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Obesity and dining out: An exploration of dietary trends in urban Malaysia

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Obesity and Dining Out:

An Exploration of Dietary Trends in Urban Malaysia

by

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Dedication

For my grandmother Lee Siu Eng: Your capacity to love and forgive humbles me. Your resourcefulness and strength amaze me. Thank you for the *mee sua* and memories.

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Abstract

Economic growth has spurred rapid urbanization in Malaysia and triggered changes in diet, lifestyle, and disease trends. National studies show that a third of Malaysia's population is overweight/obese while household expenditures on dining out grow. In metropolitan Kuala Lumpur (KL), residents navigate concepts of nutrition, body weight, and health as they dine out. Using the biocultural framework, this study examined links between body weight, diet, income, street food consumption, and nutritional knowledge through the perspectives of consumers and vendors. Altogether, 77 participants were recruited for this three-phase research. In the first phase, a survey was administered to 60 participants recruited at street food sites around KL. In the second phase, semi-structured interviews, anthropometry, and diet recalls were conducted on 13 participants. Finally, semi-structured interviews and observations were carried out on four street food vendors at their places of business.

Though the findings in this research did not show statistical relationships between body weight status, income, and dining out in KL, telling diet and lifestyle trends emerged. Work mediates the lives of participants, often dictating their diet and capacity to engage in physical activity. Though most female participants work, they still bear the expectations of meal provisioning. These factors encourage the consumption of food away from home, and the commercialization and gentrification of the local street food industry. When viewed critically through the biocultural framework, these observations support the idea that trade liberalization and domestic economic policies have induced demographic changes, household transformations, and dietary adaptations among urban dwellers in KL.

Chapter 1: Introduction

Economic growth spurred rapid urbanization in Malaysia in the past few decades, triggering shifts in food consumption, lifestyle, and disease trends. National health surveys show body composition and overall disease burden have changed within a relatively short time. Over- and under-nutrition coexist in urban areas and the prevalence of obesity and noncommunicable diseases such as cardiovascular disease and diabetes have risen dramatically. As a middle-income nation with a population of 28 million, Malaysia continues to grapple with the dual burden of disease (WHO 2011). While Malaysian health officials struggle with lowering infectious disease and malnutrition rates, they also contend with the rising prevalence of obesity and its associated risks (Foong 2004; Khor 2012; Rampal et al. 2007). One third of Malaysia's adult population is overweight; of those, 27.2 percent are considered obese (IPH 2011). National health surveys showed that the prevalence of obesity among Malaysians over 18 years old tripled between 1996 and 2006; the proportion of obese and overweight Malaysian adults increased by 10 percent and 12.5 percent, respectively (Khor 2012; Rampal et al. 2007). Noncommunicable diseases account for approximately 67 percent of the national mortality rate in 2010 (WHO 2011).

Concurrently, population-based studies using national health and household income expenditure surveys reveal interesting trends. These studies indicate a link between obesity rates and changing food consumption patterns, particularly in the consumption of food away from home (Ishida et al. 2003; Lee and Tan 2007; Tan 2010). Researchers suggest that Malaysia's economic transition from agriculture to industry since the 1950s has prompted rural-to-urban

migrations, encouraged urbanization, raised the income of urban dwellers, and fueled the growth of the food industry (Jali et al. 2006; Lee and Tan 2007; Tan 2010). These trends appear to affect dietary patterns – the amount of household expenditure of food away from home has increased from 4.6 percent to 8.7 percent between 1973 to 2005 (Tan 2010). The Malaysian food service industry has grown by 23 percent between 2001 and 2006 (Tan 2010). Many of these studies rely on secondary data and are mostly quantitative; few collected primary data on where people are dining and why, and whether the food service industry growth includes street food. Even fewer studies explore street food as an institution or space that embodies the economic and sociocultural changes of the nation, even as it becomes increasingly reified and promoted as a tourist and gastronomic attraction. Lastly, the Malaysian government recently updated its nutritional guidelines (Tee 2011) but little is known about whether Malaysians are aware of these dietary recommendations.

Purpose of research project

Given the gap in literature, this thesis explores whether Malaysia's growing girth can be associated with dining out. The goal of this study is to investigate the link between the weight status of urban Malaysians and economic growth. Specifically, this exploratory study will examine whether there is a relationship between the prevalence of overweight/obesity, income, and dining out, particularly street food consumption, in Malaysia's capital Kuala Lumpur (KL). This thesis explores these relationships from the perspectives of street food consumers and vendors using a mixed-methods approach that includes anthropometry, surveys, food recalls, observation, and interviews. The objectives of this study are to:

Consumers:

1. Explore whether there is an association between street food consumption, body weight status, and income level among adult urban Malaysians.

    1(a). Hypothesis: There is a relationship between the frequency of street food consumption, adult body weight status, and income level.

2. Investigate and identify the motivations behind adult food consumption and lifestyle patterns, and consumer knowledge of Malaysia's updated dietary guidelines.

Vendors:

1. Examine the vendors' knowledge and experience of dining trends, and whether market demands and national dietary guidelines have affected their businesses.
2. Measure the amount of food sold and number of customers within a specific time.

Findings from this thesis will help inform the design of future studies investigating the connections between economic growth and body weight status among Malaysians; examine their dietary choices and nutritional knowledge; and contribute to food and health policy discussions. Outcomes from the latter could be used in health campaigns and interventions.

Summary of chapters

To understand economic changes and dietary patterns in Malaysians, this thesis will begin by reviewing relevant literature on the 'obesity' phenomenon from both the public health and anthropological perspectives. Chapter 2 explores how obesity is framed in the public health and medical academic circles, and introduces the concept of nutrition transition. This chapter also includes an examination of these claims through anthropological lenses using the critical biocultural framework. This will be followed by a description of the setting and Malaysia's economic and political state, and nutrition policies.

Chapter 3 contains an account of the research methods used in gathering data during five months of fieldwork in Malaysia. This chapter provides a description of the research processes and analyses, and how I conducted a survey, semi-structured interviews, food recalls, anthropometry and observation of street food consumers and vendors (N=77). Findings from these activities will be presented in Chapter 4. This chapter includes the results of quantitative data collected through the survey, anthropometry and 24-hour dietary recall, and qualitative data derived from semi-structured interviews and on-site observations. The findings will be summarized and the implications discussed in Chapter 5. In this chapter, I will also list the limitations of the study and conclude with several recommendations for future scholarship.

Chapter 2: Literature Review

Obesity poses an intriguing phenomenon from both anthropological and public health standpoints. From a public health perspective, obesity has been framed in urgent medical terms due to research that noted its rapid rise, its link to noncommunicable diseases and its effect on population health, and economic security. Anthropologists, on the other hand, have studied obesity from a biocultural framework, by placing and describing it in evolutionary biology and cultural terms. Both disciplines observe the role of globalization in the rise of obesity. Generally defined as the expansion of social, economic, and technological goods, services, and ideas across territorial boundaries (Himmelgreen et al. 2014; Lee and Yach 2006), globalization has contributed to diet and lifestyle changes. Scholars note that these changes, including the trade, mass production, and decreasing diversity of food staples, effect nutrition transition (Armalegos 2010; Gortmaker et al. 2011; Swinburn et al. 2011; Ulijaszek and Lofink 2006). Though it is crucial to understand the health risks that come with excess weight, it is also useful to examine the medicalized discourse of obesity, the globalization of the food trade, and the nutrition transition model.

Public health perspective

To public health and medical workers, the prevalence of obesity worldwide looks alarming numerically. Health scholars report that more than 1 billion adults in developed and developing countries are overweight and or obese (Khor 2012; Swinburn et al. 2011; Wang et al. 2011). Experts warn that this trend carries serious health and economic repercussions, pointing to studies that show that those categorized as overweight/obese stand a higher chance of developing

cardiovascular diseases, diabetes, and high blood pressure (Cheong et al. 2012; Hubert et al. 1983; WHO 2004). Overweight/obesity can pose a major threat to the financial stability of nations: treating obesity-related disorders can cost between 0.7 and 2.8 percent of a country's total health care expenditure (Wang et al. 2011).

Population-based research shows that structural, environmental, and individual factors are associated with obesity. Researchers posit that structural factors, including economic growth, urbanization, changes in global food systems, and government policies, can affect the prevalence of obesity (French et al. 2001; Pingali 2007; Solomons and Gross 1995; Swinburn et al. 2011; Tan 2010). Exposure to obesogenic environments, including access to fast food and poor urban planning, also play a role (Swinburn et al. 2011). Genes and epigenetic processes, income level, food preferences, sedentism, and individual knowledge of nutrition can also influence body composition (Choi et al. 2011; Gortmaker et al. 2011; Pingali 2007; Popkin and Gordon-Larsen 2004; Swinburn et al. 2011; Tan 2010; Tsou and Liu 2006).

The nutrition transition model is often used to describe large-scale changes in diet, lifestyle habits, and body composition (Popkin 2001; Popkin and Gordon-Larsen 2004). The model posits that the increased consumption of food high in fat and carbohydrates, usually called "Western" diet, and sedentary lifestyles have contributed to the rising prevalence of obesity around the world. Implicit in the model is the assumption of an increasingly globalized food market and production system: transnational movement of food occurs in tandem with expanding waistlines. Industrialized productions of oils, sugar, and meat created a vibrant market for exports, particularly to developing countries (MacLeod 1988; Popkin and Gordon-Larsen 2004). In an analysis of multiple studies, the authors also note that obesity rates are also increasing in low to middle-income countries, and that "there is enormous heterogeneity in the patterns,

trends, and timing of obesity among developing countries" (Popkin and Gordon-Larsen 2004:56). However, anthropologists have criticized the model as being too simplistic; their critiques will be addressed later in the chapter.

Research on obesity and nutrition transition conducted in Asia reveal interesting trends. The World Health Organization, or WHO, (2011) reports that global obesity rates have doubled since 1980, and that many developing nations, especially in Asia, are facing a dual burden of disease. Particularly, many South East Asian nations still grapple with infectious diseases and food insecurity, while facing rising prevalence of noncommunicable diseases, malnutrition (under- and over-nutrition) and obesity. In Vietnam, health officials reported the emergence of nutrition transition in Ho Chi Minh City, where for the first time the number of those overweight and obese were equivalent to those who are not (Cuong et al. 2006). In another telling survey of 3,620 school children in KL, researchers found that obesity and under-nutrition can occur simultaneously – 7.3 percent of the students were overweight and 14.8 percent were underweight (Foong 2004). Subsequent studies connected food insecurity and obesity: a sampling of 200 Malay and Indian households in rural Malaysia reveals that more than half of the food insecure women were overweight/obese; they also stood a higher chance of developing at-risk waist circumference, a measure of body fat distribution (Shariff and Khor 2005). These women's weight status appeared to be correlated with factors such as economic independence, larger household sizes, and the lack of access to a more varied diet.

Anthropological perspective: the biocultural framework

Anthropology is well-poised to offer theoretical frameworks that can synthesize the studies listed earlier. The discipline's emphasis on temporal and spatial context allows anthropologists to investigate and describe how human body composition, health status, culture,

and the environment intersect in biocultural terms (Goodman and Leatherman 2001). According to Brewis (2011:9), the biocultural framework draws from medical anthropology and human biology, and "attempts to understand the iterative and complex interactions between human culture, ecology, biology, and history (including our evolutionary history)." Because of the framework's comprehensive expanse, it is ideal for studies of how diet and nutrition affect humans (Armalegos 2010). Moreover, the critical component of the framework, which borrows from critical medical anthropology, lets scholars consider the political economy, structural inequalities, and human agency in health issues (Goodman and Leatherman 2001; Himmelgreen et al. 2014; Leatherman and Goodman 2011). This provides researchers an avenue for examining how health knowledge is produced, learned, shared, and acted on (Dressler 2005), and how these processes may differ along class, ethnic, and gender lines. In short, the critical component of the biocultural framework allows for a more nuanced yet comprehensive understanding of obesity and food consumption, and encourages critiques of medicalized messages about health and human bodies.

The risk factors for obesity and metabolic disorders such as Type 2 diabetes are fertile fields for research and theoretical advancement. Researchers believe the heightened ability to store fat during certain seasons is an adaptive feature common in our evolutionary history (Ulijaszek and Lofink 2006); they offer several hypotheses on how this mechanism influences body weight and metabolic functions. The thrifty genotype hypothesis posits that humans developed genetic traits to store energy more efficiently and minimize renal glucose loss during seasonal shortages of food (Brewis 2011; Neel 1962; Neel et al. 1998; Ulijaszek and Lofink 2006). The contemporary industrialization of food production, increased consumption of refined and high-fat food, and sedentary lifestyles all combine to produce adverse effects on human

metabolic functioning (Benyshek and Watson 2006; Neel 1962; Neel et al. 1998). As research progresses, some scholars propose the thrifty phenotype hypothesis, which centers on how in-utero exposures to maternal food insecurity, for example, may affect the changes in and passing on of metabolic-regulating phenotypic information (Benyshek et al. 2001; Benyshek and Watson 2006; Brewis 2011; Hales and Barker 2001; Wells 2007). Subsequent investigations yield support for the concept of fetal origins of adult disease, or how fetal development and response to environmental factors shape adult disease risk. These investigations examine the developmental origins of health and disease paradigms, a multi-disciplinary field examining how pre- and post-natal factors affect future health outcomes (Kuzawa and Quinn 2009; Wells 2007). Consistent with the biocultural framework, such research increasingly supports the idea that human body composition and health reflect ecological, social and economic realities.

Anthropologists have also questioned how obesity is defined and measured. Brewis (2011:11) defines obesity as excess fat storage in the body; in biomedical terms, obesity usually becomes a concern when the excess fat affects health negatively. In most population-based health studies, obesity is measured and defined in Body Mass Index, or BMI. This measurement expresses a person's proportion of weight and height (weight/height^2), but does not capture the distribution of fat in an individual nor signify ill health (Brewis 2011; Gibson 2005; Moffat 2010). However, there are other anthropometric methods that could more accurately gauge the distribution of adiposity in one's body, such as waist, hip, and skinfold measurements (Gibson 2005). Though studies on obesity and chronic diseases such as diabetes and cardiovascular disease have resulted in positive associations (Cheong et al. 2012; Wang et al. 2011; WHO 2004), it is difficult to establish causal relationships and ascertain negative outcomes (Brewis 2011).

However, recent discourse on obesity has often taken on a highly medicalized and urgent tone. In a series on obesity in the Lancet published in 2011, researchers sound the alarm on an impending global overweight ‘epidemic’ (Dietz 2011; Gortmaker et al. 2011). The American Medical Association classifies obesity a disease, a calculated move that seeks to increase insurance reimbursements for weight-associated treatments (Reinberg 2013). Many anthropologists critique this ‘spin' from critical, feminist, and political economy perspectives (Julier 2013). Some characterize the obesity epidemic as a social construction that induces 'moral panic,' which redirects focus from structural problems related to poverty and unequal power distribution, to individual responsibility (Brewis 2011; Julier 2013; Moffat 2010). The characterization of obesity as a health concern also feeds the medical, pharmaceutical, public health, food, and weight loss industries, these authors argue. Obesity becomes a proxy platform for discussions of race, gender, and class without using these specific terms; the moral panic associated with the phenomenon excludes discussion of labor and wages, and access to healthful food and environment (Julier 2013). The medicalization of diet and weight status assumes that all bodies are the same, and the concept of ‘normalcy’ carries moral expectations and notions of ideal citizenship (Julier 2013; Lock and Nguyen 2010). However, an established body of research has repeatedly documented the link between obesity and adverse health outcomes such as diabetes and cardiovascular disease (Adair et al. 2014; Cheong et al. 2012; Hubert et al. 1983; Wen 2009; WHO 2004); disregarding these findings disrespects the people experiencing these realities (McCullough and Hardin 2013). One thing is clear: the tension between disease risk and the social construction of obesity produces a pervasive and ubiquitous anxiety about what we eat today, “as to be in effect invisible, so thoroughly do many of us now take for granted …the link between diet and our biological futures" (Lock and Nguyen 2010:163).

Globalization of food and the distribution of obesity risk

In much of the discourse on obesity, the globalization of food is often identified as a major contributor to girth (Popkin 2001; Swinburn et al. 2011). Food, in these discussions, is often framed as mass-produced commodities that proliferate through transnational corporations and government food policies (Phillips 2006). The ideas embedded in food globalization – including ideas of desirable cuisine and body weight – are often viewed as a contemporary phenomenon (Phillips 2006; Wilk 2006). Anthropologists who study food argue otherwise (Anderson 2007; Wilk 2006), claiming that the mobility of humans prior to industrialization has influenced global foodways. The spread of colonialism, international trade, and technology boosted the volume and variety of food available throughout the world (Wilk 2006). However, this is not to say that food consumption patterns around the world are becoming homogenized, or that the global food production and distribution system does not carry negative health consequences. People can reject, 'creolize' or appropriate food items and dishes (Himmelgreen et al. 2011; Wilk 2006). In certain locales, the availability and diversification of food do not decrease food insecurity or provide healthful choices; rather, it is the degree or quality of people's participation in the market economy that influences diet, body weight, and diseases (Himmelgreen et al. 2006; Piperata et al. 2011).

Recent studies of the globalization of food focus on nutrition transitions around the world, and how they trigger changes in the body composition of entire populations. What exactly are the mechanisms, processes, or factors that link body composition and food consumption? Researchers conclude that trade liberalization, participation in the market economy, and wide-spread consumption of mass-produced food, are responsible for such changes in Asia (Errington et al. 2013; Himmelgreen et al. 2014; Pingali 2007; Yasmeen 2000). Wage increases, the rising

ranks of women in the workforce, and the lack of time to prepare food have altered household structures and dietary patterns of many Asian urbanites. The movement toward a globalized food system appears to foster a taste and place value on processed food, meat, dairy products, and processed beverages. In China, studies using measures such as waist circumference and BMI estimate that about 300 million people (Shen et al. 2012) are overweight and obese; these observations show that the prevalence has increased dramatically within a short time and are expected to climb further (Armalegos 2010; Gordon-Larsen et al. 2014; Shen et al. 2012; Xi et al. 2012; Zhang et al. 2008). Additional research reveals that economic growth, urbanization, and the concomitant rise in income, are associated with an increased consumption of fat and protein (Gordon-Larsen et al. 2014; Guo et al. 2000; Zhang et al. 2008), and dietary changes such as snacking between meals (Wang et al. 2008; Wang et al. 2012) and movement away from 'traditional' Chinese diet (Dearth-Wesley et al. 2011; Zhang et al. 2008).

Perhaps one of the challenges in capturing complexities of dietary changes is the use of statistics and the design of large-scale epidemiological studies that attempt to profile certain populations (Brewis 2011; Popkin et al. 2012). As Brewis observes, the studies used in describing the prevalence of obesity do a “relatively poor job of moving beyond individual risk factors to the larger cumulative social, cultural, and ecological processes that explain the more proximate variation in risk” (2011:81). Many epidemiological examinations of obesity, particularly those using the nutrition transition model, view obesity and risk factors as a one-directional phenomenon. These studies do not elucidate the underlying processes that give the obesity phenomenon form, link it back to food consumption habits, nor consider the “feedback loops among the proximate, distal, biological, environmental, and cultural drivers of what people eat and how they move as they shape risk” (2011:83).

A growing body of anthropological literature shows that dietary and lifestyle changes are more nuanced and contextual than the nutrition transition model proposes (Himmelgreen et al. 2014; Himmelgreen et al. 2011; Neill 2007; Piperata et al. 2011; Ulijaszek and Lofink 2006). In Himmelgreen, et al.'s (2014) review of literature and case studies, the authors find evidence supporting the major tenets of nutrition transition: the industrialized food system, globalized trade and tourism, and delocalized diet have contributed to changes in population body composition. However, these authors along with others also discover that the rate, process, and result of the changes may vary. In Brazil, Piperata, et al.'s (2011) longitudinal study on the dietary patterns of rural Amazonians show that regardless of wages and government assistance, inhabitants still experience under-nutrition and limited dietary diversity. Despite these shortages, the rural inhabitants' BMI have not decreased significantly. In India, the consumption of regional diets is still linked with high body weight status (Daniel et al. 2011); and a switch to a "Western" diet, that includes salads, may not be detrimental to health especially among migrant populations (Delisle 2010; Himmelgreen et al. 2014). Popkin, who coined the phrase "nutrition transition" in the 1990s, recognizes the difficulty in generalizing global dietary and body weight trends, particularly in low- to middle-income countries where both food insecurity and obesity exists (Popkin 2011; Popkin et al. 2012). In recent writings, the author acknowledges that dietary and weight status changes differ according to factors such as setting, gender, and socioeconomic status.

Setting

Malaysia occupies two landmasses in South East Asia. Peninsular or west Malaysia, lies south of Thailand and north of Singapore, and is flanked in the west and southwest by the Indonesian archipelago (Figure 2.1). East Malaysia is located on the island of Borneo, and shares

borders with the nation of Brunei and the Indonesian state of Kalimantan. Malaysia's climate is tropical due to its proximity to the Equator; weather in Malaysia is mostly hot and humid with two seasonal monsoons. Malaysia's capital, KL, is on peninsular Malaysia; it was a former tin mining town that attracted numerous Chinese settlers.

Figure 2.1. *Map of Malaysia.*

Brief history

Prior to its colonization, multiple sultanates and kingdoms ruled Malaya. These monarchies cultivated trading and diplomatic relations with regional monarchies in Siam, Java, Sumatra, China, and India. Due to its location, history, and the spread of religions such as Islam, Hinduism, and Buddhism, Malaysia has seen several waves of immigrants from various places. This is evident in Malaysia's ethnic and religious diversity, and cuisine (Anderson 2007). Malaysia's favorable maritime location in South East Asia, nestled between the Straits of Malacca and the South China Sea, made it an ideal shipping and trading post for European colonial governments. Various parts of Malaya had been occupied by the Portuguese and the Dutch in the 16th to 19th century, and later by the British from the 19th to 20th century. During

World War II, the Japanese wrested Malaya from the British between 1941 and 1945. In 1957, Malaya declared independence from the British, and along with Singapore, Sabah, and Sarawak, formed the Federation of Malaysia in 1963. Currently, Malaysia comprises of 13 states and two federal territories.

Political/governing structure

In addition to being a federation, Malaysia is also "constitutional, monarchial, and parliamentary" (Lim 2002). Malaysia is a constitutional monarchy – the federal constitution delegated most of the country's administrative powers to the government but confers ceremonial leadership to a Malay king called *Yang di-Pertuan Agong*, who is elected every five years by the hereditary rulers/sultans of nine peninsular Malaysian states (Cooper 2009; Lim 2002). The four states without such rulers have head of states instead, called *Yang di-Pertua Negeri*. These rulers form a council called the Conference of Rulers. For states with no hereditary rulers, a 'governor' is appointed by the *Yang Di-Pertuan Agong*, in consultation with the prime minister and government representatives. Malaysia also has a bicameral parliament: the Senate (*Dewan Negara*) and the House of Representatives (*Dewan Rakyat*). Members of the former are mostly appointed by the various rulers and governors of the states; members of the latter are popularly elected for five-year terms. Each state has a unicameral legislature.

The prime minister runs the government and appoints officials to the Cabinet. The prime minister is usually a representative of the ruling political party; his cabinet is typically populated by members of the house (Cooper 2009). Therefore, many of these officials have overlapping roles. Currently, two political coalitions fight to dominate the political landscape of Malaysia. The *Barisan Nasional* (BN) coalition, which comprises the United Malays National Organisation (UMNO), the Malaysian Chinese Association (MCA), and the Malaysian Indian Congress

(MIC), has ruled the country since its independence. The *Pakatan Rakyat* (PR) coalition, which consists of *Parti Keadilan Rakyat* (PKR), Democratic Action Party (DAP), and *Parti Islam Se-Malaysia* (PAS), was formed in 2008.

The development of an opposition coalition is shaping Malaysia's political landscape into a two-party system. In the 2008 elections, BN suffered historical losses by losing 76 parliamentary seats out of 222, failing to retain its two-third super-majority status (Pakiam 2010). BN also lost its hold on five state governments that year. These losses prompted policy changes in recent years such as the slashing of food and fuel subsidies and the handing out of cash to the poor. On May 5, 2013, 80 percent of Malaysia's 12.6 million registered voters turned out in the general elections (Sadiq 2013). In a close contest, the ruling coalition won 133 seats in parliament while the opposition coalition won 89 seats (Chooi 2013). Observers note that this election highlighted the urban-rural divide and ethnic tension in the country. Post-election analysis reveals that urban voters of multiple ethnicities leaned toward the opposition coalition, while most Malays and indigenous people in the rural areas, including those in Malaysian Borneo, voted for the ruling coalition (Chooi 2013; Sadiq 2013).

Demographics

Since its independence in 1957, Malaysia has experienced economic and population growth. Malaysia’s population has increased from 23.3 million people to 28.3 million between 2000 and 2010, according to the latest census data (PHCM 2011). However, the population growth rate has slowed in the last decade compared to 1991-2000, from 2.6 percent to 2 percent. About 92 percent of those who reside in Malaysia are citizens. Among the citizens, 63 percent are ethnic Malays, about 25 percent are of Chinese descent, and 7.3 percent are of Indian descent; indigenous groups consist of less than 1 percent of Malaysia’s population. The

migration of workers from other South and South East Asian nations contributes to a growing number of non-citizens. Population growth has intensified urbanization as well: the proportion of urban populations in the country grew from 62 percent in 2000 to 71 percent in 2010. Kuala Lumpur, the capital, is completely urbanized, with 1.67 million people. Ethnic distinction is an important factor in Malaysia and is usually tied to religious affiliation (Cooper 2009). Those officially classified as Malays or indigenous are called *bumiputera*, and this label confers citizenship and other privileges under the nation's economic policies. The Chinese and Indians are still generally referred to as “immigrant races” (Lim 2002).

Economy and income

While Malaysian government officials touted the country's economic growth, they downplayed a troubling trend of disparities in national household income. The country's GDP was recorded at $287.9 billion in 2011, a slight increase from $237.8 billion in 2010. Between 2000 and 2010, World Bank (2012) data showed that the country's GDP went up from $93.8 billion in 2000. In his annual budget speech, Prime Minister Najib Tun Abdul Razak declared that the country averted an economic slowdown in the past few years due to the global financial crisis by instituting policies that supported a "robust" domestic market (Najib 2011). However, those policies were not explained. In a similar speech in 2013, Najib projected a seemingly bullish year for the country, and predicted the nation's GDP to exceed $1 trillion (Najib 2012). The growth would be fueled by private investment and domestic consumption activities.

However, data released by the government's statistic department on national household income shows that any economic activity or progress does not appear to be equally distributed. The 2009 Malaysian Household Income and Basic Amenities Survey reveals a disparity in household income among rural and urban citizens, males and females, and among the top 20

percent and the lowest 20 percent of the population. This disparity could skew the average household income in the nation, particularly as the mean income in urban areas is almost twice as much as those residing in rural areas. Mean household income in Malaysia in 2009 is RM4,025 a month (about US$1,322, with the exchange rate at US$1 = RM3), an increase from RM3,686 in 2007 (Haji Abdul Rahman 2012). Median income, however, is RM2,841. In Kuala Lumpur, the average income is RM5,488 while the median is RM4,409 (Table 2.1). Income for urban and rural males are RM4,932 and RM2,670, respectively; females in both locations earn roughly RM1,000 less than males. The disparity continues within urban cores, where the highest income recorded is RM11,312 while the lowest is RM 1,805. Similar income patterns can be observed when comparing segments of the population divided by income levels.

Table 2.1.
Mean and median income for Malaysia citizens, 2009.

Pop.	Mean (RM)	Median RM)
Top 20 %	10,208	8,220
Mid 40 %	3,770	3,640
Low 20 %	1,529	1,524

Poverty levels in Malaysia appear to have declined, but the disparity seen earlier in income is reflected in the nation's poverty levels. Poverty in Malaysia is determined by household income and defined by regions and costs of living as well as household composition and size (A Hatta and Ali 2013): the poverty line is determined by "those living in poverty," and citizens who make half of that amount is considered "hardcore/extreme poverty" (2013:48). For Peninsular Malaysia, those considered living at the poverty line earn an average of RM763 (US$254) per household. Again, the disparity among urban and rural citizens is reflected in national poverty tabulations. The incidence of poverty is 1.7 and 8.5 percent for urban and rural residents respectively; the incidence of "hardcore" poverty is 0.2 percent for urban residents and

1.8 percent for rural residents (Haji Abdul Rahman 2012). However, the overall incidence of poverty has been reduced from 16.5 in 1990 to 3.8 in 2009 (Haji Abdul Rahman 2012).

