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Food Self-Provisioning As an Effective Strategy for Addressing Climate Change and an Uncertain Future

——— Case Studies on Data Analysis of the Questionnaire Survey in China

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The background, purpose, methods, findings, and conclusion of the ongoing research Project

- **Research Background**:

Climate change, an uncertain future, and the post–pandemic era serve as significant historical contexts.

The changed of food properties due to technological intervention, along with the resulting food anxiety, exhibits unique characteristics in China. These dynamics are reflected in both macro and micro historical contexts.

- **Research purpose**

Discover the wisdom of agricultural civilization, inherit the multifaceted value of this cultural heritage in the contemporary era.

Explore an effective strategy for an alternative food system in the context of climate change and an uncertain future.

The background, purpose, methods, findings, and conclusion on the ongoing research Project

- Research Method:

Using a questionnaire designed by European scholars on FSP practices, combined with data analysis and case interviews, a random survey was conducted, with respondents in 2019 covering most cities across the country, while respondents in 2022 were primarily concentrated in the central and southern regions of China. Data analysis was performed using a comparative analysis of the two surveys. Additionally, long-term follow-up case studies were used to supplement issues not covered in the questionnaires.

General statement on the Questionnaire Survey Methods of Food–Self Provisioning(FSP) in China

General statement on the Questionnaire Survey

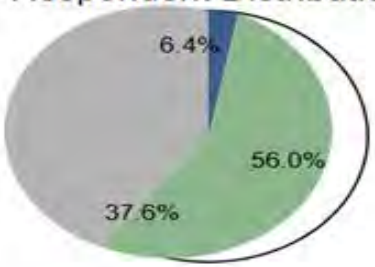
- This study began in 2019 with participation in the “Food-Self-Provisioning“(FSP) Questionnaire conducted by European scholars, using the same questionnaire sample. Two surveys were conducted, targeting over two thousand individuals (families) across most provinces and cities in China.
- The first survey took place in the summer of 2019, with 1,088 questionnaires collected.
- The second survey was conducted online in March 2022, with 1,333 questionnaires collected.
- A total of 2,050 valid questionnaires were received from both surveys.
- Up to now, there have been nearly a hundred in-depth interviews and six years of follow-up survey cases.
- The 2019 questionnaire survey was conducted using a random sampling method, with teachers and students from six universities in China trained to perform face-to-face interviews during holidays. In 2022, during the pandemic, online survey.

(1) **Area**

Comparison of Food Self-Provisioning (FSP) Surveys: 2019 vs 2022

2019 Survey

Respondent Distribution



FSP Land Availability

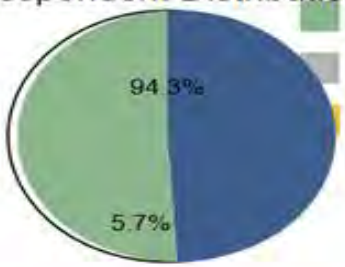
64.1% Total

74.7% 53.5% 78.0%

Decrease of 13.7%

2022 Survey

Respondent Distribution



Urban
Rural
Unspecified
With FSP Land

FSP Land Availability

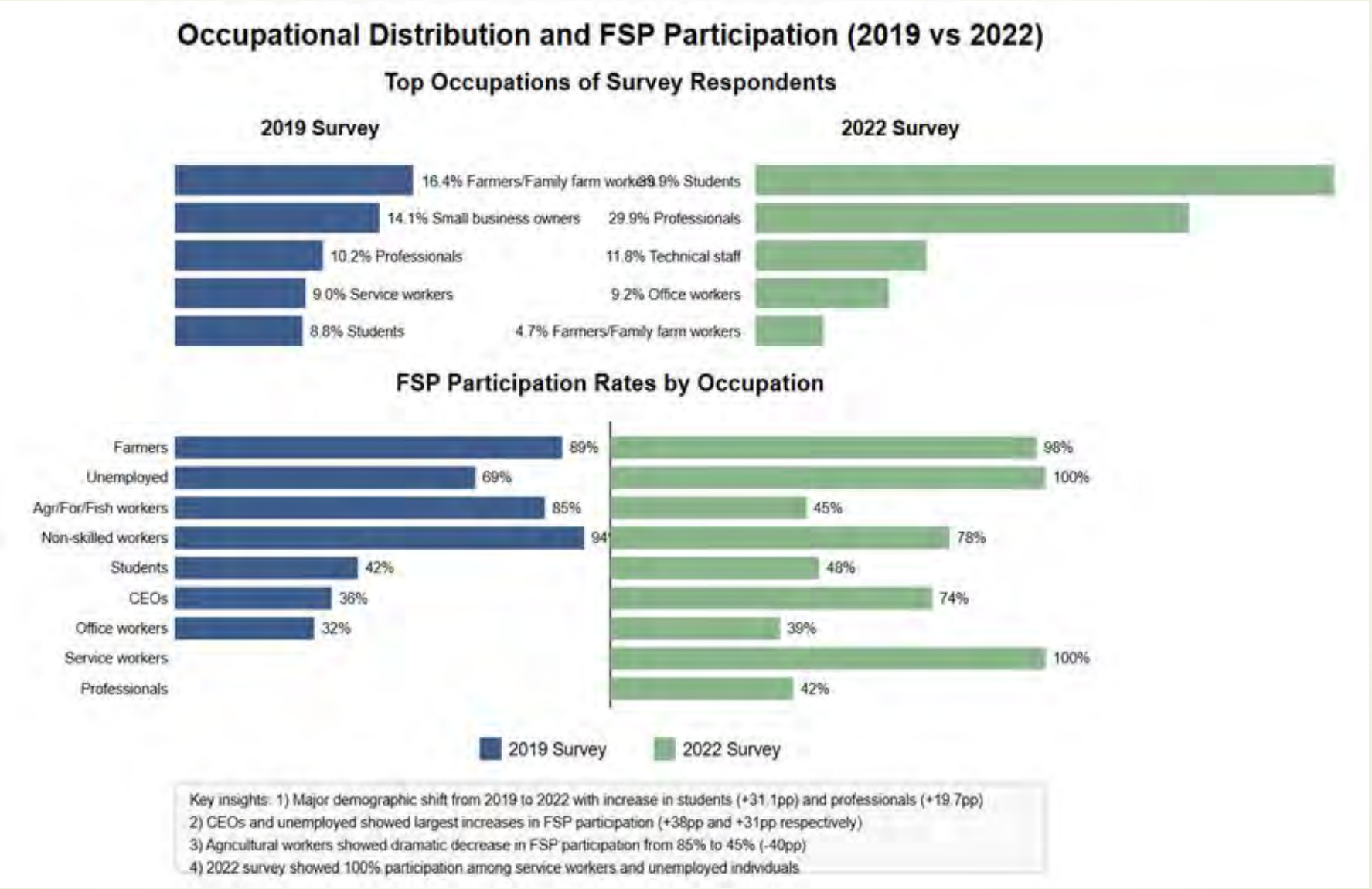
50.4% Total

Key Insights:

