THE SIDEWALK DIET

STREET MARKETS AND FRESH FOOD ACCESS IN CENTRAL HANOI

THE SIDEWALK DIET

STREET MARKETS AND FRESH FOOD ACCESS IN CENTRAL HANOI

by Claudia Atomei

Supervised research project
Travail dirigé de recherche

École d'urbanisme et d'architecture du paysage
Université de Montréal

January 2017

Title The Sidewalk Diet: Street markets and fresh food access in central Hanoi
Author Claudia Atomei
Date January 2017
Place Montreal, Quebec, Canada

SUMMARY

Hanoi's traditional food system, which relies on street markets as it's main distribution outlet, will be undergoing major changes in the next few years as the local government is planning to modernize its commercial infrastructure through its Wholesale and Retail Network Plan. This transition will lead towards a centralization of food distribution, with supermarkets and convenience stores taking an increasingly important share of the market. Although these changes can present some benefits, the scheduled closure of street markets brings about worries concerning access to fresh food. This is a serious issue needing the city government's attention since a decrease in access to fresh food can have implications for the public health and well-being of residents, particularly that of vulnerable populations.

In collaboration with HealthBridge, a Canadian NGO that has been doing advocacy work around this issue in Hanoi for the past 6 years, this project's objective was to understand how the government's interventions could influence street market-goers' access to fresh food. We conducted surveys with street market goers and completed a first mapping of the fresh food retail environment within the core districts of Hanoi. We found that many market goers shop only at street markets, meaning that their shopping habits will require a significant shift in order to adapt to a new, modern retail environment. We also learned that street market goers are generally aware of the advantages and disadvantages of the different existing types of food retail, that they often have high opinions of supermarkets, but that they nonetheless prefer street markets, mainly for their proximity. A majority of the market goers we spoke to anticipated impacts on their access to fresh food if street markets were to close, and very few knew about the local government's plan to implement such a measure. Many shared their disapproval of this plan and their desire to see street markets improved, not closed. Our spatial analysis of the fresh food retail environment showed that street markets are major contributors to food access within reasonable walking distance in central Hanoi. In fact, they serve nearly half the population that lives within 300m of a fresh food retailer in these 4 districts. More specifically, their closure, without any other mitigation measures, would increase the distance to the closest fresh food retail by more than 50%.

This project aims to provide an example of only one of the studies that should be carried before the creation of a plan like the one adopted by Hanoi's local government. Given the resources available, this project presents a pilot study of fresh food access in Hanoi, and its value rests partially on its approach to understanding and acting on this urban problem. While it does not paint the entire picture of food access in Hanoi, the focus on its spatial component allows surmising what the plan's impacts on residents' abilities to obtain healthy food might be and lets us suggest some steps forward. We first propose potential measures for integrating a planning approach to food systems within Hanoi's current city administration, and we finish with recommendations on which street markets to protect and how to best adapt and benefit from them, based on suggestions from our participants.

RÉSUMÉ

Le système alimentaire traditionnel de Hanoi, qui s'appuie sur les marchés de rue comme principaux points de distribution, connaîtra d'importants changements au cours des prochaines années alors que le gouvernement local envisage de moderniser son infrastructure commerciale par le biais de son Wholesale and Retail Network Plan. Cette transition conduira à une centralisation de la distribution alimentaire, les supermarchés et les dépanneurs prenant une part de plus en plus importante sur le marché. Bien que ces changements puissent présenter certains avantages, la fermeture programmée des marchés de rue suscite des inquiétudes concernant l'accès à aux aliments frais. Il s'agit d'un problème sérieux qui nécessite l'attention du gouvernement local, car une diminution de l'accès aux aliments frais peut avoir des répercussions sur la santé publique et le bien-être des résidants, en particulier des populations vulnérables.

En collaboration avec HealthBridge, une ONG canadienne qui travaille sur cette question à depuis six ans à Hanoi, l'objectif de ce projet était de comprendre comment les interventions du gouvernement pourraient influencer l'accès des résident.e.s aux aliments frais. Nous avons mené des sondages auprès de client.e.s des marchés de rue et avons effectué une première cartographie des points de vente de produits frais dans les districts centraux de Hanoi. Nous avons constaté que de nombreux résident.e.s font leurs achats alimentaires uniquement aux marchés de rue, ce qui signifie qu'ils devront modifier leurs habitudes d'achat de manière importante afin de s'adapter à un système de distribution moderne. Nous avons également appris que les client.e.s des marchés de rue sont généralement conscient.e.s des avantages et des inconvénients des différents types de détaillants alimentaires existants, qu'elles/ils ont souvent une opinion élevée des supermarchés, mais qu'elles/ils préfèrent néanmoins les marchés de rue, principalement pour leur proximité. La majorité des participant.e.s ont anticipé des impacts sur leur accès aux aliments frais dans l'éventualité de la fermeture des marchés de rue, et très peu connaissaient le plan du gouvernement local pour mettre en œuvre une telle mesure. Beaucoup ont partagé leur désapprobation de ce plan et leur désir de voir les marchés de rue améliorés, non pas fermés. Notre analyse spatiale de l'ensemble des points de distribution d'aliments frais a montré que les marchés de rue sont les principaux contributeurs à l'accès aux aliments frais dans un rayon raisonnable de marche dans le centre de Hanoi. En fait, ils desservent près de la moitié de la population qui vit à moins de 300 m d'un détaillant de produits frais dans ces quatre districts. Plus précisément, leur fermeture, sans aucune autre mesure d'atténuation, occasionnerait l'augmentation de plus de 50% de la distance de marche jusqu'au point de vente le plus près.

Ce projet vise à fournir un exemple d'une des études qui devraient être menées avant la création d'un plan comme celui adopté par le gouvernement local de Hanoi. Compte tenu des ressources disponibles, ce projet présente une étude préliminaire sur l'accès aux aliments frais à Hanoi, et sa valeur repose en partie sur son approche de la compréhension et de l'action sur ce problème urbain. Bien qu'il ne prétend pas retirer des conclusions sur l'ensemble de l'enjeux d'accessibilité aux aliments frais à Hanoi, l'accent mis sur sa composante spatiale permet d'estimer l'ampleur des potentiels impacts du plan sur la capacité des résident.e.s à obtenir des aliments frais, et nous permet de suggérer quelques pistes de solution. Nous proposons d'abord des mesures pour intégrer une approche de planification des systèmes alimentaires dans l'administration actuelle de la ville de Hanoi, et nous terminons avec des recommandations sur le choix des marchés de rue à protéger et sur la meilleure façon de les adapter et d'en bénéficier, à partir de suggestions de nos participant.e.s.

COLLABORATORS

Claudia Atomei
Project leader
Masters of Urban Planning student
University of Montreal

Danielle Labbé
Academic supervisor
Holder of the Canada Research Chair in
Sustainable Urbanization in The Global South
Professor at the School of Urban Planning
and Landscape Architecture
University of Montreal

Tran Thi Kieu Thanh Ha
Research supervisor
Project Manager
Livable Cities Program
HealthBridge

Dinh Dang Hai
Research supervisor
Senior Project Officer
Livable Cities Program
HealthBridge

Linh Hoàng Chi
Translator and research assistant
Urban Studies student
Bryn Mawr College

Hoàng Dương
Translator and research assistant
Architecture student
National University of Civil Engineering

Ngô Văn Bách
Translator and research assistant
Architecture student
National University of Civil Engineering

ACKNOWLEDGEMENTS

First, I want to give thanks to my academic supervisor, Danielle, for presenting me with the opportunity to conduct research in Vietnam, for communicating your passion for the city of Hanoi, for making yourself readily available and for being incredibly supportive throughout the project. Thank you to HealthBridge for agreeing to engage in this project with me, and to Kieu Hà for your warm welcome and your precious guidance during the fieldwork phase. Thank you to the National University of Civil Engineering in Hanoi, specifically to Ta Quynh Hoa for hosting me and allowing me to spend a summer in Hanoi. I would also like to thank Mitacs for choosing me for a Globalink Research Award, a resource without which my trip to Vietnam would not have been possible.

Beyond the generous academic and financial support I've received, I wish to note my appreciation for all the various meaningful gestures made by friends to help me finish this project. Thank you to Etienne Pelletier for your patience and your dedication to helping me overcome GIS and spatial analysis challenges. Heartfelt thanks to Valérie Fortin for helping me better communicate my project by capturing additional images and video footage of street markets, for always knowing how to lift my spirits and for being such a caring roommate. Thank you to Alex Tran for initiating me to Vietnamese culture and language, and for helping me become a better critical thinker and documentarian. Thank you to Giang and Sylvain for your persistence in making Vietnamese language classes engaging and entertaining. Thanks to Aquil for your support and advice. A big thank you to my Vietnamese friends Minh, Ly, Dương, Bách, Quân, Ngọc, Đảm, Chi and Hà for your devotion to translating for me and to help me with my fieldwork, for sharing your knowledge and love of Hanoi and for introducing me to delicious Vietnamese food. Thank you to Jules, Gab, Max and Val for being the best colleagues and travel companions I could have asked for. Thanks to all my fellow urban planning students that showed interest in my project and offered their support during numerous coffee shop study sessions. Finally, thank you to my family for your understanding as I once more made my way towards distant and unfamiliar places.

CONTENTS

6 Summary
7 Résumé
8 Collaborators
9 Acknowledgements

12 **CHAPTER 1: STREET MARKETS' URBAN FUNCTIONS**

12 Hanoi's street markets
12 1000 years of trading history
14 Street markets: benefits and drawbacks
15 Governmental intervention in the food distribution system
17 About this project: objectives and approaches
17 Fresh food access
18 Potential impacts of reduced spatial access to fresh food
19 Taking a planning approach to urban food systems
20 Planning for a sustainable food distribution system

22 **CHAPTER 2: SHOPPING FOR FRESH FOOD IN CENTRAL HANOI: PREDICTING THE IMPACTS OF STREET MARKET CLOSURES**

24 1. Current food shopping habits of street market-goers

24 Where do they shop?
24 How often do they shop?
25 How do they travel to shop?

26 2. Navigating the current fresh food retail environment

26 From street markets to supermarkets: perceptions
27 How to choose a fresh food retailer?
27 What is the best option for fresh food shopping?

29 3. Anticipating the impacts of the Wholesale and Retail Network Plan

29 What do street market goers know and think about the plan?
30 What would market closures mean for street market goers?

31 4. Spatial analysis of current and predicted access to fresh food in central Hanoi

31 Planned closures of traditional retailers
33 Measures of access to fresh food retailers
33 a. Retailers' service areas
35 b. Distance to different retailers
36 Redundancy in the fresh food retail environment
37 Perceived vs. estimated access to fresh food

37 5. Aspirations for the future of street markets

37 What should be done with regards to street markets?
38 How could street markets be improved?
38 Convenience stores as alternatives to street markets?

40 **CHAPTER 3: MAINTAINING ACCESS TO FRESH FOOD IN CENTRAL HANOI**

40 Governance and policy-making

40 Step 1 Make space for food planning within the city's administration
41 Step 2 Gather quantitative and qualitative data to support evidence-based planning
41 Step 3 Integrate concerns over food in decision making for other urban systems

42 Localization and design of street markets

42 Step 1 Protect street markets wherever they are the only source of fresh food
43 Step 2 Consider the value of street markets as lively urban events

43 **CONCLUSION**

44 References and endnotes
50 Appendix
50 Survey questions
51 Detailed results from the spatial analysis

CHAPTER 1
Street markets' urban functions

HANOI'S STREET MARKETS

In all the central districts of Hanoi, one can find series of vendors, mostly women, who set up shop on the pavement or the sidewalk of specific streets, offering a variety of fresh foods to passersby. Some bring tables for preparing and displaying their products and umbrellas to protect them from the sun. Others simply have a few baskets, buckets or tarps on which to lay down their fruits and vegetables, no price signs, but perhaps a small plastic chair to rest on. Their colorful installations carefully adapted and molded to the features of the streets or alleys, testify of the familiarity that vendors have developed to these spaces, after years of using them every single day. Sometimes they can be there for hours, starting early in the morning when the heat is not so heavy. In the summer, they will often disappear during the hottest time of day, between eleven in the morning and two in the afternoon. But many will be back in the afternoon and evening, selling food to those late shoppers that did not have time to buy their produce in the morning, or that perhaps prefer buying them right in time for dinner. In most of these street markets, one can buy all the fresh produce necessary for a Vietnamese meal while simultaneously seizing the opportunity to socialize. The resulting atmosphere can be somewhat chaotic: poignant food smells mixed with cackling sounds springing from caged poultry accompany the crowds of people chatting, making their way down narrow passages, side-stepping food displays and honking motorbikes.

1000 YEARS OF TRADING HISTORY

While they did not always exist in their current form, markets were key in the development of the city, not only for its economic aspects but also for its cultural ones. Vietnam's capital is now a millennial city, but its identity is still interlaced to its Old Quarter and the history of trade with the surrounding villages, to the linkages that helped it grow. In fact, the Vietnamese word for "urban" (đô thị) is a compound of two ideas: capital (đô) and market (thị). These links are recorded in the names of the 36 ancient streets situated within the limits of the old citadel walls, each street the former marketplace for a specific good. Although trading had its ups and downs, almost disappearing following the French colonization, it re-emerged after Vietnam's economic reforms in 1986, when it helped Hanoians cope with the lifestyle changes this profound transformation brought. These types of markets are now a pillar for the city's traditional food shopping practices, as they are frequented by the majority of the population[1].

" This street market came to be because of the need of people in the neighborhood. "

– 83-year-old study participant

FORMS OF TRADITIONAL FOOD VENDING IN HANOI

The main distinctions between the traditional forms of fresh food retail are related to the way in which vendors obtain access to space, to the size of the space used and the temporality of their vending activities. Interestingly, fresh food markets are such a tacit part of Hanoi's daily lives that its inhabitants do not necessarily have the vocabulary to differentiate between the types outlined below. A market is a market (chợ) regardless of the form it takes, therefore the Vietnamese terms used here are not exclusive.

Official markets (các khu chợ chính thức), sometimes called wet markets, are usually situated in a designated area or public space, off the street. These are spaces administered by a management board, designated by the municipal government, in charge of collecting fees from the renting vendors, of controlling traffic and of ensuring the safety and cleanliness of the space. Official markets consist of large areas hosting rows of stalls or kiosks, sometimes storage facilities, and are often partially or fully sheltered. These types of markets are rarer and generally more easily distinguishable from the ones below.

Street markets (chợ dân sinh) take place in open spaces (streets, alleys and sometimes public spaces), but they are temporary in the sense that no permanent infrastructure is assigned to them. Although vendors bring some equipment every day, they store it away in nearby houses or carry it back with them as they leave the space. Some could be open all day, but mornings tend to be the peak times for these markets. For many of these markets, vendors do not pay any contributions for the spaces they use, even though they use them every day over many years. They can be considered informal, but are tolerated by the authorities. However, some are semi-formal, where vendors have agreements either with the local police, the local neighborhood administration or with property owners that allow them to set up shop in the entrances or on the stairs in front of the buildings. Street markets are generally smaller and have fewer vendors than official markets, but they sometimes can be found on alleys surrounding official markets.

Frog markets (chợ cóc) take a similar form to that of street markets, using the same types of spaces. They are however smaller, comprised of just a few vendors that might decide to relocate to other spaces over the course of the day, to serve a different pool of customers. The vendors do not pay for the spaces they occupy, which is why some of these markets are sometimes dispersed by the local police. They display their products in ways that allow them to quickly pack up and leave the space, whenever necessary.