It is unclear whether policies drawn to address poverty contributed to this reduction. Malaysia's United Nation's Human Development Report (2011) did not include Multidimensional Poverty Index and the Inequality-adjusted Human Development Index figures, making it difficult to assess whether the country's relatively high Human Development Index of 0.76 is accurate. Recently, government officials implemented a nation minimum wage policy, where workers in the private sector should get a minimum of RM800 a month (Star 2013). The continuation of a public assistance program, called *Bantuan Rakyat 1Malaysia* (BR1M), would also assist households earning less than RM3,000. The assistance would be extended to adults over the age of 21 who earns less than RM2,000 (Najib 2012). The cash value of such assistance amounts to RM250, or roughly US$83. Whether this would help alleviate existing poverty in Kuala Lumpur, or lower the income gap between rural and urban citizens, remains to be seen.

Food/fuel policies and politics

Though Malaysia has seen steady economic growth since its independence, it also appears to be dealing with a slowing rate of growth. Several factors have affected the rate, such as the global recession linked to the slowing economies in the United States and Europe, the growing government deficit due to the cost of domestic food and fuel subsidies, and responses to rises in global food prices in 2008 (IMF 2009; 2014; Narayanan 2007; Sivalingam 2011). On the surface, the country's increased GDP in the past decade seems to be holding strong. Further analysis reveals, however, that Malaysia's deficit is climbing as well and that government officials have struggled with balancing its budget for more than a decade. The Malaysian fiscal deficit was about 5.5 percent of its GDP in 2000, declined to 2.7 percent in 2007, and went up

again to 7 percent in 2009 (Sivalingam 2011). A reason for the looming deficit can be attributed to the country's spending on food and fuel subsidies such as petrol, rice, cooking oil and gas, flour, and sugar: the Malaysian government spent RM73 billion, about US $23 billion, on such subsidies (Loh 2011; Pakiam 2010). The Malaysian government picks up between 8 to 45 percent of the market prices of these items (Loh 2011).

This has important consequences in the country's food policies and politics. Malaysia's Price Control Act of 1946, the Control of Supplies Act of 1961, and agricultural policies (Narayanan 2007) have provided price controls and allowed food and fuel subsidies for many years as a buffer against food insecurity and a volatile global commodities market. Attempts to curb such subsidies are political hazards, particularly in election years. In an analysis of the 2008 elections, pundits and analysts posited that losses suffered by BN, the dominant political coalition, was due in part to the scaling back of food and fuel subsidies during the global food crisis in 2007-08 (Fuller 2008). That year, the government reduced its petrol subsidy, causing a 28-year high spike in fuel prices (Pakiam 2010). The prime minister at the time, Abdullah Ahmad Badawi, stepped down from his office as a result (Fuller 2008). However, strategies to lower subsidies were put in place in 2010, and the government rolled out a five-year plan to decrease food subsidies gradually. Kicking off the plan was the slash in sugar subsidy – prices shot up from RM0.25 ($0.08) to RM1.90 ($0.63) per kilogram.

The effort to curb food and fuel subsidies continues into 2014. In a move that seemingly appealed to populist sentiments, Prime Minister Najib promised to continue subsidies on cooking oil as part of its public assistance program (Najib 2012). However, citing the rising rates of diabetes, sugar remained on the chopping block. In 2012, Najib vowed to further cut sugar subsidies by RM0.20 per kilogram and urged the food industry to scale down the use of sugar in

food preparation. At the time, sugar was still subsidized at RM0.34 per kilogram, costing the government RM278 million (Najib 2012). In 2014, Malaysian government officials abolished the sugar subsidies (Star 2013).

Prevalence of overweight/obesity and associated risks

News reports indicate that Malaysia has the highest prevalence of obesity in South East Asia, and ranked the sixth in the region (Ng et al. 2011). Such articles reinforce the perception that the rising rates of overweight and obesity is becoming an important health issue in Malaysia. In addition to such news reports, research into obesity in the national academic circles has intensified and widened in scope. A meta-analysis of 44 studies on the prevalence of obesity and overweight among Malaysians between 1996 and 2009 found that overweight and obesity prevalence are highest among adults between the ages of 40 to 59; Indians and Malays; and among women (Khambalia and Seen 2010). Gender, education level, family history, smoking, and ethnicity feature highly in the risk of developing obesity (Tan et al. 2011); females, Malays, non-smokers, those who have lower education levels and a history of family illness have a higher likelihood of being obese. In rural areas, researchers found that overweight/obesity and food insecurity can coexist. In one study, half of the 200 Malay and Indian women measured and interviewed are overweight and obese, and 58 percent of them reported degrees of food insecurity (Shariff and Khor 2005). Overweight/obese women tend to be housewives and have more children and larger households, and spend less time on economic activities.

The prevalence of metabolic syndrome also appears to be on the rise. Metabolic syndrome is described as a cluster of metabolic "abnormalities" that include abdominal obesity, insulin resistance, dyslipidemia, hypertension, and glucose intolerance (Tan et al. 2011) and is often touted as the predictor of Type 2 diabetes and cardiovascular disease development. In a

study that surveyed 3,040 respondents (2,366 responses were analyzed), a third of the respondents appear to display metabolic syndrome (Tan et al. 2011). The highest prevalence of metabolic syndrome tend to occur among Malaysian Indians, compared to the Malays and Chinese (Tan et al. 2011); Indians are less likely to exercise and eat fewer fruits and vegetables. In another study investigating Type 2 diabetes and cardiovascular disease risks among adult Malaysians, a fifth of the 3,879 sample population exhibit impaired glucose levels (Mustafa 2011). Again, women tend to outnumber men in the prevalence of impaired glucose levels.

The results of this study seem to corroborate with the findings of another research investigating the link between Vitamin D deficiency and metabolic syndrome among adults in KL. Researchers find that 38.4 percent of the participants exhibited metabolic syndrome (Moy and Bulgiba 2011), and that 41 and 87 percent of the males and females, respectively, have low levels of Vitamin D (even though females make up 58 percent of the 380 sample population). When adjusted for age and gender, those who have lower levels of Vitamin D had higher odds of exhibiting metabolic syndrome. The findings of this study yield an important insight to the lifestyles of KL residents – they spend a lot of time indoors.

National nutrition campaigns

Realizing the importance of dietary and lifestyle habits in shaping health outcomes, Malaysian government officials implemented a health surveillance system and policies to decrease disease risks. In 1986, Malaysian Ministry of Health (MOH) officials started tracking health patterns in the country. Then, officials had hoped to collect national health data every 10 years, and called the product the National Health and Morbidity Survey. These surveys, modeled after the Centers for Disease Control's National Health and Nutrition Examination Survey, are conducted on a representative population based on census sampling strategies. At the time,

Malaysia was grappling with still-high incidences of hunger and malnutrition, and the rising prevalence in noncommunicable diseases in the country. In 1991, MOH officials launched a health education campaign called the Healthy Lifestyle Campaign (Salim et al. 1999). The first phase of the five-year campaign, from 1991 to 1995, was called "Love Your Heart," which focused on preventing weight gain and promoting healthy eating. It was followed "Right Diet, Right Weight, Regular Exercise-Prevent Diabetes."

Following a 1992 International Conference of Nutrition in Rome, Malaysian MOH officials identified and targeted specific nutrition-related problems to fix (Malaysia 2006). The move signaled a step to address nutrition as a major health and socioeconomic issue in the nation. Government officials subsequently drafted a National Plan of Action for Nutrition in 1994 to improve the nutritional status of Malaysians between 1996 and 2000 (Salim et al. 1999). At the time, the plan centered on reducing starvation, undernutrition, and micronutrient deficiencies in the nation.

In 1996, a MOH working group created a National Dietary Guideline based on the Food Pyramid model; this was used heavily during the continuation of the health campaign in 1997 themed "Healthy Nutrition." At about this time, MOH officials adopted BMI as a risk factor for certain noncommunicable diseases. The national health survey conducted in 1996 begin tracking BMI as part of its methodology as "measuring body weights of adults is now recognized as an important means of objectively assessing the degree of nutritional or other socio-economic deprivation in a population" (Salim et al. 1999).

In 2005, the Prime Minister's cabinet approved a subsequent 10-year national plan that stretches from 2006 to 2015 (Ooyub 2005). Objectives of the plan are: "i. To enhance and maintain nutritional well-being for all; ii. To ensure household food security for all; iii. To

strengthen inter and intra sectoral linkages in the development and implementation of all nutrition and related activities in the country" (Malaysia 2006). Strategies for fulfilling these objectives include improving access, care, and education on nutrition. Specific activities include improving nutrition in public schools, training lactation specialists to educate new mothers on breastfeeding, and continuing the monitoring of micronutrient deficiencies through surveys (Ooyub 2005). In 2010, MOH officials updated and launched the National Nutritional Guideline, which now contains 14 key messages and 55 recommendations (Tee 2011). In addition to dietary recommendations, the latest guidelines include physical activity and weight maintenance themes and target specific topics including breastfeeding and the use of nutrition labeling on food items.

Malaysian food consumption trends

As observed earlier, the industrialization and global trade of food, and a country's economic growth can affect the eating patterns of people worldwide. In a report that investigated four decades of Food and Agriculture (FAO) food sheets for Malaysia, a study group called the Malaysian Association for the Study of Obesity (MASO) found an increase in the consumption of fat, sugar, fish, and eggs between 1960 and 2000 (MASO 2005). However, calories from complex carbohydrates such as cereals seemed to have declined; meat consumption peaked in the 1990s but fell off slightly in the 2000s. Urban dwellers, the report notes, tend to show a higher consumption of calories derived from fat. These patterns do not necessarily indicate individual or actual food consumption levels, as the report indicated, but these are useful in providing a picture of the eating patterns of Malaysians in general (Figure 2.2).

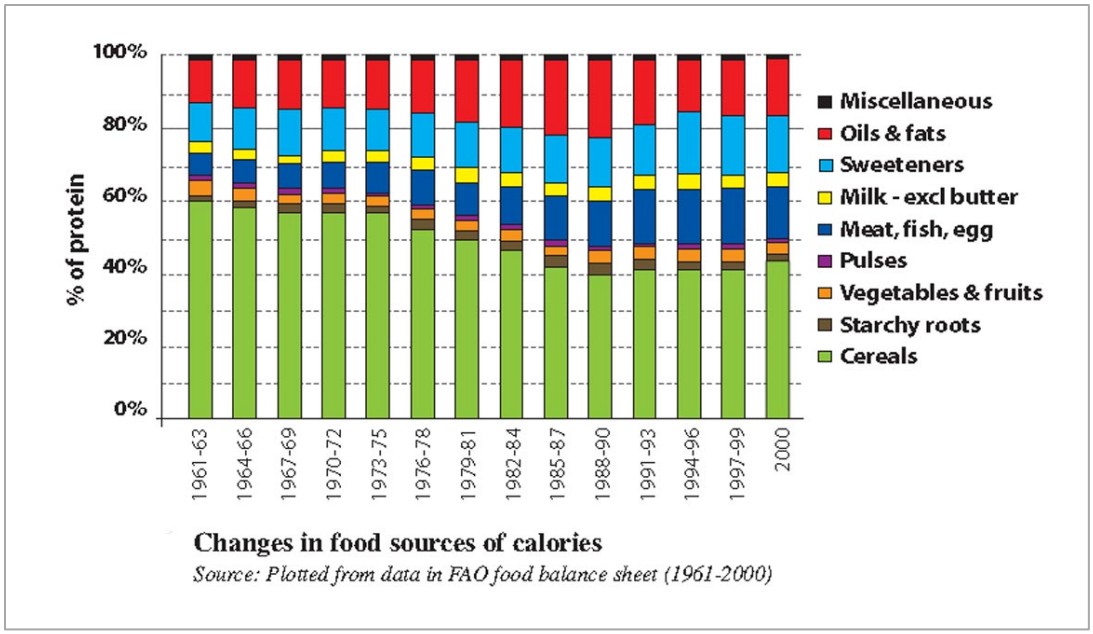

Figure 2.2. *Caloric sources, Malaysia (MASO 2005).*

These patterns corroborate other research investigating dietary trends in Malaysia, where household food expenditure is tied to rapid economic growth and urbanization (Ishida et al. 2003). Ishida and colleagues (2003) found that Malaysians have diversified their home food expenditure to include more meat, fruits, vegetables, and dairy products, in addition to rice, the main staple. Additional studies also indicate a link between obesity rates and changing food consumption patterns, particularly in the consumption of food away from home (Ishida et al. 2003; Lee and Tan 2007; Tan 2010). Researchers suggest that Malaysia's economic transition from agriculture to industry since the 1950s has prompted rural-to-urban migrations, encouraged urbanization, raised the income of urban dwellers, and fueled the growth of the food industry (Jali et al. 2006; Lee and Tan 2007; Tan 2010). These trends appear to affect dietary patterns – the amount of household expenditure of food away from home has increased from 4.6 percent to 8.7 percent between 1973 to 2005 (Tan 2010). The Malaysian food service industry has grown by 23 percent between 2001 and 2006 (Tan 2010). Ishida and colleagues (2003) found that

expenditure on food away from home is influenced by the economy; Malaysians decreased their spending on dining out during a recession in the mid 1980s, but increased their consumption when the economy recovered in the 1990s. As noted earlier, the food industry in Malaysia has grown tremendously in the 2000s – more Malaysians appear to be spending more of their income in dining out (Tan 2010).

Previously reported data raised questions of whether income or socioeconomic status influences weight status; and whether weight status is linked to dining at home or away from home. In terms dining out, researchers in South Korea found that housewives with higher education levels, often used as a proxy for socioeconomic status, tend to eat out more (Choi et al. 2011). However, the highest prevalence of obesity was observed in Korean women with lower education levels; females who ate out the most and the least were the ones who were more likely to be obese. In Brazil, however, a national survey of urban residents between 2002 and 2003 showed that eating out is positively associated with overweight/obesity (Bezerra and Sichieri 2009); and overweight and obesity tend to occur among men rather than women. Women who engage in sit-down meals, as opposed to deep-fried snacks and fast food, appear to have a lower incidence of overweight and obesity. The authors (2009) noted, however, that the cost of sit-down meals was higher and women who consume such meals were likelier to be of a higher socioeconomic status. In Malaysia, however, obesity tends to occur among those with lower education levels, particularly among women with little to secondary school education, and among those who reside in urban areas (Rampal et al. 2007).

Street food consumption

As mentioned previously, the studies indicate that income is linked to the frequency of dining out; and the risk for obesity appears to occur among females, Indians, and Malays; those

with lower education and socioeconomic levels (Ishida et al. 2003; Khambalia and Seen 2010; Tan 2010; Tan et al. 2011). However, it was unclear from the Malaysian studies where the consumption of food away from home takes place, and whether people rely on eateries such as street food to obtain quick and affordable meals. As defined by the FAO, "street food" describes a range of "ready-to-eat foods and beverages sold and sometimes prepared in public places, notably streets" (Winarno and Allain 1991). It is similar to corporate fast food, in the sense where customers can eat their meals on site or have it to go. Street food, long considered as operating within the 'informal sector,' plays crucial economic and social roles (Simon 2007). Researchers noted that the growth of the informal food sector, including street food, in many urban areas in the world coincide with rapid rural-to-urban migration. Street food generates billions of dollars in sales annually worldwide, creates employment, and provides accessible, low-cost meals (Simon 2007; Winarno and Allain 1991).

However, the nutritional value of the fares plied remains questionable. In a study from Italy's Palermo, a town of about 663 people, researchers found a correlation between street food consumption and obesity (Buscemi et al. 2011). The type of street food often found in Palermo includes *panelle* (pancakes of chickpea flour), *fritolla* (fried and boiled pieces of fat, cartilage, and meat) and *crocche* (fried cylinders of mashed potatoes) – all appear to be carbohydrate and protein dense. Employed adults and students tend to consume more street food than managers/professionals, housewives, and the unemployed. The study did not include variables for income or education levels.

From the FAO's definition, 'street food' is not a homogenous, static dining establishment but a highly varied and dynamic one in terms of the types of food sold, business models, and the identity it represents. In Malaysia, street food is becoming increasingly institutionalized; this is

evident in the creation of the Department of Hawkers and Petty Traders in 1986. Between 1990 and 2000, the department reported a 30 percent increase in the number of vendors in the city. It was estimated that the city has roughly 47,000 licensed and unlicensed vendors and more; that figure was likely underreported since no formal surveys were conducted (Bhowmik 2005). In 1990, Malaysia established the National Policy on Hawkers to provide funding and training for vendors to improve their facilities, knowledge of health and sanitation, and business skills; the plan also included a push for hawkers to relocate their businesses to central areas or buildings.

Malaysian street food reflects the influence of Chinese and Indian immigrants to the country, and the fusion of local and immigrant cuisines. Street food also represents spaces where ethnic and national identities are constantly renegotiated .(Anderson 2003; 2007; Khoo 2009; Khoo and Duruz). This study seeks to understand the current and local context in which street food exists in Kuala Lumpur, and investigate the extent of how much urban Malaysians still rely on street food for meals. The following chapters will explore the dining patterns of a sample of Kuala Lumpur residents, why they eat the way they do, and whether their dining choices affect their weight.

Chapter 3: Methods

The goal of this research is to investigate the link between the body weight status of adult urban Malaysians and economic growth. Therefore, this exploratory study examined the relationship between the incidence of overweight/obesity, income, and consumption of food away from home, particularly street food, in Kuala Lumpur (KL). As described earlier, street food is an ubiquitous feature in many Asian cities, and is often considered a major source of fast food in Malaysia (Winarno and Allain 1991). I explored these relationships from the perspectives of street food consumers and vendors using a mixed-methods approach, and used a combination of quantitative and ethnographic methods, such as anthropometry, dietary recall, surveys, interviews, and observations, to obtain results that can be situated in the sociocultural and economical context of contemporary Malaysia. Table 3.1 summarizes the research activities conducted on each sample group, the data or product that resulted from these activities, and the types of analysis that were conducted

As shown in Table 3.1, the methods were designed in accordance to this study's objectives that aim to understand factors driving food consumption and lifestyle behavior, such as daily diet and physical activity engagement, of adult KL residents. As stated previously, participants were divided into two categories: consumers and vendors. This study was conducted in three phases between September 2012 and January 2013. In this section, I will describe sampling and recruitment strategies, and the research methods used for each group. The end of this chapter contains a brief description of the ethical review processes this study received.

Table 3.1.
Summary of research activities and analysis.

Objectives	Methods	Data/product	Analysis
Consumers (N=73)			
1. To explore whether there is an association between food consumption patterns, weight status, and income level among adult urban Malaysian street food consumers. (a) Hypothesis: There is a relationship between the frequency of street food consumption, adult body weight status, and income level. 2. To investigate the motivations behind adult food consumption and lifestyle habits, as well as knowledge of Malaysia's recently updated dietary guidelines	Phase 1: Survey, including free-listing (n=60). Phase 2: Semi-structured interviews, anthropometry, diet recalls (n=13), observation and field notes.	Phase 1: Quantitative data from survey such as sex, income, and education levels, dietary and lifestyle patterns; freelist items of snacks and beverages consumed, and dining locations. Phase 2: Textual data from interviews; waist, hip, height and weight measurements; two-day dietary records for each participant; observation notes after each survey and interview.	Phase 1: Conducted descriptive data analysis using Excel and SPSS, including non parametric correlations tests and regression analysis; tabulated free list items. Phase 2: Target-transcribed textual data according to four themes; calculated BMI and waist-to-hip ratios of participants; conducted ranked tests on dietary data; observation notes supplemented the data gathered.
Vendors (N=4)			
1. To examine the vendors' knowledge and experiences on consumers eating trends, and whether market demands, national dietary guidelines and governmental policies in recent years have changed their business practices. 2. To measure the amount of food sold and the vendors' customer base.	Phase 3: Survey; semi-structured interviews; observation (timed).	Phase 3: Demographic data of vendors, including sex, education, and income levels; textual data; observation notes.	Phase 3: Descriptive data analysis of vendors; target-transcribed interviews; hand-drawn maps of businesses, tabulations of customers within an hour; notes on vendor-customer interactions.

Sampling

Participants (N=77) were recruited through convenience and snowball sampling. Sampling locations were based on a KL voter precinct map drawn by the country's Election Commission in 2003 (Chooi 2013), which established the city's boundaries and parceled the city into 11 electoral zones (Figure 3.1). Based on my knowledge of the city and input from four informants who have resided in KL for at least 10 years, these locations reflected the socioeconomic and ethnic diversity in the city. Other criteria for selecting sampling locations were accessibility by KL's Light Rail Transit system, and the availability of dining amenities such as tables and chairs.

Key:

Zone	Name
1	Bukit Bintang
2	Titiwangsa
3	Setiawangsa
4	Wangsa Maju
5	Batu
6	Kepong
7	Segambut
8	Lembah Pantai
9	Seputeh
10	Bandar Tun Razak
11	Cheras

Figure 3.1: *Electoral precinct map of Kuala Lumpur.*

Recruitment

I recruited the second subgroup of consumers (n=60) and vendors (n=4) at street food sites in four areas in KL. The initial recruitment sites scouted were Batu in the north, Lembah Pantai in the west, Bandar Tun Razak in the south, and Cheras in the east. I enlisted informants,

two females and two males, to explore these areas at the beginning of my fieldwork. The neighborhoods within these districts range from low-income to high-income and contain varying distributions of residential and commercial spaces. Batu, experiencing gentrification through real estate development, has a high number of government housing apartments. Lembah Pantai has one of the more affluent neighborhoods in KL called Bangsar, and a lower-income neighborhood called Lucky Garden. Bandar Tun Razak, a former settlement for retired military personnel, contains several schools, colleges, and new apartment complexes. Cheras, where I grew up, continues to grapple with traffic problems due increasing density and ongoing construction of highways and commuter train lines.

The recruitment plan changed slightly during fieldwork due to several factors. Since my strategy was based on the availability of street food sites the four locations, the concentration of commercial activity, real estate development, and the gerrymandered electoral boundaries affected how I recruited participants. While scouting sites, I noted there was a dearth of street food vendors in parts of the precincts due to the density of residential homes; the majority of the street food sites were in commercial areas. From conversations with informants, I learned that the politics that created the city's electoral zoning disregarded neighborhood identities, which are strongly tied to ethnicity due to the city's historic settlement patterns. Precinct boundaries, drawn in 2003, were meant to retain or break up neighborhoods to deliver votes to the ruling BN coalition (Bowring 2013; Chooi 2013). Therefore, KL residents' recognition of these identities at times did not fit precinct delineations.

In addition, residential and commercial real estate development continues to change the city's population distribution, increasingly by pricing out residents to suburbs outside the city. For example, Sentul, a neighborhood in the Batu precinct, had an active train depot staffed

mostly with Indian workers who lived nearby. In recent years, the YTL Corporation bought the old train station campus and its surrounding tracts. Realizing its real estate potential given Sentul's proximity to the city center, YTL built gated high-rise homes and turned one of the colonial-era buildings on the train campus into a performing arts theater. Given these factors, I recruited participants both in the precincts and in the neighborhoods adjacent to precinct lines. Recruitment details of the different participant groups will be listed in the following sections.

Recruitment criteria

Participants in this study had to be 21 years and older and reside in KL. Non-KL residents and non-Malaysian citizens were excluded. For the subgroup 1 of consumers, pregnant women were excluded as their dietary patterns and body weight status may change during pregnancy – including them may distort the data collected through anthropometry and dietary recalls. I used the city's ethnic distribution to guide recruitment for consumers in subgroup 2. Participants in this group reflect the ethnic make-up of the city, which consists of 45 percent Chinese, 43 percent Malay, 10 percent Indian, and 1 percent "other" (PHCM 2011). Participants in this group were split almost equally according to sex.

Data collection

As shown in Table 3.1, this study was divided into three phases, using a variety of methods. This section will detail the instrumentation used, the pilot conducted prior to the first phase, and changes to the overall data collection plan as the study progressed. Then, data collection activities for each phase will be described.

Instrumentation and pilot

In Phase 1, a survey (Appendix I) was administered to a group of participants. The survey included questions to elicit demographic and socioeconomic information, self-reported height

and body weight measurements, dining at home/out frequency, lifestyle patterns (such as physical activity), and knowledge of the national dietary guidelines. It is important to note that the self-reported measurements may incur biases and affect accuracy since they relied on participants' memory and honesty; this will be further discussed in the limitations section in Chapter 5. The survey also included seven freelist elicitations, where I asked participants to name the beverages they typically consume during each meal, frequent dining out venues, and (if participants answer "yes" to knowing the national dietary guideline) an example from the guideline.

The physical activity portion of the survey was taken from the short-form International Physical Activity Questionnaire (IPAQ 2012). According to its protocol and use in other studies, this instrument is typically deployed to obtain estimations of the energy one expends during physical activity; the measurement is expressed in metabolic-equivalent hours, or MET (Craig et al. 2003; Guthold et al. 2008; Hagstromer et al. 2008). Some researchers find that the IPAQ can overestimate physical activity levels based on IPAQ activity categories such as inactive, minimally active, and exceeding health recommendations (IPAQ 2012); or underestimate MET when compared to other tests in various countries (Guthold et al. 2008; Maddison et al. 2007). However, other studies, including one in Malaysia, confirm the validity and reliability of the English-language questionnaire and the Malay and Chinese translations (Chu and Moy 2012; Macfarlane et al. 2007). For this research, the IPAQ was used to gauge the frequency of self-reported physical activity. Results from the questionnaire were not scored to protocol or converted to MET units; instead, the number of days and amount of time participants reported being active were analyzed using descriptive statistics.

Prior to survey deployment, a pilot was conducted with a group of six people (10 percent of the proposed sample size) to check for content, phrasing, and language clarity. The pilot group was recruited through my social network in the city. After conducting the pilot, I amended several questions and instructions for clarification in both languages, and shortened the length of the survey based on the pilot group's input. I also solicited advice on the feasibility and the appropriateness of recruiting participants in locations listed earlier.

In Phase 2, I conducted semi-structured interviews, diet recalls, and anthropometry on a smaller subgroup of participants. Questions for the interviews were similar to the survey (Appendix II). Upon completing the first phase however, I added two activities to the semi-structured interview questionnaire. The first asked participants to define the meaning of terms or names ascribed to a street food site based on the freelist data gathered in the Phase 1 survey. This was added to obtain a consensus among these participants on what these terms meant. The second activity required participants to pick out an ideal body size and what they perceive their body sizes to be from a body image scale (Bhuiyan et al. 2003). The scale contains nine varying body shapes for each gender (Appendix IV) and can be used to compare a person's body size perception to their actual body weight status (Bhuiyan et al. 2003). The original questions about body image sounded awkward to the first two participants; my adviser Dr. David Himmelgreen suggested I use a scale to help clarify the questions and enable further probing.

For the food recalls, I used a set of dining utensils to help participants gauge the amount of food they ate and beverages they drank. These items included: a set of four standard cooking measuring spoons and cups purchased in the U.S. prior to fieldwork; plates, bowls, and beverage and condiment vessels bought from kitchenware stores in KL (Figures 3.2 -3). I used the bowls, plates, and vessels to help participants remember serving sizes, and measuring cups and spoons

to approximate the volume of food. The date, time, location, quantity, and content of each meal, beverage, and snack were recorded on a form (Appendix III).

Figure 3.2-3. *Vessels and plates used during 24-hour diet recall.*

For the anthropometry, I used a portable stadiometer, scale, and measuring tape to obtain height, weight, waist, and hip measurements. Protocols for these measurements were based on Gibson (2005) and Himmelgreen (2011). Each height, weight, waist, and hip measurement was taken in a standing position and recorded in metric units three times; the averages of the three measurements were used in data analysis (Appendix IV). For weight and height measurements, I used a spirit level to make sure that the wall and floor surfaces were level before setting up the stadiometer and scale. I asked participants to remove their shoes prior to stepping on either device. As for the waist and hip measurements, I left the choice of clothing removal to the participants since the close proximity may have caused discomfort. (Four male participants were measured fully-clothed.)

In Phase 3, I administered a short survey and a semi-structured interview (Appendix II). These instruments were designed to gather demographic information such as age, income range and education level, hours and days of operation, food costs, and the vendors' experiences and knowledge of the local food industry, and their observations of the general health and body weight of their customers.

Phase 1: Consumers, subgroup 2

Participants for this subgroup (n=60) were recruited at street food sites in the areas described earlier. I administered a 15-minute survey with members in this subgroup. The surveys were conducted after the administration of a verbal informed consent explanation (please see section on ethical review processes and consent) in either English or Malay. After each survey trip, I recorded the time, location, number of participants recruited at each site, and wrote observation notes. Upon completing each survey, all participants in both the pilot group and the subgroup received a small gift bearing the University of South Florida (USF) logo as a token of appreciation for their time. Gifts included mugs, chapsticks, pens, and bandaid dispensers collected from both the Department of Anthropology and the College of Public Health.

