



The Vietnam urban food consumption and expenditure study

Factsheet 10: Insights into fruit expenditure and consumption

In this factsheet we take an in-depth look at Vietnamese households' fruit expenditures, shopping behaviour, and consumption preferences. We explore the types of fruit products that households are purchasing, where they purchase different fruits and the importance of various factors when making purchase decisions. We also explore how consumption has changed over the past five years and how household income affects expenditure shares.

In urban Vietnam, expenditures on fruit products account for approximately 8% of monthly household food expenditures (per adult male equivalent¹). Note: Factsheet 3 provides a breakdown of food expenditure into different food types.

We are able to determine the share (%) of monthly expenditures dedicated to fruits (in general) purchased by households, as well as expenditures on specific fruits. We use answers to the following questions included in the food expenditure section of the survey: *"During the past month, how many times did your household purchase [particular food product ...]";* and *"For each purchase, what is the normal value (in VND) of [the product] bought for household consumption."*

Using responses to these questions, we calculate monthly expenditures for each of the food items. The individual food expenditure

values are summed to get total monthly food expenditures for each household. We then calculate expenditure shares for various food items or groups of foods, in this case – fruit products, by dividing the expenditures on fruits by the household's total monthly food expenditure.

Orange/citrus products, accounted for the highest share of fruit expenditures in all cities, especially cities in northern Vietnam where more than 30% of fruit expenditures were on orange/citrus products (average share of expenditure across all four cities was 27%; Figure 1). Despite rarely being grown in Vietnam, **apples** accounted for the second highest share of fruit expenditures in the smaller northern cities: Lao Cai City (19% of fruit expenditures) and Son La City (22% of fruit expenditures; Figure 1). This may reflect the relative proximity of these cities to major apple growing regions in China.

The share of fruit expenditures spent on different types of fruit was similar in Lao Cai City and Son La City (Figure 1). The main difference between these cities and Hanoi was the percent of expenditure dedicated to 'other fresh fruits'. With 20% of fruit expenditures dedicated to 'other fresh fruits' in Hanoi, this was double that in Lao Cai City and Son La City (Figure 1).

The **'other fresh fruits'** category includes fruits that were not evaluated separately in the survey, such as grapes, cherries, durian, dragon fruit and others. A relatively greater proportion of fruit expenditures dedicated to these fruits in the bigger cities (Hanoi and Ho Chi Minh City) likely reflects greater and more

¹Household expenditures were weighted by the number of adult male equivalents in the household to calculate a 'per adult male equivalent'. This allowed us to standardise food expenditure across households with more or less people and different ratios of adults to children. The weights were calculated using WHO/FAO energy requirements from the 2004 Human Energy Requirements, Food and Nutrition Technical Report Series.

diverse fruit availability in these cities, especially for fruits that are typically imported.

What factors influence consumers' fruit purchase decisions?

In the survey, we asked households to nominate the most important factor (from 22 options) that influences their decision to buy mangoes, peaches, pears and plums. We only asked detailed questions for these four fruit products because they were products of interest to other agricultural development projects, also funded by the Australian Centre for International Agricultural Research (ACIAR).

Figure 2 provides insight on the seven most common factors that respondents said influence their fruit purchase decisions. The top five most important factors did not differ significantly between fruits and cities (Figure 2).

Food safety was the main factor influencing purchase decisions mentioned by respondents for almost all fruits in each city. The exception was in Ho Chi Minh City, where **freshness** was considered more important. **Freshness** was the second most important factor, behind food safety, for households in the smaller cities.

Origin was also important, especially in Hanoi and Ho Chi Minh City, this may reflect greater availability of more imported fruits. It is noteworthy that a significant proportion of the households said they never purchased the three temperate fruits: **peaches, pears and**

plums in Ho Chi Minh City (Figure 2). The tropical climate and availability of different fruits in Ho Chi Minh City relative to the northern cities is likely to drive these differences.

Do external cues indicating production methods or certifications influence fruit purchasing decisions?

Interestingly, respondents rarely mentioned 'production method' or 'brand' or other labelling information (e.g. certifications such as organic, VietGAP, certified safe), as being key influencers when purchasing fruit (see Table A2 in the Appendix). This was somewhat surprising as food safety is such an important decision factor for consumers in Vietnam, and indicators of production method (e.g. through labeling) and related certifications are beginning to be used to signal quality and food safety. This point is also relevant for vegetables (Factsheet 9).

Considering this finding, it is interesting to further investigate what consumers use to indicate food safety when purchasing fruit. The outlets chosen to purchase fruits may give consumers some indication of food safety considering their previous experiences. (Note: reasons consumers shop at different outlets and their perceptions of outlets was discussed in Factsheet 6 and certification issues were analysed in more detail in Factsheet 8). **Origin** may also be used by some consumers as an indicator of food safety.

