



Food and Agriculture Organization  
of the United Nations

# Urban food system and nutrition assessment in Kathmandu, Nepal

Project report



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This report presents the key findings of the application of the UFSAN tool in Kathmandu, Nepal. It was written by Ahmed Raza (FAO), Himanshi Pandey (Public Health Foundation of India [PHFI], New Delhi), Ameeka Shereen Lobo (PHFI, New Delhi) and Anjali Ganpule Rao (PHFI, New Delhi), with helpful feedback from Isabela Sattamini (FAO).

The local research partners in Kathmandu were Nira Joshi, Ramesh Dangi and Sanish Shrestha. Overall guidance on the implementation of the tool in Kathmandu was provided by Ahmed Raza (FAO), Anjali Ganpule Rao (PHFI) and Lindsay Jaacks (University of Edinburgh), with support from Manu Raj Mathur (PHFI, New Delhi) and Prabhakaran Dorairaj (PHFI, New Delhi).

The document was edited by Sarah Pasetto, and Davide Cascella was responsible for the layout and the development of the illustrations. Bianca Carlesi and Chiara Deligia provided communication support.

## ABBREVIATIONS AND ACRONYMS

COVID-19	coronavirus disease 2019
IDDS	individual dietary diversity score
KMC	Kathmandu Metropolitan City
MDD-W	minimum dietary diversity - women
UFSAN	Urban Food System Assessment for Nutrition
NPR	Nepali Rupee*

\* NPR 1 = USD 0.0084 (average 2020 rate)



# 1. BACKGROUND

Kathmandu is the capital of Nepal and is one of the country's largest cities in Nepal. Tourism plays an important part, with Kathmandu being the third most popular travel destination in the world in 2013 (World Bank, 2013). Kathmandu currently has 32 wards (Kathmandu Metropolitan City Office, 2012). The urban area of Kathmandu valley is divided into three districts: Kathmandu, Lalitpur and Bhaktapur (City Population, 2012).

## 1.1. Municipal governance structures

These three districts are administered by:

- 21 local bodies;
- 2 metropolitan cities (Kathmandu and Lalitpur);
- 16 municipalities and;
- 3 rural municipalities (City Population, 2012).

The Kathmandu district is located in Kathmandu valley, in Province 3, Bagmati Pradesh. This is where the Kathmandu Municipal Corporation (KMC) has its district headquarters. Kathmandu district consists of 11 municipalities (Ministry of Federal Affairs and General Administration, 2017).

## 1.2. Socio-economic profile

### 1.2.1. Population trends

As at 2017, the metropolitan population of Kathmandu was 97 543 inhabitants (Ministry of Federal Affairs and General Administration, 2017). The population of Kathmandu Valley is 2.5 million inhabitants, a figure which has risen by an average of 4 percent per year, making the Valley one of the fastest-growing metropolitan areas in South Asia, as well as the first region in Nepal to face the phenomena of urbanization and modernization on a metropolitan level (World Bank, 2013).

### 1.2.2. Identification of socio-economic zones in the city

In terms of wealth, in Bagmati Pradesh, 42 percent of the 9 332 population sampled were in the highest quintile and 17 percent were in the lowest quintile. Eight percent of the population sampled were in the middle quintile (Table 1).

**TABLE 1.**

Wealth quintiles for the province of Bagmati Pradesh, Nepal

Wealth quintile	Bagmati Pradesh (%) (n=9 332)
Lowest	17.2
Second	13.3
Middle	7.5
Fourth	20.4
Highest	41.6

Source: Ministry of Health, Nepal, New ERA & ICF, 2017.

## 1.3. The malnutrition situation in Bagmati Pradesh

**TABLE 2.**

Prevalence of malnutrition in Bagmati Pradesh

Indicator	Prevalence
Stunting (children < 5 years of age)	29.4%
Wasting (children < 5 years of age)	4.2%
Underweight children (< 5 years of age)	13.3%
Anaemia among children (< 5 years of age)	42.8%
Anaemia among women (15–49 years of age)	29%

Source: Ministry of Health, Nepal, New ERA & ICF, 2017.

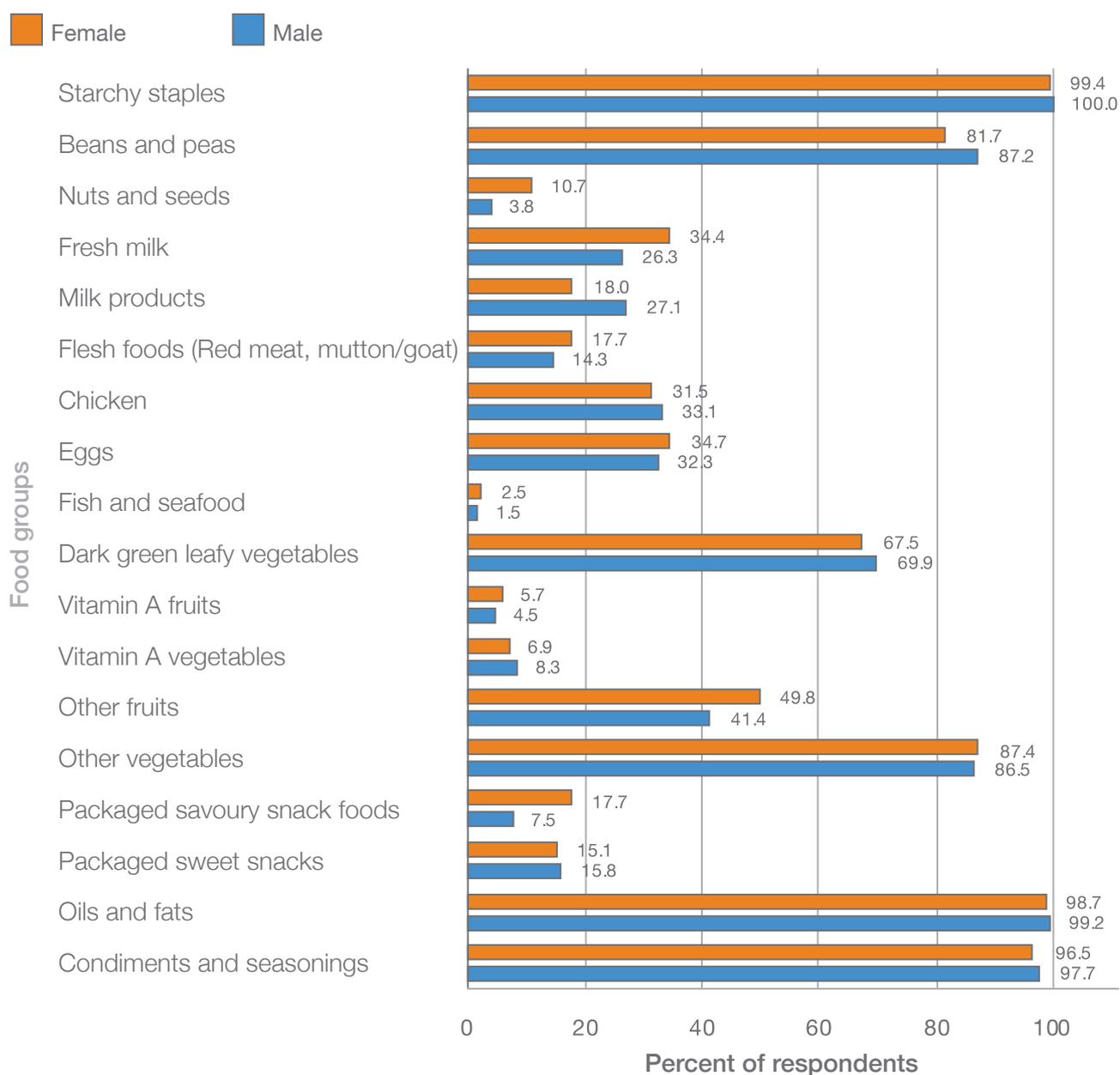


# OVERVIEW OF DIETS IN KATHMANDU

- Almost all participants consumed starchy staples daily.
- More than 65 percent consumed dark green leafy vegetables and other fruits and vegetables, and approximately 25 percent consumed milk and milk products daily.
- Forty-six percent of the participants consumed legumes, nuts and seeds, 34 percent consumed eggs and 6 percent consumed fruits and vegetables rich in vitamin A daily.
- Up to 15 percent consumed packaged foods and 17 percent consumed flesh foods daily.
- The mean individual dietary diversity score (IDDS) was 5.3, and there was a significant increase in the DDS as the household income levels increased.
- The mean minimum dietary diversity score for women of reproductive age (15–49 years) (MDD-W) was 5.4. Approximately 85 percent of this population recorded a dietary diversity score above 4.
- Higher-income individuals reported a higher IDDS and MDD-W.

**FIGURE 1.**

Distribution of food consumption on daily basis by gender (N=450).



Source: Authors' own elaboration.



---

## 2. DIETS

A total of 450 participants were interviewed across two wards in Kathmandu.<sup>1</sup>

A high proportion of respondents reported consuming starchy staples (100 percent), beans and peas (83 percent), other vegetables (87 percent), dark green leafy vegetables (68 percent), and condiments and seasonings (97 percent) on a daily basis, in comparison to fruits (47 percent), vegetables rich in vitamin A (7 percent), fruits rich in vitamin A (5 percent), and nuts and seeds (9 percent), which were consumed by a lower proportion. Moderate proportions of respondents reported consuming poultry (32 percent), flesh foods (red meat, mutton and goat) (17 percent), eggs (34 percent) and fresh milk (32 percent) on a daily basis. Almost 100 percent of respondents reported consuming oils and fats on a daily basis. Packaged savoury snacks and sweets were reported to be consumed by 14 percent and 15 percent respondents on a daily basis, respectively.

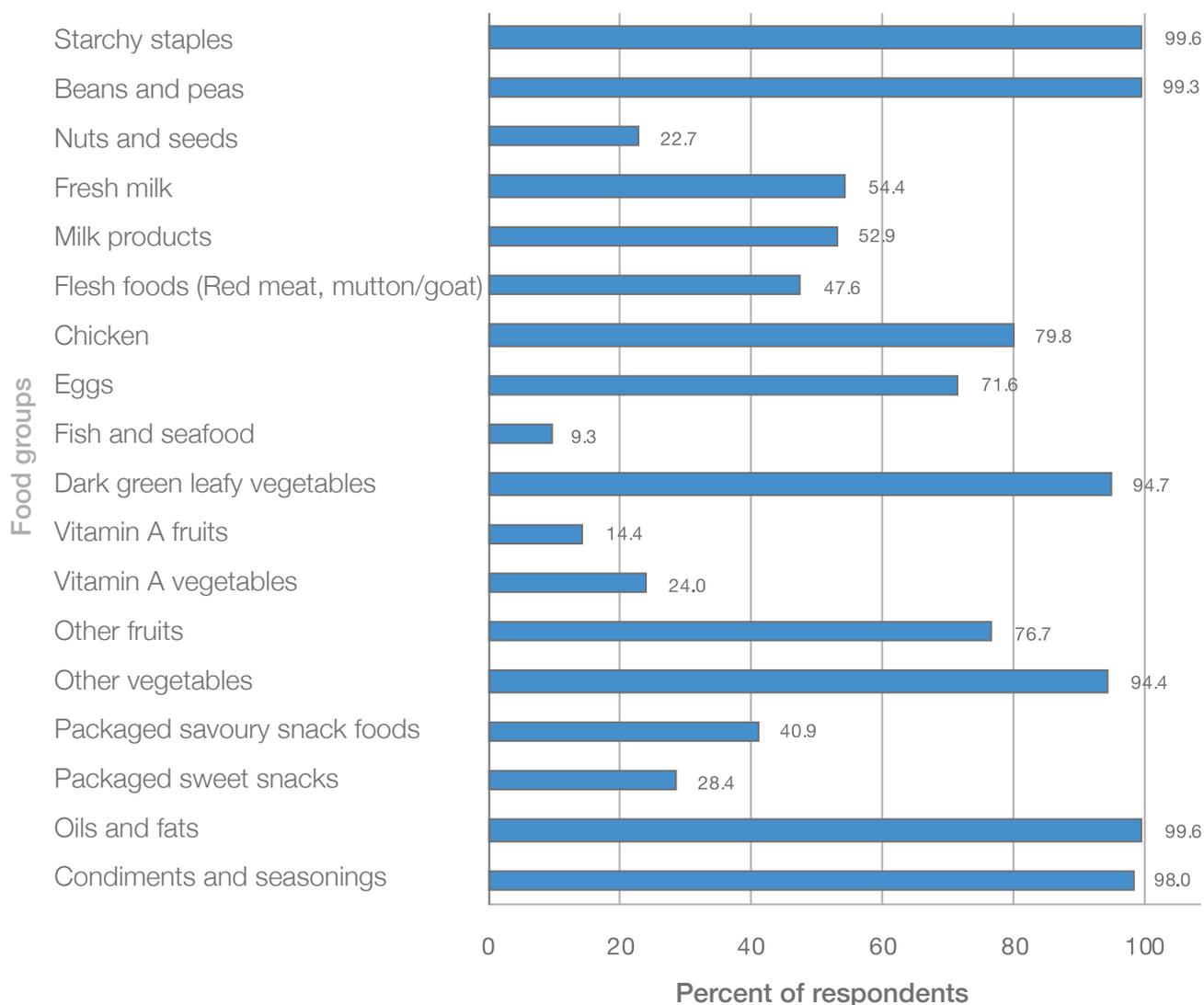
The participants' weekly food consumption also revealed a higher consumption of staples, beans and peas, chicken, fruits and vegetables (Figure 2). Concernedly, the consumption of packaged savoury snack foods was high – 41 percent. The consumption of oils and fats was reported to be 100 percent.

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<sup>1</sup> The consumer interviews were conducted from 8 to 20 November 2020.

**FIGURE 2.**

Distribution of food consumption on daily and weekly bases (N=450)



Source: Authors' own elaboration.

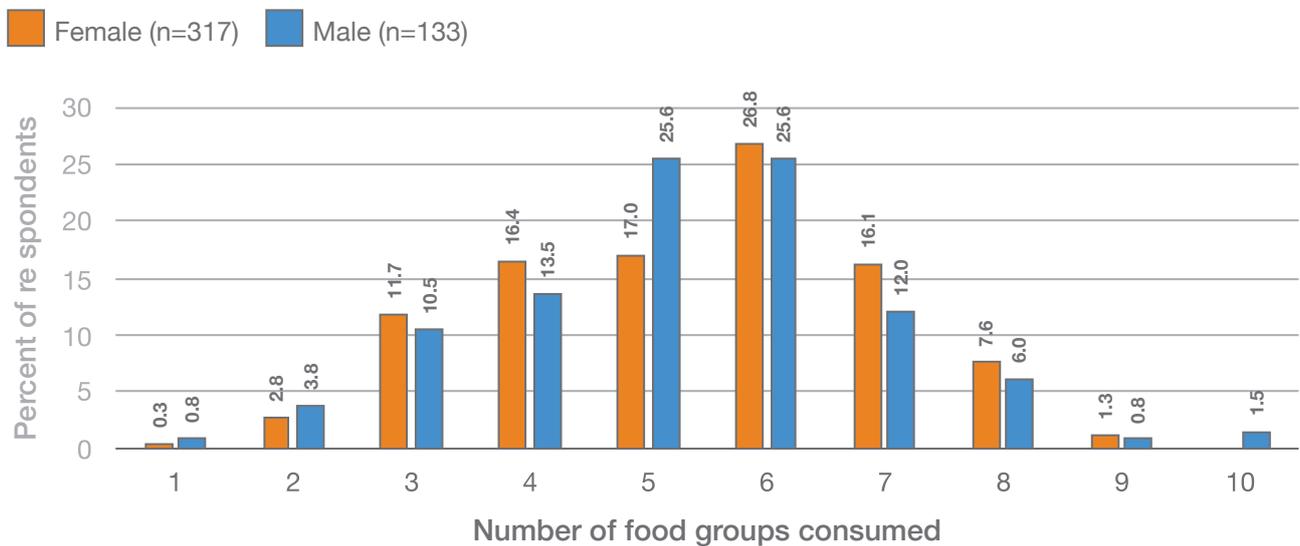
The mean individual dietary diversity score (IDDS) was 5.34,<sup>2</sup> with significant gender differences. Female respondents (n=317) reported a mean IDDS of 5.37 and male

respondents reported a score of 5.29 (n=133). Approximately 70 percent of the respondents recorded an IDDS of 4 and above.

<sup>2</sup> The IDDS was calculated considering ten food groups: starchy staples, legumes, nuts and seeds, milk and milk products, flesh foods, eggs, dark green leafy vegetables, vitamin-A rich fruits and vegetables, other vegetables, and other fruits.

**FIGURE 3.**

Percent of consumption of food groups by female and male respondents during the previous 24 hours (N=450)

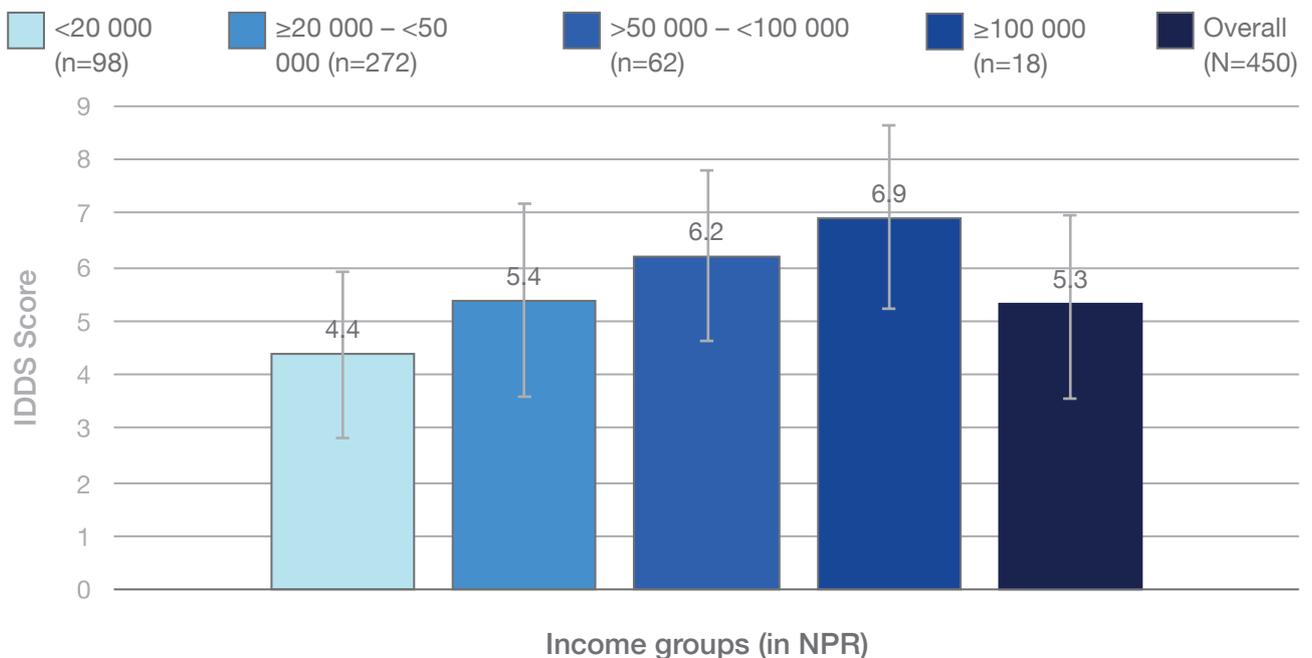


Source: Authors' own elaboration.

There was a significant increase in IDDS as household income levels increased (as seen from Figure 4).

