Impacts of the Westernization of Food Preferences on Medical Costs in China

by

Kynda R. Curtis and Jill J. McCluskey*

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Abstract:
The dietary changes in China to include more meat, diary, and processed foods, are commonly attributed in the literature to income increases, urbanization, and the availability of western food products. As seen in other Asian countries, these new food habits may increase obesity, diabetes, and other degenerative diseases among the Chinese people. These new health concerns will likely have economic consequences in terms of productivity losses and increased health care costs. This paper uses a Tobit model to analyze the influence of household demographics and food consumption on household medical costs in China. Results show that dietary choice has a definite impact on medical costs for the 800 households sampled. A nationwide dietary educational campaign in China may be useful in dampening the societal costs of dietary choice.

*Curtis (corresponding author): Assistant Professor, Department of Resource Economics (MS204), University of Nevada-Reno, Reno, NV 89557, Phone: 775-784-1682, Fax: 775-784-1342, e-mail: kcurtis@cabnr.unr.edu; McCluskey: Associate Professor, Department of Agricultural and Resource Economics, Washington State University, Pullman. The authors would like to thank Maggie Cowee for technical assistance. Research funded in part by the University of Nevada Experiment Station.

Introduction

The westernization of food preferences in China over the past two decades is well documented in the literature (Lukman *et al.*, 1998; Du *et al*., 2002; Jussaume, 2001; and Wang, 2003). The food consumption habits of Chinese citizens have shifted to a higher-fat, higher-sugar diet, similar to that of western peoples (Popkin *et al*., 1995). This is evidenced by steady increases in consumption of meats, edible oils, and dairy products, as well as processed foods, snacks, and food away from home (FAFH), and coupled with decreased consumption of carbohydrates, such as grains and vegetables (ERS, 2003). Researchers hypothesize, that these changes have resulted from increased incomes due to rapid and sustained economic growth in China, in addition to busier lifestyles and the availability of a greater variety of foods resulting from urbanization.

Recent studies by Veeck and Veeck (2000) and Curtis *et al.* (2004) support this hypothesis, as findings indicate that consumers who demand western-style convenience foods are younger adults, both married and single, with higher income levels and previous western food consumption experience. Additionally, consumers who demand these products tend to eat out often, shop at grocery stores rather than traditional Chinese wet markets, and consume more snack foods.

This change in food consumption patterns in China has fostered much discussion as to the potential economic consequences in terms of health care costs and productivity losses related to obesity, diabetes, and other degenerative diseases linked to the consumption of energy-rich foods. The social cost incurred from increasing medical expenditures due to degenerative diseases may hinder economic growth in China in the future. Possible growth in the medical service industry may or may not be offset by contractions in consumer product industries due to

decreased post-medical expenditure disposable income. Popkin *et al.* (2001) illustrates this point in a study finding the economic costs of diet-related non-communicable diseases in China to be 2.1% of China's 1995 GDP. The World Health Organization warns of the consequences to both the health and the economies of countries which face large medical expenses due to obesity (WSJ, July 1, 2002).

Obesity, a large health problem in the U.S., was recently reported by the Surgeon General to cost the American public as much as $117 billion a year, including lost wages and disability payments (2001). In fact, in 1999, obesity was associated with an average increase in hospital and outpatient spending of $395 per patient (WSJ, June 13, 2002). The societal costs of public health problems such as obesity can be partitioned into direct and indirect costs. Direct costs often include medical expenditures for preventative and treatment services, indirect costs often include lost wages resulting form illness, disability or death (Kuchler and Ballenger, 2002).

This study analyzes the influence of household demographics and dietary consumption on medical related costs in China, including cash expenditures, lost wages, and travel costs, or both indirect and direct medical costs. This research has important policy implications for China. If there is a direct relationship between dietary consumption and medical related expenditures, individual dietary choice may not reflect societal costs. Thus, policy makers and health care providers in China may need to consider a full range of public nutritional education programs.