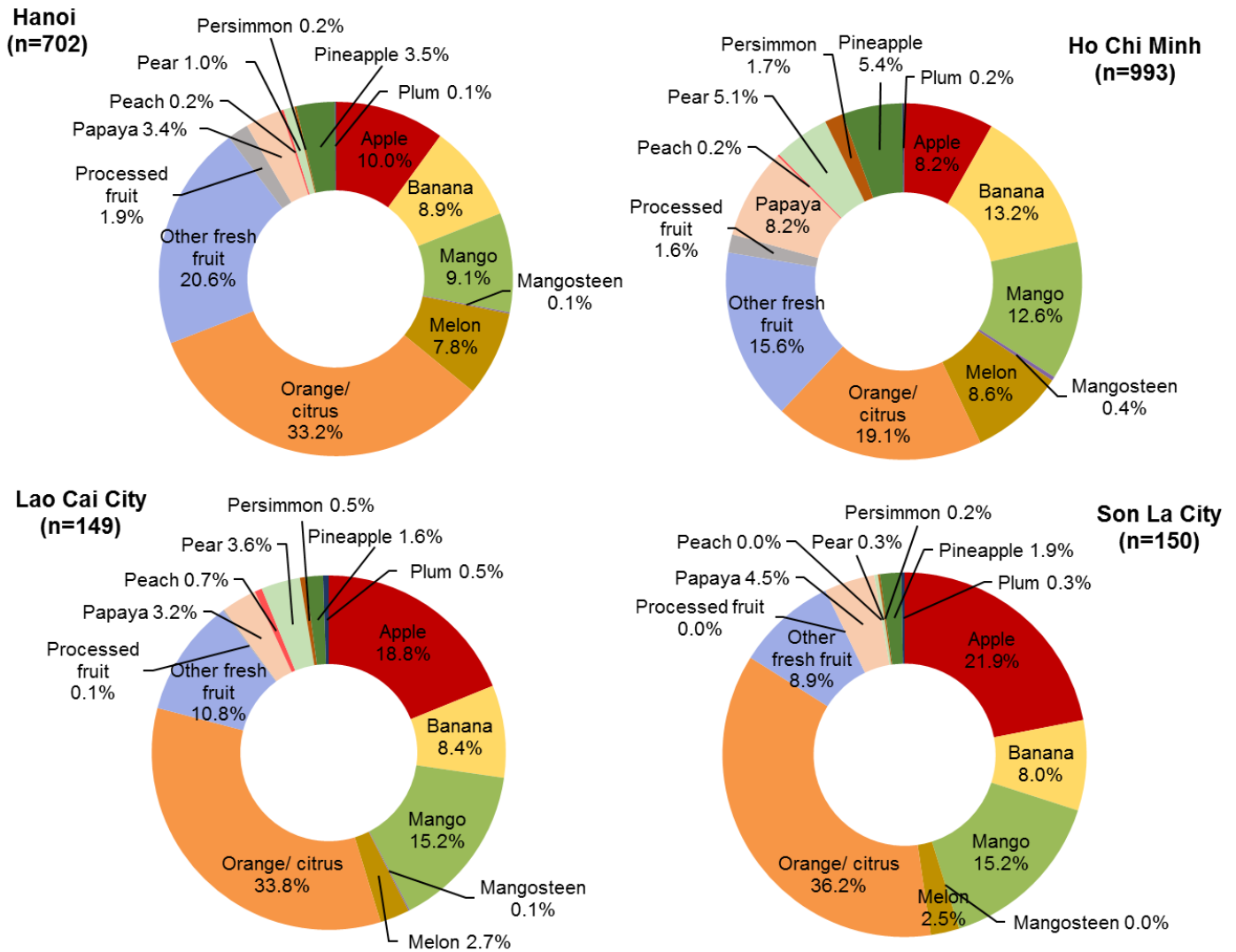


Figure 1. Share (%) of monthly fruit expenditures (per adult male equivalent) on different types of fruit in Hanoi (top left), Ho Chi Minh City (top right), Lao Cai City (bottom left) and Son La City (bottom right), Vietnam. See Table A1 in the appendix for further information. Note: the category 'processed fruit' includes canned, dried and processed, e.g. sweetened fruits.

Factors influencing choice	Hanoi				Ho Chi Minh				Lao Cai City				Son La City			
	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum
Food safety	35.4%	37.1%	41.3%	33.8%	17.3%	13.4%	18.0%	13.8%	52.6%	60.5%	59.9%	56.6%	60.5%	62.5%	65.1%	54.6%
Freshness	13.3%	12.1%	10.4%	15.9%	27.1%	13.3%	24.9%	18.5%	23.7%	20.4%	22.4%	25.0%	23.0%	13.8%	18.4%	20.4%
Taste	21.6%	11.1%	10.8%	19.2%	18.6%	7.5%	8.2%	12.0%	3.3%	3.3%	1.3%	4.6%	0.7%	4.6%	0.7%	2.0%
Origin	13.7%	22.8%	19.5%	17.6%	9.2%	7.1%	11.2%	13.2%	9.9%	9.9%	8.6%	7.2%	2.0%	2.0%	1.3%	4.6%
Nutritional content	8.5%	8.8%	7.5%	3.9%	12.2%	6.4%	11.7%	6.3%	6.6%	4.6%	6.6%	3.9%	7.9%	7.9%	7.2%	5.3%
Price	1.6%	0.9%	1.4%	1.2%	6.2%	6.2%	9.1%	7.9%	2.6%	1.3%	0.7%	1.3%	4.6%	5.3%	5.9%	4.6%
Easy to prepare	1.6%	1.3%	1.4%	2.5%	0.5%	0.4%	0.6%	0.7%	0.0%	0.0%	0.7%	1.3%	0.0%	0.0%	0.7%	1.3%
Others	4.2%	5.6%	7.5%	3.5%	8.2%	2.6%	4.1%	6.1%	1.3%	0.0%	0.0%	0.0%	1.3%	3.3%	0.7%	2.0%
Never purchase this item	0.1%	0.3%	0.1%	2.6%	0.6%	43.1%	12.0%	21.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	5.3%

Figure 2. Share (%) of households that nominated the listed factors as important in purchase decisions for mangoes, peaches, pears and plums, in Hanoi (n=693), Ho Chi Minh City (n=996), Lao Cai City (n=152) and Son La City (n=152), Vietnam. See Table A2 in the appendix for the percentages graphed here as well as a breakdown of the factors included in the 'others' category.

Where do urban Vietnamese households purchase different fruits?

As well as including questions to capture information about expenditures on different fruits, the survey also contained questions to capture where consumers are buying different fruits. Definitions of the retail outlets considered in the survey are provided in the Appendix.

Traditional markets were the dominant retail outlet used by consumers to purchase various fruit products in all cities.

Traditional markets include: formal wet markets, informal street markets, traditional family shops, semi-permanent stands and peddlers/mobile vendors.

Collectively, around 95% of monthly expenditures on fruits (Figure 3) occur at traditional retail outlets. However, the average share of expenditures at each of the traditional outlets was not the same across cities. For instance, **formal wet markets** were the most important in Ho Chi Minh City (56%) and Lao Cai City (71%). **Semi-permanent stands** had the greatest share of expenditures in Hanoi (35%) and **informal street markets** were the main channel for fruit expenditures in Son La City (45%; Figure 3).

Modern markets (supermarkets/hypermarkets, minimarts and specialty shops) attract 4.7% of monthly fruit expenditures (Figure 3). **Supermarkets** were more popular in Ho Chi Minh City (receiving 12% of fruit expenditure; Figure 3).