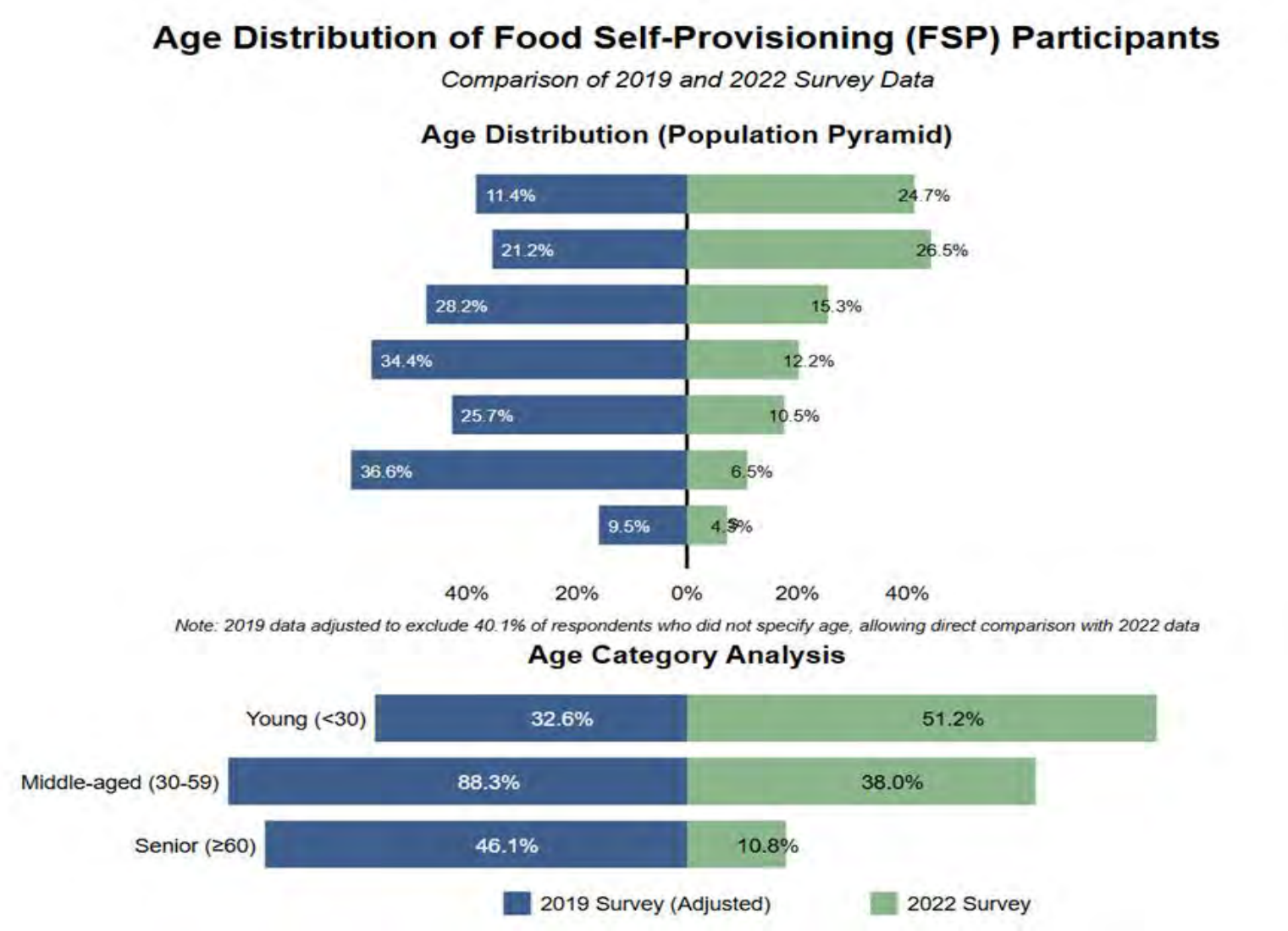
- The 2019 survey had a balanced mix of urban (6.4%) and rural (56.0%) respondents, with 37.6% unspecified.
- The 2022 online survey was predominantly urban (94.3%), which significantly changed the sample composition.
- Overall FSP participation decreased from 64.1% (2019) to 50.4% (2022).
- In 2019, unspecified location respondents had the highest FSP rates (78.0%), followed by urban (74.7%).

Note: FSP = Food Self-Provisioning (utilizing home gardens/yards for growing vegetables, fruits, or raising livestock for family consumption)