Evolution of Food Consumption Habits in China

Per capita income in urban China rose from 1500 yuan per year in 1990 to 6860 yuan per year in 2001, an increase of over 400%. A similar situation in rural China caused per capita

income to rise just over 300%. Per capita living expenditures increased in equal percentages to those of incomes, with food expenditures rising over 300% in urban areas, and 200% in rural areas (ERS, 2003). The reduction in the share of household expenditure on food as incomes increase is the natural consequence of increased purchasing power. Evidence shows that consumers in lower-income countries will spend a large share of their income on food and clothing, while consumers in higher-income countries will spend a larger share of their income on housing, services, and luxury goods (Regmi, 2003). Drewnowski (1997) shows that as the economic growth of a country improves, the diet of its population shows increasing amount of fats and sugar, and decreasing amounts of carbohydrates.

Many studies have shown that income elasticities in China are positive for dietary fat, including meats, oils, and dairy products (Guo *et al.,* 2000; Ito, Peterson, and Grant, 1989; Gould, 2002; Fan and Agcouli-Sombilla, 1997) and fruits and vegetables (Ahmadi-Esfahani and Stanmore, 1997; Han and Wahl, 1998; Gould, 2002; Guo *et al*., 2000), but negative for grains, including rice, flour, and course grains (Ito, Peterson, and Grant, 1989; Guo *et al*., 2000). Hence, it is no wonder that Chinese consumption from 1990 to 2001 decreased by 20% for grains and 18% for vegetables, and increased by 30% for edible oils, 23% for meats, and 63% for eggs (ERS, 2003).

Additionally, consumption of processed foods and snacks has dramatically risen in recent years. A recent survey conducted in Beijing, China (Curtis *et al*., 2004) found that 80% of the respondents purchased both French fries and potato chips in the last year, and 84% of the respondents had either an increased or stable consumption of potato snack foods in the preceding two years. Additionally, Mar and Hatfield (2001) found that consumers in Shanghai, China spent 9% of their total grocery bill on snack foods.

The availability of snacks and other processed foods in urban areas has resulted from an influx of Western retail chains such as Carrefour SA of France and Walmart Inc. of the United States. These retails chains have 31 and 22 locations, respectively, in China and both plan to double that number by 2004 (WSJ, November 26, 2002). Non-alcoholic beverages, meats, cereals, fruits, and vegetables account for the majority of Chinese expenditures on processed foods, which tend to be western in orientation (Bhandari and Smith, 2000). The increased frequency of dining away from home derives from a growing need to save time, as well as the command of a higher level of disposable income. Western quick service restaurants, such as McDonalds and Kentucky Fried Chicken (KFC), moved to fill this increased demand and now dot the landscape of urban China. However, not all processed foods in China are imported. In fact, food processing is the third largest industry in China, accounting for about 8% of gross industrial output (Swanson, 1996).

The World Bank predicts continued urbanization in China, with 42% of the population, or upwards of 600 million people, living in urban areas by the year 2020 (Wu *et al.*, 1998-99). If the World Banks' predictions are correct, more and more of the population will become familiar with both western and non-western processed foods, which may lead to continued growth in demand for these products. Additionally, the availability of foods provided by abundant grocery stores may foster continues increases in dietary consumption of fats and sugars.

Reasons for Concern

Cutler *et al.* (2003) find that obesity is correlated to new food technologies and processed foods, with snacks as the major change in technology to date. They also note that each one half hour in the reduction of food-prep time leads to an increase in the Body Mass Index (BMI) of

nearly .5. These findings would lead one to believe that consumers who eat more processed foods and snacks, as well as dietary fats may become obese over time. Lukman *et al*. (1998) state with regards to the change in the Chinese diet to a more western orientation, "The change in overall dietary intake is likely to have an impact on obesity, health and the economy of the nation". This has in fact been the result. A 1990 study in Beijing, found that 50% of women ages 45-60 were overweight, and the prevalence of hypertension was 13.5%, coronary heart disease, 4%, and diabetes 1.2%, all degenerative diseases (Ge *et al.*, 1992). A more recent survey in 1997 by the Chinese Academy of Preventative Medicine found that Type 2 diabetes was 3.6% in the study population, which was five times higher than a similar study conducted in 1980 (Wang). The Chinese Ministry of Health (2000), reported that from 1980 to 1999, the death toll due to degenerative diseases, such as diabetes and cardiovascular disease, rose from 54 to 95 deaths per hundred thousand people.

In addition to dietary changes, the Chinese are also decreasing their activity levels. A report by the Wall Street Journal (July 1, 2002) discusses declining bicycle sales in many areas of China due to the increased use of motorized scooters. Du *et al.* (2002) discusses the shift in decreased activity in work and leisure activities, associated with increased television viewing and a move toward occupations exhibiting light activity levels.