**FIGURE 4.**

Distribution of IDDS by income group (N=450)

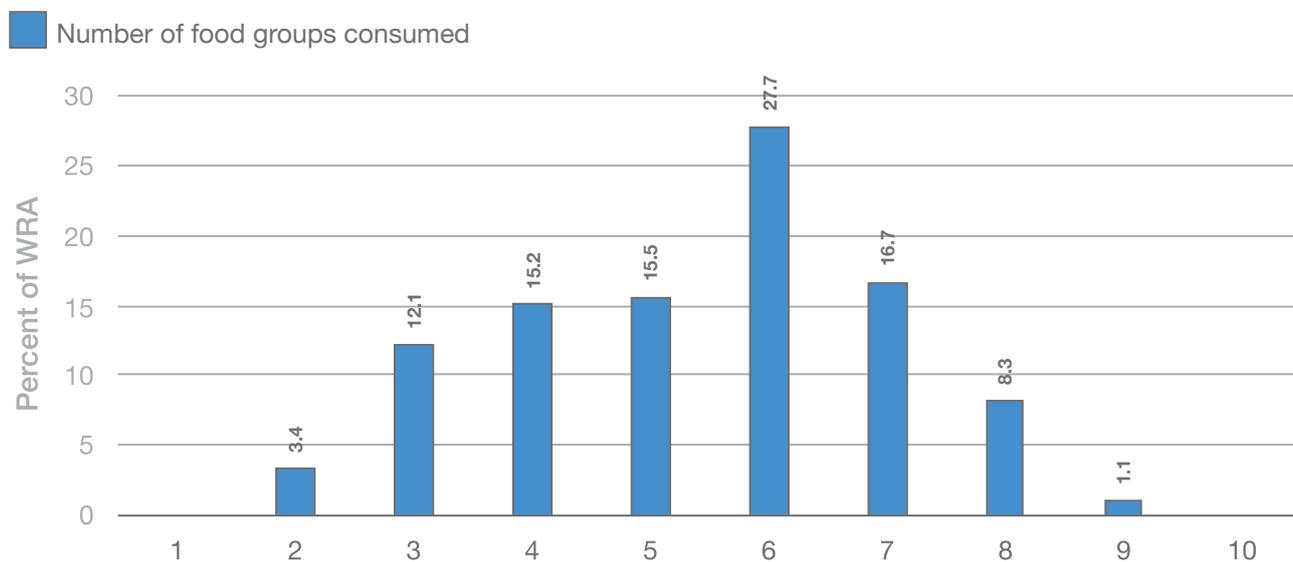


Source: Authors' own elaboration.

The mean minimum dietary diversity score for women of reproductive age (15–49 years) (MDD-W) was 5.4. Approximately 85 percent of this population group recorded a dietary diversity score above 4.

**FIGURE 5.**

Percent of consumption of food groups by women of reproductive age during the previous 24 hours (N=264)

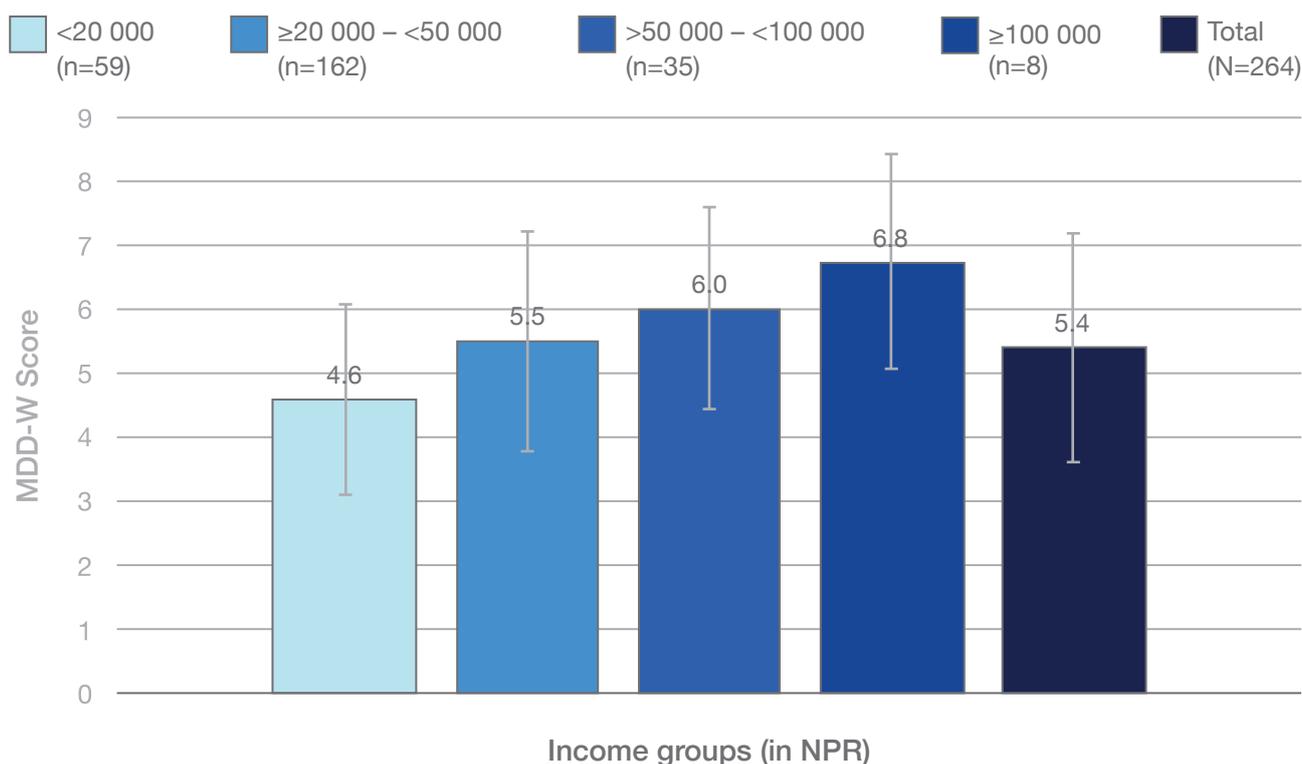


Source: Authors' own elaboration.

There was a significant increase in MDD-W as income levels increased (see Figure 6).

**FIGURE 6.**

Figure 6. Distribution of MDD-W by income group among women of reproductive age (15-49 years), (N=264, p<0.05)



Source: Authors' own elaboration.



भट्टराई  
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फोन: ९७८८८८८८



# OVERVIEW OF CONSUMER BEHAVIOUR IN KATHMANDU

**TABLE 3.**

Overview of consumer behaviour in Kathmandu

Socio-economic characteristics	Accessibility of food	Desirability and acceptability of food	Food preparation	Consumption patterns
<ul style="list-style-type: none"> <li>• Most of the participants owned a refrigerator.</li> <li>• A small number owned a freezer or microwave and had paid help for cooking.</li> <li>• Water piped into the dwelling was a major source of cooking water, while bottled water was a major source of drinking water.</li> <li>• The maximum amount of money on each food purchasing occasion was spent on the purchase of grains (NPR 1 850).</li> </ul>	<ul style="list-style-type: none"> <li>• All participants, irrespective of income, purchased their food mostly from retail outlets.</li> <li>• Small local shops were preferred place for the purchase of grains, pulses, packaged foods and soft drinks.</li> <li>• Specialty stores were mainly visited for buying dairy, sweets, fried snacks and bakery products.</li> <li>• Affordability was considered the most important factor affecting food purchase, except for people earning more than NPR 100 000 per month, who gave more importance to convenience.</li> </ul>	<ul style="list-style-type: none"> <li>• Most consumers preferred to buy:               <ul style="list-style-type: none"> <li>- in small quantities;</li> <li>- from retailers who offered competitive prices;</li> <li>- close to their home;</li> <li>- from retailers open at convenient times;</li> <li>- from retailers who offered friendly service; and</li> <li>- from retailers who provided food that is safe to eat.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Both food shopping and food preparation were dominated by women.</li> <li>• Few households mentioned receiving information on nutrition and healthy diets in the last twelve months.</li> <li>• Respondents reported receiving messages from social media, non-governmental organizations and government authorities.</li> <li>• Most respondents noted high adherence to food safety practices.</li> </ul>	<ul style="list-style-type: none"> <li>• The majority of the participants reported consuming all the food and did not waste or throw away any food items.</li> <li>• Participants reported the following reasons for not consuming food:               <ul style="list-style-type: none"> <li>- no storage facilities;</li> <li>- poor food quality;</li> <li>- food spoilage before consumption; and</li> <li>- preparing too much.</li> </ul> </li> </ul>

Source: Authors' own elaboration.



### 3. CONSUMER BEHAVIOUR

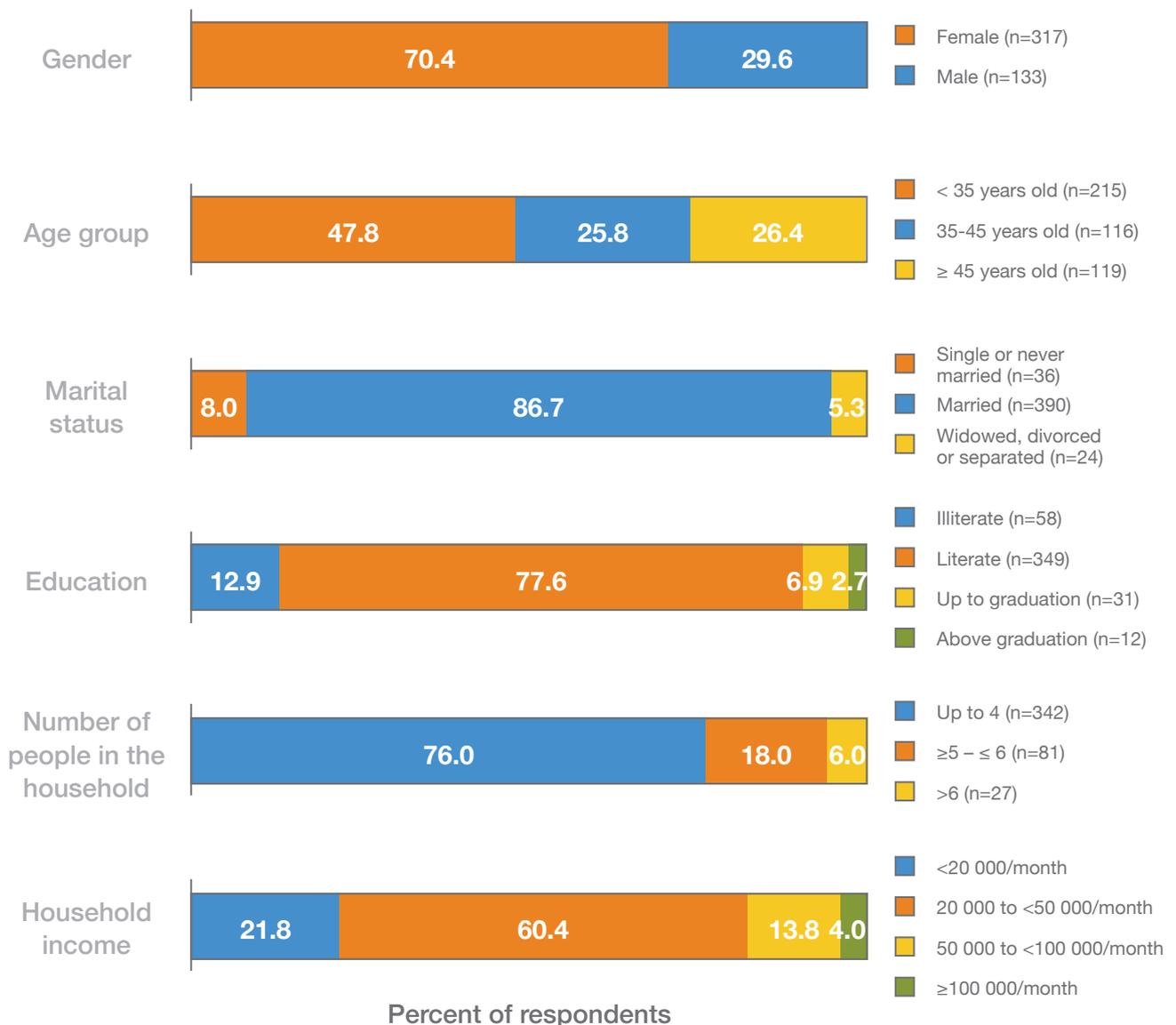
#### 3.1. Socio-economic characteristics

The majority of the participants were females (70 percent), married (87 percent) and literate (78 percent). Forty-eight percent of the participants were between 25 and 35 years of age and the mean age was 38.4 years.

More than three quarters of the households followed a nuclear family pattern with four family members, and 60 percent of the participants earned NPR 20 000 to 50 000 per month (Figure 7).

**FIGURE 7.**

Distribution of socio-demographic profiles (N=450)



Source: Authors' own elaboration.

Note: Graduates are persons who have received a degree or diploma on completing a course of study in a university or college.

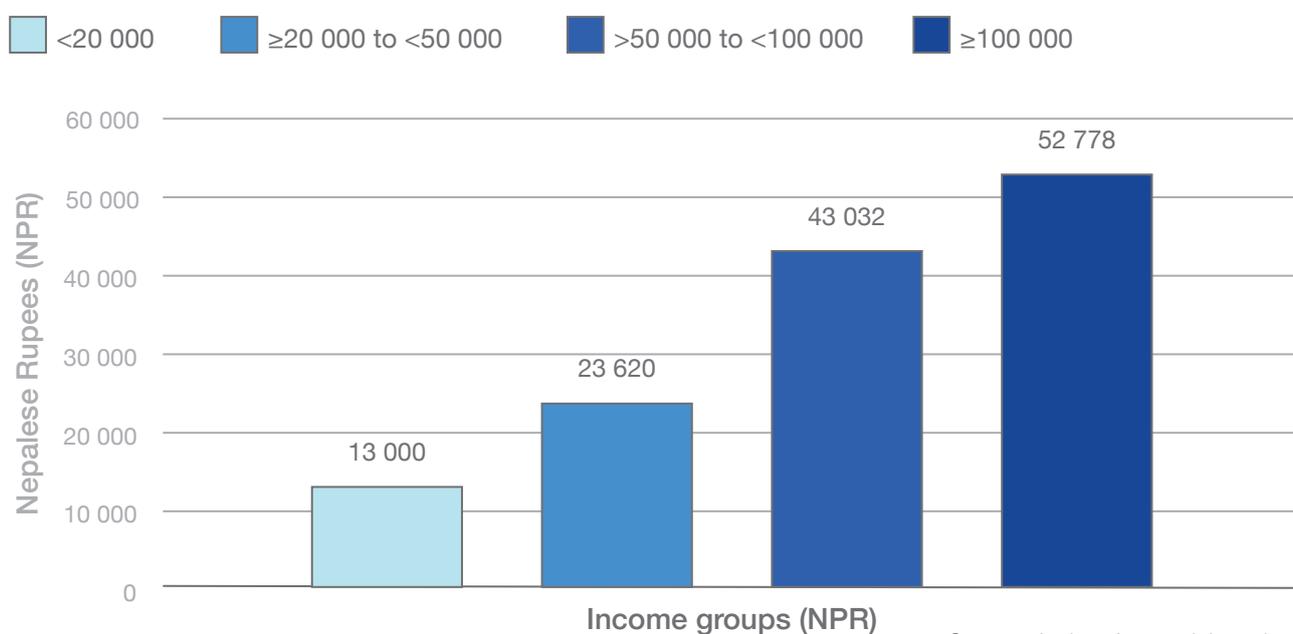
Approximately 44 percent of the participants owned a refrigerator, less than 10 percent owned a microwave and less than 2 percent owned a freezer. Only one respondent reported having paid help at home for cooking. The majority of the participants used piped water within their dwelling as the source of cooking water (52 percent). As a source of drinking water, the majority of the participants (64 percent)

used bottled water. Sixty-one percent of the participants treated water before use by boiling and using a water filter.

The consumers who participated in the assessment had a reported median household food expenditure of NPR 20 000 per month. Most of the food expenditure was made at the retailer level. As income levels increased, food expenditure also increased significantly (Figure 8).

**FIGURE 8.**

Distribution of household expenditure, by income group (N=450, p<0.01)



Source: Authors' own elaboration.

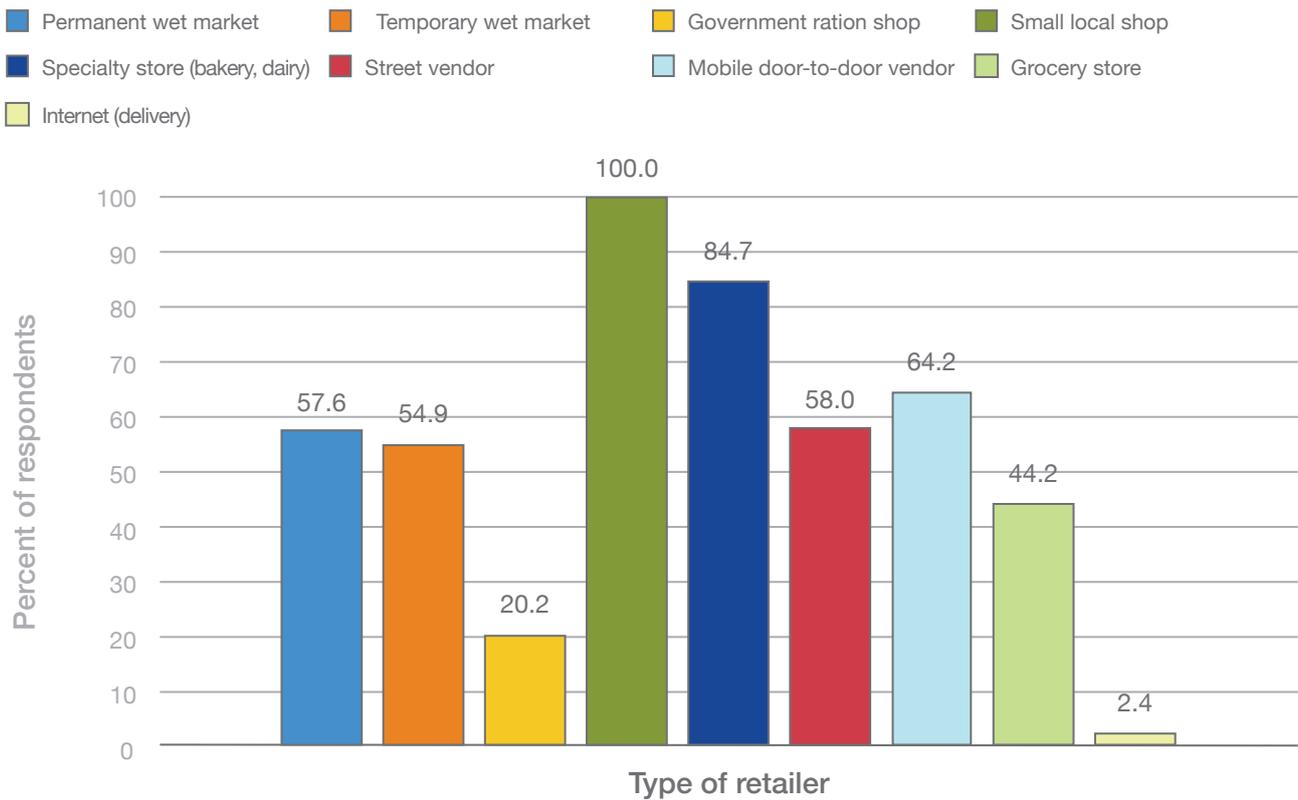
### 3.2. Accessibility of food

For consumers in Kathmandu, small local shops remain the key place of purchase for all consumers, followed by speciality stores (bakeries, dairies, etc. – 85 percent), mobile

door-to-door vendors (64 percent), street vendors (58 percent), permanent wet markets (58 percent) and temporary wet markets (55 percent) (Figure 9).

**FIGURE 9.**

Distribution of consumers' preferred retail outlets (N=450)



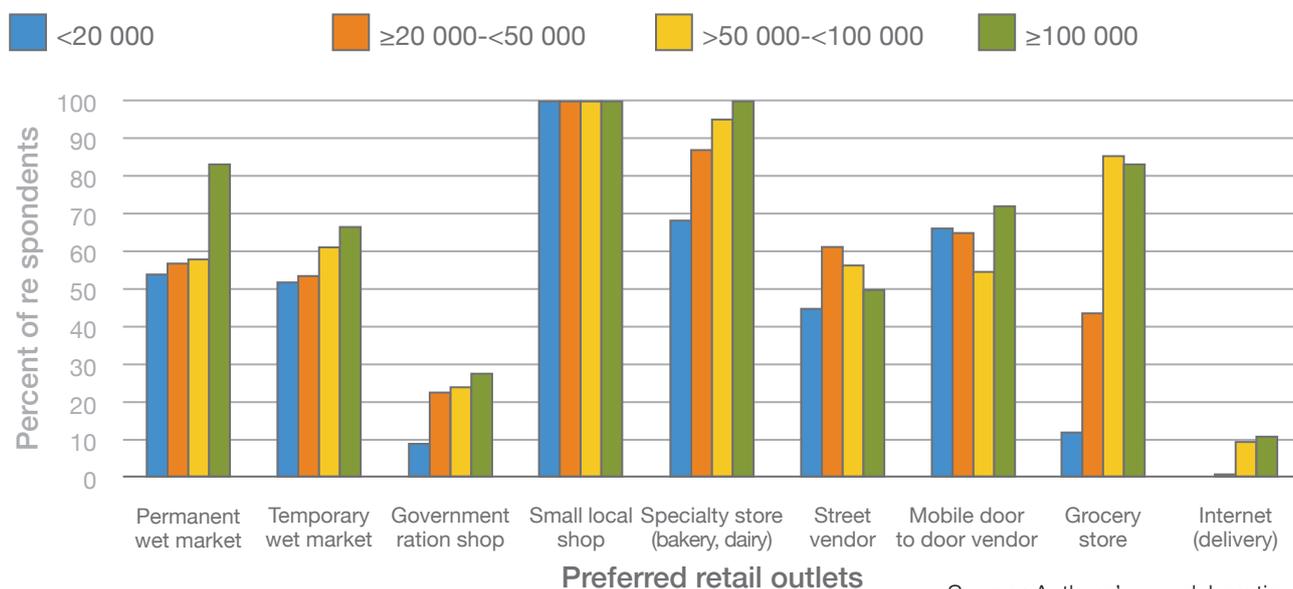
Source: Authors' own elaboration.