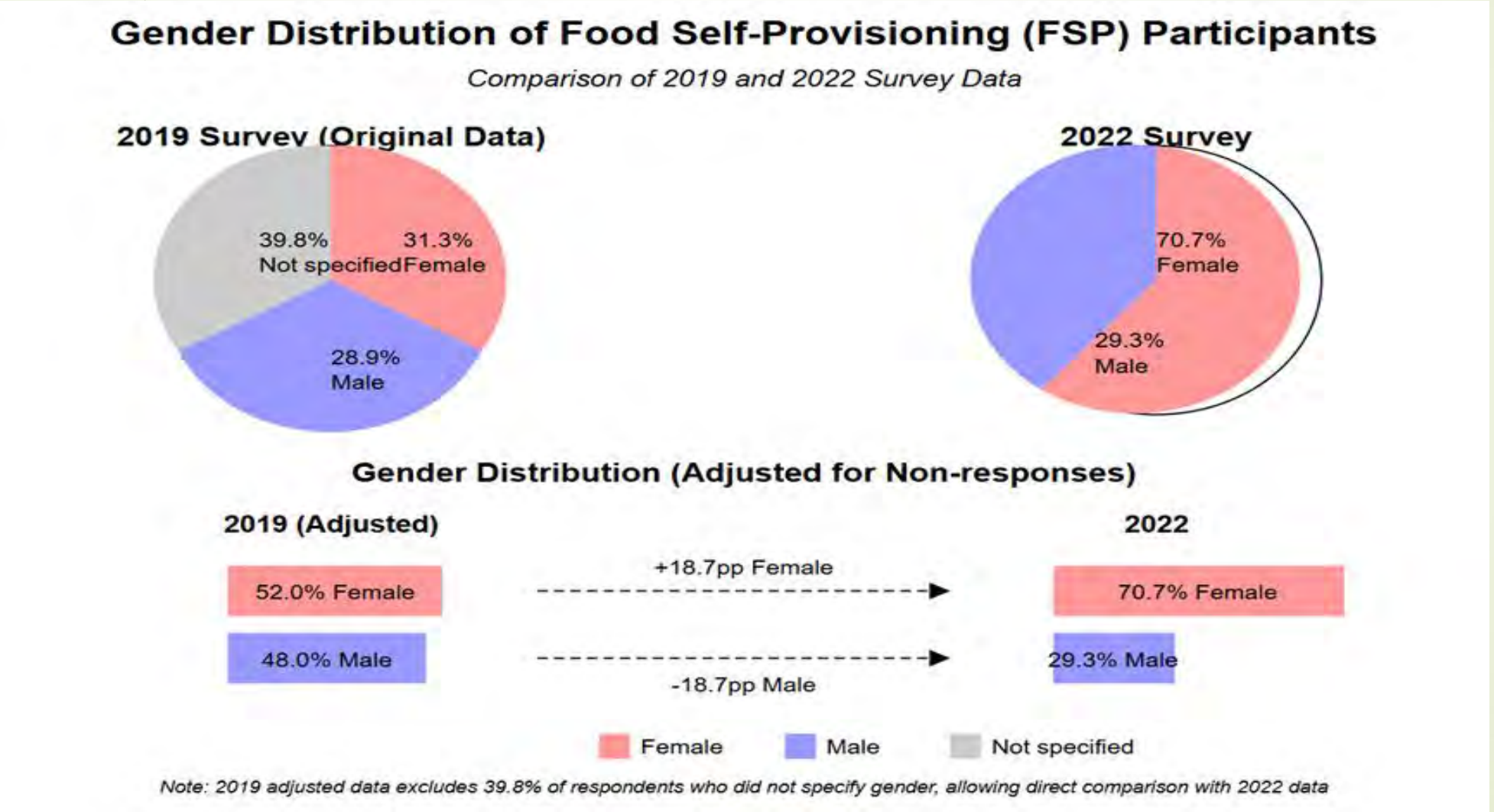
(2) **Occupation**



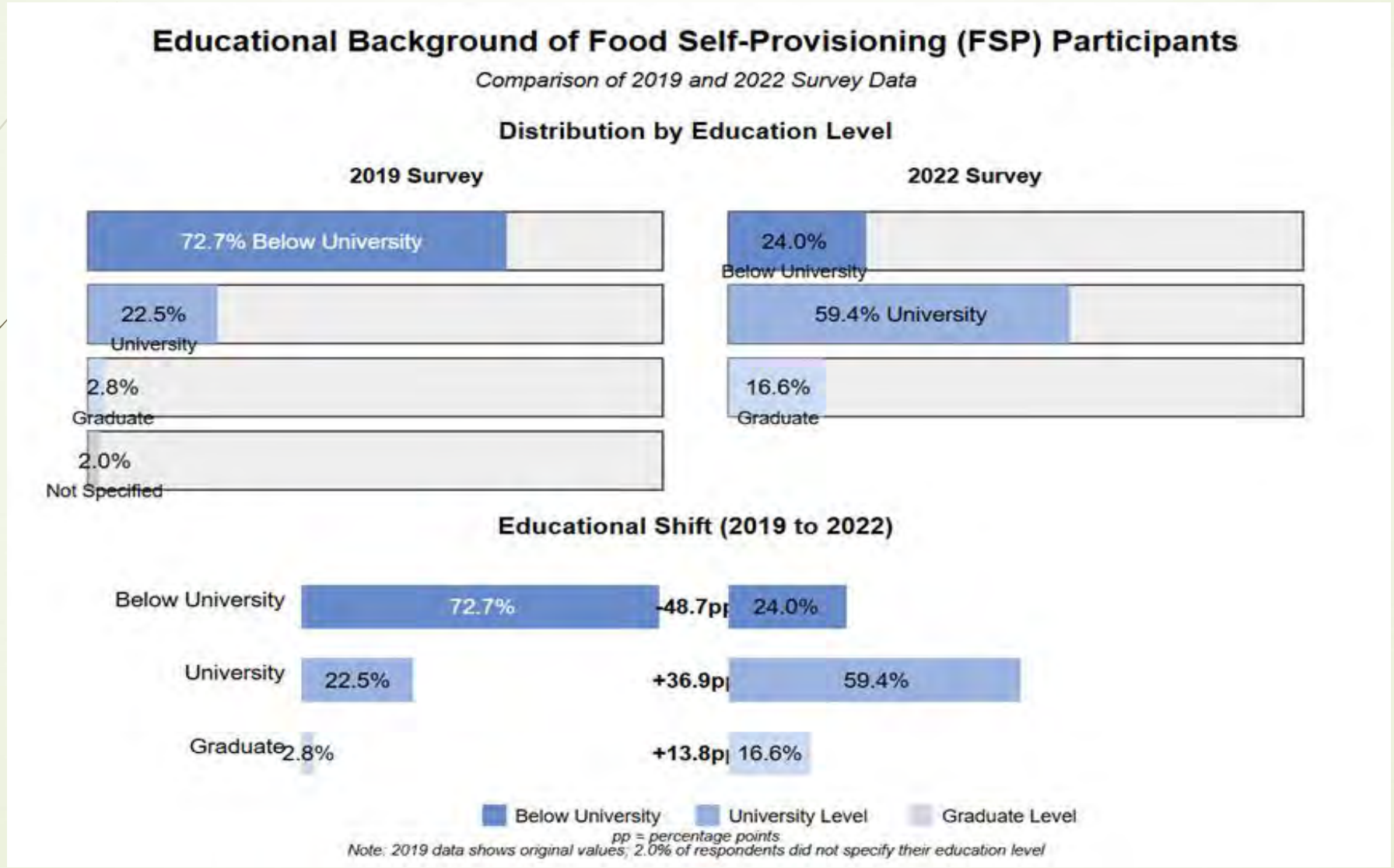
(3) **Age**


Age Distribution of Food Self-Provisioning (FSP) Participants
Comparison of 2019 and 2022 Survey Data
Age Distribution (Population Pyramid)
11.4%
24.7%
21.2%
26.5%
28.2%
15.3%
34.4%
12.2%
25.7%
10.5%
36.6%
6.5%
9.5%
40%
20%
0%
20%
40%
Note: 2019 data adjusted to exclude 40.1% of respondents who did not specify age, allowing direct comparison with 2022 data
Age Category Analysis
Young (<30)
32.6%
51.2%
Middle-aged (30-59)
88.3%
38.0%
Senior (≥60)
46.1%
10.8%
2019 Survey (Adjusted)