Figure 4 shows the share of monthly expenditure (per adult male equivalent) on different fruits spent at modern and traditional markets.

In addition Figure 4 shows that respondents from Son La City did not purchase peaches, mangosteens or processed fruits. The only fruit purchased exclusively from modern outlets was **processed fruit** (canned, dried, frozen or sweetened) in Lao Cai City (Figure 4).

Modern markets feature more heavily in expenditure share for the larger cities, Hanoi and Ho Chi Minh City. This is likely a reflection of the modern outlets being present and more common and easy to access in these cities compared to the smaller regional cities of Son La City and Lao Cai City.

In general, consumers prefer to purchase their fresh fruits from traditional markets. From this, it appears that smallholder farmers producing these products and typically supplying them into traditional market channels are unlikely to be negatively affected by the growth of supermarkets, especially in small cities, in the short-to-medium term. This is only true, however, if both traditional and modern food retail outlets are allowed to co-exist in the market.

Interestingly, a report from the General Department of Vietnam Customs states that some of the most consumed fruits (e.g. orange, apple, mango and others like grapes and berries, etc.) are often imported from China, New Zealand, Australia and Thailand². The Department also says that these products largely enter the Vietnamese retail market via modern retail outlets, especially the products from Thailand (after Thai retail groups bought two major hypermarkets: Big C in 2015 and Metro in 2016)².

² Reported by *The Hanoitimes* on 17/03/2017
<<http://hanoitimes.com.vn/economy/2017/03/81e0aff/vietnam-s-fruit-and-vegetable-imports-and-export-considerably-rise>>

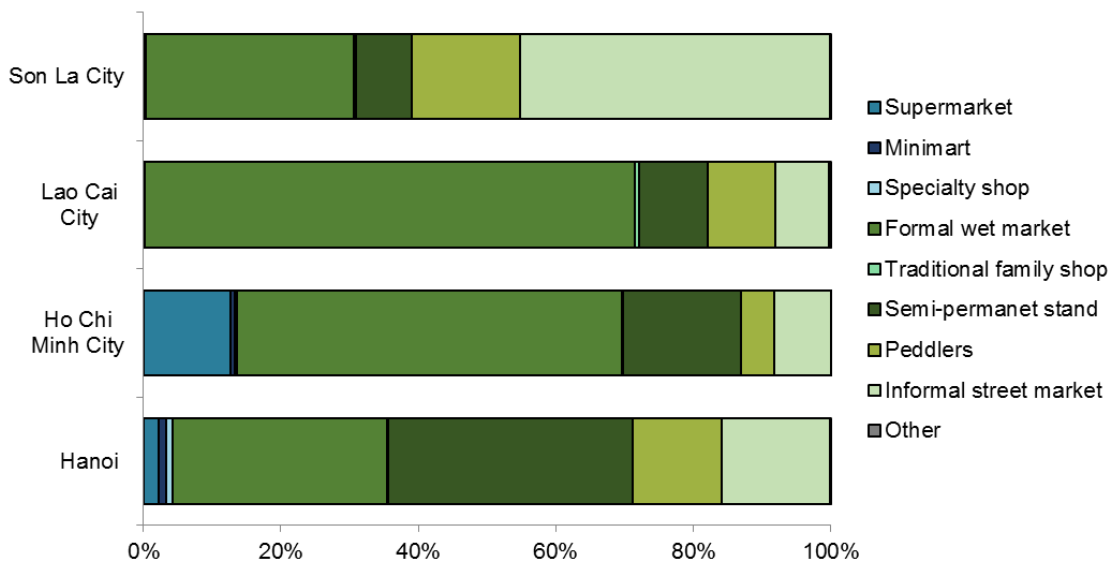


Figure 3. Share (%) of monthly fruit expenditure (per adult male equivalent) at retail outlet type in Vietnamese cities. 'Modern outlets' are depicted by blue shading and 'traditional outlets' are shown using green shading. See Table A3 in the appendix for the percentages of expenditure graphed here. Further analysis of outlets receiving fruit expenditures was conducted for households in different income groups in each city and is presented in Table A7 in the appendix. Note: 'Other' outlets include phone orders, online shopping and restaurants/cafes, etc.