For low-income households (monthly income less than NPR 20 000 per month), small local shops, speciality stores (bakeries, dairies, etc.), mobile door-to-door vendors, wet markets and street vendors were preferred (Figure 10). Similar preferences were noted by respondents belonging to households within the income

group of NPR 20 000 to 50 000 per month. For households in the high-income groups (NPR 50 000 to 100 000 per month and above NPR 100 000 per month), grocery stores were also reported as the preferred retailers, in addition to the ones mentioned earlier in this paragraph.

**FIGURE 10.**

Consumers' preferred retail outlets of choice, according to income group (N=450)



Source: Authors' own elaboration.

All of the participants purchased most of their food predominantly from retail outlets (Figure 11). For instance, a high proportion bought the following from retailers: grains, including flour (98 percent), pulses and nuts (100 percent), dairy (92 percent), fresh fruits

and vegetables (100 percent), packaged foods such as biscuits and crisps (94 percent), bakery products (54 percent), local sweets (64 percent), fried snacks (45 percent) and soft drinks (96 percent).

**FIGURE 11.**

Distribution of food purchases by location (N=450)



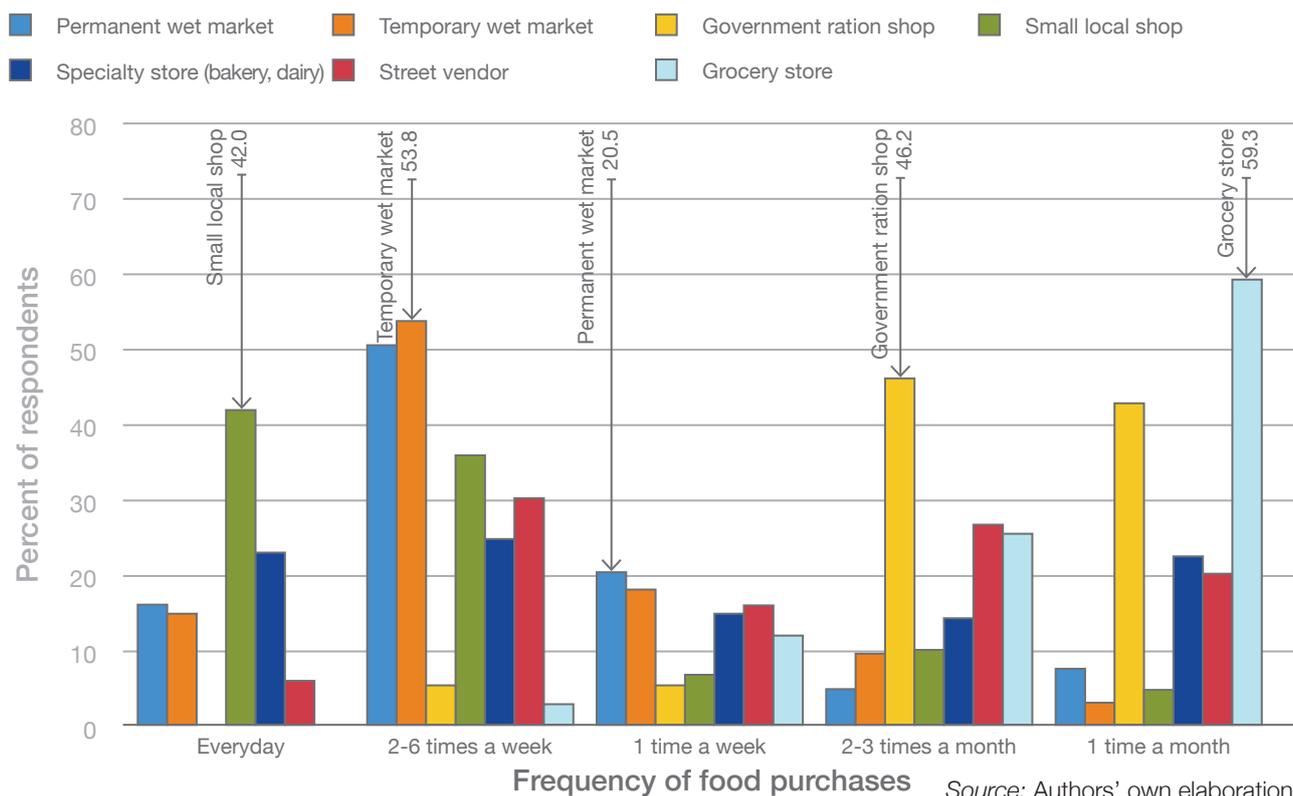
Source: Authors' own elaboration.

The majority of the participants did their daily shopping at small local shops (Figure 12). Participants frequented street vendors, permanent and temporary wet markets,

and speciality stores (bakeries, dairies, etc.) at least two to six times in a week. Monthly shopping was done at grocery stores and government ration shops.

**FIGURE 12.**

Distribution of frequency of food purchases from the retailer (N=450).

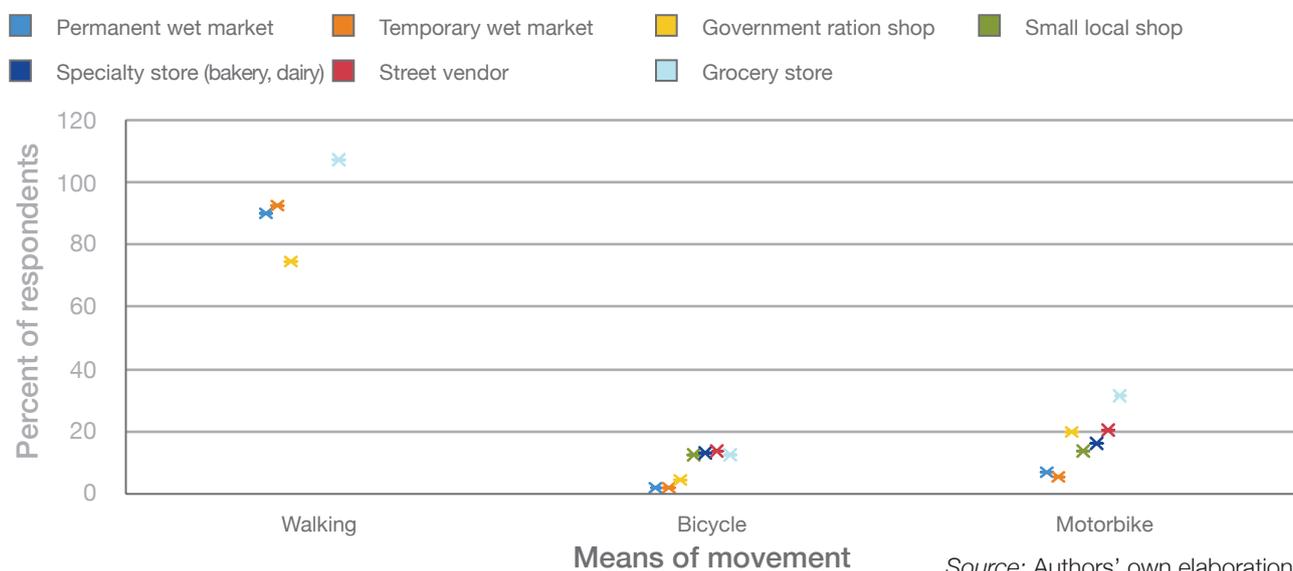


Source: Authors' own elaboration.

The majority of the respondents preferred walking as a means of transportation to purchase food from retailers (Figure 13).

**FIGURE 13.**

Preferred means of transportation to access retail outlets (N=450)



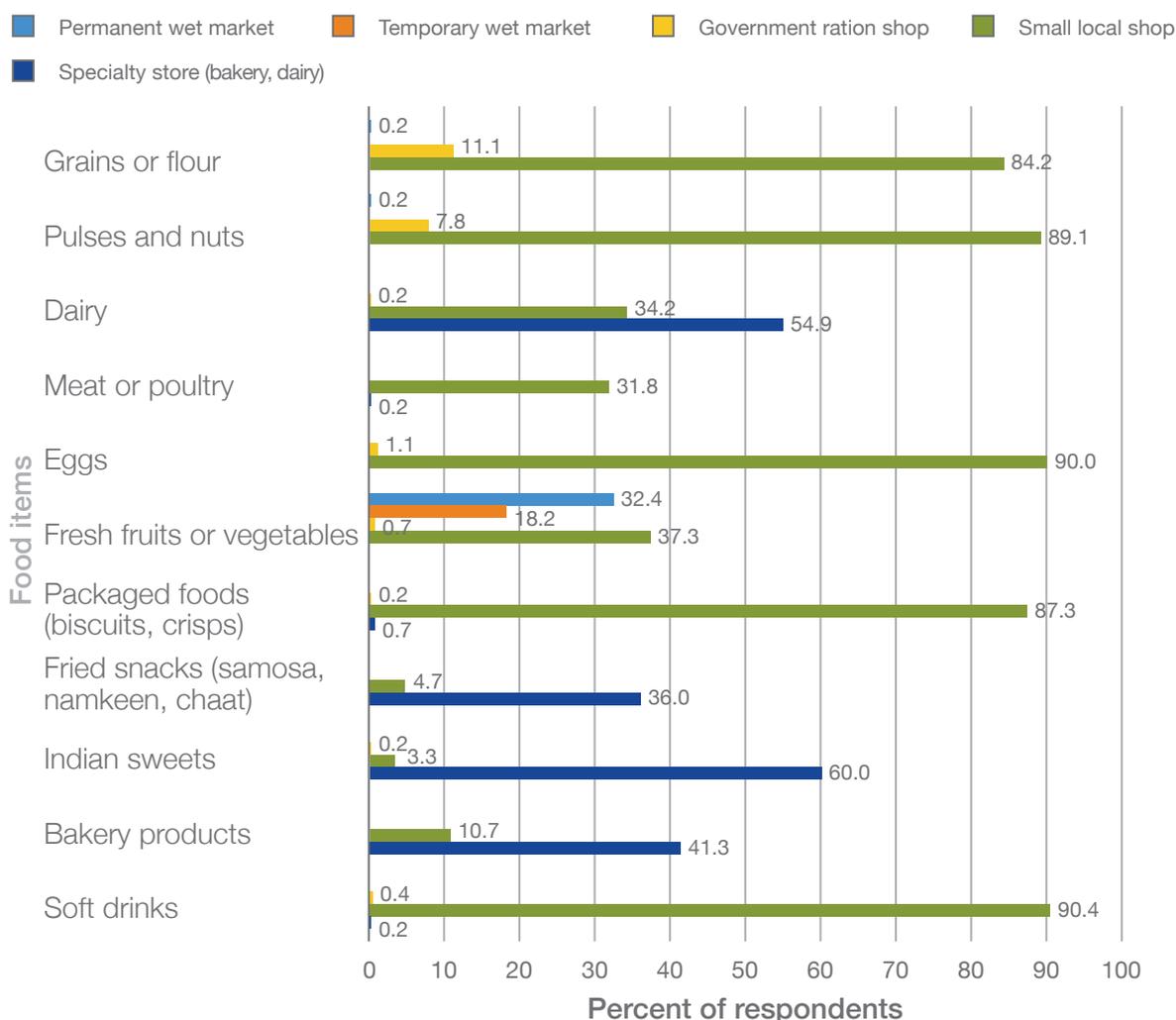
Source: Authors' own elaboration.

Various types of retailers were preferred for different food items (Figure 14). Grains, including flour, were mostly purchased in small local shops (84 percent). Similarly, pulses and nuts were bought at small local shops (89 percent). Dairy, fried snacks, local sweets and bakery products

were purchased at speciality stores. Small local shops were the preferred retailers for the purchase of meat and poultry, eggs, packaged foods and soft drinks. Fresh fruits and vegetables were purchased at small local shops and wet markets (both temporary and permanent).

**FIGURE 14.**

Distribution of food purchases, by type of retailer (N=450)



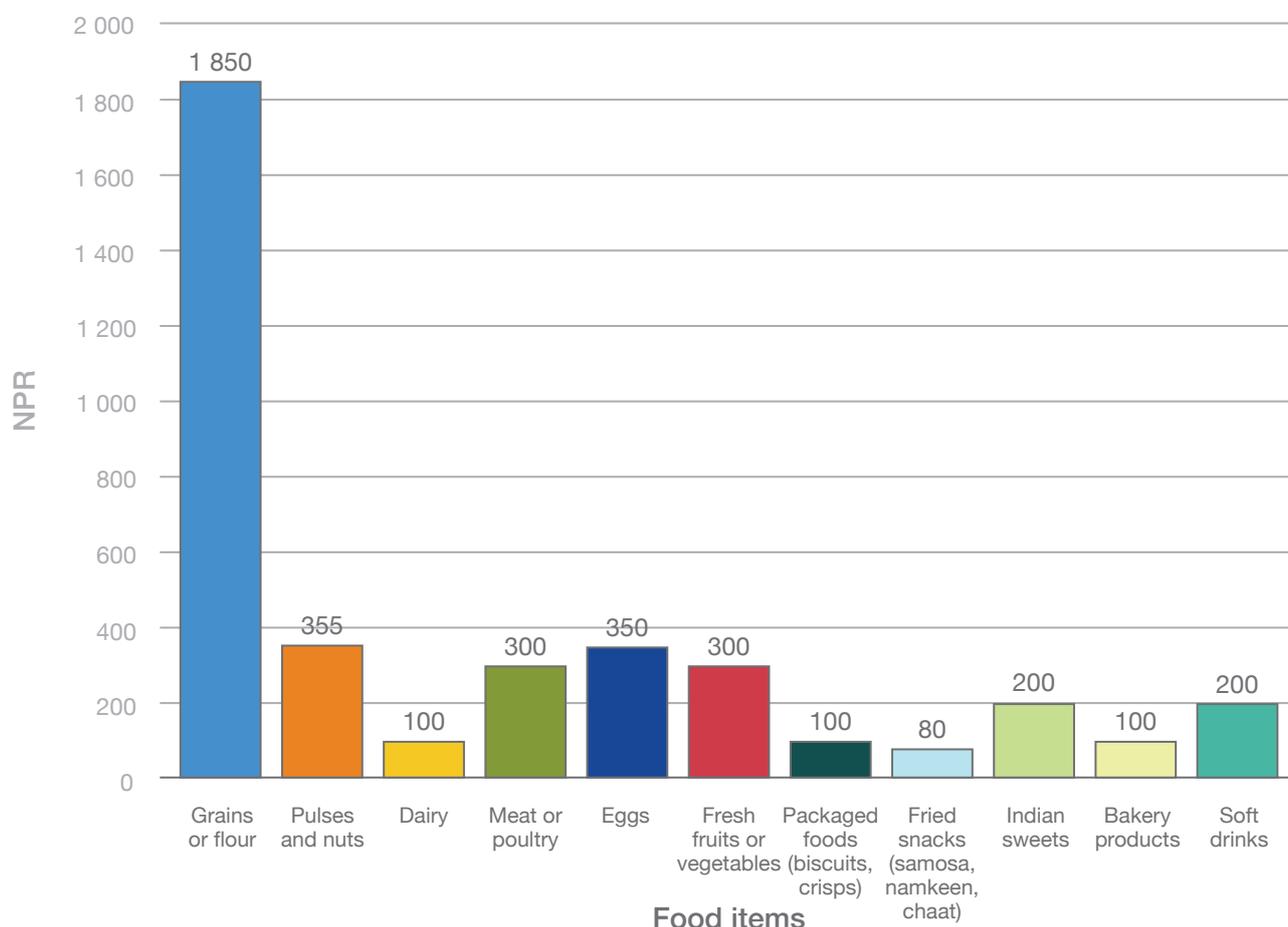
Source: Authors' own elaboration.

On each occasion, consumers' maximum expenditure was made on staples, followed by pulses and nuts, eggs, meat and poultry, and fruits and vegetables (Figure 15). The maximum median amount spent on major food items is

as follows: grains, including flour – NPR 1 850; pulses – NPR 355; eggs – NPR 350; meat and poultry – NPR 300; fruits and vegetables – NPR 300.

**FIGURE 15.**

Median money spent by consumers on each occasion, by food item (N=450)



Source: Authors' own elaboration.

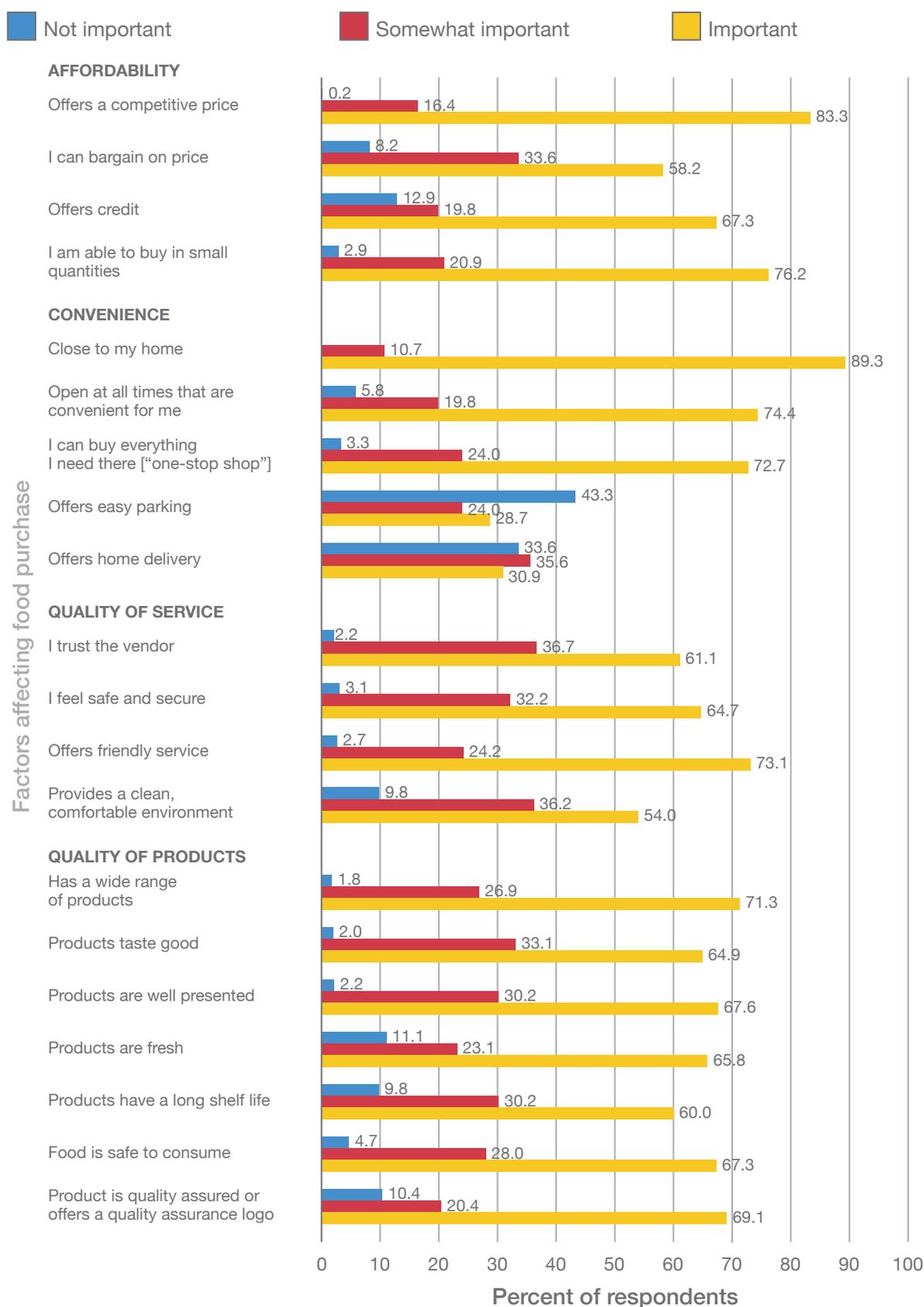
### 3.3. Desirability and acceptability of food

Respondents were asked to identify their preferences when making food purchases across the following four factors: affordability, convenience, quality of service and quality of products (Figure 15). Under food affordability, most consumers preferred retailers who offered a competitive price (83 percent), possibility to buy in small quantities (76 percent), retailers who offered the possibility of credit (67 percent) and the possibility to bargain on the price (58 percent).

