 2020). The World Food Programme (WFP) characterized the COVID-19 pandemic as the “hunger pandemic”, warning that 30 million people could die of starvation during its unfolding (Husain et al 2020).

Since the outbreak of the COVID-19 pandemic in early 2020, China has implemented the most stringent set of lockdown measures in a large number of cities and its countryside to contain the spread of the virus, including strict limitations on human mobility. In the extensive coverage of China’s lockdown measures by the global media and social media over the last three years, people outside of China are very likely to view these lockdown measures as having been universally

adopted throughout the country and unrelenting in their intensity. In fact, the ‘dynamic zero-COVID policy’, which received enormous global attention, was not implemented as the primary containment strategy until August 2021. Under this policy strict lockdown measures, mass testing, forced quarantines, travel restrictions and other measures were enforced to eradicate any outbreaks of COVID-19 in China. Since the first outbreak that occurred in Wuhan in early 2020, at least four distinctive phases of prevention and control of COVID-19 in China can be identified (Liang et al 2022). With different policy emphases, these shifting stages involved dynamic changes in the degree of human mobility, economic activities, and even public mentality. Consequently, the national and local food environments and people’s livelihoods were also dramatically transformed, molding the food security of different population groups in differential ways.

This paper examines the dynamics of food security of urban residents, particularly internal migrants, in Chinese cities across these shifting COVID-19 containment policies. The main objective is to evaluate the food security of the Chinese urban population within the changing policy environment over the three years of the pandemic. The paper aims to examine the deterioration of food security of domestic migrants in Chinese cities due to shifting policies. It first reviews the food security status of Chinese cities before the pandemic, followed by an illustration of the vulnerabilities to food security exposed by the pandemic. The paper then divides China policy measures toward COVID-19 to four phases and analyzes their food security implications using survey and interview data from Wuhan and Nanjing.

## Food Security before the Pandemic

China has been widely praised for its rapid economic growth, which has lifted millions of people out of poverty and contributed to the high levels of food security in its cities. The Global Food Security Index 2022 ranked China 25th out of 113 countries for food security and 4th in Asia, with an especially high score for food affordability and availability (Economist Impact 2022). Household food security surveys conducted by the Hungry Cities Partnership (HCP) in the years preceding the pandemic in Nanjing and six other cities in the Global South have also confirmed the effectiveness of China’s urban food provisioning system (Si and Zhong 2018). These HCP surveys used two widely tested indicators of food security developed by the FANTA project, HFIAS (Household Food Insecurity Access Scale) and HDDS (Household Dietary Diversity Score), to assess the level of household food security in these areas (Coates et al. 2007, Hoddinott and Yisehac 2002). Lower HFIAS and higher HDDS results indicate a higher level of household food security. Compared to the results of the other six surveyed cities, Nanjing showed a significantly higher level of food security, with the lowest mean HFIAS and the highest mean HDDS (Table 1).

Table 1: Mean HFIAS and HDDS Scores for HCP Household Food Security Surveys at Urban Research Sites

City	No. of households surveyed	No. of household members	Mean HFIAS	Mean HDDS
Bangalore, India	1,700	6,021	0.72	5.37
Cape Town, South Africa	2,500	10,065	5.93	6.75
Kingston, Jamaica	702	2,379	6.48	4.51
Maputo, Mozambique	2,071	9,922	6.48	4.14
Mexico City, Mexico	1,200	4,071	3.24	5.85
Nairobi, Kenya	1,434	4,836	5.82	6.04
Nanjing, China	1,210	3,372	0.61	7.83

In Nanjing, this success in food security was achieved through decades of comprehensive food-related planning involving the local food system. This planning involved strong government supports for the establishment of new food markets and various subsidies for the operation of such markets (such as utilities, rent costs, food safety testing facilities, and training) (Zhong et al 2019). The Rice Bag Policy and Vegetable Basket Policy implemented since the 1980s have made food security a central measure for assessing the social and economic policies of provincial and local governments. These key food security policies in China place the responsibility of staple grain supply on provincial governors and vegetable and other food supply on city mayors respectively. It thus incentivizes provincial and local governments to undertake regular proactive measures to improve food availability and access within their jurisdictions (Pu and Zhong 2020, Zhong et al 2021a). Such efforts involve extensive interventions by the state in the food markets in forms of providing subsidies, building new public markets, coercive governance measures, and holding ownership of some markets. In many other countries, food markets are largely dominated by private actors (and not by state authorities). In China, the public-private hybridity of the urban food system ensures easy physical and economic access to healthy food, especially in terms of food availability (Zhong et al 2019). These efforts have managed to restrict severe food insecurity and food scarcity to a very minimal and insignificant level.