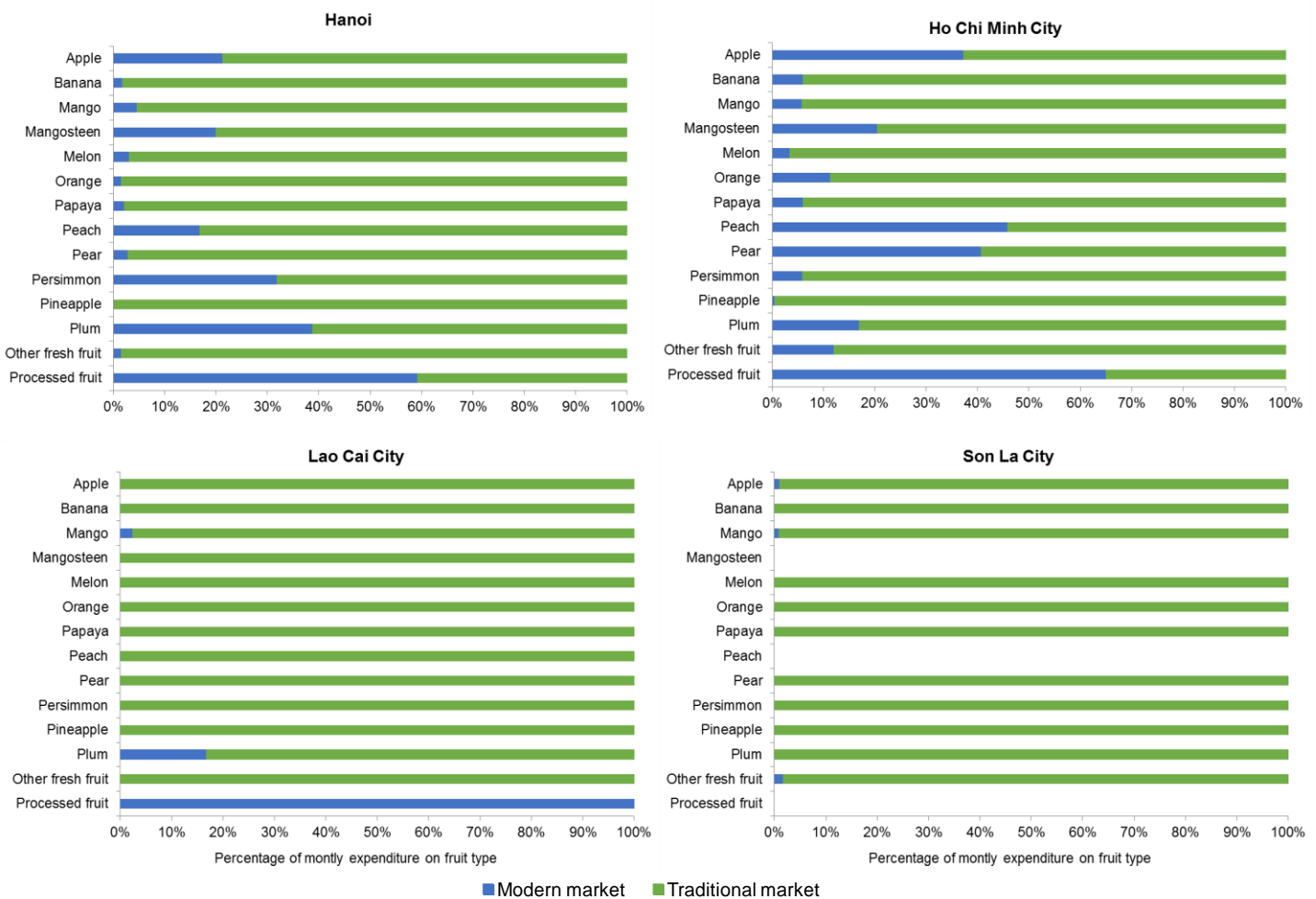


Figure 4. Share (%) of monthly expenditure on different fruits (per adult male equivalent) at modern outlets (blue), and traditional markets (green), in Hanoi (top left), Ho Chi Minh City (top right), Lao Cai City (bottom left) and Son La City (bottom right), Vietnam. See Table A4 in the appendix for the expenditure figures. Notes: Online shopping, phone orders and restaurants/cafes were considered as modern markets. The category 'other fruits' includes other fresh fruit as well as processed fruit, i.e. canned, dried, frozen or sweetened fruit.

The effect of income on fruit expenditures and consumption

In the survey, households were asked to indicate which (of nine) different gross monthly income categories would be most accurate for their household. We then analysed subsets of the sample, based on their income (income groups are defined in Table A8). Consumers from higher income households were expected to buy more expensive and imported fruits.

In Hanoi the fruit expenditures per adult male equivalent increased by 27% from the lowest income group to the highest income group (Table 1). In Ho Chi Minh City expenditures remained relatively constant across income groups (-0.2%). In Lao Cai City and Son La City fruit expenditures dropped 34% and 13%, respectively, from the lowest to highest income groups. Despite the decrease in fruit expenditures across income groups in these small cities, the average expenditure on fruit per adult male equivalent remained about 8% higher than in Hanoi and Ho Chi Minh City.

Consumers' expenditure shares on fruit products differed across cities when incomes increased (Figure 5). For instance, the share of banana in monthly fruit expenditures increased with income in Ho Chi Minh City and Lao Cai City, but decreased in Hanoi and Son La City (Figure 5). The share of expenditures dedicated to **orange/citrus**, the most popular fruit, increased with income in three cities. The exception was Hanoi, however, the absolute expenditure on orange/citrus in Hanoi did increase with income. Only **papaya** showed a slight increase in expenditure shares across income groups in all cities (Figure 5). In all cities, expenditures on some commonly **imported fruits** or non-local fruits (e.g. peaches, pears, persimmons, and plums) in the monthly fruit expenditures did not increase with income.

From these results the hypothesis that households with higher incomes will purchase more expensive or imported fruits instead of traditional, locally grown fruit was not supported. However, commonly imported fruits such as **apples** may not be particularly more expensive compared to locally grown fruits,

and thus, income may not be limiting households' access to a diverse set of fruits.

Climatic differences between Ho Chi Minh City and the northern cities, does influence local availability of some types of fruits. Therefore the fruits that need to be imported to the region come at higher costs to cover transport, etc.

Further investigation and market analysis may offer a more comprehensive evaluation of the effect of income on consumers' fruit expenditures and preferences.

Changes to fruit consumption behaviour compared to five years ago

For households who indicated they consume a particular fruit we asked if members of the household were consuming relatively more, less or similar quantities of that fruit compared to five years ago (i.e. compared to 2011). In general, most households said that they were consuming similar quantities of each fruit (Figure 6). Changes in consumption can reflect changes in: (1) availability of different fruits; (2) household incomes; and/or (3) tastes and/or preferences (e.g. as a result of concerns about quality, safety or health, or as a result of income).

Less than 4% of households said they had reduced fruit consumption and, on average, across all cities, around 5% of households said they had increased fruit consumption. **Orange/citrus** experienced the greatest increase in consumption (Figure 6).

It must be noted that this question was only asked of households who had purchased the particular fruit in the 30 days prior to the survey. For some fruits, such as mangosteens, peaches, pears, persimmons, plums and processed fruit, more than 87% of households said that they had not purchased this fruit in this period. This is not surprising given that many of these fruits were out of season when the survey was implemented, from November 2016 to March 2017. As a consequence the sample size for these fruits is small and it is therefore difficult to make conclusions about changes in consumption behaviors compared to 2011.

Table 1. Average monthly fruit expenditure shares (VND per month) per adult male equivalent by income group in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150), Vietnam.

City	Low	Low-Middle	Middle-High	High
Hanoi	145,769	142,811	161,131	184,974
Ho Chi Minh City	148,868	136,673	149,238	148,524
Lao Cai City	177,474	185,162	156,123	117,919
Son La City	176,289	160,730	192,892	153,211

Note: Income groups are defined in Table A8.