2022 Survey

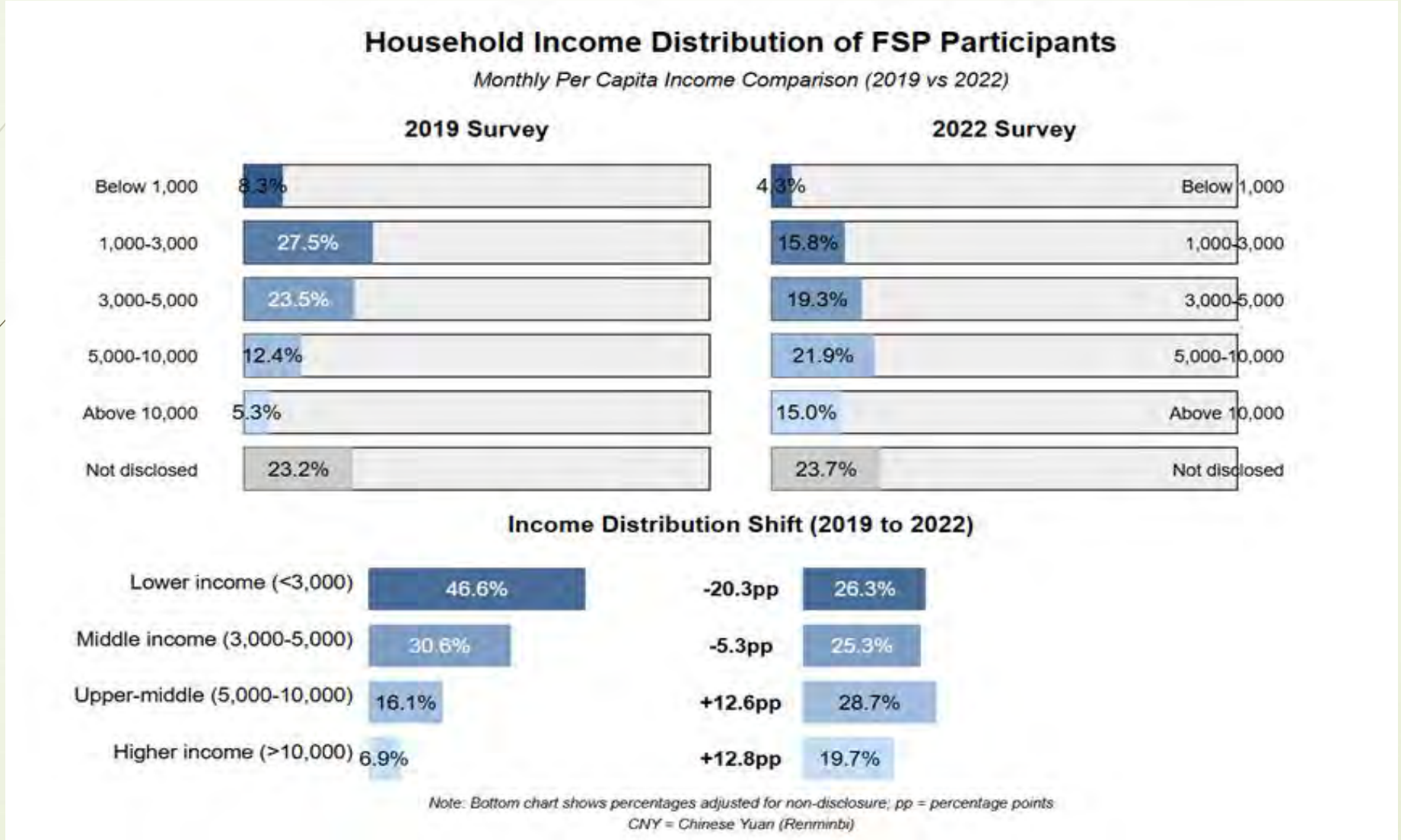
(4) **Gender**


Gender Distribution of Food Self-Provisioning (FSP) Participants
Comparison of 2019 and 2022 Survey Data
2019 Survey (Original Data)
39.8%
Not specified
31.3%
Female
28.9%
Male
2022 Survey
70.7%
Female
29.3%
Male
Gender Distribution (Adjusted for Non-responses)
2019 (Adjusted)
2022
52.0% Female
+18.7pp Female
70.7% Female
48.0% Male
29.3% Male
-18.7pp Male
Female
Male
Not specified
Note: 2019 adjusted data excludes 39.8% of respondents who did not specify gender, allowing direct comparison with 2022 data

