



Living Wage

Urban, Shenzhen, China

Context Provided in the Manufacturing Industry

By: Sangui Wang, School of Agricultural Economics and Rural Development, Renmin University of China, Beijing, China

Yu Wang, School of Agricultural Economics and Rural Development, Renmin University of China, Beijing, China

Fengfeng Gu, MA Program in Social Science (MAPSS), University of Chicago, IL, USA

Danyan Lu, School of Agricultural Economics and Rural Development Renmin University, China, Beijing, China



Photo Courtesy of Steve Juvetson, CC-BY-2.0



Series 1, Report 13

August 2015

Prepared for: The Global Living Wage Coalition

Under the Aegis of Fairtrade International, Forest Stewardship Council, GoodWeave International, Rainforest Alliance, Social Accountability International, Sustainable Agriculture Network, and UTZ, in partnership with the ISEAL Alliance and Dr. Richard Anker and Ms. Martha Anker.

SECTION I: INTRODUCTION	3
1. Background	3
2. Living wage estimate	3
3. Context	4
3.1 Shenzhen (Chinese: 深圳) and location of industries	4
3.2 China is now an upper middle-income country and Shenzhen is a modern city	5
3.3 Migrant workers, left behind family members and living wage	6
4. Concept and definition of a living wage	8
5. How a living wage is estimated	8
SECTION II: COST OF A BASIC BUT DECENT LIFE FOR A WORKER AND THEIR FAMILY	11
6. Food costs	11
6.1 General principles of model diet	11
6.2 Model diet	12
6.3 Food prices	15
6.4 Seasonality of Food Prices	17
7. Housing costs	18
7.1 Standard for basic acceptable local housing	18
7.2 Rent for basic acceptable housing	20
7.3 Utilities and other housing costs	25
7.4 Summary of Housing Costs	25
7.5 Additional Remarks on Housing	25
8. Non-food and non-housing costs	29
9. Post checks of non-food and non-housing costs	32
9.1 Health care post check	32
9.2 Education post check	33
9.3 Transportation Post Check	34
9.4 Communication Post Check	35
10. Provision for unexpected events to ensure sustainability	35
SECTION III: LIVING WAGE FOR WORKERS	37
11. Family size needing to be supported by living wage	37
12. Number of full-time equivalent workers in family providing support	37
13. Take home pay required and taking taxes and mandatory deductions from pay into account	39
SECTION IV: ESTIMATING GAPS BETWEEN LIVING WAGE AND PREVAILING WAGES	40
14. In-Kind Benefits	40
14.1 In-kind benefits as partial payment of living wage	40
14.2 Value of In-Kind Benefits and Cash Allowances as Partial Payments of a Living Wage	41

15. Living wage in context and compared to other wages	41
15.1 Minimum Wage, poverty line wage and Asian floor wage	42
15.2 Prevailing Wages for Manufacturing Workers in Shenzhen	42
15.3 Income Benchmark in Shenzhen	43
15.4 Wage ladder	44
15.5 Recent wage trends	45
16. Conclusions	45
REFERENCES	49
ANNEXES	51
Annex 1: Rent	51
Annex 2: ACTUAL FOOD CONSUMPTION	52

Living Wage Report

Shenzhen, China

Urban

Context provided in the manufacturing industry

SECTION I

INTRODUCTION

1. BACKGROUND

This report estimates a living wage for urban Shenzhen for August 2015 with a focus on manufacturing industry parks (Bao'an District, Longgang District and Longhua New District). This report uses the methodology developed by Richard Anker and Martha Anker (2017) that builds and improves on their earlier work on living wages published by ILO (See Anker, 2006 and Anker, 2011). There are over 30 other living wage reports using this methodology including 5 reports for other Chinese cities.

This report was commissioned by Social Accountability International, a member of The Global Living Wage Coalition. The Global Living Wage Coalition brings together Fairtrade International, Forest Stewardship Council (FSC), Goodweave International, Rainforest Alliance (RA), Social Accountability International (SAI), Sustainable Agriculture Network (SAN), UTZ, and the ISEAL Alliance, with the shared mission to see continuous improvements in workers' wages, in the farms, factories and supply chains participating in their respective certification systems and beyond, and the long term goal for workers to be paid a living wage. Each living Wage Benchmark commissioned by the Coalition is made public to further this aim and to increase the opportunity for collaboration toward payment of a Living Wage.

2. LIVING WAGE ESTIMATE

Our estimate of a living wage for August 2015 is **RMB 2,508 per month** (RMB 115 per day) for areas of Shenzhen with concentrations of manufacturing industrial parks. Taking all mandatory deductions into account, our estimate of a gross living wage is **RMB 2,818 per month** (RMB 130 per day) for permanent workers. This is approximately equal to \$440 per month and \$20 per day¹. In this report, we estimate our living wage based on a 21.75 day work month, which is in accordance with the minimum-wage guarantee system in Shenzhen for 2015.

*Corresponding author. E-mail address: wangyu2011@ruc.edu.cn (Yu Wang).

¹6.4 is used in this report as an approximate exchange rate between the US dollar and China's RMB.

3. CONTEXT

3.1 Shenzhen² (Chinese: 深圳) and location of industries

Shenzhen is located in the southern part of China mainland and immediately north of Hong Kong Special Administrative Region. It became China's first Special Economic Zone (SEZ) in 1980³ and is so far one of the most successful SEZs in China. It was empowered to hold sub-provincial administrative status in 1981 and became specifically-designed city in the state plan in 1988, enjoying municipal level authority in economic management. It has direct jurisdiction over six administrative districts and four management new districts⁴ at present.

Shenzhen has more than one thousand industrial zones, among which manufacturing industrial zones are concentrated in the Bao'an District, Longgang District, and Longhua New District. We use a simplified map to show the geographic relationship of different districts and to indicate the industrial parks involved in our on-site survey (see Figure 1).

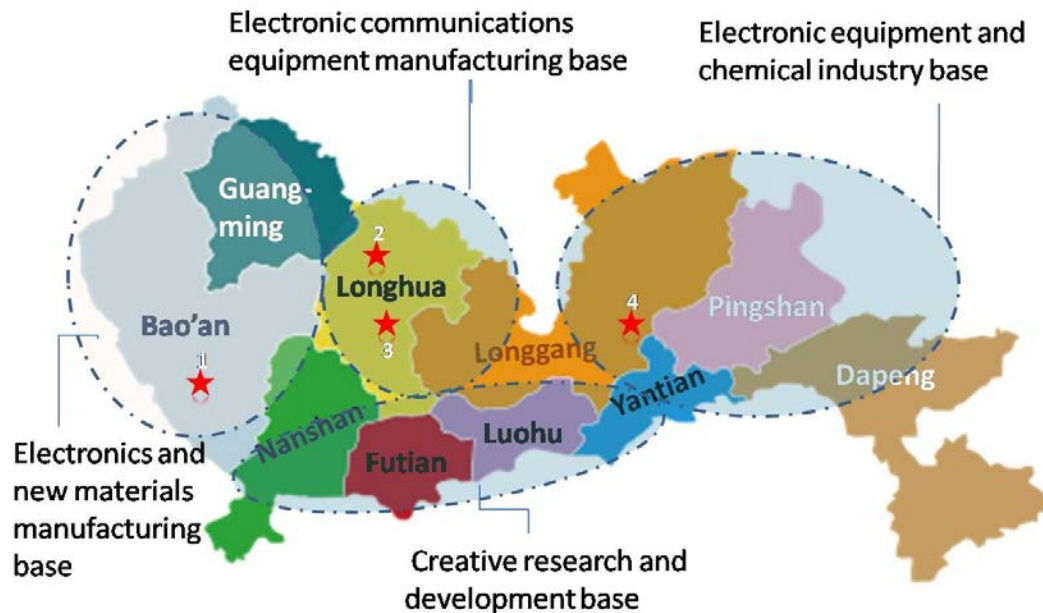
It is important to point out that our living wage is estimated for areas of Shenzhen where industries are concentrated thus where most workers in manufacturing industries live. We felt that it was appropriate to estimate a living wage for such areas of Shenzhen as this best reflects the living costs faced by typical workers. This has important implications for the estimation of a living wage for Shenzhen, because living costs are lower in these areas compared to that in the center of Shenzhen and upscale neighborhoods.

²See more for basic introduction of Shenzhen from Wikipedia, the free encyclopedia
<https://en.wikipedia.org/wiki/Shenzhen>

³“全国人民代表大会常务委员会关于批准《广东省经济特区条例》的决议”, Available at
<http://www.chinalawedu.com/falvfagui/fg22016/22495.shtml>, Accessed Sep 3, 2015.

⁴Management new districts are management areas; not administrative divisions registered under the Ministry of Civil Affairs.

Figure 1: Districts, industrial bases, and investigation sites of Shenzhen



Notes:

Guangming, Longhua, Pingshan and Dapeng are new districts as management areas but not administrative divisions registered under the Ministry of Civil Affairs. Guangming and Longhua are subordinate to Bao'an. Pingshan and Dapeng are subordinate to Longgang.

On-site investigation industrial parks are labeled with red stars. Star 1 represents small electronics factories located in Xixiang town in Bao'an district. Star 2 and star 3 represent Guanlan Science and Technology Park (in Guanlan town) and Longhua Science and Technology Park (a technology group in Longhua New District) respectively. Star 4 represents a LED lighting and electronic application factory located in Shangrong Science and Technology Industrial Park in Longgang District.

3.2 China is now an upper middle-income country and Shenzhen is a modern city

Shenzhen has been developing at an incredibly fast pace since China's reform and opening-up which began in the late 1970s, enjoying an average annual GDP growth rate at 23.9% and an average annual GDP per capita growth rate at 11.5% (calculated at constant prices) from 1980 to 2013⁵, and its GDP calculated at current prices reached RMB 1,600,198 for 2014⁶. Secondary industry, with an average annual growth rate of 30.6% from 1980 to 2013, is the biggest contribution to Shenzhen's vigorous growth, and the average annual growth rate for industry and construction during the same period is 32.2% and 23.0% respectively.

As is apparent from the following photos of the outskirts of the city, Shenzhen is a modern city and housing and living conditions are reasonably good. In fact, China is no longer a poor country and is considered to be an upper middle income country.

⁵Source: Shenzhen Statistical Yearbook, 2014. Available at <http://www.szstj.gov.cn/nj2014/start2014.htm>. Accessed Sep 4, 2015.

⁶“深圳市 2014 年国民经济和社会发展统计公报”. 深圳市统计局. 2015 年 4 月 22 日, Available at http://www.szstj.gov.cn/xxgk/tjsj/tjgb/201504/t20150424_2862885.htm. Accessed Sep 4, 2015.

Figure 2: Images representing typical surroundings in Shenzhen, China's industrial parks: streets, housing, electric bicycle "taxi", and consumption and leisure places



Source: Authors in August 2015.

3.3 Migrant workers, left behind family members and living wage

According to the yearly statistical bulletin of Shenzhen's national economy and social development, Shenzhen had a population of 10.78 million people in 2014⁷, among which, almost 7 million (more than 60%) were migrant workers⁸. These migrant workers mainly engaged in manufacturing, wholesale and retail industry, accommodation and catering service etc. Noticeably, more than 60% of migrant workers were employed in the manufacturing sector.

Migrant workers, most of whom come from rural areas of relatively underdeveloped regions, have formed the mainstay of manufacturing workers in Shenzhen as well as other relatively industrialized areas of China. Less than 50% of migrant workers live with their family members, which is especially common for unmarried young workers since they can live independently far away from

⁷"深圳市 2014 年国民经济和社会发展统计公报"深圳市统计局.2015 年 4 月 22 日.

http://www.sz.gov.cn/tjj/tjj/xxgk/tjsj/tjgb/201504/t20150424_2862885.htm

⁸"深圳农民工近 700 万每年寄回工资 1000 亿"深圳卫视. 2014 年 01 月 16 日.

<http://www.s1979.com/shenzhen/201401/16112208116.shtml>

their parents. It is tough, however, for couples to live apart, and for parents to suffer the separation from their children. The majority of workers employed in manufacturing industrial sectors of Shenzhen are from the provinces of Guangdong, Hunan, Hubei and Sichuan. Generally, workers have to submit to separation from their family members due to economic concerns and social cultural factors. It's the common case that migrant worker parents work in a city and their children are raised by grandparents and study in the hometown. This leads to consumption at both ends of rural areas (for left-behind members) and cities (for migrant workers). For this reason, migrant workers typically send a considerable proportion of their wage to support family members back home. This means that most migrant workers are very concerned with living costs and living condition in their hometown (usually rural areas). Under these circumstances, and given the definition of living wage as a concept concerning family, it might seem logical to estimate a living wage for manufacturing industrial workers in Shenzhen partly based on living costs and living standards in their home area. However, it is neither correct in conceptual terms, nor feasible in practice. We consider that a living wage for manufacturing industrial workers in Shenzhen should be based on living costs and living standards required for decency in Shenzhen. This is explained as follows.

First of all, there should be one living wage for all manufacturing industrial workers in Shenzhen. There cannot be one living wage for Shenzhen workers (who would support a family in Shenzhen based on living costs and living standards in Shenzhen) and another living wage for other Shenzhen workers (who would support a family based on different living costs and living standards away from Shenzhen). Separate living wages for Shenzhen residential workers and migrant workers cannot be acceptable, because it might lead to discrimination based on ethnicity and a race to the bottom in wages. Second, it's also not feasible in practice to carry out different living wages for migrant workers from different places because migrant workers are not from one place but from all corners of China. Third, under the definition and spirit of living wage, we feel that all workers in Shenzhen (regardless of whether they are residential or migrant) should be able to afford a living standard considered decent for the worker's family to live in Shenzhen. A living wage estimated based on living standards acceptable in the workers origin areas as well as origin area costs that are probably both lower than in Shenzhen would likely mean that local residential workers would not be able to earn what constitutes a living wage in their own city. Fourth, a living wage is mainly estimated for areas of Shenzhen where typical manufacturing industrial workers live and not for all areas of Shenzhen, such as the expensive city center. Actually, the majority of manufacturing factories are located in industrial parks in peripheral areas of a city to reduce costs and at the same time enjoy the advantage of industry cluster. The circumstances of different industrial parks in Shenzhen are similar, and so are workers' living costs and living standards. However, for industries that spread all over the city, especially those in central districts, there may be substantial differences in living costs and living standards.