## Vulnerabilities Exposed by the Pandemic

Despite these positive dimensions of China's national and local food systems, there are certain vulnerabilities in its urban food systems that have been exposed and strengthened by the COVID-19 pandemic. Furthermore, these weaknesses may have a significant effect during future crises, if left unaddressed. One key concern relates to the volatility of food prices caused by the pandemic (Cheng 2022). These spikes in food prices occurred especially after local governments blocked roads and local transportation networks to contain the spread of the virus in early 2020. Agricultural production went on red alert, as restrictions hindered the easy outflow of food produce from farms and the uninterrupted

inflow of agricultural inputs (Chen et al 2020, Pu and Zhong 2020). These disruptions in domestic food production and circulation were compounded by the contraction of regular channels of food imports, as several major food-exporting countries temporarily halted their grain exports (Chen et al 2020, Falkendal et al 2021). In a national public opinion survey on food prices conducted in April 2020, nearly half of the respondents in the country pointed out the noticeably higher costs of fresh produce and meat (Dou et al 2021).

For most urban residents in China, the most immediate and drastic change in their food security was in their daily access to food sources, which was the result of the sudden and unexpected lockdowns. In the early period of the pandemic (in 2020), the Chinese government imposed among the most severe measures globally to contain the spread of the coronavirus. The main strategy was to lock down large regions of the country, including many major metropolises. The lockdown was successful in that, within a few weeks, it averted a major public health crisis. However, strict lockdowns restricted and, in some cities, completely hampered the regular access of residents to public service facilities. These strict measures also drastically transformed the local food environment, disrupting food supply chains and inevitably deteriorating the food security of local populations. Because food markets were closed, urban residents were forced to switch to online food delivery services, which were often unreliable and costly (Gao et al 2020, Guo et al 2020). Certain social cohorts were badly hit by these changes, which significantly depreciated their access to food. For example, elderly residents living on their own, who had limited technological skills (such as using mobile phone apps and the Internet to order food), and faced other challenges, such as poor physical health, were most adversely affected. The impact of the 'digital divide', which has pushed the elderly and other disadvantaged groups to the margins of modern economic activities in China, has never been so detrimental, as witnessed since the onset of the pandemic (D'Cruz and Banerjee 2020, Xie et al 2020, Song et al 2021).

New studies on the consequences of the COVID-19 pandemic have shown that people of different socioeconomic status, racial, gender, ethnic background, and formal status experienced this health-based crisis in divergent ways (Lester Pirtle and Wright 2021; El Arab et al. 2023). International and internal migrants have been among the social groups most

affected by the pandemic. In the age of lockdowns, internal travel restrictions and border closures, immobility, that is, severe restrictions on travel within the city and outside of it, have profoundly unsettled the economic and food security of these vulnerable groups. On the one hand, the latest research on international migrants has shown that limited access to livelihood opportunities, resources, and supports contributed to their greater exposure and precariousness to the COVID-19 pandemic (McAuliffe and Triandafyllidou 2021). On the other hand, the pandemic has resulted in a “crisis of mobility” when lockdowns in cities clamped down on economic activities and forced internal migrant labours to return to their hometown (Rajan et al. 2020). The vulnerabilities of migrants, who were crucial workers in essential sectors during the pandemic, are magnified by the fact that they are more likely to work in jobs that pose a higher risk of contracting the virus (IOM 2020). Due to various factors such as “their living and working conditions, lack of consideration of their cultural and linguistic diversity in service provision, xenophobia, their limited local knowledge and networks, and their access to rights and level of inclusion in host communities”, migrants are more likely to contract the virus, not receive adequate care, have worsened symptoms, suffer psychosocial impacts, and experience livelihood insecurity (Guadagno 2020: 4). These challenges have directly contributed to migrants’ food insecurity. With these understandings, it is crucial to examine the experience of internal migrants during the Covid-19 pandemic and how access to food has evolved alongside the changing lockdown policies.

## Changing COVID-19 Containment Measures in China since 2019

To better understand the dynamics of food security during the pandemic, a detailed assessment of the changing circumstances of the COVID-19 pandemic in China and its control is required. The prevention and control of the COVID-19 pandemic in China can be divided into four phases from December 2019 to early 2023. Table 2 summarises these phases, including their time periods, prevalent pandemic-related general conditions, containment measures, and other policies adopted by Chinese authorities and their effects on urban food environments and food security.