Phase 2: Consumers, subgroup 1

The second phase of the research, which includes a semi-structured interview, diet recall, and anthropometry, took place among a smaller subgroup of consumers (n=13) that enabled me to gather more in-depth data. Participants in this subgroup were mainly recruited from my social network, as few participants in the earlier subgroup provided additional contacts for the second phase; those who did provide potential candidates did not respond to my follow-up inquiries. I met with each participant twice, once during a week day and once during a weekend. Participants chose the place and time for these sessions, which were either in their homes or in private rooms at their work places. Prior to data collection, I conducted written informed consent procedures with each participant. The consent procedure and interviews were conducted in English or Malay.

In the first session, I conducted an audio-recorded, semi-structured interview. After the interview, I conducted a diet recall where I asked each participant to list the food and beverages

they consumed in the past 24 hours. The diet recalls were not audio recorded. This session lasted an average of one and a half hours. In the second session, I conducted anthropometry and another food recall with the participants. This session typically lasted half an hour. I wrote observation notes after each meeting. Upon completion of each session, participants received a RM10 store gift card as a token of appreciation for their time.

Phase 3: Street food vendors

The third phase focused on street food vendors (n=4). Recruitment for this small group was more difficult due to time constraints and several rejections. These vendors run a mixture of informal to formal operations. Two of these vendors operated out of a stand beside roadways, and two operated out of a hawker center that offerd multiple street food stalls and seating for patrons. I met with each participant twice. During the first meeting, I administered a short survey and a semi-structured interview with each participant. In the second session, I conducted timed observations to calculate the number of customers they served within an hour. Prior to the observation, I recorded the location of the site and the type of food sold, drew a layout of the business, and noted the interactions between the vendors and their patrons. I spent between one and a half to two hours at each site during each session. Each session was conducted during the day as these participants served the breakfast and lunch crowds. Upon the completion of each session, each vendor was given a RM10 store gift card as a token of appreciation for their time.

Ethical review processes and conduct

This study fulfills the thesis and internship requirements for the USF Department of Anthropology, and the field experience and special project requirements for the College of Public Health's Global Health Department. As such, I was required to have an internship/field supervisor. I sought and received the guidance of Dr. Andrew Tan, an associate professor of

economics at Universiti Sains Malaysia (USM), Penang, in this study. Dr. Tan had published extensive research on food and health economics in Malaysia.

Per federal human research regulation (DHHS 2013), I obtained approvals from both the USF Institutional Review Board (IRB#: Pro00008796) and the USM Research Ethics Committee (USMKK/PPP/JEPeM [255.4.(2.3)]) prior to fieldwork. Since I am conducting research under Dr. Tan's supervision, USM requested that I submit my research proposal for ethical review. The USF IRB approved this research on Aug. 14, 2012, and approved the request for continuing review on July 22, 2013 (Appendix VII). Per USM ethics committee procedures, I met with and received the ethics committee's approval on Sept. 20, 2012. A letter confirming the approval was dated Oct. 9, 2013 (Appendix VIII).

During fieldwork, I strived to adhere to the American Anthropological Association's ethical code of conduct (AAA 2012), and to maintain the study participants' welfare, privacy and confidentiality. None of the participants in this study fit the IRB's ‘vulnerable population’ description. However, I used a participant numbering system to avoid revealing the participants' identities; these numbers were used in my field and observation notes, audio recordings, and data analysis. During fieldwork, I administered informed consent to all participants in either Malay or English. The USF IRB waived the documented informed consent for the consumers in subgroup 2 − participants I recruited and surveyed at street food sites − as a documented consent would be the only document that would link these participants to their identities. Each participant received a copy of the consent script, which bears the contact information for me, my USF adviser, and the USM ethics research committee, in case they have questions or complaints. As stated earlier, all participants received a small gift as a token of my appreciation for their time; consumers in

subgroup 2 received a USF souvenir each while consumers in subgroup 1 and the street food vendors received a RM 10 store gift card.

Chapter 4: Analysis and Findings

This exploratory study utilized quantitative and qualitative methods to examine whether there are connections between diet, weight, and income among Malaysians residing in Kuala Lumpur (KL). As detailed in the previous chapter, this study was carried out in three phases and on three sample groups. This chapter will describe the analyses and findings from the data collected during fieldwork, and sections are divided according to each sample group.

The first section of this chapter will explore data derived from the largest sample of consumers (n=60) recruited for a survey at various KL street food sites. The second section will describe the anthropometry, diet recall, and interview data obtained from the second sample of consumers (n=13) enlisted through my social network. The third section will reveal findings from interviews and observations of street food vendors (n=4) recruited during the survey.

Survey, anthropometry, and food recall data were coded and analyzed using Microsoft Office Excel 2007 and SPSS Version 21; interview data were transcribed and coded using Microsoft Office Word 2007. Anthropometry measurements – converted into BMI and waist-to-hip (w-t-h) ratios – were compared to cutoff points from the Centers for Disease Control and Prevention (CDC) and the WHO. Due to variations in stature and strong associations between a lower BMI and noncommunicable diseases, the WHO recommended using a cutoff of 23 kg/m^2 to classify Asians as overweight (WHO 2000; 2004), as opposed to 25 kg/m^2 employed by the CDC. In addition to the WHO, the International Task Force on Obesity, the International Association for the Study of Obesity, and researchers in the region support the use of the lowered cutoff (Cheong et al. 2012; Low et al. 2009; Wen 2009; WHO 2000; Zaher et al. 2009). The

lowered BMI threshold was included by the Malaysian Clinical Practice Guideline (Ismail 2004), and was used in data analysis in the country's latest National Health and Morbidity Survey (IPH 2011).

Phase 1: Consumers, subgroup 2

A 15-minute survey, including several free-listing activities, was conducted on a total of 60 participants. However, the final sample for this group is 55; five participants were excluded because they did not meet recruitment criteria or complete the survey. Survey questions were divided into four parts: demographic, dietary pattern, lifestyle/physical activity, and health and nutrition (Appendix I); the free listing was embedded within the survey's dietary portion. Data from the survey was coded and categorized for analysis, and results from the free lists were pile-sorted and tabulated. This section will explore these data by reviewing the descriptive analysis findings. Then, results from a series of correlations and logistic regression analyses will be described.

Demographic and descriptive analysis

The sample population for Phase 1 consisted of 31 males (56.4 percent) and 24 females (43.6 percent). Twenty participants identified themselves as Malay (36.4 percent), 21 as Chinese (38.2 percent), 11 as Indians (20 percent) and two as 'other' (5.5 percent). The average age was 37.2 years. Thirty-two participants (58.2 percent) said they were married, 22 (40 percent) were not married, and one (1.8 percent) was widowed. Out of the 32 married participants, 30 reported having children (54.5 percent); these participants had an average of 2.6 children (SD=1.5). Thirty-four participants (61.8 percent) completed either college or university, and 21 (38.2 percent) finished secondary school. Twenty-six participants (47.3 percent) earned above KL's median income of RM 4,409, while 29 (52.8 percent) made less (Table 4.1).

Table 4.1.
Characteristics of survey participants (n=55).

	Total	%
Sex		
Males	31	56.4
Females	24	43.6
Ethnicity		
Malay	20	36.4
Chinese	21	38.2
Indian	11	20
Other	3	5.5
Education		
Secondary school	21	38.2
College	15	27.3
University	19	34.5
Work Days/week		
0 (Retired)	4	7.3
5 days	23	41.8
6 days	22	40
7 days	6	10.9
Work Hours/day		
None	4	7.3
1-4 hours	1	1.8
5-8 hours	19	34.5
9-12 hours	26	47.3
13 hours and more	5	9.1
Income (monthly)		
RM 0-499	0	0
RM 500-900	3	5.5
RM 1,000-2,999	26	47.3
RM 3,000-4,999	15	27.3
More than RM 5,000	11	20
Marital Status		
Married	32	58.2
Not married	22	40
Widow/Widower/Divorce	1	1.8
Children		
Yes	30	54.5
No	25	45.5
Live With		
Family	42	76.4
Alone	8	14.5
Housemate(s)	5	9.1

Based on self-reported weight and height, the average BMI was 24.2 (SD=4.85). The mean was within the CDC's normal weight range. Five participants (9.1 percent) were

underweight, 11 (20 percent) were overweight, and eight (14.5 percent) were obese (Table 4.2). However, based on the WHO BMI cutoff for Asians, six participants (10.9 percent) were underweight, 14 participants (25.5 percent) were overweight, and 19 (34.5 percent) were obese. The WHO cutoff points nearly doubled the proportion of overweight/obese participants in the sample, from 32.7 to 60 percent.

Table 4.2.
Anthropometry for survey participants (n=55).

	n	Mean	Median	SD	Min	Max
Age	55	37.2	35	11.69	21	64
Anthropometry						
Weight (kg)	55	65	65	14.48	40	101.8
Height (cm)	55	163.71	165	9.23	139.7	183
BMI	55	24.21	23.51	4.85	14.17	36.85
	n	**%**	**Coding for analysis**		**n**	**%**
Body Mass Index (CDC)						
Underweight	5	9.1	0 - Under- to normal weight		36	67.3
Normal weight	31	56.4				
Overweight	11	20	1 - Overweight to obese		19	32.7
Obese	8	14.5				
Body Mass Index (WHO)						
Underweight	6	10.9	0 - Under- to normal weight		22	40
Normal weight	16	29.1				
Overweight	14	25.5	1- Overweight to obese		33	60
Obese	19	34.5				

This sample group (Table 4.3) consumed an average of 2.7 meals/day (SD=0.67), and dined out an average of 13 times/week (SD=5.14). Common dining out venues included restaurants and various street food sites (Figure 4.5); these sites will be explored in Phase 2. Water, tea, and coffee were the most frequently listed beverages consumed during meals (Figures 4.2-4). Five people (9 percent) reported not eating breakfast; 11 (20 percent) ate breakfast between one to six times/week; and 39 (70 percent) said they ate breakfast seven times/week. Respondents who had breakfast at home consumed the meal there an average of 1.56 times/week (SD=2.43), while those who ate out for breakfast did so at an average of 4.88

times/week (SD=2.57). All participants ate lunch and tended to dine out for the mid-day meal; respondents ate lunch out an average of 5.54 times/week (SD=1.85) and ate lunch at home an average of 1.25 times/week (SD=1.72). As for dinner trends, 11 participants (20 percent) dined home seven days/week. The rest (80 percent) dined out at an average of three times/week (SD=2.53), and at home at an average of 3.75 times/week (SD=2.57). Nearly half the participants did not eat between meals. Those who snacked did so at an average of 1.65 times/day (SD=0.71); biscuits or cookies, and potato chips were the most frequently listed snack items (Figure 4.1). Most of the respondents who snacked purchased them. Ten (32.25 percent) said that they bought snacks in bulk from supermarkets while the rest (67.74 percent) would buy them from places such as food stalls and sundry shops. Thirty-one participants (56.36 percent) had food prohibitions, mainly due to religion, while 24 (43.64 percent) did not.

Table 4.3.
Summary of dining patterns.

Meals (days/week)	n	Mean	SD	Median	Min	Max
Meals/day	55	2.74	0.67	3	1	5
Meals Out	55	13.02	5.14	14	2	21
Meals In	55	6.42	4.76	6	0	19
Breakfast In	50	1.56	2.43	0	0	7
Breakfast Out	50	4.88	2.57	6	0	7
Lunch In	55	1.25	1.72	1	0	7
Lunch Out	55	5.54	1.85	6	0	7
Dinner In	55	3.75	2.57	4	0	7
Dinner Out	55	3.03	2.53	2	0	7
Snack	31	1.65	0.71	2	1	3

In the lifestyle section of the survey, participants were asked about their work, sleep, and physical activity patterns. Out of 55 participants, 39 (70.9 percent) did not smoke. Twenty-six (47.3 percent) respondents said they worked 9-12 hours/day, while 19 (34.55 percent) worked five to eight hours/day. Four (7.28 percent) did not work, one (1.8 percent) worked one to four hours/day, and five (9.1 percent) worked more than 13 hours/day. For those who worked, 23 (45.1 percent) worked five days/week and 22 (43.1 percent) worked six days/week; six (11.76

percent) respondents reported working seven days/week. Participants reported sleeping an average of 6.34 hours/day (SD=1.11), with a range of four to ten hours/day including naps.

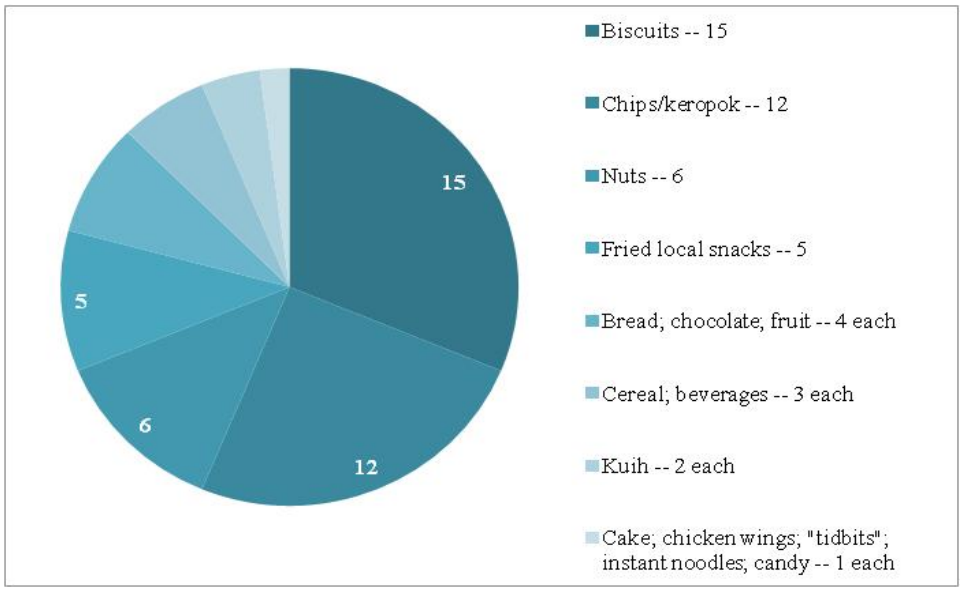

Figure 4.1. *Frequency of snack items from free listing activity. (Total items: 63)*

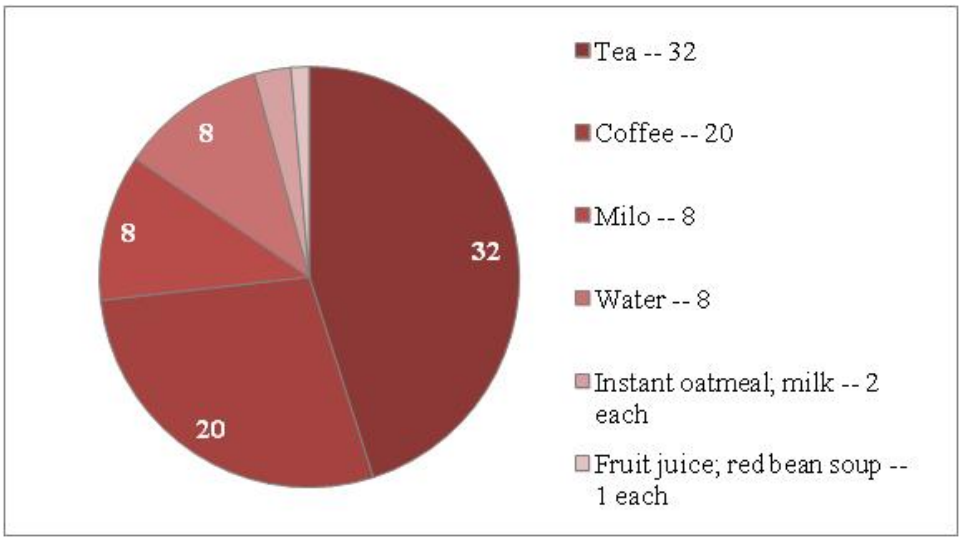

Figure 4.2. *Frequency of beverages consumed during breakfast from free listing activity. (Total items: 74)*

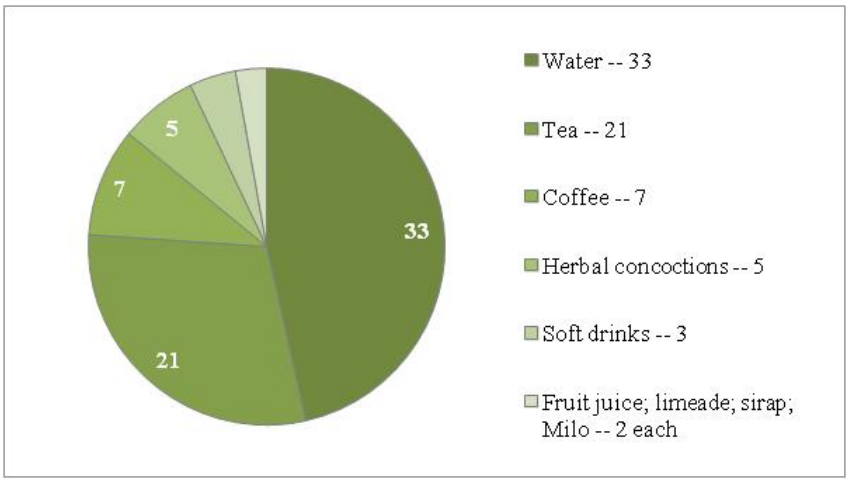

Figure 4.3. *Frequency of beverages consumed during lunch from free listing activity. (Total items: 77)*

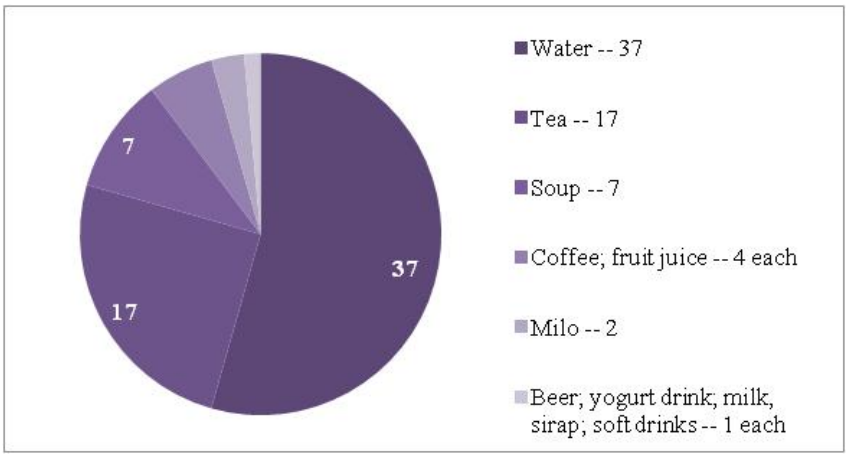

Figure 4.4. *Frequency of beverages consumed during dinner from free listing activity. (Total items: 76)*

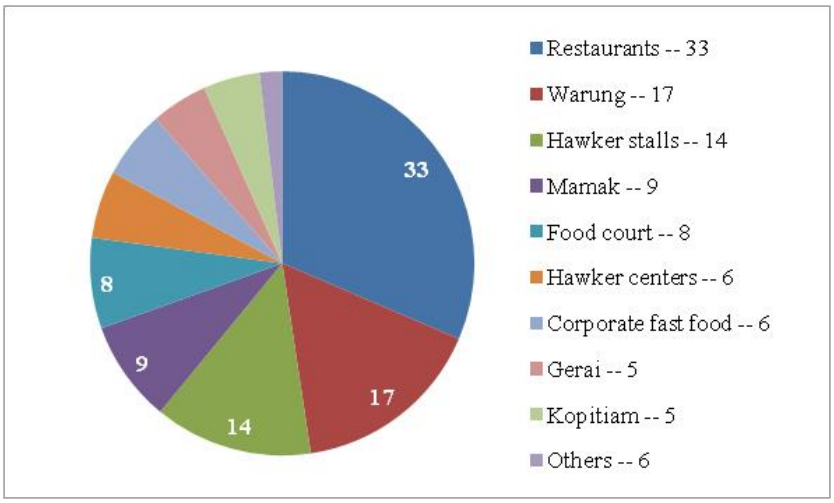

Figure 4.5. *Frequency of dining out locations from free listing activity. (Total items: 109)*

The International Physical Activity Questionnaire (IPAQ) was used to gauge the respondents' physical activity level. Each participant was asked if they engaged in moderate and vigorous physical activity within the past seven days of the interview (Table 4.4). According to the IPAQ interview guide (2012), a moderate activity takes moderate effort, makes one breathe somewhat harder than normal, and includes carrying a light load, swimming, or bicycling at a regular pace (walking is excluded). A vigorous activity takes hard physical effort, makes one breathe harder than normal, and includes heavy lifting, digging, or running. Thirty-one respondents (56.36 percent) participated in some form of vigorous physical activity in the week leading up to the interview, at an average of 3.52 days/week (SD=2.25) and at a mean of 2.28 hours/day. Forty-one respondents (74.55 percent) engaged in moderate physical activity in the previous week, at an average of 3.87 times/week (SD=2.44) and at a mean of 1.8 hours/day (SD=2.04). Forty-three respondents (78.18 percent) walked an average of 5.53 days/week (SD=1.78) for at least 10 minutes at a time, and did so at an average of 1.53 hours/day (SD=2.23). On work days, all respondents sat down for an average of 6.09 hours/day (SD=1.11).

Table 4.4.
Summary of physical activity findings.

Activity	n	Mean	SD	Median	Min	Max
Vigorous Activity (day/week)	31	3.52	2.25	3	1	7
Vigorous Activity (hours/day)	31	2.28	2	2	0.33	8
Moderate Activity (days/week)	41	3.87	2.44	3	1	7
Moderate Activity (hours/day)	40*	1.8	2.04	1	0.17	9
Walking (days/week)	43	5.53	1.78	6	1	7
Walking (hours/day)	43	1.53	2.23	0.75	0.167	9
Sitting (hours/day)	55	6.09	3.28	5	1	11.5
Sleep (hours/day)	55	6.34	1.11	6	4	10

*Note: * 1 respondent answered "not sure".*

In terms of health, participants were asked to describe their health on a scale of excellent, good, fair, poor, and very poor. Thirty-four (61.82 percent) respondents answered "fair," while 19 (34.55 percent) categorized their health as "good." Four (7.27 percent) reported being in

"excellent" health while three (5.45 percent) rated their health as "poor" or "very poor." Respondents were also asked to depict their weight based on a scale of overweight, normal weight, and underweight. Twenty-two (40 percent) participants said they were "overweight," and 30 (54.55 percent) felt they were at a "normal" weight, and eight (14.55 percent) reported being "underweight." The last questions on the survey pertained to the participants' knowledge of the national dietary guidelines. Only 12 (21.8 percent) respondents said they knew the nutritional guidelines; 11 (91.67 percent) were able to correctly list examples contained in the guidelines.

Correlations and logistic regression analyses

An exploratory descriptive analysis on the survey data set showed many variables with skewed or bimodal distributions. Therefore, most of the variables derived from the survey such as weight and height, meals, physical activity, and lifestyle patterns were coded and categorized into smaller groupings to enable more robust cell sizes for statistical tests. For example: BMI values were collapsed into two categories: under- to normal weight, and overweight/obese. Due to distribution shapes and small sample size, nonparametric tests were used (Field 2009). For the correlations, Kendall's tau was utilized to examine whether there were relationships between variables. Findings from these tests guided the next stage of analysis: binary logistic regression. Regression modeling was conducted to see how well independent variables could predict dependent variables. This section will describe the results from these tests.

Correlations. A series of correlations were conducted on demographics, dietary, and lifestyle variables to see whether there were relationships with each other. This description will summarize several correlations associated with this study's research objectives, namely those related to weight status, income, and dining/lifestyle trends. Due to the scale-based survey

questions, the correlations tests were performed on varying sample sizes; participants who answered "none" or "never" were eliminated from the analyses to prevent skewing the data.

Test results (Table 4.5) showed statistically significant correlations between the participants' BMI (using the CDC cut-off points) and having breakfast out (r=-0.25; n=50; p=0.014), days walked/week (r=-0.254; n=43; p=0.035) and days worked/week (r=0.334; n=51; p=0.035). However, after recoding BMI data according to the WHO cutoff for Asia, there appeared to be a correlation between BMI and walk days/week (r=-0.219; n=51; p=0.004) and sex (r=-0.329; n=55; p=0.008), but not with the other variables listed earlier. Statistical correlations were also observed for both sets of BMI and the participants' perception of their own weight (CDC: r=-0.462; n=55; p= 0.000; WHO: r=-0.419; n=55; p= 0.001). A scatter plot graph showed a weak, negative linear relationship between the two variables (Figure 4.6). There were no significant correlations between both sets of BMI and income.

In terms of dining patterns, there were no statistically significant correlations between the participants' sex, income, and education levels. However, tests showed correlations between the frequency of eating breakfast with marital status (r=-0.235; n=50; p=0.041) and having children (r=-0.326; n=50; p=0.008). As for lunch, there seemed to be a correlation between eating lunch in and income (r=0.309; n=32; p=0.034) and work days/week (r=-0.36; n=32; p=0.012). These associations were interesting because there were no significant correlations between eating lunch out and the other two variables. Having dinner out appeared to be correlated with marital status (r=0.249; n=43; p=0.033), having children (r=0.276; n=43; p=0.022), who they lived with (r=0.311; n=43; p=0.001) and work days/week (r=-0.25; n=43; p=0.027). Eating dinner at home was significantly correlated with having children (r=-0.232; n=44; p=0.041).

Table 4.5.

Kendall's tau correlations on demographic, weight status, diet, and lifestyle trends.

Variables	n	Correlation coefficient	*Sig.*
BMI (CDC)			
Walk Days/week	43	-0.254	0.035
Breakfast Out/week	50	-0.25	0.036
Work Days/week	51	0.334	0.007
Perception of Weight	55	-0.462	0
BMI (WHO-Asia)			
Walk Days/week	51	-0.219	0.037
Lunch Out/week	55	-0.231	0.044
Sex	55	-0.329	0.008
Perception of Weight	55	-0.419	0.001
Breakfast			
Marital Status	50	-0.235	0.041
Having Children	50	-0.326	0.008
Lunch In			
Income	32	0.309	0.034
Work Days/week	32	-0.36	0.012
Dinner Out			
Marital Status	43	0.249	0.033
Having Children	43	0.276	0.022
Live With	43	0.311	0.01
Work Days/week	43	-0.25	0.027
Work Days/week			
Sex	51	-0.25	0.033
Walk Days/week	51	-0.219	0.037
Sleep Hours/day	51	-0.204	0.052
Walk Days/week			
Sex	43	0.244	0.041

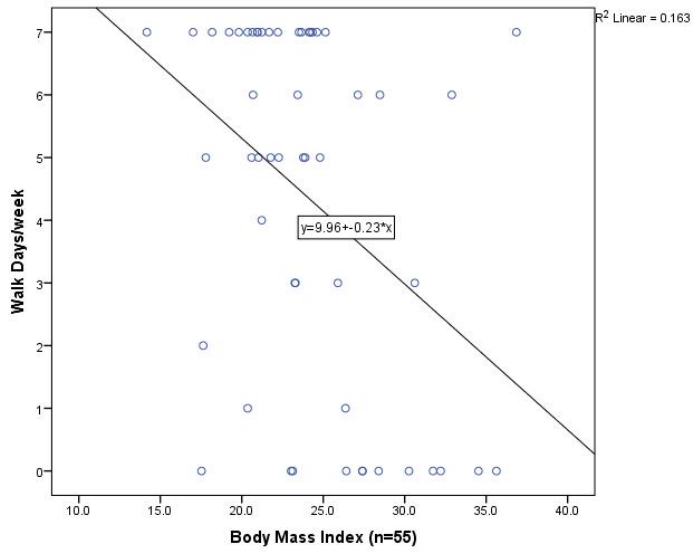

Figure 4.6. *Scatter plot of walk days/week and BMI (n=55).*

To ascertain whether dining in or out can be linked to weight and income, two variables expressing the number of meals out/week and meals in/week were created and tested with BMI, income, work days/week, and sex; there were no significant correlations. Correlations tests were also conducted to see whether there were associations between meals participants chose to dine in or out. Results showed that having dinner out were positively associated with having breakfast (r=0.220; n=55; p=0.020) and lunch out (r=0.390; n=55; p=0.000). An inverse relationship was also observed for having dinner in (Table 4.6).

Table 4.6.
Kendall's tau correlations for meals (n=55).