Living wage should be based on costs in Shenzhen but not in areas that migrants come from. The decision to estimate a living wage for manufacturing workers in Shenzhen exclusively based on living cost and living standard in Shenzhen is generalizable to other cities in China, which would mean that it would not be appropriate for a living wage in a city to be based on living costs and living standards in other areas. It is important to point out this thought because China is a country with massive internal migration (typically from rural to urban, from less developed areas to developed areas).

4. CONCEPT AND DEFINITION OF A LIVING WAGE

The idea of a living wage is that workers and their family should not have to live in poverty. But a living wage should do more than simply keep workers and their families out of poverty. It should also allow them to participate in social and cultural life. In other words, wages should be sufficient to ensure that workers and their families are able to afford a decent basic lifestyle considered acceptable by society at its current level of economic development. Workers should receive a living wage in normal work hours without having to work overtime. The following definition of a living wage has been agreed to by the Global Living Wage Coalition which includes Fairtrade International, Rainforest Alliance/SAN, UTZ, Goodweave International, FSC and Social Accountability International (SAI) as well as ISEAL:

“Remuneration received for a standard work week by a worker in a particular place sufficient to afford a decent standard of living of the worker and her or his family. Elements of a decent standard of living include food, water, housing, education, healthcare, transport, clothing and other essential needs including provision for unexpected events.”

The idea of a living wage is not new (see Anker 2011 for following quotes). Nor is it a radical idea. Adam Smith (1776) wrote that “No society can surely be flourishing and happy, of which far greater part of the members are poor and miserable. It is equity besides that they who feed, clothe and lodge the whole body of the people should have such a share of the produce of their own labor as to be themselves well fed, clothed and lodged.” Pope Leo XIII (1891) in a Papal encyclical stated that “Remuneration must be enough to support the wage earner in reasonable and frugal comfort. If through necessity, or fear of worse evil, the workman accepts harder conditions because an employer or contractor will give no better, he is the victim of fraud and injustice.” American President Franklin D. Roosevelt (1933) wrote that “Liberty requires opportunity to make a living – a living decent according to the standard of the time, a living which gives men not only enough to live on but something to live for.” International Labor Organization Constitution (1919) states that “Peace and harmony in the world requires an adequate living wage”, and United Nations’ Universal Declaration of Human Rights (1948) states that “Everyone who works has the right to just and favorable remuneration ensuring for himself and his family an existence worthy of human dignity.” See Anker (2011) for how other organizations, international organizations, NGOs, governments and others describe living wage.

5. HOW A LIVING WAGE IS ESTIMATED

Figures 3, 4, and 5 at the end of this section indicate how a living wage for manufacturing industrial workers in Shenzhen was estimated. We started by estimating the cost of a basic but decent living standard for manufacturing industrial workers and their families in Shenzhen. This was done for a reference family consisting of 3.5 people (2 adults and 1.5 children). This family size is consistent with statistical data of typical household size for registered residents of Shenzhen and total fertility rate for China. Discussion on family size can be found in section 11.

The first step to estimate living costs involves developing a model diet for workers using the method developed in Anker and Anker (2017). This involved: (i) calculating required number of calories per person for the reference size family (2297); (ii) identifying least expensive acceptable food items in accordance with workers’ dietary habits and relative food prices using surveys of markets where

workers shop; and (iii) using data on nutritional content of foods to develop a preliminary model diet, and then adjusting the preliminary model diet to meet the recommended dietary structure for Chinese people in Development Outline of Food and Nutrition in China: 2014-2020 as well as WHO recommendations. Second, we find out the cost of renting an acceptable family dwelling through field visits by evaluating the cost of various rental units, utility costs, other housing costs, and routine repairs/maintenance costs which are basic for a family. Estimating housing costs separately through our own inquiry is important because according to government household expenditure statistics, only 14.1% of household expenditures in Shenzhen was for housing, which is much too low, especially considering that 6.1 % was spent for utilities thus leaving only 8% for rent. Third, we estimate non-food-non-housing (NFNH) cost for a living wage (i.e. all other costs besides food and housing) based on the ratio of NFNH to food costs expenditures according to secondary statistical data and the cost of our model diet. This was followed by post checks to make sure that sufficient funds are included in NFNH for education, health care, transport, and communication. Fourth, we estimated the number of full-time equivalent workers per family providing support in order to estimate a net living wage for workers based on information from government websites and published papers. Finally, payroll taxes and deductions are taken into consideration to estimate the gross living wage for workers.

Considerable thought and effort was put into making our living wage estimate. This included identification of typical manufacturing industrial parks, design of data collection forms, investigation with workers from different industrial parks in Shenzhen, visits to markets where workers shop, visits to rental housing where workers live, and discussions and information from various informants in certain area as well as collection of secondary data on consumption structure and food consumption, local dietary culture and habits, local standard for housing, papers and reports from researchers, and information from the government and international agencies.

Figure 3: Components of a basic but decent life for a family



Figure 4: From cost of basic but decent life to net living wage

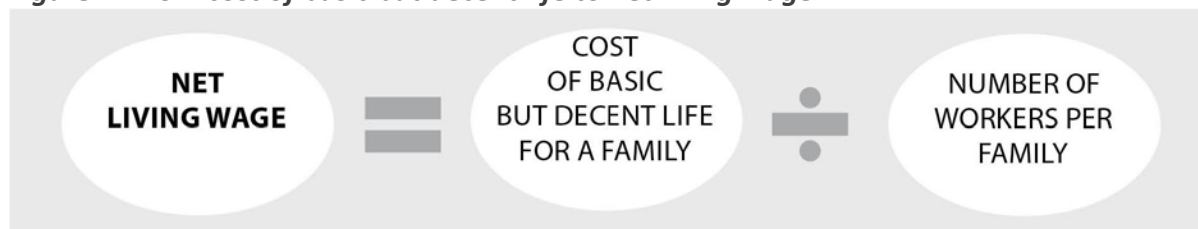
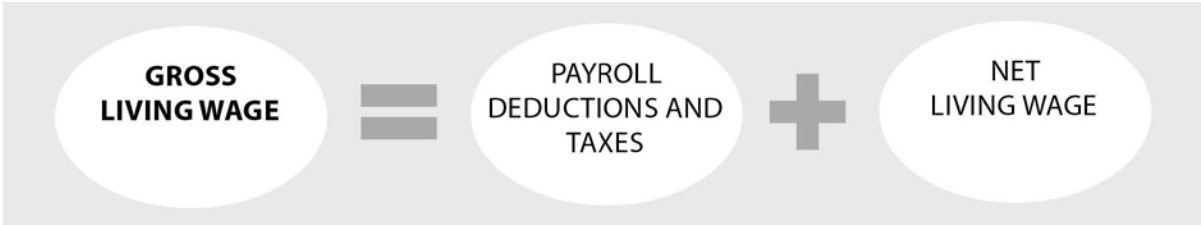


Figure 5: From net living wage to gross living wage



Source: Anker and Anker (2017).

SECTION II

COST OF A BASIC BUT DECENT LIFE FOR A WORKER AND THEIR FAMILY

6. FOOD COSTS

Food costs for a living wage for manufacturing industrial workers in Shenzhen were estimated to be **RMB 12.2 (\$1.91) per person per day** for a family of 2 adults and 1.5 children. This was estimated using a model diet and local food prices.

6.1 General principles of model diet

Food is almost always the most important expense of households in developing countries. The following general principles were used to establish the model diet which estimated food costs for our living wage for manufacturing industrial workers in Shenzhen.

Our model diet needed to be:

- i. Nutritious: (i.e. have sufficient calories as well as acceptable quantities of proteins, fats, carbohydrates, etc.) to help ensure that workers and their families have enough to eat and can be healthy. Our model diet has a sufficient number of calories (2297), is close to nutritional recommendations for proteins (78g per day per person), and meets recommendations for fats (no more than 30 % of all calories), cereals and grain (more than 50 % of all calories) outlined in the *Development Outline of Food and Nutrition in China: 2014-2020* as well as nutritional recommendations of World Health Organization (WHO/FAO, 2003): minimum of 10 % of calories from proteins (with a reasonable proportion of proteins coming from “higher quality” sources such as legumes and animal-origin foods, see WHO/FAO/UNU 2007); 15-30 % of calories from fats; and 55-75 % of calories from carbohydrates.
- ii. Consistent with dietary preferences and local food availability and costs: For this reason, our model diet includes considerable amounts of cereals and grains, meat and fish, green leafy vegetables and fruits. Dietary preferences and food diversity is taken into consideration.
- iii. Relatively low in cost for a nutritious diet: For this reason, our model diet includes less expensive types of rice, noodles, tofu, meat and fish, fruits and vegetables, etc. to keep down total food costs and mimic how cost-conscious workers shop for food while maintaining nutritional standards.
- iv. Consistent with Shenzhen’s high development level: For this reason, our model diet which includes high quality protein from animal-origin foods such as pork, fish, eggs and milk is beyond the actual consumption of China at present and meets the nutritional recommendations in *Development Outline of Food and Nutrition in China: 2014-2020* which gives a general guide and target for the near future.

6.2 Model diet

Our model diet has 2297 calories. This is in the range of 2200-2300 calories proposed for year 2020 in *Development Outline of Food and Nutrition in China: 2014-2020*. The model diet also meets the World Health Organization's standards for nutritional needs for calories, macro nutrients (10-15% of calories from proteins, 15-30% calories from fats, and 55-75% calories from carbohydrates) and micro nutrients. It also meets some higher standards for year 2020 in *Development Outline of Food and Nutrition in China: 2014-2020*.

Our model diet contains 2297 calories based on the assumption that manufacturing industrial workers and their family members engage in moderate physical activity. The model diet used to estimate food costs for manufacturing industrial workers is shown below and in Table 1.

It includes:

- 407 grams of cereals per day (303 grams of rice and 104 grams of noodles)
- 56 grams of Tofu per day
- 99 grams of UHT milk per day (one cup for children per day, with no milk for adults)
- 44 grams of eggs per day (1 egg per day)
- 62 grams of meat per day (5 meat meals per week)
- 49 grams of fish per day (4 fish meals per week)
- 213 grams of vegetables per day (136 grams of green leafy vegetables, and 77 grams of other vegetables)
- 131 grams of fruits per day (1 banana or 1 orange)
- 33 grams of cooking oil per day (2 and 1/2 tablespoons)
- 25 grams of sugar per day (6 teaspoons)
- 2 grams of tea per day (2 cups of tea per day for adults)

- This is a basic diet for an industrialized city in an upper middle-income country such as Shenzhen, China. We developed our model diet by starting with the actual food consumption of workers according to data from the National Bureau of Statistics of China in order to help ensure that our eventual model diet would be palatable. We then adjusted this to ensure that nutritional needs are met using nutritional standards from WHO and State Council of China. We also took into consideration market prices for various foods without compromising on nutrition so that our model diet was a low-cost nutritious diet.

Cereals are central to our model diet, rice and noodles provide 61.6% of calories. 14.0% of calories come from proteins, which is not high for an upper middle income country such as China. At the same time, it is worth noting that quantities of vegetables and fruits are generally consistent with

what workers typically consume, while quantities of eggs and milk are considerably higher than that workers actually consume. For example, according to data from National Bureau of Statistics (NBS) of China, urban residents purchase 29 grams of eggs and 39 grams of fresh milk per person per day on average. We included greater quantities of eggs and milk in our model diet instead of other protein-rich foods such as beef and mutton, because eggs are less expensive per protein than beef and mutton. 99 grams of UHT milk per day is included in our model diet to ensure children get around one cup of milk per day to provide calcium for bone strength. Therefore, this is not an excessive assumption in our model diet.

Table 1: Model Diet

Food items ^a	Grams purchased ^b	Grams edible ^c	Cost per kg RMB yuan ^e	Cost RMB yuan ^f	Comments
Rice	303	303	5	1.52	Price for common and also least expensive variety available.
Noodles	104	104	7	0.73	Price for least expensive brand available for package of 1 kg.
Roots and tubers	41	39	2.8	0.12	Price for small size potato. Least expensive root and tuber.
Tofu	56	56	5	0.28	Price for medium firm tofu. Least expensive and most popular.
Milk	99	99	12	1.19	Price for 243ml (250g) UHT milk. A little more expensive than powdered milk but most popular. Approximately 1 box per day for children.
Eggs	50	44	11	0.55	Price for chicken eggs. Least expensive. 1 egg per day.
Pork	62	62	30	1.86	Price for lean pork. Not least expensive meat but least expensive per edible gram and per protein. 5 meals per week. ^g

Food items ^a	Grams purchased ^b	Grams edible ^c	Cost per kg RMB yuan ^e	Cost RMB yuan ^f	Comments
Fish	84	49	13	1.10	Price for grass carp. Least expensive. 4 meals per week.
Vegetable 1	84	73	4	0.34	Price for Chinese cabbage. Least expensive vegetable.
Vegetable 2	84	77	4.8	0.40	Price for cucumber. Second least expensive vegetable.
Vegetable 3	78	63	6	0.47	Price for bok choy. Third least expensive vegetable.
Fruit 1	84	69	4	0.34	Price for orange. Least expensive fruit.
Fruit 2	105	62	4	0.42	Price for banana. Least expensive fruit.
Cooking oil	33	33	12	0.40	Price for 5L barreled blend oil. Least expensive.
Sugar	25	25	6	0.15	Price for white sugar, simplified packaged. Less expensive than brown.
Tea	2	2	76	0.16	Price for packaged green tea. Less expensive. 2 cups per day for adults.
Total of above				10.00 (\$ 1.56)	
Total with 22% miscellaneous food costs				12.20 (\$ 1.91)	

Notes:

In addition to having a sufficient number of calories (2297), our model diet nearly meets recommendations in Development Outline of Food and Nutrition in China: 2014-2020 for proteins (78g per day per person), and totally meets recommendations for fats (no more than 30% of all calories), calories from cereals and grain (no less than 50% of all calories) as well as WHO recommendations for proteins (10-15% of all calories), fats (15-30% of all calories) and

carbohydrates (55-75% of all calories). Calories in the model diet are 14% from proteins (75g), 61.6% from cereals and grain, 22.2% from fats and oils, and 63.7% from carbohydrates.