Itinerant street vendors (bán hàng rong) are the smallest and the most modular type of food retail in Hanoi. They often consist of a single vendor traveling alone, carrying products in baskets balanced over one's shoulders or fixed to a bicycle. Itinerant street vendors stop to serve customers or to take a break and can sometimes join other vendors at frog markets. This type of trade has been officially banned by local authorities in 2008, but in practice, it is mostly forbidden in key areas of the city. Elsewhere, where they are not considered to be affecting the city's image, itinerant street vendors are more likely to be tolerated. In general, their trading activities are highly policed, often facing the risk of being fined or having their products confiscated[2].

STREET MARKETS: BENEFITS AND DRAWBACKS

The street markets of Hanoi have been the subject of academic interest over the last decade, many of their aspects observed and critiqued. They are recognized to bring to urban communities economic, as well as social well-being and health benefits. First, they contribute to the local economy by allowing employment of otherwise unqualified workers, often women and rural migrants, that find themselves in a situation of poverty. Many do it because this type of trading requires a very low initial investment, especially if they do not have to pay for space their business occupies. Being able to sell food and make a small profit margin every day allows street market vendors to support themselves and their families, which often live outside the city. In this way, vendors also represent links between urban and rural communities. They contribute to a regional economy since they act as distributors of fresh products grown near the city, sometimes by their own families[3].

Second, street markets are dynamic social environments that allow for interactions between otherwise very different populations. On one hand, it is in these market spaces that long lasting relationships between neighbours grow. This benefit of markets is particularly important for the many migrants that move to Hanoi and can take advantage of this environment to build new social support systems. On the other hand, the relationships between vendors and customers can be meaningful as well. Many residents visit the same vendor every day, put their trust in the quality of their products and would even help the vendors escape harassment by the local police. In any case, market spaces can be seen as public spaces which contribute to the quality of life in a neighborhood[4].

Finally, street markets are an asset to urban food security because they make fresh, non-processed food easily available to Hanoi's residents. Not only is this food affordable, but it is also distributed in locations that are very near people's homes, making it convenient for women in the workforce and for those living with reduced mobility to purchase all the necessary ingredients for a home cooked meal[5].

However, it has come to the public's attention that street markets present a few important problems as well. Other than the fact that they can contribute to increased traffic congestion on the streets and alleys they are located on, street markets are mainly criticized for distributing food in an unhygienic manner. By their temporary nature, they lack the infrastructure necessary for safely handling fresh food. There are often no sources of fresh water, no equipment for keeping the products cool in Hanoi's hot climate, no appropriate displays that protect the products from the nearby traffic and no proper waste management systems. Regardless of the quality of the products at source, when they are handled in these conditions, they can become a health safety hazard for those that consume them. And since these markets are self-managed by the vendors, there are no overarching rules to control food safety and cleanliness of spaces. Even though products are primarily bought and used the same day, many cases of food poisoning have been documented in Hanoi making food safety a substantial source of concern[6].

GOVERNMENTAL INTERVENTION IN THE FOOD DISTRIBUTION SYSTEM

The problems related to food hygiene and safety were among the reasons for which Hanoi's local government recently challenged the role of street markets within the city's food distribution system. In 2009, the Hanoi Trade Department formulated a Wholesale and Retail Network Plan which proposes important changes affecting trade in general, with the objective of increasing the quality of life of residents by better meeting their demands. The plan, which was adopted by Hanoi's People's Committee in 2011, concerns fresh food retailers as it outlines the government's wish to upgrade some of the existing smaller official food markets and redevelop the larger ones. The type of upgrading proposed consists in replacing the smaller official markets with food stores such as supermarkets or convenience stores, and in entirely converting the larger official markets into developments that combine both retail and residential housing functions.

The government motivations for adopting this plan are partly related to a desire to modernize the city, which in the case of food retail materializes through sanitization. This decision is based on the observation that an increasing number of people frequent 'modern retail services' which, in the case of food, can be interpreted as different types of food stores. The government interprets this information to mean that all Hanoians desire or aspire to shop for food at these types of stores. Also, the plan only addresses the intended transformations for official markets, ignoring the existence of other types of traditional food trading such as street markets, frog markets, and itinerant street vendors. It is understood from this plan that the local government does not consider these types of food distribution to be a legitimate part of Hanoi's future retail network[7].

Although the plan's objectives are to be attained by 2020, we can already observe its impact on food retail in Hanoi. Between 2011 and 2014, 135 new supermarkets were built while seven official markets were converted in the way outlined in the plan. However, none of these converted markets have had the expected success with customers, and two of them are already closed due to their poor performance. A study conducted by HealthBridge shows that, although the new markets spaces were cleaner and had a more appropriate infrastructure for food vendors, they were more difficult to access and lacked the conviviality that customers appreciated in traditional food markets. Also, vendors that were allowed to sell products in the new markets were paying higher rent and administration fees, while seeing the demand for their services be significantly reduced. These findings exposed that the newly converted markets were not popular amongst customers and vendors due not only to the characteristics of the new vending spaces but also due to customers' aversion to changing their food shopping habits. Additionally, it was estimated that some 200 informal markets were shut down in the period between 2010 and 2013[8].

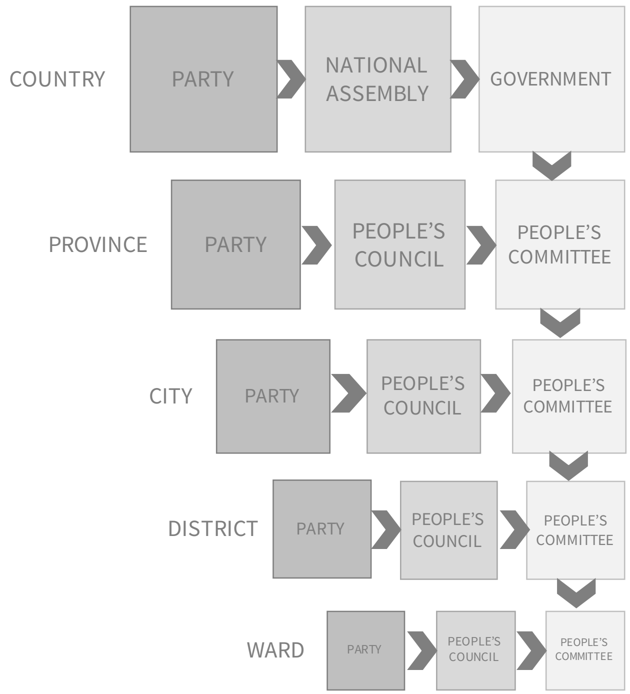
Given these outcomes, the government's plan has been criticized not only for its content but also for the ways in which it was formulated and implemented. While this plan was introduced as a mean to respond to residents' demands, its formulation involved no activity in surveying or taking into consideration Hanoians' opinions. The potential impacts of the proposed changes on both customers and vendors do not seem to have been considered either. This could lead to believe that the government's real objectives are not the ones stated in the plan and that the economic interests of modern retail corporations and investors are the ones being prioritized over the well-being of those residents and food traders that depend on traditional food markets[9]. The implementation of the plan could also be seen as a step towards the formalization of the economy. In this view, replacing or redeveloping traditional markets into formal ones would facilitate the collection of revenue taxes, bringing in extra revenue to the local government through easier application of taxation mechanisms. This, however, does not mean that redeveloping or closing down traditional food markets would also be advantageous for the local economy as a whole.

HANOI'S POLITICAL AND ECONOMIC CONTEXT

The Socialist Republic of Vietnam is a one-party state governed by the Communist Party of Vietnam. The public administration structure is a vertical one, where each instance is subordinate to the level above it. The unit of government in charge of the province of Hanoi is called the Hanoi People's Committee, whose decisions are supervised by the Hanoi People's Council, a democratically elected unit. Hanoi's local government must follow the national orientations and policies emitted by the Communist Party, and make sure these trickle down to the smallest administration level, the ward[10].

Even though it is one of the last countries to function based on a communist political and administrative system, Vietnam's does not have a command economy anymore. Since the adoption of a series of economic reforms (referred to as đổi mới) starting in 1986, trade with other countries and investment from private actors became possible within a "socialist-orientated market economy". In fact, similar to other countries with open economies, private businesses with significant economic power began influencing decisions made by the administration, often resulting in resolutions that would favour them.

These changes in economic relationships had an accelerating effect on Vietnam's development and lead to the application of measures based on a certain notion of modernization. The đổi mới influenced Hanoians' food shopping habits, notably through the motorization of personal transport (massively switching from walking and cycling to driving motorbikes or cars) and through the diversification of the food retail network (increased informal food vending, opening of privately owned food stores like supermarkets)[11].



ABOUT THIS PROJECT: OBJECTIVES AND APPROACHES

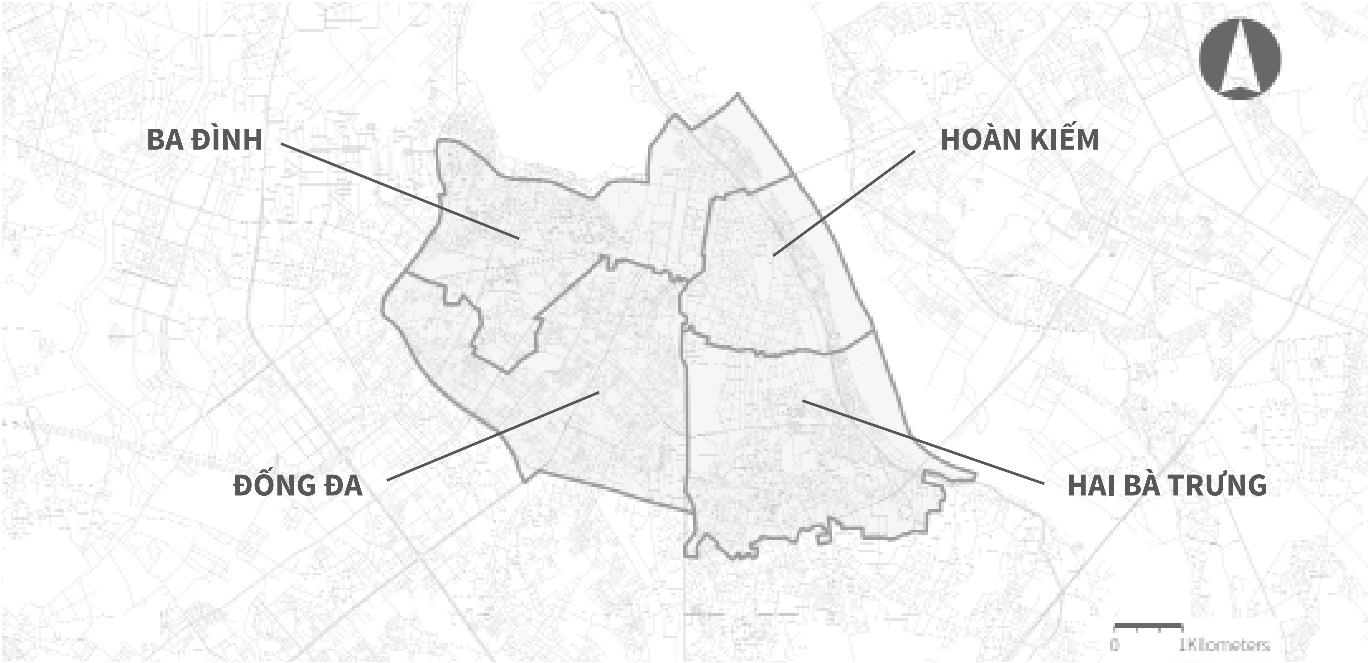
Traditional food markets are an important component of Hanoi's urban ecosystem, and through its intervention on the food retail network, the local government will undoubtedly influence the existing social, cultural and economic dynamics related to food distribution and consumption. While these changes affect a variety of stakeholders in Hanoi's complex urban and regional food system, for the purpose of this project we have decided to focus on their implications for the residents that obtain their food from traditional sources. More specifically, we wanted to understand how the government's interventions will influence street market-goers' access to fresh food within the core districts of Hanoi (mapped below), where street markets have been in function for the longest time. We have chosen to study this type of traditional food vending because it is affected by the Wholesale and Retail Network Plan, but it has not been documented by academic, governmental or non-governmental institutions as much as official markets or itinerant street vendors.

Fresh food access

City life depends on the population's ability to fulfill their primary needs, particularly the need to eat. Since the late 1970s, self-provisioning has stopped being the main way to ensure food security in Hanoi, so the majority of the population now obtains food from traditional food vendors and food stores[13]. Therefore, a simple way to know if residents have adequate access to food is to assess their abilities to shop at the different types of food retailers available. To do so we can further dissect the concept of food access into three components:

/ access to **quality** food, meaning to be able to obtain food that is nutritionally and culturally appropriate;
/ **economic** access, meaning to have the income or monetary resources necessary to purchase quality food, and
/ **spatial** access, meaning either to have food retailers located within an adequate distance from one's home or to have the ability and means to travel to and from the retailer.

If all of these criteria are met, we can say that a population has adequate access to food[14].



DEFINITIONS

"**Food security** represents one's ability to obtain enough food to lead an active, healthy life.
The concept is based on three pillars:

/ **food availability**: having sufficient quantities of food available on a consistent basis
/ **food access**: having sufficient resources to obtain appropriate foods for a nutritious diet
/ **food use**: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation."

American Planning Association[15]

For the purpose of this project, we were interested in obtaining food access information about street market-goers because we wished to know more about the food shoppers that would be directly affected by market closures resulting from the implementation of the government's plan. We have also chosen to focus our attention on the spatial component of fresh food access because it likely is the component easiest to measure. While we can build from spatial access measurement methodologies used elsewhere[16], the economic and quality components of access are particularly difficult to measure in Vietnam. Obtaining information on residents' incomes, on food prices, on food sources and food nutritional value is a significant challenge, especially in a context of informal food trading. Although it is not impossible to gather this type of data, it is a job better suited for a larger, more comprehensive study that could perhaps be led by a local research agency. We did, however, keep in mind throughout our study the potential interactions between these different components. One of the ways we tried to integrate the quality component of access was through choosing to study only spatial access to retailers that sell fresh food. Although there are many recorded quality issues with fresh food sold in Vietnam[17], the category of "fresh food" was for us the closest to being "nutritionally and culturally appropriate" and the only quality indicator for which we could gather data.

While this study does not paint the entire picture of food access in Hanoi, the focus on its spatial component allows surmising what the plan's impacts on residents' abilities to obtain healthy food might be. It is important to take food access into consideration, even if only from a spatial perspective because the location and design of food retail space significantly influence who can use them and how easily[18]. This has implications for the health and well-being of urban populations, particularly that of vulnerable ones. Finding ways to mitigate the potential impacts described in the following section motivated this project.

Potential impacts of reduced spatial access to fresh food

Access to fresh food manifests itself differently from one city to another and might impact the diets and health of residents to varying degrees. In North American and European countries, where most research on food access takes place, an easier access to fresh food retailers has sometimes been observed to have a positive effect on the health of urban populations, partly because there is also an abundance of sources of food that are considered unhealthy. In those cases, given the choice, some people might be inclined to buy industrially processed food from nearby retailers, rather than traveling further to reach a fresh food retailer and travel all the way back to prepare that food themselves. However, the situation in Vietnam is somewhat different since fresh food retailers and street food vendors are still more common than retailers that sell what can be considered unhealthy food. This does not mean that access to food is not as important for the health of Vietnam's urban populations, but it suggests that reduced access to fresh food might have a different set of impacts on Hanoians' health[19].