Variables	Breakfast Out		Breakfast In		Lunch Out		Lunch In		Dinner Out		Dinner In	
	Value	*Sig.*	*Value*	*Sig.*	*Value*	*Sig.*	*Value*	*Sig.*	*Value*	*Sig.*	*Value*	*Sig.*
Breakfast Out			-0.516	0			-0.226	0.022	0.22	0.02		
Breakfast In	-0.516	0							-0.248	0.018	0.208	0.03
Lunch Out							-0.864	0	0.39	0	-0.335	0.001
Lunch In	-0.226	0.022			-0.864	0			-0.407	0	0.344	0.001
Dinner Out	0.22	0.02	-0.22	0.024	0.39	0	-0.407	0			-0.891	0
Dinner In			0.208	0.03	-0.335	0.001	0.344	0.001	-0.891	0		

Lastly, statistical analyses revealed interesting associations in terms of work and other lifestyle patterns. Results showed a significant correlation between work days/week and sex (r=-0.25; n=51; p=0.033) and walk days/week (r=-0.219; n=51; p=0.037). Interestingly, the p-value for work days/week and the number of hours participants said they sleep/day was 0.057 (r=-0.204; n=51), close to being significant. Walk days/week was also significantly correlated with sex (r=0.244; n=51; p=0.041). The days/week participants spent engaging in vigorous and moderate physical activities, and sitting down during work days were not correlated with BMI or income. Smoking was not correlated with BMI or income.

Logistic regression analysis. Per the research objectives, the survey intended to explore whether there were relationships between dining out and weight and/or income; and whether there was a connection between knowledge of the national dietary guidelines and lifestyle

patterns. Continuing from the correlations analysis, a series of binary logistic regression models were performed on two categorical dependent variables: BMI and participants' self-reported dietary guidelines knowledge. The purpose of the regression modeling was to see whether some of the independent variables can predict the dependent variables.

For this analysis, variables such as BMI, income, meals out, and work days were collapsed into two categories. Using the same categories as earlier correlations analyses, BMI categories were collapsed into under- to normal weight, and overweight to obese groupings. Income was divided into two groups: those who make above KL's median income and those who make below (earlier analyses used the same groupings). Days walked/week were turned into three categories: those who do not walk at least 10 minutes a day/week, those who walk between one to five days/week and those who walk six to seven days/week. The regression models employed the "enter" method on SPSS; findings were compiled in Table 4.7.

The regression model using CDC-based BMI categories as dependent variable, sex, income, and education predicted up to 67.3 percent of the dependent variable (R^2=0.04; X^2=1.597; p=0.66); the model can correctly predict 94.6 percent of the under-to normal weight group and 11.1 percent of the overweight to obese group. The R^2 and percentages predicted for both weight categories showed that the model and the relationship between the dependent and independent variables were relatively weak. The same independent variables, however, predicted up to 72.7 percent of the BMI categories based on the WHO Asian cutoff (R^2=0.285; X^2=13.03; p=0.015); the model can correctly predict 50 percent and 87.9 percent of the respective weight groups. The negative beta values for sex and education showed negative associations. This was supported by previous correlations showing a negative relationship between the two variables. The positive beta values, along with odds ratios >1 for income, implied a stronger link. These

suggest that whether a participant is female (coded as 1 in the analysis; males were coded as 0) and a lower education level can decrease the chances of whether they are overweight or obese; inversely, a rise in a participant's income level may increase their likelihood of being overweight.

Table 4.7.
Binary logistic regression for predicting weight status and dietary guidelines knowledge (n=55).

Variables	B	Odds ratio	Sig.	% predicted	Nagelkerke R^2	Model X^2	*p*
Dependent variable = BMI (CDC) Under- to normal weight = 0, overweight to obese = 1							
Sex	-0.058	0.943	0.926				
Income	0.744	2.104	0.286	67.3	0.04	1.597	0.66
Education	-0.347	0.707	0.387				
Walk Days/week	-0.362	0.696	0.002	78.2	0.366	16.741	0.001
Work Days/week	0.277	1.32	0.202				
Dependent variable = BMI (WHO) Under- to normal weight = 0, overweight to obese = 1							
Sex	-1.122	0.326	0.075				
Income	1.488	4.427	0.065	72.7	0.285	13.03	0.005
Education	-1.075	0.341	0.02				
Walk Days/week	-0.857	0.03	0.425	63.6	0.192	8.436	0.015
Work Days/week	1.067	0.077	2.908				
Dependent variable = Dietary Guidelines Knowledge Yes = 0, No = 1							
Income	0.806	2.238	0.332				
Education	0.769	2.158	0.131	78.2	0.268	10.526	0.015
Sex	1.966	7.141	0.031				
BMI (CDC)	-0.376	0.687	0.676				
Perception of weight	-1.674	0.188	0.01	80	0.219	8.453	0.038
Walk Days/week	0.02	1.021	0.887				
BMI (WHO)	-2.07	0.126	0.042				
Perception of weight	-2.446	0.087	0.004	80	0.332	13.376	0.004
Walk Days/week	-0.027	0.974	0.853				

Days walked/week and days worked/week predicted up to 78.2 percent of the CDC-based BMI categories (R^2=0.366; X^2=16.741; p=0.001); the model can correctly predict 100 percent of the under- to normal weight group. The same test was conducted for the WHO-based BMI categories, and the same independent variables predicted 63.6 percent of the dependent variable (R^2=0.192; X^2=8.436; p=0.015); the model can correctly predict 31.8 percent and 84.8 percent of respective weight groups. The beta values for the days walked in the regression model, along with odds ratio <1, showed negative associations. This implied that the more days participants

walk in a week, the less likely they are to be overweight or obese. This echoed the findings depicted in Figure 4.6 and an earlier correlation analysis that showed a negative relationship between weight status and the number of days walked per week.

Income, education, and sex predicted up to 78.2 percent of the participants' dietary guideline knowledge (R^2=0.268; X^2=10.526; p=0.015); the model can correctly forecast 33.3 percent of the "yes" category and 90.7 percent of the "no" category. The participants' BMI, their perception of their own weight and the number of days spent walking/week can predict up to 80 percent of the participants' dietary guideline knowledge; this percentage was the same for both CDC- (R^2=0.219; X^2=8.453; p=0.038) and WHO-based (R^2=0.032; X^2=13.376; p=0.004) BMI categories. For the CDC-based cutoffs, the model predicted 33.3 percent of "yes" group and 93 percent of "no" group; the model that used the WHO-based cutoffs forecasted 25 percent and 95.3 percent of the respective dietary knowledge groups. The positive beta values and odds ratio >1 for sex, education, and income showed positive associations between these variables. From the regression model, a participant with higher income and education level may be two times more likely to know the dietary guidelines. Earlier descriptive analysis showed that the 10 out of 12 participants who said they knew the guidelines are males, it can be inferred from the model that male participants are seven times more likely to know the guidelines. In addition, the negative beta values on the participants' perception of their weight and body weight status, along the odds ratio of <1, show negative associations between variables; this association was revealed in the earlier correlations analysis. The model suggested that a participant's weight status and weight perception can decrease the chances of them knowing the guidelines.

Phase 2: Consumers, subgroup 1

Thirteen participants were recruited for this phase; one dropped out. Twelve participants engaged in one semi-structured interview, two 24-hour food recalls, and anthropometric measurements. This section will explore these findings by first providing a snapshot of the demographic and anthropometry data of the sample population, followed by a statistical analysis of diet recall data. Data culled from interviews will be presented according to four themes: 1) work; 2) dining preferences; 3) food, nutrition, and health; and 4) concepts of street food.

Demographics and anthropometry data

The sample population (Table 4.8) comprised five females (41.67 percent) and seven males (58.33 percent). The average age of the participants was 33 years (SD=8.71). Seven (58.33 percent) identified themselves as Chinese, four (33.33 percent) as Malay, and two (8.33 percent) as Indians. Five participants were married; out of these four (33.33 percent) had children. Two (16.67 percent) were born in KL while the rest (83.33 percent) were born in other states; the latter participants reported living in KL for an average of 20 years (SD=13.29). Two participants (16.67 percent) earned less than KL's reported median income, while the rest (83.33 percent) made more. Eleven participants (91.67 percent) attended college or university, one (8.33 percent) completed secondary school. These participants work an average of five days a week (SD=0.67), for about 8.5 hours a day (SD=1.27). They sleep an average of 6.9 hours a day (SD=1.1). Only two (16.66 percent) participants smoke.

Table 4.8.
Characteristics of interview participants (n=12).

	Total	%
Sex		
Males	7	58.33
Females	5	41.67
Ethnicity		
Malay	4	33.33
Chinese	7	58.33
Indian	1	8.33
Education		
Secondary school	1	8.33
College	2	16.67
University	9	75
Income (monthly)		
RM 1,000-2,999	2	16.67
RM 3,000-4,999	3	25
More than RM 5,000	7	58.33
Marital Status		
Married	5	41.67
Not married	7	58.33
Children		
Yes	4	33.33
No	8	66.67
Live With		
Family	9	75
Alone	3	25

The average BMI for this group was 24.9 (SD=2.78), which is 0.01 away from the CDC's overweight range (Table 4.9). Using the same cutoff, the proportion of participants considered under- to normal weight to those who are overweight and obese was seven to five. However, under the WHO delineations, the average BMI for this sample fell within the overweight category; the proportion of those who are under- to normal weight to those who are overweight and obese was one to three. The average waist-to-hip ratio for male participants was 0.89 (SD=0.045) while the average for females was 0.8 (SD=0.022). Those who exceed the WHO's waist-to-hip (w-t-h) ratio cutoff for males (0.9) and females (0.85) were considered to have excessive wiast adiposity and are at risk for metabolic complications (WHO 2008). The number of participants with a normal w-t-h ratio and those with at-risk w-t-h ratio was three and nine

respectively. These uneven distributions for the WHO weight and w-t-h categories may affect the statistical significance of dietary recall analysis.

Table 4.9.
Anthropometric and lifestyle characteristics of interview participants (n=12).

	n	Mean	SD	Median	Min	Max
Age	12	33.33	8.71	3	22	54
Weight* (kg)	12	70.71	12.25	68.15	54.3	93.3
Height* (cm)	12	168.16	9.29	169.9	153	182.2
BMI	12	24.87	2.77	24.5	21.2	28.9
Waist circumference* (cm)						
Female	5	76	3.23	76.6	72.5	80.7
Male	7	90.84	5.95	90.3	81.4	97.8
Hip circumference* (cm)						
Female	5	94	5.19	93	89	103
Male	7	100.54	4.64	99.4	93	106.4
Waist-to-hip ratio~						
Female	5	0.8	0.022	0.81	0.77	0.82
Male	7	0.89	0.045	0.89	0.82	0.93
Food expenditure/month (RM)	12	979.17	438.73	975	300	1500
Work Hours/day	12	8.46	1.27	8	6	10
Work Days/week	12	5.08	0.67	5	4	7
Sleep Hours/day	12	6.91	1.1	6.75	5	8.5
Sitting Hours/work day	12	8.5	3.8	7.75	5	15
Walk Days/week	12	4.83	2.49	6	1	7

** Average of three measurements.*
~ WHO w-t-h ratio cutoffs for males and females are 0.9 and 0.85 respectively.

Diet recall data

The diet recall data analysis was based on Himmelgreen, et al's (2006) work in Connecticut. The authors used independent variables such as language and time in the U.S. to gauge dietary acculturation among Puerto Rican women in Hartford. This research employed a similar strategy. Twelve participants recounted their food intake during the weekend and week days during dietary recalls. Altogether, participants consumed a total of 480 food and beverage items. These items were pile-sorted into seven categories, five were based on the United States

Department of Agriculture food groupings (USDA 2013): grains, vegetables, fruit, protein, dairy. Snacks and beverages were the remaining composite categories.

An exploratory data analysis indicated that a) there were variations in the consumption frequency of certain food items (Table 4.10), and b) frequency distribution for some items were not normal. Due to these factors and the small sample population, the analysis used non-parametric ranks tests (Field 2009). A series of Mann-Whitney tests were conducted to compare food consumption to independent variables such as sex (male v. female), weight status (under-to-normal weight v. overweight), and dining location (in v. out).

Table 4.10.
Frequency of food consumption for sample population (n=12).

Food groupings	Category	Frequency	%	Mean/person/day	SD
Grains	Refined grain	66	13.8	2.75	33.782
	Whole grain	11	2.3	0.46	5.630
Vegetables	Vegetable (other)	60	12.5	2.50	30.721
	Vegetable (dark, leafy)	16	3.3	0.67	8.199
	Vegetable (starchy)	11	2.3	0.46	5.630
Fruit	Fruit	15	3.1	0.63	7.685
Protein	Meat	19	4	0.79	9.720
	Seafood	26	5.4	1.08	13.316
	Legumes/bean/soy products	10	2.1	0.42	5.117
	Poultry	26	5.4	1.08	13.316
	Eggs	25	5.2	1.04	12.802
	Nuts	6	1.3	0.25	3.062
Dairy	Milk	10	2.1	0.42	5.117
	Cheese	2	0.4	0.08	1.027
	Butter/ghee	6	1.3	0.25	3.062
Snacks/sweets	Snack foods	12	2.5	0.50	6.144
	Sweets/dessert	18	3.8	0.75	9.206
	Other	1	0.2	0.04	0.514
Beverages	Soda/Artificial drink	14	2.9	0.58	7.172
	Coffee	12	2.5	0.50	6.144
	Juice	3	0.6	0.13	1.541
	Soup (broth)	6	1.3	0.25	3.062
	Tea	31	6.5	1.29	15.864
	Water	74	15.4	3.08	37.892

Several significant associations emerged from the analysis (Table 4.11). For water consumption, there was a significant difference between male and female participants (U=1; Z=-2.728; p=0.005); males reported drinking more water than females (mean = 7.7 to 4). Snack consumption between those who fell under the CDC's categories of under- to normal weight and overweight to obese also appeared different (U=4.5; Z=-2.3; p=0.03). The frequency range of snack consumption for this sample group fell between zero to four times, those who were measured to be in the CDC range of overweight and obese said they snacked an average of 1.8 times (SD= 1.53) during the recalls. The analysis also revealed several significance differences in the consumption frequency of water (U=29; Z=-2.518; p=0.012), refined grain (U=36.5; Z=-2.097; p=0.039), leafy vegetables (U=36; Z=-2.301; p=0.039), and legumes (U=35; Z=-2.574; p=0.033). Participants appeared to drink less water, but ate more refined grain, leafy vegetables, and legumes when they dined out.

Ranks tests were carried out on three other independent variables: day of the week (week day v. weekend), w-t-h ratio (normal v. at-risk), and weight status using the WHO Asian cutoff. Test results showed no significant consumption frequency differences between the day of the week and the WHO-based BMI categories. However, the tests showed differences in the consumption of vegetables (U=2.5; Z=-2.045; p=0.036) and snacks (U=2.5; Z=-2.216; p=0.036) among those with normal and at-risk waist-to-hip ratios. However, the results for the w-t-h categories may be affected due to the proportion of participants who fell in the respective normal and at-risk groups (3:1); since the sample size was small and the proportions highly skewed, these findings may not be significant.

Table 4.11.

Ranks tests results of food consumption frequency by sex, weight status, and dining location.

Variables	n	Median	Mean	SD	Mean rank	Mann-Whitney U	Z	*Sig.*
Water								
Males	5	8	7.714	1.87	8.86	1	-2.728	0.005
Females	7	5	4	1.70	3.2			
Dined in	12	4	4.333	2.87	16.08	29	-2.518	0.012
Dined out	12	1.5	1.833	1.53	8.92			
Snacks								
Under- to normal weight (CDC)	7	0	0.429	0.53	4.64	4.5	-2.3	0.03
Overweight to obese (CDC)	5	1	1.8	1.30	9.1			
Normal w-t-h ratio	9	1	0.56	0.53	5.28	2.5	-2.216	0.036
At-risk w-t-h ratio	3	2	2.33	1.53	10.17			
Refined Grain								
Dined in	12	1	1.33	1.83	9.54	36.5	-2.097	0.039
Dined out	12	5	4.167	3.07	15.46			
Leafy Vegetables								
Dined in	12	1	0.25	0.45	9.5	36	-2.301	0.039
Dined out	12	0	1.083	1	15.5			
Vegetables								
Normal w-t-h ratio	9	3	3.67	2.96	5.28	2.5	-2.045	0.036
At-risk w-t-h ratio	3	9	9	3	10.17			
Legumes								
Dined in	12	1	0.083	0.29	10.33	35	-2.574	0.033
Dined out	12	0	0.75	0.75	14.67			

Interview data

A content analysis was conducted on the interview data. Interview audio recordings were target-transcribed based on themes that emerged from the interview guide, as well as interview, field, and observation notes. I conducted some interviews bilingually – participants either spoke a mixture of English and Malay or English and local Cantonese; I transcribed and translated the non English-language interviews verbatim. In the preliminary analysis, interview data were sorted into three major themes according to a code list: time, dining, and health. These themes included subthemes of work, time spent eating and cooking, and nutritional knowledge. The coded data were reviewed again to see whether some of the themes could be clarified and consolidated. The final central themes that appeared repeatedly throughout the textual data were 1) work; 2) dining behaviors; 3) food, nutrition, and health; and 4) concepts of street food.

Theme 1: Work. Work emerged as a major theme that threaded all interviews. All participants recruited for this phase were professionals with office jobs who worked an average of 8.46 hours (SD=1.27), at a mean of five days/week (SD=0.67). Participants described their jobs as mostly desk-bound; half of the participants said their jobs required them to travel either locally or internationally for short periods of time. Work appeared to influence the participants' daily lives, including their diet and ability to engage in physical activities. It was also apparent food-related activities such as shopping and cooking were still defined by gender roles.

Discussions of meals or dietary habits were often accompanied by mentions of work. Breakfast, for example, was one such meal. Out of 12 participants, three reported skipping breakfast and one woman said she will eat a later meal at work after sending her children to school. Those who eat breakfast said they would consume light meals at home and mentioned having to rush through this meal to get to work. To many participants, work appeared to take precedent over breakfast. As a 22-year-old male graphic designer said, "it depends, if there is time for breakfast, I'll have breakfast. It won't be like specifically I need breakfast, if there is time then I'll have my breakfast lah." As for lunch and dinner, work often dictated the time, location and access to certain kinds of food. The location of the participants' offices, as well as work-related travel, affected dietary choices. One participant, a 30-year-old male photographer for a low-cost airline company, commuted an hour and a half to work (depending on traffic) at an airport outside of KL. Since the areas surrounding the air site remained undeveloped, the photographer and his coworkers often traveled at least half an hour to the next town for food. Though there were eateries at the air site, he said, but most were corporate fast-food joints: "If I can, I want to eat, like, salad every day for lunch but like, at the place where I work, it's not conducive. The only salad you can get is from Starbucks or Coffee Bean, which is like what,

three leaves and like a whole load of dressing." Participants who traveled out of town for work said what and when they ate was limited to where they were. One 36-year-old male participant, a national media company executive who managed live coverage of the Malaysian soccer league, said his meal times were often inconsistent. During soccer season, he had to fly to various states, oversee crew and equipment logistics, and coordinate match coverage: "So when that thing happens for nine months of the year, that basically disrupts my, my food pattern, intake."

Since work occupied much of the participants' time, the role of procuring and preparing food were often relegated to females. Out of 12 participants, seven were single. Three of the single participants, all males, lived with immediate families; the remaining four, three males and one female, lived alone. For those who were married, the women reported doing most of the grocery shopping and cooking. For those who were single and living with their families, their mothers cooked. The three single males reported cooking at home but two said they tended to eat out rather than cook. When the single participants cooked, they leaned toward quick meals such as instant noodles, eggs, pasta, toasts, fried rice, and canned food. Only one single male participant, a 42-year-old designer/competitive cyclist who lived alone, described cooking most of his meals from scratch.

All female participants worked; four were married and three had children. The married women cited having children as a driving factor for cooking at home rather than dining out because of the perceived control over the quality of the meal. A 32-year-old journalist, who became a first-time mother in 2012, said she and her husband stopped dining out frequently due to the arrival of their child. As she described the typical meals she would prepare, she asserted: "I like cooking uh, ...but it's more of like, when you do it at home, you, you sort of uh, whatever goes in is more cleaner, I believe, as the oil you use is also cleaner, a better sort of oil that you

buy." For male participants who lived with their mothers or wives who did not have the time to cook, the whole family tended to eat out because it was more convenient. As the oldest male participant, a 54-year-old ad agency owner, said: "Because actually my wife doesn't cook, so, it's uh, all our meals are out. ...For a while, for quite a number of years, my mother cooked. ...But I realize because I began keeping quite late hours, it wasn't efficient anymore and so I began to eat out, and then my son has left home so there's not many of us so we decided not to bother my mum, so she didn't have to cook everyday for us now."

Aside from diet, participants said the sedentary nature and time spent at work left them little time to engage in physical activities. Eleven participants reported sitting an average of 8.5 hours/work day. All participants walked an average of 4.8 days/week for at least 10 minutes at a time; all except one drove to work. Most of the walking was related to work – attending meetings or walking from the parking lot or a public transport hub to the office. Another form of physical activity that participants said they engaged in were related to household chores such as sweeping, mopping, gardening, and lifting loads of laundry. Only three participants, all males, said they put aside time to exercise, by either cycling, working out in a gym, or walking in a park. For the other participants, finding time to exercise was tough. A 23-year-old, a recent college graduate, said working left "not much hours for yourself, for your own time, to do your own things that you want to do." Another female participant, the 32-year-old mother, said: "I try my best to make time for myself to go into something, but there is always something else which is bugging you, which is like your family actually, you have to do things for your kids, you know, you have to cook, all these things that come in between. Honestly I do not have time, but I do try to make time."

Theme 2: Dining behavior. While work affected the diet and physical activity engagement of these participants, relationships and cost helped shape their dining behaviors. The term "relationship" in this context signifies relations between participants and their familial, platonic, work, and neighborhood networks; these associations strongly influenced the participants' dietary decisions. The cost of eating out, however, featured less in determining dining preferences due to the diversity of food options in KL.

It was clear from the interviews that dining in Malaysia is a highly social activity that promotes bonding between participants and their familial, social, and business circles. This sentiment was expressed in the participants' descriptions of acts such as lunching and snacking. Similar to participants in the Phase 1 survey, many participants in this sample population often dined out for lunch, often with their coworkers or clients. It appeared that the act of having group lunches can either maintain ties or clarify boundaries between participants and their coworkers of different ethnicities. Due to religion-based dietary prohibitions practiced by certain ethnicities – for example: Malay Muslims generally consume *halal* food items prepared in accordance to Islamic scriptures – dining decisions were often made collectively during lunch outings. A male participant who worked for a large computer-gaming company reported eating lunch out in a mixed-ethnic group of up to four people. However, the group is one of two lunch groups within his 10-person department. He said his group would often frequent the same eatery that serves *halal* food, while the other group would go elsewhere: "We kind of separate (sic). ...we normally separate because other Chinese colleagues, they go Chinese hawker." Snacking, however, produced opposite results. Out of 12 participants, 10 said they ate between meals; they snacked an average of 1.65 times/day (SD=0.71), and usually at work. The food items consumed came from various sources: they were bought in bulk from supermarkets, purchased from nearby

eateries during breaks, or gifted by business associates. Regardless of source, many participants reported sharing them. As one 22-year-old male participant noted, "we will buy a lot, then we put in the office and then everyone will start eating it. This eating habit is not only me, but the whole office." During festivities such as Lunar New Year, Eid el-Fitr, or Diwali, coworkers would often distribute seasonal sweets or baked goods at work. As one 30-year-old male participant observed: "Usually it's like chocolate or cookies. Any festive season they will have a lot of cookies right? Chinese cookies, Malay cookies, then Deepavali cookies, all year round."

While relationships may shape these participants' dietary decisions, finances did not appear to be a major influence. Though participants in the sample population were attentive to food costs or expenses, the diversity of eateries, grocery stores, and wet markets in KL made it easy to eat within any budget. Participants reported spending an average of RM 979 (SD=438.73) a month, or approximately US $326, on groceries and dining out; the amount spent on food was almost a third of the participants' individual monthly incomes. When asked whether they thought which was more expensive – dining in or out – the answers were mixed. Though five said dining out and one said eating at home, the other half were more ambiguous in their responses. Participants indicated that their decisions to dine in or out depended on personal taste, the purpose of the meal, the proximity or convenience of the dining location, and time; many would perform a mental calculus of cost and tradeoffs. When participants were probed about what they thought was a reasonable price to pay for a meal out, participants listed ranges for two distinct types of eateries: places that serve street food fare and restaurants. For the former, participants said it was reasonable to pay under RM 10 to 15 (US $3 to $5) for a meal, while dining at the latter would usually run about RM 50 (US $16) per person. For most participants, dining out in restaurants usually entailed eating at establishments that serve non-local cuisine,

such as Japanese or "Western" food. Street food fare, as the participants described, usually feature local cuisine that comes in one dish (such as a bowl of noodles or a plate of chicken or fried rice), multiple dishes shared family-style, or multiple dishes served in a buffet. As for dining at home, participants reported sharing dishes, usually in the form of a family meal of meat and vegetable dishes with rice, or single-dish meals such as pasta, fried noodles or rice. Single male participants who lived with their families reported contributing financially to the household for groceries and supplies. While some participants said they felt the quality of the home-cooked meals were healthier, the time, labor, and resources invested would add up to be more than dining out. As one 25-year-old married female participant with no children noted: "It's actually cheaper to eat out if you eat below 10 ringgit per meal. In terms of total cost lah, you got to pay for [cooking] gas, you got to pay for, you know, all your oil, and stuff like that. Because average per meal, when I cook, costs about 25 to 30 ringgit for the both of us, with gas and electricity and everything lah." However, for some participants, quality trumped costs. The 42-year-old single male participant who cooked said the time and labor he invested to procure quality ingredients from "trusted" sources yielded tastier and cheaper results compared to dining out: "You need about 100 ringgit to properly eat, actually, to have a good meal, you know, just to spend some time outside. That's why I prefer to cook, I like cooking."

Theme 3: Food, nutrition, and health. Given the responses in the earlier theme, it was clear that Malaysians have a wide variety of dining options at their disposal. As one participant noted wryly, "the first thing people talk about when you say 'Malaysia', it is food. It's a horrible thing lah, you know. All things food, it is the only thing that distinguishes the country." This quote revealed a pervasive sense of conflict among participants when they discuss eating and its connections to health in terms of nutrition, weight and fitness, and diseases such as

cardiovascular and metabolic disorders. Many participants, regardless of ethnicity, income level, or sex, recognized that their diet and lack of exercise due to work can affect their weight and health. Although participants exhibited little knowledge of the national dietary guidelines, they learned about nutrition and its effects on health and weight from multiple sources and from personal experiences.

Throughout conversations about their lifestyle, participants often expressed their experiences, conceptions, and concerns about health, diet, and weight. When presented with a body image scale (Appendix V) and asked to pick an image that represented their ideal and current body shapes, eight participants saw themselves as overweight. Only three participants thought their body shapes matched their ideal, and one thought he weighed less than his ideal. Ten participants believe that their weight affected their health, which was mostly described in terms of physical fitness and ease of movement. Many participants often used the example of performing physical activities to conceptualize fitness and ideal weight, as this 32-year-old female participant illustrated: "Ok, I think, I'm my opinion, if you're just overweight and if you can't move fast, ...it's already an early sign that something is wrong due to your weight, you know. It's like you'll be slogging yourself, you'll be perspiring, in fact, more compared to an ordinary person, or you just can't reach a certain distance within a certain time, something is wrong with you, and you can't deny the fact that it's your body weight that is slowing you down." Being underweight was also associated with ill health, as this 33-year-old single female participant noted: "It seems like you don't have energy. When you are too skinny, I don't know, Women should have some curves (laughs). ...It's as if there's not enough nutrition."

Three participants said they did not think weight is an indicator of noncommunicable diseases. One 23-year-old male participant believed genes mattered in disease development just

as much as diet and exercise: "Because weight can be affect by many things what (sic), doesn't mean if you're too skinny you're not healthy, doesn't mean if you're too fat you're not healthy. Some people are quite obese lah, their high blood pressure, their cholesterol level, ok. It's just their genes lah, you can't, you can't measure your health by your weight."

All participants had a family history of noncommunicable diseases: all have immediate and extended family members who were diagnosed with diabetes, heart diseases, high blood pressure, thyroid disorders, and cancer. At least three participants cited this as a motivation for trying to eat "better", including this 42-year-old male participant: "I am very particular about food. ...My cousins are my age, some of them passed away already. ...They don't control what they eat, so, most of my relatives, you know, ...had bypass surgery, because they don't control what they eat, they got ...high blood pressure, *kencing manis* (diabetes) and all that ah, so I don't want to be like that."