From the first outbreak in Wuhan in December 2019 until March 2020, COVID-19 cases in China were largely confined to Wuhan and nearby cities in Hubei province. These abrupt outbreaks forced the central government to shut down Wuhan and nearby cities, cancel all public transportation services from Hubei, and set up 1,501 control stations on all levels of roadways. This first lockdown also indefinitely shut down all public service facilities, such as food markets, restaurants, hotels, and other forms of accommodation, and entertainment businesses. Wuhan’s total lockdown further prohibited all persons from leaving their own residential compound or neighbourhood, except for health reasons, such as emergency medical services and COVID-19 related services (China Watch, Institute for Contemporary China Studies and School of Health Policy and Management 2020).

Table 2: Phases of COVID-19 Prevention and Control in China, 2019-2023

Phase	Time period	COVID-19 conditions	Containment measures	Policies affecting food security
I	December 2019- March 2020	Outbreak in Wuhan and nearby cities	City-wide and provincial lockdowns, mass testing, mobility tracing	Food markets closed, mobility restrictions, emergence of online food buying groups
II	April 2020- August 2021	Sporadic, small number of cases	“Normalized prevention and control” phase, prevention of foreign cases being imported into China	Occasional closing of food markets
III	September 2021- December 2022	Major outbreaks mixed with small outbreaks	“Dynamic zero COVID” policy, rapid control of new outbreaks, mass nucleic testing and big data tracking, lockdowns in major cities since March 2022	Closedown of residential neighbourhoods in lockdown cities, thriving online food buying groups
IV	January 2023- present	Nationwide outbreaks	Lifted restrictions and abandoned mass testing	Food markets no longer required to be closed

*Developed by the authors using Liang et al. (2022) and State Council Information Office of the PRC (2020)*

A distinctive feature of pandemic control in China was the central role of the local community or *shequ* in minimizing the spread of the coronavirus. Jiang (2022) has argued that the highly centralised top-down system of pandemic policy design and implementation placed the responsibility and burden of combatting the COVID-19 pandemic ultimately on “the community”. A *shequ* or “community” refers to the residential neighbourhood committee drawn across several residential compounds. Often characterized as grassroots self-governing organisations, they also function as the final bastion of government power exerted from the top. These “communities” carried out key responsibilities of conducting routine COVID tests of residents, guarding entry and exits to neighbourhoods, providing food, personal protection equipment and necessities, and conveying government pandemic control policies to households within their jurisdiction. Given these expanded responsibilities, these communities exerted considerable power throughout the various phases of COVID-19 prevention and control disproportionate to their status and actual capacity. Suddenly endowed with these overwhelming responsibilities and powers, the lack of self-governance capacity of communities led to a serious shortage of qualified personnel. In the early days of the epidemic, it was common for a very small number of community workers to be responsible for the daily needs of hundreds or even thousands of households. As a result, food security was severely compromised.

By March 2020, the epidemic was largely contained in Wuhan. China’s COVID-19 containment strategy then quickly transitioned to the new “normalized prevention and control” phase, which witnessed only a small number of sporadic outbreaks. The heavy-handed control measures imposed in Wuhan and nearby cities were gradually lifted. This success can partly be attributed to the established mass reporting system that alerted residents to the potential risks of infection and contagion. However, what was described as the “People’s War against COVID-19” succeeded at the expense of individual freedom, particularly freedom of mobility, privacy, and dignity (Jiang 2021, 2022). Migrants returning from Wuhan to their provinces of origin faced institutionalised discrimination through the established mass reporting system for some time (Mozur 2020; Jiang 2021).

The focus of the second phase was to prevent the entry of COVID-19 cases from outside China. These deterrent measures included severe travel restrictions into the country and COVID testing of not only visitors, but also imported food and other goods. Since travel restrictions were first imposed on 28 March 2020, China has undergone several policy changes to prevent imported cases of COVID-19 through international travel (Huld 2022). Travellers from other countries entering China were required to undergo a two-week quarantine at designated hotels upon arrival, typically followed by another quarantine at their own residences or other accommodations at their local destination points. This mandatory quarantine was supplemented by the strict control of visa permits issued to travellers. This phase also witnessed extensive screening of imported foods. This was especially the case after viral RNA was detected in various imported frozen raw foods throughout the country in early

June 2020 and several outbreaks were traced to workers in cold storage, seafood processing facilities, and markets selling imported cold chain foods (Bai et al., 2021). Although the risk of COVID-19 transmission through food and food packaging is considered low, China launched a national programme in July 2020 to screen packaged frozen foods (News Desk 2022). Food markets, including large wholesale markets, were closed sporadically to limit contamination.