In terms of convenience, consumers preferred to buy from outlets that were close to their homes (89 percent), open at suitable timings (74 percent), and were a “one-stop shop” for all food items (72 percent). Most consumers considered quality of service as an important factor when making purchases, valuing friendly service (73 percent), the feeling of safety and security (65 percent) and trustworthiness of the vendor (61 percent). In terms of the quality of products, consumers most valued retailers that sold a wide range of products (71 percent) and that sold products marked with a quality assurance logo (69 percent).

**FIGURE 16.**

Distribution of factors affecting consumers' food purchase patterns (N=450)



Source: Authors' own elaboration.



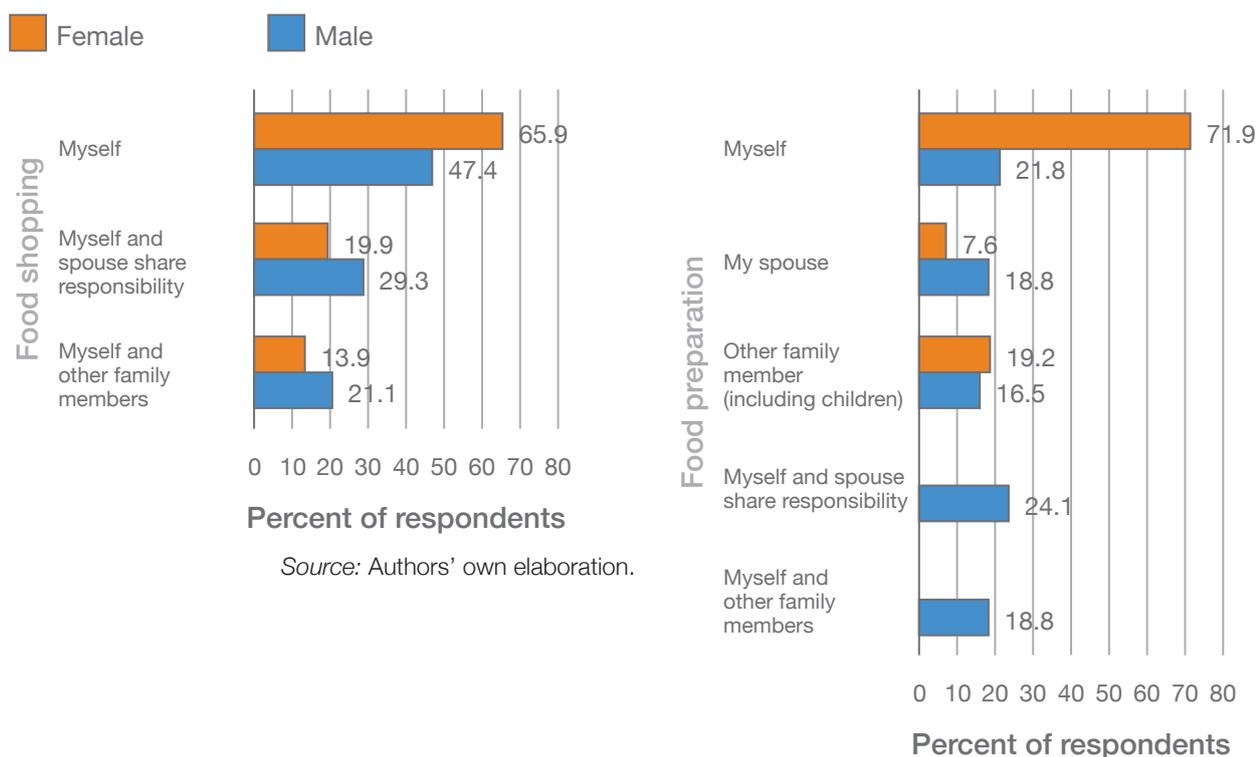
### 3.4. Food preparation

Approximately 60 percent of the participants did food shopping on their own, with 23 percent reporting sharing responsibility with their spouse and 16 percent reporting sharing responsibilities with other family members (including children). Among female respondents, approximately 66 percent noted doing shopping on their own, followed by 20 percent sharing responsibility with their spouse and 14 percent with another family member. Among male respondents, 47 percent mentioned that they shopped themselves, followed by 29 percent sharing responsibility with their spouse and 21 percent with another family member.

Fifty-seven percent of the respondents did food preparation on their own, with 19 percent sharing the responsibility with other members of the family (including children) and 12 percent sharing the responsibility with their spouse. Among female respondents, approximately 72 percent mentioned that they prepared food themselves, followed by 19 percent sharing the responsibility with another family member and 8 percent with their spouse. Among male respondents, only 22 percent noted that they prepared food themselves, followed by 24 percent who reported sharing the responsibility with their spouse and 19 percent who reported that their spouse alone did food preparation.

**FIGURE 17.**

Distribution of food shopping and preparation patterns in the household by gender (N=450)



Source: Authors' own elaboration.

Source: Authors' own elaboration.

Most respondents noted high adherence (above 96 percent) to the food safety practices of: washing food prior to cooking or storing, using clean and fresh utensils, keeping raw and cooked foods separately, and awareness of the need

to completely cook the food (Figure 18). Sixty percent of consumers mentioned adherence to keeping meat and fish separate from fruits and vegetables.

**FIGURE 18.**

Food safety practices at the household level (N=450)



Source: Authors' own elaboration.

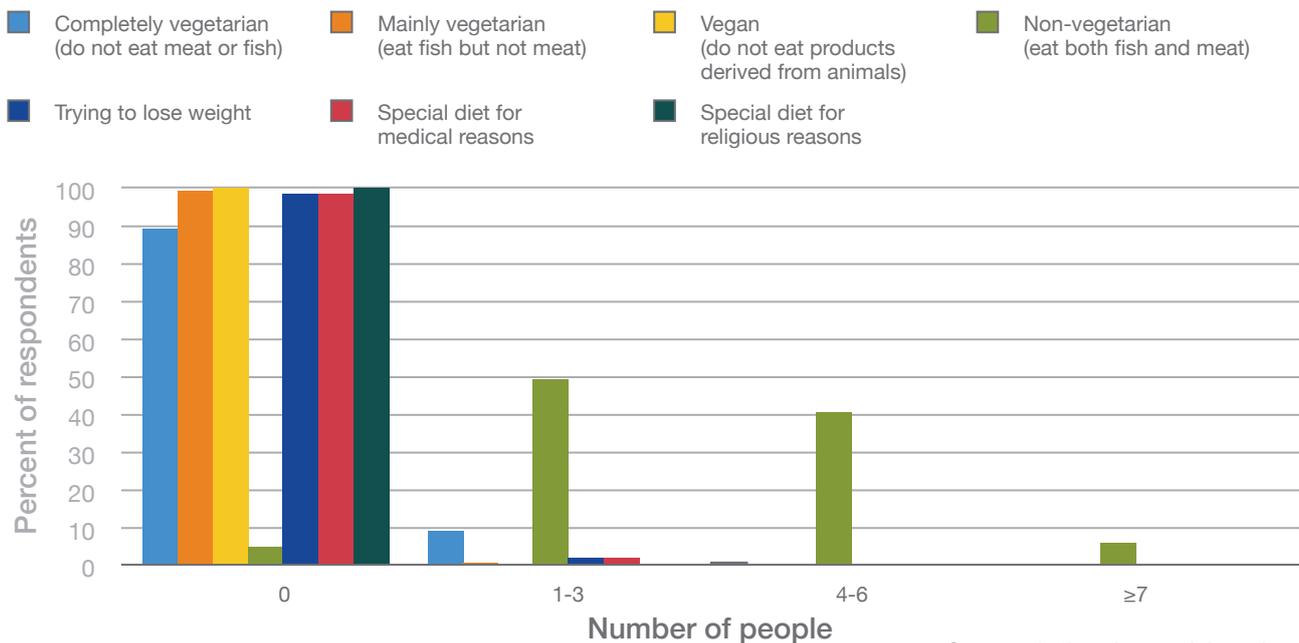
### 3.5. Consumption patterns

When asked about the dietary patterns of their family members, 90 percent of the respondents reported zero completely vegetarian (do not eat meat or fish) household members; 100 percent stated having mainly vegetarian (eat fish but not meat) household members; and 100 percent reported vegan (do not eat products derived from animals) members in the household.

Forty-nine percent of the participants had up to three non-vegetarians (eat both fish and meat) in the household and 40 percent had four to six non-vegetarian household members. In terms of consuming special diets, the majority of the households (above 98 percent) reported having zero individuals who consumed special diets for weight loss, medical or religious reasons.

**FIGURE 19.**

Dietary patterns of households (N=450)



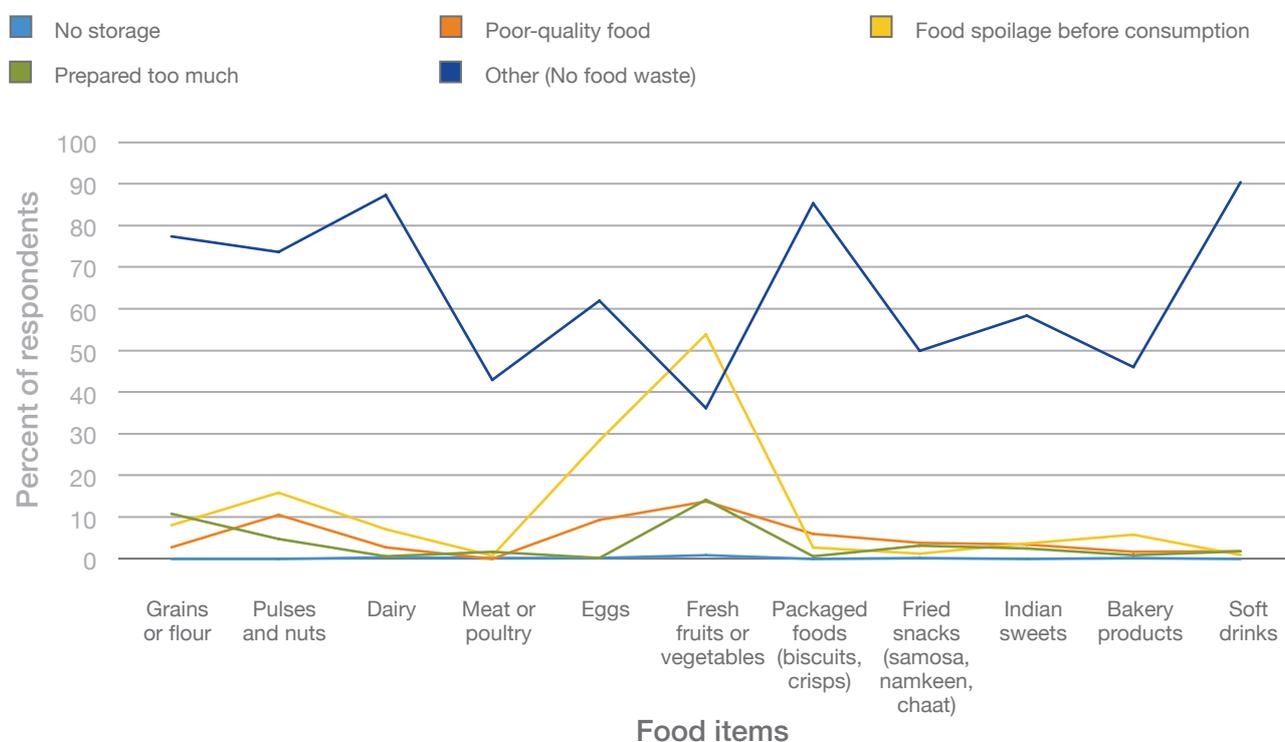
Source: Authors' own elaboration.

The majority of the participants reported consuming all the food and did not waste or throw away any food items (Figure 20). Participants were asked to specify the reasons for not consuming food purchased for the household, around the following five factors: no storage facilities, poor food quality, food spoilage before consumption, and prepared too much.

For grains and fried snacks, preparing too much was noted as the major reason for not consuming the food. For pulses, dairy, eggs, bakery products, fresh fruits and vegetables, spoilage before eating was identified as the main reason for non-consumption. Poor quality was reported as the reason for not consuming packaged food, fried snacks, local sweets and soft drinks.

**FIGURE 20.**

Distribution of consumers’ reasons for not consuming food (N=450)



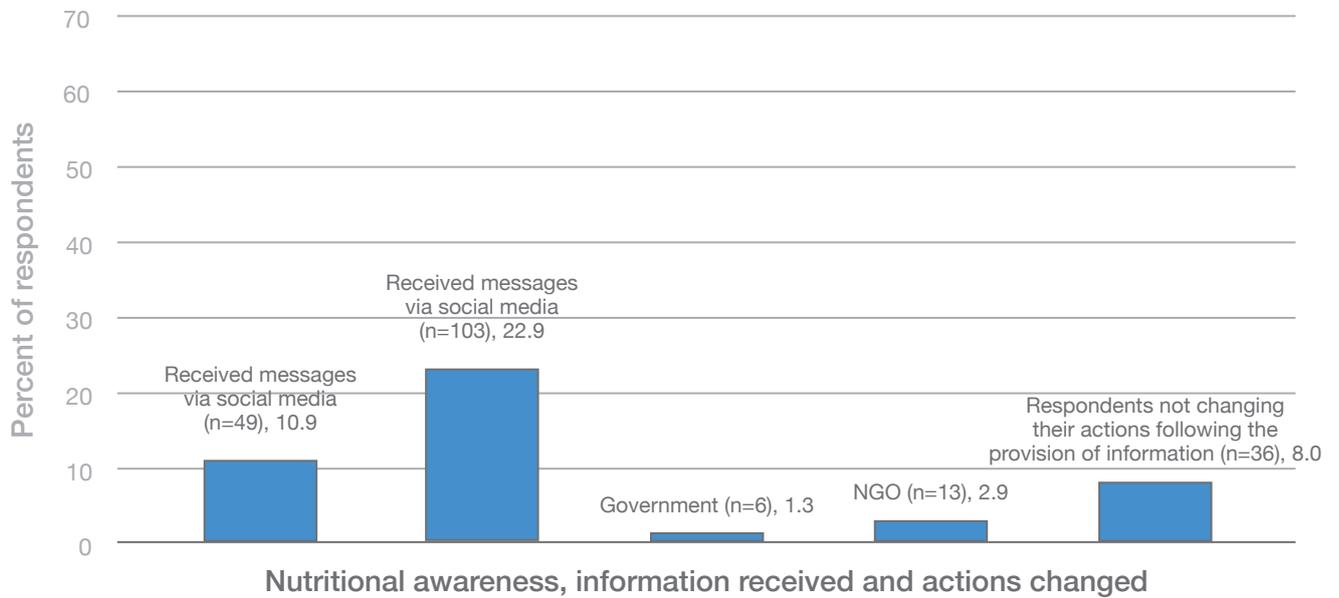
Source: Authors’ own elaboration.

Eleven percent of the households mentioned that they had received information on nutrition and healthy diets in the last 12 months (Figure 20). The main source of the nutritional information was noted to be social media (23 percent),

while only 1 percent of respondents reported having received information from governmental authorities. After receiving the information, only 8 percent of the participants reported no change in their actions.

**FIGURE 21.**

Distribution of nutritional awareness, information received about healthy diets and actions changed by the consumers (N=450)



Source: Authors' own elaboration.

# MARKET

**S** **A** **L** **E**

**SPECIAL**  
*Price*

GROCERY STORE

DAIRY

**50%**  
OFF

**SALE**

**DRINKS**

FRUITS & VEGETABLES



# OVERVIEW OF FOOD ENVIRONMENTS IN KATHMANDU

**TABLE 4.**

Overview of food environments in Kathmandu

<b>Availability and accessibility of food</b>
<ul style="list-style-type: none"><li>• All in all, the assessment revealed that 297 food items were sold by retailers. Rice and wheat were the main staples sold, while <i>tur</i> and <i>mung dals</i> were the main pulses available for consumers.</li><li>• Several retailers sold packaged foods (biscuits and crisps), fried snacks (<i>samosas</i>, <i>namkeen</i>, <i>chaat</i>, etc.) and soft drinks.</li><li>• For most of the staple products, the main source of purchase for retailers were wholesalers (83 percent) and traders (28 percent).</li><li>• Milk was mostly procured from traders (33 percent) and wholesalers (19 percent). Wholesalers were also the main source of purchase for most fresh fruits and vegetables, eggs, packaged foods and beverages (soft drinks).</li><li>• Closed and open vehicles, two-wheelers, bicycles and headload were used to transport food products to the retailers.</li><li>• As expected, the greatest proportion of food products (99 percent) across all food groups were sold primarily to consumers by retailers.</li></ul>
<b>Marketing and regulation</b>
<ul style="list-style-type: none"><li>• Formal retailers advertised most of their food products outside the retail outlets or at the entrance.</li><li>• Few informal retailers (32 percent) advertised foods and beverages, and most of them advertised outside.</li><li>• Informal retailers advertised the following food items outside their outlets: soft drinks, crisps, biscuits, ice cream, confectionery and milk.</li><li>• Among formal retailers, the most common food item advertised were soft drinks. The most desired area to advertise were outside the retail outlet and the entrance.</li><li>• Three out of eight food service outlets offered a choice of healthy sides and healthy cooking options. A moderate proportion (50 percent) of food service outlets offered consumers diet beverages and water.</li></ul>
<b>Food quality and safety</b>
<ul style="list-style-type: none"><li>• A very high proportion of retailers (78 percent and above) highlighted food safety and quality, service, convenience and affordability as important factors when choosing potential suppliers.</li><li>• Most retailers did not report any problems with their suppliers for 52 percent of the food products they sold.</li><li>• Retailers noted that there was no food loss or wastage for 39 percent of the food products.</li><li>• The most sought-after strategies by retailers to reduce food loss were reducing the damage caused by rodents, pests and insects, improving storage facilities and sourcing good-quality products.</li></ul>

Source: Authors' own elaboration.



## 4. FOOD ENVIRONMENTS

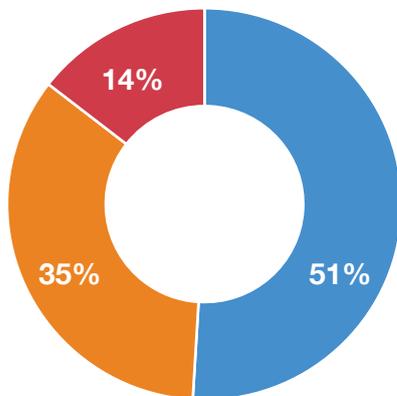
In this study, retailers are mainly divided into three types: formal retailers, informal retailers and food service outlets. Formal retailers are those having permanent establishments with a license to sell goods in local markets or malls. Informal retailers are those who do not have a license or a fixed place to sell their products. Food service outlets are those which provide ready-to-eat food and meals to customers.

A total of 55 retailers and food service outlets were surveyed in Kathmandu.<sup>3</sup> Twenty-eight (51 percent) comprised of formal retailers, 19 (35 percent) comprised of informal retailers and 8 (15 percent) were food service outlets.

**FIGURE 22.**

Distribution of type of retailers interviewed for the assessment (n=55)

■ Formal retailers (n=28)    ■ Informal retailers (n=19)  
 ■ Food service outlets (n=8)



Source: Authors' own elaboration.

The survey was conducted in two wards: Ward no. 6 and Ward no. 16. Retailers were evenly distributed across these two wards – 27 (49 percent) were surveyed in Ward no. 6 and 28 (51 percent) in Ward no. 16.

<sup>3</sup> The retailers and food service outlets interviews were conducted from 9 to 19 November 2020.

Most formal retailers (27 out of 28) interviewed as part of the assessment had permanent structures. In this study, permanent structures are defined as those shops which operate under a license and have been established in a fixed place. Temporary structures, instead, are those that are not situated in an allocated place. Eight (out of 55) retailers and food service retailers had temporary structures.

Out of 55 retailers, only 1 was a member of a trade association.

### 4.1. Availability and accessibility of food

Table 5 presents an overview of food groups and food items which are sold by retailers in Kathmandu. All in all, the assessment revealed that 297 food items were sold by retailers. Rice and wheat were the main staples sold, while *tur* and *mung dals* were the main pulses available for consumers. Several retailers sold packaged foods, such as biscuits and crisps, fried snacks (*samosas*, *namkeen*, *chaat*, etc.) and soft drinks.