Survey Data

The data for this study originates from the 1993 China Health and Nutrition Survey. The survey was conducted by the Carolina Population Center at the University of North Carolina at Chapel Hill, the Institute of Nutrition and Food Hygiene, and the Chinese Academy of Preventive Medicine. In 1993 a total of 3,441 households were surveyed, consisting of primarily

residents from large urban areas in eight different provinces (Liaoning, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou). Detailed demographic, economic, time use, labor force participation, asset ownership, nutrition, and expenditure data were obtained.

For this study we randomly selected 100 households from each of the eight provinces surveyed, for a total sample of 800 households. The average age level of all individuals in the sample was 45 years old. The gender make up of the sample was about equal with 50.4% female and 49.6% male. The education level of the sample consisted of 48.2% who had completed middle school and 7.2% with a university degree. The majority of households consisted of two or more employed adults at 71.9%, with 16.1% with only one working adult, and 12% with no working adults. The mean household size was 3.5 people. The mean household nominal income was 597 yuan per month. Of the 800 households 41.1% were classified as rural and 58.9% were classified as urban.

For those households with medical costs the mean monthly expenditure was 298 yuan. The mean loss of income from illness was 73 yuan, with an average number of days home sick of 8.34. The mean travel cost was 64 yuan, and the cash outlay for medical was 16 yuan.

Mean monthly food consumption per household consisted of 50.7 kilograms of rice, 17.14 kilograms of wheatflour, 3 kilograms of other grains, 7.4 kilograms of cooking oil, 5.4 kilograms of eggs, 10.8 kilograms of meat, including beef, pork, and mutton, and 1.5 kilograms of sugar. See Table 1 for a complete description of sample statistics.

Medical Expenditure Model

Given the mixed discrete-continuous and censored nature of the survey data, a Tobit regression model as described by Mittelhammer *et al.* (1998) and similar to the expenditure

model presented by Fanning *et al.* (2002), is used to evaluate the influencing factors on total monthly household medical costs. The Tobit regression model is represented by

$$Y_i^* = x_i\beta + \varepsilon_i^*, \text{ where } \varepsilon_i^* \sim iid\ N(0,\sigma^2) \tag{1}$$

and

$$E[Y_i] = (x_i\beta)\theta(\frac{x_i\beta}{\sigma}) + \sigma\phi(\frac{x_i\beta}{\sigma}) \tag{2}$$

where θ is the normal cumulative distribution function and ϕ represents the normal probability density function. The method of maximum likelihood estimation is used, with the following likelihood function.

$$L(\beta,\sigma;y) = \prod_{\{i:y_i=0\}} \theta(\frac{-x_i\beta}{\sigma}) \prod_{\{i:y_i>0\}} \sigma^{-1}\phi(y_i - \frac{x_i\beta}{\sigma}) \tag{3}$$

Medical costs are modeled as a bivariate polynomial of the continuous observable demographic variables, w_i, discrete observable demographic variables, r_i, and the continuous observable dietary intake variables, z_i. Hence, the structure of $X\beta$ specified by the model is the following.

$$X\beta = \beta_0 + \sum_{i=1}^{n}\beta_{1i}X_i + \sum_{i=1}^{n}\beta_{2i}X_i^2 + \sum_{i\neq j=1}^{n}\lambda_{1ij}X_iX_j + \sum_{i\neq j=1}^{n}\lambda_{2ij}X_i^2X_j + \sum_{i\neq j=1}^{n}\lambda_{3ij}X_iX_j^2 + \sum_{i\neq j=1}^{n}\lambda_{4ij}X_i^2X_j^2 \tag{4}$$

The vector of discrete demographic variables enter into the linear terms only.

$$r_i = \{Education, Employment, Rural/Urban, \text{Pr}ovince(1-8)\} \tag{5}$$

The vector of continuous demographic variables enter into the linear, interaction, and/or quadratic terms with themselves.

$$w_i = \{Age, Income, HHsize\} \tag{6}$$

The vector of continuous dietary variables enter into the linear, interaction, and/or quadratic terms with themselves only.

$$z_i = \{Rice, Wheatflour, Grains, Cookingoil, Eggs, Meats, Sugars\} \quad (7)$$

Variable Descriptions

All variables are on a per household basis. The age variable represents the head of household age. The income variable represents totally monthly household income. The education variable represents the education level of the head of household. The employment variable represents the number of employed adults in the household. The HHsize variable denotes the number of household members. The Rural/Urban variable designates if the household is in a larger city or in a rural area. The Province (1-8) variables are eight separate dummy variables. The household receives a 1 for the province variable in which it resides, otherwise a 0.