China entered Phase III in August 2021 when new technologies for tracking people’s mobility were already in place and were tested on larger scales. This phase also witnessed the adoption of the ‘dynamic zero-COVID policy’ that aimed to quickly control outbreaks using rigorous city-wide lockdowns with the help of mass testing and mobility control technologies such as special health and travel codes (BMJ 2022). These travel codes were mobile applications that tracked and managed the health and mobility information of individuals during the pandemic. Individuals were assigned color codes (such as red, yellow, or green) based on their health status and potential exposure to infectious diseases. Individuals with a red code were often required to undergo quarantine or take other precautionary measures due to a higher perceived risk. These codes controlled the travel and mobility of persons to certain areas along with access to public spaces severely restraining the mobility of internal migrants. During this phase, partial or complete lockdown measures were reintroduced in many cities throughout the country. The major cities with large numbers of residents that underwent such lockdowns included Xi’an (13 million people), Shanghai (25 million people), Chengdu (21 million people), and Shenzhen (17 million people). As these harsh lockdowns quickly caused severe social and economic hardships for millions of residents, the word ‘lockdown’ (*fengkong*, also known as *fengcheng*) became highly controversial. Local government policy documents often replaced it with other soft terms, such as ‘stasis management’ (*jingtai guanli*), ‘stillness throughout the whole region’ (*quanyu jingtai guanli*) and ‘temporary social control’ (*linshixing shehui guankong*), in the hope that it would appear less harsh and be more acceptable to Chinese residents. Similar phrases were constantly adopted by the Chinese government officials in formal statements and daily conversations. This new official vocabulary on COVID-19 constituted a new governmental tactic to mitigate the severe negative psychological consequences of lockdowns for the Chinese public at large. Yet, these rapidly creation and adoption of new terms also made the public extremely vigilant about any policies that restrict mobility.

With the very high level of uncertainty brought about by abrupt lockdowns (accompanied by the food market lockdowns), food stocking became a routine for many urban residents who previously used to buy fresh food daily. Food security was especially compromised in cities where lockdowns were enforced for long periods, but limited food delivery services were available. Complaints about reduced food accessibility and affordability dominated ordinary conversation in many parts of China. Many residents had to rely on online food markets and private or self-organised buying groups to access food and other necessities. The precarity

of food access greatly increased the rapidly accumulating discontent within the society. People were worn out by the prolonged dynamic zero-COVID policy, which was increasingly ineffective in containing the spread of the much more contagious omicron variant.

In early 2022 and supported by lockdowns and mass testing, the Chinese government finally abolished its zero-COVID policy. Little is known about the decision-making process that led to the 'opening' of the country, but China lifted most of the COVID containment measures all at once.

## COVID-19 and Food Insecurity in China

Shortly after WHO's announcement of the global pandemic on March 11, 2020, the Hungry Cities Partnership conducted an online survey with 2389 households in Wuhan and Nanjing cities to assess the food security effects of the pandemic. For China, this was in the middle of Phase I, when a significant proportion of the population in these two cities was already under lockdown. Our survey used the Household Food Insecurity Access Scale (HFIAS) and the Household Food Insecurity Access Prevalence (HFIAP) to assess the level of food security of households. A total of 1822 survey respondents, 796 in Wuhan and 1026 in Nanjing, answered all the questions required for the calculation of these two indicators. Among them, 19.5 and 21.1 percent of respondents in Wuhan and Nanjing respectively were migrants. The average HFIAS scores in Wuhan and Nanjing were 9.4 and 4.8 respectively (out of a possible 27). This is quite high compared to the survey results conducted in Nanjing in 2015 when the average HFIAS was only 0.61 (Si and Zhong 2018). No comparable pre-pandemic data exists for Wuhan. The significant increase in the HFIAS score suggests a considerable growth in food insecurity. The deterioration of urban food security is also clearly reflected in the results of the HFIAP scale summarised in Table 3. The survey found that 94.8 percent of the respondents in Wuhan and 69.3 percent of the respondents in Nanjing were food insecure to various degrees in early 2020 and in the early stages of the pandemic. Among these groups, 37.9 and 21.6 percent of respondents in Wuhan and Nanjing, respectively, were severely food insecure. When the detailed responses to the HFIAS questions in the survey are examined, we find

that a significant proportion of the respondents, 54.6 percent in Wuhan and 29.6 percent in Nanjing, were concerned about not having enough food to consume.