Most participants said they do not know what is in the national dietary guidelines, a formal representation of nutritional knowledge. But many expressed learning about nutrition from their family, social networks, the Internet, and from their encounters with medical professionals. At the time of the interviews, two participants were on self-imposed diets to lose weight; one said she reduced her daily intake of rice and noodle, while another adhered to a "3-low-1-high" diet (which limits caloric and carbohydrate intakes for three days and allows one 'normal' diet day) and a gym regimen. The former, a mother of three children, managed to be on the diet for less than a week. The latter, a 33-year-old male, had been on the diet for a month. Both participants said they learned about these diets from speaking with their friends and researching the Internet. Also, participants revealed that many of their dietary preferences were shaped during childhood and through consumption experiences. For example, the participants

who did not eat breakfast or drink coffee said they never acquired either habit or taste when younger. Participants who liked noodles over rice often based their preferences on physiological experiences and notions of digestion after consuming either product. When speaking about the rice, noodles, portion sizes, and dining at restaurants, a 30-year-old male participant described his sensations: "...(It's) like all the blood has gone to the stomach and you're not thinking anymore. Like so 'coma', we call it. I think after that sort of phase, like, we knew that, like, you know, we have to eat somewhat of a smaller of a portion and something easier to digest, like for example, I think noodles is slightly better, psychologically thinking, there's no scientific fact to back this." Some participants, however, learned about nutrition in a 'scientific' way through their encounters with medical institutions when they or a family member were sick. A female participant who developed gestational diabetes during her first pregnancy called the experience life changing. During most of her pregnancy, she had to record her diet, check her blood, and meet her health care provider frequently. After this ordeal, she realized she needed to improve her post-pregnancy diet: "It was also a turning point for me because ...in the earlier stage, I found out that if you eat rice, the sugar levels are really high, and it doesn't come down. Yeah, and this is the white rice that is available, which I have been eating all my life you know. And I realized if I do not eat rice, and instead I eat noodles, it's not too bad, you know."

Theme 4: Concepts of street food/dining options. The last theme from this dataset was prompted by results from the free-listing activity in the Phase 1 survey. During the survey, participants were asked to name places where they would frequently dine out. The list, as shown in Figure 4.5, included terms for various types of eateries. However, many of the terms had overlapping definitions. To explore these dining options, participants in Phase 2 were asked to define six terms: hawker stalls, food court, *mamak*, *warung*, *kopitiam*, and restaurant. The

findings depicted an increasingly corporatized food industry in KL, and signified spaces where tensions between ethnic and national identities, class, and prejudices about hygiene interact. Many of these dining establishments were staffed by foreign migrant workers. By examining how these dining options were described – through concepts such as ethnicity, price points, food, location, sanitation, and service – one can get a glimpse into the sociocultural factors that influence how participants decide where to eat.

Hawker stalls. Hawker stalls, which can be found in various locations and set-ups, appeared to be the most popular representation of street food in Malaysia. Words used to describe this term included "cheap," "side of the street," "Chinese," "unhygienic," "MSG," and "unhealthy." According to participants, hawker stalls featured mobile carts serving one specific dish (e.g., a bowl of noodle-soup or a chicken-and-rice plate) prepared on the spot, and usually found outdoors (Figures 4.7-8). Some vendors provided seating, some did not. Patrons placed orders with the cook and food would be served by the cook or a worker. Hawker street fare may feature regional dishes and could be ethnically segregated depending on the items served (due to dietary prohibitions). One 54-year-old male participant noted it was common for stall owners or cooks to hire foreign migrant workers: "There are more and more, you know, immigrants, they're all migrant workers now, and of course there's lots of variety partially because of the migrant workers and you find that the, the normal food we grew up eating had become a fusion of sorts."

Food court. Participants depicted a food court as a space comprising multiple hawker stalls. They used words such as "air-condition," "shopping malls," "eclectic," "cleaner," and "convenient" to portray food courts. Another Malay term, "*medan selera*," was used to illustrate the concept of a food court (Figures 4.9-10). One 34-year-old female participant called it "hyped-up hawker stalls." Similar to hawker stalls, patrons would order food at a particular stall and

have dishes delivered to the table. According to the older participants in the sample, food courts used to be a collection of hawker stalls located outdoors under a covered space or pavilion. Stalls were typically arranged on the boundaries of the pavilion with communal tables and chairs in the center. Increasingly, the older participants noted that food courts are now often found in shopping malls. The food served were mostly *halal* and included non local cuisine such as Korean, Japanese, and 'Western' fare. These food courts were mostly self-service and orders and payments were conducted at the respective stall.

Figures 4.7-8. *Examples of hawker stalls in Kuala Lumpur. (Photos by Sylvia Lim.)*

Food courts were perceived to have a higher standard of sanitation due to its commercial indoor location. Participants also observed that many stalls were run by corporate franchises. The migration of these hawker stalls from outdoors to indoors can be explained by the rate of commercial development in the past three decades: "*Medan selera* used to be the food court, before there were like food courts in shopping centers. They were food courts in open areas. ...Ever since ...more shopping complex has been built, (there are) more food courts inside the shopping complex, so not many people would go to *medan seleras* any more."

Mamak. Like the eatery it is used to convey, the use of the term "*mamak*" has expanded from its original scope. Commonly understood to describe Indian Muslims in Malaysia (mamak

is a derivation of the Tamil word *'maa ma'*, meaning uncle), the term now includes the kinds of dining establishments these Indian Muslims run (Figures 4.11-12). As most participants explained, a *mamak* is cuisine-specific, serving unique items such as *roti canai*, a griddled flat white-bread, *nasi kandar*, a buffet of curries and side dishes served with steamed rice, and *mee goreng mamak*, a fried noodle dish.

Figures 4.9-10. *An example of an open-air food court in Petaling Jaya, Malaysia, and a food court 'stall' in a Kuala Lumpur shopping complex. (Photos from http://tailim.blogspot.com and http://cwfoodtravel.blogspot.com)*

As a Malay female participant noted, a *mamak* is "filthy, delicious, unhealthy, all the wrong things. ...(It is) food everyone grew up with." Older participants described the changes or "upgrades" this establishment went through in the past three decades. A *mamak* was also called a *mamak* 'stall', owing to its beginnings as roadside stands similar to the Chinese hawker stalls. However, many stall operators ditched the streets and moved indoors after contending with negative opinions about their sanitation. One participant observed that common interior features of an indoor *mamak* such as tiled floors, open kitchens, and stainless steel furniture were adopted to help improve public perception of cleanliness. In the last decade or so, these indoor *mamaks* extended operating hours to 24 hours, included amenities such as televisions and free wireless Internet, and expanded their menu to include Thai and 'Western' dishes. Food and beverages

were ordered through waitstaff, many who were foreign migrant workers; payments were taken at a counter manned by a manager or the proprietor. It became a social space; younger participants often described *mamak* by its affordable food, hours of operation and social function, such as a place to watch major sporting events. However, one 33-year-old male participant, an Indian Muslim who grew up in the state of Penang, lamented these changes: "It's diluted, it's just a convenient place for people to meet. ...The concept of *mamak* in KL is basically a social place where you can gather socially, cheaply. It's not where you can have real *mamak* food."

Figures 4.11-12. *An example of an outdoor mamak stall and an indoor mamak eatery. (Photos by Tony Stefan and from www.backpackingmalaysia.com)*

Warung. Warung is a Malay term describing roadside food stalls similar to hawker stalls (Figures 4.13-14). Participants depicted *warung* as stands plying affordable Malay dishes; they observed that in recent years the concept has expanded to include Thai and Indonesian food due to influence from foreign migrant workers. The sizes of the stall and availability of seating varied according to the type of food served, which ranged from snack food items such as "*pisang goreng*," fried bananas, to "*nasi campur*," a buffet featuring Malay meat and vegetable dishes with steamed rice. Malay participants described *warungs* in KL as open-air stalls under wooden or corrugated metal coverings located in parking lots or in alleys between buildings; these

participants expressed sanitation concerns due to the *warung* location. These businesses had set hours and were family-owned. Malay participants tended to associate *warung* with wooden stands or eateries in rural areas or villages. Out of the list of eateries explored in this section, *warung* was perhaps the most racialized space. When asked to define *warung*, most Chinese and Indian participants tended to use the term "Malay," followed by a description of similar eateries such as a *mamak* or a *kopitiam*. The Malay participants, however, were able to provide more in-depth explanations that did not compare it to other types of eateries. As one 33-year-old male Indian respondent noted: "(It is) similar to *mamak* stalls, I would say, but really not to social... I mean, it depends, uh, (there is) a bit of socializing as well, I think mostly Malays, they socialize at *warungs*. You can't see that much of Indians and, uh, or Chinese, yeah."

Figures 4.13-14. *An example of a warung serving nasi campur in Kuala Lumpur. (Photos by Tony Stefan.)*

Kopitiam. A *kopitiam* is a localized Hokkien (a dialect from China's Fujian Province) term that literally translates into coffee shop (Figures 4.15-16). Participants associated *kopitiam* with specific beverage, breakfast, and snack items such as butter-roasted black coffee served in a cup and saucer, thick toast with coconut jam and margarine, and soft-boiled eggs. A *kopitiam* was described as a predominantly Chinese establishment serving non *halal* food in shop lots

without air conditioning. However, participants observed that the *kopitiam* had changed in ways similar to the *mamak* or food court: many *kopitiam*s in KL included hawker food stalls. As several participants explained, a *kopitiam* proprietor either leased or owned a shop lot, ran the beverage services, and rented out spaces to hawker stall operators. Patrons ordered food with each respective stall operator and paid for their beverages and food separately. In the past decade, the *kopitiam* became increasingly corporatized. Similar to chain cafes such as Starbucks, Malaysian entrepreneurs have expanded uniformed, nostalgia-tinged *kopitiam* franchises across the country, replete with standard interior features such as marble table tops and black-and-white photographs of "traditional" *kopitiams.* These franchises served a *halal* menu that included hawker-stall fare and employ a wait staff in uniforms. Participants used words such as "branded," "over-hyped coffee shop," and "lifestyle" to describe these newer establishments. Not unlike the *mamak*, some of these corporate air-conditioned *kopitiams* are open 24 hours and offer free Internet access. As a 54-year-old male participant noted, the traditional, Chinese-run *kopitiams* gave way to newer establishments managed by ethnically-diverse "entrepreneurs" because the former could not keep up with the times; the concept of *kopitiam* was revived in a way to appeal to younger consumers who seek affordable, local cuisine and a comfortable place to socialize. Another participant, a 32-year-old female, said: "A *kopitiam* is basically like uh, it's a Starbucks, it's a Malaysian version of Starbucks, I can say that yeah. ...And I would (add) that *kopitiams* have now, have elevated a little, one step, in the sense it's a bit more posh looking so it's a bit more like a restaurant *kopitiam*, you know ...It's not really a *kopitiam* anymore. It's more of like a restaurant that serves *kopitiam* food, but in a more, a better environment." The term *kopitiam* may also carry regional and generational connotations, as a 25-year-old female participant observed: "But nowadays it's kind of blurry right, because *kopitiam* can be like Old Town [a

franchise], and you know... if you're from Ipoh or if you're from Penang you say *kopitiam*, people would think coffee shop, but if you're from PJ [Petaling Jaya, an urban area in the state of Selangor adjacent to KL] and you say *kopitiam*, people would think of Old Town, especially the younger generation."


Figures 4.15-16. *An example of an older kopitiam and the interior of an Old Town White Coffee shop, a local cafe franchise, in Kuala Lumpur. (Photos from http://www.nileguide.com/ and http://fiuzu.com)*

Restaurant. Most of the survey and interview participants cited restaurants as one of the places they would frequently dine at. Participants associated restaurants with words such as "high end," "pricey," and "comfortable." Restaurants were located indoors and had wait staff. They described restaurants as a space typically divided into smoking and non-smoking sections. Unlike the predominantly cash-only eateries listed earlier, patrons could pay for meals by cash or credit card at restaurants. Restaurants could serve either local or foreign cuisine. Participants further differentiated the 'sub-genres' within specific 'ethnic' cuisines, such as South Indian banana leaf restaurant or a Chinese "*tai chow*" (in local Cantonese) offering made-to-order dishes served family-style. One 42-year-old male participant observed that "restaurant" also encompassed the types of places listed earlier depending on the language spoken and the location of the eatery: "...it's hard to define a kedai *mamak*, a *warung*, a restaurant here." Several participants said they liked to dine at restaurants because of convenience and comfort. They

described frequenting restaurants for dinner after work, during weekends, or during non-work related gatherings with friends. Many participants said they usually dine out with family members, girlfriends or boyfriends, or clients at restaurants. Though dining in restaurants could cost more than dining at home or at the eateries listed earlier, some participants preferred it because of the perceived convenience and food quality; they did not mind paying more as long as they obtained the appropriate return in terms of service or portion sizes. One 30-year-old male participant said: "We feel like we are okay to pay it (sic) when the service is good, especially when you go to a restaurant. ... I think it's an Asian mentality when um, it's bloody expensive when the service is bad. I think that factors in a lot as well, psychologically because uh, you feel like, why do I have to pay so much when the service sucks, you have to wait and the food is always come in like at a delayed time and the portion is so small."

Phase 3: Food vendors

Per the research objectives, the interviews and observations conducted in this phase intended to investigate the vendors' knowledge of local dining trends and food business, and to measure the number of customers they served within a specific time. However, one of the research objectives – to approximate the amount of food sold within a specific time – could not be achieved due to the variety of the food sold and the vendors' hesitancy at revealing business-related figures. This section will describe the demographics and business models of these vendors, their experiences and observations of the food industry, and their insights on Malaysia's rising prevalence obesity and overweight.

Demographics and business models

A total of four vendors were recruited for this phase. Three were male and one was female. The average age of the participants was 46.5 (SD=11.03). Two of the vendors identified

themselves as Chinese, one as Indian, and another as Malay. Three vendors reported earning RM 3,000 and above, which is slightly below or higher than KL's monthly median income, while one made between RM 1,000-2,999. Three participants said they were married with children. Half of the participants said they completed college, the remainder graduated secondary school.

Each participating vendor in this research ran different types of eateries and operated under varied business models. One vendor managed a South Indian roadside stall in a commercial area, while another owned a small stall selling banana and fish-paste fritters in a residential district. The sole female vendor operated a *kopitiam*, ran the beverage service, and sold chicken rice in a commercial zone. The youngest male vendor hawked pork-noodle bowls out of a stall within a neighborhood *kopitiam*. Three vendors said they received government approval to run their businesses, either operating under a municipal license or within a place with an existing license, while one did not (the banana fritter vendor). One vendor had been in the food business for more than 30 years, two for more than 10 years, and one for less than two years. Two vendors said they inherited the business from their parents, one was a hired manager for an absentee owner, and another decided to quit an office job to start his own business.

All vendors serviced the breakfast and lunch crowds. Three vendors hired foreign migrant workers from India and Indonesia to help run their businesses while one was a husband-wife operation. The noodle seller hired one migrant worker, the Indian manager employed seven, while the female vendor had a staff of six. Two vendors, the *kopitiam* and South Indian stall manager, served 81 and 98 customers, respectively, within an hour during lunch time. The noodle vendor sold 11 bowls of food within an hour, while the fried banana vendor had six

customers in two hours[1]. Food preparation time varied depending on the type of food sold. Participants said most of the food, such as meat and vegetable dishes, broth, and batter, were cooked ahead of time prior to the breakfast, lunch, or tea rush. Some dishes, such as the roasted poultry and pork served by the female vendor, had to be prepped or cooked hours before the start of the business day. Once preparations were completed, the serving time for each meal was short. The vendor selling banana fritters spent about 10 minutes cutting, battering and frying different banana cultivars before putting them on a tray; customers could purchase multiple pieces from the tray at a time. This participant also sold different snacks such as *keropok* (fish-paste fritters), *kuih keria* (sweet potato 'donuts') and *cucur badak* (stuffed sweet potato fritters), and these were cooked in limited numbers ahead of time. The noodle seller would simmer the broth in advance; it took him approximately three minutes to boil the noodles and meat, blanch the leafy vegetables, and assemble all the ingredients in a bowl for a customer. As for the South Indian food stall, all vegetable and meat dishes, along with rice, were cooked about an hour or so before the lunch crowd arrived, and customers served themselves buffet style. In between breakfast and lunch, and lunch and tea, the head cook and several helpers would prepare snack food items such as curry puffs (savory pastry stuff with curried potatoes or sardines) and *vadai* (savory legume fritters) for sale during tea. The female vendor selling chicken rice would prepare the roasted meat, rice, and broth ahead of time. Customers would specify the type and cut of meat they want; it took her about 30 seconds to assemble a plate of meat and rice with slices of raw cucumber. All vendors gave customers complimentary condiments such as chili sauces and chopped chilies in soy sauce, or small bowls of chicken broth or *rasam* (a tamarind-based South Indian soup) with their meals. The dishes and snacks these vendors sold cost between RM1 to RM 6

[1] It rained for several hours during the time of the observation. The number of customers counted during this period may not reflect the usual number of customers this vendor would serve due to inclement weather, since the stall was located outdoors, with limited cover from rain and sun.

(approximately US $0.33 to $2); these prices did not include beverages. All vendors said they did not know the national dietary guidelines.

Doing business

Interviews with these food vendors revealed several insights on the dining behavior and the small-scale food industry in KL. Corroborating with some of the findings from Phase 2 interviews, food vendors said that their clients usually live or work near their eateries. As such, all vendors had a following of 'regulars'. This local customer base directly influenced two crucial business practices vendors described adhering to: keeping prices affordable and maintaining good relationships. All vendors reported seeing a rise in ingredients and overhead costs due to the government's easing of food and fuel subsidies and general inflation. Three vendors, who had been in business for more than 10 years, said they either did not increase the prices of their meals or increased it slightly to keep up with costs and competition. One male vendor, who inherited the business from his father, said he would only increase the price of each meal based on the level of customization his customers requested. For example, a meal of noodle, broth, pork, leafy greens, fried shallots, and seasoning oil would cost RM 4.50 each. If a customer asked for an egg, a surcharge of RM 0.8 would be added. "If they (suppliers) raise the price, we have to raise the price. ...An egg, last time, seven to eight years ago, cost about RM 0.10 cents apiece. Now, it is 30 to 40 cents apiece." The female vendor noticed that the volume of customers served by her stall would increase nearing the end of the month, right before pay day. Therefore, to keep her customers happy, she said she could not raise her prices despite the hike of ingredients costs over the years: "My customers are regular customers. All have eaten here for a long time, right, and all of them are very supportive." All vendors tried retaining their regulars by establishing reciprocal relationships with them; the vendors chatted with customers, modified meals when

requested, or gave away free food. The Malay vendor selling banana fritters said such services made lasting impressions in a competitive industry: "Doing business is not just a matter of a customer bringing you one ringgit, you give him one ringgit's worth of bananas, you take his money, and he goes home. I want him to return and to remember me."

Diet and more

When asked why they thought overweight and obesity was becoming more prevalent in Malaysia, the vendors' answers centered on lifestyle, namely dietary behavior, work, and lack of exercise. The gist of the responses: too much work, too little sleep and exercise, poor diet, and abundant access to food. The vendors echoed sentiments similar to participants in Phase 2 – the fast-paced, work-centric city life can adversely affect health and weight. From two of the vendors' perspectives, work contributed to negative lifestyle habits. A 30-year-old male vendor observed that many KL residents such as himself worked long hours and engaged in frequent after-work "entertainment" such as going to happy hours at bars or socializing at dining establishments. These activities resulted in late nights, caused inadequate sleep, and enabled "fat to stick to the body more". Those who participated in such "night life" are more likely to eat late in the night and are less likely to exercise, he said.

The workplace itself can be a prominent factor in shaping lifestyle patterns. The banana-fritters vendor described a "work culture" where many sedentary Malaysian workers consumed multiple meals during a work day – breakfast, midmorning tea, lunch, afternoon tea, dinner, and late-night snack. He said these workers were spoiled for choice due to their access to a large variety of food and dining establishments. The Indian stall owner observed that variety whets the appetite for eateries such as his because they were convenient, fast, and cheap: "They like to go to stalls for eating. When you go to the restaurant, you have to sit down, but here, if you want to

come, you just take your rice and just go around there (the buffet), ...They take only what they wish to take, what they like." However, the low price points did not translate into healthy choices or portion sizes. The manager noticed that some of his customers tended to pile on the rice: "That's uh, spoiling your health. Too much rice will make you fatter. You must take less rice and more vegetables lah."

The vendors expressed that diet was only one of multiple factors contributing to the nation's growing waistlines. As the banana-fritter vendor summed it up, the economic condition of urban Malaysians has improved to the point that, "we are living in a prosperous country, where we have everything what we can get (sic). Nothing is stopping us. Whatever you want to eat, just say it." Work and the resulting income changed the way Malaysians interact with one another both at the work place and outside of it; these kinds of interactions often center on food. He recalled that people used to call on each other at home, and guests of such social visits were served a cup of tea, Milo or coffee, and some cookies. Now, social calls take place in coffee shops that sell food, and people tend to eat throughout the visit. He repeatedly observed: "In Malaysia, eating has become a culture, you know. It's not a habit."

Chapter 5: Discussion and Conclusion

This final chapter will discuss the results of this research and conclude this thesis. The first section in this chapter will summarize the findings from Chapter 4. Then, results from the study will be reviewed and examined through four themes: 1) economic growth and weight status, 2) nutrition transition, 3) street food, and 4) consumption and control. Prior to discussing recommendations for future research and the study's applied implications, I will list out the limitations. Lastly, the conclusion section will recap the major findings and discussion points.

Summary of key findings

From the data collected, it can be surmised that the participants in this research, regardless of income levels, had an average BMI that straddled the overweight category. Many of these participants dined out frequently; respondents from the survey would eat out an average of 13 times a week. Across the board, participants preferred drinking water during meals, followed by tea and coffee with sugar or sweetened condensed milk (except for Chinese tea). Though restaurants were a popular dining out venue, it appeared that participants still frequented street food-type eateries for meals. Dining out affected food and beverage consumption in different ways, as the diet recall analysis showed. Participants drank more water at home compared to when dining out. Inversely, participants ate more refined grains, green leafy vegetables, and legumes while dining out. This illustrated the accessibility of refined grains such as rice, noodles, and bread; and perhaps the lack of time or skills to prepare meals with vegetables and legumes.

Most participants worked between five to seven days a week, for more than 8 hours a day. They were largely sedentary, and many did not engage in much physical activity per week except walking. On most work days, they sat an average of six hours a day, and slept roughly the same amount of time. Statistical analyses showed relationships between snacking, walking and weight: there were significant correlations between walking and weight, and mean ranks tests results revealed the connections between snacking and both high BMI and waist-to-hip ratio. The inadequate sleep hours, coupled with the propensity to snack, may have influenced weight status. However, the participants' tendency to walk at least five days a week may have offset some of the sedentism they encountered at work. Walking was shown to be correlated with sex; on average, females tended to walk more days per week than males. This may have been due to the gendered income disparity (Haji Abdul Rahman 2012). The fact that females reported walking more than males indicated that the latter either had better access to personal vehicles or held jobs that did not require them to walk as much. From my observation and personal experience, it was surprising that females walked more because of rising concerns over crimes (Fuller 2013; Singh 2013) and exposure to sunlight that may darken skin tones (Moy and Bulgiba 2011).

Apart from work and its influence on diet and physical activity, findings from this project yielded several interesting revelations. Continuing the observation on gender, many interview participants revealed that food preparation was still mostly delegated to females. For those whose households featured women who work full-time or unmarried participants living alone, meals at home were often quick ones, consisting of instant noodles, bread, pasta, fried rice/noodles, and canned foods. Convenience appeared to be a major motivation in this case, as well as in explanations for dining out. Eating with family members, friends, or coworkers was often described as a way to maintain social ties; increasingly, such interactions were taking place in

public eating spaces rather than personal spaces such as homes. The need for convenience and public eating spaces, in turn, has guided the growth and transformations experienced by various local food establishments. By moving indoors, extending hours and menus, and providing free wi-fi, eateries such as the *kopitiam* and the *mamak* reinvented themselves to cater workers short on time but long on socializing. Due to access to diverse eateries in KL, the cost of meals did not appear to be the predominant factor in whether participants chose to dine out.

Lastly, most participants demonstrated a lack of awareness of the nation's dietary guidelines. This pointed to poor education and dissemination efforts by government public health officials. This may partly be due to the document itself: the latest version of the guidelines (NCCFN 2011) featured 14 key messages that required a high level of language and scientific literacy to understand. Despite the lack of such formal knowledge, many participants expressed informal knowledge of nutrition learned from other sources. The validity and accuracy of such information depended on the source, which included subjective physiological sensations after consuming a particular food. Nevertheless, a basic and formal nutrition education is much needed as research continues to show strong relationships between diet, weight and disease development (Hubert et al. 1983; Lumeng and Saltiel 2011; WHO 2004); and all interview participants had immediate and extended family members diagnosed with noncommunicable diseases ranging from heart diseases to diabetes to cancer.

Discussion of findings

The following section will discuss the findings under four themes. The first will examine the results from this study from an economic perspective, on whether economic growth has affected the waistlines of the population. The second theme centers on the concept of nutrition transition, and whether findings from this research support the model. Third, the

conceptualizations of street food in KL, and the shifts in the local definitions of various street food establishments, will be reviewed in the context of food commodification. Finally, these discussion points will be viewed collectively through the biocultural framework, by assessing these observations through the critical medical anthropology perspective.

Economic growth and body weight status

Earlier research, from a macro view, showed links between the overall rise in household income, increased expenditure on food away from home, and a more diverse diet (Ishida et al. 2003; Lee and Tan 2007; Tan 2010). These examinations note that a more diverse diet does not translate into adequate consumption of the recommended servings of fruit and vegetables per day (Yen et al. 2011), or that the foods consumed while dining out are healthy (Lee and Tan 2007). In addition, research reveals that gender, income, education level, family history, and ethnicity as key variables in shaping obesity risks (Tan et al. 2011). Taken together, these findings may help explain the co-occurrence of overweight/obesity and food insecurity in both rural and urban Malaysia (Foong 2004; Shariff and Khor 2005). In this study however, it remains to be seen whether the dietary behavior of urban Malaysians, particularly the consumption of street food, can be linked to weight status or income since analysis did not yield any relationships.

The lack of relationships between weight status, income, and dining out generated interesting thoughts on the country's economic and agricultural policies to date. Studies showed an uptick in fat, protein, and sugar consumption within the span of 40 years (MASO 2005), and a national fondness for beverages enhanced with sweetened condensed milk (IPH 2011). These consumption trends were reflected in the country's food import and export figures. Though Malaysia exports a fair share of agricultural goods, it remained a net importer of food in 2011 (MIDA 2012). Top food items imported that year were cereals, vegetables and fruit, sugar,

wheat, maize, and palm oil (FAO 2013; MIDA 2012). Between 2000 and 2010, the country had increased meat and cereal imports, with a 6.5 and 5.3 percent of annual growth rates respectively (Wong 2009). However, it was difficult to say whether all the imported food stuff were consumed locally as Malaysia also has a large food processing industry; the country exported RM13.5 billion (approximately US$4.5 billion) in prepared foods in 2011, out of RM20.6 billion (approximately US$6.87 billion) in total food exports (MIDA 2012).

Another facet within these policies and the described consumption trends are local food and fuel subsidies, which may have contributed to the prevalence of overweight and obesity. As detailed in Chapter 2, Malaysia's food price control laws and agricultural policies, which included such subsides, were enacted to keep the country food secure (Narayanan 2007). Scholars have observed the functional role affordable food plays in capitalist economy: cheap food allows for lower wages and more disposable income for workers (Albritton 2013). The items receiving subsidies, such as sugar, rice, flour, cooking oil and gas, and petrol, encouraged widespread consumption of these products. Similar to many countries experiencing trade liberalization, urbanization, and nutrition transition (Himmelgreen et al. 2014; Ulijaszek and Lofink 2006; Yasmeen 2000), Malaysia's participation in the global food commodities market and domestic food and fuel subsidies may have promoted the growth of its food and beverage industry. Factors such as affordable food, accessible eateries, work, and its resulting income, may have influenced KL residents to dine out more in a variety of food establishments.

Tracing the effect of such subsidies on weight status may be possible in the near future as the Malaysian government continues to ease off on subsidies. To curb the country's budget deficit and raise the rate of economic growth, government officials have started scaling back food and fuel subsidies (Grant 2013; Lee 2014; Star 2013). Starting in 2014, government

officials eliminated sugar subsidies, lowered petrol subsidies, increased public transportation fees, and planned a sales tax implementation. In lieu of subsidies, officials expanded the government's cash-aid program to the poor. How such measures affect the health, weight, and food security of citizens will be an interesting topic to pursue.