^a Specific food items used to represent each food group in our model diet are the lowest cost food items per edible gram in the food group as well as in accordance with workers' dietary habit to reduce food cost with acceptable quality and mimic how workers typically shop. In China, there are abundant food items for each food group and people always eat a wide variety of foods even in one single day. For example, people can have rice, rice noodles, steamed bun (stuffed or not), and wheat noodles, etc. as staple foods, and people have only one variety or several varieties of staple foods in a single day, depending on the influence of local dietary cultures and individual dietary habits. Workers in Shenzhen are from different provinces, northern or southern, eastern or western, sharing very different dietary cultures and habits. Here we use limited food items to represent workers' food consumption and leave the issue of dietary cultures and habits to be mediated by miscellaneous food costs below.

^b Edible quantity differs from purchased quantity for foods with inedible parts such as fruits and vegetables with inedible skin or stem; pork with inedible bones; eggs with inedible shell; and fish with inedible bones, head, scales and tail. Percentages inedible are drawn from China Food Composition 2009 edited by Institute of Nutrition and Food Safety, China CDC. Note that % edible we used for potatoes, orange and banana are indeed very different from %s for these in USDA database.

^c Number of calories, proteins, fats and carbohydrates are also estimated using China Food Composition 2009 reported values per 100 grams for each food item.

^d Additional miscellaneous food costs are assumed to increase food cost by 22%. This consists of: (i) 3% for miscellaneous foods not listed in our model diet such as salt, spices, chicken stock cubes and condiments (with soft drinks and sweets excluded); (ii) plus 15% to allow for some variety (e.g. beef or more expensive fish sometimes; larger portion of pork sometimes; more expensive rice sometimes; more expensive vegetables and fruits sometimes; etc.); (iii) plus 4% for some waste and spoilage.

^e Cost per kg is based on prices observed in local places where workers shop. Almost all foods are priced per jin (1/2 kg) in markets. In some markets (e.g. farmer's market or open fair), prices are different in different shopping times, and in other markets (e.g. small supermarkets) most foods' prices don't differ. We use the prices in accordance with workers shopping habit of both purchasing time and market places.

^f Cost for each food item is calculated by multiplying quantity purchased by cost per kg.

^g Lean pork is 15% more expensive than pork with around 20% fat which is least expensive pork in the market. Though pork (0.1478 yuan per protein in our model diet) is slightly more expensive than fish (0.1350 yuan per protein in our model diet) per protein, workers don't eat fish as frequently. Some workers told us they only cook fish on the weekends sometimes. But pork is very common for their daily diets.

6.3 Food prices

To estimate the cost of our model diet, we collected food prices from places where workers typically shop. In this way, we are able to help ensure that the cost of our model diet would reflect the actual prices that workers pay for different food items. Near industrial park one, we visited one supermarket and one open-air fresh food market (including eight street vendors). Near industrial park two, we visited one big market fair of agricultural products (including all food groups we need) and one supermarket. Near industrial park three, we visited three fresh food markets and one street vendor. All of these sites were places workers typically shop for food, determined through interviews with workers.

We collected prices for a range of foods that workers tend to purchase for daily life. The prices vary based on different qualities, quantities, and different varieties of an item that sellers offer. The food items which are included in our model diet were decided after we collected and analyzed all of the prices for all of the food items. Then, we decided which items to include in our model diet. For each

shop visited, we found the lowest price per kg for relatively less expensive food items in every food group. We choose the least expensive variety for several relatively low cost food items in every food group near these three industrial parks (we didn't visit industrial park 4 due to time constraints, but we checked prices with workers from industrial park 4 to make sure that workers near industrial park 4 can purchase food items at the prices we collected near the aforementioned three industrial parks) and then choose least expensive acceptable food items to form our model diet. It is important to point out, the lowest prices of certain food types with certain quantities and qualities do not differ much among markets due to convenient transportation and market competition.

The details of how we estimated food prices are worth noting in order to demonstrate clearly how our model diet was developed. This is important because quantities typically bought by workers depends on whether they live together with family (those who live together with family members tend to cook more frequently than those who live alone), whether they have enough time to cook (workers told us that they didn't have time to cook when they need to work overtime), and whether they have other more convenient methods for meals (workers who worked in factories with refectories told us they always had lunch and sometimes dinner at factory's refectory to save time). Meanwhile the price was RMB 10 per meal on average, which is higher than the cost of meals prepared at home (RMB 12.2 for breakfast, lunch and dinner). Even though our model diet is nutritious and consistent with workers' dietary preferences while maintaining a low cost, the food costs estimated using the model diet is lower than the expenditure of food for workers who usually eat at factory refectories.

For the prices, we assumed that workers buy the least expensive food items available in a store among each food group. This does not necessarily lead to low quality but limited number of food items. As was observed from different markets, food prices in the same food group differ mainly due to different varieties but not different qualities. For example, the price of rice per kg indeed varies a lot with the variety and place of origin. While the lowest price (RMB 5 per kg) was Chuntao rice (a name of common rice in markets we visited), rice was always available in the different markets we visited with the price of Chuntao rice only a little lower than the least expensive jasmine fragrant rice which costs RMB 5.76 per kg. The price for the least expensive orange was RMB 4 per kg, but was RMB 6 per kg for oranges of a different size.

Price per kg for many items is relatively high when purchased in small quantities. For example, the least expensive rice costs RMB 5 per kg for a 25 kg bag compared to around RMB 6 when sold per kg. However, only workers with family living together would buy this kind of package because those who live alone did not cook much, and therefore the large quantity food would not make sense for them. The cooking oil is assumed to be purchased in bottle of 5 liters, which is consistent with the largest quantities observed in local markets as well as what workers typically buy. We assumed that workers living with family would have sufficient income if they earned a living wage to be able to buy properly large quantities of rice, cooking oil, milk, etc.

To allow for some variety for our model diet (as it would not be reasonable to expect that workers are always able to find and eat only the lowest cost foods every day), 15% is added to the cost of our model diet. This 15% allows for some variety and flexibility (and also seasonal price fluctuation of food) so that workers can for example sometimes eat a more expensive variety of rice, eat a larger portion of meat, eat beef instead of pork, eat more expensive fruits and vegetables, or eat certain food items even if they are at high prices due to seasonal price fluctuation or other reasons. This 15% for variety is not high compared to workers' consumption habits and the factor of seasonal

price fluctuation of food. Because workers would purchase food items they like even if those items are more expensive than the least expensive items in certain food groups, and our market price survey was taken in August, during which time food items, especially vegetables and fruits, were abundant in provision and thus the prices were relatively low. 3% is added for salt, spices and condiments. Assuming 3% for salt, spices and condiments is generally proper because of the improvement of nutrition and diversity of diet do not necessarily require more salt, spices and condiments. Also, 4% is added for minimum wastage and spoilage. These are all conservative assumptions. In keeping with the concept of a nutritious low cost diet, our model diet does not include soft drinks, candy or cakes.

6.4 Seasonality of Food Prices

Prices of the majority of food items don't fluctuate much seasonally but some food items do. Food price data of 50 cities that are posted three times per month by the National Bureau of Statistics of China are used to estimate to what extent food prices collected in our data collection month represent average food prices throughout the year. We calculated the average food prices in 2015 for the 50 cities, and compared it with that in August. We find that among the listed 27 food items, the price difference of 15 food items is less than 1%. Pork and eggs are about 10% more expensive in August 2015 than the average prices of the year, although the price of pork continuously increased from January to August in 2015 and then remained fairly stable for the remainder of the year. While some vegetables are less expensive in August, for example, the prices of cucumber and string beans are nearly 14% lower than the average prices of the whole year, other vegetables are more expensive in August such as Brassica rape and Chinese cabbage are both around 12% more expensive in August 2015.

Taking the above factors into account, seasonality does not affect our model diet cost much when the prices come into mixed effects. China is a vast country that benefits from climate variability, modern greenhouse agriculture and advanced transportation conditions. This allows for choice when workers balance their food consumption by selecting different least expensive food items in different seasons, so there is no need to do seasonal adjustment for our model diet. Above all, the cost of the model diet was conservative.

Figure 6: Typical markets where workers buy food: Comprehensive supermarkets, street vendors, and free of agriculture products





Source: Authors in August 2015

7. HOUSING COSTS

Housing costs were estimated by summing up costs of:

- i. rent for a basic acceptable dwelling
- ii. utility costs, other housing costs, and routine repairs/maintenance costs

Costs were determined by visiting houses of workers, speaking to workers about their housing conditions and costs, speaking to local renters, and speaking to individual dealers. Of 21 houses listed in Table 3, 9 houses were visited, and 12 were described in detail while speaking to workers to collect the information of their houses' conditions.

We estimate that cost of a basic acceptable housing near manufacturing industrial parks in Shenzhen is **RMB 1,020 per month** consisting of approximately RMB 780 for rent, RMB 140 for electricity and cooking gas, RMB 70 for water, RMB 10 for minor repairs and maintenance, and RMB 20 for management fees (e.g. domestic waste treatment fees).

7.1 Standard for basic acceptable local housing

Standards were set for basic acceptable housing for a family of 3-4 persons near manufacturing industrial parks in Shenzhen to determine local housing costs. This standard was based on:

- maximum number of persons per room to avoid being considered overcrowded housing according to UN-HABITAT (2007)
- minimum number of square meters of living space (minimum number used is used from government supported housing standard of low income families in Shenzhen)
- need for electricity, protection from elements in terms of floor, walls and ceiling, and water and sanitary facilities that both meet minimum decent standards for 21st century for an upper middle income country

We did not have data of percentage of houses in Shenzhen meeting the different characteristics of our housing standard, such as appropriate materials of floor, walls, ceiling, electricity, etc. But,

© Global Living Wage Coalition

Under the Aegis of the ISEAL Alliance, Fairtrade International, Forest Stewardship Council, GoodWeave International, Rainforest Alliance, Social Accountability International, Sustainable Agriculture Network, and UTZ

readers could expect that houses rented by workers can easily meet prevailing housing standards, aside from that set for necessary living space. Shenzhen has modern housing (most buildings being multistory), even in suburban areas. But often workers do not have housing of the appropriate size in terms of floor space or living space in Shenzhen (as well as in other cities in China).

Our housing standard is:

- building in reasonable condition
- cement or tile floor in reasonable condition
- cement walls with cement base
- durable roof of zinc or cement without leaks
- ceiling at least 2.2 meters
- sufficient number of windows for adequate lighting and ventilation
- electricity
- piped water inside house
- flush toilet inside house
- at least 4 rooms (living room, bedroom, kitchen, bathroom)⁹
- at least 50 square meters of floor space or 40 square meters of living space
- within reasonable distance from industrial park

50 square meters of floor space or 40 square meters of living space for a 3-4 people household is a standard that is higher than the current living standard for manufacturing workers in Shenzhen - even though, according to Shenzhen Statistical Yearbook 2014, residents in Shenzhen enjoyed 27.58 square meters per capita building space¹⁰ in 2013. There was no detailed description of this indicator, but it can be speculated that these data overestimated real per capita building space, because in our field survey we found that many landlords owned several sets of houses and leased their extra apartments to migrant workers which probably did not change the per capita building space of the landlord's house when renting to migrant workers was taken as a private deal. And according to our field survey, the majority of manufacturing workers rent houses with limited living space such as 25 square meters of living space for 3 or more persons. Overcrowded dwelling conditions are common for manufacturing workers in big cities like Shenzhen. In our field survey, we found only some managers lived in housing that meet our decent housing standards.

⁹According to UN-HABITAT (2007) and United Kingdom standard since 1935, housing requires at least 2 potential sleeping rooms (e.g. at least 1 bedroom and 1 living room) for a 4 person household to avoid being considered as overcrowded. And in Shenzhen, it is basic to have bathroom and toilet inside house.

¹⁰Building space is official indicator of floor space, which consists of house architectural area and shared construction area.

Despite being much better than current housing conditions for manufacturing workers in Shenzhen, our housing standard of 50 square meters of floor space is very basic. This floor space is only slightly higher than the highest standard of government-supported, low-rent housing for low income families in Shenzhen (although we expect that workers should be in the lower middle income group rather than the low-income group). According to the standard of low-rent housing in Shenzhen (2008), floor space should be 15 square meters per capita and no more than 45 square meters per household. However, according to the new standard of indemnificatory housing/public rental housing since 2014, renting floor area should be 50 square meters for a 2-3 people household and 65 square meters for a household of 3 or more. For this reason, 50 square meters of floor space for a 3-4 person household is rather conservative. It should be noted that floor space as used in this report also includes house architectural area and shared construction area. It is reasonable to assume 20% of apportionment of common area for apartments in multistory buildings.¹¹ We feel that it is proper to use 40 (=50×80%) square meters of living space for our standard.