### The Case of Wuhan

As the early epicentre of the COVID-19 outbreak in China, Wuhan implemented some of the harshest lockdown measures seen so far on a global scale. Between 23 January and 8 April 2020, this city of 11 million residents was put under complete lockdown. The 9 million people who had not left the city for the upcoming Spring Festival were quarantined within the city (Ma and Zhuang 2020). Their food needs posed a serious and protracted challenge. Food insecurity, which used to be a problem for a small number of households in China, suddenly became a reality for a significant proportion of this city's population (Zhong et al 2021b).

The abrupt imposition of the complete lockdown of Wuhan's residential neighbourhoods sent shockwaves through the city's food system. Grocery shopping was restricted, with little time given to residents to prepare for these highly restrictive circumstances. In the days between January 23 (when the city was locked down) and February 14, Wuhan residents were still allowed to go shopping at supermarkets, community stores, and even public markets (also known as wet markets). These food outlets were ordered to close on January 30. Since face-to-face interaction with the local residents was not possible due to the lockdowns, the research team conducted 12 in-depth phone interviews with local residents in Wuhan to understand what the sudden change in the food environment meant for their food security. Many respondents had to alter their food purchasing routines. Many carried two to three large shopping boxes with them to purchase as much food as they could on a single trip to minimize their exposure to the coronavirus. Others relied on highly priced private delivery services from limited online suppliers or food distributed by local community committees. This new shopping practice was markedly different from the traditional practice in the country of purchasing food on a daily and regular basis to ensure its freshness (Veeck et al 2015). Another reported change in food retail before the complete lockdown on February 14 involved informal street food vending. After the closure of the public markets, many vegetable vendors operating in these markets began working as street vendors outside the gated urban communities. Most of our interviewees complained that the prices these vendors charged were significantly

Table 3: Level of Household Food Insecurity in Wuhan and Nanjing

Categories	Wuhan (2020)		Nanjing (2020)		Pre-COVID Nanjing (2015)	
	No.	%	No.	%	No.	%
Food secure	41	5.2	315	30.7	929	78.9
Mildly food insecure	124	15.6	297	28.9	162	13.8
Moderately food insecure	329	41.3	192	18.7	62	5.3
Severely food insecure	302	37.9	222	21.6	25	2.1
Total	796	100.0	1,026	100.0	1,178	100.0

Source: Zhong et al. (2021b: 13)

higher than the public markets. However, most continued to buy from street vendors because of the perceived freshness of the food that they sold.

Although most of the Wuhan residents were not prepared for the lockdown, its timing contributed to their food security in unexpected ways. This urban lockdown occurred two days before the Chinese Spring Festival, when most households purchase and cook extra food. This festival is a time for family reunion, and food is a key part of the annual celebration. Many of our research participants indicated that they were initially not very concerned about food availability, as they had already purchased and prepared a considerable amount of food just before the lockdown. However, restaurants that had stocked up for the increased banquet orders for the upcoming festival were hit hard, as all their orders were cancelled due to the lockdown. All restaurants and food establishments were closed during the lockdown. Many restaurants were forced to sell their cooked and uncooked foods, including their surplus perishable food stocks, at discounted prices. One interviewee recounted benefitting from these unexpected restaurant food sales during the early period of the lockdown: "I was fortunate that on my way home [at the beginning of the lockdown], I saw a restaurant selling half-prepared meat at a very cheap price in front of the restaurant. I bought a lot of them. I didn't expect that it would be so helpful for my household in the coming weeks".

### Internal Migrants and Food Security

When evaluating food security conditions during the three years of the pandemic in China, it is evident that the food security challenges triggered by the altered food environment at the beginning of the pandemic have shifted to financial shocks as the pandemic continued for many weeks and months. These economic hardships were mainly caused by the negative changes in the labour market due to the prolonged measures to contain the spread of the virus, particularly during Phase III (Gong et al 2022). Gong et al's (2022) study calculated that a 10 percent increase (3.7 days on average) in the duration of the zero-COVID policy raised the probability of unemployment by around 0.1. Later, food insecurity became more economically induced, rather than being caused by temporary market closures, and, moreover, it was firmly entrenched as a durable challenge. Simple policy measures, such as increasing food supply through the reopening of food markets, would no longer easily rectify this problem.