**TABLE 5.**

Distribution of food items and food groups, overall (n=297)

Food group	Food items	Frequency (%)
Staples and pulses	Wheat	6 (10.9)
	Rice	24 (43.6)
	Tur dal	20 (36.4)
	Mung dal	19 (34.5)
	Other staples	24 (43.6)
Vegetables	Onion	11 (20.0)
	Potato	11 (20.0)
	Tomato	9 (16.4)
	Other vegetables	11 (20.0)
Fruits	Banana	5 (9.1)
	Papaya	4 (7.3)
	Pomegranate	4 (7.3)
	Other fruits	5 (9.1)

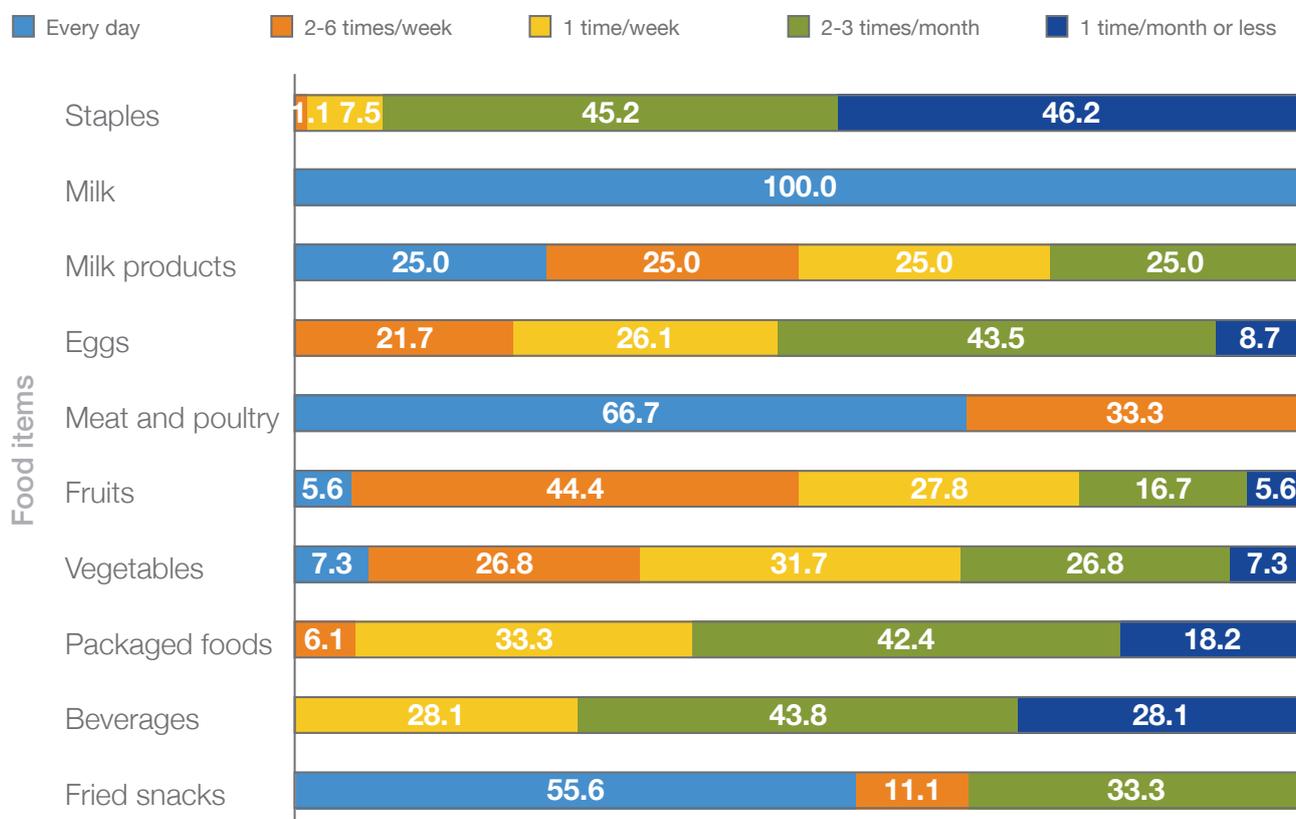
Food group	Food items	Frequency (%)
Milk	Milk	21 (38.2)
Milk products	Condensed milk	-
	Paneer	4 (7.3)
Meat and poultry	Meat and poultry	2 (3.6)
Eggs	Eggs	23 (41.8)
Packaged food	Packaged foods (biscuits, crisps)	33 (60.0)
Fried snacks	Fried snacks (samosas, namkeen, chaat)	9 (16.4)
Other snack foods	Local sweets	9 (16.4)
	Bakery products	11 (20.0)
Beverages	Soft drinks	32 (58.2)

The majority of retailers selling milk, meat and poultry and fried snacks reported repurchasing these food items on a daily basis (Figure 23). Most of the food items in the following groups were repurchased two to three times per month, as follows: eggs (44 percent), packaged foods (42 percent) and beverages (44 percent). Most fruits (44 percent) were repurchased two to six times per week, while most vegetables (32 percent) were repurchased once a week. Most snack foods (30 percent) were repurchased once a month.

Source: Authors' own elaboration.

**FIGURE 23.**

Distribution of food items and repurchasing frequency by retailers (N=297)



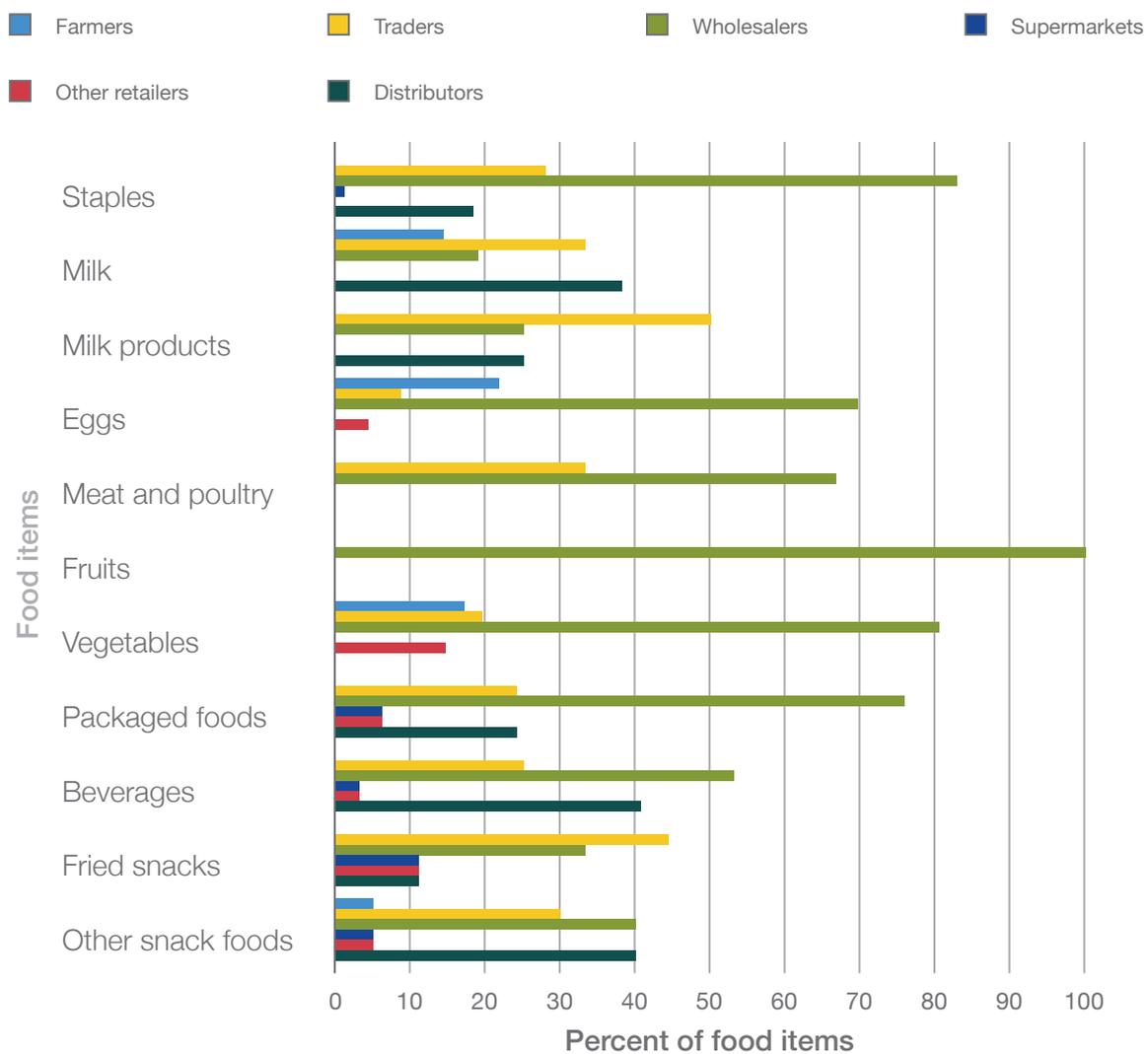
Source: Authors' own elaboration.

For most of the staple products, the main source of purchase for retailers were wholesalers (83 percent) and traders (28 percent) (Figure 24). Milk was mostly procured from traders (33 percent) and wholesalers

(19 percent). Wholesalers were also the main source of purchase for most fresh fruits and vegetables, eggs, packaged foods and beverages (soft drinks).

**FIGURE 24.**

Distribution of retailers' main sources of food purchase, by food system actor (N=297)



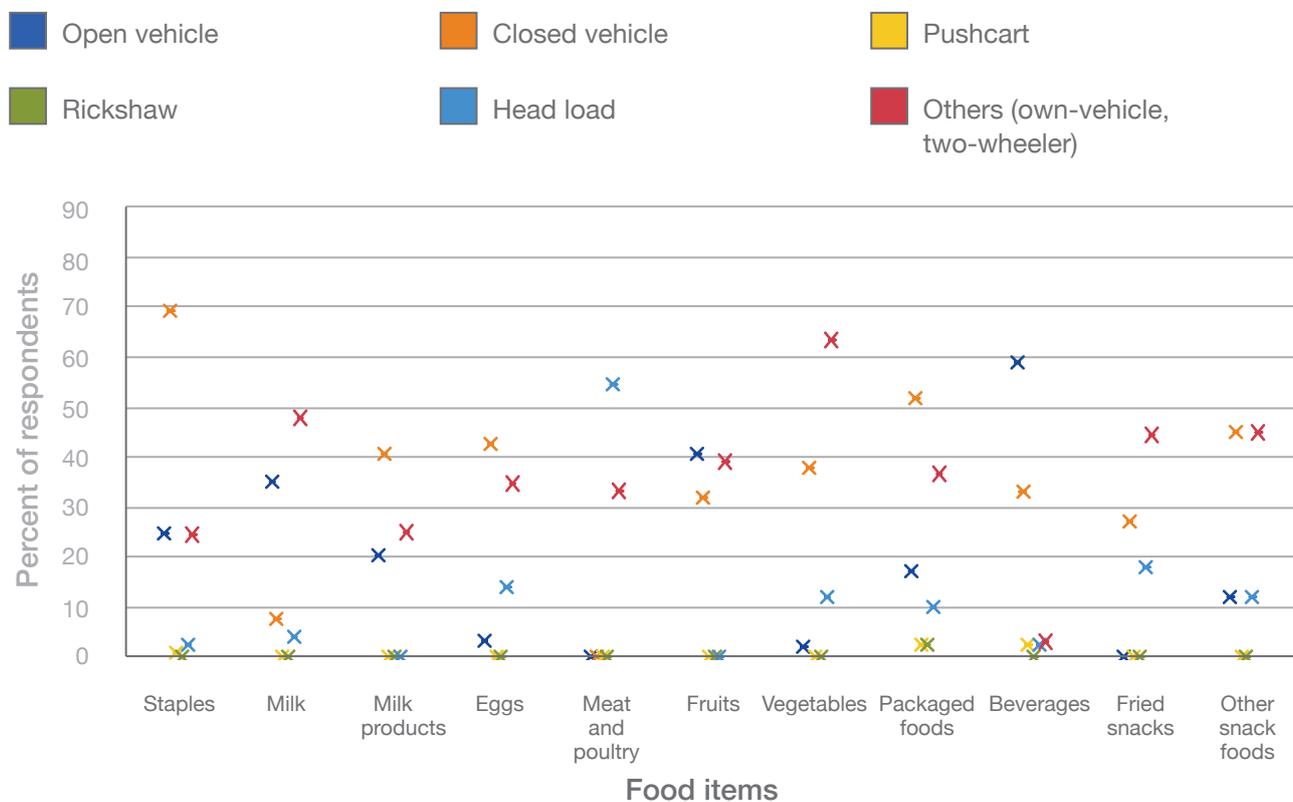
Source: Authors' own elaboration.

Closed and open vehicles, two-wheelers, bicycles and headload were used to transport food products to the retailers (Figure 25). Staples and pulses were mostly transported via closed vehicles. Milk was transported through open vehicles. Fruits were transported through both

open and closed vehicles, whereas vegetables were transported through two-wheelers, bicycles and closed vehicles. Packaged foods are mostly transported via closed vehicles. Beverages (soft drinks) were transported by open vehicles.

**FIGURE 25.**

Mode of transportation of food items from suppliers to retailers (N=297)



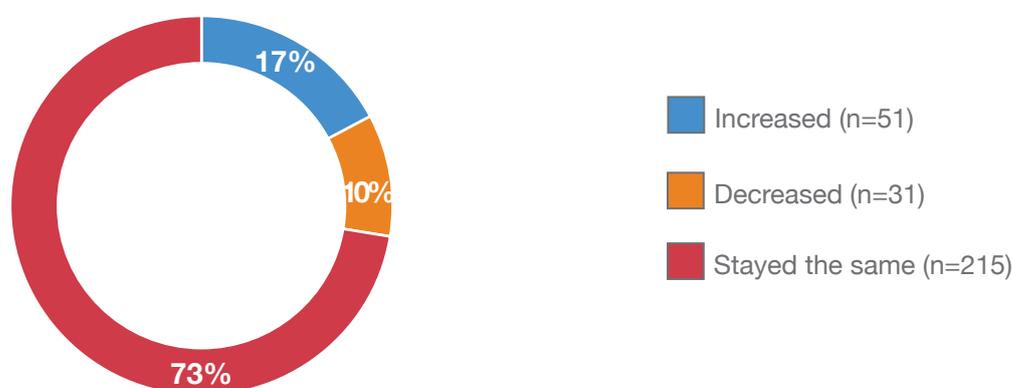
Source: Authors' own elaboration.

As expected, the greatest proportion of food products (99 percent) across all food groups were sold primarily to consumers by the retailers. Sales of most (72 percent) of the food products

were expected to be consistent in 2021. The most common reasons for changes in sales expectations were previous sales experience and the COVID-19 pandemic.

**FIGURE 26.**

Distribution of retailers' sales expectations for the same time the following year (2021) (N=297)



Source: Authors' own elaboration.



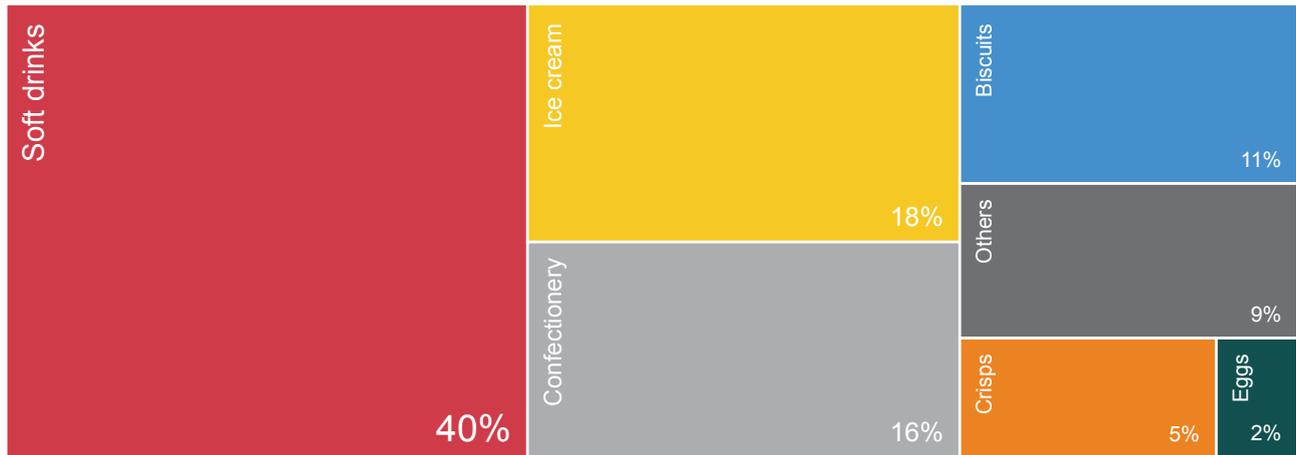


## 4.2. Marketing and regulation

Among formal retailers, the most common food items advertised were soft drinks (40 percent) (Figure 27).

**FIGURE 27.**

Percent distribution of common food items advertised by formal retailers (N=57 food products)

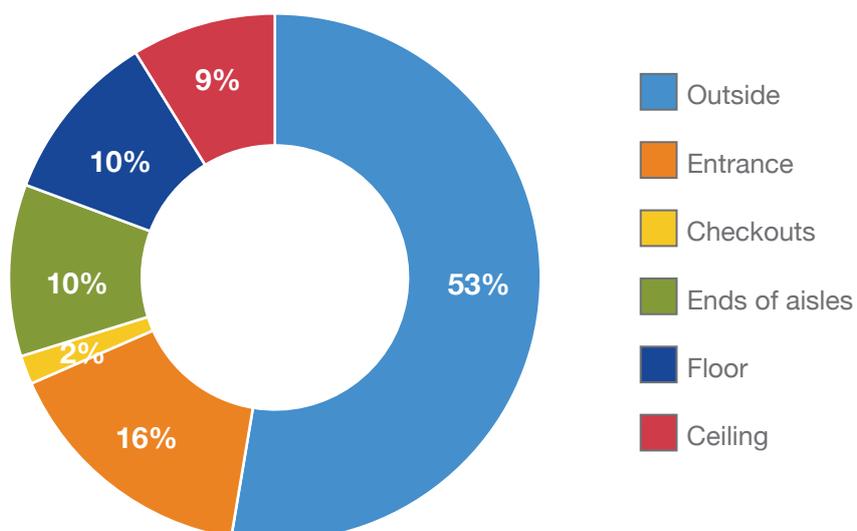


Source: Authors' own elaboration.

The most desired areas to advertise were outside the retail outlet (doors, windows, walls, fences and parking lots: 53 percent) and the entrance (16 percent) – see Figures 28 and 29.

**FIGURE 28.**

Distribution of total food and beverage products advertised by formal retailers (N=57 food products)



Source: Authors' own elaboration.