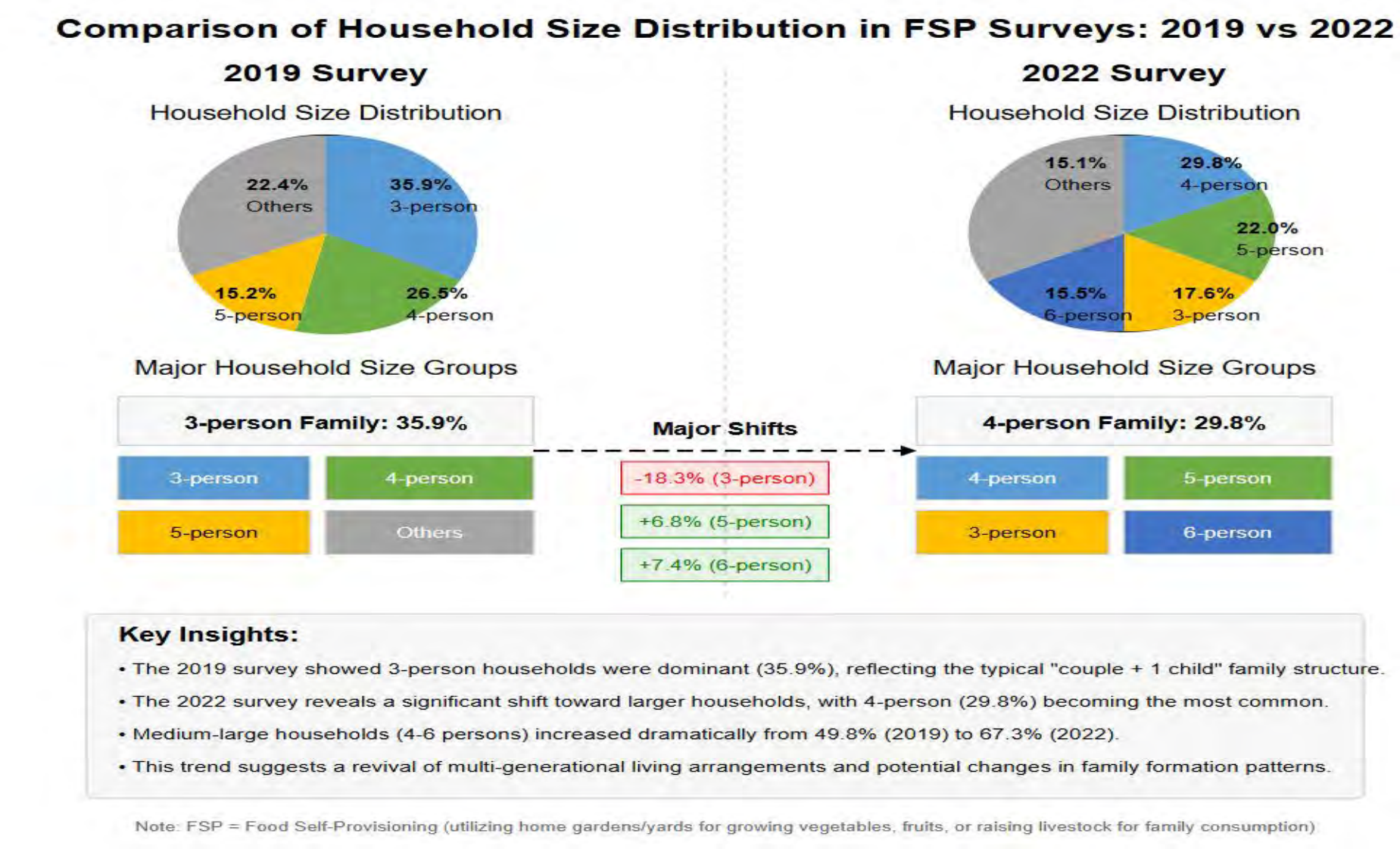
(5) **Education**


Educational Background of Food Self-Provisioning (FSP) Participants
Comparison of 2019 and 2022 Survey Data
Distribution by Education Level
2019 Survey
2022 Survey
72.7% Below University
22.5% University
2.8% Graduate
2.0% Not Specified
24.0% Below University
59.4% University
16.6% Graduate
Educational Shift (2019 to 2022)
Below University
72.7%
-48.7pp
24.0%
University
22.5%
+36.9pp
59.4%
Graduate
2.8%
+13.8pp
16.6%
Below University
University Level
Graduate Level
pp = percentage points
Note: 2019 data shows original values; 2.0% of respondents did not specify their education level