Furthermore, this pronounced change does not imply that there were no challenges to the food environment in the later stages. While this shift reflects the broad trend, the level of food security has not undergone a continuous decline during the pandemic. Rather, it has varied over space and time. In Phase I, lockdowns such as in the case of Wuhan have resulted in unprecedented closure of wet markets and food stores and resulted in elevated food insecurity. The disruption of the urban food environment did not last long, as strict lockdowns were effective in controlling the spread of the virus. In Phase II, when fewer cases of COVID were found and lockdowns were rare, the pre-pandemic high level

of food security was restored in most cities. In Phase III, strict lockdowns were only enforced in certain cities with major outbreaks. However, more than a year of repeated cycles of lockdowns and re-openings severely impacted the national economy and resulted in a significant reduction of labour wages. This marked reduction in earnings was especially felt by less-educated labourers working in the traditional service sector and foreign investment enterprises, leading to widening income inequality among different socioeconomic groups in the country (Wu et al 2022). Workers in the traditional service sectors such as wholesale, retail, tourism, and entertainment experienced a greater risk of wage loss compared to those in manufacturing and modern service sectors such as logistics, telecommunications, and business services. Gong et al (2023) found that although the dynamic zero-COVID policy (previously discussed as Phase III) did not result in significant economic loss in 2021, the policy was more strictly implemented in 2022 and led to a 30 percent decline in mobility. Consequently, China experienced a 3.9 percent loss of GDP in 2022.

The enforcement of containment measures produced a localized mobility pattern where intercity mobility decreased by an average of 16 percent even between city pairs with no local COVID-19 cases (Mu et al 2023). When lockdowns were imposed in major cities such as Wuhan, Shanghai, and Shenzhen, a significant proportion of rural-urban migrants were confined in the city and faced extraordinary challenges. In Chinese cities, local households are legally recognised by their local household registration, known as hukou (Fan 2008). Migrants often do not possess local hukou, although some of them who meet the criteria would be able to qualify to receive the hukou after living in the city for a certain period. Households with the local hukou can be used to distinguish between migrants and local permanent residents. The results of our Wuhan and Nanjing surveys showed that migrants (households without local hukou) had a diverse food experience compared to local permanent residents during the COVID-19 pandemic. This difference is clearly demonstrated by the HFIAS and HFIAP results of the survey.

Figure 1 shows the HFIAP scores of the local and migrant households in Wuhan and Nanjing. First, aggressive containment measures implemented in early 2020 have resulted in an abnormally high level of food insecurity in both cities. Only 5 percent of the households in Wuhan and 29 percent of the households in Nanjing were considered food secure. Households experiencing severe food insecurity were as high as 37 percent in Wuhan and 20 percent in Nanjing, although the pattern of HFIAP categorization of the two cities was starkly contrasted. Second, migrant households were far more likely to be food insecure (97.2 percent in Wuhan and 78.2 percent in Nanjing) compared to local households in both cities. Third, among the food insecure, migrant households were much more likely to be severely food insecure than local households. The higher vulnerability of migrant households during the pandemic is also verified by the average HFIAS. While the average HFIAS of local households in Wuhan was 9.2, it was 10.4 for migrant households. In Nanjing, migrants scored 6.9 on average, while the score