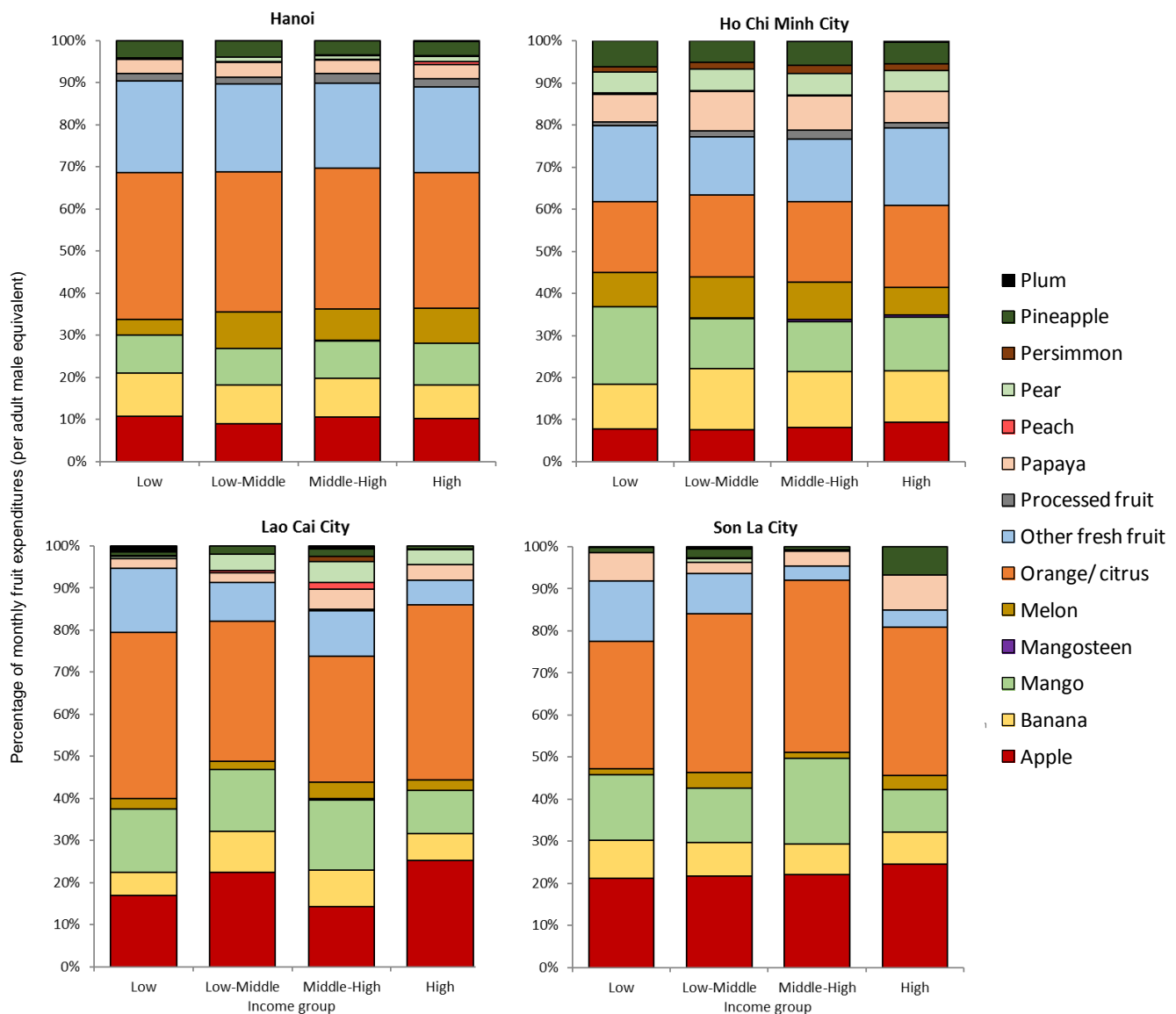


Figure 5. Share (%) of monthly fruit expenditures (per adult male equivalent) on different fruit products by income group in Hanoi (top left), Ho Chi Minh City (top right), Lao Cai City (bottom left) and Son La City (bottom right), Vietnam. See Table A5 in the appendix for the figures. Note: The category 'processed fruit' includes canned, dried, frozen or sweetened fruit.