Each dietary intake variable represents monthly household consumption of that particular food item. Monthly household food consumption was determined by examining changes in household inventory from the beginning to the end of each day, in combination with a weighing and measurement technique. Individuals were asked to report all food consumed away from home on a 24-hour recall basis. This information was used to supplement in-home food consumption.

The dependent variable, totally monthly household medical costs, represents monthly medical cash outlay, loss of pay due to days away from work, and finally the travel costs associated with medical care. The travel cost portion of this variable consists of the time spent traveling to and from the medical facility, as well as time spent waiting multiplied by 30% of the

daily wage rate[1]. Additionally, if any transportation costs were noted, it was added to the travel cost. If the sickness or injury resulted from days away from work, the number of days was multiplied by the daily wage rate to obtain a loss of pay estimate. It is our hope that total monthly medical costs will provide a relatively accurate estimate of all household costs of medical treatment in a given month.

Discussion of Results

A number of regressions were completed incorporating the continuous demographic variables in all terms and then only in the linear terms. The same was done with the continuous dietary variables. Regressions with and without the province variables were also completed. See Table 2 for a description of the model used in each regression.

Across regressions a number of variables were consistently significant at the .90 level. These included rice, wheatflour, meats, and the Hubei province with a positive impact on medical costs, and cookingoil with a negative impact on medical costs. The Henan province variable showed a negative significance in the first regression as well. The employment and rural/urban variables were also significant in the majority of the regressions at the .80 level. See Tables 3 and 4 for complete regression results.

Surprisingly rice intake had a positive impact on medical costs, which at first seems strange as it is a traditional food staple in China. However, white rice consumption is not healthy for those with diabetes, and hence, it seems reasonable that there may be a correlation between white rice consumption and diabetic medical issues. Meat intake was also positive indicating that increased consumption of meat products may lead to higher medical costs.

[1] Method of travel time cost estimation used by Chen *et al.* (2004).

Interestingly the interaction term between rice and meat positively impacted medical costs as well and was highly significant. Also, surprisingly cooking oil had a significant negative impact on medical cost. The Chinese have historically used large amounts of oil in the food preparation process, which may indicate that households which continue to self prepare foods and eat at home rather than consuming pre-prepared and/or processed foods or eating away from home have lower medical costs. The increased use of flour, including wheat flour, signifies increased consumption of breads, pastas, and flour based snacks. Eggs were found to be a significant positive influence on medical costs in regression A, but not in the others. Sugars were not significant in any of the regressions. However, as sweet foods tend to be less popular in China than in western countries, it may be that sugar consumption levels are still relatively small in China.

The positive significance of the employment variable may indicate that the larger the number of employed individuals in the household the more access to medical facilities. However, it may represent households with individuals who may be working in more sedentary professions and have a larger need for medical attention. The positive impact of the Rural/Urban variable denotes that households living in urban areas have higher medical costs. It is certainly possible that the availability of medical facilities may play a role here.

Residing the Hubei province had a significant positive impact on household medical costs. This province is a major agricultural production area for China and is rich in mineral deposits as well. Hubei is a primary tourist destination, as well as a commercial and distribution area due to its location on the Yangtze River. Per capita GDP in Hubei was 8319 yuan in 2002, which puts them at the top of the bottom 40% in comparison to other provinces (tdctrade, 2004). Hubai has recently seen large growth in its automobile, machinery, and textiles industries.

Interestingly, McDonalds and Coca-Cola have invested heavily in Hubei's food and beverage industries (tdctrade, 2004). This province seems to be a good example of an area of sustained economic growth. Residents have seen increases in annual per-capita GDP of 6.5% and an influx of western foods.