First, we can imagine that having to travel a longer distance to reach a fresh food retailer would perhaps lead to a decrease in the use of active transportation modes (walking and cycling) for the purpose of food shopping. Driving a motorbike or a car to go grocery shopping impacts the health of urban populations in at least two ways: it takes away opportunities for physical exercise and it contributes to increased road traffic and the degradation of air quality in the city[20].

Secondly, the obligation to travel further to shop for fresh food might affect the ways in which people shop and prepare food. This could lead to a decrease in the frequency of food shopping, which is currently high in Vietnam due to low access to refrigeration and the abundant use of fresh products in traditional cuisine. This change could, in turn, affect the types of food people buy, perhaps resulting in the purchase of more dried or processed foods that can be kept for longer, but that do not provide all the nutritional elements necessary for a healthy diet. To obtain traditional meals with fresh products, people might more often visit restaurants or purchase food from street food vendors. Looking at the experience of some developed countries, it is not impossible that traditional food preparation skills be lost following such changes in food shopping and food consumption habits. This could increase the dependence on industrially processed foods and the adoption of unhealthy diets, which both contribute to an overall decrease in food security[21].

Third, although often absent from discussions on food and public health in developed countries, mental health is particularly important to consider in the case of traditional food shopping in Vietnam. We cannot ignore the benefits to mental well-being associated with visiting food markets in public spaces, which we have seen can host vital social support networks among Hanoi's residents. In the case of street market closures, these social networks might take different shapes or occupy other spaces, but they might also dissolve and leave fewer resources available to residents[22].

Furthermore, fresh food access is an equity issue since the effects of reduced access are more likely to be felt by populations that are already disadvantaged. Those having physical mobility issues, those with few economic means, and women are some of the groups that often visit traditional food markets and whose daily routines are already marked by difficulties and responsibilities. The challenges associated with changing one's food shopping habits, particularly if they involve additional transportation in a city that is difficult to navigate like Hanoi, can add on to the burden carried by these populations. Paying attention to their needs and opinions would, therefore, be a first step towards planning for maintained and improved fresh food access in Hanoi[23].

“ When I was younger and healthier, I would sometimes go to other places to buy food.”

– street market-goer

Taking a planning approach to urban food systems

Considering the importance of access to fresh food in urban environments, surprisingly few governments consider it when making decisions about the development of their cities. In fact, food systems in their entirety are commonly left out of analyses that contribute to decision-making in cities. This is partly due to the fact that food systems are not easily observable and are often taken for granted, even though their effects are widespread as they interact with other urban functions like transportation and housing or the local economy and the environment. This leads to disorganized and disjointed action on the food system through interventions aimed at other urban systems. Such is the case in Hanoi, where the Wholesale and Retail Network Plan adopted by the government essentially concerns the economic development of the city, but it has important implications for the food system, which are not properly acknowledged[24].

Piecemeal policies like these are rarely effective in fostering a sustainable urban food system. This is why, new ways of reaching this goal have been developed in recent years, grouped under the term “food system planning”. This emergent planning approach to food systems involves looking at all its components, evaluating how they currently function, how their functioning can be improved to make the system sustainable and finally formulating the type of action necessary for those improvements. The type of actions that can be taken can include monitoring indicators of sustainability in the food system, applying modifications to current legislation, creating policy, obtaining financial resources to support programs and fostering leadership among the concerned stakeholders. In the few places where this approach is starting to be used, the focus is put on the well-being of communities at the local and regional scales and local governments are identified as important leaders or partners in the process[25].

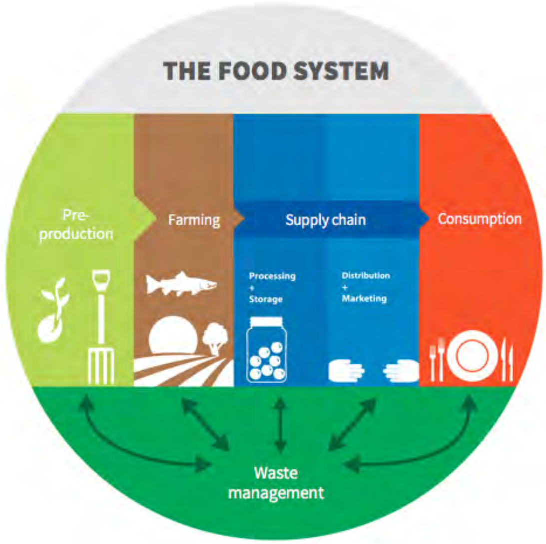


Figure 1 Schematic representation of a food system[26].

This project concerns the distribution component of Hanoi's food system. From a public health and well-being perspective, the distribution component is important because it is the link that connects consumers to the rest of the system. For planners and governments, taking a close look at food distribution is a smart way through which to address urban poverty and to ensure the needs of the most vulnerable are being met. In Hanoi, a better understanding of this dimension can also act as a preventive measure. It can help avoid making decisions that will diminish the existing benefits of Hanoi's well established traditional food distribution system, whose characteristics governments elsewhere are working hard to recreate[27].

Planning for a sustainable food distribution system

Since we have seen that the outcomes of reduced food access can differ depending on the city, the first guideline to keep in mind is to anchor research and action in the local context. Frameworks and methods can be borrowed from planning processes elsewhere, but they must be adapted to the situation at hand. This is especially important since most food system planning work is currently taking place in North American and European contexts. Secondly, planning needs to be tailored to the urban context since the issues related to rural, regional or national food systems can be very different from the ones experienced in urban environments. Third, the concerned stakeholders need to be involved in the planning process. Governing urban food systems is challenging due to their complexity and to the relationships they generate between a wide range of actors with different interests. In the case of Hanoi, the local government must be involved in the food planning process, but its needs and opinions are not the only ones that should matter when making decisions that concern the local population. Finally, from a methodological perspective, it is recommended to use both quantitative and qualitative data to inform the planning process. This is a way to ensure that policy and action are based on well documented and reliable evidence[28].

This project aims to provide an example of only one of the studies that should be carried before the creation of a plan like the Wholesale and Retail Network Plan adopted by Hanoi's local government. As it follows from the material above, more substantial and wide-encompassing studies would be required to understand Hanoi's food system in all its dimensions, and to be able to plan action aimed at the entire system. Given the limited resources available, this project presents a pilot study of fresh food access in Hanoi, and its value rests partially on its approach to understanding and acting on this urban problem. The following chapter describes how we obtained information for our study and what limits are associated with our methodology. We also describe the results we found and the ways in which they can be interpreted.

SUMMARY OF THE STUDY'S OBJECTIVES

1. Assess **street market-goers' current usage and dependence on street markets** for fresh food procurement

   / Document the shopping habits of street market goers in central Hanoi
   / Document the perceptions, desires, and aspirations of street market goers with respect to the fresh food retail environment
   / Map the locations of main retailers constituting the fresh food retail environment in central Hanoi

2. Evaluate the **potential impact of street market closures** on street market-goers' access to fresh food

   / Document how street market goers anticipate market closures to impact them
   / Estimate the impacts of street market closures on the spatial component of food access based on the current and predicted food retail environment spatial configurations

3. Create recommendations for **maintaining and improving access to fresh food** in central Hanoi

CHAPTER 2

Shopping for fresh food in central Hanoi:

predicting the impacts of street market closures

Information about fresh food access for street market goers in central Hanoi was obtained using two methods. First, we surveyed street market goers in order to document their fresh food shopping habits, to find out how they perceive their current retail environment and in what ways they think street market closures might impact them. Second, we mapped the locations of the most used types of fresh food retail within the central districts. This allowed us to compare quantitative measures of access, obtained through spatial analysis of the retail environment, to participants' perceptions of access to fresh food. The survey also allowed us to gather information about the desires and expectations of participants with respect to the retail environment in the future. The following sections describe the results we obtained and what they mean from a food access point of view.

PILOT STUDY METHODOLOGY

We conducted a pilot study to experiment with the evaluation of fresh food access in Hanoi. Although the subsequent results cannot be generalised to the entire population of central Hanoi, it is meant to serve as an example of the type of analysis that should precede the design of food policy.

A survey with questions based on information from previous studies[29] was administered in August 2016, among 37 street market-goers at 4 different street markets, one in each of Hanoi's central districts[30].

We mostly recruited participants between 8 am and noon, avoiding the early morning period when street markets are very crowded and customers are in a rush to make their purchases and leave. We aimed to speak to market goers of all ages[31]. We spent between 5 and 15 minutes talking to each participant, often standing in the market space or sitting at nearby tea stands[32]. The following sections detail the most relevant findings following the administration of this survey.

STUDY SITES

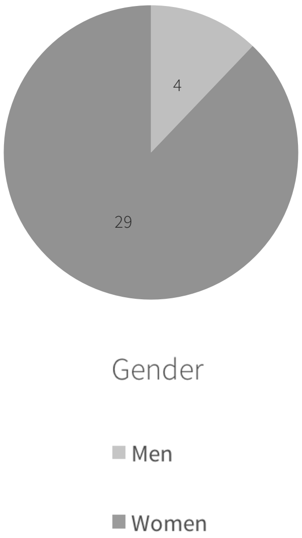
VĂN CHƯƠNG MARKET
Đống Đa district
8 participants

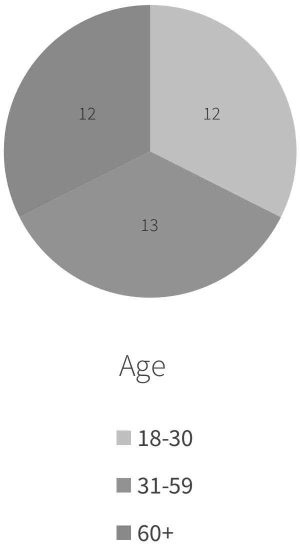
LINH LANG MARKET
Ba Đình district
9 participants

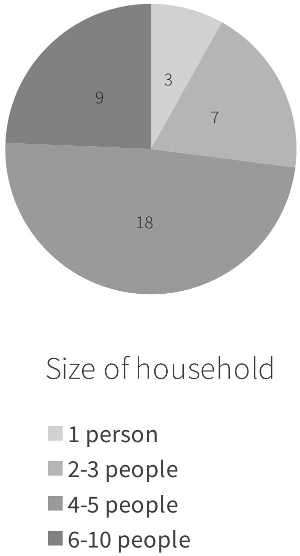
YÊN THÁI MARKET
Hoàn Kiếm district
9 participants

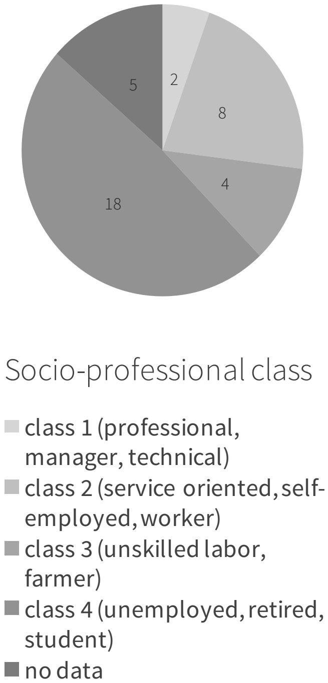
QUỲNH MAI MARKET
Hai Bà Trưng district
11 participants

CHARACTERISTICS OF THE GROUP OF PARTICIPANTS









Other observations
Younger participants were more likely to belong to higher socio-professional classes.
All participants aged 60 years or older belonged to socio-professional class 4.

1. CURRENT FOOD SHOPPING HABITS OF STREET MARKET-GOERS

It is important to evaluate the current state of the food system before attempting to modify it. The type of information gathered in this section can serve as a baseline for predicting and measuring the impacts of policy and other governmental interventions on residents' food shopping habits.

We asked participants to tell us what type of food retailers they shop at for fresh food, how often they shop and what mode of transport they use to reach their shopping destination. They provided these answers for four of the most commonly purchased types of fresh products: vegetables, fruit, meat/fish/seafood products and rice/noodles[33].

FRESH FOOD RETAIL OPTIONS IN CENTRAL HANOI

Street markets (chợ dân sinh): Small public markets consisting of individual vendors, without permanent infrastructure, offering a variety of fresh food.

Official markets (các khu chợ chính thức): Large public markets with some infrastructure (roof cover, tables, etc.) selling a variety of fresh food, sometimes transformed or dried food as well.

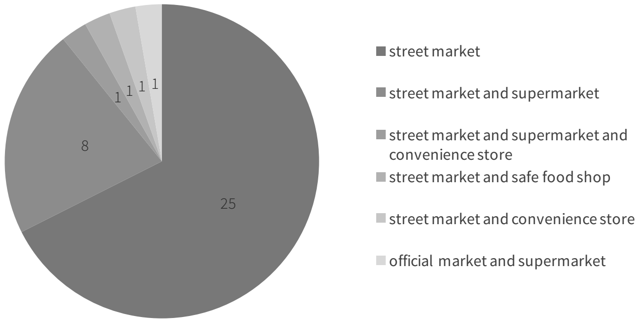
Convenience stores (cửa hàng tiện lợi): Small chain grocery stores that sell both transformed and fresh food, usually with a less diverse offer than other types of retail.

Safe food stores (cửa hàng rau an toàn): Stores offering fresh and sometimes transformed food that is labeled as "safe" or "organic".

Supermarkets (siêu thị): Large chain stores, offering transformed food and fresh food, can sometimes be found within shopping centers.

Where do they shop?

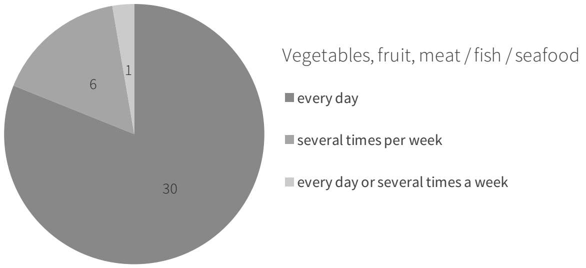
Participants were asked to list all the retail types they visit when shopping for each of the 4 types of fresh food[34].

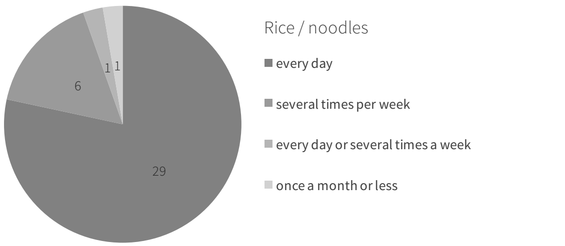


Findings

/ Most surveyed participants visit the same retailer to shop for all their fresh food.
/ The majority of surveyed participants shop for fresh food only at street markets.
/ Around 1/3 of surveyed participants shop at multiple types of retailers to fulfill their fresh food needs.

How often do they shop?[35]





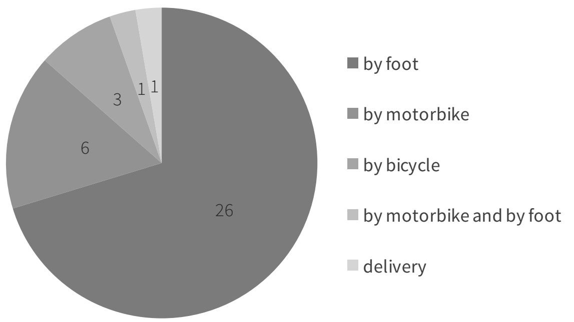
Findings

/ In general, surveyed participants shop at similar frequencies for all types of fresh food.
/ The majority of surveyed participants shop for fresh food every day.