Nutrition transition

The observation on subsidies and its possible link to population weight and health raised questions about how nutrition transition is occurring in Malaysia. As detailed in Chapter 2, the nutrition transition model posits that dietary patterns and weight status changes occur in a homogenous manner, and that these result from a move toward "Western" food consumption. Citing ongoing long-term studies, anthropologists have observed that dietary and lifestyle changes within a society are more complex than the nutrition transition model proposes (Himmelgreen et al. 2014; Himmelgreen et al. 2011; Neill 2007; Piperata et al. 2011; Ulijaszek and Lofink 2006). These authors suggest that dietary and body composition changes occurring in different parts of the world are not uniform or linear, and these changes are highly susceptible to regional social, economic and political influences. Though the model sum up a general trend of dietary shift toward increased consumption of refined carbohydrates, sugar, and meat (Himmelgreen et al. 2014; Popkin and Gordon-Larsen 2004), it does not appear to leave much room for nuance, particularly in how these shifts occur. The terminology used to illustrate the shift – to a so-called "Western" diet – is problematic. In addition, the socio-cultural aspects of eating may have been overlooked.

In the context of this research in KL, it appears that participants still rely on street food for meals; those whose income ranges above the city median also tend to frequent restaurants. As iterated earlier, this study did not find relationships between weight status, income, and street

food consumption or dining out. However, this does not mean that locally-produced fare procured at street food sites or restaurants – often consisting of carbohydrate and meat laden dishes – are nutritionally adequate or low in per-serving calories. In a separate study in India, researchers found associations between abdominal adiposity and the consumption of regional diets, with little evidence of "Western" diet (Daniel et al. 2011). Perhaps the delineation of "Western" cuisine from "local" or "traditional" cuisines may be inaccurate, especially in a post-colonial, multiethnic, and gastronomically-diverse country such as Malaysia.

To describe the factors contributing to the collective diet of KL residents, it is perhaps useful to examine Yasmeen's (2000) explanation of the "(post) industrial palate", which situates dietary patterns in Bangkok, Thailand, in the context of urbanization and the subsequent restructuring of gender roles within urban households. The term "industrial palate" was coined to describe the consumption of mass-produced, processed, cheap food (MacLeod 1988; Yasmeen 2000) by Asian urban workers, in tandem with the 'commodization' of food. Yasmeen's observations of middle-class urbanites in Bangkok could be used to explain the dietary habits of this sample of KL residents. Economic growth, resulting from trade liberalization, spurred rural-to-urban migration and rapid urbanization. This resulted in several important socio-cultural changes: the increasing number of women and unmarried urbanites in the workforce; the trend toward smaller, nuclear families; and the proliferation of supermarkets, convenience stores, fast-food, and street food establishments (Himmelgreen et al. 2014; Pingali 2007; Winarno and Allain 1991; Yasmeen 2000). These changes, along with the amount of time spent at work, encourage the notion of 'time scarcity,' described as the perceived lack of time that people have to do what they need or want (Jabs and Devine 2006); people increasingly turn to fast or processed food due to the lowered "time price" of such meals (Gortmaker et al. 2011).

These characteristics fit the description of this study's sample population, especially the gendered food preparation roles within households. Most of the women surveyed or interviewed work and dine out often, and both men and women reported not having enough time to cook. Data also revealed an interesting tension: it appeared that women bore both the expectations to provide nourishing meals and work to support themselves or their families. As observed elsewhere in Asia (Errington et al. 2013; Yasmeen 2000), the obligations placed on women encouraged them to find quick fixes in pre-packaged food such as instant noodles, or to purchase meals that either substitute or resemble home-cooked ones. It can be argued that the participants in this study often resorted to these solutions. In addition, "traditional" home-cooked meals often involved a significant amount of time, skill and knowledge to prepare; this could play a major role in why both female and male participants opted for quick meals when they do cook at home. This also supports the notion of the "industrial palate", where mass-produced items such as rice, pasta, instant noodles, and bread featured prominently in the participants' descriptions of what they would usually eat at home.

Street food

In KL, one of the ways participants can obtain familiar, 'homemade' meals are through the various street food establishments in the city. As noted elsewhere (Bhowmik 2005; Simon 2007), the emergence and growth of street food illustrates the effects of urbanization, migration, and increased participation of women in the workforce. As described in Chapter 2, street food vendors offer cheap and quick meals, feed a growing urban populace of workers, and create jobs in the informal food sector (Simon 2007; Winarno and Allain 1991). However, based on the evidence found during this study, the concept and informal nature of street food, especially in KL, may be changing.

Street food is becoming increasingly reified and commodified, particularly among those who develope a taste for the exotic cuisines of the "Other" (Heldke 2013), or those hungering for local nostalgia. What started out as a humble enterprise and subsistence strategy for many low-income urban dwellers has become a global catch-phrase. Gaining worldwide 'legitimacy' as its own culinary institution, street food has been featured in glossy gourmet magazines, tourist handbooks, and TV travel shows. This push for recognition culminated in the first World Street Food Congress, which took place in Singapore in June 2013. Organized by a Singaporean food guide writer, the 10-day conference featured 40 street food vendors from around the world and discussions that included TV host Anthony Bourdain, Saveur magazine's editor-in-chief James Oseland, and other personalities and experts from Asia (Miller 2013). To celebrate an institution that provides cheap meals to the populace, attendants had to fork out S$750 (approximately US$ 595) for tickets to participate in a two-day discussion (WSFC 2013). In one of the talks, Bourdain asked whether street food is still street food if it is not on the streets anymore.

In a way, the crux of Bourdain's question can be observed in KL. The eateries one would associate with street food have become commercialized, blurring the boundaries between formal and informal, authentic and manufactured. Similar to what Yasmeen observed in Bangkok (2000), many informal street food businesses in KL move toward 'formality,' by relocating indoors to air-conditioned facilities such as food courts in shopping malls. Street food fare becomes branded, as evident in the corporate chains of *kopitiams* serving flat bread, noodles, and roasted coffee in stores decorated to mimic the 'original' institution. These transformations also reflect the fluidity of human migration as more street food vendors staff their operations with foreign workers and expand their menus to include non-local cuisine. Finally, these "public eating" (Yasmeen 2000) and "cosmopolitan spaces" (Khoo 2009), where KL citizens turn to

prepared foods in multiethnic settings outside of the home, are changing the ways they socially relate to each other. With free Internet and satellite TV access and affordable food, such spaces transcend its dining function, and become a place where social relationships are conducted and reinforced.

Consumption and control

To obtain a wider view of the findings, it is perhaps useful to juxtapose the macro and micro, the abstract and the quantifiable. In the previous sections, the discussions centered on how Malaysia's economic growth and policies along with changes in the movement of people, food, and gender roles may have altered consumption habits. How would these explanations play out at the individual level? The concepts described earlier seem to create a rift between distal factors surrounding the discourse of food consumption (and, to an extent, body weight and health status) and the agency of the individuals who participated in this study. Drawing from critical medical anthropology in an attempt to bridge the gap, this section will discuss the issues of control, consumption, and agency of the worker-consumer.

Critical medical anthropology, or CMA, provides a space for scholars to examine health and behavioral phenomena within a political economy context (Singer 2001). CMA permits researchers to recognize the calculated oppressions of class and gender in the workings of a capitalist nation-state, how such "antagonisms" let one class dominate others and the means of production, and how such activities endorse certain norms and practices (Ong 1991; Singer 2001). This perspective clarifies the processes of dominance by framing the contradictions in consumption and control as deliberate and functional neoliberal constructions (Guthman and DuPuis 2006). Applying Focault's notions of governmentality and biopower, described as the institutionalized management of populations through their bodies (Lock and Nguyen 2010),

Guthman and DuPuis (2006:443) illustrate how the prevailing discourse on dietary choices and obesity is deployed to control workers and create consumers: "Eating becomes the embodiment of that which today's society holds sacred: consumption. We buy and eat to become good subjects." Individual choice, the authors assert, has been cultivated in ways as to lend it a veneer of freedom.

These concepts capture the essence of this study's findings. The earlier discussions of food subsidies and weight status, the gradual transformation of diets and household structures, and the changing food landscape in a dynamic metropolis point to an incredibly limited matrix of daily-life options afforded to research participants. Work drives dining choices, the ability to engage in physical activity, and social interactions. What and where they eat, and who they eat with, reveal unconscious and subtle divisions of class, gender, and ethnicity. Economic policies, including food and fuel subsidies and participation in the industrial food system, may have stimulated the accessibility and popularity of certain food items. In another display of bodily regulation, government officials use health to validate domestic policies. When sugar subsidies were cut, the prime minister deployed epidemiological data on noncommunicable diseases to justify the move (Star 2013).

In contrast, participants in this study clearly demonstrated their lack of knowledge of the national dietary guidelines, which pointed to inadequate dissemination of such information. Studies in Australia and the United States have shown that nutrition knowledge is a strong predictor of food consumption habits, and awareness of the connection between diet and disease (Fahlman et al. 2010; Glasson et al. 2011; Hendrie et al. 2008; Yen et al. 2008). Malaysian federal auditors provided reasons for the lack of dietary guideline knowledge in a report that included the ministry of health (NAD 2012). Allocated a budget of RM47.47 million

(approximately US $15.82 million) in 2012 and tasked with promoting health programs including the Healthy Lifestyle Campaign, auditors found fund mismanagement, sloppy accounting, and badly-produced education materials. Though ministry officials placed newspaper advertisements and news stories on noncommunicable disease prevention, access to the remedies were not immediately apparent. For example, one of the key messages in the dietary guidelines, publicized in newspaper ads, advised citizens to be physically active every day. However, I observed that potential barriers to such behavior – a vehicle-centric urban environment, personal safety concerns, access to private fitness facilities and public amenities such as parks – were not addressed. Guthman and DuPuis' observations (2006:444) sum up these contradictions: "Neoliberal governmentality produces contradictory impulses such that the neoliberal subject is emotionally compelled to participate in society as both out-of-control consumers and self-controlled subjects".

Limitations

Prior to discussing recommendations for future research, it is necessary to list the limitations of this research. The small sample population (N=71) derived from a city of 1.6 million inhabitants may affect the generalizability of the statistical and qualitative analyses. However, the nature of exploratory research, the specific research topic (dietary trends of KL residents), and the mixed methods used to triangulate data in this project may offset sample size concerns and contribute to information saturation (Draper and Swift 2011; Morse 2000; Schensul et al. 1999). To ensure representation, participants in Phase 1 (n=55) and 2 (n=12) of the study were recruited to reflect the ethnic make-up of KL. However, I faced difficulties in recruiting females for the survey, as well as street food vendors for interviews and observations. For the former group, many females approached at street food sites during the survey were reluctant to

speak with me; many did not give reasons for their rejection. Nonetheless, the male-to-female ratio in the survey sample (approximately 5:4) and in the KL population (approximately 1:1) was quite close. As for the vendors, the low number of participants (n=4) affected data saturation. During recruitment, three street vendors declined to participate in this research citing work as the main reason; one female agreed to be interviewed but did not show up for a scheduled meeting.

Some of the methods used in this study may have incurred bias. The survey, interviews, and dietary recalls relied on self-reported information and the participants' memories, which can produce response and recall biases (Bernard 2011). Also, the dependence on self-reported information sometimes does not yield data. The street food vendors interviewed declined to reveal business-related figures such as food costs, sales volume, and rent even after I probed them using estimates. Their reluctance was understandable given the competition within the local food industry, and perhaps the informal nature of these businesses. It was unclear whether these vendors had to pay business taxes or had to officially account for labor and other costs (at least one vendor operated without a license or formal approval in a residential zone). As mentioned in the previous chapter, it was also difficult to measure amount of food the vendors sold because of the variety of dishes the vendors served and how the food was prepared. Counting during observations was nearly impossible; since the observation was timed to an hour, usually during a busy period, the tabulation may not reflect what the vendors sell in a day.

The recruitment of Phase 2 interview participants may incur selection bias. I attempted to recruit participants for this phase by asking survey participants for referrals but the plan fell through due to a lack of response. As back-up, I approached people within my social network for recommendations. This may have worked in my favor as these personal referrals confirmed my credibility as a student-researcher; participants were more willing to speak with me and let me

measure them. However, this group of participants reflect the socio-economic homogeneity of my social network as most of them are working, educated professionals.

It should be noted that weight measurements obtained through the survey and anthropometry sessions are estimates. The survey data relied on self-reported figures, which may vary in accuracy depending on the participants' memories or honesty. Some Phase 2 participants were measured fully-clothed. The close proximity required by the hip and waist measurements made some participants uncomfortable so I left the decision of clothing removal to them. Therefore, four male participants were measured fully-clothed, while the rest were measured in their underwear.

Before concluding this section, I believe it is important to reiterate my position as a researcher, and how my identity, background, and the participants' perceptions of these factors, may have influenced data collection and analysis. As scholars have observed, ethnographic or qualitative research resulting from the interaction of an investigator and a participant – amidst an array of personal and environmental factors – can affect how information is produced, collected, interpreted, and presented (Augner 1995; Haraway 1988; Harding 1993; Marcus 1986). The situation or positionality of a researcher, as well as the academic and socio-political privileges afforded to one, can influence the representation of the research subject. Therefore, I find it crucial to maintain reflexivity throughout this research process by stating my position within it.

Though born and raised in Malaysia, I have resided in the United States since 1998. My identity as a Western-educated female of Chinese descent probably showed in my interactions with research participants. During fieldwork, I had a strange sense of being an insider and an outsider simultaneously. Though I speak English, Malay, and the local Cantonese and can code switch between them, many participants picked up on the fact that I am not entirely 'local'.

During interviews, I constantly asked questions that may seem obvious to the locals. Mostly, participants appeared patient and took the time to share and explain experiences, meanings, and observations. However, two participants had also expressed their frustration at the questions by commenting "if you live here, you would know what it means," which made the remainder of the interviews awkward for me. For most of my fieldwork, I found the residents of KL kind, respectful, and generous; and I am sincerely grateful for the experience and their willingness to participate in this research.

Recommendations

This section will discuss several recommendations for future research and applied implications.

- **Examining food consumption trends and subsidies:** Following the discussion of economic policies and food consumption, it would be interesting to see whether there are relationships between food consumption trends, including dining out patterns, and Malaysia's food and fuel subsidies. Since Malaysian government officials are starting to slash or reduce subsidies for sugar and petrol and plan to impose a general sales tax on goods, comparing consumption trends before and after such cuts may yield interesting insights. National health data, particularly diabetes and cardiovascular-disease rates, can be used as additional variables to examine whether such policy decisions can affect health.
- **Strengthening sampling strategy:** The convenience and snowball sampling strategies used in this research suffices for a small-scale exploratory study; however, future researchers may want to avoid using the KL electoral precinct map to focus the sampling efforts. The electoral precincts were gerrymandered and produced

boundaries that do not reflect neighborhood identities, which were mostly delineated by class and ethnicity. This is important if ethnicity and income are major demographic variables.

- **Expanding research scope:** Since KL is Malaysia's largest city, findings derived from this population may not reflect the rest of the country. To get a better sense of the dietary patterns of the country, perhaps similar research using both quantitative and qualitative methods can be conducted in other urban and rural areas. Also, recruiting criteria can be widened to include children and senior citizens, as well as foreign immigrants as they made up 8.2 percent of the country's population in 2010 (PHCM 2011). In addition, researchers may want to include a food security survey as part of the methods, to further investigate how weight status, food security, noncommunicable diseases, and dietary trends are linked.
- **Applying findings to guide policy formation**: The participants' lack of knowledge of the national dietary guidelines points to an area where the findings from this research may be of practical use. Nutritional knowledge is crucial in letting individuals make informed choices about their diet, and Malaysians should be able to access such evidence-based information easily. As pointed out in an earlier discussion, there did not appear to be a consistent message or a clear source of such information due to structural inefficiencies within the health ministry. Particularly, the mismanagement of funds intended for this purpose as well as the apparent lack of expertise in accurately marketing the information can and must be addressed. Suggestions for improving such errors, however, are fraught with political implications given the current divided political landscape described in Chapter 2.

Short of restructuring the whole health ministry, by making the accounting, bidding, and planning processes more transparent and systematic, changes may be difficult.

Conclusion

In summary, this research did not yield conclusive links between street food consumption, body weight status, and income levels among participants, but did reveal several factors that appear to drive their dining and lifestyle patterns. The average BMI of participants in the study either verges on or places them as overweight or obese. Many participants spend a lot of time at work, and this seems to affect dietary choices in terms of where, what and who they eat with. Though most male and female participants work, the expectations of meal provisioning still fall on women. This may explain why participants tend to dine out so often, particularly at the various types of street food in the city; such establishments offer familiar meals reminiscent of home. Many participants have sedentary jobs, do not appear to engage in much physical activity, and sleep an average of six hours per day. A majority of the participants also do not know about the national dietary guidelines.

These findings point to a post-industrial population whose dietary patterns may be affected by economic growth, food policies, and the global commodification of food systems. Though the nutrition transition model can generally explain the dietary shifts within this population, it does not capture the context-specific nuances of how politics, economics, and food systems interact to produce such changes. When viewed through the biocultural framework, especially through the critical medical anthropology lens, the research participants' dietary and lifestyle choices demonstrate a constant conflict of consumption and control common in capitalist societies. The government further contributes to this conflict by selectively publicizing and withholding, through institutional negligence, health-related information. With future

research, perhaps more evidence can be collected to help direct the restructuring of the country's health agencies.

Bibliography

A Hatta, Zulkarnain, and Isahaque Ali
2013 Poverty Reduction Policies in Malaysia: Trends, Strategies and Challenges. Asian Culture and History 5(2):48-56.

Adair, L. S., P. Gordon-Larsen, S. F. Du, B. Zhang, and B. M. Popkin
2014 The Emergence of Cardiometabolic Disease Risk in Chinese Children and Adults: Consequences of Changes in Diet, Physical Activity and Obesity. Obesity Reviews 15:49-59.

Albritton, Robert
2013 Between Obesity and Hunger: The Capitalist Food Industry. *In* Food and Culture: A Reader. Third edition. Counihan, C. and P. Van Esterik, eds. New York: Routledge.

Anderson, Eugene N.
2003 Review: Changing Chinese Foodways in Asia. Anthropos 98(2):620-621.

Anderson, Eugene N.
2007 Malaysian Foodways: Confluence and Separation. Ecology of Food and Nutrition 46(3-4):205-219.

Armalegos, George J.
2010 The Omnivore's Dilemma: The Evolution of the Brain and the Determinants of Food Choice. Journal of Anthropological Research 66(2):161-186.

American Anthropological Association
2012 Statement on Ethics: Principles of Professional Responsibilities. Arlington, VA: American Anthropological Association.

Augner, Robert
1995 On Ethnography: Storytelling or Science? Current Anthropology 36(1):97-130.

Benyshek, Daniel C., John F. Martin, and Carol S. Johnston
2001 A Reconsideration of the Origins of the Type 2 Diabetes Epidemic among Native Americans and the Implications for Intervention Policy. Medical Anthropology 20(1):25 - 64.

Benyshek, Daniel C., and James T. Watson
2006 Exploring the Thrifty Genotype's Food-Shortage Assumptions: A Cross-Cultural Comparison of Ethnographic Accounts of Food Security among Foraging and Agricultural Societies. American Journal of Physical Anthropology 131(1):120-126.

Bernard, Russell
2011 Research Methods in Anthropology: Qualitative and Quantitative Approaches. Lanham, Maryland: Altamira Press.

Bezerra, Ilana Nogueira, and Rosely Sichieri
2009 Eating out of Home and Obesity: A Brazilian Nationwide Survey. Public Health Nutrition 12(11):2037.

Bhowmik, Sharit K.
2005 Street Vendors in Asia: A Review. *In* Economic and Political Weekly. Mumbai: Sameeksha Trust.

Bhuiyan, A. R., J. Gustat, S. R. Srinivasan, and G. S. Berenson
2003 Differences in Body Shape Representations among Young Adults from a Biracial (Black-White), Semirural Community: The Bogalusa Heart Study. American Journal of Epidemiology 158(8):792-797.

Bowring, Philip
2013 Malaysia's Rigged Electoral System. Asia Sentinel, May 17, 2013.

Brewis, Alexandra A.
2011 Obesity: Cultural and Biocultural Perspectives. New Brunswick: Rutgers University Press.

Buscemi, Silvio, Annamaria Barile, Vincenza Maniaci, John A. Batsis, Alessandro Mattina, and Salvatore Verg
2011 Characterization of Street Food Consumption in Palermo: Possible Effects on Health. Nutrition Journal 10(1):119-127.

Cheong, K.C., A.F. Yusoff, S.M. Ghazali, K.H. Lim, S. Selvarajah, J. Haniff, G.L. Khor, S. Shahar, J.A. Rahman, A.A. Zainuddin, and A.N. Mustafa
2012 Optimal Bmi Cut-Off Values for Predicting Diabetes, Hypertension and Hypercholesterolaemia in a Multi-Ethnic Population. Public Health Nutrition 16(3):453-59.

Choi, Mi Kyung, Tae Yoon Kim, and Jin-Suk Yoon
2011 Does Frequent Eating out Cause Undesirable Food Choices? Association of Food Away from Home with Food Consumption Frequencies and Obesity among Korean Housewives. Ecology of Food and Nutrition 50(3):263-280.

Chooi, Clara
2013 Pakatan MPs to Use Parlimentary Strength to Block Unfair Delineation. The Malaysian Insider, May 22, 2013.

Chu, Anne H. Y., and Foong Ming Moy
2012 Reliability and Validity of the Malay International Physical Activity Questionnaire (IPAQ-M) among a Malay Population in Malaysia. Asia-Pacific Journal of Public Health.

Cooper, Elizabeth
2009 Thought, Hunger, and Intervention: The Experience of Food Insecurity in Rural Non-Peninsular Malaysia, Department of Anthropology, University of South Florida.

Craig, C.L., A. Marshall, M. Sjostrom, A.E. Bauman, M. L. Booth, B.E. Ainsworth, M. Pratt, U. Ekelund, A. Yngve, J.F. Sallis, and P. Oja
2003 International Physical Activity Questionnaire: 12-Country Reliability and Validity. Medicine & Science in Sports & Exercise 35(8):1381-1395.

Cuong, T. Q., M. J. Dibley, S. Bowe, T. T. M. Hanh, and T. T. H. Loan
2006 Obesity in Adults: An Emerging Problem in Urban Areas of Ho Chi Minh City, Vietnam. European Journal of Clinical Nutrition 61:673-681.

Daniel, Carrie, Dorairaj Prabhakaran, Kavita Kapur, Barry Graubard, Niveditha Devasenapathy, Lakshmy Ramakrishnan, Preethi George, Hemali Shetty, Leah Ferrucci, Susan Yurgalevitch, Nilanjan Chatterjee, K. S. Reddy, Tanuja Rastogi, Prakash Gupta, Aleyamma Mathew, and Rashmi Sinha
2011 A Cross-Sectional Investigation of Regional Patterns of Diet and Cardio-Metabolic Risk in India. Nutrition Journal 10(1):12.

Dearth-Wesley, Tracy, Penny Gordon-Larsen, Linda S. Adair, Anna Maria Siega-Riz, Bing Zhang, and Barry M. Popkin
2011 Less Traditional Diets in Chinese Mothers and Children Are Similarly Linked to Socioeconomic and Cohort Factors but Vary with Increasing Child Age. The Journal of Nutrition 141(9):1705-1711.

Delisle, Hélène
2010 Findings on Dietary Patterns in Different Groups of African Origin Undergoing Nutrition Transition. Applied Physiology, Nutrition, and Metabolism 35(2):224-228.

Dietz, William H.
2011 Reversing the Tide of Obesity. The Lancet 378(9793):744-746.

Draper, A., and J. A. Swift
2011 Qualitative Research in Nutrition and Dietetics: Data Collection Issues. Journal of Human Nutrition and Dietetics 24(1):3-12.

Dressler, William
2005 What's Cultural About Biocultural Research? Ethos 33(1):20-45.

Errington, Frederick, Tatsuro Fujikura, and Deborah Gewertz
2013 The Noodle Narratives: The Global Rise of an Industrial Food into the Twenty-First Century. Berkeley: University of California Press.

Fahlman, Mariane M., Nate McCaughtry, Jeffrey Martin, and Bo Shen
2010 Racial and Socioeconomic Disparities in Nutrition Behaviors: Targeted Interventions Needed. Journal of Nutrition Education and Behavior 42(1):10-16.

Field, Andy
2009 Discovering Statistics Using SPSS. London: Sage Publications Inc.

Food and Agriculture Organization
2013 FAO Stat: Malaysia. *In* Food and Agriculture Organization: Country profile. Organization, F.a.A., ed, Vol. 2014: Food and Agriculture Organization of the United Nations.

Foong, Ming Moy
2004 Body Mass Status of School Children and Adolescents in Kuala Lumpur, Malaysia. Asia Pacific Journal of Clinical Nutrition 13(4):324-329.

French, Simone A., Mary Story, and Robert W. Jeffery
2001 Environmental Influences on Eating and Physical Activity Annual Review of Public Health 22(1):309.

Fuller, Thomas
2008 Asian Food Crisis Has Political and Civil Implications. The New York Times, April 18, 2008.

Fuller, Thomas
2013 Wave of High-Profile Crimes Has Put Malaysians on the Defensive. The New York Times, October 18, 2013.

Gibson, Rosalind S.
2005 Principles of Nutritional Assessment. New York City: Oxford University Press.

Glasson, Colleen, Kathy Chapman, and Erica James
2011 Fruit and Vegetables Should Be Targeted Separately in Health Promotion Programmes: Differences in Consumption Levels, Barriers, Knowledge and Stages of Readiness for Change. Public Health Nutrition 14(04):694-701.

Goodman, Alan H., and Thomas L. Leatherman
2001 Traversing the Chasm between Biology and Culture: An Introduction. *In* Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology. Goodman, A.H. and T.L. Leatherman, eds. Ann Arbor: The University of Michigan Press.

Gordon-Larsen, P., H. Wang, and B. M. Popkin
2014 Overweight Dynamics in Chinese Children and Adults. Obesity Reviews 15:37-48.

Gortmaker, Steven L., Boyd A. Swinburn, David Levy, Rob Carter, Patricia L. Mabry, Diane T. Finegood, Terry Huang, Tim Marsh, and Marjory L. Moodie
2011 Changing the Future of Obesity: Science, Policy, and Action. The Lancet 378(9793):838-847.

Grant, Jeremy
2013 Najib Razak to Cut Subsidies in Effort to Plug Deficit. Financial Times, December 31, 2013.

Guo, X., T. A. Mroz, and B. M. Popkin
2000 Structural Change in the Impact of Income on Food Consumption in China, 1989–1993. Economic Development and Cultural Change 48(4):737-760.

Guthman, J., and M. DuPuis
2006 Embodying Neoliberalism: Economy, Culture, and the Politics of Fat. Environment and Planning D: Society and Space 24(3):427-448.

Guthold, Regina, Tomoko Ono, Kathleen L. Strong, Somnath Chatterji, and Alfredo Morabia
2008 Worldwide Variability in Physical Inactivity: A 51-Country Survey. American Journal of Preventive Medicine 34(6):486-494.

Hagstromer, M., P. Bergman, I. De Bourdeaudhuij, F. B. Ortega, J. R. Ruiz, Y. Manios, J. P. Rey-Lopez, K. Phillipp, J. von Berlepsch, and M. Sjostrom
2008 Concurrent Validity of a Modified Version of the International Physical Activity Questionnaire (IPAQ-A) in European Adolescents: The Helena Study. International Journal of Obesity 32(S5):S42-S48.

Haji Abdul Rahman Bin Hassan
2012 Household Income and Basic Amenities Survey, 2009. Department of Statistics, Malaysia.

Hales, C. Nicholas, and David J. P. Barker
2001 The Thrifty Phenotype Hypothesis: Type 2 Diabetes. British Medical Bulletin 60(1):5-20.

Haraway, Donna
1988 Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. Feminist Studies 14:575-599.

Harding, Sandra, ed.
1993 Rethinking Standpoint Epistemology: What Is Strong Objectivity? New York: Routledge.

Heldke, Lisa
2013 Let's Cook Thai: Recipes for Colonialism. *In* Food and Culture: A Reader. Third edition. Counihan, C. and P. Van Esterik, eds. New York: Routledge.

Hendrie, Gillian Anne, John Coveney, and David Cox
2008 Exploring Nutrition Knowledge and the Demographic Variation in Knowledge Levels in an Australian Community Sample. Public Health Nutrition 11(12):1365-1371.

Himmelgreen, David A., Allison Cantor, Sara Arias, and Nancy Romero Daza
2014 Using a Biocultural Approach to Examine Migration/Globalization, Diet Quality, and Energy Balance. Physiology & Behavior d.o.i.: 10.1016/j.physbeh.2013.12.012.

Himmelgreen, David A., Nancy Romero Daza, and Charlotte Noble
2011 Nutrition and Health. *In* A Companion to Medical Anthropology. Singer, M. and P.I. Erickson, eds: Wiley-Blackwell.