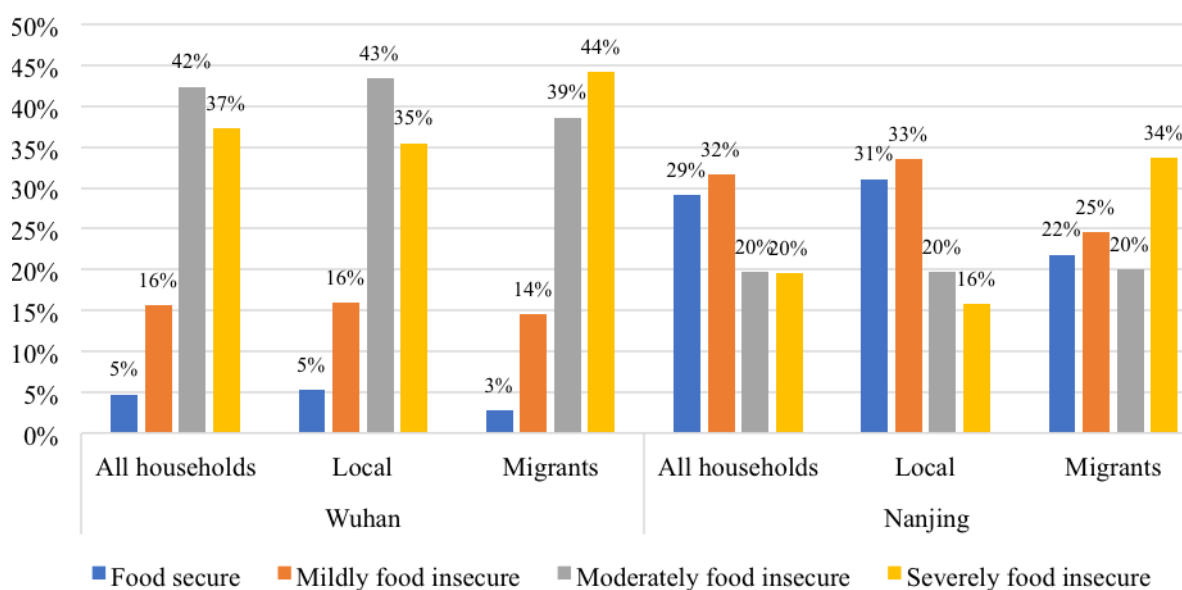


of local households was only 4.3 (see also Xu et al 2023). It is important to note that both measures indicate a very high level of food insecurity, largely due to the prolonged total lockdown of residential areas and workplaces.

To understand how migrants and local households experienced pandemic-induced food access challenges differently, we juxtapose the results of the main challenges to food access facing these two groups in both cities in Table 4. In general, the most significant challenges are increased food expenditure, restricted mobility, restricted access to markets, and increased food prices. In Wuhan, the food expenditure of more than 83 percent of households increased; more than 72 percent of households found that restricted mobility was a major challenge for food access; and more than 60 percent of households claimed that restricted access to wet markets and supermarkets constituted a major challenge. Although this situation was also quite significant in Nanjing, it was much less severe.

A comparison of the major challenges facing migrant and local households reveals a more complicated picture. While only four of the nine challenges affected more migrant households than local households in Wuhan, seven of the nine challenges were experienced more frequently by migrant households than local households in Nanjing. The differences were not that significant for most of the challenges. This is likely because Wuhan implemented a drastic total city lockdown that severely affected both local and migrant households, and largely overshadowed the gap in terms of accessing food and other resources between the two groups. Despite this commonality, migrants were hit considerably harder, which was reflected in increased food expenditures, restricted mobility, and higher loss of income in both cities. This result demonstrates the greater vulnerability and pandemic precarity of migrants and underscores the importance of the nexus between pandemic precarity and food insecurity for the migrant population, as has been suggested by research in other national settings (Onyango et al 2023).

**Figure 1: Comparison of Household Food Security between Local and Migrant Households in Wuhan and Nanjing**



**Table 4: Challenges to Food Access Facing Local and Migrant Households in Wuhan and Nanjing**

Major challenges to food access	Wuhan		Nanjing	
	% of local households	% of migrant households	% of local households	% of migrant households
Increased expenditure on food	83.7	86.9	64.7	79.0
Restricted mobility	72.0	75.9	27.8	39.0
Restricted access to wet markets and supermarkets	60.8	60.0	30.2	36.2
Food price increases	61.9	58.6	35.5	37.1
Loss of income	49.1	51.7	19.3	25.7
Limited food availability/variety in wet markets and supermarkets	31.8	37.2	26.5	26.7
Limited food availability/variety in online stores	37.6	28.3	19.3	12.4
Food quickly sells out in online stores	33.7	28.3	15.1	14.3
Restricted delivery of food to your home	27.3	20.7	9.3	13.3

The higher level of food insecurity among migrants is socially constructed, as the result of the social, economic, and institutional barriers that prevent them from accessing resources and services in cities on par with the local permanent residents. This socially constructed nature, as Xu et al. (2023) accurately pointed out, can be understood using the lens of three major 'pathways' to food insecurity for migrants, namely income, food access, and social security. The diagram in Xu et al. (2023: 4) illustrates these three pathways. Building on this framework, we next discuss the three manifestations of the socially constructed nature of the food insecurity of migrants through the pandemic in China: precarious economic conditions, limited social connections, and weak access to social protection programmes.