(6) Household Income



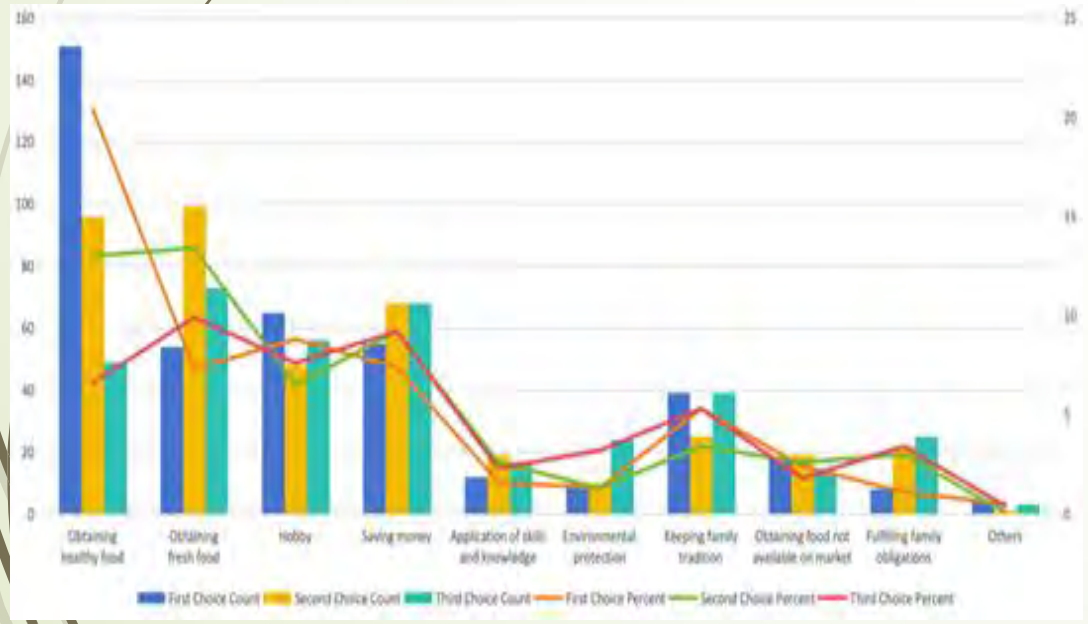
(7) Household size

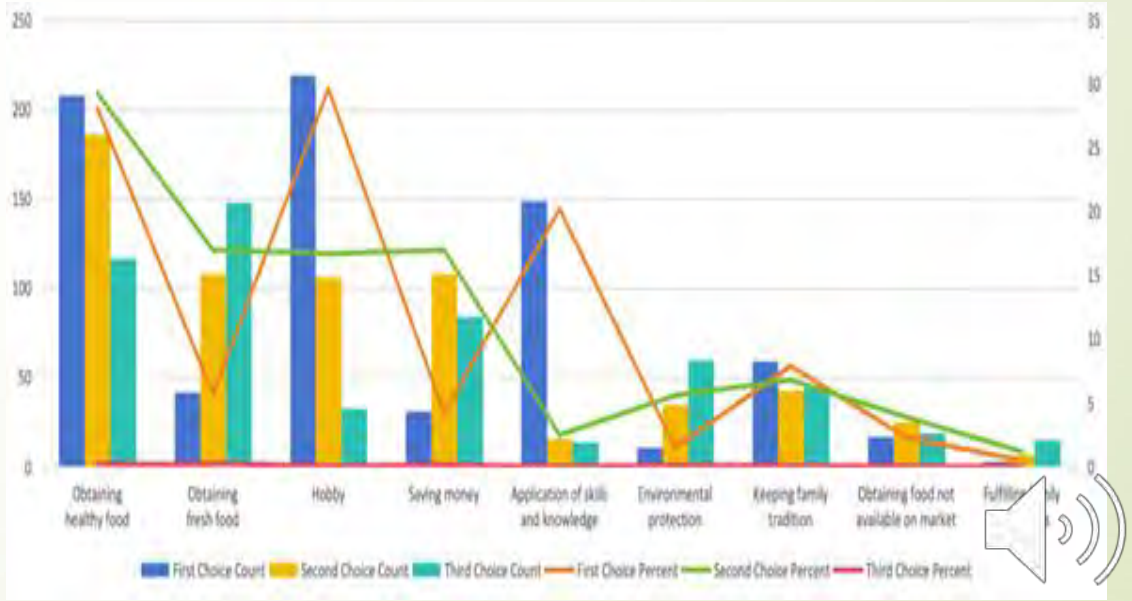


Key Findings on urban food-self provisioning in China

Motivations

A survey revealed that the top motivations for people growing one's own food are to access organic (ranked 1st) and fresh produce (ranked 3rd). Saving money comes in second (ranked 2nd). Rounding out the list are those who view it as a hobby and a way to spend leisure time (ranked 4th) and those who are continuing a family tradition (ranked 5th). Compared with the survey data from 2019, the proportion of younger cohorts participating in FSP was increasing during the 2022 pandemic period, especially for urban white-collar workers who only used balconies and plant box. The phenomenon of young people using balconies to participate in food growing is consistent with our observations and investigations during the pandemic period.



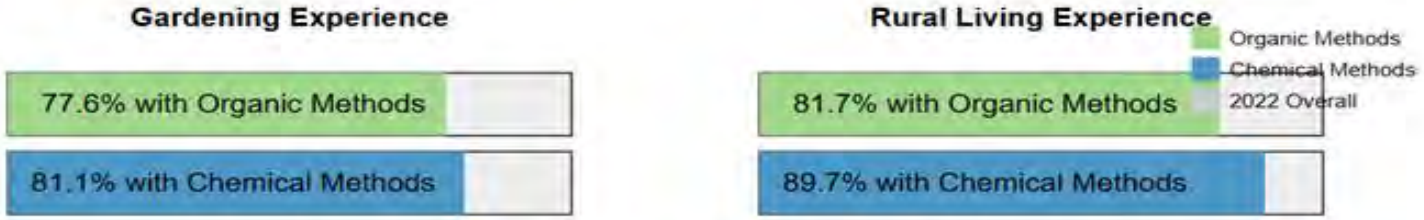


Fertilizer Usage

Correlational Analysis of Fertilizer Usage in FSP

Relationships between Fertilizer Choices, Experience, and Education (2019-2022)

Experience and Fertilizer Approach (2019)



Educational Background by Fertilizer Approach

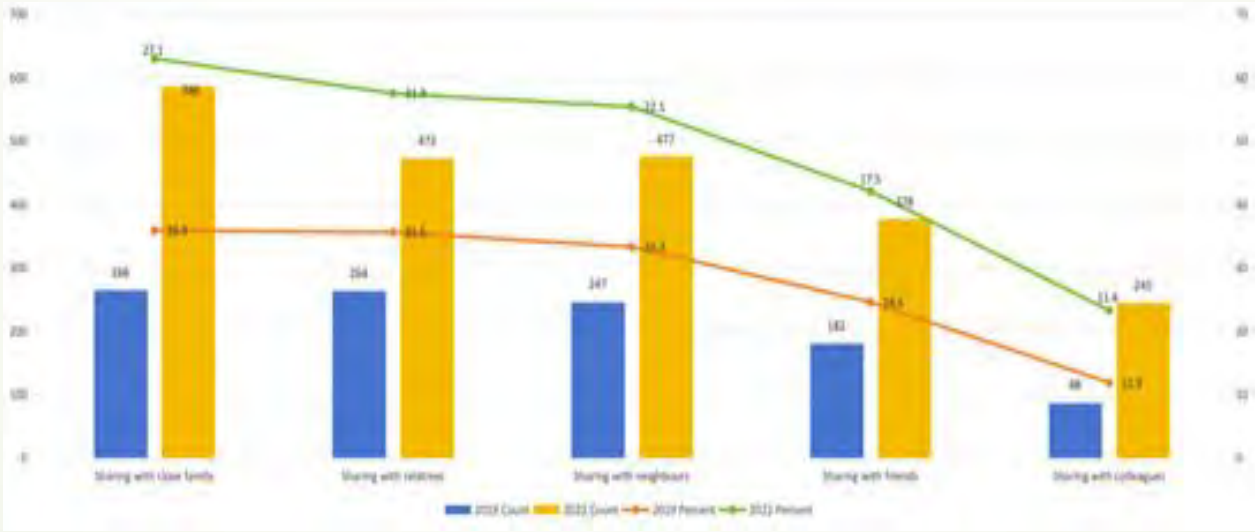
	2019		2022 Overall
Below University:	73.0% (Organic)	72.6% (Chemical)	25.7%
University:	21.5% (Organic)	23.6% (Chemical)	56.3%
Graduate:	3.7% (Organic)	1.8% (Chemical)	18.0%