Himmelgreen, David A., Nancy Romero Daza, Maribel Vega, Humberto Brenes Cambronero, and Edgar Amador
2006 "The Tourist Season Goes Down but Not the Prices." Tourism and Food Insecurity in Rural Costa Rica. Ecology of Food and Nutrition 45(4):295-321.

Hubert, H.B., M. Feinleib, P.M. McNamara, and W.P. Castelli
1983 Obesity as an Independent Risk Factor for Cardiovascular Disease: A 26-Year Follow-up of Participants in the Framingham Heart Study Circulation 67:968-977.

International Monetary Fund
2009 Malaysia: 2009 Article Iv Consultation - Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Malaysia International Monetary Fund.

—
2014 IMF Executive Board Concludes 2013 Article Iv Consultation with Malaysia. Washington, D.C.: International Monetary Fund.

International Physical Activity Questionnaire
2012 International Physical Activity Questionnaire Vol. 2012: IPAQ. Retrieved from https://sites.google.com/site/theipaq/

Institute for Public Health (Malaysia)
2011 National Health and Morbidity Survey 2011. Institute for Public Health (Malaysia).

Ishida, Akira, Siong-Hook Law, and Yoshihisa Aita
2003 Changes in Food Consumption Expenditure in Malaysia. Agribusiness 19(1):61-76.

Ismail, Ikram Shah
2004 Clinical Practice Guidelines on Management of Obesity. Malaysia, M.o.H., ed. Kuala Lumpur: Ministry of Health Malaysia, Academy of Medicine Malaysia, Malaysian Association for the Study of Obesity, Malaysian Endocrine and Metabolic Society.

Jabs, Jennifer, and Carol M. Devine
2006 Time Scarcity and Food Choices: An Overview. Appetite 47(2):196-204.

Jali, Razani, John Stillwell, and Phil Rees
2006 The Changing Pattern of Rural and Urban Migration in Malaysia. *In* International Population Geographies Conference. University of Liverpool.

Julier, Alice
2013 The Political Economy of Obesity: The Fat Pay All. *In* Food and Culture: A Reader. Third edition. Counihan, C. and P. Van Esterik, eds. New York: Routledge.

Khambalia, A. Z., and L. S. Seen
2010 Trends in Overweight and Obese Adults in Malaysia (1996–2009): A Systematic Review. Obesity Reviews 11(6):403-412.

Khoo, Gaik Cheng, ed.
2009 Kopitiam: Discursive Cosmopolitan Spaces and National Identity in Malaysian Culture and Media. UK: Palgrave Macmillan.

Khoo, Gaik Cheng, and Jean Duruz
In press; N.d. '*Mamak*, Anyone?': Identity and Perceptions of Tamil Muslim Eateries in Malaysia", in Making *Rojak*: Food, Space and Identity in Malaysia and Singapore. Walnut Creek: Altamira Press.

Khor, Geok-Lin
2012 Food Availability and the Rising Obesity Prevalence in Malaysia. International E-Journal of Science, Medicine & Education 6 (Supp 1)(1):S61-68.

Kuzawa, Christopher W., and Elizabeth A. Quinn
2009 Developmental Origins of Adult Function and Health: Evolutionary Hypotheses. Annual Review of Anthropology 38(1):131-147.

Leatherman, Tom, and Alan H. Goodman
2011 Critical Biocultural Approaches in Medical Anthropology. *In* A Companion to Medical Anthropology. Singer, M. and P.I. Erickson, eds: Wiley-Blackwell.

Lee, Helen S.H., and Andrew K.G. Tan
2007 Factors Affecting Malaysian Household Purchase Decisions of Food-Away-from-Home. Journal of International Food & Agribusiness Marketing 19(2-3):97-115.

Lee, Kelley, and Derek Yach
2006 Globalization and Health. *In* International Public Health: Diseases, Programs, Systems, and Policies. Second edition. Merson, M.H., R.E. Black, and A.J. Mills, eds. Sudbury: Jones and Bartlett Publishers.

Lee, Shi-Ian
2014 Amid Rising Prices, Najib Defends Cuts. The Malaysian Insider, January 6, 2014.

Lim, Hong Hai
2002 Electoral Politics in Malaysia: 'Managing' Elections in a Plural Society. *In* Electoral Politics in Southeast and East Asia Aurel Croissant, G.B.a.M.J., ed. Singapore: Friedrich Ebert Stiftung.

Lock, Margaret, and Vinh-Kim Nguyen
2010 The Anthropology of Biomedicine: Wiley-Blackwell.

Loh, Sebastian
2011 How Much Taxpayer Ringgit Is Allocated to Each of the Major Subsidized Items from Fuel to Flour. Retrieved from http://news.malaysia.msn.com/usercomments/article.aspx?cp-documentid=5412048#page=1.

Low, S., M.C. Chin, S. Ma, D. Heng, and M. Deurenberg-Yap
2009 Rationale for Redefining Obesity in Asians. Annals Academy of Medicine Singapore 38:66-74.

Lumeng, Carey N., and Alan R. Saltiel
2011 Inflammatory Links between Obesity and Metabolic Disease. The Journal of Clinical Investigation 121(6):2111-2117.

Macfarlane, Duncan J., Cherry C. Y. Lee, Edmond Y. K. Ho, K. L. Chan, and Dionise T. S. Chan
2007 Reliability and Validity of the Chinese Version of IPAQ (Short, Last 7 Days). Journal of Science and Medicine in Sport 10(1):45-51.

MacLeod, Scott Alexander
1988 A Fortune in Cookies? Changing Contexts of Consumption and the Emergence of the Industrial Palate in Hong Kong, Department of Geography, University of British Columbia.

Maddison, R., C.N. Mhurchu, Y. Jiang, S.V. Hoorn., A. Rodgers, C.M.M Lawes, and E. Rush
2007 International Physical Activity Questionnaire (IPAQ) and New Zealand Physical Activity Questionnaire (NZPAQ): A Doubly Labelled Water Validation. International Journal of Behavioral Nutrition and Physical Activity 4(62).

Malaysian Association for the Study of Obesity
2005 Strategy for Prevention of Obesity - Malaysia. Malaysian Association for the Study of Obesity.

Malaysian Investment Development Authority
2012 Industries in Malaysia: Food Industry. *In* Industries in Malaysia. Authority, M.I.D., ed, Vol. 2014. Kuala Lumpur: Malaysian Investment Development Authority.

Marcus, George, ed.
1986 Contemporary Problems of Ethnography in the Modern World System. Berkeley: University of California Press.

McCullough, Megan B., and Jessica A. Hardin
2013 Introduction. *In* Reconstructing Obesity: The Meaning of Measures and the Measure of Meanings. McCullough, M.B. and J.A. Hardin, eds. New York: Berghan Books.

Miller, Jenny
2013 Is Singapore Really Street Food's Garden of Eatin'? *In* Bon Apetit. Bon Apetit Street Food coverage: Conde Nast.

Ministry of Health Malaysia
2006 National Nutrition Policy of Malaysia. Malaysia, M.o.H., ed. Kuala Lumpur: Ministry of Health Malaysia.

Moffat, Tina
2010 The “Childhood Obesity Epidemic”. Medical Anthropology Quarterly 24(1):1-21.

Morse, Janice M.
2000 Determining Sample Size. Qualitative Health Research 10(1):3-5.

Moy, Foong-Ming , and Awang Bulgiba
2011 High Prevalence of Vitamin D Insufficiency and Its Association with Obesity and Metabolic Syndrome among Malay Adults in Kuala Lumpur, Malaysia. BMC Public Health 11:1-7.

Mustafa, Norlaila
2011 Prevalence of Abnormal Glucose Tolerance and Risk Factors in Urban and Rural Malaysia. Diabetes Care 34(6):1362-1364.

Najib, Tun Haji Abdul Razak
2011 The 2012 Budget Speech. Finance, M.M.o., ed. Kuala Lumpur: Malaysia Ministry of Finance.

Najib, Tun Haji Abdul Razak
2012 The 2013 Budget Speech. Finance, M.M.o., ed. Kuala Lumpur: Malaysia Ministry of Finance.

Narayanan, Suresh
2007 The Challenges of Raising Revenues and Restructuring Subsidies in Malaysia. Kajian Malaysia 25(2):1-28.

National Audit Department (Malaysia)
2012 2012 General Auditor Report: Activities of the Federal Ministries/Departments and Management of Government Companies, Series 2. Malaysia, N.A.D., ed. Kuala Lumpur: National Audit Department.

National Coordinating Committee on Food and Nutrition (Malaysia)
2011 Malaysian Dietary Guidelines. National Coordinating Committee on Food and Nutrition, M.o.H.M., ed. Putrajaya: Technical Working Group on Nutrition Guidelines.

Neel, James V.
1962 Diabetes Mellitus: A "Thrifty" Genotype Rendered Detrimental by "Progress"? American Journal of Human Genetics 14:353-362.

Neel, James V., Alan B. Weder, and Stevo Julius
1998 Type Ii Diabetes, Essential Hypertension, and Obesity as "Syndromes of Impaired Genetic Homeostasis": The "Thrifty Genotype" Hypothesis Enters the 21st Century. Perspectives in Biology and Medicine 42(1):44.

Neill, Dawn B.
2007 Indo-Fijian Children's BMI. Human Nature 18(3):209-224.

Ng, Eileen, Suganthi Suparmaniam, and Ili Liyana Mokhtar
2011 At the Dewan Rakyat: Obesity among Malaysians on the Rise. New Straits Times, November 15, 2011.

Ong, Aihwa
1991 The Gender and Labor Politics of Postmodernity. Annual Review of Anthropology 20:279-309.

Ooyub, Shafie
2005 National Plan of Action for Nutrition of Malaysia (2006-2015). Ministry of Health Malaysia.

Pakiam, Ranjeetha
2012 Najib Says Clear Majority in Malaysia Election 'Challenging'. Bloomberg, March 19, 2012.

Phillips, Lynne
2006 Food and Globalization. Annual Review of Anthropology 35(1):37-57.

Pingali, Prabhu
2007 Westernization of Asian Diets and the Transformation of Food Systems: Implications for Research and Policy. Food Policy 32(3):281-298.

Piperata, Barbara A., Jennifer E. Spence, Pedro Da-Gloria, and Mark Hubbe
2011 The Nutrition Transition in Amazonia: Rapid Economic Change and Its Impact on Growth and Development in Ribeirinhos. American Journal of Physical Anthropology 146(1):1-13.

Popkin, Barry M.
2001 The Nutrition Transition and Obesity in the Developing World. The Journal of Nutrition 131(3):871S-873S.

Popkin, Barry M., and P. Gordon-Larsen
2004 The Nutrition Transition: Worldwide Obesity Dynamics and Their Determinants. International Journal of Obesity 28:S2-S9.

Popkin, Barry M.
2011 Contemporary Nutritional Transition: Determinants of Diet and Its Impact on Body Composition. Proceedings of the Nutrition Society 70(01):82-91.

Popkin, Barry M., Linda S. Adair, and Shu Wen Ng
2012 Global Nutrition Transition and the Pandemic of Obesity in Developing Countries. Nutrition Reviews 70(1):3-21.

Population and Housing Census of Malaysia
2011 Population and Housing Census of Malaysia: Population Demographics and Basic Demographic Characteristics 2010. Department of Statistics Malaysia.

Rampal, Lekhraj, Sanjay Rampal, Geok Lin Khor, Azhar Md Zain, Shafie Bin Ooyub, Ramlee Bin Rahmat, Sirajoon Noor Ghani, and Jayanthi Krishnan
2007 A National Study on the Prevalence of Obesity among 16,127 Malaysians. Asia Pacific Journal of Clinical Nutrition 16(3):561.

Reinberg, Steven
2013 U.S. Doctors' Group Labels Obesity a Disease. U.S. News & World Report, June 19, 2013.

Sadiq, Jahabar
2013 Bn Wins Malay Heartland, Pakatan the Cities. The Malaysian Insider, May 6, 2013.

Salim, Fatimah, Tahir Aris, Siti Sa'adiah Hassan Nudin, and Maimunah Hamid
1999 National Health and Morbidity Survey 1996. Volume 14: Nutritional Status. Ministry of Health, Malaysia.

Schensul, Stephen L., Jean J. Schensul, and Margaret D. LeCompte
1999 Essential Ethnographic Methods. Lanham: AltaMira Press.

Shariff, Z Mohd, and G.L. Khor
2005 Obesity and Household Food Insecurity: Evidence from a Sample of Rural Households in Malaysia. European Journal of Clinical Nutrition 59:1049–1058.

Shen, Jia, Abhinav Goyal, and Laurence Sperling
2012 The Emerging Epidemic of Obesity, Diabetes, and the Metabolic Syndrome in China. Cardiology Research and Practice 2012:5.

Simon, Scott
2007 Promises and Challenges of the Informal Food Sector in Developing Countries Food and Agricultural Organization. Retrieved from ftp://ftp.fao.org/docrep/fao/010/a1124e/a1124e00.pdf

Singer, Merrill
2001 The Development of Critical Medical Anthropology: Implications for Biological Anthropology. *In* Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology. Goodman, A.H. and T.L. Leatherman, eds. Ann Arbor: The University of Michigan Press.

Singh, Ranjit
2013 Malaysia's Crime Wave Clouding Investors. The Malaysian Insider, August 15, 2013.

Sivalingam, S.
2011 Malaysia Struggles with Its Budget Deficit, Subsidies and Elections. *In* Institute of South East Asian Studies. Viewpoints, Vol. 2012. Singapore: Institute of South East Asian Studies.

Solomons, Noel W., and Rainier Gross
1995 Urban Nutrition in Developing Countries. Nutrition Reviews 53(4):90-95.

Swinburn, Boyd A., Gary Sacks, Kevin D. Hall, Klim McPherson, Diane T. Finegood, Marjory L. Moodie, and Steven L. Gortmaker
2011 The Global Obesity Pandemic: Shaped by Global Drivers and Local Environments. The Lancet 378(9793):804-814.

Tan, Andrew K. G.
2010 Demand for Food-Away-from-Home in Malaysia: A Sample Selection Analysis by Ethnicity and Gender. Journal of Foodservice Business Research 13(3):252-267.

Tan, Andrew K.G., Richard A. Dunn, Mohamed Ismail Abdul Samad, and Mustapha Idzwan Feisul
2011 Sociodemographic and Health–Lifestyle Determinants of Obesity Risks in Malaysia. Asia-Pacific Journal of Public Health 23(2):192-202.

Tan, Andrew K.G., Richard A. Dunn, and Steven T. Yen
2011 Ethnic Disparities in Metabolic Syndrome in Malaysia: An Analysis by Risk Factors. Metabolic syndrome and related disorders 9(6):441.

Tee, E. Siong
2011 Development and Promotion of Malaysian Dietary Guidelines. Asia Pacific Journal of Clinical Nutrition 20(3):455-461.

The Star
2013 Budget 2014: 6% GST, Sugar Subsidy Cut, More BR1M; the Highlights. The Star.

The Star
2013 Minimum Wage for Smes Deferred. The Star, March 20, 2013.

Tsou, Meng-Wen, and Jin-Tan Liu
2006 Obesity, Schooling and Health Knowledge: An Empirical Study of Taiwanese Women. Education Economics 14(1):89-106.

Ulijaszek, Stanley J., and Hayley Lofink
2006 Obesity in Biocultural Perspective. Annual Review of Anthropology 35(1):337-360.

United States Department of Agriculture
2013 Food Groups. *In* ChooseMyPlate.gov, Vol. 2013. Washington, D.C.: United States Department of Agriculture.

United States Department of Health and Human Services
2013 Federal Policy for the Protection of Human Subjects ('Common Rule'). Services, U.S.D.o.H.H., ed. Washington, D.C.: U.S. Department of Health & Human Services.

Wang, Y. Claire, Klim McPherson, Tim Marsh, Steven L. Gortmaker, and Martin Brown
2011 Health and Economic Burden of the Projected Obesity Trends in the USA and the UK. The Lancet 378(9793):815-825.

Wang, Zhihong, Fengying Zhai, Shufa Du, and Barry M. Popkin
2008 Dynamic Shifts in Chinese Eating Behaviors. Asia Pacific Journal of Clinical Nutrition 17(1):123-130.

Wang, Zhihong, Fengying Zhai, Bing Zhang, and Barry M. Popkin
2012 Trends in Chinese Snacking Behaviors and Patterns and the Social-Demographic Role between 1991and 2009. Asia Pacific Journal of Clinical Nutrition 21(2):253-262.

Wells, Jonathan C.K.
2007 The Thrifty Phenotype as an Adaptive Maternal Effect. Biological Reviews 82:143-172.

Wen, Michael
2009 Are Asians at Greater Mortality Risks for Being Overweight Than Caucasians? Redefining Obesity for Asians. Public Health Nutrition 12(4):497-506.

Wilk, Richard
2006 Home Cooking in the Global Village: Caribbean Food from Buccaneers to Ecotourists. Oxford: Berg.

Winarno, F.G., and A. Allain
1991 Street Foods in Developing Countries: Lessons from Asia. Food, Nutrition and Agriculture 1.

Wong, Larry C.Y.
2009 Food Security and Growth: Malaysia's Strategic Approach. *In* Akademi Sains Malaysia second series of ASM biotechnology and agriculture forums: Food security. Soh, A.C. and H.S. Yong, eds. Pp. 55-67. Universiti Malaya: Institute of Strategic and International Studies (ISIS) Malaysia.

World Health Organization
2000 The Asia-Pacific Perspective: Redefining Obesity and Its Treatment. World Health Organization.

—
2004 Appropriate Body-Mass Index for Asian Populations and Its Implications for Policy and Intervention Strategies. The Lancet 363:157-63.

—
2008 Waist Circumference and Waist–Hip Ratio: Report of a Who Expert Consultation. World Health Organization.

—
2011 Noncommunicable Diseases Country Profiles 2011. *In* Noncommunicable diseases and mental health. Geneva: World Health Organization.

—
2011 Obesity and Overweight. *In* Obesity and overweight, Vol. 2011.

World Street Food Congress
2013 World Street Food Congress. *In* World Street Food Congress. Ltd., M.S.P., ed, Vol. 2012. Singapore: Singapore. Retrieved from http://www.wsfcongress.com/

Xi, B., Y. Liang, T. He, K. H. Reilly, Y. Hu, Q. Wang, Y. Yan, and J. Mi
2012 Secular Trends in the Prevalence of General and Abdominal Obesity among Chinese Adults, 1993–2009. Obesity Reviews 13(3):287-296.

Yasmeen, Gisele
2000 Not "from Scratch": Thai Food Systems and "Public Eating". Journal of Intercultural Studies 21(3):341-352.

Yen, Steven T., Biing-Hwan Lin, and Christopher G. Davis
2008 Consumer Knowledge and Meat Consumption at Home and Away from Home. Food Policy 33(6):631-639.

Yen, Steven T., Andrew K. G. Tan, and Rodolfo M. Nayga Jr
2011 Determinants of Fruit and Vegetable Consumption in Malaysia: An Ordinal System Approach*. Australian Journal of Agricultural and Resource Economics 55(2):239-256.

Zaher, Z.M.M., R. Zambari, S.P. Chan, V. Muruga, B. Ng, G. Appannah, and T.O. Lim
2009 Optimal Cut-Off Levels to Define Obesity: Body Mass Index and Waist Circumference, and Their Relationship to Cardiovascular Disease, Dyslipidaemia, Hypertension and Diabetes in Malaysia. Asia Pacific Journal of Clinical Nutrition 18(2):209-16.

Zhang, Xiaoyong, Hans Dagevos, Yuna He, Ivo van der Lans, and Fengying Zhai
2008 Consumption and Corpulence in China: A Consumer Segmentation Study Based on the Food Perspective. Food Policy 33(1):37-47.

Appendix I: Consumer Survey

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Consumer survey
(ADMINISTERED BY P.I.)

Section 1: Background

1.1 Age (*Umur*):	1.2 Sex (*Jantina*): 1 - ☐ Female 2 - ☐ Male
1.3 Height (*Tinggi*):	1.4 Weight (*Berat*):
1.5 Ethnicity (*Bangsa*):	1.6 Religion (*Agama*):
1.7 Occupation (*Pekerjaan*):	

1.8 Marital status (*Taraf perkahwinan*):
1 - ☐ Married *(Kahwin)*
2 - ☐ Not Married *(Belum Kahwin)*
3 - ☐ Widow/Widower/Divorced *(Balu/duda/janda)*

1.9 Do you have children (*Adakah anda mempunyai anak)?*
1 - ☐ Yes *(Ya)* 2 - ☐ No *(Tidak)*

1.10 If yes, how many children do you have and how old are they? (*Jika ada, berapa anak yang anda ada dan apakah umur mereka?*) _____

1.11 Place/state of birth *(Negeri tempat lahir)*: _____

1.12 If not from K.L., how long have you lived in K.L? *(Jika bukan dari K.L., berapa lamakah sudah anda tinggal di K.L.)*?
_____ years (*tahun*)

1.13 Live with *(Menetap dengan)*:
1 - ☐ Family *(Keluarga)* 2 - ☐ Self *(Sendiri)* 3 - ☐ Housemates *(Teman serumah)*

1.14 Education level *(Tahap pendidikan)*:
1 - ☐ Primary *(Sek. Rendah)* 2 - ☐ Secondary *(Sek. Menengah)*
3 - ☐ College *(Kolej)* 4 - ☐ University *(Universiti)*

1.15 Can you tell me what your average income is per month? Is it *(Boleh tak anda beritahu saya purata pendapatan anda sebulan? Adakah ia)*:

1 - ☐ RM0-499 2 - ☐ RM500-999 3 - ☐ RM1,000-2,999
4 - ☐ RM3,000-4,999 5 - ☐ More than RM5,000

Section 2: Diet

2.1 On an average day, how many meals do you eat -- not including snacks? *(Dalam jangka masa sehari, berapa kali anda makan -- tidak termasuk makanan ringan?)*
☐ 1 meal ☐ 2 meals ☐ 3 meals ☐ 4 meals ☐ 5 meals ☐ 6 or more

2.2 On an average day, how many times do you snack, if at all? (*Biasanya, berapa kali dalam sehari anda makan makanan ringan, jika ada?*)
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 and more ☐ None

2.2 (a) (If yes to the above), do you purchase the snacks or are they prepared at home? (*Jika menjawab 'ya' untuk soalan di atas, adakah anda membeli makanan ringan itu, atau memakan makanan ringan yang disediakan dirumah?)*
1 - ☐ Purchased (*beli*) 2 - ☐ From home (*dari rumah*)
3 - ☐ Purchased and prepared from home (*beli and disediakan di rumah*)

2.2 (a.i) <u>If purchased</u>, where do you usually buy your snacks? (*Jika makanan ringan itu dibeli, di manakah anda beli makanan itu?*)

_____

2.2 (a.ii) <u>If purchased</u>, what kinds of snacks do you usually eat? (*Apakah jenis makanan ringan yang anda sering makan?*)

_____

2.3 On average, how many times a week do you eat breakfast? (*Biasanya, berapa kerapkah dalam seminggu anda makan sarapan pagi?*)
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ None

2.4 On average, how many times a week do you breakfast outside? *(Biasanya, berapa kali dalam seminggu anda makan sarapan pagi di luar?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.5 On average, how many times a week do you prepare and eat breakfast at home? *(Biasanya, berapa kali dalam seminggu anda sediakan dan makan sarapan pagi di rumah?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.6 What do you usually drink during breakfast? *(Semasa sarapan, apakah yang anda biasa minum?)*

_____

2.7 On average, how many times a week do you eat lunch outside? *(Biasanya, berapa kali dalam seminggu anda makan tengahari di luar ?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.8 On average, how many times a week do you eat lunch at home? *(Biasanya, berapa kali seminggu anda makan tengahari di rumah?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.9 What do you usually drink during lunch? *(Semasa makan tengahari, apakah yang anda biasa minum?)*

_____

2.10 On average, how many times a week do you eat dinner outside? *(Biasanya, berapa kali seminggu anda makan malam di luar?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.11 On average, how many times a week do you eat dinner at home? *(Biasanya, berapa kali seminggu anda makan malam di rumah?)*
☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

2.12 What do you usually drink during dinner? *(Semasa makan malam, apakah minuman yang anda biasa minum?)*

_____

2.13 When you are dining out, what kinds of food do you usually eat, and where would you eat? *(Bila anda makan di luar, apakah yang anda sering makan, dan di manakah tempat makan ini)*?

2.14 Do you have any food prohibitions? *(Anda ada apa-apa larangan makanan?)*
1 - ☐ Yes *(Ya)* 2 - ☐ No *(Tidak)*

Section 3: Lifestyle and physical activity (Source: IPAQ)

3.1 Do you smoke? (Adakah *anda merokok*)?
1 - ☐ Yes *(Ya)* 2 - ☐ No *(Tidak)*

3.2 How many hours do you work in an average day? *(Biasanya, berapa jam akan anda berkerja dalam sehari?)*
1 - ☐ 1 to 4 hours 2- ☐ 5 to 8 hours 3 - ☐ 9 to 12 hours 4 - ☐ 13 hours and more
5 - ☐ None

3.3 How many days do you usually work in a week? *(Biasanya, berapa hari akan anda berkerja dalam seminggu?)*

☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times ☐ 6 times
☐ 7 times ☐ Never

The next several questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do:

- at work
- at home or in the garden
- to get from one place to the other house and garden work
- to get from place to place
- in your spare time for recreation, exercise or sport.

(*Soalan-soalan berikut akan menanya anda tentang jumlah masa yang anda gunakan untuk menjalankan kegiatan fizikal dalam tempoh 7 hari yang lepas ini. Sila jawab soalan-soalan ini walaupun anda berpendapat bahawa anda bukanlah seorang yang aktif. Sila fikirkan tentang aktiviti-aktiviti yang anda lakukan:*

- *di tempat kerja*
- *di rumah dan kawasan halaman*
- *untuk bergerak dari satu tempat ke tempat yang lain*
- *pada waktu lapang untuk rekreasi, senaman atau bersukan.*)

Think about all the vigorous activities that you did in the last 7 days for at least 10 minutes at a time:

- Vigorous physical activities take hard physical effort
- Make you breathe much harder than normal
- Examples: heavy lifting, digging, running, or fast bicycling

(*Fikirkan tentang semua aktiviti fizikal berat yang anda telah lakukan dalam tempoh 7 hari yang lepas ini untuk sekurang-kurangnya 10 minit:*

- *Aktiviti fizikal berat adalah aktiviti yang menggunakan daya tenaga fizikal yang kuat*
- *Akan membuat anda bernafas jauh lebih kuat daripada biasa*
- *Contoh: mengangkat barang berat, mencangkul, berlari atau berbasikal laju)*

3.4 During the last 7 days, on how many days did you do vigorous physical activities?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah menjalankan kegiatan fizikal berat?*)

☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

3.4 (a) If yes, how much time did you usually spend doing vigorous physical activities on one of those days?
(*Berapakah masa yang anda biasa gunakan untuk menjalankan kegiatan fizikal berat pada salah satu daripada hari berkenaan?)*

_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

Think about all the moderate activities that you did in the last 7 days for at least 10 minutes at a time:

- Moderate activities take moderate physical effort
- Make you breathe somewhat harder than normal

- Examples: carrying light loads, bicycling at a regular pace or swimming
- Do not include walking

(*Fikirkan tentang semua aktiviti fizikal sederhana yang anda telah lakukan dalam tempoh 7 hari yang lepas ini, untuk sekurang-kurangnya 10 minit.*

- *Aktiviti fizikal sederhana adalah aktiviti yang menggunakan daya tenaga fizikal yang sederhana*
- *Akan membuat anda bernafas agak lebih kuat daripada biasa*
- *Contoh: mengangkat barang ringan, mengelaplantai, berbasikal pada kelajuan biasa, atau berenang*
- *Ini tidak termasuk berjalan kaki.*)

3.5 During the last 7 days, on how many days did you do moderate physical activities?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah menjalankan kegiatan fizikal sederhana?*)
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

3.5 (a) How much time did you usually spend doing moderate physical activities on one of those days?
(*Berapakah masa yang anda biasa gunakan untuk menjalankan kegiatan fizikal sederhana pada salah satu daripada hari berkenaan?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

Think about the time you spent walking in the last 7 days, such as walking:

- at work
- at home
- to travel from place to place
- for recreation, sport, exercise, or leisure

(*Fikirkan tentang masa yang anda telah gunakan untuk berjalan kaki dalam tempoh 7 hari. Masa ini merangkumi berjalan kaki:*

- *di tempat kerja*
- *di rumah*
- *dari satu tempat ke tempat yang lain*
- *untuk rekreasi, bersukan, bersenam atau pada masa lapang*)

3.6 During the last 7 days, on how many days did you walk for at least 10 minutes at a time?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah berjalan kaki untuk sekurang-kurangnya 10 minit?)*
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

3.6 (a) How much time did you usually spend walking on one of those days?
(*Berapakah masa yang anda biasa gunakan untuk berjalan kaki pada salah satu daripada hari berkenaan?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

The last question is about the time you spent sitting on work days during the last 7 days. This includes time spent at work or at home, and during your leisure time. Examples are:

- time spent sitting at a desk or reading

- visiting friends
- sitting or lying down to watch television.