Policy Implications

Should China implement a nationwide campaign to educate citizens on the medical and economic implications of dietary choice? Would such a campaign work? Studies in the U.S. and abroad find health information to be a significant factor in consumer food choice. Carlson and Gould (1994) find that information regarding dietary fat intake was a significant factor in the food choices made by the household meal planner. Chern *et al.* (1995) examine the link between health information and food demand based on FDA Health and Diet Surveys from 1978-1988. They find that health information elasticities are positive for corn and soybean oils and negative for butter and lard. Kim and Chern (1999) show that increasing health information reduces the consumption of hog grease, tallow, and palm oil, but increases the consumption of fish oil in Japan.

Yu *et al*. (1999) in a study of the impact of the Tianjin (China) intervention project for body mass, blood pressure, and salt consumption, find that from 1989 to 1996, hypertension and obesity dropped for the 45 to 64 age group, but increased for the 15-34 age group. Hypertension decreased by 23% in males and 27% in females (Zhai *et al.*, 2002). The project consisted of a series of health education and promotional activities. However, since significant impacts were only seen in older populations, the authors conclude that health education should be focused on younger age groups.

To date a comprehensive national dietary educational campaign in China does not exist, but various small scale and less organized projects have been initiated (Zhai *et al*., 2002). The Chinese Nutrition Society and the Chinese Academy of Preventive Medicine has published a set of dietary guidelines for Chinese residents, as well as numerous nutritional education pamphlets. The Ministry of Education launched a campaign to reduce teaching time in public schools to allow for increased physical activity time.

Summary and Conclusions

In this study we have examined the dietary and demographic impacts on medical costs, including loss of work, travel, and medical payments. As the results indicate, dietary choice does have an impact on medical costs in china, especially meats, flour, and rice products. Urban citizens also have higher medical costs, especially those in high economic growth zones. Increases in income and the availability of convenience foods in grocery stores and restaurants are likely culprits.

As Lino *et al.* (1999) point out, the Healthy Eating Index (HEI) which measures an individuals overall diet quality, increases as ones level of education and income rises in the U.S., but generally income has to be three or more times higher than the poverty line. Income levels in China will have to improve even more dramatically to move China to the next level, where higher incomes influence healthy dietary choice. In the meantime, government intervention in the form of dietary education may be useful in informing citizens of the potential personal and societal costs of food choice.

Table 1: Demographic summary statistics (N=800)

Variable	Description	Distribution %
Age	Reported age	Mean 45.19
Gender	0 female 1 male	50.4 49.6
Education	1. None 2. Primary school 3. Lower middle school 4. Upper middle school 5. Technical school 6. University or college 7. Unknown	.9 13.8 24.1 10.6 6.4 7.2 37
Household Income	Reported monthly income	Mean 597.77 yuan
Household Size	Interviewer count 1 person 2 people 3 people 4 people 5 people 6 people 7 or more	Mean 3.58 3.6 12.3 38.0 25.6 12.6 5.1 2.7
Employment Status	1. No adults employed 2. 1 adult employed 3. 2 or more adults employed	12 16.1 71.9
Rural/Urban	0 rural 1 urban	41.1 58.9
Rice	Household monthly rice consumption	Mean 50.7 kg
Wheat Flour	Household monthly wheat flour consumption	Mean 17.1 kg
Grains	Household monthly grain consumption	Mean 3.03 kg
Cooking Oil	Household monthly oil consumption	Mean 7.4 kg
Eggs	Household monthly egg consumption	Mean 5.4 kg
Meats	Household monthly meat consumption	Mean 10.8 kg
Sugars	Household monthly sugar consumption	Mean 1.5 kg

Table 2: Tobit A-G regression setup.

Variable Use	R-A	R-B	R-C	R-D	R-E	R-F	R-G
Discrete Demographic	Linear	Linear	Linear	Linear	Linear No provinces	Linear No provinces	Linear No provinces
Continuous Demographic	Linear Interaction Quadratic	Linear Interaction Quadratic	Linear Interaction	Linear	Linear	Linear Interaction Quadratic	Linear Interaction Quadratic
Continuous Dietary	Linear Interaction Quadratic	Linear	Linear Interaction Quadratic	Linear	Linear	Linear	Linear Interaction Quadratic

Table 3: Tobit parameter estimates for regression A.

