The Effect of Health-Related Behaviors on Income across Provinces: A Panel Dataset

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Abstract

Although there are already many studies about how health-related behaviors such as alcohol consumption and physical exercise impact on earnings, most studies suggested the relation of earnings and each health-related behavior alone. This study uses longitude data from different waves to reconfirm, or to reevaluate, the relationship between 5 health-related behaviors and earnings, and to integrate locations factor into the relationship between health-related behaviors and earnings. OLS regression analysis is used to estimate the effects on earnings of various typical health-related behaviors variables including cigarette, tea, coffee, and alcohol consumption and physical exercise. In addition, using fixed effect model, the analysis reduces the bias of the estimation caused by omitted variables to the greatest extent and indicates the relation of income and other tradition variables such as occupation and experience. Finally, interaction effect model is used to examine the disparity between inland and coastal provinces. The results show that alcohol, tea, and coffee consumption, and adequately physical exercise all have significant positive effects on income. Only cigarette consumption has a negative association with income. Furthermore, most health-related behaviors variables do not show the income disparity between inland and coastal provinces when taking the location variable into interaction effect model. Health-related behaviors do not contribute more benefits neither to workers in inland provinces nor those in coastal provinces.

Keywords

1. Introduction

The relationship between health-related behaviors and income is well understood through recent studies. Poor health may cause low efficiency during work

and lead to low socioeconomic status. People who perform well in health-related behaviors may have a better body to support ones daily work, thus better income. From another perspective, people with higher socioeconomic status may also have greater access to healthier behaviors such as indoor fitness activities, eventually training oneself a stronger body. It is hard to confirm whether income cause health problems or health status will impact income. Although the issue of a casual relationship is not yet proven by extant literature, the correlative relationship between health-related behaviors and income can be illustrated by data.

Furthermore, the income distribution in China is unequal as researchers have noticed. The household income from coastal provinces is higher than that from inland provinces. Under this context, it is significant to show that the unequal distribution of income still exists in China regardless of impacts of common factors that may influence income. The government can then make more efficient public policies, which need or need not related to health-related behaviors, to reduce the unequal problem.

In this research, we used data from CHNS in order to verify our propositions about the relationship between health-related behaviors and incomes.

2. Literature Review

It is well established that there is a strong positive correlation between individual's earning and one's health-related behaviors. I consider alcohol assumption, smoking, participation in physical exercise, and tea drinking as typical health-related behaviors and use these to evaluate the correlative relationship.

Susan L. Etna estimated the constitutional effects of income on health measures, including average daily alcohol consumption and work and functional limitations (Ettner, 1996). Susan used a two-stage instrumental variable estimation method applied to cross-sectional data to produce constant assessments of the effect of income on various health proxies. The result revealed that increase in income is strongly positive correlated to one's health status; however, the assumption of heavy drinking did not decrease, as this result reflects the prevalence of light social drinking among those of high socioeconomic status. In 2011, a group of researchers from University of Michigan and Columbia University analyzed the socioeconomic and health information from a multi-generational sample (Cerdá, Johnson-Lawrence, & Galea, 2011). From investigation of a lifetime income patterns alcohol consumption, Magdalena Cerda concludes that if the household income is consistently low from one's childhood to adulthood, one would have higher probability be struggle in heavy drink. People with lower incomes are generally associated with a higher likelihood of abstinence and heavy drinking, and a lower likelihood of light/moderate drinking. Moderate drinker has a higher probability to gain a better income than drinking abstention as found in M. Christopher Auld's research (Auld, 2005). Auld asserts alcohol and cigarettes using as "endogeneity" of substance abuse to income due to the high correlation of smoking and drinking. Regard of this, the estimation shows that smoking penalty

earns 24 percent less than nonsmokers after correcting for endogeneity.

In 2004, Chinese researchers published a review of studies conducted in China on the possible health benefits of tea (Zhu, Huang, & Tu, 2006). Either by reviewing past literature, or highlighting epidemiological studies and clinical trials, they reinforced the benefits of tea such as its potential inhibitory effect on carcinogenesis and its effects on reducing blood lipid levels and preventing plaque formation in the aorta. Such benefits are also mentioned and supported with further research in a paper written by Chung S. Yang and Janelle M. Landau (Yang & Landau, 2000). As mentioned in Susan Ettner's article, standard economic theory predicts that healthy people will have higher labor force participation rates and higher wages, which translates into higher earnings. Tea has visible good effects on one's health; hence, it is reasonable to suspect the positive correlation between tea drinking and income.

In 2020, E. D. Tovar-García used Russian longitude data to develop a regression analysis of the relationships between specific types of sports/exercise and earnings (Tovar-García, 2021). Participation in sports/exercise indicates higher productivity, which should translate into higher wages. People who earn money have a higher potential participating in physical exercise. Tovar-García concluded that high income is highly correlated to fitness activity, mainly indoor fitness activity, but not weakly correlated to team sports and even negative significant associations with activities like bicycling and pleasure walking.