Key Correlation Findings:

- Rural living experience is strongly associated with fertilizer usage patterns in 2019, with 89.7% of chemical fertilizer users having rural backgrounds (8.0pp higher than organic-only users).
- The most substantial difference in educational background occurred among graduate degree holders, who in 2019 were twice as likely to use organic methods (3.7%) compared to chemical methods (1.8%).
- The 2022 survey shows dramatic educational profile shifts, with university and graduate education comprising 74.3% of respondents, compared to approximately 25% in 2019.

Sharing the harvests

Willing to share the harvested fruits with others: 40–80% of the respondents said that they are willing to share with their family, relatives, and neighbors. This is a way to enhance community communication and gain a sense of accomplishment as well.



Land sources: urban

- Residents in urban areas have three types of land sources:
  - The first utilizes spaces like street corners, vacant lots, balconies, rooftops, and planting boxes.
  - The second involves renting small plots in urban farms.
  - The third, living on the city's outskirts, typically owns small private plots.

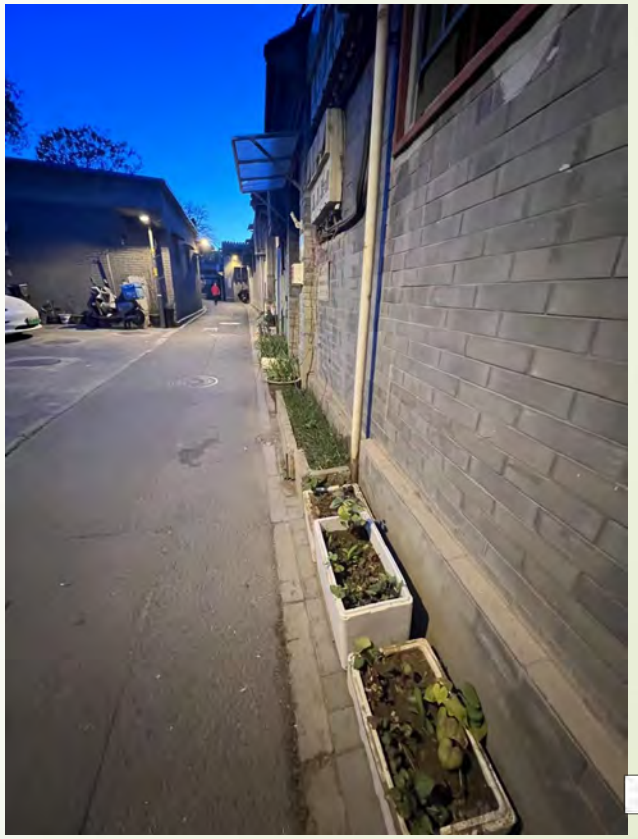
Land sources: urban

- Utilizes spaces like street corners, vacant lots, balconies, rooftops, and planting boxes.
- Even in a huge city like Beijing, people have shown great imagination and creativity. By using this small space, they can grow food and make their living environment better.
- The photo is only 500 metres from Tiananmen Square.

Land sources: urban

- Utilizes spaces like street corners, vacant lots, balconies, rooftops, and planting boxes.

- *Hutong Beijing*



Land sources: urban

- renting small plots in urban farms
- Left: Discovery Bay Community, Hong Kong;
- Right: Urban Farm, Beijing.

Land sources: rural

- Most residents in rural areas continue to follow historical policies and have access to "allotment land”
- China as a major agricultural country, still has nearly 400 million people living in rural areas, with each household having private plots of varying sizes(allotment land).
- These pictures were taken in a village in Helong Manchu Autonomous County, Dandong City, Liaoning Province, in northeastern China, on October 19, 2024.

Over the past six years, there have been changes in the participating groups and their motivations.

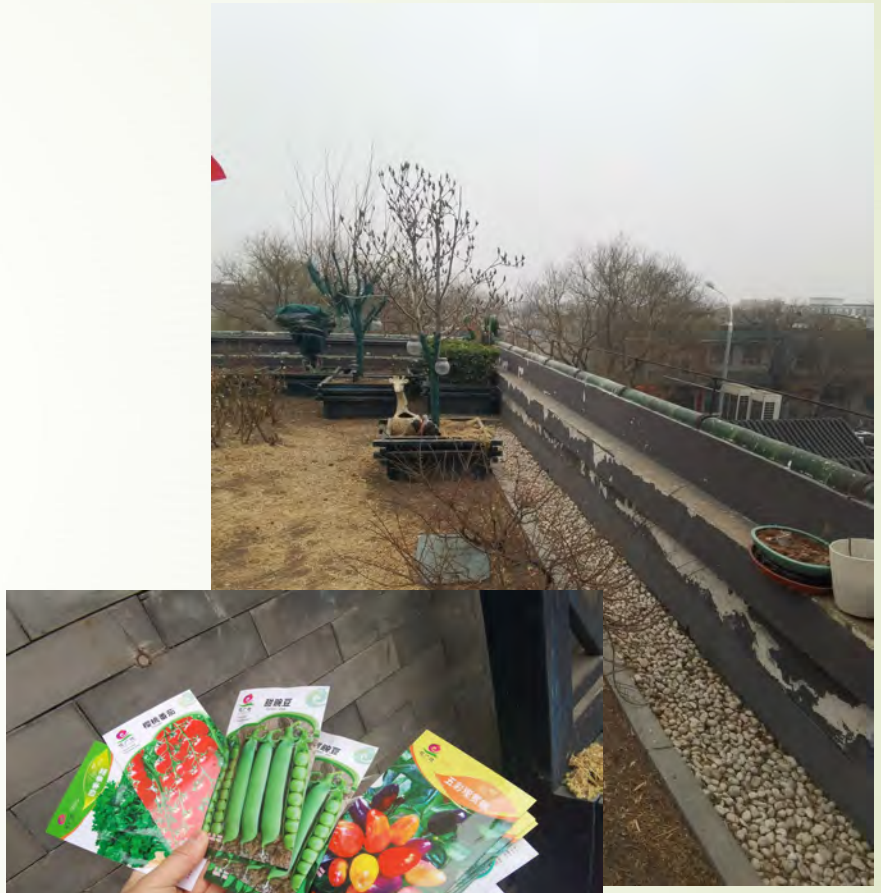
- Before the pandemic, the primary reason people gardening at home was to ensure food quality and convenience.
- During the pandemic, planting at home not only alleviated shortages for families but also helped others in needs, playing the role of food as a "reservoir."
- After the pandemic, people have come to recognize the multiple values of FSP——it can be to relieve stress, emotional well-being, and life more enjoyable, as well as a leisure activity with taking freedom and relaxation. It also sparked children and young people's enthusiasm for planting