Other observations

Participants shopping at a frequency of several times per week were more likely to belong to the youngest age group (5/8) and to shop at other types of food retailers, not just street markets.

How do they travel to shop?



Findings

/ All participants use the same mode of transport regardless for which type of food they are going shopping.
/ The majority of surveyed participants travel by foot to do their fresh food shopping.

Other observations

There are no apparent correlations between the mode of transport used to shop for food and the choice of food retailer, or the frequency of shopping[36].

TO TAKE AWAY FROM SECTION 1

Traditional food shopping habits (shopping at street markets, by foot, every day) seem to be still prevailing among surveyed participants.

There seem to be no major differences between shopping for the different types of fresh food, which can mean that participants shop for all the necessary fresh food within the same trip.

2. NAVIGATING THE CURRENT FRESH FOOD RETAIL ENVIRONMENT

People's perceptions of different retail options could be formed based on experience shopping at those retailers and/or on information conveyed by community members and other media. These perceptions likely affect their food shopping habits and surveying them gives some insight with respect to the market goers' motivations and to their potential reaction to street market closures. The following indicators can help us understand how surveyed participants think about food retailers, and how they make choices regarding food shopping.

From street markets to supermarkets: perceptions

The way in which participants talked to us about the different types of fresh food retailers can inform us on two fronts. First it can tell us what they think of each type of retail, and second, it can show us what kinds of considerations shape their view of food retailers. Since we are interested in access to fresh food, we categorized their answers based on the three components of access.

/ The "spatial component of access" category includes any mentions to distance or time needed to travel to reach a fresh food retailer and the process of parking their vehicles.
/ The "economic component of access" category includes mentions to the price of food.
/ The "quality component of access" category includes mentions to trust in the source of fresh food, to the diversity of products as well as to the overall quality, safety and cleanliness of fresh food.
/ Finally, the "other considerations of social nature" category includes mentions to the experience of shopping such as the cleanliness and aesthetics of the shopping environment, crowdedness, speed of transactions, ability to choose specific quantities of food and relationship to vendors.

Figure 2 Considerations participants most often mentioned when describing each type of fresh food retailer available. The green dots indicate advantages and red dots indicate disadvantages most commonly identified for each type of retail[37].

	Street markets		Official markets		Convenience stores		Safe food stores		Supermarkets	
Spatial component of access	●					●				●
Economic component of access						●				●
Quality component of access	●	●			●		●		●	
Other considerations of social nature		●		●						

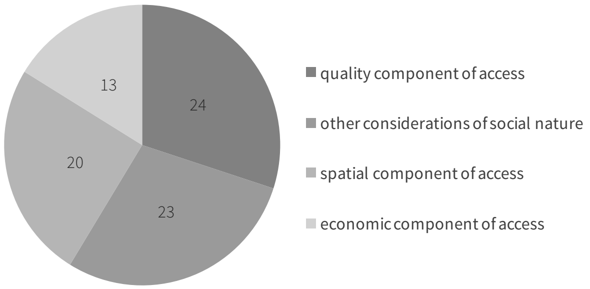


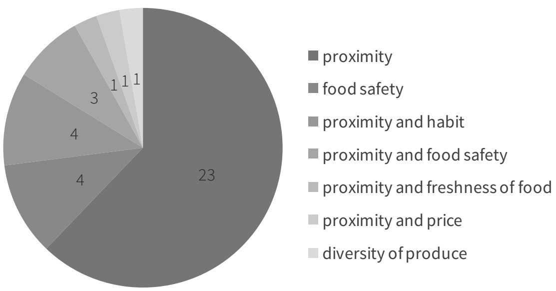
Figure 3 Tally of how many participants made remarks pertaining to each one of these types of considerations[38].

Findings

/ Participants have identified issues of spatial and economic access related to convenience stores and supermarkets. This means they believe these types of stores are far away from their homes and sell expensive food.
/ Opinions diverge on the quality of food sold in street markets, but most participants perceive stores of any kind (whether supermarkets, safe food stores or convenience stores) as providing better food than street markets.
/ The types of considerations that seem to contribute most to the participants' perceptions of the food retail environment are related to the quality component of access and to the more social aspects of food shopping.

How to choose a fresh food retailer?

This second indicator can inform us on what kinds of considerations surveyed participants believe most influence their choice of food retailers[39].



Findings

/ Nearly all participants said they value the proximity of the retailer, whether it was their only criterion or they also valued another criterion (32/37). The majority of surveyed participants said the single most important criterion for them is the proximity of the retailer (23/37).

Other observations

Most participants who valued proximity as their most important criterion shop only at street markets (20/23). All participants who valued food safety as their single most important criterion shop at food stores (safe food shops, supermarkets, convenience stores) as well as street or official markets (4/4). Most participants who valued proximity and food safety shop at a variety of retailers and believe retailers other than street markets are best (2/3). Also, most participants that valued both proximity and either freshness, habit or price, shop only at street markets and believe street markets are the best retail type (4/6).

What is the best option for fresh food shopping?

Finally, we have asked participants to identify the food retail type they consider to be the best overall. This third indicator shows how, all factors considered, each type of retail rates in the opinion of participants[40].

Findings

/ Around 1/2 of surveyed participants think street markets are the best type of fresh food retail.
/ More than 1/3 of surveyed participants think supermarkets are the best type of fresh food retail.

Other observations

We observed that more than half of participants shop only at the types of retail they believe to be the best (19/37). In fact, most participants in this subgroup shop only at street markets which they also think is the best type of retail (17/19). It is interesting to note that these participants were often aware of disadvantages for both street markets and for other types of retail, nonetheless making the choice that street markets are the best option for them. This is perhaps due to the fact that they generally perceive the other types of retail as being less geographically accessible than street markets and selling produce that is not as fresh, while their main criteria for choosing a food retailer are proximity, habit, and freshness of food.

Only a few participants never shop at the type of retailer they think is best (7/37). More specifically, all participants from this subgroup shop only at street markets while they believe supermarkets are best. The disconnect between their opinions and their actual choices may be because, even though they considered supermarkets as being a cleaner shopping environment and supplying better quality products, they also perceived issues regarding spatial and economic access to supermarkets. In fact, their choice of retail is coherent with their criteria for choosing a food retailer since most of these participants said proximity was their most important criteria, and they generally are of the opinion that street markets are closest to their homes.

The remaining participants (10/37) shop at multiple retailers even though they believe only one of them is best. More precisely, most participants in this subgroup shop at both street markets and another retailer but believe the other retailer is better (7/10). These participants tended to mention disadvantages of street markets (mostly regarding poor cleanliness) and advantages of other types of retail (mostly regarding food quality). They also often spoke about food quality as being an important criterion for choosing a food retailer (5/7). This could mean that these participants shop at other retailers because they are worried about the quality of food sold at street markets, however, this represents an additional effort which prevents them from shopping at those other retailers more often.

TO TAKE AWAY FROM SECTION 2

Street markets still popular regardless of their problems

Most participants' choices of food retail are coherent with their beliefs concerning the best overall retail type. This means that for the most part, they shop at the retailers they believe are best. And even though they were aware of the disadvantages and advantages of several types of food retail, many participants still believed street markets are the best option for food shopping. It seems that the proximity of street markets to their homes is the main reason for preferring this type of fresh food retail.

Supermarkets are well perceived

Without necessarily visiting this type of retail or choosing to only shop there, nearly half of participants thought supermarkets are the best type of retail. The identified issues with geographic and economic access might prevent these participants from shopping more often at supermarkets, but what attracts them there is the perceived offer of better quality food. And although not mentioned by our participants, another underlying reason for thinking well of supermarkets could be the perception that they are a destination for higher class customers[41]. Accordingly, what seems to prevent some participants from thinking street markets are the best type of retail are concerns about the quality of food sold and the cleanliness of street market spaces in comparison to supermarkets and other food stores.

Food quality: important but difficult for customers to assess

The spatial component of access was not among the most important factors contributing to how participants perceived or described each type of food retail. Based on the way they described food retailers, participants seem more preoccupied with the quality of food. However, there seems to be a disconnection between the place food quality takes in participants' overall perceptions of their food retail environment and the importance they give to it when they make choices about which retailer to shop at. This is perhaps because they see trade-offs between food quality and food prices or proximity of retailers and are not necessarily ready to spend more on or travel further to access better quality food, even thought they would like to. It could also be because, even though they value food quality, participants know it is difficult to measure it objectively. Instead, they choose to base their criteria on information they readily have access to, such as the proximity of the retailer from their household. Nonetheless, participants that said they take food quality into consideration when choosing a food retailer are coherent in their actions. These participants do also shop at food stores which they believe to have good quality food and to be the best kinds of retail.

Access is not the only important characteristic of food retail

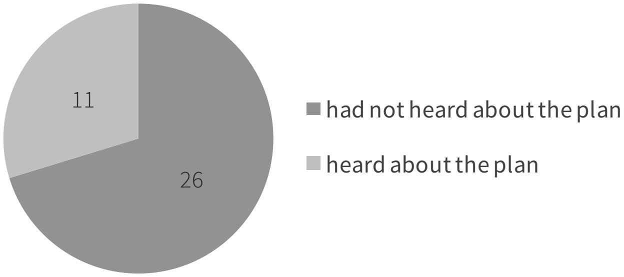
Although comments relating to the different components of access were often voiced by participants, they seem to also be concerned with other aspects of the shopping experience, like the environment of the markets or shops. This could be due to the fact that it is easier for participants to observe these aspects and compare between the different types of retail. It is, however, important to keep this in mind since these considerations could significantly influence the choices of certain participants, equally or more so than the accessibility of food retail.

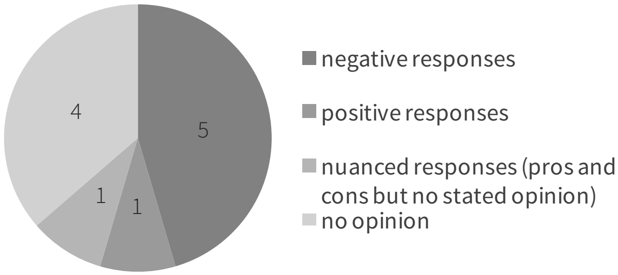
3. ANTICIPATING THE IMPACTS OF THE WHOLESALE AND RETAIL NETWORK PLAN

The participants' knowledge of and reactions to the governmental plan can inform us not only about their potential capacity to adapt their food shopping habits in the face of systemic change, but also about the government's current approach to communication concerning its actions. This information will help us formulate recommendations for how to create food policies that are effective in both their objectives and their implementation.

What do street market goers know and think about the plan?

We asked participants to tell us if they knew about the government's plan and if so, what they think of it.





Findings

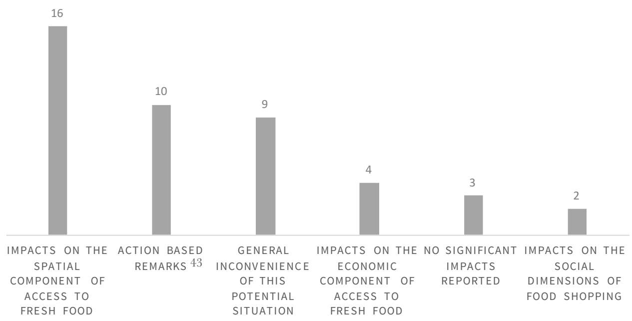
/ Fewer than 1/3 of surveyed participants had heard about the plan.
/ Around 1/2 of the participants who knew about the plan had a negative opinion of it and more than 1/3 did not share an opinion on it.

Other observations

Participants that had heard about the plan were more likely to shop at the other food retailers, not just at street markets. Participants disagreed with the plan and its objectives. They also perceived it as unrealistic.

What would market closures mean for street market goers?

We asked participants to talk about how they anticipate street market closures could impact the ways in which they shop for food[42].



Findings

/ Almost 1/2 of surveyed participants predicted that street market closures would have an impact on the spatial component of their access to fresh food.
/ Around 1/4 of surveyed participants spoke about the general inconvenience this situation would cause for them.

Other observations

Participants of all ages, household sizes and socio-professional classes are similarly worried about the impact market closures would have on the spatial component of food access. Most of them said the most important criterion when they choose a food retailer is the proximity to their homes (12/16) and most of them shop only at street markets (13/16). However, almost half of them do not think street markets are the best food retail option (7/16). They also shop on average less often than does the entire group of surveyed participants.

Impacts on economic access to food were discussed mostly by participants that shop only at street markets but don't necessarily believe street markets are the best type of food retail. None of them mentioned food prices as being an important criterion for choosing their food retailer.

TO TAKE AWAY FROM SECTION 3

Widely anticipated impacts on spatial access to fresh food

Most surveyed participants, regardless of their age, household composition, and socio-economic profile, recognized they would, in some way, be impacted by street market closures, even if they don't think street markets are the best food retail option. Most of participants' worried that such closures would impact the spatial component of food access. This was especially true for participants that value proximity to the retailer and do not shop from a variety of sources. In contrast, none of the participants anticipated impacts on the quality food they will be able to buy and only a few mentioned economic impacts. This could mean that they do not anticipate consuming less fresh food overall, but that they believe they would put in the extra effort and resources necessary to buy fresh food from other types of food retail.

Communication around public policy is necessary

The government perhaps did not prioritise or has not been successful at communicating to the population its intentions regarding the fresh food retail environment. It may be particularly important to improve communication around this type of public policy since knowing about the plan may incite residents to adapt their behavior and facilitate transitions. Some of the surveyed participants who knew about the plan may have diversified their choice of food retailers in order to prepare for the upcoming changes in the retail environment.