Variable	Coefficient	Standard error	t-stat	P-value
Intercept	10.8	455.7	.02	.981
Rural/Urban	41.2	26.9	1.53	0.126
Education	3.6	4.0	.91	0.365
Employment	21.1	21.0	1.0	.315
Pr. Liaoning	-67.7	56.6	-1.20	0.231
Pr. Jiangsu	-	-	-	-
Pr. Shandong	-42.9	67.63	-0.64	0.525
Pr. Henan	-118.9	65.5	-1.81	0.070
Pr. Hubei	106.7	51.05	2.09	0.037
Pr. Hunan	-68.0	49.88	-1.36	0.173
Pr. Guangxi	-84.1	52.74	-1.59	0.111
Pr. Guizhou	-51.0	50.86	-1.00	0.316
Age	-2.16	14.17	-0.15	0.878
Age^2	.0215	.112	0.19	0.849
Income	-.46	1.16	-1.40	0.691
$Income^2$	.0003	.0005	0.67	0.505
HHsize	34.75	91.80	0.38	0.705
$HHsize^2$	-3.76	11.34	-0.33	0.740
AgeIncome	.019	.038	0.50	0.619
$Age^2Income$	-.0001	.00031	-0.49	0.626
$AgeIncome^2$	-.00001	.000018	-0.84	0.399
$Age^2Income^2$	1.27e-07	1.47e-07	0.87	0.387
HHsizeIncome	-.045	.253	-0.18	0.858
$HHsize^2Income$	.0049	.0319	0.16	0.877
$HHsizeIncome^2$	.00005	.0001	0.41	0.684
$HHsize^2Income^2$	-6.38e-06	.00001	-0.41	0.682
Rice	-3.66	1.250	-2.93	0.004
$Rice^2$	.0059	.0046	1.28	0.201
Wheatflour	2.38	1.030	2.31	0.021
$Wheatflour^2$	-.008	.0053	-1.59	0.113
Grains	1.10	1.892	0.58	0.561
$Grains^2$	-.0027	.0047	-0.59	0.558
Cookingoil	3.83	11.9	0.32	0.748
$Cookingoil^2$	-.0018	.457	-0.00	0.997
Eggs	7.987	5.241	1.52	0.128
$Eggs^2$	-.175	.1452	-1.21	0.228
Meats	-10.31	9.31	-1.11	0.268
$Meats^2$	.214	.2318	0.92	0.356
Sugars	5.51	9.7	0.57	0.570
$Sugars^2$	-.2005	.388	-0.52	0.606
RiceMeat	.6493	.1623	4.00	0.000
$Rice^2Meat$	-.0011	.0007	-1.69	0.091
$RiceMeat^2$	-.0102	.0046	-2.24	0.026
$Rice^2Meat^2$	.000251	.00002	1.07	0.285
CookingoilMeats	-2.08	1.65	-1.26	0.208
$Cookingoil^2Meat$	.03	.0591	0.51	0.610
$CookingoilMeats^2$	.019	.0382	0.52	0.602
$Cookingoil^2Meats^2$	-.0002	.0011	-0.18	0.854

Table 4: Tobit parameter estimates for regressions B through G.