7.2 Rent for basic acceptable housing

The usual way we estimate housing cost is by collecting information on rent for housing that meets our minimum standard. To help determine housing costs for manufacturing industrial worker in Shenzhen, we spoke to many workers, first-line managers; collected detailed information on houses of 19 workers/front-line managers; spoke to landlords; and visited 5 houses for rent. Table 3 provides detailed information for 24 houses (5 near industrial park 1, 10 near industrial park 2, 7 near industrial park 3, 2 near industrial park 4).

The lowest rent we found for houses close to our acceptable standards was RMB 700. We found two houses with this rent. One had 50 square meters of living space, including a living room, 2 bedrooms, kitchen, and bathroom. This house was located 600 meters away, 8 minutes' walking distance, from the nearest gate of the industrial park 2. The other one had 48 square meters of living space, including a living room, 2 bedrooms, and kitchen and bathroom. This house was located 4000 meters away, 20 minutes' by bike, from the nearest gate of the industrial park 2. It is relatively farther compared to workers living just outside the industrial park. But this distance is fairly acceptable.

However, considering the housing market around the industrial park, it is hardly possible to rent an acceptable house at the price of RMB 700 for most workers. Using the information from Table 3 on rent and number of square meters of floor space we created a scatter plot of rent per square meter as a function of number of square meters and fitted a nonlinear line (see Annex 1). According to this fitted line, rent of about RMB 780 is paid for 40 square meters of living space. The neighborhood and the condition of the building differed a lot for the housing we visited, which helps explain why individual points are below or above the fitted curve. This would indicate that a rent around RMB 780 is typical for our housing standard. Even for some housing that fell short of our standard in Table 3, the cost of RMB 780 is not an excessive price. For example, a house of 26 square meters of living space (as listed in Table 3) could cost RMB 850 per month. So we feel that the cost of RMB 780 could only ensure workers to rent an acceptable house of condition similar to the two least expensive acceptable houses we saw (that rented for RMB 700) at this cost without other specific

¹¹20% for lost space seems reasonable, because internal and external walls typical occupy around 12% of covered space and shared areas such as stairwells, elevators, and halls also need to be considered since these are included in covered space in China.

factors such as extreme fortune or coincidence. Therefore, we made an adjustment to set a rent for **acceptable housing at RMB 780**.

Given the detailed information of the rent for the two least expensive acceptable houses we saw (that rented for RMB 700), we checked whether it was overly generous because these two houses were larger in space than our standard (40 square meters of living space), and both of these two houses had 2 bedrooms, which was above our standard. We spoke to local landlords near these industrial parks and found that there was hardly any house in market with 4 rooms (living room, bedroom, kitchen, and bathroom) that could meanwhile meet the standard of at least 50 square meters of floor space or 40 square meters of living space, due to compact style of houses. Houses that could meet our space standard usually have two bedrooms.

Besides the information provided by workers and landlords, we searched online to check the rents of houses that meet our standards. We could only find few such houses at a lower cost. Most of the houses workers rent were owned by local residents (landlords) with limited property rights, and the houses could be easily rented out by posting leaflets on the wall of the buildings. For this reason, rent information on website was of little help for the areas we visited.

Table 2: Example of cost of rented housing units

Housing Number	Visited?	Acceptable standard? ^d	Rent in local currency	Size & rooms ^{a, c}	Comments	Distance to Work Place ^b	Industrial park # ^c
1	No	No	350	18 sq m, LR, 1BR, K, Bath	Tiny rooms. Old building.	7 minute walk (500m)	4
2	No	No	400	18 sq m, 1 BR, K, Bath	Tiny rooms. Old Building.	5 minute walk (400m)	2
3	No	No	450	17 sq m, 1 BR, K, Bath	Tiny rooms. Old building.	15 minute walk (1,00 m)	3
4	No	No	450	30 sq m, 1 BR, K, Bath, LR	House in fair to good condition.	15 minute walk (1100m)	2
5	No	No	450	30 sq m, LR, 1 BR, K, Bath	House in fair to good condition.	15 minute walk (1000m)	4
6	Yes	No	480	39 sq m, LR, 1 BR, K, Bath	Old building. 5 th floor, no elevator.	8 minute walk (500m)	2
7	No	No	500	12 sq m, LR, 1 BR, Bath	Too crowded. Tiny rooms, no kitchen.	4 minute walk (250m)	1
8	No	No	520	14 sq m, LE, 1 BR, K, Bath	Not enough living space.	4 minute walk (250m)	1
9	No	No	530	20 sq m, LR, 1 BR, K, Bath	Not enough living space.	20 minute walk (1,500m)	3
10	No	No	590	30 sq m, LR, 1 BR, K, Bath	Not enough living space.	15 minute walk (1,100m)	2
11	No	No	630	18 sq m, LR, 1 BR, K, Bath	Tiny rooms. Old building.	17 minute walk (1,500m)	2
12	Yes	No	700	22 sq m, LR, 1 BR, K, Bath	Crowded. Tiny rooms. Kitchen next to bathroom.	2 minute walk (150m)	1
13	Yes	No	700	22 sq m, LR, 1 BR, K, Bath	Housing in fair to good condition. 6 th floor in an old building with no elevator.	12 minute walk (900m)	3
14	No	Yes	700	48 sq m, LR, 2 BR, K, Bath	Good condition. Relatively far away from workplace.	20 minutes by bike (4,000m)	3
15	No	Yes	700	50 sq m, LR, 2 BR, K, Bath	House in fair to good condition.	8 minute walk (600m)	2

Housing Number	Visited?	Acceptable standard? ^d	Rent in local currency	Size & rooms ^{a, c}	Comments	Distance to Work Place ^b	Industrial park # ^c
16	Yes	No	750	22 sq m, LR, 1 BR, K, Bath	Housing in fair to good condition. 7 th floor in an old building with no elevator.	12 minute walk (900m)	3
17	No	Yes	800	40 sq m, LR, 2 BR, K, Bath	Good condition.	20 minute walk (1,500m)	3
18	Yes	No	850	26 sq m, LR, 1 BR, K, Bath	Crowded. Tiny rooms. Kitchen is transformed from balcony.	2 minute walk (150m)	1
19	Yes	Yes, above	862	62 sq m*, LR, 1 BR, K, Bath	New building with elevator. Good condition.	12 minute walk (900m)	2
20	No	Yes, above	900	62 sq m*, LR, 2 BR, K, Bath	New building with elevator. Good condition.	12 minute walk (900m)	2
21	Yes	Yes, above	900	68 sq m*, LR, 2 BR, K, Bath	New building with elevator. Good condition.	12 minute walk (900m)	2
22	No	Yes	1,000	40 sq m, LR, 2 BR, K, Bath	House in fair to good condition but too many people living together.	5 minute walk (400m)	1
23	Yes	Yes	1,000	42 sq m, LR, 2 BR, K, Bath	Housing in fair to good condition. 5 th floor in an old building with no elevator.	12 minute walk (900m)	3
24	Yes	Yes, above	1,000	63 sq m*, LR, 2 BR, K, Bath	New building with elevator. Good condition.	12 minute walk (900m)	2

Notes:

- LR indicates living room. BR indicates bedroom. K indicates kitchen. Bath indicates bathroom.
- All housing units are within 20 minutes of commuting distance (most by walk, only one by bicycle).
- Size with "*" indicates floor size, which includes apportioned house architectural area (including area occupied by walls) and public shared construction areas (residential pool area, elevator, common hallways and stairwell), while size without "*" indicates absolute living space. Floor space is comprised of house architectural area and shared construction area, and for different buildings the portion of absolute living space differs. All dwellings in this table

meet the standards of safety, durable structure, access to safe water, access to sanitary toilet, adequate lighting, and adequate ventilation and other facility requirements. Living space is almost the only critical concern of acceptable housing in our survey

- d. “No” – means the housing did not meet the basic standard. “Yes” – means housing is acceptable and meets the basic standard. “Yes, above” – means that housing was above the basic standard.

7.3 Utilities and other housing costs

Utility costs were estimated with detailed information on housing expenditure provided by 15 workers and landlords. Utility and other housing costs were estimated to be RMB 240 per month. Costs of electricity and cooking gas were estimated to be RMB 140 per month per person. We estimated the cost of electricity and gas together because some households use electricity for cooking instead of gas. We adjusted the cost to take the seasonal factor into consideration, because the cost of electricity would increase by a considerable rate in hot summer. Water cost was estimated to be RMB 70 per month per person. RMB 10 was assumed for minor repairs and maintenance per month. We estimated an additional cost of management fees (e.g. hygiene fees) as RMB 20 per month.

We checked the estimated utility costs with 3-4 people households investigated, and found that it was proper. This represents around 5.9% of our estimated living costs for a living wage which is reasonable. This is only slightly lower than around 6.1% paid for electricity and water and other services according to the expenditure weights of the second quintile (20%-40%) of the income distribution in Shenzhen Statistical Yearbook 2013. This comparison implies that our estimate of electricity and water/refuse costs are reasonable.

7.4 Summary of Housing Costs

Our estimate of housing costs is RMB 1020 per month (consisting of RMB 780 for rent, RMB 140 for electricity and gas, RMB 70 for water, RMB 10 for minor repairs and maintenance, and RMB 20 for basic management fees). This represents around 25.1% of our estimated cost for a decent living standard for manufacturing industrial workers in Shenzhen, which is reasonable for housing near industrial parks in a major city. This percentage is higher than government statistics of 14.1% of spending for households at the 20th- 40th percentile of the household expenditure distribution. It should be noted that private housing is not included in the indicator of house rent in official statistics, and the population without registered permanent residence (most workers in our discussion) are generally excluded in official statistics, though most of them do indeed rent housing. This leads to underestimated housing costs and its proportion of total household spending in government statistics.

7.5 Additional Remarks on Housing

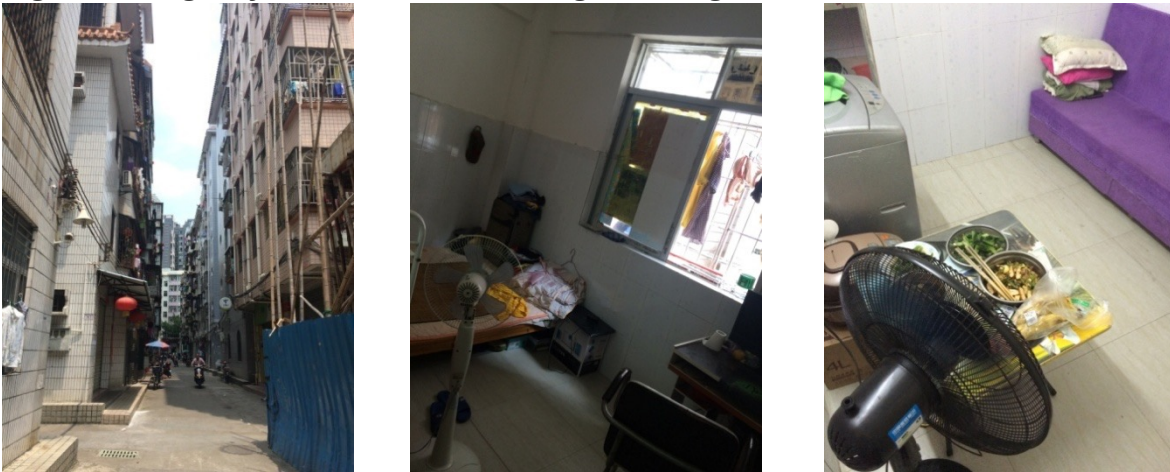
Several aspects of the housing we visited are worth noting. First, rent and extent of choice differed around the industrial parks. Around industrial park 1, dwelling areas were close to factories, or even connected with each other. Workers rented housing very close to their workplaces (about 2-5 minutes walk) because dwelling areas close to factories were relatively downscale compared to residential areas away from factories. Workers around industrial park 1 were all living in a similar location. In areas near industrial park 2 and industrial park 3, dwelling areas were clearly separated from workplaces, with the living quarters surrounding these industrial parks. Those living quarters, including dwelling areas, were transformed from villages to offer targeted support for workers' life and consumption, which were large enough to offer workers with more choices to rent housing closer to or farther away from their work places. The differences of landscape and housing supplies account for higher housing rent around industrial park 1 than around industrial park 2 and industrial park 3.

Second, rent was expected to rise with the rise in wages. Workers from these four different industrial parks told us that rent for housing rose whenever the government adjusted the minimum wage. Recently, when the Shenzhen government adjusted the minimum wage frequently (about once a year), landlords raised their rents accordingly at an increment of RMB 50, for example. It can be expected that the housing rent might go up if a living wage higher than prevailing wage. Since the industry is a large employer in the area, it could significantly affect the local housing market in a similar way to how minimum wage affected the market. However, this issue is a complicated economic problem and is beyond the scope our research.

Third, the prevailing housing conditions of the majority of workers fell short of our decent standards in a living wage according to our field survey. This, however, was often a result of personal choices rather than the lack of availability of decent housing. The majority of workers who earned wages (with overtime) higher than our estimate of living wage in Shenzhen chose to rent smaller housing for the purpose of saving for other expenditure or future consumption, such as for a more expensive cell phone, for marriage, for new house construction in hometown, etc. Also, many workers lived alone without family, and thus did not need space sufficient for a family.

Lastly, compared to the high commercial housing prices and rent in Shenzhen, the rental cost of housing for workers around industrial parks we visited was fairly low. The main reason for this phenomenon is that lots of the houses built around industrial parks we visited were with limited property rights, either owned by residents due to relocation factors or built with the special purpose of providing housing for workers as a supporting facility.