The first manifestation is the precarious **economic conditions** of migrants. It is widely recognized that a significant number of rural-urban migrants perform low-skilled and physical labour-intensive jobs in Chinese cities that generally offer low wages and minimal benefits (Chan and Yang 2020, Xu et al 2023). Zhang et al's (2016) analysis of Chinese household income data confirmed that migrants earn slightly less than half of the urban workers' average income. Migrants are more likely to work in the private sector, while local urban residents are more likely to be employed in state-owned enterprises. Migrants' lower wages can be largely explained by their lower educational levels, limited work experience, and other variables of human capital (Chuang and Yan 2017). As a result, migrants have been less resilient to the various disruptions in economic activities during the pandemic and much more exposed to food price shocks and food insecurity. The rise in food prices contributed to higher food-based expenditures, exerting much greater stress on their limited incomes.

Another important dimension of the socially constructed nature of the greater migrant food insecurity is related to their relatively limited **social connections** within the city. While local permanent residents could easily rely on their well-established personal networks in times of emergency, migrants often have few contacts that could provide the support they needed. During periods of lockdowns, people relied on their personal connections to share important information about food access, join buying groups, exchange food with others, and receive food deliveries (Qian and Hanser 2021, Liang and Zhong 2023). As migrants are considerably less embedded in local social networks, these various social resources were not available to them, putting them in a highly disadvantageous position to cope effectively with food shortages. Our research, especially interviews, revealed that this disadvantage was often exacerbated by the limited knowledge in the case of some migrants about the local food environment and sometimes limited food preparation skills or access to cooking appliances.

In addition to economic disparities and limited social connections, deep-rooted institutional barriers that affect migrant food security also relate to their limited access to **social protection** programmes such as children's education, healthcare, old age grants, minimum living standard allowances and other state-subsidised benefits (Afridi et

al 2015, Hung 2022, Kuang and Liu 2012). Most of these programmes are provided exclusively to local permanent residents holding a hukou. Furthermore, migrants without hukou often find themselves ineligible to buy property in many major cities because they do not meet the criteria set by local governments. These disparities in access between internal migrants and local residents within a Chinese city, in many ways, are similar to or even greater than the disparities in treatment and rights of immigrants (international migrants) and citizens in a country. This disparity in terms of access to social benefits significantly increases the precarity of migrants and consequently affects their food security. For example, during lockdowns, some migrants living in gated communities were excluded from the buying groups that were organized by the property management company (Xu et al 2023). Anecdotal evidence and public media suggest that some rural migrants faced a severe food shortage during lockdowns in Xi'an.

## Discussion and Conclusion

Three years after the COVID-19 pandemic was declared as an international crisis, the World Health Organization announced on 5 May 2023 that it was no longer a global health emergency. However, the manifold adverse outcomes of the pandemic will continue to shape the lives of millions of people for a long period of time. One of the important long-term impacts of this global pandemic is surging food insecurity in many countries. This paper has shown that the aggressive COVID-19 containment measures adopted in China have significantly reduced the high level of food security prevalent in its urban areas before 2020. Moreover, migrants have become more food insecure in general and more likely to be severely food insecure since the onset of the pandemic. This can be explained by the precarious employment and economic conditions of internal or rural-urban migrants, their limited social connections, and their disadvantaged position in accessing social protection programmes. Therefore, internal migrants have faced greater challenges of food access compared to local residents since 2020, particularly in terms of increased food expenditure, restricted mobility, and loss of income.

As pandemic prevention and control measures unfolded in China, the nature of food insecurity facing internal migrants and local households has also been transformed as a largely entrenched condition. Policy measures to contain COVID-19 in China have undergone four major phases between 2020 and 2022, shifting from abrupt lockdowns to "normalized prevention and control" to "dynamic zero-COVID policy" and the final opening. Correspondingly, the nature of food insecurity in Chinese cities transformed from being induced by the disrupted food environment to being induced by economic hardships. The decrease in financial resources has increasingly become a major trigger of food insecurity among urban residents in China. The deepening and enduring challenge of food insecurity is now an established reality in urban China. As Battersby (2017) pointed out, food security in cities is not a problem of availability but rather

an issue of structural poverty, which has coalesced with the effects of the pandemic controls. The pandemic affected food security strongly through strong income declines and job losses (Laborde et al 2020). This new durable form of urban food insecurity forged by the pandemic underscores the urgent need to establish and maintain social safety nets for marginal groups, such as internal migrants and other low-income households. It further demands innovative systemic solutions in the long run through structural changes that provide more economic opportunities for migrants. Finally, longitudinal studies involving new post-pandemic surveys are required to evaluate the changing impacts of the various factors on the food security of migrants. Such studies will be especially important for investigating how migrants have coped with these challenges of food access during and after the pandemic and what policy measures are necessary to reduce these adversities. Interventions to improve the economic conditions of migrants will need to be a key aspect to improve their food security in the long term.

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