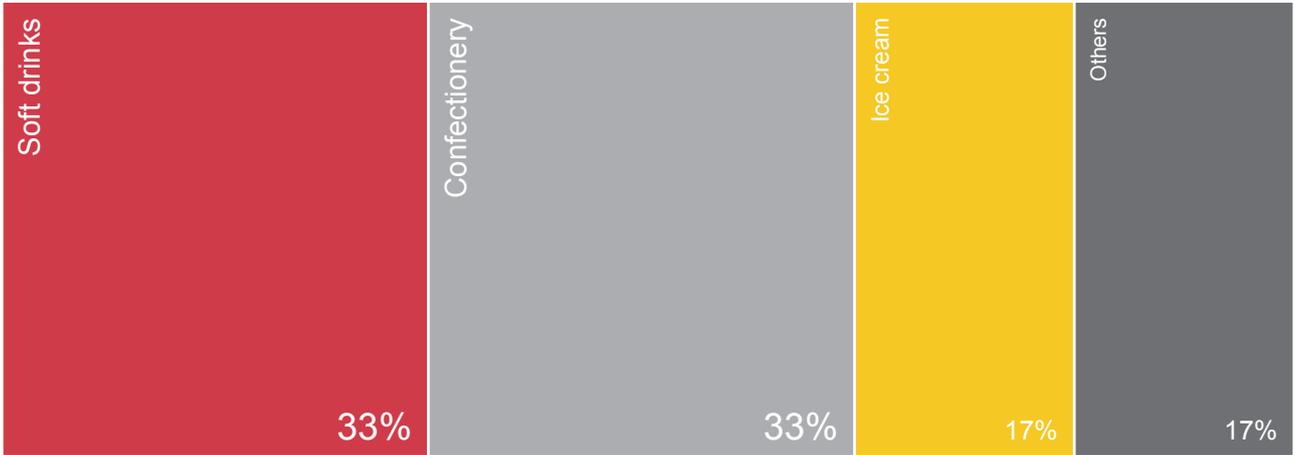
**FIGURE 29.**

Distribution of food and beverage products advertised by formal retailers, by place of advertisement (N=57 food products)

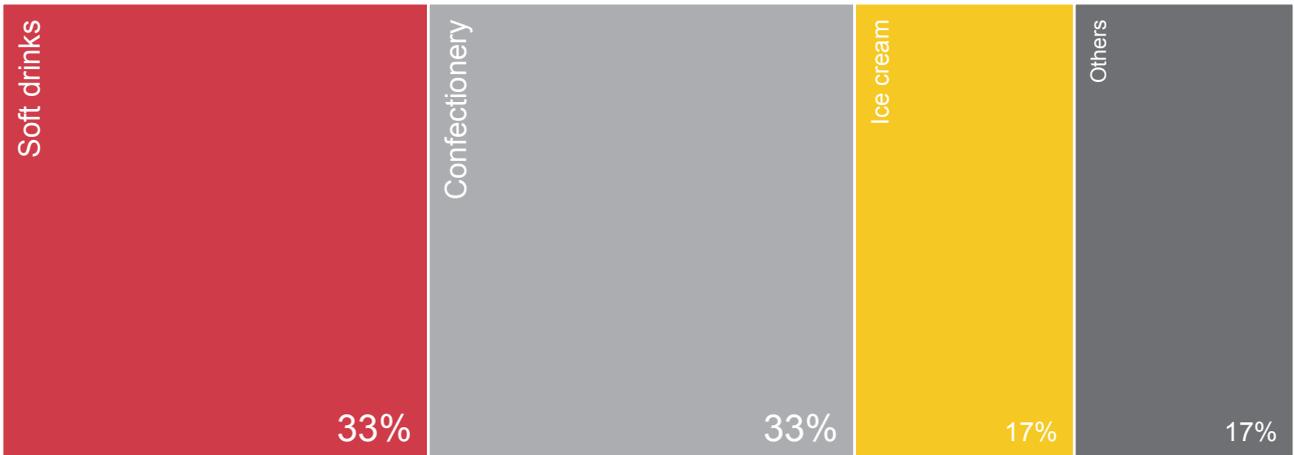


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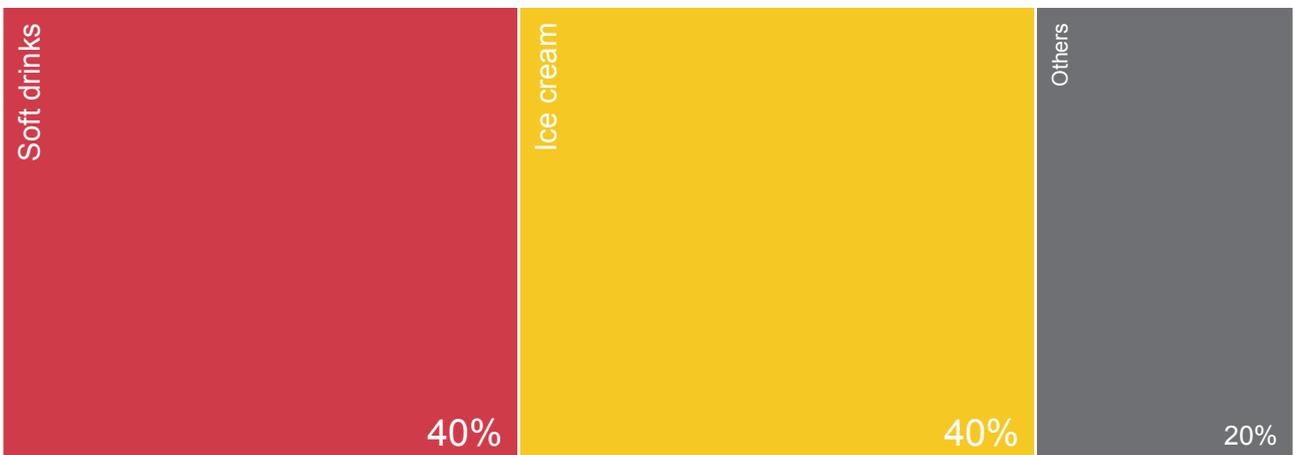
### Ends of aisles



### Floor



### Ceiling



Source: Authors' own elaboration.

Information on nutrition was captured for food service retailers (see Table 6). Three out of 8 outlets (37.5 percent) offered a choice of healthy sides and healthy cooking options. A moderate proportion (50 percent) of food service outlets offered consumers diet beverages and water.

**TABLE 6.**

Distribution of food service outlets (N=8)

Food services	Frequency (%)
	Food service outlets (N=8)
Is a choice of healthy sides available (e.g. salad, fruits, steamed/boiled vegetables)?	2 (25.0)
Are healthy cooking options available (e.g. baking, boiling, steaming)?	1 (12.5)
Are diet beverages or water available?	4 (50.0)

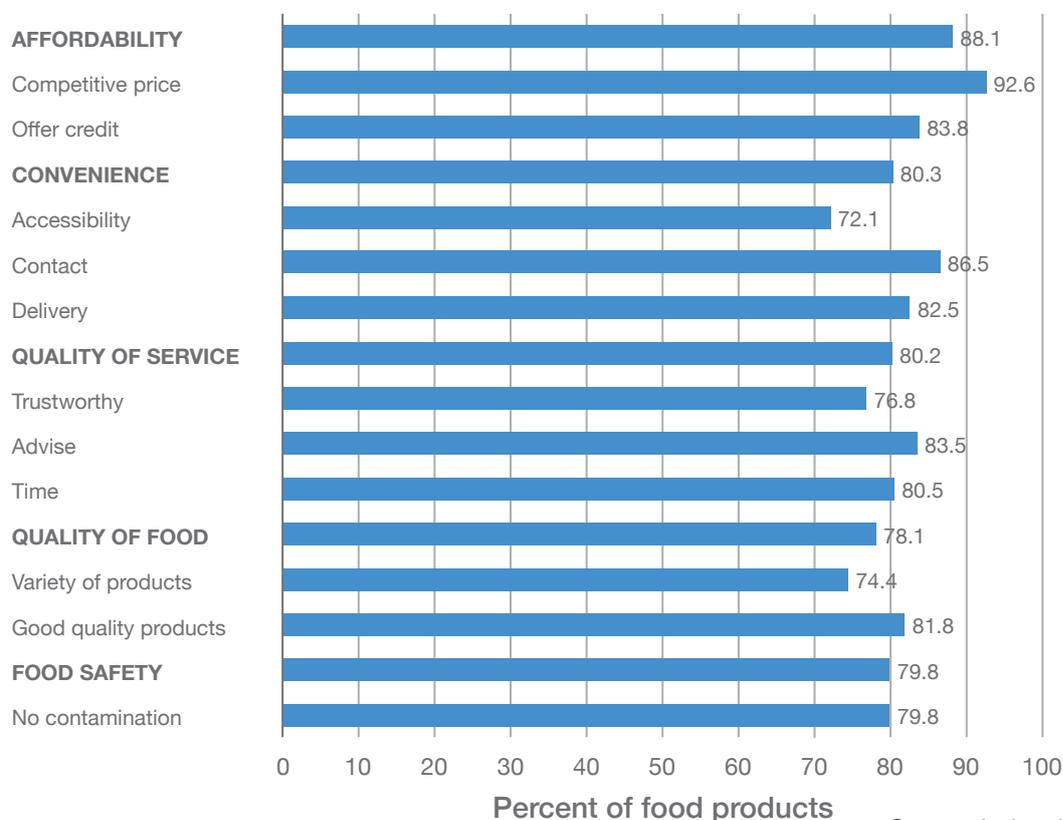
Source: Authors' own elaboration.

### 4.3. Food quality and safety

Given that retailers mostly sell to consumers, their preferences related to food quality and safety are critical in understanding the food environments. For this reason, retailers were asked to identify their preferences when selecting food items to sell. A very high proportion of retailers (78 percent and above) highlighted food safety and quality, service, convenience and affordability as important factors when choosing potential suppliers. Under food safety and quality, retailers valued suppliers who could provide a wide range of products, of consistently good quality and without contamination. As for convenience, ease of access and proximity to the supplier, the ability to contact them at any time and the possibility of delivery were noted as important considerations. Under food affordability, retailers valued the possibility of being able to obtain a competitive price and credit from the supplier. Under quality of service, retailers deemed it important for the supplier to be trustworthy, proactive in communicating any supply problems and time-sensitive.

**FIGURE 30.**

Percent distribution of food safety concerns reported by retailers (N=297 food products)



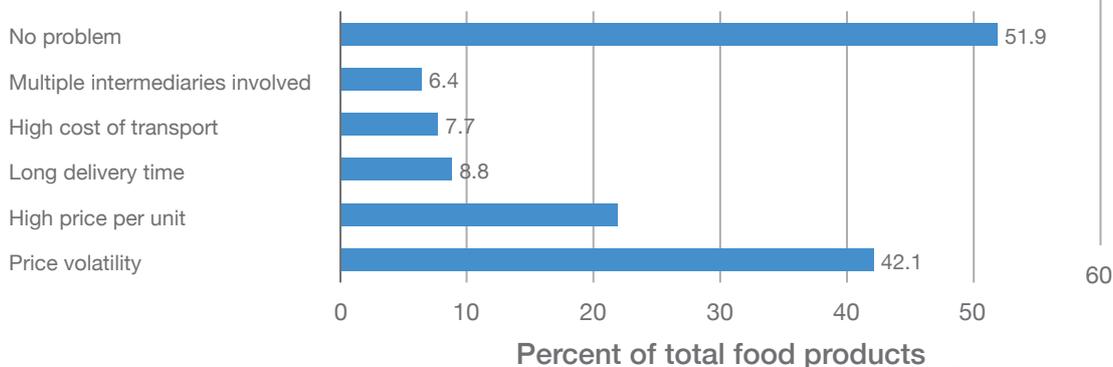
Source: Authors' own elaboration.

Most retailers did not report any problem with their suppliers for 52 percent of the food products sold. However, retailers considered

price volatility to be a problem for percent 42 of products.

**FIGURE 31.**

Distribution of major problems retailers faced with suppliers (N=297 food products)



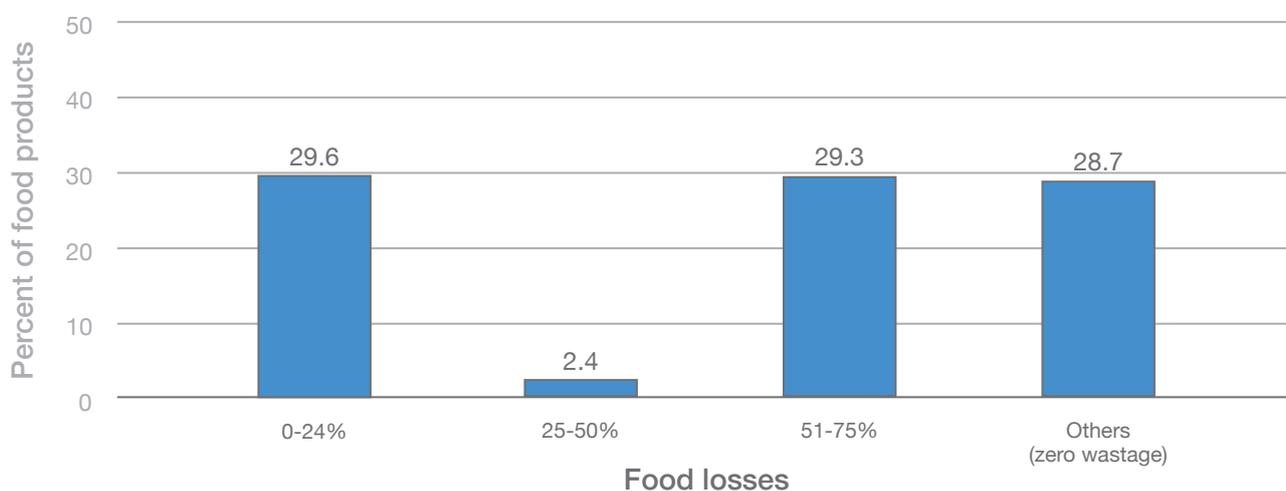
Source: Authors' own elaboration.

Retailers noted that there was no food loss or wastage for 29 percent of the food products (Figure 32). However, it was noted that the

percentage of unsold staple, fruit and vegetable products fell within the ranges of 0 to 24 percent and 51 to 75 percent.

**FIGURE 32.**

Self-reported food losses at the retail level (N=297 food products)



Source: Authors' own elaboration.

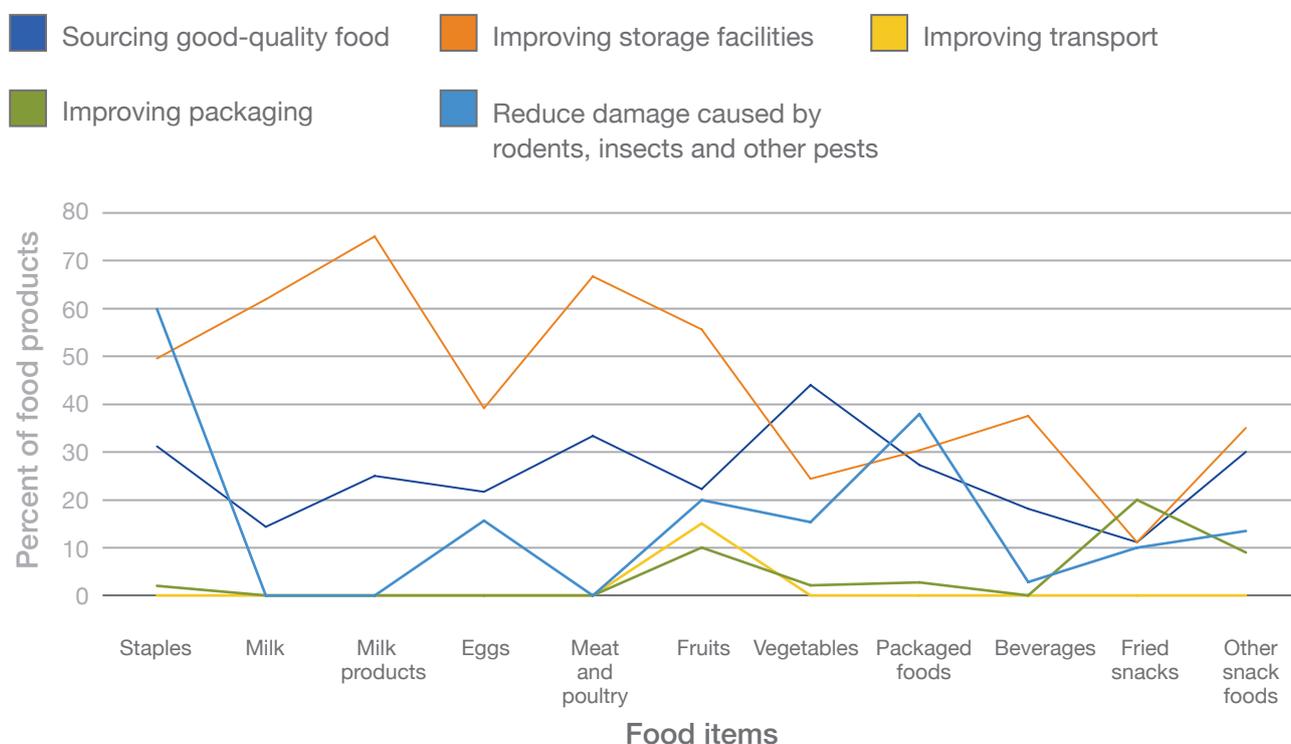
Retailers noted the following reasons for products not being sold: products failed to meet retailer's expectations, products do not sell, and product spoilage. The unsold products, across food groups, were mostly brought home for consumption, discarded as waste or used as fodder.

To reduce loss of food products across food groups, retailers noted improving storage facilities (41 percent), sourcing good-quality food (28 percent), and reducing damage caused by rodents, insects and other pests (32 percent) as the most common strategies employed.

For staple products and pulses, retailers' most sought-after strategies to reduce food loss were reducing damage from rodents, insects and pests (67 percent), improving storage facilities (50 percent) and sourcing good-quality foods (31 percent). For vegetables, the most common strategy included sourcing good-quality foods (44 percent). For fruits, common strategies included: reduction in damage caused by rodents, insects and other pests, improvements in storage facilities, improvements in packaging, and sourcing good-quality foods.

**FIGURE 33.**

Percent distribution of strategies implemented to reduce losses (N=297 food products)

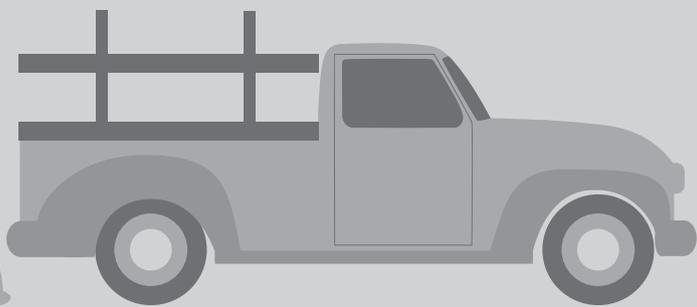
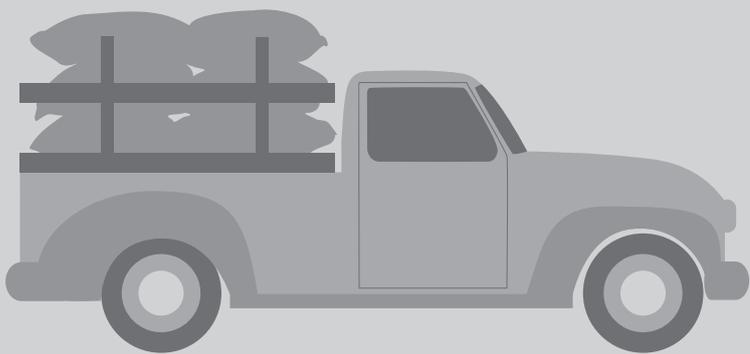


Source: Authors' own elaboration.

Out of 55 retailers, only 1 reported receiving formal training in food safety management provided by the government authorities for food technology and quality control. In addition, only six (11 percent) operated under a food safety or quality assurance programme. The programmes that the food actors came across were from the Department of Food Technology and Quality Control, the private sector and the Nepal Bureau of Standards & Metrology. The major barrier perceived by food actors in operating formal food safety programmes was the lack of awareness of such programmes.

Retailers were asked about the services and infrastructure offered by municipal authorities. Formal retailers adjudicated the quality of the

following services as “poor”: provision of clean and potable water, hygiene and food safety inspections, support for establishing new businesses, availability of transport infrastructure, and registration and licensing of vendors. Informal retailers rated the services related to the availability of clean and potable water, hygiene and food safety inspection, and support for establishing new businesses as “poor”. Food service outlets considered services related to the provision of clean and potable water, the telecommunication network, hygiene and food safety inspections, the support for establishing new businesses, and the registration and licensing of vendors to be “poor”.



# OVERVIEW OF FOOD SUPPLY CHAINS IN KATHMANDU

- Out of 55 traders, wholesalers and processors, 50 (91 percent) were members of a trade association – 2 of these were traders (and intermediaries), 42 were wholesalers and 6 processors.
- Traders, wholesalers and processors mainly sold their products to other food retailers (95 percent), followed by consumers (87 percent), across all food groups.
- Out of 55 traders, wholesalers and processors, only 2 had received formal training in food safety management.
- The majority of the food products (91 percent) across all food groups were delivered to traders, wholesalers and processors.
- The analysis revealed that none of the food products managed by traders, wholesalers and processors, across all food groups, were transported and distributed through cold storage facilities.
- Storage, transport and marketing were the main post-harvest activities undertaken by traders, wholesalers and processors. These supply chain actors mentioned that only 5 percent of the food products were unsold.
- None of the farmers interviewed were members of farmer producer organizations.
- None of the farmers used vehicles with cold storage to transport crops. Sixty-nine percent of the farmers reported having no problems with the buyer. However, 24 percent reported delay in payment and 13 percent reported reduced shares of profits due to multiple intermediaries.

**TABLE 7.**

Indicative distribution of food products according to yearly supply and demand, as reported by traders, intermediaries, processors and wholesalers

Food groups	Supply		Demand	
	Low	High	Low	High
Eggs	March April	August	April	July
Fruits	October	June	October	July
Meat and poultry	March	January June August November	April	January June
Milk	January February December	July August October	October	March April May
Other snack foods	January December	August	January December	August
Staples	March	August	March April	August
Vegetables	March	August	April	July

Source: Authors' own elaboration.