Figure 7: Images of a local workers' housing – housing number 12 in Table 2





Source: Authors, August 2015.

Figure 8: Images of a local workers' housing – Housing number 16 in Table 2



Source: Authors, August 2015.

Figure 9: Images of a local worker's housing – Housing number 21 in Table 2



Source: Authors, August 2015.

8. NON-FOOD AND NON-HOUSING COSTS

Non-food and non-housing costs were estimated using a variant of Engel's law (which states that percentage of household expenditure spent for food decreases as household income increases) and current expenditure pattern statistics from the Shenzhen Statistical Yearbook 2013¹².

First, we needed to estimate the ratio of non-food and non-housing expenditures to food expenditures. We estimated this based on expenditure pattern of medium-low income households of the income distribution (per capita annual consumption of household was classed into 7 groups¹³ by income level in Shenzhen Statistical Yearbook 2013). We used data for medium-low income group of households, which represented the group at the **second quintile (20%-40%) of the income distribution** in Shenzhen. This is a relevant reference group for a living wage, because it is supposed that a living wage should ensure that the households of manufacturing industrial workers can afford the consumption pattern of medium-low households. Households at the 20th-40th percentile spent 42.5% for food and 14.1% for housing. This means that 43.3% was spent for non-food and non-housing. However, the percent spent for food and non-food and non-housing is adjusted in our methodology as indicated below.

The observed ratio of non-food and non-housing costs to food costs for our reference group was 1.339. Before calculating this ratio we:

- i. excluded funds for tobacco because tobacco was felt not necessary for decency
- ii. took into consideration that meals away from home reduce the need to prepare food at home

Note that expenditure for eating out was included in food expenditure in the survey statistical data, and therefore we took into consideration that meals away from home reduce the need to prepare food at home. We assumed 50% of costs of meals away from home is for the food in these meals¹⁴.

The total for all non-food and non-housing costs is estimated at **RMB 1,739 per month for our reference size family**. This covers alcohol; clothing and footwear; household facilities, articles and service; health care; transportation and communication; education; recreation, education and cultural services; service cost associated with eating away from home; and other goods and services.

After estimating all non-food and non-housing costs using the above **1.339** ratio, we looked at whether funds included for health care and education are sufficient because these are considered as basic human rights in almost all countries. We also looked at transportation and communication

¹²Though we have Shenzhen Statistical Yearbook 2014, there is no grouped household expenditure data in this yearbook, and therefore we decided to use Shenzhen Statistical Yearbook 2013.

¹³These 7 groups were grouped from households of lowest income, low income, medium-low income, medium income, medium-high income, high income, and highest income to represent 10%, 10%, 20%, 20%, 20%, 10%, 10% of income distribution respectively.

¹⁴We assumed that 50% of the cost of meals away from home in household expenditure data is for the food in these meals and 50% is for profits and services such as food preparation, cooking, serving and cleaning. This assumption is based on analysis by Richard Anker and Martha Anker of contents of meals in China as well as analysis of meals in India, United States and in Dominican Republic.

costs, as these are major expenses for workers. Based on these in-depth examinations, we did not adjust our estimate of non-food and non-housing costs (see the following sections).

Table 3: Food, Housing, and Non-food and Non-housing costs: Percentage distribution of actual expenditure for Shenzhen at 20th- 40th percentile of income distribution and implied funds included in our living wage for Shenzhen

Major or Sub-major expenditure group	% Expenditure according to government statistics	% after adjustments used for estimating living wage	Implied funds provided by our living wage	Comments
Food	42.54%	36.41% ^a	1,299	Based on model diet.
Housing	14.12%	14.12%	1,020	Based on actual rents for acceptable housing standard.
NFNH ^a				
Alcohol and Beverages ^b	(1.32%)	1.32%	47	Not excessive. Originally in food group in government statistics.
Tobacco ^c	(0.72%)	0	0	Not considered essential. Originally in food group in government statistics.
“Restaurants” (Meals away from home)	(8.17%)	4.09%	146	50% of cost of meals away from home is assumed to be for the food in these meals. Originally in food group in government statistics.
Clothing and Footwear	7.10%	7.10%	253	
Household Facilities, Articles and Services	6.12%	6.12%	218	

Major or Sub-major expenditure group	% Expenditure according to government statistics	% after adjustments used for estimating living wage	Implied funds provided by our living wage	Comments
Recreational Durable Consumer Goods	1.98%	1.98%	71	
Recreation Service	3.95%	3.95%	141	
Miscellaneous Goods & Services	2.54%	2.54%	91	
Health	3.30%	3.30%	118	
Education	4.50%	4.50%	161	
Transport	7.42%	7.42%	265	
Communication	6.41%	6.41%	229	
TOTAL NFNH		48.74%	1,739	
Total Expenditure			4,058	

Notes:

^a Note that 42.54% of household expenditure was for food and 14.12% of household expenditure was for housing originally according to government statistics. But expenditure of alcohol and beverages and tobacco was included in the group of food in government statistics while in our living wage, these items should be treated as NFNH expenditure. We excluded the funds for alcohol and beverages and tobacco from food and also half of meals away home from food, and this resulted in 36.41% for food after these adjustments. Funds for tobacco are excluded in our living wage, and funds for alcohol and beverages (1.32%) and half of meals away home (4.09%) are regarded as NFNH expenditure in our living wage estimation.

^{b, c} Expenditure for food included but did not list sub-major expenditure group such as alcohol and beverages and tobacco in Shenzhen Statistical Yearbook 2013. So we used percentages of these two

sub-major expenditure groups for Guangdong Province from China Statistical Yearbook 2013 as a substitution.

9. POST CHECKS OF NON-FOOD AND NON-HOUSING COSTS

9.1 Health care post check

Reportedly 100% of the resident population¹⁵ were covered by health insurance in 2009¹⁶. More recently, a public development plan reported that over 95% of the population in our covered geography benefits from basic health insurance coverage.¹⁷ Public health care in Shenzhen is generally felt to be of high coverage ratio and reasonable quality according to most workers with whom we spoke. Almost all the workers we interviewed told us that they and other workers in the same factories were covered by urban employees' health insurance system (UEBMI). For three of the four industrial parks, branches of public hospitals were located just in or near these industrial parks, which facilitated timely medical service for workers; and for the other industrial park without a public hospital located nearby, there was a community health service center in the neighborhood.

Private clinics are also available for workers in these four industrial parks, and it was common that workers would prefer to seek medical advice or buy over-the-counter (OTC) medications from private clinics where fees were usually not covered by health insurance when they felt the problem was just minor illness, because generally it was time-consuming to go through the medical process in public hospitals. In addition, seeking medical advice from public hospitals during the daytime on a workday meant that workers had to ask for leave, which would lead to reduction in wages (e.g. missing attendance bonus), while medical service from private clinics were available after work and on weekends.

To get an idea of the extent to which the approximately RMB 118 per month implicitly included in our living wage for health care is sufficient, we estimated possible health care costs to families based on information on medical costs. According to *Shenzhen Statistical Yearbook 2013*, health care costs RMB 53 per person per month for median-low income households. Thus, for a family with 3-4 people, the cost was RMB 186 per month-- which was higher than the RMB 118 included in our living wage for healthcare. It should be noted that a considerable proportion of the population included in the official statistics are the aged (about 7% of population is over 60 years old), who have higher medical expenditure than those in the labor force and this raises the average costs of health care. We decided not to make adjustment for health care costs in our living wage since our reference family for our living wage is composed of 2 adults and 1.5 children.

¹⁵Resident population of a city in specified year indicates those who reside in the city for more than 6 months this year. Thus, migrant workers who work and reside in a city more than 6 months this year are counted in resident population.

¹⁶“深圳医疗保险参保人数达 886 万全市常住人口医保参保率已达 100%” Available at: http://www.gd.gov.cn/govpub/zwdt/dfzw/200908/t20090828_101367.htm.

¹⁷This rate was publicly reported in government development plan.

《深圳市人力资源和社会保障事业第十二个五年规划（2011—2015 年）》 Available at: http://www.szsi.gov.cn/sbjxxgk/ghjh/zxgh/201310/t20131015_2252546.htm.

9.2 Education post check

Nine-year compulsory education is provided in China, including 6 years of primary school (beginning at age 6) and 3 years of junior high school. Tuition fees have been abolished for the nine-year compulsory education across China since the fall semester in 2008. Enrolment rates are high in China for primary school and secondary school, and gross enrolment ratios for primary school and secondary school are 104.4%¹⁸ and 104.1% respectively in 2013 according to Educational Statistics Yearbook of China.

Almost all children from low and middle income families attend a public school rather than a private school. Therefore, it is reasonable to expect children of workers to attend public school and not private school for estimating education costs toward a living wage. Even children of non-native permanent residents (typical of most manufacturing workers) may apply for public schools in Shenzhen as long as their parents can provide the required basic documents.¹⁹ However, most workers we spoke to had their children study in their home area instead of in Shenzhen, because it was a saving of time, labor, and money to rely on children's grandparents to take care of them in rural areas. But some workers told us that they were about to apply for public schools for their children. Regardless of their de facto choices, we feel that a living wage should be able to support a family with children to afford public schools in Shenzhen.

Despite the abolition of tuition fees, students have to pay for books, learning materials, stationery, outings, and other miscellaneous fees during the nine-year compulsory education. Children's school uniform costs are included under the clothing expenditure group and transportation costs to school are included under the transportation expenditure group.

Extra costs of senior high school are not included in our living wage due to the college entrance examination system and economic concerns. First, it is a complicated procedure for students without locally registered permanent residence, *Hukou*²⁰ in Chinese, to attend local high schools, and public senior high schools are often not accessible while private senior high schools are somehow too expensive for our living wage. Second, it is neither easy nor practical to take college entrance examination in local place due to registration limitations even if requirements of senior high school admission are met, and it's not advisable either to take exam back at hometown due to the obvious differences in contents of college entrance examination among different provinces. So, we decide not to include extra costs for non-native students to attend senior high school in

¹⁸Gross enrolment ratio of education indicates the ratio of students at school to corresponding school-age population. Thus, it can be greater than 1. Unlike the gross enrolment, net enrolment ratio indicates the ratio of students of corresponding school age at school to corresponding school-age population. The difference lies in the numerator. And net enrolment ratio of school-age children in primary schools was 99.7% in China, 2013.

¹⁹These include original residence verification booklets, residence permits in Shenzhen, proof of residence (contract of buying or renting a house), proof of employment and payment of social insurance, family planning certificate, and a contact letter of school attendance issued by education bureau in original residential place.

²⁰The *hukou* system was formalized as a permanent population registration system in 1958 in China. Despite significant modifications since the early 1980s, the system remains unchanged in nature to a large extent. Unlike population registration systems in many other countries, the Chinese system was designed not merely to provide population statistics and identify personal status, but also to directly regulate population distribution and serve many other important objectives desired by the state. In fact, the *hukou* system is a major tool of social control employed by the state (Kam Wing Chan and Li Zhang, 1999). *Hukou* plays an important role in social welfare distribution between urban and rural as well between local and non-local.

Shenzhen. In other words, we treat the costs of senior high school as the same as native students cost. We checked education costs according to official statistics which include senior high school costs to ensure that families earning a living wage can afford the costs of local compulsory education and costs of local senior high school equivalent to native students at least.

According to household expenditure data from Shenzhen Statistics Yearbook for 2013, 4.5% of expenditure of the medium-low income households (20th-40th percentile of the income distribution) is spent on education. This implies approximately **RMB 161 per month (RMB 1,932 per year)** is included in our living wage estimate for education. This is probably reasonable for a family with 1.5 children with 1 child in primary or secondary school and remaining “0.5 child” less than primary school age in our living wage. Because tuition fees for kindergarten increase costs for education on average, the implied cost isn’t an excessive estimation.

We checked this with information from workers with children studying in Shenzhen and felt it can generally cover education costs for a family with 1.5 children. We decided not to adjust funds included in our living wage for education.

9.3 Transportation Post Check

Public transportation is good in Shenzhen. Households at 20th-40th percentile of the income distribution in Shenzhen spend 7.4% of all their expenditures for transportation according to the household expenditure data in Shenzhen Statistical Yearbook 2013 that we used to estimate non-food and non-housing costs for our living wage. This implies that **RMB 265 per month** is included in our living wage for transportation if no adjustments are made.

To help estimate necessary transportation costs for workers, we collected information on cost of transportation to nearest supermarkets, shopping mall, and downtown as well as the visiting frequency of typical workers, based on assumptions we made on the number of visits for workers and their families that would be “necessary for decency”.

Although the costs per round trip obviously vary with distance, RMB 10 and RMB 20 per round trip per person were the most common costs mentioned. According to this, the cost per person for a return trip is typically around RMB 15.

Workers we interviewed typically made trips on weekends or public holidays, roughly once per month. Almost all the workers made a visit to their hometown (ranging from hundreds to thousands of kilometers) during the Lunar New Year. So, we made assumptions about what could be considered to be a reasonable number of trips for workers and their families.

We made the following assumptions for trips:

- i. No costs for commuting or daily grocery shopping because most of workers we spoke to generally walked to workplaces as well as markets or food vendors for daily grocery shopping.
- ii. Twice per month for all family members to go to nearest downtown for variety of reasons such as visits to a shopping mall, bank, or a day out.

- iii. Once every other month for children to go to downtown for various reasons, such as visiting children's parks or museums.
- iv. One visit per year to families and relatives, especially during the Lunar New Year, (assuming RMB 600 per person of transportation cost for a return visit).