4. SPATIAL ANALYSIS OF CURRENT AND PREDICTED ACCESS TO FRESH FOOD IN CENTRAL HANOI

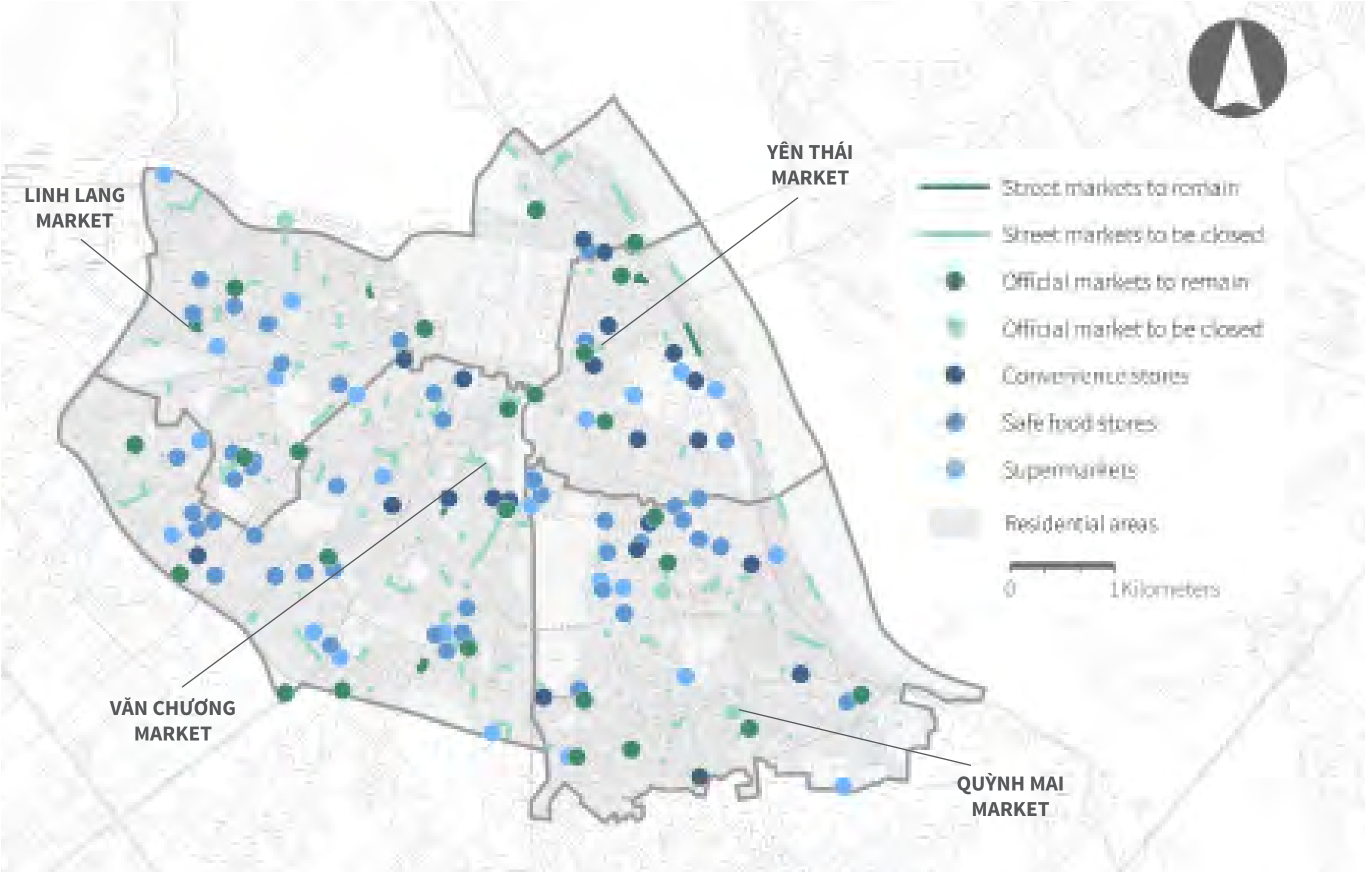
Having reviewed participants' food shopping habits and their perceptions of the different options available to them, it is interesting to take a look at the spatial dimension of the retail environment. In this section, we describe the current food retail environment in central Hanoi and predict how it would look as a result of the closure of some street markets and official markets, as outlined in the Wholesale and Retail Network Plan. This will show what options are available to participants, and how spatially accessible they are. Based on this information, we explore ways is which access to fresh food might change if the plan is implemented.

Planned closures of traditional retailers

One of the objectives of this project was to draw a first portrait of the current fresh food retail environment in central Hanoi. This is useful as a baseline image, allowing us to visualize potential changes to this environment. The map below shows the locations of the 231 existing food retailers of all types that we have mapped, and it highlights the 103 street markets and two official markets that would be closed following the application of the Wholesale and Retail Network Plan[44].

Findings

Street markets represent an important part of the fresh food retail network and their closure significantly decreases the number of available fresh food sources in central Hanoi.



MAPPING AND SPATIAL ANALYSIS METHODOLOGY

Finding the locations of fresh food retailers

Due to the size of the fresh food retail network in central Hanoi, the collection of information was prioritized. Since street markets were the main subject of interest for this project, and since very little spatial information concerning them was previously published, we have invested most of the project's resources in documenting them. This was done by driving to all streets and major alleys within the city's four core districts and recording the exact location of each market. Markets were sometimes located with the help of local residents, which would point us to the ones in their neighborhood. This work was done over a period of two months in the summer of 2016[45]. Official markets were the easiest to locate since their addresses were listed in the government's plan. We did, however, visit all of them to check if they are still open and that they sell fresh food. To locate supermarkets and convenience stores, we used academic papers[46], online articles and our own observations to make a list of the main retail chains present in central Hanoi. We then were able to find most addresses online, through the official websites of each company[47]. Finally, to find the locations for safe food stores, we used the map provided by VECO Vietnam on their Safe and Organic Food Finder website[48]. Although other independent retailers sell fresh food within the studied area, we did not have the necessary resources to locate them.

Finding the locations of participants' homes

When we administered the survey to participants, we asked them to share with us the street intersection closest to their home. Many participants shared their exact address, but a few did not wish to share any locational information about their homes. We were able to map the homes of 28 out of 37 participants.

Obtaining base maps of central Hanoi

Road network data, urban blocks, district and ward boundaries, and population density data were obtained from previous studies done through the Canada Research Chair in Sustainable Urbanization in the Global South. Population density data was obtained for the ward scale and calculated for smaller spatial units such as residential blocks. These are approximations since populations are not evenly distributed within a ward.

Choosing a scale

Food retail networks do not necessarily follow administrative boundaries, but in the case of central Hanoi, street markets are likely to be found in each ward since they serve a very local scale. With that in mind, we knew each district would have many street markets on its territory, so we decided to focus our study only to the four core districts of Hanoi. These districts are the oldest and densest. They are often separated from the neighboring districts through wide avenues and their boundaries often mark a distinct break in urban form. Through this choice, we assume that residents living within the four districts only shop at food retailers within the districts, although this is not entirely accurate.

Measuring access

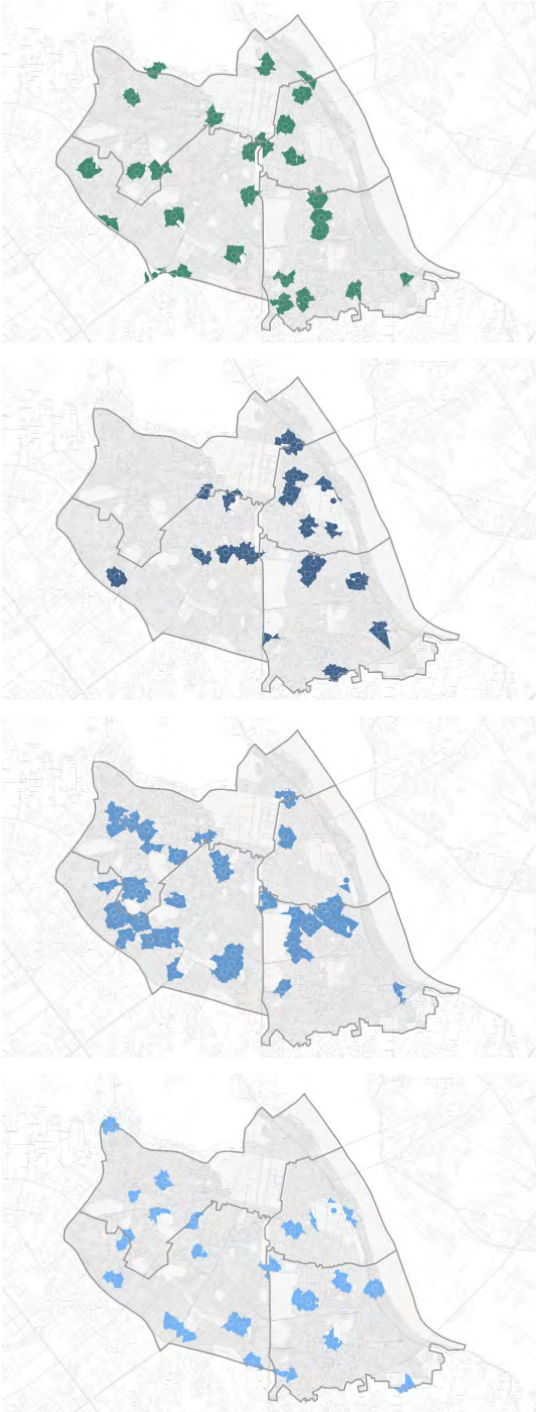
The Network Analysis toolbox in ArcGIS was used to calculate "service areas" and "closest facilities". In order to be able to perform these analyses for street markets, which were initially mapped as lines, data transformations were performed. Street market data was converted from line-based layers to point-based layers, with the points made to represent the possible entrances for each street market.

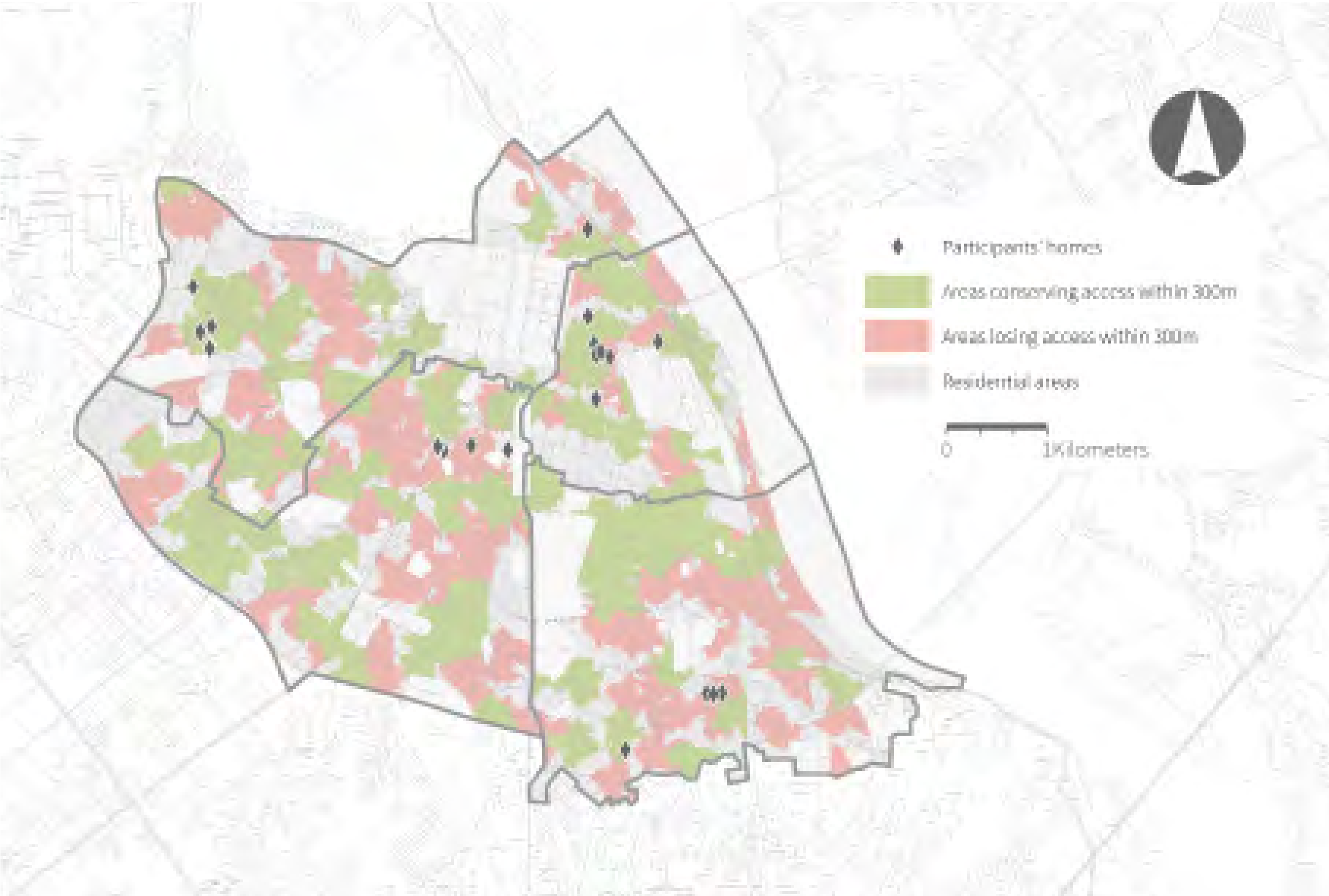
Measures of access to fresh food retailers

No measure of spatial access can fully capture residents' actual experiences. Each has their limits but taken together they begin to delineate the complex dynamics at play. Below are two types of tools we used for estimating access.

a. Retailers' service areas

In order to estimate how many residents can access a food retailer within a reasonable distance of their homes, we calculated 300m service areas for each retailer mapped. Since we did not find previous studies about what a reasonable walking distance for food shopping is in the Vietnamese urban context, we based our choice on a study looking at reasonable walking distance to public transportation in the country's biggest city[49]. Although this is not a fixed limit (some residents could be willing to travel more or less than 300m to reach a fresh food retailer) it helps us create a simple indicator of access. This analysis can be reiterated by choosing a different reasonable distance measure[50].





Findings

Street markets serve by themselves nearly half of the areas (48%) and half of the population (50%) situated within a reasonable walking distance (300m) to a fresh food retailer in central Hanoi. If most traditional retailers (almost all street markets and some official markets) are closed down as planned, the size of the area and the population served in this manner will decrease to a similar extent (46% and 48% respectively).

Street markets cumulatively serve a larger area and a higher number of people than do all the other types of retail combined. On average, each street market covers a wider area of service than stores or official markets and this is partly due to its linear shape which makes it accessible from different points along the street. It is also due to the fact that supermarkets and convenience stores are more likely to be located near non-residential areas or structural barriers, which reduces their actual service areas.

Other observations

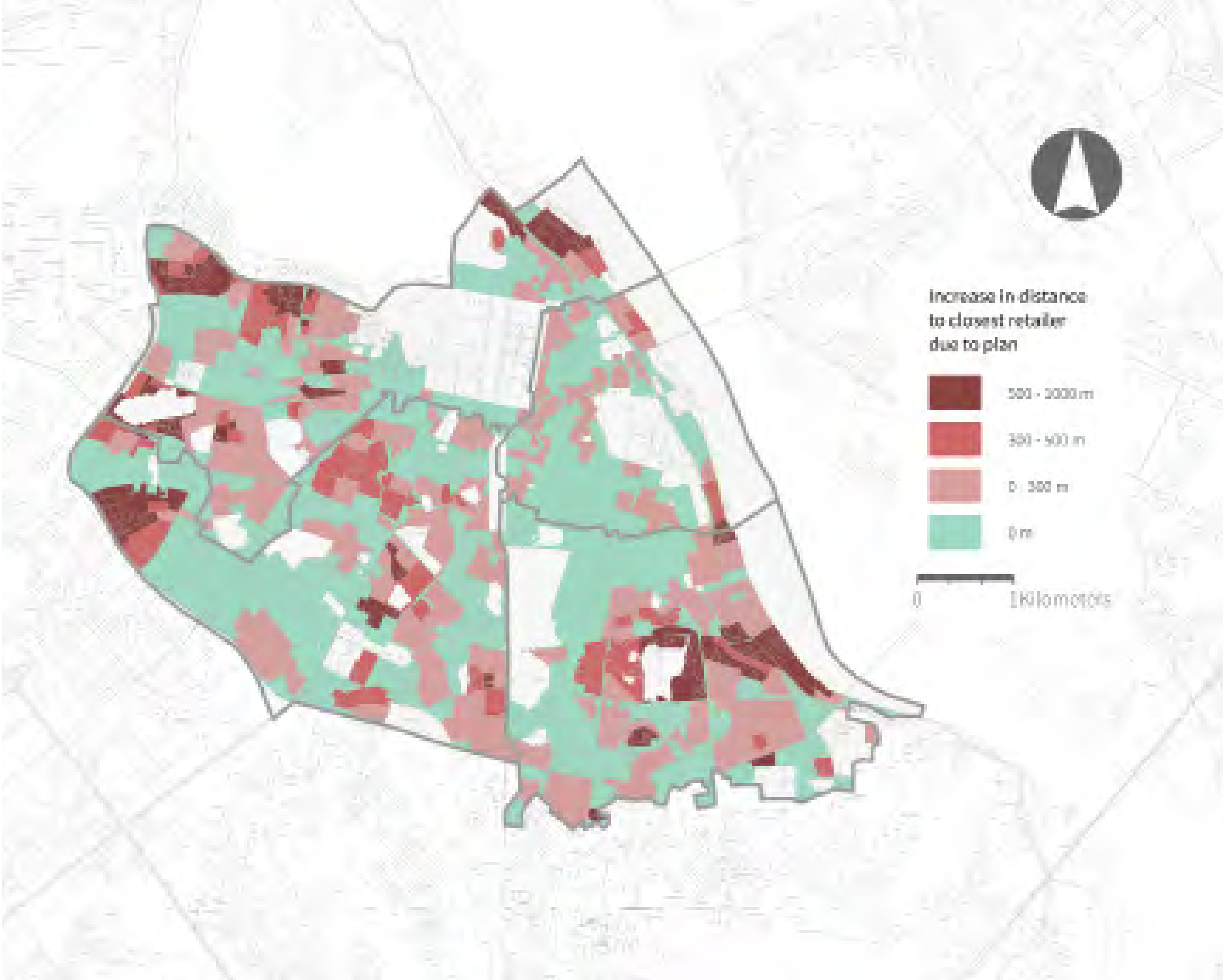
5/28 participants lived outside the service areas for the street markets where they were interviewed.10/28 participants will not be within a 300m service area of any retail following the plan, and 15/28 will not be within a 300m service area of a traditional retailer.