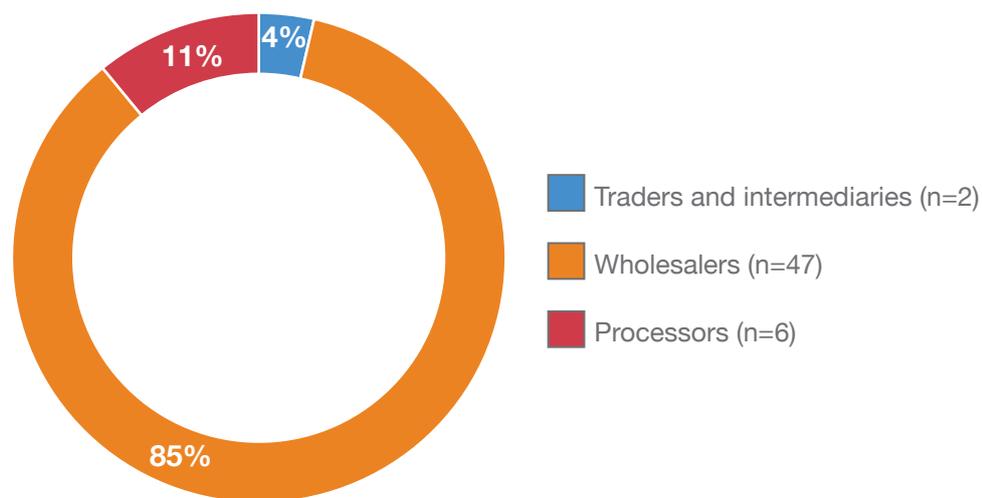
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## 5. FOOD SUPPLY CHAINS

To understand food supply chains in Kathmandu, 55 traders, wholesalers and processors were interviewed. Two traders (and intermediaries), 47 wholesalers and 6 processors were identified in 17 wards in the city.<sup>4,5</sup>

**FIGURE 34.**

Distribution of traders, wholesalers and processors interviewed for the assessment (n=55)



Source: Authors' own elaboration.

About nine (16 percent) and eight (15 percent) food actors were located at Kalimati and University Path, respectively. These food supply chain actors managed a total of 95 food products from the following food groups: staples and pulses (wheat, rice, dals, etc.), fruits (banana, papaya, pomegranate, etc.) and vegetables (potatoes, tomatoes, etc.), milk and milk products (milk and paneer), meat and poultry, and eggs. In this survey, fruits, vegetables and dairy were sold by wholesalers, whereas staples were sold by traders, wholesalers and processors.

Farmers, other traders and wholesalers were the main sources of purchase for food products (Figure 35). For staples, most of the food products (95 percent) were purchased from traders. For fruits, vegetables, meat and poultry, both other traders and wholesalers were the main source of purchase.

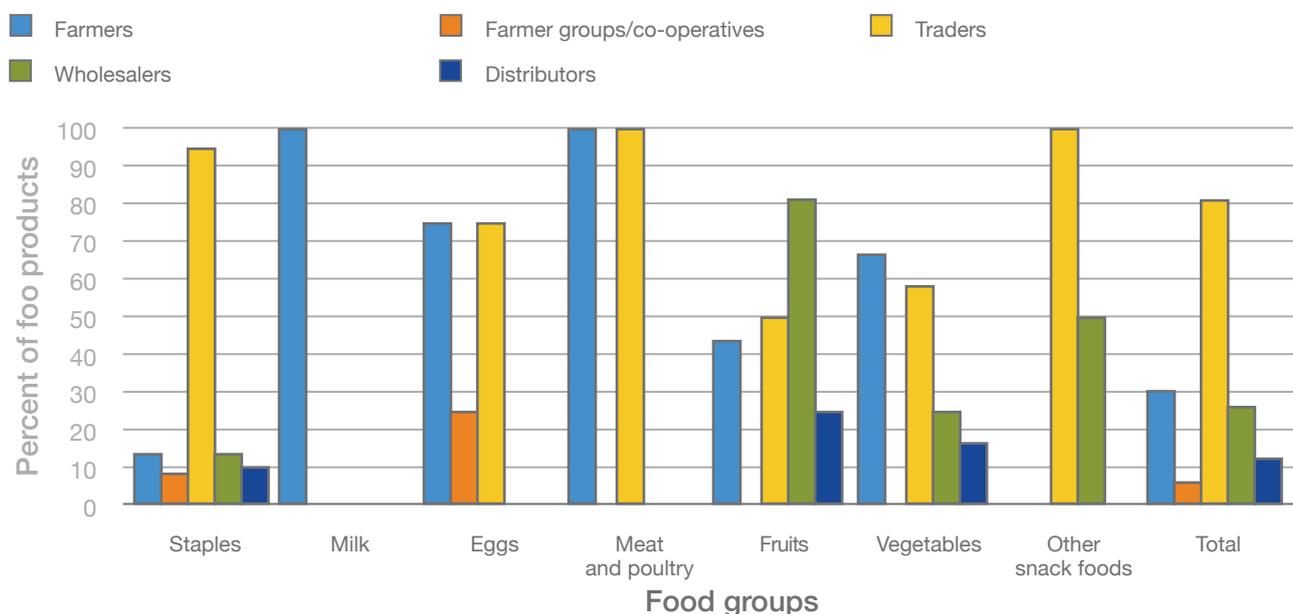
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<sup>4</sup> The interviews with traders, wholesalers and processors were conducted from 10 to 13 November 2020.

<sup>5</sup> Boudhha, Chandragiri, Ganeshman Singh Road, Gokarneshwor, Kalimati, Kathmandu, Kirtipur, Kulershwor, Nilbarahi Marg, Nirmal Lama Marg, Pahikwo Sadak, Shankharapur, Swayambhu Marg, Tankeshwar Marg, Tokha, University Path and Yekikaran Sadak.

**FIGURE 35.**

Percent distribution of food groups and sources of purchase of traders, wholesalers and processors (N=95 food products)



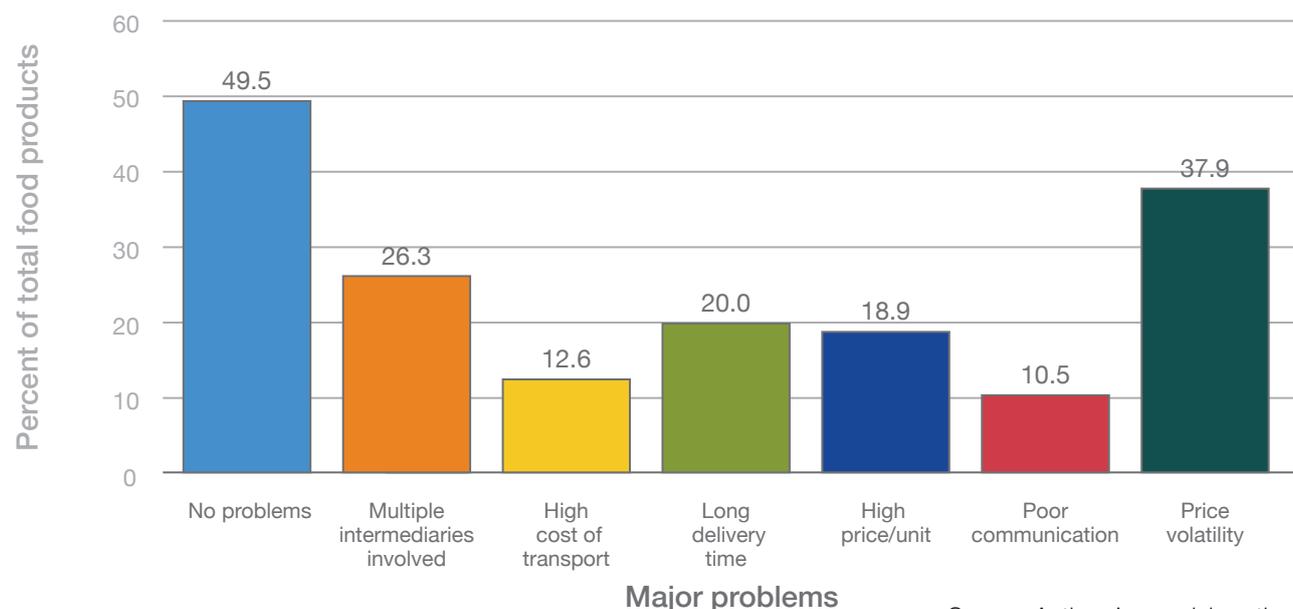
Source: Authors' own elaboration.

Traders, wholesalers and processors noted that for approximately 50 percent of the food products, there were no problems with the

supplier. However, price volatility was considered to be an issue for actors managing staples, pulses, fruits and vegetables.

**FIGURE 36.**

Percent distribution of major problems with suppliers faced by traders, wholesalers and processors (N=95 food products)

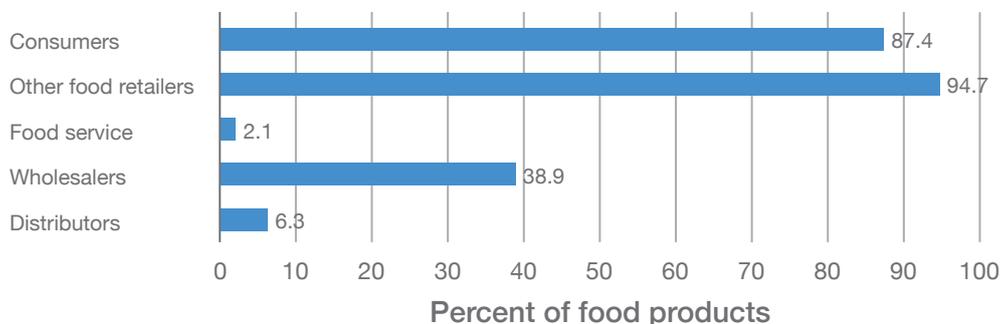


Source: Authors' own elaboration.

Traders, wholesalers and processors mainly sold their products to other food retailers (95 percent) followed by consumers (87 percent), across all food groups (Figure 37).

**FIGURE 37.**

Distribution of food system actors: buyers for traders, wholesalers and processors (N=95)



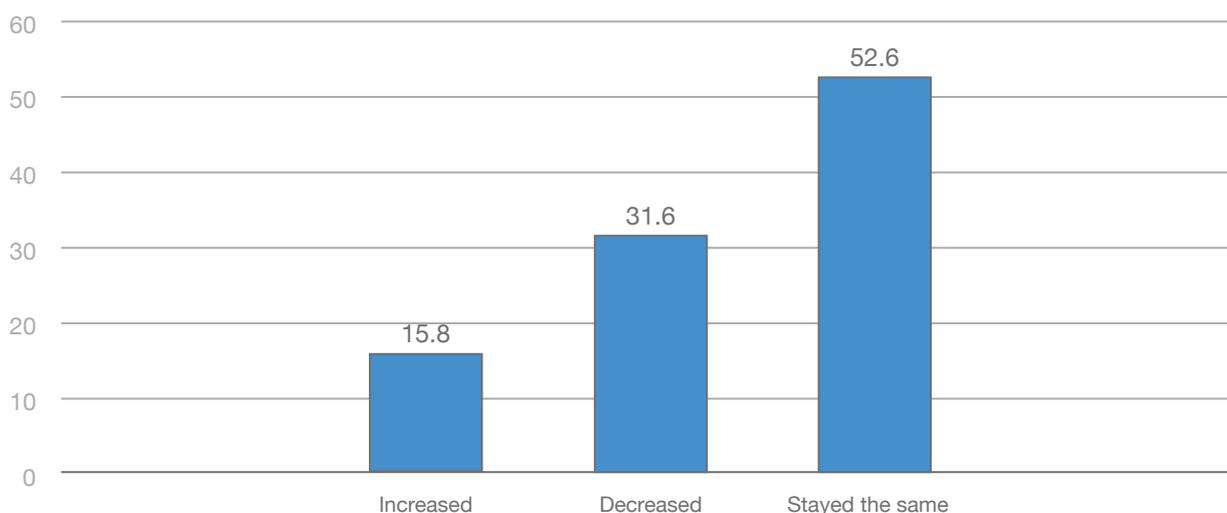
Source: Authors' own elaboration.

Sales of about 31.6 percent of the food products were expected to decrease during the same time in 2021. The most common reasons for changes

in sales expectations were market stability and the COVID-19 pandemic.

**FIGURE 38.**

Distribution of traders', wholesalers' and processors' sales expectation for the same time the following year (2021) (N=95)



Source: Authors' own elaboration.

A total of 45 farmers were interviewed from the peripheral areas of Kathmandu with respect to the type of crop production.<sup>6</sup> During the *rabi* season,<sup>7</sup> 33 (73 percent) farmers grew at least one crop and three (7 percent) grew two crops, which were mostly wheat (grown by 14 farmers), vegetables (grown by 14 farmers), pulses and lentils (grown by seven farmers), fruits (grown

by three farmers), and rapeseed (grown by one farmer). Eighty-five percent of the farmers cultivated up to 5 *ropani* of land,<sup>8</sup> and 10 percent cultivated 5 to 10 *ropani* of land for crops during the *rabi* season. Around 72 percent of the farmers reported selling three quarters of their crops.

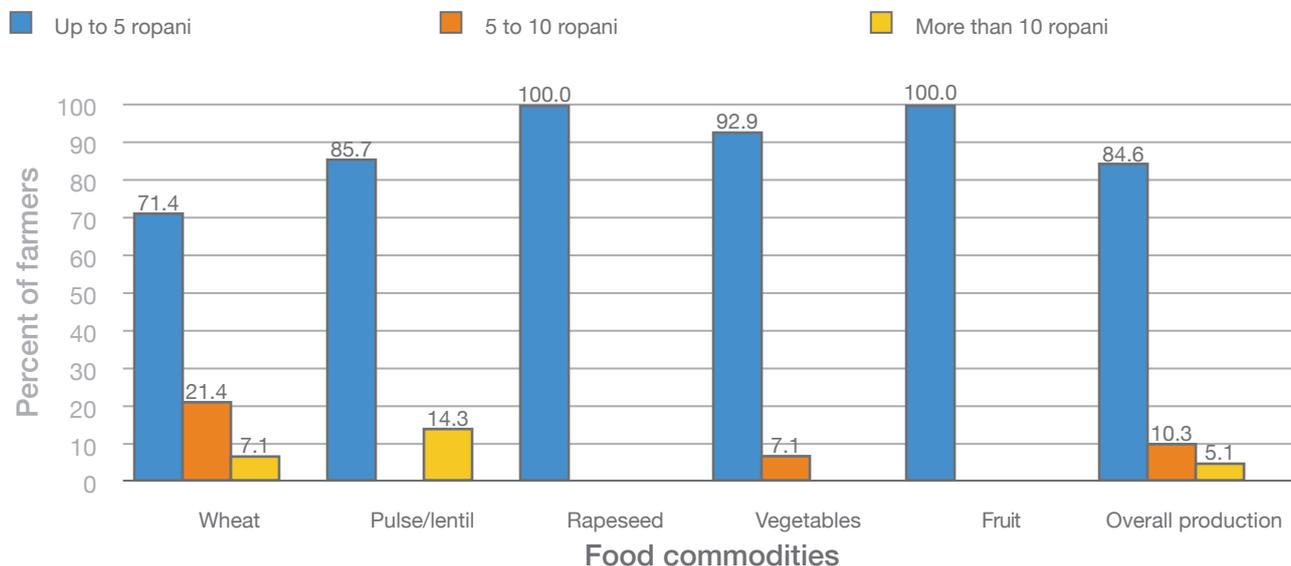
<sup>6</sup> The farmers' interviews were conducted from 12 to 14 November 2020.

<sup>7</sup> The winter season, from November to April.

<sup>8</sup> 1 *ropani* = approximately 0.05 ha.

**FIGURE 39.**

Crops cultivated during the *rabi* season, according to farm size (N=45)



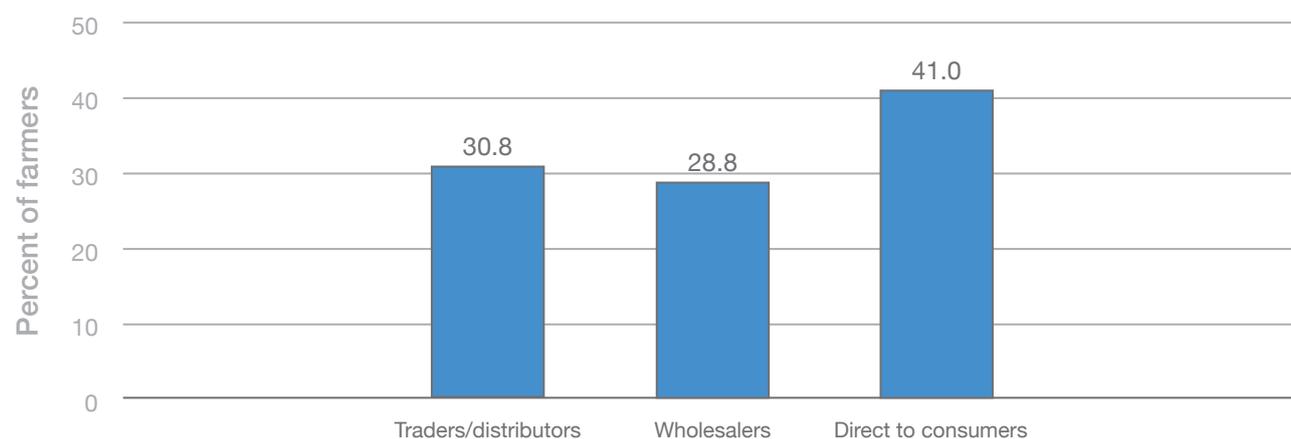
Source: Authors' own elaboration.

The unsold crops during the *rabi* season were mostly used for home consumption by all farmers, followed by donating them to others. Most farmers sold their produce directly to

consumers (41 percent), followed by traders and distributors (31 percent) and wholesalers (29 percent).

**FIGURE 40.**

Distribution of farmers' primary place for selling crops in the *rabi* season (N=45)

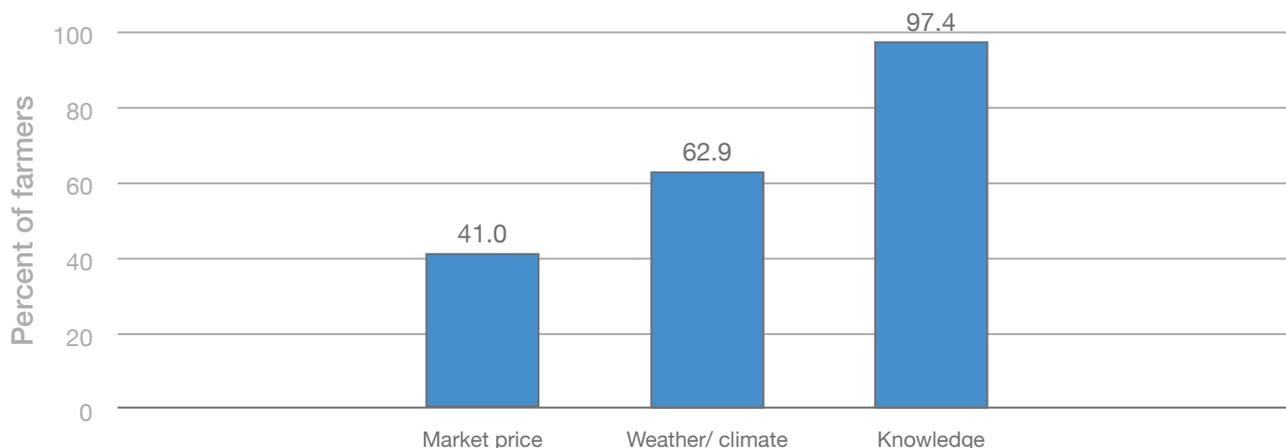


Source: Authors' own elaboration.

Ninety-seven percent of the farmers cultivated the crops because of their knowledge, followed by 63 percent who cultivated due to weather.

**FIGURE 41.**

Percent distribution of reasons for cultivation of crops in the *rabi* season (N=45)



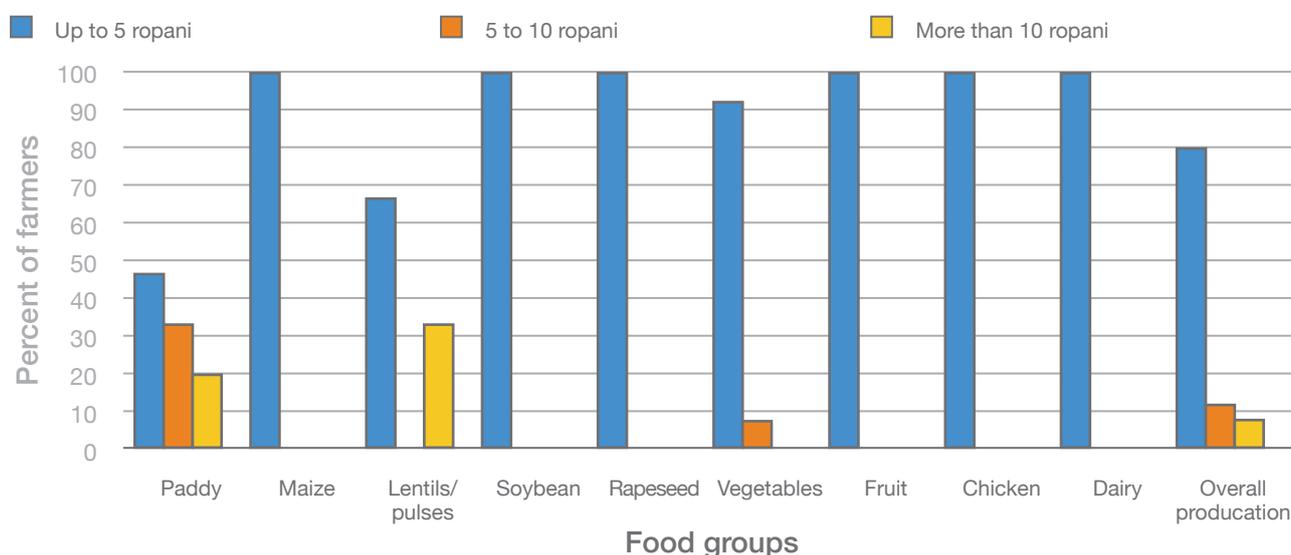
Source: Authors' own elaboration.