Variable	R-B		R-C		R-D		R-E		R-F		R-G	
	Co.	t	Co.	t	Co.	t	Co.	t	Co.	t	Co.	t
Intercept	-188	-0.41	-165	-1.28	-193	-2.05	-145	-1.67	-252	-0.55	-188	-0.41
Rural/Urban	35.4	1.32	31.8	1.19	34.3	1.29	39.4	1.49	39.3	1.48	44.6	1.69
Education	4.19	1.03	4.22	1.04	4.27	1.05	5.07	1.25	4.95	1.21	4.2	1.04
Employment	25.8	1.21	26.8	1.30	29.5	1.44	36.9	1.84	30.9	1.47	24.0	1.15
Pr. Liaoning	38.4	0.71	62.4	1.14	41.8	0.79	-	-	-	-	-	-
Pr. Jiangsu	92.65	4.53	118	2.33	93.6	1.56	-	-	-	-	-	-
Pr. Shandong	43.51	0.82	61	1.05	34.8	0.67	-	-	-	-	-	-
Pr. Henan	-	-	23	0.38	-	-	-	-	-	-	-	-
Pr. Hubei	158.9	2.80	181	3.56	159	2.83	-	-	-	-	-	-
Pr. Hunan	.556	0.01	25	0.49	2.57	0.04	-	-	-	-	-	-
Pr. Guangxi	-17.3	-0.28	-	-	-20	-0.33	-	-	-	-	-	-
Pr. Guizhou	18.3	0.32	40	0.80	18	0.32	-	-	-	-	-	-
Age	-1.20	-0.08	.441	0.29	1.36	1.29	1.06	1.02	.659	0.05	.321	0.02
Age^2	.013	.012	-	-	-	-	-	-	.001	0.01	.005	0.05
Income	-.237	-0.20	-.06	-0.47	0.15	0.58	.017	0.67	-.093	-0.08	-.195	-0.17
$Income^2$	.0001	0.38	-	-	-	-	-	-	.0000	0.18	.0000	0.37
HHsize	53.23	0.57	4.47	0.29	1.19	0.12	.215	0.02	68.3	0.73	49.49	0.54
$HHsize^2$	-6.2	-0.54	-	-	-	-	-	-	-8.36	-0.72	-5.75	-0.51
AgeIncome	.0155	0.40	-	-	-	-	-	-	.015	0.38	.0155	0.40
$Age^2Income$	-.0001	-0.36	-	-	-	-	-	-	-.000	-0.40	-.000	-0.45
$AgeIncome^2$	-.00001	-0.67	-	-	-	-	-	-	-.000	-0.58	-.000	-0.66
$Age^2Income^2$	1.00e-07	0.67	-	-	-	-	-	-	9.32e-08	0.62	1.09e-07	0.73
HHsizeIncome	-.123	-0.48	-	-	-	-	-	-	-.158	-0.61	-.091	-0.36
$HHsize^2Income$	0.150	0.46	-	-	-	-	-	-	0.202	0.62	.011	0.35
$HHsizeIncome^2$	.00008	0.69	-	-	-	-	-	-	.0000	0.83	.000	0.56
$HHsize^2Income^2$	-.00001	-0.69	-	-	-	-	-	-	-.000	-0.87	-9.45 e-06	-0.60
Rice	.562	1.84	.56	1.86	.56	1.87	.587	2.06	.566	1.97	-2.88	-2.39
$Rice^2$	-	-	-	-	-	-	-	-	-	-	.0039	0.85
Wheatflour	1.09	1.85	1.02	1.75	1.04	1.79	.794	1.54	.856	1.65	1.827	1.96
$Wheatflour^2$	-	-	-	-	-	-	-	-	-	-	-.007	-1.38
Grains	.014	0.02	.022	0.04	.016	0.03	-.137	-0.22	-.126	-0.20	.819	.043
$Grains^2$	-	-	-	-	-	-	-	-	-	-	-.002	-0.49
Cookingoil	-6.15	-2.29	-6.3	-2.36	-6.2	-2.35	-5.79	-2.22	-5.68	-2.17	6.10	0.51
$Cookingoil^2$	-	-	-	-	-	-	-	-	-	-	-.040	-0.09
Eggs	.176	0.07	.379	0.15	.399	0.16	-.081	-0.04	-2.61	-0.11	5.02	1.08
$Eggs^2$	-	-	-	-	-	-	-	-	-	-	-.118	-0.88
Meats	2.88	1.79	2.95	1.86	2.89	1.82	2.62	1.75	2.67	1.75	-5.26	-0.57
$Meats^2$	-	-	-	-	-	-	-	-	-	-	.107	0.46
Sugars	1.755	0.36	1.87	0.38	2.08	0.43	2.59	0.54	2.18	0.45	4.927	0.53
$Sugars^2$	-	-	-	-	-	-	-	-	-	-	-.164	-0.43
RiceMeat	-	-	-	-	-	-	-	-	-	-	.5666	3.47
$Rice^2Meat$	-	-	-	-	-	-	-	-	-	-	-.000	-1.31
$RiceMeat^2$	-	-	-	-	-	-	-	-	-	-	-.008	-1.89
$Rice^2Meat^2$	-	-	-	-	-	-	-	-	-	-	.0000	0.77
CookingoilMeats	-	-	-	-	-	-	-	-	-	-	-2.20	-1.33
$Cookingoil^2Meat$	-	-	-	-	-	-	-	-	-	-	.0265	.069
$CookingoilMeats^2$	-	-	-	-	-	-	-	-	-	-	.0297	0.50

$Cookingoil^2Meats^2$	-	-	-	-	-	-	-	-	-	-	-.000	-0.25

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