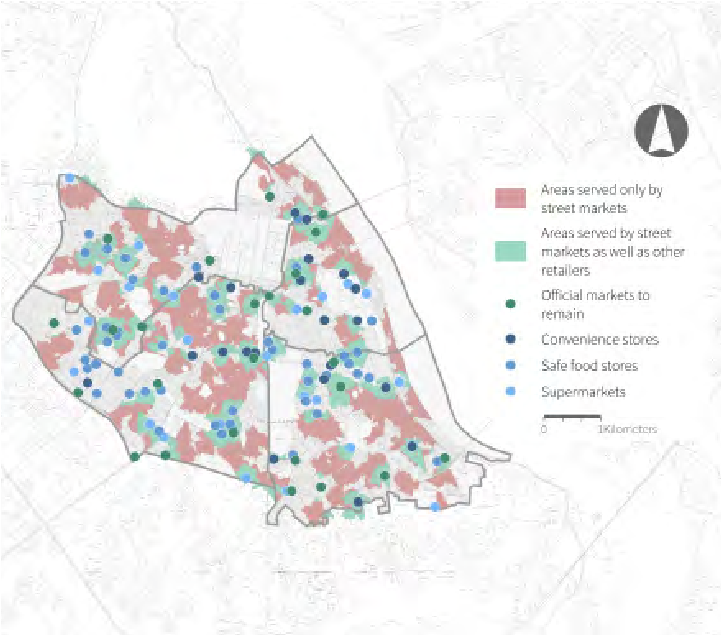
b. Distance to different retailers

We then looked at the distance to be traveled from residents' homes to the nearest retailers. Since it would be very difficult to measure this for each individual home in the four central districts of Hanoi, we used residential blocks as origins, instead of buildings. Although it is not a given that residents shop at the closest retailer from their home, this information allows us to look at access in a different way[51].

Findings

The average distance that residents need to travel to reach a fresh food retailer would increase by 54% (from 244m to 375m) if the targeted street markets and official markets were to be closed down as planned.





Redundancy in the fresh food retail environment

Areas that are served by multiple food retailers can be considered more resilient in the face of changes to the retail network. Redundancy is, therefore, an asset since the closure of one retailer leaves residents with other options within a similar walking distance. In order to anticipate which areas could be affected the most, we have mapped those that are only serviced by a retailer targeted for closure in the governmental plan.

Findings

Most of the other retailers are located within a street market service area. However, since there are currently many more street markets than other types of retail, a majority of street markets are the only retailer within their own service area. This means that in the event of street market closures, most of the areas currently served only by a street market will lose access to fresh food within a reasonable walking distance.

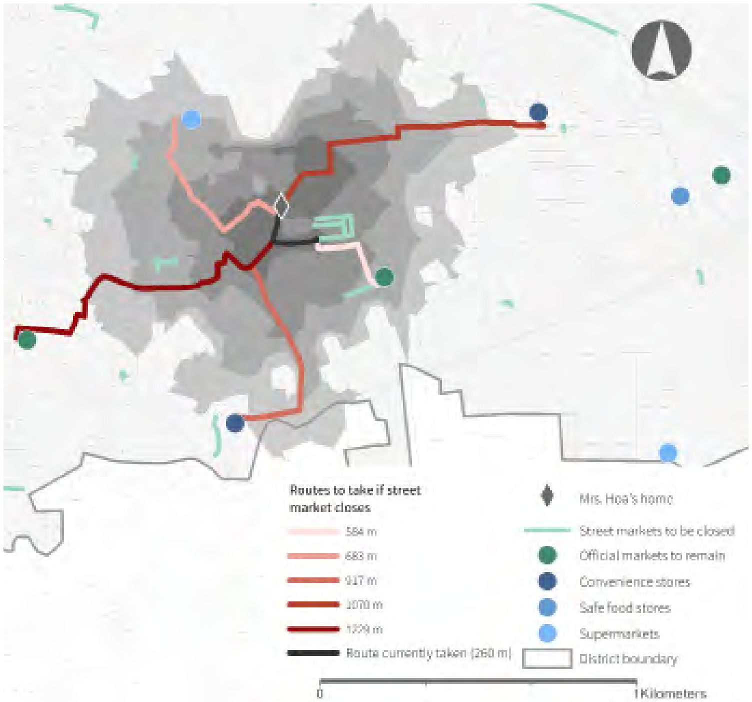
CASE STUDY : MRS. HOA

Mrs. Hoa* is a 61-year-old retired woman who only shops at the Quỳnh Mai Market, in the Hai Bà Trưng district. She lives with 4 other family members near the market. She walks the 260m distance to the market every day as she is the person responsable of buying the necessary produce for her household.

She told us she believes street markets are the best options when it comes to buying fresh foods. She considered shopping at supermarkets but heard that the food sold there isn't actually safer. She also thinks convenience stores aren't that convenient and she doesn't like official markets because they are dark and the quality of the food is not great. She likes the street market because it's so near her house and because, there, it easy for her to only buy the exact quantity of food she wants.

As we brought up the subject of the Wholesale and Retail Network Plan, she said that she disagrees with it because she will have to use a motorbike in order to get groceries. The map to the right shows the other options available to her if street markets in her neighborhood would close down. The gray shapes show which areas she can reach by walking 300, 500, 700 and 1000m.

* The name was changed for confidentiality purposes



Perceived vs. estimated access to fresh food

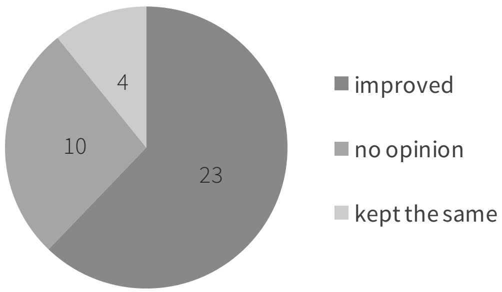
Most participants expect a significant decrease in access to fresh food retail in the event of street market closures and this is also the conclusion of our spatial analysis. It is interesting to note that the measure of access, calculated through spatial analysis for food stores and official markets, matches participants' perceptions about these retail types. Participants more often perceived supermarkets and convenience stores to be spatially inaccessible compared to official markets and safe food stores and this was confirmed by our analysis. In general, we can say that participants' perceptions correspond closely to the spatial reality of the retail environment.

5. ASPIRATIONS FOR THE FUTURE OF STREET MARKETS

Finally, we explored street market-goers' opinions about the future of street markets. We thought it important to understand their desires in the case street markets would remain active, but also in the case they would be closed. This step is important because good food policy must take into consideration the needs of the affected populations.

What should be done with regards to street markets?

We first asked participants what they think should happen with the existing street markets in central Hanoi.



Findings

/ More than 1/2 of participants thought street markets should be improved.
/ Around 1/3 of participants did not share an opinion on the question.
/ None of the surveyed participants said they want the street markets to close.

Other observations

Participants who would like street markets to be improved expressed this view regardless of their current shopping habits. The group of participants that did not share an opinion on this question had non-traditional shopping habits, meaning they shopped at more than one type of retailer and traveled on average less often by foot to reach their retailers.

TYPES OF IMPROVEMENTS DESIRED BY STREET MARKET-GOERS

Cleanliness of space: many participants mentioned that street markets should be cleaner.

Organisation of space: some participants mentioned wanting a more optimal usage of market space for both vendors and customers through suggestions such as diminishing traffic and providing infrastructure for vendors.

Size of space: some participants mentioned wanting the street markets to be bigger, with more vendors.

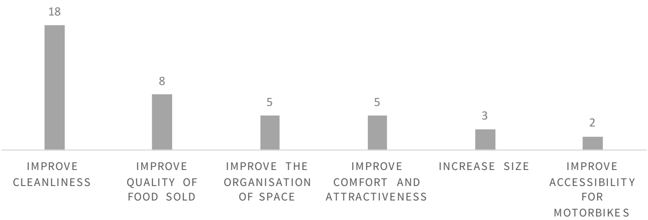
Comfort and attractiveness: some participants wanted street markets to be brighter, airier and cooler, especially during the summer.

Quality of food: some participants mentioned wanting street markets to offer a larger diversity of food and food that is safer.

Accessibility for motorbikes: a few participants wanted street markets to be located on wider streets and provide better parking to facilitate transportation by motorbike.

How could street markets be improved?

In the case street markets would remain open, we asked participants to describe in which ways they would like the existing markets to be improved[52].



Findings

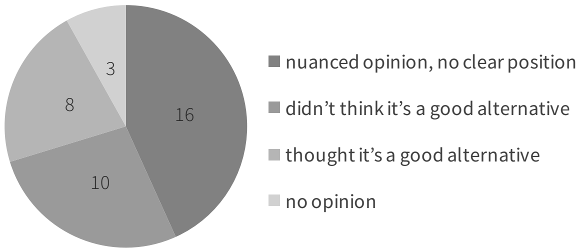
/ The most commonly mentioned desired improvement was the cleanliness of street market spaces (almost 1/2 of participants).
/ The second most common desire was the improvement of the quality of food sold at street markets.

Other observations

Generally, there seems to be coherence between the proposed improvements and the criteria participants mentioned being most important for choosing a food retailer.

Convenience stores as alternatives to street markets?

In the case street markets would be permanently closed, participants would search for alternatives, most likely some type of food store. When it comes to food stores, shopping at convenience stores is the shopping experience that could most resemble shopping at street markets. We have therefore asked participants to tell us whether or not they consider convenience stores to be a satisfactory alternative to street markets. Some participants also shared with us the reasons behind their answers.



Findings

/ Almost half of the participants had a nuanced opinion on the question, mentioning pros and cons but not taking a clear position.
/ Few participants thought it was a good alternative, only 2 mentioning they prefer convenience stores over street markets.

Other observations

The most common reasons for thinking convenience stores are not good alternatives to street market are the convenience and the habit of shopping at street markets. The most common reason for thinking convenience stores are good alternatives to street market is the perceived higher quality of food sold at convenience stores. Participants with a nuanced opinion often mentioned thinking that food sold at convenience stores is of higher quality, but they also thought convenience stores are situated far away from their homes and sell products that are expensive.

TO TAKE AWAY FROM SECTION 5

Street markets: an asset the community wishes to maintain

There is significant interest from surveyed participants for the maintenance and improvement of street markets with more than half wanting the street markets to remain operational in some form. Naturally, those participants who seemed ambivalent about the future of street markets are not as dependent on traditional shopping habits (shopping by foot, at street markets near the home) and seemed more open to shopping at other types of retailers.

Cleaner and more pleasant street markets spaces are desired

The most pressing needs identified by participants regarding the current state of street markets are related to their cleanliness and accordingly, to the safety of the food offered in these spaces. Other often mentioned improvements are related to the aesthetics of the street market space and therefore to a more social aspect of food shopping. Generally, participants wanted improvements that correspond to the characteristics they value most when choosing a food retailer, meaning they are consistent in their demands.

Convenience stores: not a clear solution for fresh food procurement

Although participants are aware of the advantages and disadvantages of shopping at convenience stores, it seemed difficult for many of them to decide whether convenience stores would satisfy their food shopping needs in the event of street market closures. This could mean that most of them are not firmly closed to the idea of shopping there if necessary. However, based on the answers given by participants that had a formed opinion, they do not believe the needs currently fulfilled by street markets can be easily filled by convenience stores in the event of street market closures.

VARIATIONS IN FRESH FOOD ACCESS BASED ON SOCIO-ECONOMIC PROFILES?

Due to the small number of participants in this study, it would be difficult to extrapolate any results relating to socio-economic profiles for the entire population of central Hanoi. Perhaps a wider survey and a more thorough and spatialized vulnerability analysis would be necessary since some of our observations hint at the **relationship between the residents' backgrounds and their food shopping behaviour/preferences**:

/ The **age** of the concerned population could be a factor worthy of consideration for food-related policy in central Hanoi. We noticed that in some ways, older participants could be more vulnerable to the impacts of street market closures because they are more likely to shop by foot and to value the proximity of fresh food retail. They are also the most likely to be worried about economic access to fresh food. However, they might have some strategies for coping with changes to the food retail environment since they were able to recognize specific impacts and offer action-based comments such as: «I would need to switch retailers» or «I would rely more on supermarkets». The younger participants seemed to be less able to identify the specific impacts that street market closures would have on their shopping habits, often only mentioning the general inconvenience this situation would cause for them. The older participants were also the most informed about the plan and seemed to be more engaged in thinking about the future of their community.

/ Although not a main factor in our observations about habits and perceptions, the **size of the household** could be important to consider when making decisions about the food distribution system due to the challenge of food storage. Larger households need to buy larger quantities of food and storing that food for more than a day can be problematic in the current context of central Hanoi. In our study, we observed that participants coming from larger families tended to shop the most often, which may be a way for them to overcome the issue of storage. Thus, we can imagine that having to decrease the frequency at which they shop due to street market closures could lead to a decrease in consumption of fresh foods or to changes in cooking and eating habits.

CHAPTER 3

Maintaining access to fresh food in central Hanoi

RECOMMENDATIONS

In Hanoi as in most cities worldwide, access to fresh food presents both a systemic, political challenge and a local development and design challenge. While being very different, these challenges should be considered simultaneously for an efficient way of building sustainable urban food systems. This is why, even though our project focused on understanding fresh food access, we have not only formulated recommendations concerned with the physical, spatial configuration of the food retail environment, but also with the governance process required to apply them. The following are general recommendations but they can serve as a starting point for delving into the emergent realm of food system governance[53].