These assumptions work out to a total approximate cost of RMB 200 per month for a family with 2 adults and 1.5 children. According to actual household expenditure data in Shenzhen Statistical Yearbook 2013, households between 20th-40th percentiles of the income distribution spend RMB 1,434 per person per year, which implies RMB 416 per month for a family with 3.5 people. This is much higher than our estimate probably due to costly ownership and use of private vehicles instead of public transportation. The exclusion of non-native households in the official statistics and the relatively high rate of ownership of private vehicles for native households increase the level of average costs of transportation in government statistics²¹, while our living wage allows only public transportation for workers and their families.

We concluded that **RMB 265 per month** for transportation included in our living wage is higher than the costs we assumed from workers actual trip pattern (although lower than the expenditure indicated by data from Shenzhen Statistical Yearbook 2013). Finally, we decided to make no adjustment because we felt workers would plan more trips when having a living wage.

9.4 Communication Post Check

China has widespread telecommunication and internet access with a large percentage of the population using cell phones, computers and other electronic communications devices regularly. In cities, it is common for every adult to have a cell phone and for a family to own a computer.

Households at 20th-40th percentile of the income distribution in Shenzhen spend 6.4% of all their expenditures for communication according to the household expenditure data in the Shenzhen Statistical Yearbook for 2013 that we used to estimate non-food and non-housing costs for our living wage. This implies that **RMB 229 per month** is included in our living wage for communication if no adjustments are made.

According to the workers we spoke to, although costs of telecommunication varied with usage, most common costs mentioned were between RMB 50-100 per adult per month, based on which we assumed RMB 75 per adult per month. For families that own computers and televisions, charges for internet (broadband fees) were generally RMB 50 per month and RMB 10 per month for cable television fees. This would aggregate to RMB 210 (75*2+50+10) per month for a family with 2 adults and 1.5 children. This is very similar to the RMB 229 per month included in our living wage. Thus, we felt it unnecessary to make any adjustment of **RMB 229 per month** for communication costs.

10. PROVISION FOR UNEXPECTED EVENTS TO ENSURE SUSTAINABILITY

Since unforeseen events and expenses can easily and quickly throw workers' living at a basic life style into poverty and debt from which they may not be able to recover, such as accidents, illness,

²¹We could not adjust the secondary data before calculating the NFNH to Food ratio for the more costly nature of the ownership and use of private vehicles compared to use of public passenger transport because the available statistics are not detailed enough to allow for this.

death/funerals, etc., it is common when estimating a living wage to add a small margin above the cost of a basic quality life to allow for unexpected events. It is also typical to include some additional funds to allow for some discretionary spending.

There is no agreed margin for unexpected events to be included in a living wage to help ensure sustainability. Social Accountability International as well as Anker in work (Anker, 2011) used 10%, and ad hoc living wage estimates for Asian specific factories with mostly young single women workers used 15% and 25% (Anker, 2011). Margins of 5% and 10% are common. We decided to use a margin of 5% for emergencies and sustainability as in other countries. We also added another 5% for gift money to friends/relatives/parents (5% is equivalent to around one work day per month when there are 21.75 work days in a month). For Chinese families, expenses of social exchanges are part of the cultural tradition. It is common for people to send some money to their aged parents and send gift money to their relatives or friends on occasions of wedding, funeral, birthday and so on, the amount of which varies from dozens to hundreds or even thousands of *yuan*, depending on local customs, frequency of events, and the relationship quality. Gift money or social spending is obligatory and frequent in the cultural context. For this reason, we feel that a total 10% (5% for emergencies and sustainability and another 5% for gift money especially to parents) of margin to be added is not excessive. This means that 10% was added to the sum of food, housing, and non-food and non-housing costs to provide a margin of sustainability, which adds up to **RMB 406 per month**. Note that interest and debt payments are ignored in our calculations. We assume that a living wage would enable workers to stay out of crippling debt.

SECTION III

LIVING WAGE FOR WORKERS

11. FAMILY SIZE NEEDING TO BE SUPPORTED BY LIVING WAGE

Living wage is a family concept. This is clearly shown by the comprehensive ILO review of living wages (Anker, 2011). It is, therefore, necessary to determine an appropriate family size that workers would typically need to support on their wage in Shenzhen.

We used **3.5 persons** (two adults with 1.5 children) as our family size based on practical considerations. It is impractical to calculate the actual average family size of workers in Shenzhen as well as in other cities in China because current population statistics hardly cover left-behind family members of workers in Shenzhen or workers who reside less than 6 months in Shenzhen. None-the-less, we feel that it is necessary to compare our assumed family size with statistical data and informants we spoke to.

According to the data gathered from Shenzhen Statistical Yearbook 2014, the average number of persons per household among registered residents was 3.66 in 2013. Data from 600 surveyed households (registered residents & non-registered residents) in Shenzhen indicated that the average number of persons per household was 3.21 in 2012. It should be noted that single person households in which there is only one adult member are included in these statistics. Thus for households with two or more members in Shenzhen, the average household size would be greater than 3.21.

It's common to have 1 child for an urban family and 2 children for a rural family due to family planning policies in China. The current total fertility rate (TFR) in China is 1.47²². Industrial workers in cities are expected to have larger family size than the native population of cities, since industrial workers are mostly migrant workers from undeveloped/rural areas where TFR is higher. Workers we spoke to suggest that one child or two are both typical among married workers. Based on the data above, we feel the assumed size of 3.5 persons (two adults with 1.5 children) as our family size in living wage is appropriate.

12. NUMBER OF FULL-TIME EQUIVALENT WORKERS IN FAMILY PROVIDING SUPPORT

As living wage is a family concept, it is necessary to make an assumption about number of workers in the family who provide support through their work. The most common assumptions used for this in previous living wage studies state that there are one or two workers per family (see Anker 2011 review).

To determine a reasonable estimate of the equivalent number of workers per family in order to estimate a living wage for workers in manufacturing sectors in Shenzhen, we gathered data on age specific labor force participation rates, as well as unemployment rates from government websites

²²This is reported by Zhenwu Zhai, Rennin University of China. And readers should note that TFR of 1.18 births in 2010 according to the Sixth Nationwide Population Censuses has been criticized to be under real rate by scholars. “2015 将迎人口出生小高峰”《人民日报海外版》(2015 年 02 月 10 日第 04 版)
http://paper.people.com.cn/rmrbhwb/html/2015-02/10/content_1532783.htm.

and publications. It was first assumed that the manufacturing industrial workers have full time employment. This means that it is only necessary to estimate the likelihood that the worker's spouse/partner is working full time. Average labor force participation rate (LFPR) for people between 16 and 59 in Shenzhen in 2010 was 84.79% according to a published paper. But this understates LFPR for the actual working population because many 15-24 year olds in China would still be in school and out of the labor force. We adjusted this estimate for people 15-59 to approximate the LFPR for the primary working age population (25-59) using ILOLABORSTA data for all of China in 2015 on the ratio of LFPR for ages 25-59 compared to LFPR for ages 15-59 (1.0623). This yielded a LFPR for ages 25-59 of 89.9%²³. Urban registered unemployment rate is 4.1% for urban China in 2014. But it is known that registration systems understate actual unemployment substantially. The unemployment rate averaged 10.9% in 2002-2009 using a more reliable, nationally representative household survey in China²⁴. We decided to use 10.9% as our unemployment rate here. We did not have data on the extent of part-time employment but it is known to be low, and so we used 5% for our part-time employment assumption. Using the above information, it is possible to estimate the likelihood that a person is working full-time, which comes to 78.1% (i.e. $89.9 \times [1 - 10.9\%] \times [1 - 0.5 \times 0.05]$ ²⁵). This implies that 78.1% of spouses/partners have work full-time on average and therefore, there are on average 1.78 full-time equivalent workers per family for industrial workers.

We apply the above estimate of the number of workers per family by using LFPR estimates for urban China to Shenzhen. The main reason is that it is not feasible to calculate a separate estimate for Shenzhen as well as other cities, especially since migrant workers from across the country account for a high proportion of workers in industrial parks and statistical data of cities generally do not cover migrant workers but only the registered population.

According to the data for 600 surveyed households (registered residents + non-registered residents), the average number of employees per household in Shenzhen is 1.7 (with average persons per household 3.21) in 2012. The difference between the two estimates (1.7 and 1.78) is quite modest. Because manufacturing industrial workers in Shenzhen are usually young and mid-aged labor force, the spouses/partners are likely to be similar in age and labor condition. Thus, we feel it advisable to use **1.78 full-time equivalent workers** per family to estimate a living wage for industrial workers in Shenzhen.

²³Average LFPR for ages 16-59 in Shenzhen in 2010 is 84.79% according to a published paper, but we don't use it because it reduces LFPR for main working ages because many 15-24 year olds in China are still in school and so out of the labor force.

²⁴See more in the NBER paper by Shuaizhang Feng, Yingyao Hu, Robert Moffitt, "Long Run Trends in Unemployment and Labor Force Participation in China".

²⁵Average proportion of full-time work per adult = Average adult labor force participation rate \times (1.0 – unemployment rate) \times (1.0 - 0.5 \times part-time employment rate). See more details in (R. Anker and M. Anker, 2017)

13. TAKE HOME PAY REQUIRED AND TAKING TAXES AND MANDATORY DEDUCTIONS FROM PAY INTO ACCOUNT

Mandatory taxes that are deducted from pay need to be taken into consideration because workers need to receive sufficient take home pay to be able to afford a decent life. Voluntary deductions from pay are not considered here, because they are in a sense a form of voluntary expenditure.

Insurances, including pension, medical, unemployment, disability, and maternity, are compulsory for documented workers, regardless of *Hukou*. But social insurance base and the proportion of payment for individuals/factories are different for workers on account of their *Hukou*²⁶ status. Basically, we need to determine applicable social insurance base and proportion of individual account (no need to consider the proportion paid by employers here) for our living wage estimate. Based on official documents about insurance, it is proper to use actual wage of workers as the social insurance base²⁷ when our estimate of living wage is slightly above current minimum wage in Shenzhen. The proportion paid by individuals is 11% (8% for pension, 2% for medical, and 1% for unemployment) regardless of *Hukou*.

Housing fund is only applicable for workers with Shenzhen *Hukou*. We decided not to take it into consideration here because this fund is for purchasing house or house refurbishing, which is not a must in a living wage at present. For this reason, **11% of wage as mandatory deductions** is taken into consideration to make sure workers would have sufficient take home pay.

²⁶As was noted before, integrated social welfare benefits are closely related to *Hukou* and the specific circumstances are of great difference in different provinces and cities. Here, in short, those workers with Shenzhen *Hukou* will be included in a higher-level basic social insurance than those without Shenzhen *Hukou*.

²⁷For documented workers in Shenzhen, actual wage is set to be social insurance base when it meets the following conditions: (i) no more than 300% of the average monthly wage of on-the-job workers in Shenzhen last year; (ii) for workers without Shenzhen *Hukou*, no less than current minimum wage; (iii) for worker with Shenzhen *Hukou*, no less than 60% of the average monthly wage of on-the-job workers in Shenzhen last year. The average monthly wage of on-the-job workers in Shenzhen in 2014 is RMB 6,054, and 60% of that is RMB 3,632. Thus, for workers with Shenzhen *Hukou*, the social insurance base is higher than our estimate of living wage.

SECTION IV

ESTIMATING GAPS BETWEEN LIVING WAGE AND PREVAILING WAGES

14. IN-KIND BENEFITS

In-kind benefits provided by employers can reduce the amount of cash income that workers require to maintain a basic but decent life equivalent to the standards under a living wage without in-kind benefits. For this reason, it is reasonable to take it into account the value of in-kind benefits when determining whether workers receive a living wage.

It is common but optional for factories to provide, for example, permanent workers with free or low-cost dormitories, free or low-cost meals, and free transportation to nearest town on weekends. Not surprisingly, there is considerable difference in both forms and values of in-kind benefits among various factories.

14.1 In-kind benefits as partial payment of living wage

ILO Conventions 95 and 99 (ILOLEX, 2013) allow for in-kind benefits to be considered partial payment of wages if they are “authorized by national laws or collective agreements or arbitration”, and if they “are either customary or desirable because of the nature of the work”, and if they are “appropriate for the personal use and benefit of the worker and his family.” And, “The value attributed to such allowances [should be] fair and reasonable.”

To be considered as partial payment of living wage in this report, in-kind benefits needed to be:

- i. regular (so workers could count on receiving benefit)
- ii. considered of personal value by workers;
- iii. customary in that a reasonable percentage of firms provide the benefit and workers receive it. To be considered as partial payment of living wage, minimum standards of decency as regards the benefit also had to be met.

Value of in kind benefits as partial payment of a living wage should not:

- i. exceed the factory’s cost in order to prevent factories from “profiting” on providing in-kind benefits
- ii. exceed replacement cost to workers if they had to provide or purchase this on their own
- iii. total value for all in-kind benefits could not exceed 30%²⁸ of the living wage.

These guidelines are based on ILO Conventions and a review of national laws in 162 countries.

²⁸There is no clear regulation on specific maximum monetary amounts that serves as maximum allowed value for in kind benefits as partial payment of wages in China, while we feel 30% may be used as a conservative proportion for Shenzhen.

14.2 Value of In-Kind Benefits and Cash Allowances as Partial Payments of a Living Wage

It is common for manufacturing factories to provide free or low-cost staff quarters (dormitories) for workers. However, the staff quarters are generally of limited space (a small separate room for two or more workers without kitchen, living room, or even bathroom), which is far below our standards of housing for a living wage. According to our field survey, some firms provide free staff quarters for workers. Collection of data from some large employers indicates that it costs around RMB 100-150 per worker per month when providing free accommodation. But, this benefits only some workers, and many workers rent housing either on the factory premises or on their own. Furthermore, workers are often asked to pay RMB 100 or so for dorm accommodation. Given the lack of access to reliable data, the variability of the benefit from factory to factory, the low cost of this to employers, poor quality, and the frequency of a important co-pay by workers, this type of in-kind benefit is not considered in this report.