New trends, New Innovations, and New Direction

- **Three changes in post–pandemic :**

1. **The rise of young "urban farmers" has spurred the growth of the planting industry.** This includes the expansion of material markets (such as seeds, fertilizers, planting boxes, and tools) and the emergence of live–streaming sales and technical guidance websites, forming a cyclical industrial chain.
   The industry's output value exceeds 10 billion yuan. Cities like Shanghai, Dongguan, Beijing, Suzhou, and Guangzhou rank among the top 5 for balcony gardening, with the majority of growers being born between 1985 and 1995.

   (Source: Taobao's "2022 Balcony Vegetable Planting Report")



the rooftop of Di'anmen Post Office in Beijing, taken on March 10, 2025 .

New trends, New Innovations, and New Direction

2. **New research directions in agricultural science institutes.**

such as, the Jiangsu Academy of Agricultural Sciences has developed multiple planting products and technologies tailored for small spaces, providing integrated solutions for cultivation, daily life, and artistic expression.

New trends, New Innovations, and New Direction

3. The release of new national policies.

In 2023, the Central Government's No. 1 document highlighted the "courtyard economy" and encouraged rural areas to develop by utilizing small courtyards, this aims to preserve agricultural cultural heritage, promote ecological cycles, and achieve multi-industry development of the "green economy." By 2024, 40,000 "pocket parks" had been built in urban areas.

- http://www.moa.gov.cn/xw/qg/202307/t20230725_6432909.htm
- Right image: Discovery Bay Eco-Community Farm Project, Hong Kong,2025

New trends, New Innovations, and New Direction

- Home gardening, even on a small plot of land, reflects people's emotions and pursuits in various aspects such as nature, aesthetics, art, leisure, humanity, and creativity in daily life. It inspires diverse social practices and sparks imagination in "spatial production."
- Not only does it provide an excellent platform for philosophers, artists, and personalized architects to showcase their talents, but it also offers a vast space for the public to engage in life design and imagination. More importantly, people recognize it as a resilient, sustainable, and adaptable source of food.

Challenges In Rural Areas

- The courtyard economy (including farm villar, pick–your–own orchards, homestays, and eco–parks) is becoming an integral part of rural revitalization, with most being developed as tourism projects. **However, it faces two critical challenges: one is "homogenization," and the other nature is excessively commercialized.**
- The phenomenon of "Being Flatted" (被上楼) refers to Chinese farmers' land being taken for reclamation and urban development (Ministry of Land and Resources, 2008),
- forcing them to move out of their ancestral estates into high–rise buildings. Its consequences: the local governments' expropriation of arable lands for property development has left villagers unable to grow food in the fields or allotments, and their cost–of–living increase (Chen Xiwen, 2011).
- The ability to cope with food shortages will be to weaken, posing a challenge to both households and the state in the face of climate change and an uncertain future.

Challenges In Rural Areas

- In most regions, the elderly and children are left behind, while **the younger generation has largely moved to cities**, and the loss of traditional farming culture, techniques, and skills.
- "What kind of future will the 'generation of youth in **climate change**' face: where will are their land in? Ask farmers that the land will dry up and become barren in twenty or thirty years—what should they do? The survival of soil, climate, species, and even our entire living environment will be caught in such changes." (Latour) China is now confronting the challenges by this phenomenon.

Challenges In Urban Areas

- Modern people blindly chase the idea that technology is able to solve all problems, such as creating off-season fruits and vegetables, pre-made meals, fast food, etc., which undermines the natural and cultural attributes of food and has caused disastrous impacts on society, ecology, and health.
- The younger generation generally harbors a dependency on technology.
- Urban life, with its concrete jungles, severs the connection with nature, leading to a lack of understanding about the sources of grains and food, a diminishing appreciation for nature's offering, and severe wastage of food.
- The lengthening of the industrial, transportation, and storage chains for grains, vegetables, and fruits has necessitated various preservation technologies, affected the quality of food. While people are wary of food that has been technologically altered, they are also compelled to purchase food they are not entirely comfortable with.

Opportunities and Challenges Coexist in the Future

- Home gardening, even on a small plot of land, reflects people's emotions and pursuits in various aspects such as nature, aesthetics, art, leisure, humanity, and creativity in daily life.
- It inspires diverse social practices and sparks imagination in "spatial production." Not only does it provide an excellent platform for philosophers, artists, and personalized architects to showcase their talents, but it also offers a vast space for the general public to engage in life design and imagination.
- More importantly, people recognize it as a resilient, sustainable, and adaptable source of food.

Conclusion and Discussion

- Conclusion:
- FSP Multiple Values:

  Resilience

  Autonomy

  Sustainability,

  Imagination,

  Creativity,

  Aesthetic Sense,

  Prepare for a rainy day

  and practicality

- Discussion

How to change the managers and policies lack flexibility, and the planning has been monotonous.

How to gain more social support in areas such as technical guidance, land management, and professional talent development?

How to raise awareness of micro–level food systems and integrate them into national economic statistics?

Acknowledgments & Statement

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Thank you
Look forward to questions and discussions

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