Governance and policy-making

Our data and analyses confirm our initial assumptions that, if it is implemented, the Wholesale and Retail Network Plan proposed by Hanoi's Industry and Trade Department will significantly impact spatial access to fresh food in the city's central districts. We have also highlighted that the plan is unpopular among the residents that participated in our study, indicating that the transition to a distribution system solely based on food stores would likely be difficult for many residents in the current context. The undesirable effects which we expect the plan would have on public health and on residents' well-being is no surprise given that it was not developed with food access in mind. As mentioned at the beginning of this report, different approaches can be used for acting on the often overlooked urban food systems. Below, we briefly outline some steps which we believe could support the development of a more effective strategic planning approach concerning the food distribution system in central Hanoi.

Step 1. Make space for food planning within the city's administration

In setting up a coherent and effective public administration system, local governments charge specific departments and employees to maintain the city's most important urban functions (ex: land, transportation, housing, culture). Since it plays a role in the well-being of the urban population which is as central as any other basic urban function[54], the urban food system should get the same degree of attention. Similar to other Vietnamese cities, this is not the case in Hanoi at the moment. One fast way to start this process would be to put in place a taskforce group with the mandate to design a long-term fresh food accessibility plan for central Hanoi. This group would be in charge of considering questions such as: How can Hanoi's food system be modernized in a sustainable way, without significantly affect food access? Which types of retailers are needed to fulfill the residents' food shopping needs, how many access points are necessary and where should they be located? What is the best way to lead this transition in order to minimize impacts on the most vulnerable segments of the urban populations (ex: poorer households, elderly, people with limited mobility)?

Step 2. Gather quantitative and qualitative data to support evidence-based planning

Prior to outlining any plans and policies, the taskforce group would need to understand the current situation. A collaboration with local and international researchers and experts on the subject of food access and food system planning is advised. It would be important to consider previous research done on the subject, adapt existing approaches to the specific context of Hanoi, and carry further studies concerning all components of accessibility (spatial, economic and quality) as necessary. The participation of concerned stakeholders such as residents, informal vendors and formal retailers in this process is crucial for painting a fuller picture of food access in central Hanoi. The information gathered in this way, including the spatial dataset provided in this study, should be maintained and updated periodically to ensure decisions are made based on current realities[55]. Seeking to learn how other regions have dealt with this problem could also be helpful[56].

Step 3. Integrate concerns over food in decision making for other urban systems

Once a core of knowledge and expertise around food access is developed within the city's administration, it would be important to share that with other city departments whose actions influence food systems in some way. This could include the Department of Industry and Trade, Department of Transport, Authority of Planning and Investment, Department of Labor, Invalids and Social Affairs, Department of Agriculture and Rural Development, Department of Planning and Architecture, Department of Construction, Department of Natural Resources and Environment, and Department of Health. Concerns over food access should then be integrated into the Wholesale and Retail Network Plan, as well as in other plans such as the Local Resilience Action Plan for The City of Hanoi, developed in 2010 by the government in partnership with the World Bank. The structure and mandate of the taskforce group might have to evolve with time since for concerted action on the entire food system a more elaborate governance structure will likely be needed. Such restructuring processes are not easy undertakings, but they can lead to a more efficient administration[57].

RESIDENTS' RELATIONSHIP TO THE LOCAL GOVERNMENT

Without being specifically prompted on this question, two participants suggested they trust the government's decisions for acting in the best interest of the population. Three other participants formulated unprompted demands for governmental actions: (1) improving food safety regulation, (2) allowing the construction of a supermarket on an empty lot in their neighborhood and (3) building an official market in their neighborhood. All five participants were older. This age group might have higher expectations regarding governmental intervention.

Localization and design of street markets

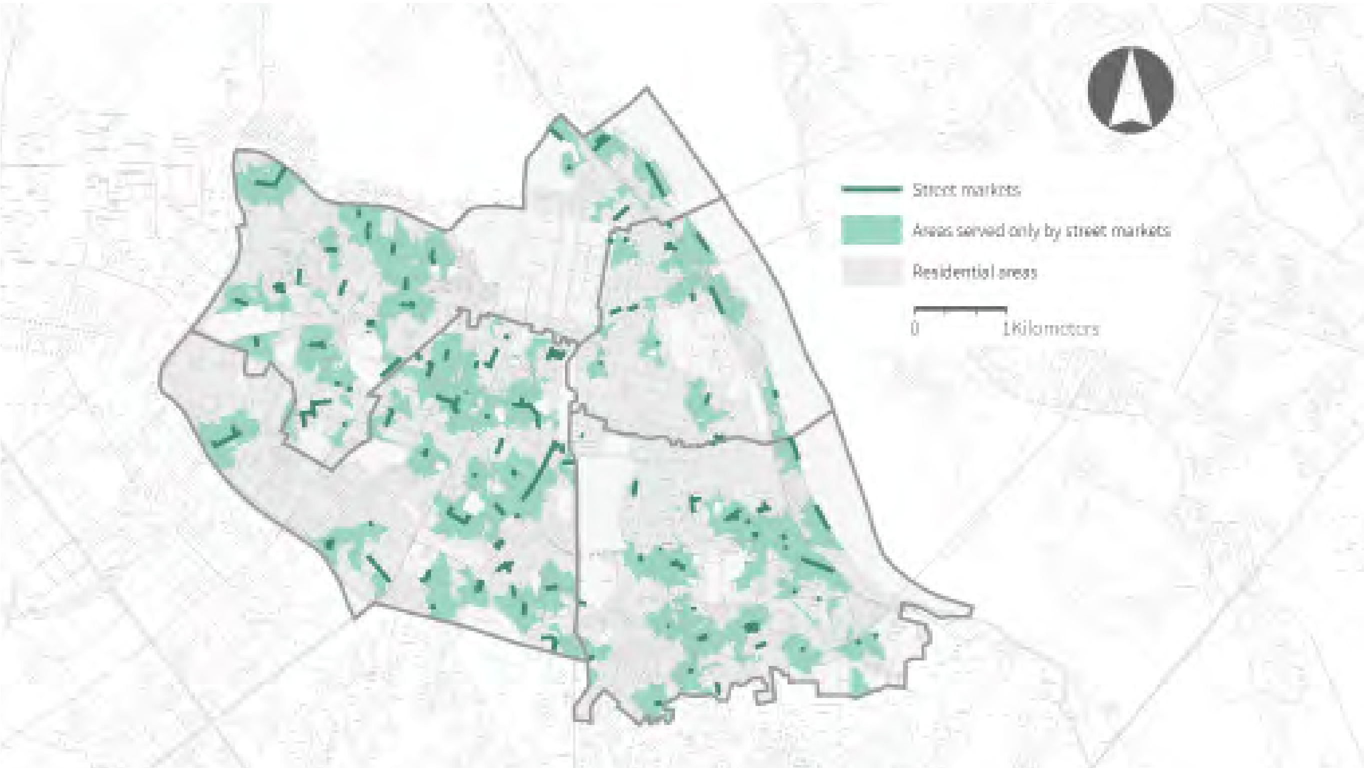
We have observed that in central Hanoi, fresh food shopping is an activity that takes place very close to home. Street markets have naturally been set up where there is demand, nearly every ward hosting at least one. Other types of food retail (convenience stores, safe food stores, supermarkets) have opened shop within some wards, adding to the diversity of fresh food offer in those neighborhoods. This study, however, shows that these alternative retailers do not present the same benefits to residents as traditional food retailers. They are complementary but are not generally perceived as adequate replacements of traditional retailers. The massive closure of street markets, as prescribed by the Wholesale and Retail Network Plan, would leave the demand for traditional food shopping unmet in most neighborhoods, and more importantly, it would potentially leave some residential areas without access to fresh food within a reasonable walking distance.

“ Convenience stores are too far away and are not suitable for old people.”

– street market-goer

Step 1: Protect street markets wherever they are the only source of fresh food

We recommend to abstain from closing down any markets that are in use and that fulfill a need among residents. However, if the local government wishes to go on with the modernizing of Hanoi’s retail environment, we suggest the official recognition and protection of street markets in the areas that are currently not served by any other types of fresh food retailers.



Through our conversations with street market goers in central Hanoi, we've noted that they not only value access to street markets situated near their homes but also the pleasant environment provided by these markets. Street markets are already appreciated for their dynamic social ambiance and for the ease with which transactions can be done with vendors that set up shop right next to the street. Participants are however concerned with the cleanliness of the market space and improvements in this regard would clearly lead to a more satisfactory retail experience. From previous studies, we also know that the work of vendors would be facilitated if they could have access to adequate equipment such as foldable preparation and display tables, storage, designated washing stations or access to clean water, and designated waste disposal stations[58]. These facilities, along with a minimal market self-management by the vendors, could have a positive effect on the cleanliness and safety of the fresh food being sold. Such low-cost and high-benefit improvements would merit the consideration of the local government, which could perhaps delegate their conception and design to the taskforce group, using the input of the vendors and customers that are currently using those street markets[59].

Step 2: Consider the value of street markets as lively urban events

While protecting and improving those street markets that are the only fresh food sources for certain areas, the local government could also think about keeping a few key street markets in each district for their social benefits. These markets could be allowed to open periodically, during weekends for example, and be made the base for "market day" events. Some preparation and support from the local government would contribute to improving the environment of these markets (through the provision of adequate equipment), as well as the quality of the food (through food safety regulations). These events would have the objective of celebrating this Hanoian tradition, allowing residents and visitors to enjoy the atmosphere and social opportunities offered by street markets, while still providing affordable fresh food for those who need it. This approach could help redefining street markets as an asset for the city, not a step away from modernity since events like these are quite popular and well appreciated in cities worldwide[60].

CONCLUSION

Through our data and analysis, we have showed that street markets are a significant and legitimate source of fresh food for residents in central Hanoi. It is clear that many problems concerning the retail system in Vietnam need indeed be addressed[61]. However, we highlight that traditional food retailing is not necessarily incompatible with a modern food distribution system and that its abolishment is not a panacea to improved urban life[62]. To better understand and act on this complex issue, we suggest the use of an integrated food system planning process, with a particular attention to food access. The adoption of such an approach by the local government can be a strategic way to address issues of poverty and inequality in Hanoi. It is also crucial for avoiding unintended consequences of food system transitions, examples of which have been observed and are currently being battled in many other cities throughout the world.

REFERENCES AND ENDNOTES

[1] Ali, M., Quan, N. T., & Nam, N. V. (2006). An analysis of food demand patterns in Hanoi: predicting the structural and qualitative changes. *Technical bulletin*, (35), 4.
Turner, S. (2009). Hanoi's Ancient Quarter Traders: Resilient Livelihoods in a Rapidly Transforming City. *Urban studies*, 46(5-6), 1203-1221.
Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Maruyama, M. (2010). The nature of informal food bazaars: Empirical results for Urban Hanoi, Vietnam. *Journal of Retailing and Consumer Services*, 17(1), 1-9.
Wertheim-Heck, S. C., Vellema, S., & Spaargaren, G. (2015). Food safety and urban food markets in Vietnam: The need for flexible and customized retail modernization policies. *Food Policy*, 54, 95-106.
[2] Maruyama, M. (2010). The nature of informal food bazaars: Empirical results for Urban Hanoi, Vietnam. *Journal of Retailing and Consumer Services*, 17(1), 1-9.
Barthelmes, L. (2012). Peasants or Peddlers? Mobile Street Vendors in Hanoi, Vietnam. Max Planck Institute for Social Anthropology.
Turner, S., & Schoenberger, L. (2012). Street Vendor Livelihoods and Everyday Politics in Hanoi, Vietnam The Seeds of a Diverse Economy? *Urban Studies*, 49(5), 1027-1044.
Eidse, N., Turner, S., & Oswin, N. (2016). Contesting Street Spaces in a Socialist City: Itinerant Vending-Scapes and the Everyday Politics of Mobility in Hanoi, Vietnam. *Annals of the American Association of Geographers*, 106(2), 340-349.
[3] Maruyama, M. (2010). The nature of informal food bazaars: Empirical results for Urban Hanoi, Vietnam. *Journal of Retailing and Consumer Services*, 17(1), 1-9.
Thanh, H. X., Anh, T. T., Quang, L. T., Giang, D. T., & Phuong, D. T. T. (2013). Food security in the context of Vietnam's rural–urban linkages and climate change. IIED, London.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
[4] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
Wertheim-Heck, S. C., Vellema, S., & Spaargaren, G. (2015). Food safety and urban food markets in Vietnam: The need for flexible and customized retail modernization policies. *Food Policy*, 54, 95-106.

[5] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Pulliat, G. (2013). Vulnérabilité alimentaire et trajectoires de sécurisation des moyens d'existence à Hanoi: une lecture des pratiques quotidiennes dans une métropole emergente. Géographie - Université de Nanterre - Paris X.
Thanh, H. X., Anh, T. T., Quang, L. T., Giang, D. T., & Phuong, D. T. T. (2013). Food security in the context of Vietnam's rural–urban linkages and climate change. IIED, London.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
[6] Figuié, M., Bricas, N., Thanh, V. P. N. & Truyen, N. D. (2004). Hanoi consumers' point of view regarding food safety risks: an approach in terms of social representation. *Vietnam Social Sciences*, 3(101), 63-72.
Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
[7] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Lincoln, M. (2008). Report from the field: street vendors and the informal sector in Hanoi. *Dialectical Anthropology*, 32(3), 261-265.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
Giddings, C. (2016). Traditional Fresh Markets and the Supermarket Revolution: A Case Study on Châu Long Market. George Washington University.
[8] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
Giddings, C. (2016). Traditional Fresh Markets and the Supermarket Revolution: A Case Study on Châu Long Market. George Washington University.
[9] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat; experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.
Geertman, S. (2011). Hanoi–fresh markets, a way of life and public health under threat. *Vietnamese Urban Planning Journal* (Tap Chi Xay Dung).
Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
[10] Based on figures from Albrecht, D., Hocquard, H., & Papin, P. (2010). Urban Development in Vietnam: The Rise of Local Authorities. Resources, Limits and Evolution of Local Governance. Agence Française du Développement.
[11] Drummond, L. B. (2000). Street scenes: practices of public and private space in urban Vietnam. *Urban Studies*, 37(12), 2377-2391.
Koh, D. W. H. (2006). Wards of Hanoi. Institute of Southeast Asian Studies.
Gillespie, J. (2008). Localizing global rules: Public participation in lawmaking in Vietnam. *Law & Social Inquiry*, 33(3), 673-707.
Albrecht, D., Hocquard, H., & Papin, P. (2010). Urban Development in Vietnam: The Rise of Local Authorities. Resources, Limits and Evolution of Local Governance. Agence Française du Développement.
Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Liveable Cities Program.