Free or low-price meals are less common in-kind benefits nowadays in Shenzhen. Most of the workers we visited pay for meals at moderate prices in dining halls, cooked at home, or dined out. For workers eating in dining halls inside their factory, the costs exceeded cooking an equivalent meal at home. The benefit of eating the meal in the factory was that workers save time for a rest before continuing work. For these reasons, free or low price meals in the workplace are not considered in this report, since they do not save the worker any money.

Workers did not enjoy benefits for commuting or transportation to nearby towns. Some factories provide transport cash allowance, but only to workers of certain levels. Thus, this type of in-kind benefits is not considered in this report.

Cash allowances and bonuses (including retention cash bonus, assembly line production bonus for typical production, attendance cash bonus, and other holiday cash bonus) also vary greatly among different factories. Due to poor information on these types of benefits, they are not considered in this report.

In general, we decide not to take in-kinds benefits into consideration for our living wage because:

- i. lack of detailed data needed to calculate such benefits
- ii. findings that the value of this to workers is low
- iii. lack on information regarding cash allowances

Cash allowances are expected to increase wages by a fairly small amount in general. When comparing living wage to other wages, we will remind readers to note the connotation of wages to help better understanding wage comparisons in this report.

15. LIVING WAGE IN CONTEXT AND COMPARED TO OTHER WAGES

Table 4 at the end of this report illustrates the summary table for calculation of living wage per month. It is useful to compare our living wage estimate to other wage indicators to get an idea of extent to which our living wage is relatively high or low. This is done in a wage ladder in Figure 10.

15.1 Minimum Wage, poverty line wage and Asian floor wage

On March 1, 2015, Shenzhen raised its minimum wage to RMB 2,030 per month for full-time workers and RMB 18.5 per hour for part-time job workers, ranking the highest in mainland China. It is expressly stated that the minimum wage should not contain overtime pay or subsidies under special working conditions or other fees outside the minimum wage under law. It should be noted that cash allowances and in-kind benefits do not count towards the minimum wage. For full-time workers, daily wage is converted to be RMB 93.33 according to the average days paid per month of 21.75 days. Overtime pay on weekdays, on days-off, and on legal holidays are supposed to be at least 150%, 200%, and 300% of hourly/daily wages, which are converted from minimum wages, respectively.

Our living wage is 1.39 times of the current minimum wage in Shenzhen. Both the wage implied by minimum living security line in Shenzhen for 2015²⁹ (RMB 1,573) and the wage implied by the World Bank's \$3.1 and \$6.2 a day poverty lines (RMB 723 and RMB 1,446 respectively³⁰) are much lower than current statutory minimum wage in Shenzhen. Our living wage is 73% of Asian Floor Wage, which is suggested by Clean Clothes Campaign for the garment industry that is often referred to by certifiers and multi-national companies. The latest value posted online is RMB 3,847 for 2015.

15.2 Prevailing Wages for Manufacturing Workers in Shenzhen

Income of workers has a huge range, depending on the amount of work available and possibilities for bonuses or overtime pays. In addition to minimum wage, it can vary by: (i) seasonal and annual variations, (ii) enterprise and department performances and (iii) type of worker (assembly-line worker, skilled worker).

Workers in manufacturing industrial factories receive full-attendance bonus if they are never late, never leave early and are never absent. This is achieved some months and not in other months. Overtime pay is commensurate to overtime hours and days (weekdays, weekends, or holidays). Workers earn 1.5 times pay when they work overtime on weekdays which is common during a factory's busy season. It's not common for workers to work on day-offs or legal holidays to earn twice or three times pay, because factories would prefer to increase overtime work on weekdays instead of days-off or holidays to reduce costs.

Overtime pay is an important part of wages for workers. China has a 40 hour workweek, and overtime should not exceed 36 hours per month according to labor laws in Shenzhen. It is common for manufacturing workers to work overtime reaching up to 36 hours, including overtime on weekdays, weekends and holidays. It would at least increase RMB 630 in addition to the minimum wage if workers work 36 hours overtime per month on weekdays, for which they receive 1.5 times pay. Most workers we spoke to could get RMB 2,800 or more as gross pay because sometimes they

²⁹Minimum living security line in Shenzhen for 2015 is RMB 800 per person. This was multiplied by 3.5 for family size and divided by 1.78 for number of full-time workers per family to get an implied wage.

³⁰We applied the adjusted poverty line and **rural/urban adjustments of 2011 PPPs for China** (Ferreira, F. H. G., et al. 2015). The urban PPP is 3.9 in 2011. And a second poverty line of \$3.10 in 2011 PPPs has also been proposed as the comparable equivalent to the \$2 dollar-a-day poverty line in 2005 PPPs, commonly used as a poverty line for middle-income countries.

work overtime on weekends and this enables them to earn more overtime pay. This means that currently a sizable proportion of workers' pay is earned because of overtime hours.

Although one principle of living wage (see definition in beginning of report) is that living wage should be earned in standard work week without overtime, long working hours are really common in manufacturing factories in China and workers are properly compensated for this. For this reason, prevailing wages workers actually earned include production bonuses and overtime pay which reflects the reality in the manufacturing industry in China. But to look at the gap between prevailing wages and the living wage, overtime pay would need to be subtracted. Note that skilled workers could get RMB 4,000-5,000 or more, while group leaders (first-line managers) could earn around RMB 6,000.

Our estimate of living wage is no higher than lots of workers' real wage when overtime is common for workers employed in the manufacturing industry. The only thing to note here is that our living wage definition is that wages need to be earned in normal work hours without overtime work.

15.3 Income Benchmark in Shenzhen

As published by Shenzhen's Bureau of Human Resources and Social Security, the income benchmark³¹ indicates that the mean wage for manufacturing industry is RMB 3,900, and the median wage is RMB 3,975, and the low wage is RMB 2,257³². Median wage is the wage at the 50th percentile of wages ranked from low to high, representing the median level of wage in the market. Low wage is the arithmetic mean value of the wages at the first 10% of wages ranked from low to high. Obviously, income benchmark for an industry is calculated based on different positions and various types of work. We feel it is proper to use the **low wage** as a comparison with our living wage, because the first 10% of wages ranked from low to high is representative for the majority of general workers in the manufacturing industry.

In fact, there are many highly skilled workers in the manufacturing industry. Specifically, for computer, communications, and other electronic equipment manufacturing industries in 2015, the income benchmark indicates that the mean wage is RMB 4,835, the low wage RMB 2,552, and median wage RMB 4,238. Workers involved in our field survey are all from these specific industries. It should be noted that wages of income benchmark do not exclude overtime pay, performance bonus, etc.

Our estimate of living wage is 72.3% of the mean wage (RMB 3,900) and 1.25 times of low wage (RMB 2,257) for manufacturing industry, and is 58.3% of mean wage (RMB 4,835) and 1.1 times of low wage (RMB 2,552) for computer, communications, and other electronic equipment manufacturing industry. However, the wages indicated in the income benchmarks contain overtime pay.

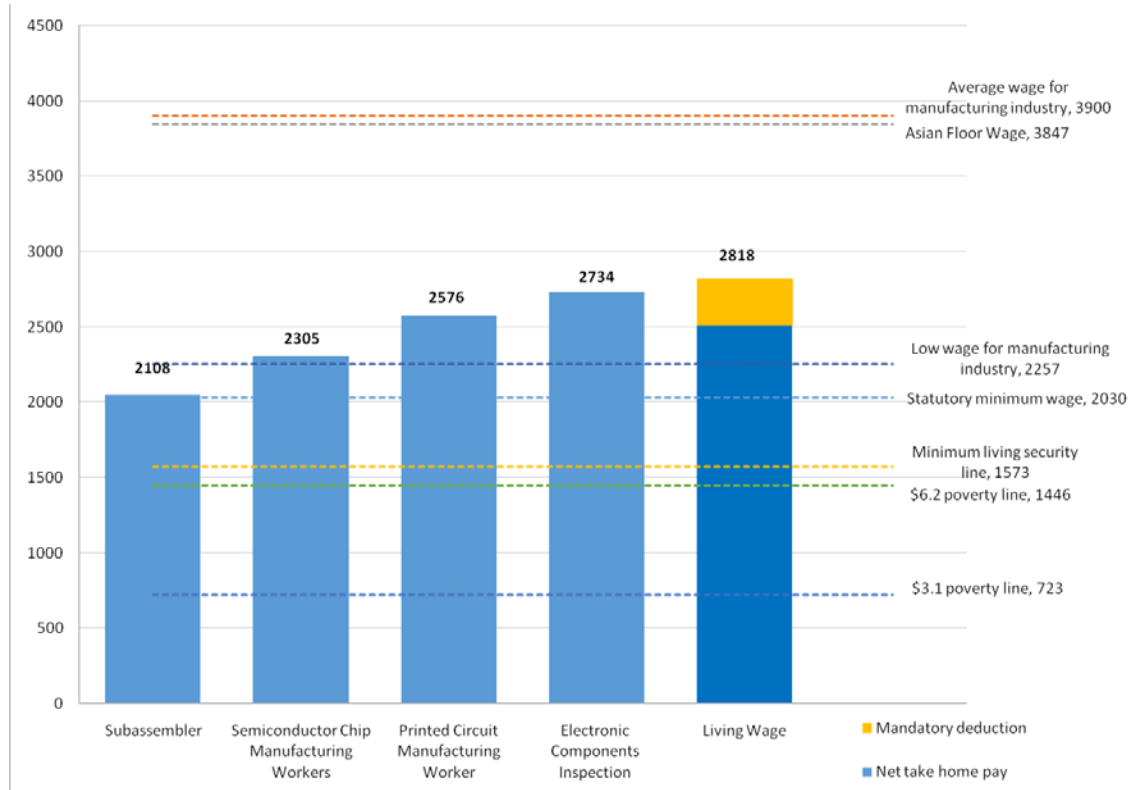
³¹Income benchmark, published by government, is a kind of price signal to indicate prevailing labor wages in labor market. Different from statutory minimum wage, income benchmark indicates current prevailing wages of different occupations and positions, which reflect the economic efficiency of enterprises. Migrant workers are included in these statistics.

³²深圳市 2015 年人力资源市场工资指导价.深圳市人力资源和社会保障局. 2015-9-28. Available at http://www.sz.gov.cn/rsj/tjsj/zxtjxx/201509/t20150928_3240607.htm

15.4 Wage ladder

Figure 10 provides a wage ladder for Shenzhen. It includes our living wage along with other wage benchmarks for comparison such as: statutory minimum wage, low wage (arithmetic mean value of the wages at the first 10% of wages ranked from low to high) of several work groups, average wage for manufacturing industry, wage implied by minimum living security line (which can be regarded as an urban poverty line and every city in China has its own line), wages implied by \$3.1 and \$6.2 World Bank poverty lines, and Asian Floor Wage.

Figure 10: Wage ladder for Shenzhen



Notes:

Statutory minimum wage of RMB 2,030 in Shenzhen came into effect on March 1, 2015. Wages exclude overtime.

For prevailing wages of four worker groups, namely the average wage for staff and workers in 2014, average wage for manufacturing industry, and low wage for manufacturing industry, overtime pay is included and in-kind benefits are excluded (if in-kind benefits are included in wages, then wages would be higher). However, our living wage as well as statutory minimum wage and wages calculated from poverty lines neither include overtime pay nor take account of in-kind benefits.

The average wage and low wage for manufacturing industry were from the income benchmark published by Shenzhen's Bureau of Human Resources and Social Security, September, 2015. Low wage is the arithmetic mean value of the wages at the first 10% of wages ranked from low to high.

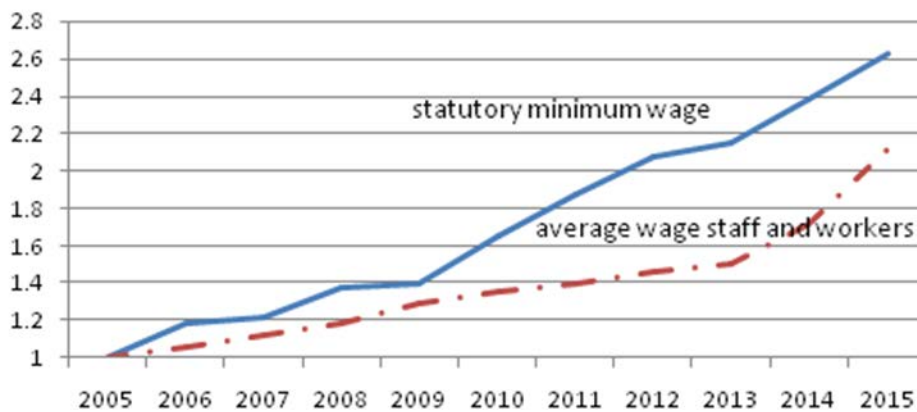
Wage groups used here are all from computer, communications, and other electronic equipment manufacturing industries. Meanwhile, data of low wage of different groups are used here for

comparison, which are from income benchmark in Shenzhen for 2015. Wages for the four groups include overtime pay and other pay besides basic wage.

15.5 Recent wage trends

Wage trends in the past 10 years are useful to provide important contexts. It's necessary to adjust wages over time for inflation before graphing them. Figure 11 illustrates wage trends over the last ten years in Shenzhen. Both the statutory minimum wage and the average wage for staff and workers more than doubled between 2005 and 2015 even after taking inflation into consideration. The percentage increase in average wage for wage staff and workers, however, lagged well behind that for the minimum wage until 2013.