During the *kharif* season,<sup>9</sup> the majority of the farmers grew rice (paddy) and vegetables (30 percent and 26 percent, respectively). Paddy farmers mostly cultivated 0 to 5 *ropani* and 5 to 10 *ropani* of land, whereas vegetables were

grown within the range of 0 to 5 *ropani* of land. Seventy-two percent of farmers sold 75 percent of the crops and 20 percent sold half of the crops grown.

**FIGURE 42.**

Crops cultivated during the *kharif* season, according to farm size (N=45)



Source: Authors' own elaboration.

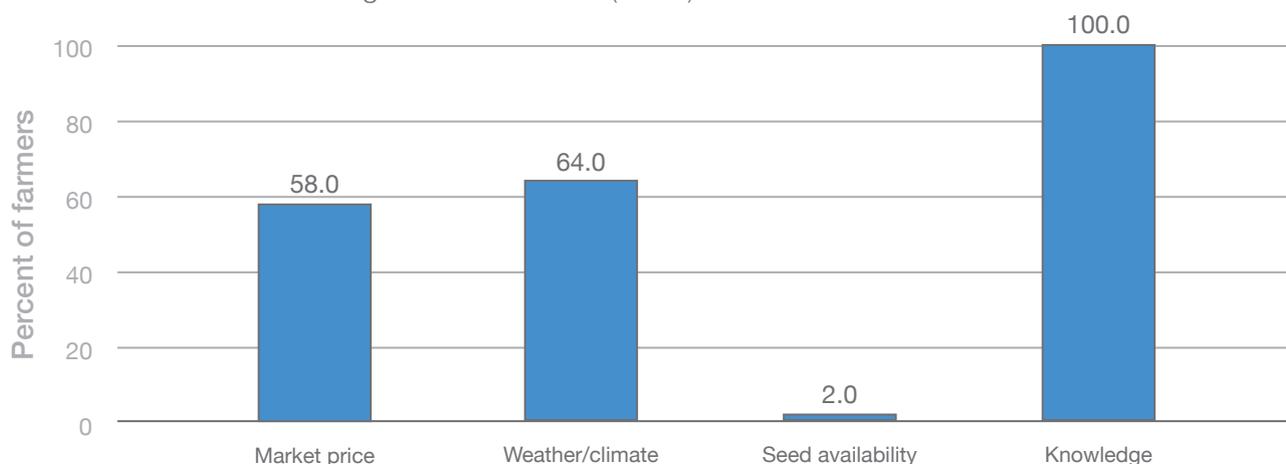
The unsold crops were mostly used for home consumption by all farmers, followed by donating them to others. Most farmers (44 percent) sold their crops directly to consumers, while 34 percent sold to traders and distributors.

All farmers cultivated the crops because of their knowledge, followed by 64 percent of farmers who cultivated due to climatic and weather-related factors during *kharif*.

<sup>9</sup> The rainy season, from May/June to October.

**FIGURE 43.**

Reasons for cultivation during the *kharif* season (N=45)



Source: Authors' own elaboration.

### 5.1. Access to services

Out of 55 traders, wholesalers and processors, 50 (91 percent) were members of a trade association – 2 of these were traders (and intermediaries), 42 were wholesalers and 6 processors. These trade associations mostly offered the following services to traders and wholesalers: extension and technical production advice, market information, sourcing of inputs, mechanization services, publicity and advocacy, assistance with licenses and compliance with regulations, and negotiation with authorities.

Out of the 55 traders, wholesalers and processors interviewed, only two had received formal training in food safety management. The actors reported receiving formal trainings in food safety management from the government authorities, non-governmental organizations and business associations, while 18 (33 percent) operated under a food safety or quality assurance programme. The programmes based on food safety or quality assurance programmes were offered by the Nepal authorities for food technology and quality control, which included the Department of Commerce and Supply Management, the Department of Food Technology and Quality Control, and the Nepal Chamber of Commerce.

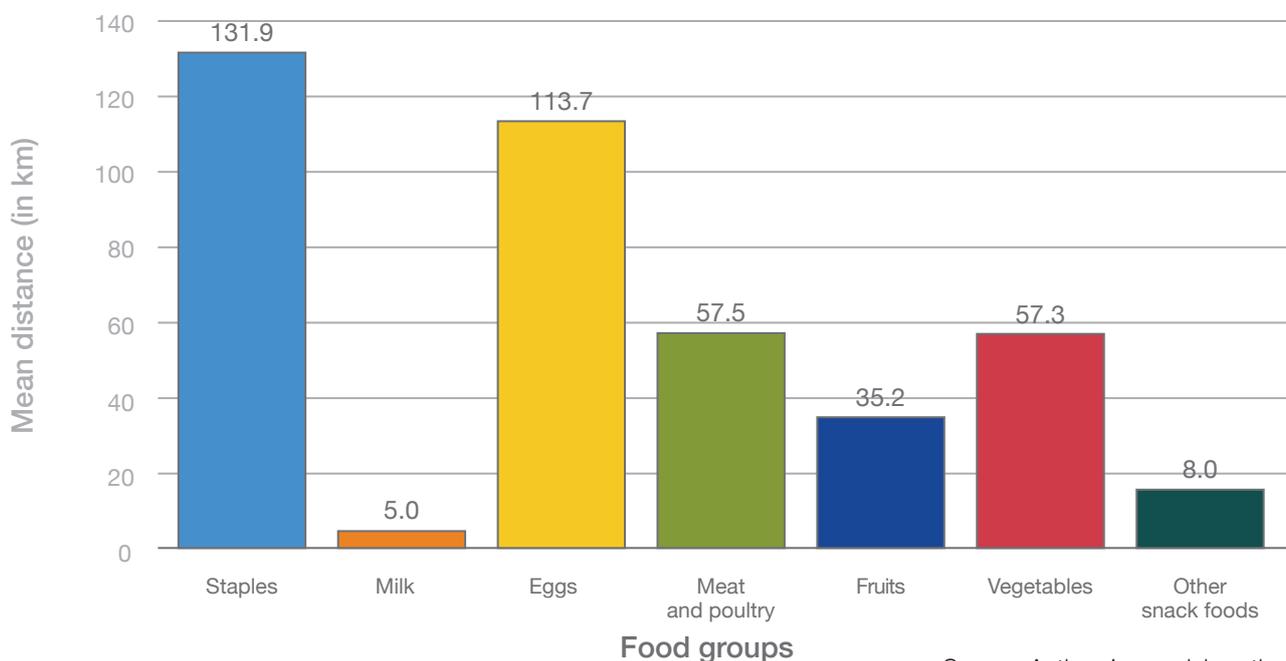
None of the farmers interviewed were members of farmer producer organizations.

### 5.2. Post-harvest, processing and distribution

The majority of the food products (91 percent) across all food groups were delivered to the traders, wholesalers and processors. Food items belonging to the staples and pulses category were delivered through both open and closed vehicles. The mean distance between the supplier of staples and pulses items and the trader, wholesaler and processor was 132 km. To transport fruits from the supplier, open vehicles were mostly used, and the mean distance was noted to be 35 km. As for vegetables, both open and closed vehicles were used for transportation, and the mean distance from the source was 57 km. The analysis revealed that none of the food products, across all food groups, were transported and distributed through cold storage facilities.

**FIGURE 44.**

Mean distance (in km) between suppliers and traders, wholesalers and processors, by food product



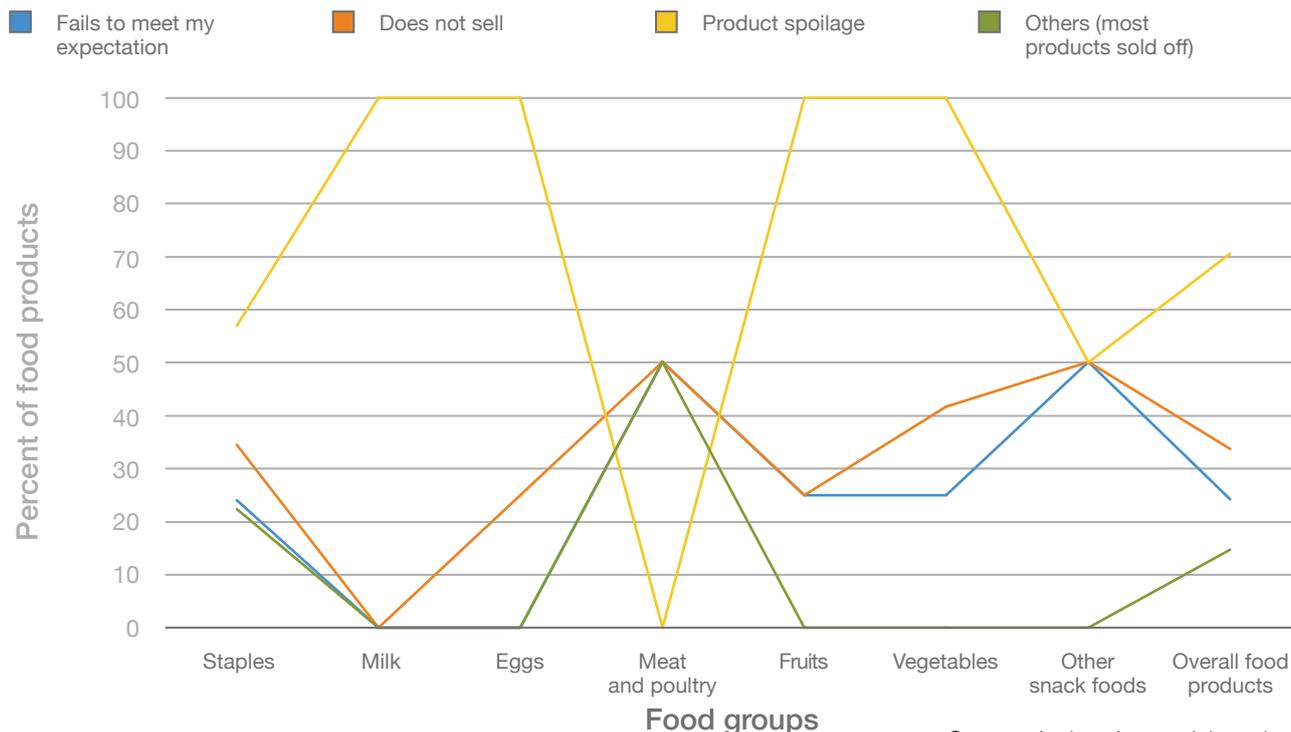
Source: Authors' own elaboration.

products were unsold. Product spoilage was the most common reason for not selling food products, across food groups, affecting 71 percent of the products. Within food groups, the reason for most staple commodities not

being sold was failure to sell the products, product spoilage and products failing to meet expectations. Product spoilage was the main concern for fruits and vegetables.

**FIGURE 45.**

Percent distribution of reasons for food groups not being sold (food products=95)



Source: Authors' own elaboration.

More than half of the food products (51 percent), across the three food groups that were not sold were discarded as waste by the traders, wholesaler and processors. In the case of staples, most products which were not sold were used as fodder (31 percent). Fruits and vegetables not sold were mainly discarded as waste. The most desired strategy to reduce losses across food groups was sourcing good-quality food (65 percent), reducing damage caused by rodents, insects and pests (40 percent) and improving storage facilities (27 percent).

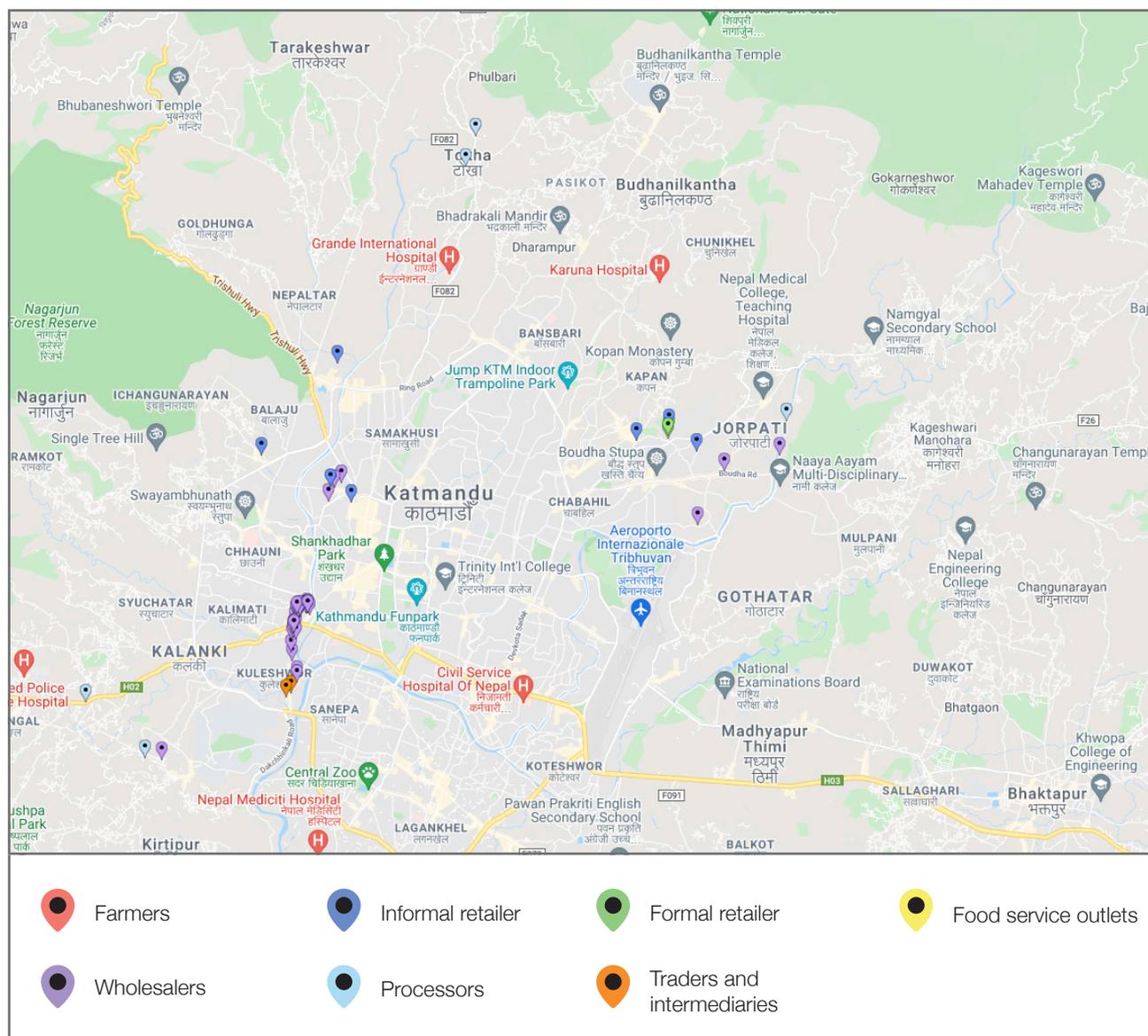
When farmers were asked about their strategies to reduce crop losses, the majority of the farmers (78 percent) reported making efforts to reduce damage caused by rodents, insects and pests. When asked about their strategies to improve crop safety, the majority of the farmers (73 percent) reported using fewer chemical inputs (organic, non-pesticide management, zero budget natural farming, etc.).

Most farmers (82 percent) reported that buyers collected the crops using either truck, van, pick-up or headload. None of the farmers used vehicles with cold storage to transport crops. Sixty-nine percent of the farmers reported having no problems with the buyer. However, 24 percent reported delay in payment and 13 percent reported reduced shares of profits due to multiple intermediaries. On asking about the key factors considered important when choosing a potential buyer, easy access (close location), offer of a competitive price and prompt payment were reported to be the most important factors.

## 6. GEO-MAPPING OF KEY FOOD SYSTEM ACTORS AND AVAILABILITY OF KEY FOOD GROUPS IN KATHMANDU

**FIGURE 46.**

Distribution of farmers, traders, wholesalers and retailers by survey type in Kathmandu

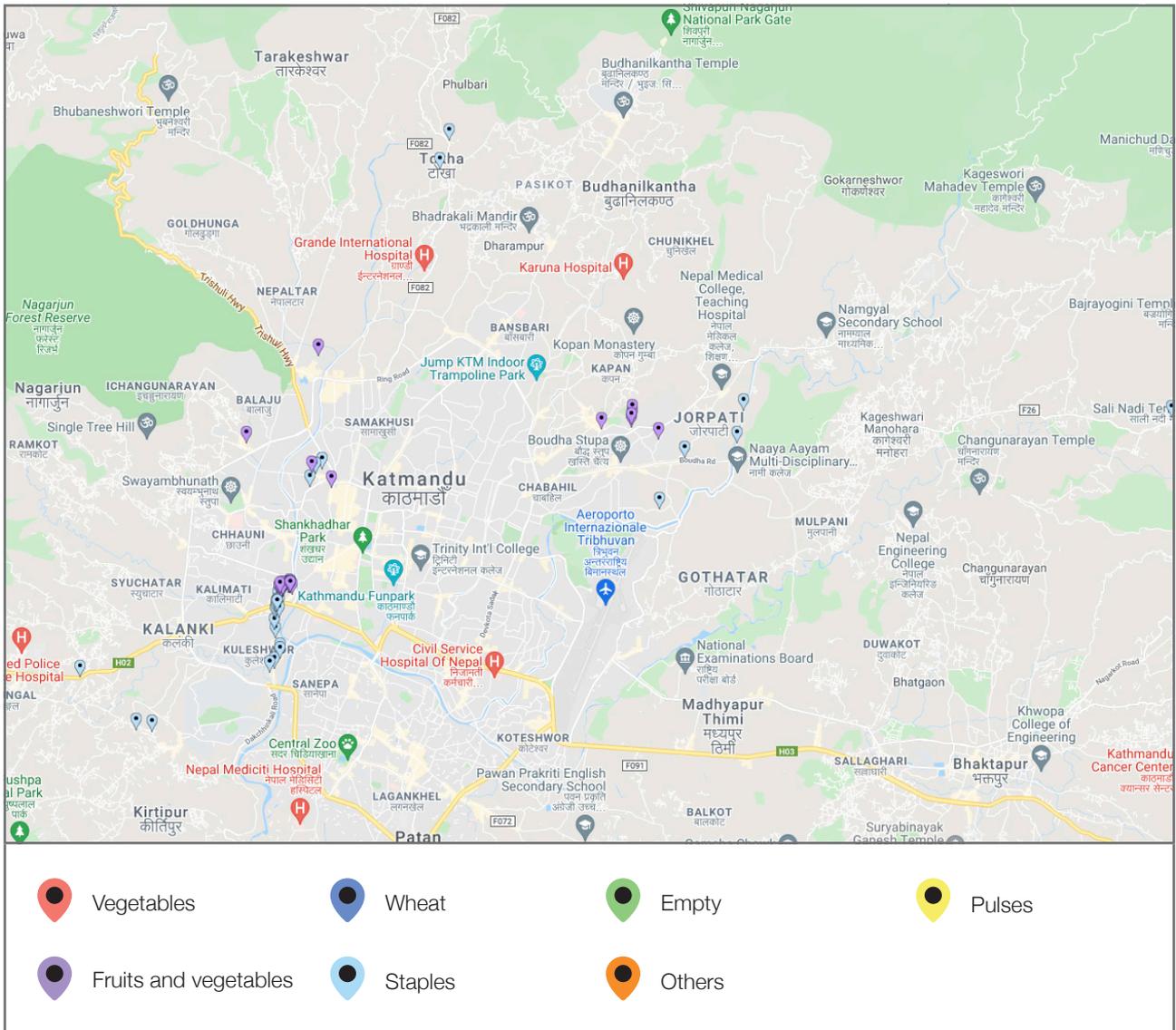


Source: SurveyCTO & Batchgeo, 2020.

Note: The geo-mapping was captured through the SurveyCTO Android Application & Batchgeo. SurveyCTO collects GPS coordinates using the device's built-in GPS function.

**FIGURE 47.**

Distribution of farmers, traders, wholesalers and retailers by food group in Kathmandu



Source: SurveyCTO & Batchgeo, 2020.

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