Daniel, K., Efroymson, D., Ha, T. T. K., Hai, D. D., & Fitzgerald, S. (2015). Campaigning to save market women's livelihoods in Hanoi: experience from HealthBridge. *Gender & Development*, 23(1), 13-30.
[12] Quertamp, F., Pandolfi, L. & Petibon, L. (2014). Faire la ville. Lecture croisée des méthodes et ou ls de l'urbanisme en France et au Viêt-Nam. Centre de Prospective et d'Etudes Urbaines (PADDI) et l'Institut des Meùtiers de la Ville (IMV).
[13] Wertheim-Heck, S. C., & Spaargaren, G. (2015). Shifting configurations of shopping practices and food safety dynamics in Hanoi, Vietnam: a historical analysis. *Agriculture and Human Values*, 1-17.
[14] Hodgson, K. (2012). Planning for food access and community-based food systems: a national scan and evaluation of local comprehensive and sustainability plans. American Planning Association Report, 1-175.
[15] Hodgson, K. (2012). Planning for food access and community-based food systems: a national scan and evaluation of local comprehensive and sustainability plans. American Planning Association Report, 1-175.
[16] Clarke, G., Eyre, H., & Guy, C. (2002). Deriving indicators of access to food retail provision in British cities: studies of Cardiff, Leeds and Bradford. *Urban Studies*, 39(11), 2041-2060.
Pearce, J., Witten, K., & Bartie, P. (2006). Neighbourhoods and health: a GIS approach to measuring community resource accessibility. *Journal of Epidemiology and Community Health*, 60(5), 389-395.
Shaw, H. J. (2006). Food deserts: towards the development of a classification. *Geografiska Annaler: Series B, Human Geography*, 88(2), 231-247.
Bertrand, L., Thérien, F., & Cloutier, M. S. (2008). Measuring and mapping disparities in access to fresh fruits and vegetables in Montreal. *Canadian Journal of Public Health*, 6-11.
Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating healthy food and eating environments: policy and environmental approaches. *Annual Review of Public Health*, 29, 253-272.
Hirsch, J. A., & Hillier, A. (2013). Exploring the role of the food environment on food shopping patterns in Philadelphia, PA, USA: a semiquantitative comparison of two matched neighborhood groups. *International Journal of Environmental Research and Public Health*, 10(1), 295-313.
[17] Simmons, L., & Scott, S. (2008). Organic agriculture and "safe" vegetables in Vietnam: Implications for agro-food system sustainability. Department of Geography, University of Waterloo.
Pulliat, G. (2013). Vulnérabilité alimentaire et trajectoires de sécurisation des moyens d'existence à Hanoi: une lecture des pratiques quotidiennes dans une métropole emergente. Département de Géographie, Université de Nanterre - Paris X.
[18] White, S., & Hamm, M. W. (2014). Urban Agriculture and a Planning Approach to Urban Food Systems. Center Report Series, No. 4. Global Center for Food Systems Innovation, Michigan State University.
[19] Smith, D. M., Cummins, S., Taylor, M., Dawson, J., Marshall, D., Sparks, L., & Anderson, A. S. (2009). Neighbourhood food environment and area deprivation: spatial accessibility to grocery stores selling fresh fruit and vegetables in urban and rural settings. *International Journal of Epidemiology*, 221, 1-8.
Pearce, J., Hiscock, R., Blakely, T., & Witten, K. (2008). The contextual effects of neighbourhood access to supermarkets and convenience stores on individual fruit and vegetable consumption. *Journal of Epidemiology and Community Health*, 62(3), 198-201.
[20] Pearce, J., Hiscock, R., Blakely, T., & Witten, K. (2008). The contextual effects of neighbourhood access to supermarkets and convenience stores on individual fruit and vegetable consumption. *Journal of Epidemiology and Community Health*, 62(3), 198-201.
[21] Pinstrup-Andersen, P. (2009). Food security: definition and measurement. *Food security*, 1(1), 5-7.
[22] Geertman, S. (2010a). Fresh markets, a way of life and public health under threat;
experiences in Europe and Asia and action for Hanoi. HealthBridge Livable Cities Program.
Geertman, S. (2010b). Urban development trends in Hanoi & impact on ways of life, public health and happiness. Livability from a Health Perspective. *Vietnamese Urban Planning Journal* (Tap Chi Xay Dung).
[23] Yasmeen, G. (2000). Feeding Asian cities. In Proceedings of the Regional Seminar, Bangkok, Thailand. FAO.

White, S., & Hamm, M. W. (2014). Urban Agriculture and a Planning Approach to Urban Food Systems. Center Report Series, No. 4. Global Center for Food Systems Innovation, Michigan State University.
[24] Smith, D. W. (1998). Urban food systems and the poor in developing countries. *Transactions of the Institute of British Geographers*, 23(2), 207-219.
Pothukuchi, K., & Kaufman, J. L. (2000). The food system: A stranger to the planning field. *Journal of the American Planning Association*, 66(2), 113-124.
American Planning Association. (2007). APA Policy Guide on Community and Regional Food Planning.
Cohen, M. J., & Garrett, J. L. (2010). The food price crisis and urban food (in) security. *Environment and Urbanization*, 22(2), 467-482.
[25] Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values*, 16(2), 213-224.
Pothukuchi, K., & Kaufman, J. L. (2000). The food system: A stranger to the planning field. *Journal of the American Planning Association*, 66(2), 113-124.
Pothukuchi, K. (2009). Community and regional food planning: Building institutional support in the United States. *International Planning Studies*, 14(4), 349-367.
Dubbeling, M. (2013). Cityfood: linking cities on urban agriculture and urban food systems. ICLEI and the RUAF Foundation.
[26] Figure adapted from bcfoodsystem.com.
[27] Drakakis-Smith, D. (1991). Urban food distribution in Asia and Africa. *Geographical Journal*, 51-61.
Dixon, J., Omwega, A. M., Friel, S., Burns, C., Donati, K., & Carlisle, R. (2007). The health equity dimensions of urban food systems. *Journal of Urban Health*, 84(1), 118-129.
[28] White, S., & Hamm, M. W. (2014). Urban Agriculture and a Planning Approach to Urban Food Systems. Center Report Series, No. 4. Global Center for Food Systems Innovation, Michigan State University.
Shields, L. (2013). Feeding Hanoi's urbanisation: What policies to guide the transformation of the urban food system. IUFN Working Paper.
[29] Jensen, R. W., & Peppard, D. (2007). Food-buying habits in Hanoi. *Sojourn: Journal of Social Issues in Southeast Asia*, 22(2), 230-254.
Maruyama, M., & Trung, L. V. (2007). Traditional bazaar or supermarkets: a probit analysis of affluent consumer perceptions in Hanoi. *International Review of Retail, Distribution and Consumer Research*, 17(3), 233-252.
Mergenthaler, M., Weinberger, K., & Qaim, M. (2009). The food system transformation in developing countries: A disaggregate demand analysis for fruits and vegetables in Vietnam. *Food Policy*, 34(5), 426-436.
Maruyama, M. (2010). The nature of informal food bazaars: Empirical results for Urban Hanoi, Vietnam. *Journal of Retailing and Consumer Services*, 17(1), 1-9.
[30] We chose these specific markets because of their significant size and dynamism, to ensure we would be able to meet enough market goers that would agree to participate in our study. The markets were chosen after the team visited, observed and mapped all street markets in the 4 central districts.
[31] Although we spent several hours in each of the 4 street markets, it was difficult to recruit participants, especially ones that traveled to the market by motorbike or bicycle, since most customers were in a rush to complete their purchases and continue on with their day. This might have affected recruitment as those customers that had time to talk to us often lived near the market, accessed it by foot, and spent more time there, using it as a social space.
[32] The survey contained 18 questions, 5 of which were open questions. To administer the survey, 3 team members worked together: one assistant would question the participant and write down brief answers, a second assistant would simultaneously translate the answers and the researcher would write down the details of more elaborate answers and information shared by participants without being prompted by a question.
[33] Jensen, R. W., & Peppard, D. (2007). Food-buying habits in Hanoi. *Sojourn: Journal of Social Issues in Southeast Asia*, 22(2), 230-

254.
Pulliat, G. (2013). Vulnérabilité alimentaire et trajectoires de sécurisation des moyens d'existence à Hanoi: une lecture des pratiques quotidiennes dans une métropole emergente. Département de Géographie, Université de Nanterre - Paris X.
[34] Since definitions of street markets and frog markets vary but their physical characteristics are often similar, we have combined the answers belonging to these two categories into one single "street market" category.
[35] Multiple choice question.
[36] This could be due to a bias in our data due to difficulties recruiting street market goers that traveled by motorbike or bicycle.
[37] For creating this indicator, we summarized all the information concerning the different types of food retailers that each participant shared with us. We then categorized their remarks based on how they related to the different components of food access and based on whether or not they were representing advantages or disadvantages. This data was gathered from surveyed participants' answers to open questions as well as other information they shared with us without being prompted by our survey questions. Therefore, not all surveyed participants contributed to this dataset. Furthermore, not all surveyed participants formulated an opinion for all types of retail. Most spoke to us about street markets and supermarkets which may indicate that participants were not necessarily informed about all the food retail options available to them or that these two types of retailers were perceived as being more legitimate options and worth being discussed.
[38] Each participant's remarks could pertain to one or more of these 4 categories of considerations.
[39] Participants could list any number of criteria as being important to them.
[40] Participants could list any number of retail types as being the best.
[41] Figuié, M., & Moustier, P. (2009). Market appeal in an emerging economy: Supermarkets and poor consumers in Vietnam. *Food Policy,* 34(2), 210-217.
[42] Participants could give any number of answers to this open question.
[43] Recognition that would have to change their habits, that they would have to switch retailers or rely more on supermarkets.
[44] Although not perfectly accurate, it provides a record that can be improved over time. We could see added the locations of fresh food stores that will open due to encouragement by the government's plan. In fact, we can imagine the dataset in its current initial form could inform choices with respect to where to best locate new fresh food stores.
[45] We are fairly confident to have located all street markets open in the morning, regardless of their size, but it is possible that we have not located some markets that take place on different streets only in the evening.
[46] Maruyama, M., & Trung, L. V. (2007). Supermarkets in Vietnam: Opportunities and obstacles. *Asian Economic Journal*, 21(1), 19-46.
[47] The list included: Citimart, Intimex, Fivimart, Uni Mart/Seika, LotteMart, Vinmart, Family Mart, Hapro Food. The datasets for these types of retail are only as accurate as the information published by each retail chain. Although more supermarkets and convenience stores exist in central Hanoi, we only picked the ones that had a significant offer of fresh foods.
[48] http://www.soff.asia/pages. Again, this data set is only as accurate as the map provided by VECO. Many other stores in central Hanoi claim to sell safe foods, however, the ones chosen by VECO are more likely to truly offer products of high quality and safety.
[49] Tuan, V. A. (2014). Special Assistance for Project Implementation (SAPI) for metro line 1 project in Ho Chi Minh City.
[50] All service areas were generated using the entire road network, but for area size and population calculations, they were trimmed to only show the residential areas served.
[51] For this analysis, we have located the centroid of each residential block and used them as origins for our path calculations. The resulting measurements are limited in their precision since they represent the average path a resident living in a block would take to travel to a food retailer. Calculations are more precise for smaller blocks (such as those in the the Hoàn Kiếm district) than for larger ones.
[52] Participants could give any number of answers to this open question.
[53] Mount, P. (2012). Growing local food: scale and local food systems governance. *Agriculture and Human Values*, 29(1), 107–12.

Evans, A. (2011). Governance for a resilient food system. Oxfam Discussion Papers.
MacRae, R. & Donahue, K. (2013). Municipal food policy entrepreneurs: a preliminary analysis of how Canadian cities and regional districts are involved in food system change.
Barling, D., Lang, T. & Caraher, M. (2002). Joined-up food policy? The trials of governance, public policy and the food system. *Social Policy & Administration*, 36(6), 556-574.
[54] Pothukuchi, K., & Kaufman, J. L. (1999). Placing the food system on the urban agenda: The role of municipal institutions in food systems planning. *Agriculture and Human Values*, 16(2), 213-224.
[55] Ali, M., Quan, N. T., & Nam, N. V. (2006). An analysis of food demand patterns in Hanoi: predicting the structural and qualitative changes. *Technical bulletin*, (35), 4.
[56] Greater Chicago Food Depository. (2015). Cook County Food Access Plan.
City of Greensboro. (2015). Greensboro Fresh Food Access Plan.
[57] Wilson, L., & Khanh Van P. T. (2005). Technical Assistance for Regional Planning in Vietnam. Final Report. World Bank.
[58] Dobson, R., Skinner, C., & Nicholson, J. (2009). Working in Warwick: including street traders in urban plans. Chapter 4 - From Street to Informal Shopping Concourse: Urban Design Solutions. School of Development Studies, University of KwaZulu-Natal. Wiego.
Centre for Urban Equity & Cardiff University. (2014). Inclusive Design for Street Vendors in India.
[59] Wertheim-Heck, S. C., Vellema, S., & Spaargaren, G. (2014). Constrained consumer practices and food safety concerns in Hanoi. *International Journal of Consumer Studies*, 38(4), 326-336.
[60] Hall, C. M., & Sharples, L. (2008). Food and wine festivals and events around the world: Development, management and markets. Routledge.
Endres, K. W. (2013). Traders, markets, and the state in Vietnam: Anthropological perspectives. *Austrian Journal of South-East Asian Studies*, 6(2), 356.
[61] Maruyama, M. (2011). Modern retailers in transition economies: The case of Vietnam. *Journal of Macromarketing*, 32(1), 31-51.
[62] Sze-ki, L. (2006). An ethnographic comparison of wet markets and supermarkets in Hong Kong. *The Hong Kong Anthropologist*, 2, 1-51.

ANNEXES

SURVEY QUESTIONS

1. Where do you live? (What is the closest street intersection?)

2. How many people does your household have ?

3. Where do you work?

4. Where do your children study / work?

5. How old are you?

6. Are you the main person purchasing food for your household? (Answer choices: yes / no)

7. If not, do you know where the other members of your household purchase food? (Answer choices: yes / no)

8. Can you please tell us from which type of retailer your household purchases fresh fruit, fresh vegetables, meat/seafood/fish, rice/noodles?

9. When you choose the place to buy each of these types of food items, which criteria is the most important for you ?

10. How often do you or other members in your household purchase each of these types of food items? (Answer choices: everyday, several times per week, once a week, once a month or less)

11. Which mode of transport do you or the member of your households who do food shopping use to shop for each of these types of food items?

12. In your opinion, which type of retail is the best place to shop for each of these types of food items?

13. Have you heard about the government's plan to remove / renovate street markets in Hanoi? (Answer choices: yes / no)

14. If yes, what do you think of this plan?

15. How do you think the food shopping habits of your household would be impacted if this street market would close?

16. Do you think convenience stores/mini-marts would be a satisfactory alternative to street markets if these would close down? Why?

17. In your opinion, should street markets like this one be improved or removed?

18. If you think street markets should be kept, what kind of improvements do you think are necessary for making them better?

DETAILED RESULTS FROM THE SPATIAL ANALYSIS

300m service areas in current retail environment	Area (m^2)	Population (people)
Street markets	13,668,579	502,999
Convenience stores	2,179,478	83,143
Safe food stores	4,493,065	145,158
Supermarkets	2,350,715	64,053
Official markets	3,005,120	109,782
All retailers excluding street markets	9,193,039	305,358
All retailers	17,601,673	609,775
Traditional retail (street markets and official markets)	14,762,243	537,232
Non-traditional retail (supermarkets, convenience stores, safe food stores)	7,463,262	243,210
Street markets only	8,408,634	304,417
Traditional retail only	10,120,074	365,773
Non-traditional retail only	2,821,093	71,750

300m service areas in predicted retail environment	Area (m^2)	Population (people)
Traditional retail	3,674,773	135,491
All retailers	9,566,456	317,300
Traditional retail only	3,643,043	134,201
Non-traditional retail only	5,923,413	183,099

Change in 300m service areas due to plan	Area (m^2)	Population (people)
All retailers - current	17,601,673	609,775
All retailers - predicted	9,566,456	317,300
Total change (%)	-46	-48

Redundancy in the food retail environment	Official markets	Convenience stores	Safe food stores	Supermarkets
Number of street market areas intersecting other retailers	17	15	29	17
Number of other retailers found in street market service areas	19	19	46	19
Total number of other retailers mapped	27	21	49	25
% total number of retailers found in street market service areas	70.4	90.5	93.9	76.0