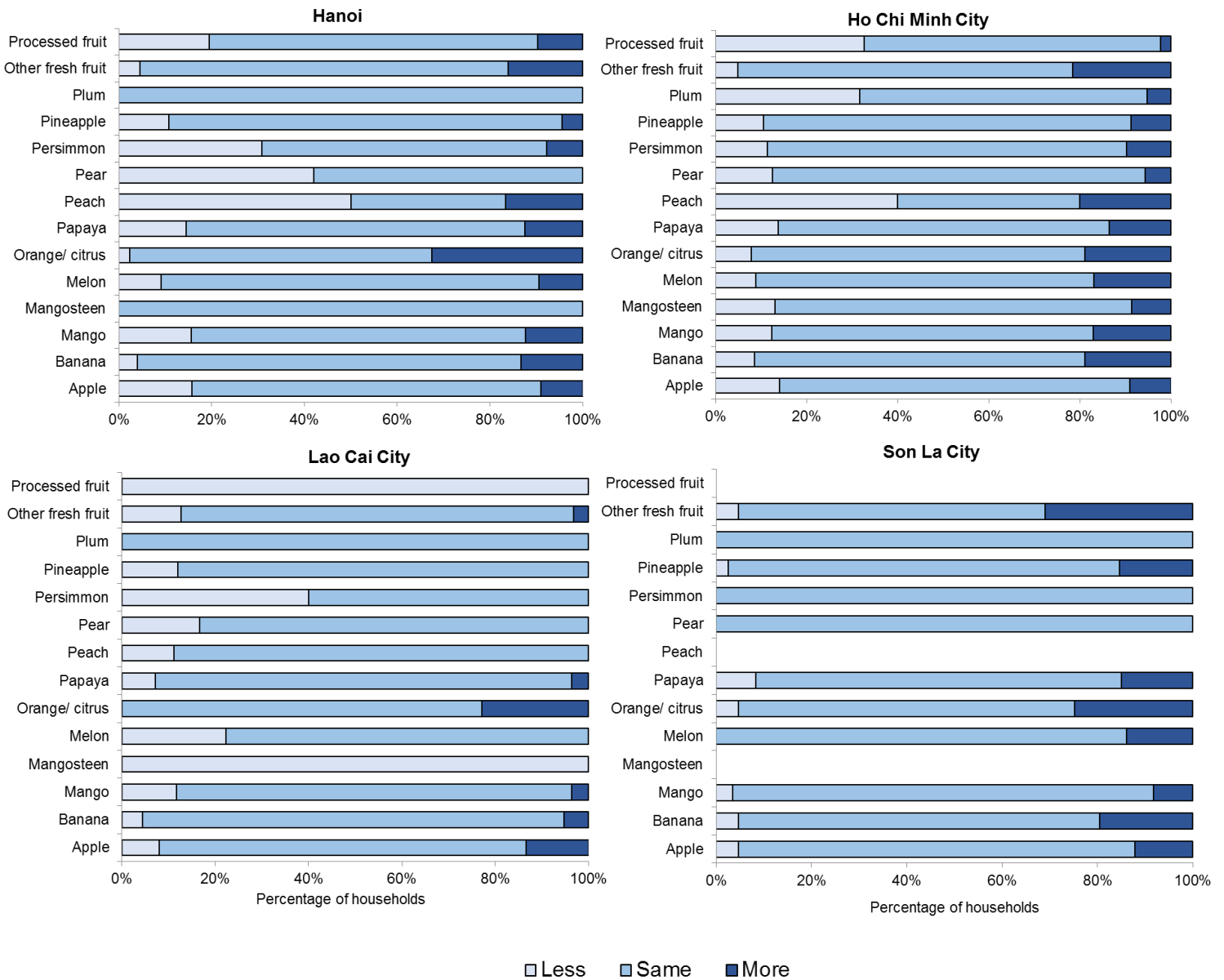


Figure 6. Share (%) of households who purchase [fruit] who stated they are buying relatively 'less', a similar amount ('same') or 'more' of the [fruit] compared to five years prior to the survey (i.e. compared to 2011) in Hanoi (top left), Ho Chi Minh City (top right), Lao Cai City (bottom left) and Son La City (bottom right), Vietnam. See Table A6 in the appendix for the percentages graphed here.

Appendix to Factsheet 10

Definitions and percentages used to generate graphs

Definitions of retail outlets

- *Hypermarkets and Supermarkets* (examples include Metro, Big C, Fivi Mart, Unimart, AC Mart).
- *Minimart* or convenience store (examples include 7-Eleven, Vinmart, Shop & Go, Circle K).
- *Specialty shops*: small sized shops with clear external billboards signalling the offer of certified safe, clean or organic foods (examples include Bac Tom, Big Green and Klever Fruit).
- *Online*: customers order food online and have their order delivered or prepared for collection.
- *Phone order*: customers order food over the phone and have their order delivered or prepared for collection.
- *Formal wet market*: a market formally established by the authorities.
- *Traditional family shop*: a small food shop run by a household that commonly sells processed foods and beverages.
- *A semi-permanent stand*: a retailer selling from a table, stand, cart, or stall that can be moved, but generally stays in one place during the day.
- *Informal street markets*: retailers sell to the public without having a permanent structure for the market.
- *Peddlers/mobile street vendors*: a retailer operating on foot, on a bicycle, or from a pick-up and sells both food and non-food items.

Table A1. Share (%) of monthly fruit expenditure (per adult male equivalent) on different fruits in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150), Vietnam.

Fruit	Hanoi	Ho Chi Minh City	Lao Cai City	Son La City
Apple	10.0	8.2	18.8	21.9
Banana	8.9	13.2	8.4	8.0
Mango	9.1	12.6	15.2	15.2
Mangosteen	0.1	0.4	0.1	0.0
Melon	7.8	8.6	2.7	2.5
Orange/ citrus	33.2	19.1	33.8	36.2
Processed fruit ¹	1.9	1.6	0.1	0.0
Papaya	3.4	8.2	3.2	4.5
Peach	0.2	0.2	0.7	0.0
Pear	1.0	5.1	3.6	0.3
Persimmon	0.2	1.7	0.5	0.2
Pineapple	3.5	5.4	1.6	1.9
Plum	0.1	0.2	0.5	0.3
Other fresh fruit	20.6	15.6	10.8	8.9

¹Note: Processed fruit includes canned dried and processed fruits, e.g. sweetened fruits.

Table A2. Share (%) of households that nominated the listed factors as important in purchase decisions for mangoes, peaches, pears and plums in Hanoi (n=693), Ho Chi Minh City (n=996), Lao Cai City (n=152), Son La City (n=152), Vietnam.

Factors influencing choice	----- Hanoi -----				----- Ho Chi Minh City -----				----- Lao Cai City -----				----- Son La City -----			
	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum	Mango	Peach	Pear	Plum
Food safety	35.35	37.09	41.27	33.77	17.27	13.35	17.97	13.76	52.63	60.53	59.87	56.58	60.53	62.50	65.13	54.61
Freshness	13.28	12.12	10.39	15.87	27.11	13.25	24.90	18.47	23.68	20.39	22.37	25.00	23.03	13.82	18.42	20.39
Taste	21.65	11.11	10.82	19.19	18.57	7.53	8.23	12.05	3.29	3.29	1.32	4.61	0.66	4.61	0.66	1.97
Origin	13.71	22.80	19.48	17.60	9.24	7.13	11.24	13.15	9.87	9.87	8.55	7.24	1.97	1.97	1.32	4.61
Nutritional content	8.51	8.80	7.50	3.90	12.25	6.43	11.75	6.33	6.58	4.61	6.58	3.95	7.89	7.89	7.24	5.26
Price	1.59	0.87	1.44	1.15	6.22	6.22	9.14	7.93	2.63	1.32	0.66	1.32	4.61	5.26	5.92	4.61
Brand	0.87	2.16	2.89	0.72	0.30	0.10	0.20	0.30	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diversity	1.73	1.59	2.31	1.15	1.00	0.20	1.10	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Easy to prepare	1.59	1.30	1.44	2.45	0.50	0.40	0.60	0.70	0.00	0.00	0.66	1.32	0.00	0.00	0.66	1.32
Grade, Class	0.29	0.43	0.87	0.00	1.31	0.20	0.60	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Appearance	0.00	0.14	0.29	0.72	0.80	0.50	0.70	0.90	0.00	0.00	0.00	0.00	0.00	3.29	0.66	0.66
Colour	0.14	0.14	0.29	0.58	1.41	0.60	0.10	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Smell	0.29	0.14	0.14	0.14	1.61	0.50	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Firmness/texture	0.00	0.00	0.00	0.00	0.80	0.10	0.60	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.66
Variety	0.43	0.72	0.43	0.14	0.50	0.20	0.20	0.60	0.66	0.00	0.00	0.00	1.32	0.00	0.00	0.66
Production method	0.43	0.29	0.29	0.00	0.40	0.10	0.10	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other labelling info	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Expiry date	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Package size	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Never purchase this item	0.14	0.29	0.14	2.60	0.60	43.07	12.05	21.49	0.00	0.00	0.00	0.00	0.00	0.66	0.00	5.26