Figure 11: Change in real statutory minimum wage and average wage staff and workers, indexed in 2005, Shenzhen 2005-2015



Notes:

Inflation was taken into consideration by adjusting with CPI (Consumer Price Index) in Shenzhen. CPI for 2005-2014 is from Shenzhen Statistical Yearbook, while CPI for 2015 is not available yet, and we supposed it to be the same as 2014. Real wages are indexed to 2005. Data of average wage for staff and workers from 2005 to 2014 are from Shenzhen Statistical Yearbook, while average wage for 2015 is from Guangdong Area Salary Survey Report 2015-2016.

16. CONCLUSIONS

Our living wage estimate for Shenzhen in terms of the take home pay is **RMB 2,508 per month** (RMB 115 per day). This is before consideration of possible in-kind benefits provided to some workers and social insurance fund mandatory deduction from pay. Taking all mandatory deduction into account, our estimate of a cash living wage is **RMB 2,818 per month** (RMB 130 per day) for permanent workers.

This living wage estimate is much higher than the statutory minimum wage in Shenzhen (RMB 2,030), national urban poverty line wage (RMB 1,573), and World Bank poverty line wages (RMB 723 and RMB 1,446), but lower than the average wage for manufacturing industry (RMB 3,900), Asian Floor Wage (RMB 3,847), and the average wage for staff and workers (RMB 6,054 in 2014) in

Shenzhen. Being lower than average wages in Shenzhen appears to make sense, because overtime is common among manufacturing workers, and our living wage assumes that it is earned without overtime. In addition, we don't count in-kinds benefits in our living wage because the conditions of different factories vary too much and the value of in kind benefits appears to be low. When comparing living wage to other wages, readers should be cautious regarding whether overtime pay is included in prevailing wages to ensure a good understanding of our wage ladder. Our living wage estimates are representative of living costs for workers in certain parts of Shenzhen where factories are concentrated. A living wage for the center of Shenzhen would be substantially higher.

Considerable thought and effort have been put into making our living wage estimates. They are based on solid methodology; numerous national and international data sources; visits to workers' homes and places where workers typically shop for food; discussions with workers and their family members; discussions with landlords of housing and vendors; discussions with various key informants such as first-line managers (e.g. production group leaders), university professors, and so forth. This also included reviews of many papers, reports and statistics from researchers, government and international agencies.

As indicated in this report, conservative assumptions were used to estimate our living wage. This means that our living wage is a conservative estimate and not overly generous. It is difficult to see where we have overestimated living costs required to ensure a basic level of decency for workers. Our low cost, nutritious model diet used to assess food costs represents the basic needs for residents of a major city in an upper middle income country. Secondly, the standard we set for acceptable housing is basic for workers with around 40 square meters of living space including: 1 living room, 1 bedroom, a kitchen, and a bathroom, although our housing standard for living space is much better than what most manufacturing workers currently live in. Thirdly, we estimate non-food and non-housing (NFNH) costs using the ratio of NFNH costs to food costs according the consumption structure of the second quintile (20th- 40th) of the income distribution in Shenzhen. We also assume that families rely on public transport, public schools (for children), and public medical service (with sometimes private clinics). Post checks on our NFNH costs were performed with data from both workers' actual consumption and official statistical data of different reference groups.

Finally, it is important that our living wage estimates are viewed in the context of present day Shenzhen where living costs are high. The statutory minimum wage is much lower than our living wage, and workers have to earn their living by working overtime though the overall prevailing wage in Shenzhen is not so low nowadays.

Table 4: Summary table for calculating living wage

Item	Cost in RMB	Cost in USD
PART I. FAMILY EXPENSES		
1. Food cost per month for reference family	1,299	203
Food cost per person per day	12.20	1.91
2. Housing costs per month	1,020	159
Rent per month for acceptable housing	780	122

Item	Cost in RMB	Cost in USD
Utilities and minor repairs per month	240	38
3. Non-food non-housing costs per month taking into consideration post checks (no post checks adjustments made)	1,739	272
4A. Additional funds for helping parents (5%)	203	32
4B. Additional for sustainability and emergencies (5%)	203	32
5. Total household costs per month for basic but decent living standard for reference family	4,464	697
PART II. LIVING WAGE PER MONTH		
6. Net living wage per month, take home pay	2,508	392
7. Mandatory deductions from pay	310	48
8. Gross wage required per month for Living Wage (8) [8=6+7]	2,818	440
PART III: LIVING WAGE BASIC WAGE IN INDUSTRY CONSIDERING VALUE OF TYPICAL IN-KIND BENEFITS, CASH ALLOWANCES, AND BONUSES IN INDUSTRY		
Living wage per month, net take home pay (6) [6=5/#workers]	2,508	392
Typical value per month of common in kind benefits in industry (9A)	0	0
Typical value per month of common cash allowances and bonuses in industry (9B) (list in notes to table)	0	0
Net living wage basic wage when workers receive typical in kind benefits, cash allowances, and bonuses in industry (10) [10= 6-9A-9B]	2,508	392
Gross living wage basic wage when worker receives typical in kind benefits, cash allowance, and bonuses in industry (11) [11= 8-9A-9B]	2,818	440

Table 5: Key values and assumptions for a living wage estimate

KEY VALUES AND ASSUMPTIONS	Comments
Location & industry	Shenzhen, China & Manufacturing Industry Parks
Exchange rate of local currency to USD	6.4
Number of full-time workdays per month	21.75

KEY VALUES AND ASSUMPTIONS	Comments
Number of hours in normal workweek	40
Number of workers per household	1.78
Reference family size	3.5
Number of children in reference family	1.5
Ratio of non-food non-housing costs to food costs	1.339

REFERENCES

- Anker R. 2006a. Living wages around the world: A new methodology and internationally comparable estimates. *International Labour Review*. Vol 145 no 4.
- Anker R. 2006b. Poverty lines around the world: A new methodology and internationally comparable estimates. *International Labour Review*. Vol 145 no 4.
- Anker R. 2011. Estimating a living wage: A methodological review. *Conditions of Work and Employment Series No. 29*. International Labour Organization. Geneva.
- Anker R. 2011a. Engel's law around the world: 150 years later. Working Paper Series 247. Political Economy Research Institute. University of Massachusetts, Amherst.
- Anker R. and Anker M. 2017. Living wages around the world: Manual for measurement. Edward Elgar. London and Northampton.
- Chan K.W. and Zhang L. 1999. The hukou system and rural-urban migration in China: processes and changes. *China Quarterly*. Vol 160 no 160, pp. 818-855.
- Feng, Shuaizhang, Y. Hu, and R. A. Moffitt. 2015. Long Run Trends in Unemployment and Labor Force Participation in China. *NBER Working Papers*.
- Ferreira, F. H. G., Chen, S., Dikhanov, Y., Hamadeh, N., Jolliffe, D., & Narayan, A., et al. 2015. A global count of the extreme poor in 2012: Data issues, methodology and initial results. Policy Research Working Paper.
- Housing and Construction Bureau of Shenzhen Municipality. 2014. For policies on public rental housing. Available at:
http://www.szjs.gov.cn/csml/zcfg/xxgk/zcfg_1/bzzf/201312/t20131206_2262593.htm Accessed Sep 10 2015
- ILO, ILOLEX. 2013. ILO conventions. Available on www.ilo.org/ilolex.
- Institute of Nutrition and Food Safety, China CDC (中国疾病预防控制中心营养与食品安全所). 2009. China Food Composition 2009(中国食物成分表)[M]. Beijing: Peking University Medical Press (北京: 北京大学医学出版社)
- National Bureau of Statistics of the People's Republic of China (NBS). For data of household consumption. Available at <http://www.stats.gov.cn/> Accessed Aug 8, 2015.
- Shenzhen City Bureau of Statistics (NBS). 2015a. Shenzhen 2014 statistical bulletin for national economic and social development. Available at:
http://www.sz.gov.cn/tjj/tjj/xxgk/tjsj/tjgb/201504/t20150424_2862885.htm. Accessed Sep 4, 2015.
- Shenzhen City Bureau of Statistics (NBS). 2015b. Shenzhen Statistical Yearbook, 2014. Accessed on <http://www.sz.gov.cn/nj2014/start2014.htm>.
- Shenzhen Municipal Labor and Social Security Bureau (深圳人力资源与社会保障局). 2015. For income benchmark for the current labor market. Available at:
<http://www.szhrss.gov.cn/>. Accessed Sep 27, 2015.

- Shenzhen TV (深圳卫视). 2014. Nearly 7 million migrant workers in Shenzhen sent remittance of 100 billion a year (深圳农民工近 700 万每年寄回工资 1000 亿). Reported on Jan 16, 2014. Available at: <http://www.s1979.com/shenzhen/201401/16112208116.shtml> Accessed Sep 5, 2015.
- State Council of China (国务院办公厅). 2014. Development Outline of Food and Nutrition in China: 2014-2020 (《中国食物与营养发展纲要(2014—2020 年)》, 国办发〔2014〕3 号). Available at: http://www.gov.cn/zwgk/2014-02/10/content_2581766.htm. Accessed Sep 6, 2015.
- UN-HABITAT. 2007. State of world's cities 2006/07. Nairobi.
- Wikipedia. For the basic induction and a geographic base map of Shenzhen. Available at <https://en.wikipedia.org/wiki/Shenzhen>. Accessed Sep 2, 2015.
- WHO/FAO 2003. Report of a joint WHO/FAO expert consultation. Diet, nutrition and the prevention of chronic diseases. WHO technical reports series 916. Geneva.
- World Bank. 2015. World Development Indicators. Accessible at: <http://data.worldbank.org/indicator/PA.NUS.PRVT.PP>. Accessed Oct 2, 2015.

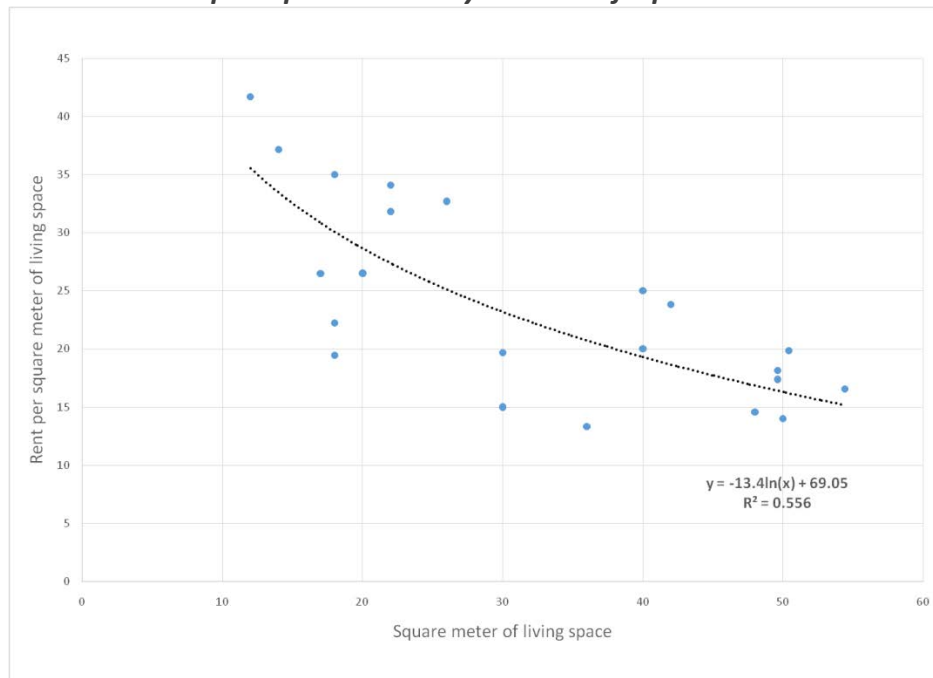
ANNEXES

ANNEX 1: RENT

In order to estimate the relationship between rent per square meter and the number of square meters, a consistent measure of the number of square meters is needed. Therefore, for the four houses with floor space indicated in table 3, we adjusted this space by multiplying it by 0.80 as this is the approximate ratio of living space to floor space to account for walls and shared architectural areas.

According to the estimated relationship in Figure 12 between rent per square meter and the number of square meters ($y = -13.4 \ln(x) + 69.05$), rent of around RMB 780 *yuan* is paid for 40 square meters of living space.

Figure 12. Shenzhen rent per square meter by number of square meters



ANNEX 2: ACTUAL FOOD CONSUMPTION

The table in this annex indicates actual food consumption. It is provided for the purpose of comparison to our model diet. Data in this table is converted to daily consumption from annual consumption, which is published in China Statistical Yearbook 2014.

Table 6: Per capita consumption of major foods per day, China

Food group	Grams, Nationwide ^a	Comments	Grams Urban ^b	Additional comments ^d
Cereals and grains	381	Staple food	216	Includes cereals and grains, tubers, and beans that are regarded as staple foods
Roots and tubers	7			
Pulses, legumes, beans	29			
Eggs	8.7	Fresh eggs	29	Fresh eggs
Dairy	32	Milk and dairy products	38	Fresh milk
Meats and aquatic products	117	Pork 54g; beef 4g; mutton 3g; poultry 17g; aquatic products 29g	140	Pork 58g; beef and mutton 10g; poultry 30g; aquatic products 42g
Vegetables	267	Fresh vegetables and mushrooms	308	Fresh vegetables
Fruits	104	Fresh melons and fruits	154	Fresh melons and fruits
Oils and fats	35		25	Only edible vegetable oil
Sugar	15		NA ^c	

Notes:

^a For nationwide data; the data is for year 2013. There is no clear statement of whether the consumption is in concept of purchased amount or edible amount, but we can generally regard it as purchased amount, not edible amount.

^b For urban data, the data is for year 2012. It is stated as purchased amount of food consumption.

^c NA indicates that data is unavailable.

^d Additional comments give some differences of referred to food groups between nationwide data and urban data, though they are both from the same yearbook.