(*Soalan terakhir ini adalah berkaitan masa yang anda telah gunakan untuk duduk pada hari-hari bekerja dalam tempoh 7 hari yang lepas ini. Ini termasuk masa di tempat kerja, di rumah atau di masa lapang. Contoh adalah seperti:*

- *duduk di meja atau membaca*
- *menziarahi kawan-kawan*
- *duduk atau baring sambil menonton televisyen.*)

3.7 During the last 7 days, how much time did you spend sitting on a work day?
(*Dalam tempoh 7 hari yang lepas ini, berapakah masa yang anda telah gunakan untuk duduk pada sesuatu hari bekerja?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

3.8 On average, how many hours do you sleep in a 24-hour day?
(Biasanya, berapa jam yang akan anda tidur dalam tempoh masa 24 jam?)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

3.9 How do you feel about your health *(Apakah pendapat anda tentang kesihatan anda*)?
1 - ☐ Excellent *(Cemerlang)*
2 - ☐ Good *(Baik)*
3 - ☐ Fair *(Sederhana)*
4 - ☐ Poor *(Lemah)*
5 - ☐ Very poor *(Sangat lemah)*

3.10 Do you think you are:
(Pada pendapat anda, adakah anda rasa anda mempunyai berat badan yang:)
1 - ☐ Overweight *(berlebihan)* 2 - ☐ Normal weight *(normal)* 3 - ☐ Underweight *(berkurang)*

Section 4: Nutritional guidelines

4.1 In 2010, the Malaysian government updated the national dietary guideline. Do you know what is in the guideline? *(Pada tahun 2010, kerajaan Malaysia telah mengemaskinikan panduan pemakanan negara. Tahukah anda kandungan panduan itu)*?
1 - ☐ Yes *(Ya)* 2 - ☐ No *(Tidak)*

4.2 [IF YES] The Malaysian dietary guideline has 14 key messages. Can you describe one of them?
([JIKA YA] Garis panduan pemakanan Malaysia mempunyai 14 mesej utama. Bolehkah anda terangkan salah satu mesej itu)?

Appendix II: Consumer Interview Guide

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Consumer survey and interview guide
(ADMINISTERED BY P.I.)

Age (*Umur*):	Sex (*Jantina*): 1 - ☐ Female 2 - ☐ Male
Ethnicity (*Bangsa*):	Religion (*Agama*):
Occupation (*Pekerjaan*):	

Marital status (*Taraf perkahwinan*):
1 - ☐ Married *(Kahwin)*
2 - ☐ Not Married *(Belum Kahwin)*
3 - ☐ Widow/Widower/Divorced *(Balu/duda/janda)*

Do you have children (*Adakah anda mempunyai anak)?*
1 - ☐ Yes *(Ya)* 2 - ☐ No *(Tidak)*

If yes, how many children do you have and how old are they? (*Jika ada, berapa anak yang anda ada dan apakah umur mereka?*) _____

Place/state of birth *(Negeri tempat lahir)*: _____

If not from K.L., how long have you lived in K.L? *(Jika bukan dari K.L., sudah berapa lama anda tinggal di K.L.)*?
_____ years (*tahun*)

Live with *(Menetap dengan)*:
1 - ☐ Family *(Keluarga)* 2 - ☐ Self *(Sendiri)* 3 - ☐ Housemates *(Teman serumah)*

Education level *(Tahap pendidikan)*:
1 - ☐ Primary *(Sek. Rendah)* 2 - ☐ Secondary *(Sek. Menengah)*
3 - ☐ College *(Kolej)* 4 - ☐ University *(Universiti)*

What your average income is per month? Is it *(Apakah purata pendapatan anda sebulan? Adakah ia)*:
1 - ☐ RM0-499 2 - ☐ RM500-999 3 - ☐ RM1,000-2,999
4 - ☐ RM3,000-4,999 5 - ☐ More than RM5,000

Interview guide

I. Meals:

1. On an average day, how many meals do you eat? *(Biasanya, dalam jangka masa sehari, berapa kali anda makan?)*

2. Do you usually eat breakfast? (*Biasanya, berapa kerapkah dalam seminggu anda makan sarapan pagi?*)
    a. If no, why not? (*Jika tidak, mengapa?*)
    b. If yes, do you usually eat breakfast at home or do you eat out? (*Jika menjawab ya, anda biasanya makan sarapan pagi di rumah atau di luar?*)
        i. If out, why? (*Jika di luar, mengapa?)*
        ii. What do you usually drink during breakfast? (*Semasa sarapan, apakah yang anda biasanya minum?*)

3. Do you usually eat lunch at home or do you dine out? *(Anda biasanya makan tengahari di rumah atau di luar?)*
    a. If dine out, where do you normally eat? (*Jika makan di luar, biasanya, di manakah akan anda makan?*)
        i. Why do you eat out? (*Mengapakah anda makan makanan di luar*?)
    b. What would you normally eat? (*Apakah yang anda biasanya makan?)*
    c. What do you usually drink during lunch? (*Semasa makan tengahari, apakah yang anda biasanya minum?*)

4. Do you usually eat dinner at home or do you dine out? *(Anda biasanya makan malam di rumah atau di luar?)*
    a. If dine out, where do you normally eat? (*Jika makan di luar, biasanya, di manakah akan anda makan?*)
        i. Why do you eat out? (*Mengapakah anda makan makanan di luar*?)
    b. What would you normally eat? (*Apakah yang anda biasanya makan?)*
    c. What do you usually drink during lunch? (*Semasa makan malam, apakah yang anda biasanya minum?*)

5. On an average day, how many times do you snack, if at all? (*Biasanya, berapa kali dalam sehari anda makan makanan ringan?*)
    a. If yes, do you purchase the snacks or are they prepared at home? (*Jika menjawab 'ya' kepada soalan di atas, adakah anda membeli makanan ringan itu, atau memakan makanan ringan yang dibuat dirumah?)*
    b. (If purchased), where do you usually buy your snacks? (*Jika makanan ringan itu dibeli, di manakah anda beli makanan itu?*)

6. Do you think it is more expensive to eat at home or to eat out? Why? (*Pada pendapat anda, apa yang lebih mahal: makan di rumah atau makan di luar? Mengapa?*)
    a. What do you think is a reasonable price to pay for food when you eat out? (*Pada pendapat anda, apakah yang anda rasa adalah harga yang berpatutan apabila makan di luar*?)
    b. How much money do you usually spend on food each month? (*Biasanya, berapa banyak yang akan anda belanjakan dalam sebulan untuk membeli makanan?)*
    c. Can you tell me how you define these words what (*Bolehkah anda jelaskan definasi perkataan-perkataan ini*): hawker stalls, food court, mamak, warung, kedai, kopitiam, and restaurant. (PROBE: Is it place/location, food, price or people specific?)

II. Lifestyle:

1. Do you smoke? (*Adakah anda merokok*)?
2. How many hours do you work in an average day? (*Biasanya, berapa jam akan anda berkerja dalam sehari?*)
    a. How many days a week do you usually work? (*Biasanya, berapa hari akan anda berkerja dalam seminggu?*)
    b. Do you think you work too much or too little? (*Pada pendapat anda, anda berkerja terlalu banyak atau terlalu sikit?*)
    c. Can you describe what you usually do while working? (*Bolehkah anda menerangkan kepada saya apakah yang anda biasanya lakukan semasa kerja?)*

3. How many hours do you sleep in a 24-hour day? *(Biasanya, berapa jam anda tidur dalam jangka masa 24 jam)*?

III. Physical activity (Source : IPAQ)

The next several questions will ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do:

- at work
- at home or in the garden
- to get from one place to the other house and garden work
- to get from place to place
- in your spare time for recreation, exercise or sport.

(*Soalan-soalan berikut akan menanya anda tentang jumlah masa yang anda gunakan untuk menjalankan kegiatan fizikal dalam tempoh 7 hari yang lepas ini. Sila jawab soalan-soalan ini walaupun anda berpendapat bahawa anda bukanlah seorang yang aktif. Sila fikirkan tentang aktiviti-aktiviti yang anda lakukan:*

- *di tempat kerja*
- *di rumah dan kawasan halaman*
- *untuk bergerak dari satu tempat ke tempat yang lain*
- *pada waktu lapang untuk rekreasi, senaman atau bersukan.*)

Think about all the vigorous activities that you did in the last 7 days for at least 10 minutes at a time:

- Vigorous physical activities take hard physical effort
- Make you breathe much harder than normal
- Examples: heavy lifting, digging, running, or fast bicycling

(*Fikirkan tentang semua aktiviti fizikal berat yang anda telah lakukan dalam tempoh 7 hari yang lepas ini untuk sekurang-kurangnya 10 minit:*

- *Aktiviti fizikal berat adalah aktiviti yang menggunakan daya tenaga fizikal yang kuat*
- *Akan membuat anda bernafas jauh lebih kuat daripada biasa*
- *Contoh: mengangkat barang berat, mencangkul, berlari atau berbasikal laju)*

1. During the last 7 days, on how many days did you do vigorous physical activities?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah menjalankan kegiatan fizikal berat?*)
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

1(a) If yes, how much time did you usually spend doing vigorous physical activities on one of those days?

(*Berapakah masa yang anda biasa gunakan untuk menjalankan kegiatan fizikal berat pada salah satu daripada hari berkenaan?)*
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

Think about all the moderate activities that you did in the last 7 days for at least 10 minutes at a time:

- Moderate activities take moderate physical effort
- Make you breathe somewhat harder than normal
- Examples: carrying light loads, bicycling at a regular pace or swimming
- Do not include walking

(*Fikirkan tentang semua aktiviti fizikal sederhana yang anda telah lakukan dalam tempoh 7 hari yang lepas ini, untuk sekurang-kurangnya 10 minit.*

- *Aktiviti fizikal sederhana adalah aktiviti yang menggunakan daya tenaga fizikal yang sederhana*
- *Akan membuat anda bernafas agak lebih kuat daripada biasa*
- *Contoh: mengangkat barang ringan, mengelaplantai, berbasikal pada kelajuan biasa, atau berenang*
- *Ini tidak termasuk berjalan kaki.*)

2. During the last 7 days, on how many days did you do moderate physical activities?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah menjalankan kegiatan fizikal sederhana?*)
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

2 (a) How much time did you usually spend doing moderate physical activities on one of those days?
(*Berapakah masa yang anda biasa gunakan untuk menjalankan kegiatan fizikal sederhana pada salah satu daripada hari berkenaan?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

Think about the time you spent walking in the last 7 days, such as walking:

- at work
- at home
- to travel from place to place
- for recreation, sport, exercise, or leisure

(*Fikirkan tentang masa yang anda telah gunakan untuk berjalan kaki dalam tempoh 7 hari. Masa ini merangkumi berjalan kaki:*

- *di tempat kerja*
- *di rumah*
- *dari satu tempat ke tempat yang lain*
- *untuk rekreasi, bersukan, bersenam atau pada masa lapang*)

3. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?
(*Dalam tempoh 7 hari yang lepas ini, berapa harikah anda telah berjalan kaki untuk sekurang-kurangnya 10 minit?)*
☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days
☐ 7 days ☐ Never

3(a) How much time did you usually spend walking on one of those days?
(*Berapakah masa yang anda biasa gunakan untuk berjalan kaki pada salah satu daripada hari berkenaan?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

4. The last question is about the time you spent sitting on work days during the last 7 days. This includes time spent at work or at home, and during your leisure time. Examples are:

- time spent sitting at a desk or reading
- visiting friends
- sitting or lying down to watch television.

(*Soalan terakhir ini adalah berkaitan masa yang anda telah gunakan untuk duduk pada hari-hari bekerja dalam tempoh 7 hari yang lepas ini. Ini termasuk masa di tempat kerja, di rumah atau di masa lapang. Contoh adalah seperti:*

- *duduk di meja atau membaca*
- *menziarahi kawan-kawan*
- *duduk atau baring sambil menonton televisyen.*)

4(a) During the last 7 days, how much time did you spend sitting on a work day?
(*Dalam tempoh 7 hari yang lepas ini, berapakah masa yang anda telah gunakan untuk duduk pada sesuatu hari bekerja?*)
_____ hours per day (*jam sehari*) _____ minutes per day (*minit sehari*)
☐ Don't know/Not sure *(Tidak tahu/tidak pasti*)

IV. Health

1. How do you feel about your health *(Apakah pendapat anda tentang kesihatan anda?*)

2. How do you feel about your weight? *(Apakah perasaan atau pendapat anda terhadap berat badan anda?)*
    a. How do you feel about the weight of your family members or relatives? (*Apakah perasaan atau pendapat anda terhadap berat badan keluarga dan saudara-mara anda?)* (PROBE: Tell me what you mean about fat/skinny. What would you categorize as such? Where or how did you learn about it?)

3. Do you think your weight affects your health? (*Pada pendapat anda, adakah berat badan anda mempunyai sebarang kesan terhadap kesihatan anda?)*

4. Do you have a family history of hypertension, cardiovascular disease, diabetes or strokes? (*Adakah ahli-ahli keluarga atau saudara-mara anda mempunyai sejarah penyaki-penyakit seperti hipertensi/darah tinggi, diabetes/kencing manis, penyakit jantung atau strok?)*

V. Nutritional guidelines

1. In 2010, the Malaysian government updated the national dietary guideline. Do you know what is in the guideline? *(Pada tahun 2010, kerajaan Malaysia telah mengemaskinikan panduan pemakanan negara. Tahukah anda kandungan panduan itu*?)
    a. If yes, the Malaysian dietary guideline has 14 key messages. Can you describe one of them? (*Jika ya, garis panduan pemakanan Malaysia mempunyai 14 mesej utama. Bolehkah anda terangkan salah satu mesej itu*?)

Appendix III: Diet Recall Form

USF
UNIVERSITY OF SOUTH FLORIDA

24-hour Diet Recall Form
(ADMINISTERED BY P.I.)

Participant ID number:	Gender (*Jantina*):
Date (*Tarikh*):	Age (*Umur*):
Takes nutritional supplement (*Makanan tambahan/ubat*): Yes (*ya*) / No (*tidak*)	If yes, list type (*Jika ada, terangkan jenis*):
Mealtime: 1-Morning *(4 to 9 a.m.)* 2-Midmorning *(9 to 11:30 a.m.)* 3-Noon *(11:30 to 2 p.m.)* 4-Afternoon *(2 to 5 p.m.)* 5-Evening *(5 to 8 p.m.)* 6-Late Evening *(8 p.m. to 4 a.m.)*	Money spent on food last month (*Jumlah wang yang dibelanjakan untuk makanan bulan lepas*): RM: (USD $1.0 = RM 3.0)

Time (*masa*)	Food items/description (*Jenis makanan*)	Place of purchase (*Tempat dibeli*)	Amount (*Jumlah dimakan*)

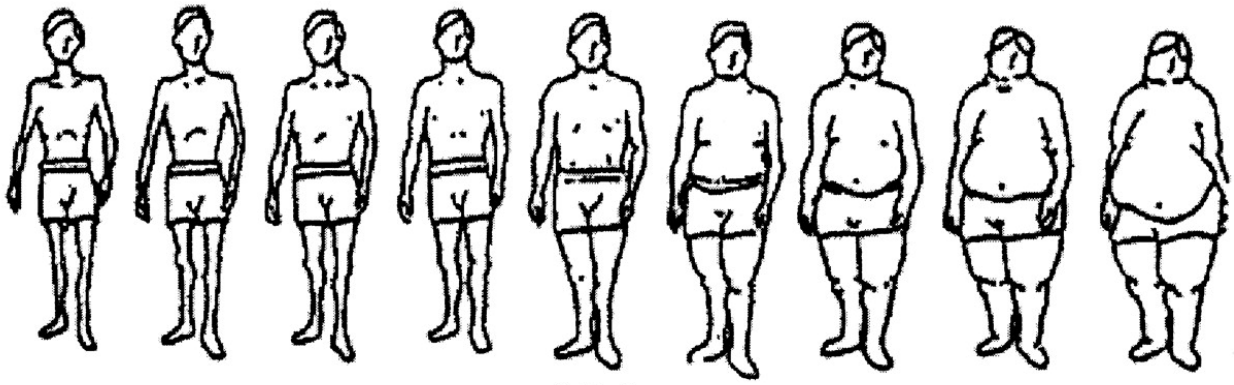
Appendix IV: Anthropometry Form

Anthropometry Form
(ADMINISTERED BY THE P.I.)

Participant ID number:	Gender:
Date:	Date of birth:
BMI (Body Mass Index) [Weight (kg)/Height (cm)^2]:	Waist-to-hip ratio [Waist (cm)/hips (cm)]:

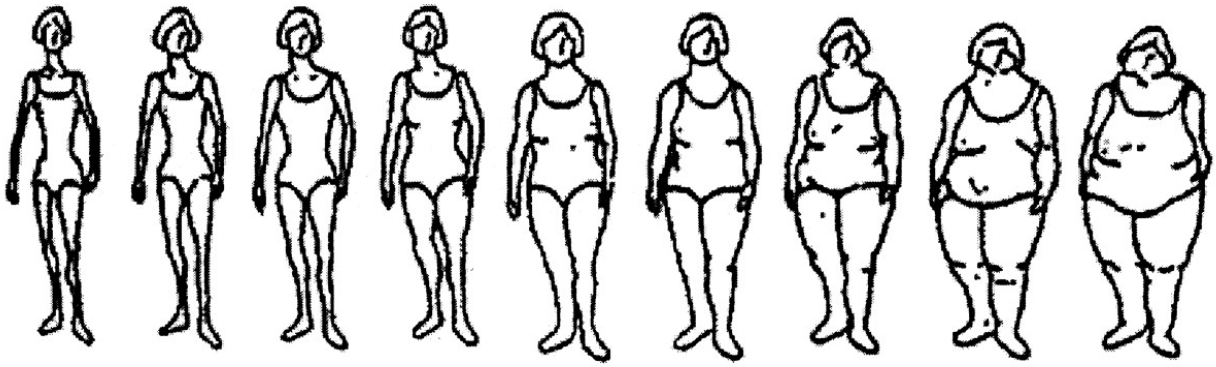
	Measure 1	Measure 2	Measure 3	Average
Height				
Weight				
Hip circumference				
Waist circumference				

Appendix V: Body Image Scale



Male

1 2 3 4 5 6 7 8 9



Female

Appendix VI: Vendor Interview Guide

Vendors survey and interview guide; observation guide.
(ADMINISTERED BY P.I.)

Age (*Umur*):	Sex (*Jantina*): 1 - ☐ Female 2 - ☐ Male
Ethnicity (*Bangsa*):	Religion (*Agama*):
Location (*Lokasi*):	

Education level *(Tahap pendidikan)*:
1 - ☐ Primary *(Sek. Rendah)* 2 - ☐ Secondary *(Sek. Menengah)*
3 - ☐ College *(Kolej)* 4 - ☐ University *(Universiti)*

What your average income is per month? Is it *(Apakah purata pendapatan anda sebulan? Adakah ia)*:
1 - ☐ RM0-499 2 - ☐ RM500-999 3 - ☐ RM1,000-2,999
4 - ☐ RM3,000-4,999 5 - ☐ More than RM5,000

Interview guide

1. Place/state of birth *(Negeri tempat lahir)*: _____
    a. If not from K.L., how long have you lived in K.L? *(Jika bukan dari K.L., sudah berapa lama anda menetap di K.L.)*?
    b. Why did you move to KL? (*Mengapa anda berpindah ke KL?*)

2. Are you married? Do you have children? If yes, how old are they? *(Apa taraf perkahwinan anda? Anda mempunyai anak? Jika ada, apakah umur mereka?)*

3. How long have you been a vendor? (Sudah *berapa lama anda menjual makanan di gerai ini?)*
    a. What kind of dishes/food item do you sell? (Anda jual makanan jenis apa?)

4. How did you get into this business? (*Bagaimana anda memulakan atau membuka perniagaan ini?*)
    a. Why did you get into this business? (*Mengapa anda mulakan perniagaan ini?*)
    b. How did you decide on what dish/food item to sell? (*Bagaimana anda membuat keputusan tentang jenis makanan yang anda jual?)*

5. Has the food industry in KL changed from the time you started your business and now? *(Industri makanan di KL sudak berubah tak, dari masa anda memulakan perniagaan anda hingga sekarang?)*
    a. If yes, in what ways? (*Jika menjawab ya, apa perubahan-perubahan itu?*)
    b. Have food prices changed? (*Adakah harga makanan berubah?)*
    c. Do you think the government is involved in these changes? *(Pada pendapat anda, adakah kerajaan terlibat dalam perubahan-perubahan ini?)*
    d. What do you think are some of the challenges you face in doing business these days? *(Pada pendapat anda, apa cabaran-cabaran yang anda menghadapi dalam perniagaan anda pada masa kini?)*
    e. Do you think your customers' tastes have changed? *(Pada pendapat anda, adakah citarasa pelanggan-pelanggan anda telah berubah?)*

6. Do you think there are more dining options for your customers nowadays? *(Pada pendapat anda, adakah pelanggan-pelanggan anda mempunyai pelbagai pilihan makanan?)*
    a. How do you deal with the competition? *(Bagaimana anda bersaing dengan peniaga-peniaga lain?)*
    b. Why do you think people in KL still like to eat at hawker centers or food stalls? *(Pada pendapat anda, mengapa orang-orang di KL masih suka makan di gerai atau warung makanan?)*
    c. Do you think this business is profitable? *(Pada pendapat anda, perniagaan makanan ini masih menguntungkan?)*
    d. Do you have regular customers who eat at your stall/buy food from you? *(Anda tak pelanggan-pelanggan tetap yang makan di gerai anda/membeli makanan dari anda?)*

7. Government officials say that many Malaysians are overweight, and the extra weight is unhealthy. What do you think about this statement? *(Wakil-wakil kerajaan telah berkata bahawa ramai rakyat Malaysia kini mempunyai berat badan yang berlebihan, dan berat tambahan ini tidak baik untuk kesihatan. Apa pandangan anda terhadap kenyataan ini?)*
    a. What do you think caused their extra weight? *(Pada pendapat anda, apa yang mengyebabkan berat badan tambahan ini?)*

8. In 2010, the Malaysian government updated the national dietary guideline. Do you know what is in the guideline? *(Pada tahun 2010, kerajaan Malaysia telah mengemaskinikan panduan pemakanan negara. Tahukah anda kandungan panduan itu*?)
    a. Have these guidelines affected your business*? (Adakah panduan pemakanan ini menjejaskan atau mengesankan perniagaan anda?)*
    b. Do you think your customers are aware of these guidelines? *(Pada pendapat anda, adakah pelanggan-pelanggan anda sedar atau mengetahui panduan ini?)*

9. Can you tell me the price of each dish/food item you sell? *(Boleh tak anda memberitahu saya harga-harga makanan yang anda jual?)*
    a. What is the average cost of each dish/food item? *(Apa kos purata setiap makanan yang anda jual?)*
    b. What is the average number of dish/food item you sell a day? *(Apa jumlah makanan yang anda biasanya jual dalam jangka masa sehari?)*
    c. What are the ingredients for this dish/food item? *(Apa bahan-bahan/ramuan yang anda gunakan di dalam masakan anda?)*

10. What are your hours of operation? (*Pukul berapa anda buka dan tutup perniagaan anda?)*
    a. How many days a week do you work? *(Biasanya, berapa hari anda berkerja dalam jangka masa seminggu?)*
    b. What is the average number of customers you serve in a day? *(Apa purata bilangan pelanggan anda dalam jangka masa sehari?)*

Appendix VII: USF Institutional Review Board Approval Letters

USF
UNIVERSITY OF SOUTH FLORIDA

DIVISION OF RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-5618

August 14, 2012

Sylvia Lim
Anthropology
3365 Ramblewood
Pl. Sarasota, FL
34237

RE: **Expedited Approval** for Initial Review
IRB#: Pro00008796
Title: Obesity and dining out: An exploration of dietary trends in urban Malaysia

Dear Ms. Lim:

On 8/13/2012 the Institutional Review Board (IRB) reviewed and **APPROVED** the above referenced protocol**.** Please note that your approval for this study will expire on 8/13/2013.

Approved Items:
Protocol Document:
LIM_Protocol_REVISED

Consent Documents:
LIM_Consent Form_SG2.pdf
LIM_Consent Form_SG2_BM.pdf
LIM_Consent Form_Vendors.pdf
LIM_Consent Form_Vendors_BM.pdf

Please use only the official, IRB- stamped consent/assent document(s) found under the "Attachment Tab" in the recruitment of participants. Please note that these documents (the consent/assent documents to be signed by participants) are only valid during the approval period indicated on the stamped document. If you have been granted a Waiver of Informed

Consent Documentation you do not need your document IRB-stamped.

Your study qualifies for a waiver of the requirements for the documentation of informed consent for the anonymous survey as outlined in the federal regulations at 45CFR46.117 (c) which states that an IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) that the only record linking the subject and the research

would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or (2) that the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review categories:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have

any questions regarding this matter, please call 813-974-

5638. Sincerely,

John A Schinka, Ph.D.

John A. Schinka, Ph.D., Chairperson
USF Institutional Review Board

USF
UNIVERSITY OF
SOUTH FLORIDA

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

7/22/2013

Sylvia Lim
Anthropology
4202 E. Fowler Avenue SOC107
Tampa, FL 33620

RE: **Expedited Approval for Continuing Review**
IRB#: CR1_Pro00008796
Title: Obesity and dining out: An exploration of dietary trends in urban Malaysia

Study Approval Period: 8/13/2013 to 8/13/2014

Dear Ms. Lim:

On 7/19/2013, the Institutional Review Board (IRB) reviewed and **APPROVED** the above application and all documents outlined below.

Approved Item(s):
Protocol
Document(s):
LIM_Protocol_2_12
0612
LIM_Protocol_REVISED

The waiver of documentation of informed consent has been renewed.

The IRB determined that your study qualified for expedited review based on federal expedited category number(s):

(6) Collection of data from voice, video, digital, or image recordings made for research

purposes. (7) Research on individual or group characteristics or behavior (including, but not

limited to,
research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral

history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have
any questions regarding this matter, please call 813-974-

5638. Sincerely,

John Schinka, Ph.D., Chairperson
USF Institutional Review Board

Appendix VIII: USM Human Research Ethics Committee Approval Letter

USM UNIVERSITI SAINS MALAYSIA

Jawatankuasa Etika Penyelidikan Manusia USM (JEPeM)
Human Research Ethics Committee USM (HREC)

Our. Ref. : USMKK/PPP/JEPeM [255.4.(2.3)]
Date : 9th October 2012

Universiti Sains Malaysia
Kampus Kesihatan,
16150 Kubang Kerian,
Kelantan. Malaysia.
T: 609 - 767 3000 *samb.* 2350 / 2352
F: 609 - 767 2351
E: jepem@kk.usm.my
www.crp.kk.usm.my

Miss Sylvia Lim Siew Boon
M. Soc. Sc Student
School of Social Sciences
Universiti Sains Malaysia
11800 Minden, Pulau Pinang.

The Human Research Ethics Committee, Universiti Sains Malaysia (FWA Reg. No: 00007718; IRB Reg. No: 00004494) has approved in principle the study mentioned below:

Title	Obesity and Dining Out: An Exploration of Dietary Trends in Urban Malaysia.		
Protocol No	-	**Principle Investigator**	Miss Sylvia Lim Siew Boon
Date of approval Protocol received Reviewed by Committee Received Amended Protocol	9th October 2012 12th June 2012 20th September 2012 25th September 2012	**Co-Investigator(s)**	Dr. Andrew Tan
Research Center	Kuala Lumpur	**Date of study start**	October 2012 – March 2013
Financial Support	-	**Number of Samples**	95 subjects

The following item (✓) have been received and reviewed:-

(✓) **Ethical Approval Application Form**
(✓) **Study Protocol**
(✓) **Participant Information Sheet and Consent Form**
(✓) **Questionnaires**

Investigator(s) are required to:
a) follow instructions, guidelines and requirements of the Human Research Ethics Committee, Universiti Sains Malaysia (JEPeM)
b) report any protocol deviations/violations to Human Research Ethics Committee (JEPeM)
c) comply with International Conference on Harmonization – Guidelines for Good Clinical Practice (ICH-GCP)
d) note that Human Research Ethics Committee (JEPeM) may audit the approved study.

PROFESSOR DR. MOHD SHUKRI OTHMAN
Chairman
Human Research Ethics Committee