Table A3. Share (%) of monthly fruit expenditures (per adult male equivalent) at types of retail outlets in Vietnam.

Outlets	Hanoi	Ho Chi Minh City	Lao Cai City	Son La City
Supermarket	7.1	12.0	4.7	0.0
Minimart	5.5	11.3	0.0	0.0
Specialty shop	7.8	7.7	3.3	13.5
Formal wet market	18.6	23.5	25.7	15.9
Traditional family shop	5.7	4.1	7.2	5.1
Semi-permanent stand	19.5	13.9	16.6	11.9
Peddlers	9.0	10.7	11.7	14.2
Informal street market	14.9	13.4	17.5	33.9
Other ¹	12.1	3.3	13.4	5.5

¹Note: 'Other' outlets include online shopping, phone orders and restaurants/cafes, etc.

Table A4. Share (%) of monthly fruit expenditures (per adult male equivalent) on different fruits at modern¹ and traditional markets, in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150), Vietnam.

Fruit	----- Hanoi -----		---- Ho Chi Minh City ----		----- Lao Cai City -----		----- Son La City -----	
	Modern	Traditional	Modern	Traditional	Modern	Traditional	Modern	Traditional
Apple	21.3	78.7	37.2	62.8	0.0	100.0	1.0	99.0
Banana	1.7	98.3	6.0	94.0	0.0	100.0	0.0	100.0
Mango	4.5	95.5	5.7	94.3	2.3	97.7	0.9	99.1
Mangosteen	20.0	80.0	20.4	79.6	0.0	100.0	0.0	0.0
Melon	3.0	97.0	3.3	96.7	0.0	100.0	0.0	100.0
Orange/citrus	1.5	98.5	11.2	88.8	0.0	100.0	0.0	100.0
Papaya	2.1	97.9	6.0	94.0	0.0	100.0	0.0	100.0
Peach	16.8	83.2	45.8	54.2	0.0	100.0	0.0	0.0
Pear	2.8	97.2	40.6	59.4	0.0	100.0	0.0	100.0
Persimmon	31.7	68.3	5.9	94.1	0.0	100.0	0.0	100.0
Pineapple	0.0	100.0	0.4	99.6	0.0	100.0	0.0	100.0
Plum	38.7	61.3	16.9	83.1	16.7	83.3	0.0	100.0
Other fresh fruit	1.5	98.5	12.0	88.0	0.0	100.0	1.6	98.4
Processed fruit ²	59.1	40.9	65.0	35.0	100.0	0.0	0.0	0.0

Notes: ¹Online, shopping, phone order and restaurants/cafes were considered as modern markets; ²Processed fruit includes canned dried and processed fruits, e.g. sweetened fruits.

Table A5. Share (%) of monthly fruit expenditures (per adult male equivalent) on different fruit products by income group in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150).

Income group ¹	Apple	Banana	Mango	Mangosteen	Melon	Orange/ citrus	Papaya	Peach	Pear	Persim mon	Pineapple	Plum	Other fresh fruit	Processed fruit ²
Hanoi														
Low	10.8	10.2	8.9	0.0	3.9	34.9	3.4	0.0	0.2	0.1	4.1	0.0	21.8	1.7
Low-Middle	8.9	9.3	8.7	0.0	8.7	33.3	3.6	0.1	1.1	0.1	3.7	0.1	20.9	1.6
Middle-High	10.6	9.1	8.9	0.3	7.4	33.4	3.2	0.2	0.9	0.3	3.3	0.0	20.3	2.2
High	10.3	7.9	9.9	0.0	8.4	32.1	3.5	0.7	1.3	0.1	3.4	0.2	20.5	1.9
Ho Chi Minh City														
Low	7.7	10.7	18.4	0.0	8.2	16.8	6.5	0.3	5.1	1.1	6.2	0.1	6.5	0.9
Low-Middle	7.5	14.5	12.0	0.2	9.7	19.4	9.4	0.2	5.2	1.5	5.1	0.0	9.4	1.3
Middle-High	8.1	13.4	11.9	0.4	8.9	19.2	8.1	0.2	5.1	1.9	5.8	0.1	8.1	2.2
High	9.4	12.2	12.7	0.7	6.5	19.5	7.4	0.1	4.9	1.7	5.0	0.4	7.4	1.2
Lao Cai City														
Low	16.9	5.5	15.0	0.0	2.5	39.6	2.3	0.0	0.4	0.2	1.0	1.4	2.3	0.0
Low-Middle	22.4	9.8	14.6	0.0	2.0	33.3	2.3	0.5	4.0	0.0	1.9	0.0	2.3	0.0
Middle-High	14.3	8.7	16.7	0.3	3.8	29.9	4.8	1.5	5.0	1.3	1.7	0.8	4.8	0.4
High	25.2	6.5	10.1	0.0	2.5	41.5	3.7	0.0	3.5	0.2	0.7	0.0	3.7	0.0
Son La City														
Low	21.3	9.0	15.5	0.0	1.5	30.3	6.8	0.0	0.0	0.0	1.1	0.2	6.8	0.0
Low-Middle	21.7	7.9	13.0	0.0	3.8	37.6	2.8	0.0	0.8	0.2	2.1	0.5	2.8	0.0
Middle-High	22.2	7.2	20.4	0.0	1.3	40.9	3.6	0.0	0.0	0.3	0.8	0.0	3.6	0.0
High	24.6	7.6	10.0	0.0	3.4	35.2	8.3	0.0	0.0	0.0	6.8	0.0	8.3	0.0

Notes: ¹Information about income groups is available in Table A8. ²Processed fruit includes canned dried and processed fruits, e.g. sweetened fruits.

Table A6. Share (%) of households who purchase [fruit] who stated they are buying relatively 'less', a similar amount ('same') or 'more' of the [fruit] compared to five years prior to the survey (i.e. compared to 2011) in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150), Vietnam.

Buy and consume	Apple	Banana	Mango	Mangosteen	Melon	Orange/ citrus	Papaya	Peach	Pear	Persimmon	Pineapple	Plum	Other fresh fruit	Processed fruit ¹
Hanoi														
Less	15.8	4.0	15.7	0.0	9.1	2.3	14.5	50.0	42.1	30.8	10.8	0.0	4.6	19.4
Same	75.2	82.7	72.0	100.0	81.5	65.2	73.0	33.3	57.9	61.5	84.8	100.0	79.4	70.8
More	9.0	13.3	12.3	0.0	9.4	32.5	12.5	16.7	0.0	7.7	4.4	0.0	16.0	9.7
Ho Chi Minh City														
Less	14.0	8.5	12.3	13.0	8.8	7.9	13.8	40.0	12.5	11.4	10.5	31.6	4.9	32.6
Same	77.0	72.6	70.6	78.3	74.3	73.2	72.6	40.0	81.7	78.9	80.7	63.2	73.6	65.1
More	9.0	18.9	17.1	8.7	16.9	18.9	13.6	20.0	5.7	9.8	8.8	5.3	21.6	2.3
Lao Cai City														
Less	8.0	4.4	11.7	100.0	22.2	0.0	7.1	11.1	16.7	40.0	12.0	0.0	12.7	100.0
Same	78.6	90.3	84.7	0.0	77.8	77.2	89.3	88.9	83.3	60.0	88.0	100.0	84.1	0.0
More	13.4	5.3	3.6	0.0	0.0	22.8	3.6	0.0	0.0	0.0	0.0	0.0	3.2	0.0
Son La City														
Less	4.7	4.7	3.5	0.0	0.0	4.7	8.3	0.0	0.0	0.0	2.6	0.0	4.8	0.0
Same	83.2	75.7	88.2	0.0	86.1	70.5	76.7	0.0	100.0	100.0	82.1	100.0	64.3	0.0
More	12.1	19.6	8.2	0.0	13.9	24.8	15.0	0.0	0.0	0.0	15.4	0.0	31.0	0.0

¹Note: Processed fruit includes canned dried and processed fruits, e.g. sweetened fruits.

Table A7. Share (%) of monthly fruit expenditure (per adult male equivalent) at types of retail outlet by income group in Hanoi (n=702), Ho Chi Minh City (n=993), Lao Cai City (n=149) and Son La City (n=150), Vietnam.

Income group ¹	Supermarket	Minimart	Specialty shop	Formal wet market	Traditional family shop	Semi-permanent stand	Peddlers	Informal street market	Other ²
Hanoi									
Low	1.10	0.92	0.00	18.70	0.00	46.72	14.98	17.58	0.00
Low-Middle	4.47	2.30	1.94	25.84	7.74	29.19	11.25	17.27	0.00
Middle-High	7.39	2.35	2.86	22.39	12.25	31.61	8.97	12.09	0.08
High	6.47	3.27	3.98	26.06	0.00	33.98	7.68	17.66	0.90
Ho Chi Minh City									
Low	21.10	1.29	0.00	29.31	0.00	27.21	6.98	14.12	0.00
Low-Middle	15.20	2.21	0.23	43.01	11.39	15.79	5.65	6.53	0.00
Middle-High	13.83	3.98	0.92	39.37	4.73	24.74	6.23	6.20	0.00
High	29.35	1.38	0.00	37.70	4.83	15.68	3.12	6.29	1.65
Lao Cai City									
Low	0.00	0.00	0.00	43.36	0.00	31.94	5.06	18.63	1.01
Low-Middle	0.00	0.00	0.00	43.30	17.60	21.49	10.85	6.76	0.00
Middle-High	3.76	0.00	0.13	45.99	8.56	22.08	13.07	6.41	0.00
High	0.00	0.00	0.00	66.12	0.00	29.47	2.78	1.63	0.00
Son La City									
Low	0.00	0.00	0.69	19.67	0.00	11.92	23.81	43.62	0.28
Low-Middle	0.00	0.00	0.00	22.50	12.66	23.30	12.28	29.26	0.00
Middle-High	0.00	0.00	0.00	22.26	0.00	21.90	11.25	44.59	0.00
High	0.00	0.00	0.00	42.19	9.34	19.35	26.69	2.44	0.00

Notes: ¹Information about income groups is available in Table A8; ²'Other' outlets include online shopping, phone orders and restaurants/cafes, etc.

Table A8. Share (%) of households in each gross monthly income group in Hanoi Ho Chi Minh City, Lao Cai City and Son La City, Vietnam.

Income group	Household gross monthly income (VND)	Household gross monthly income (USD) ⁺	Percent of households [#]			
			Hanoi	Ho Chi Minh City	Lao Cai City	Son La City
Low income	1.5 to 4.5 million	67.29 to 201.88	6.7	7.2	18.8	26.0
Low-Middle income	4.5 to 7.5 million	201.89 to 336.46	32.1	30.3	40.3	44.0
Middle-High income	7.5 to 15 million	336.47 to 672.92	40.6	41.4	34.9	21.3
High income	≥ 15 million	≥ 672.93	20.7	21.1	6.0	8.7

⁺Based on exchange rate of 1 USD = 22,291 VND from 1 December 2016; [#]Sample includes only those households that answered all questions about expenditure, Hanoi n=702, Ho Chi Minh City n=993, Lao Cai City n=149 and Son La City n=150.