As mentioned in The China Quarterly, Azizur Rahman Khan, Keith Grifn, Carl Riskin and Zhao Renwei pointed out that although urban income inequality has decreased after the reform and opening, the distribution of income still has some inequality in China (Khan, Griffin, Riskin, & Zhao, 1992). Rural disparity, for example, is greater: Public policies exacerbate this inequality—the average rural household pays 2 percent of its income as net taxes, while the average urban household receives a net subsidy of nearly two-fifths of its income. In 2005, Peter Pedroni and James Yudong Yao developed non-stationary panel techniques to empirically support that, since the reforms, the long-run trend is toward continued income divergence at the provincial level, and they concluded that economic developments of all coastal provinces are better and faster (Pedroni & Yao, 2006).

Numerous studies focused on China disparity conditions after the open-door economic reforms of the late 1970s. Nonetheless, the degree to which the inequality of average income between coastal versus inland provinces is affected by the factors of health-related behaviors has basically been ignored in most studies. Hence, this paper aims to fill in these blank areas.

3. Research Question

Based on an analysis of past literature, I found that little analysis considered the relationship between income and overall health-related behaviors all together, and there was a lack of analysis of the extent to health-related behaviors affected

the income disparity in China between coastal and inland provinces. Therefore, this study mainly focuses on the following aspects.

In terms of quantitative data, this study will also select data from recent years, from 2000 to 2015. In terms of region selections, this study also groups provinces with significant geographical location into coastal provinces and inland provinces for analysis.

1) To reconfirm the relationship between income and health-related behaviors, considered smoking, drinking tea, drinking alcohol, and physical exercise as typical health-related behaviors together.

2) Does the disparity between coastal and inland provinces still exists under all other conditions including health-related behaviors in equal status.

4. Methodology

4.1. Data

The data are taken from China Health and Nutrition Survey (CHNS) from 6 waves (over the years 2000-2015) to create a panel dataset.[1] CHNS is an international collaborative project designed to examine the effects of government public policies related to health on the health status of its population. The sample consists of 30000 observations in 15 provinces and several municipal cities.

The sole dependent variable in this study is annual income. In the sample, the average annual income was 8180.27 yuan in 2000 and 33,807.15 in 2015. In the regression analysis, this variable is taken in logarithms to meet a more normal distribution. The explanatory variables include education and experience length, current health status, health-related habits, primary occupation, and other such as individual's sexuality and location. Respondents reported their years of schooling, and the ages minus years of school and 6 account for the length of working or social experience as 6 is the age that usually the child attend a school. For current health status, aggregation levels are used as follows: 1) Excellent or good (43% of respondents indicating yes); 2) Fair (23%); 3) Poor (0.04%). To approach health-related habits, the research asked the respondents to indicate either they do follow behaviors or not: smoking, heavily drinking alcohol, drinking tea, adequately exercising, and drinking coffee. Mean we got from the regression analysis accounting for the percentage of observation who did do the behavior; take drinking tea (mean = 0.32, SD = 0.47) as an example: 32 percent of all 12,751 respondents have a tea-drinking habit. Different occupations will have different pay for their labor, so we classify primary occupation as technical worker, manager, office staff, farmer, worker and the other.

In addition to record their primary occupation, this study also considers other factors such as the sexuality of respondents and their living location' whether live in urban or inland provinces.

We conclude descriptive statistics in the below chart (Table 1). This table records the data needed in the study year by year.

Table 1. Descriptive statistics.

		2000				2004			
Variables	Observation	Mean	S.D.	Min	Max	Observation	Mean	S.D.	Min	Max
Yearly Income	9365	8180.27	9631.76	-12413.79	172631.60	7470	9883.97	12210.83	17.32	225000.00
Education and Experience										
Schooling(years)	12496	7.02	4.12	0	18	11549	7.36	4.23	0	18
Experience(age - years schooling - 6)	11574	26.43	19.80	0	94	10823	30.83	19.49	0	52
Health Status										
Excellent/ Good	15831	0.43	0.50	0	1	12308	0.54	0.50	0	1
Fair	12751	0.23	0.42	0	1	12124	0.29	0.45	0	1
Poor	12751	0.04	0.20	0	1	12124	0.06	0.24	0	1
Habits(% sample reporting)										
Smoking or not	12598	0.23	0.42	0	1	11745	0.24	0.43	0	1
Heavily drinking alcohol	15518	0.11	0.31	0	1	12180	0.13	0.33	0	1
Drinking tea	12751	0.32	0.47	0	1	12124	0.32	0.46	0	1
Adequately exercising	12752	0.15	0.36	0	1	12180	0.12	0.33	0	1
Drinking Coffee	12751	0.01	0.10	0	1	12124	0.02	0.14	0	1
Jobs										
Tech worker	12580	0.05	0.21	0	1	10017	0.04	0.21	0	1
Manager	12580	0.03	0.16	0	1	10017	0.03	0.16	0	1
Office staff	12580	0.03	0.17	0	1	10017	0.02	0.15	0	1
Farmer	12580	0.38	0.49	0	1	10017	0.26	0.44	0	1
Worker	12580	0.12	0.32	0	1	10017	0.09	0.28	0	1
Other job	12580	0.12	0.33	0	1	10017	0.10	0.30	0	1
Other										
Being a female	15518	0.49	0.50	0	1	12180	0.51	0.50	0	1
Living in urban areas	12752	0.33	0.47	0	1	12180	0.33	0.47	0	1
Living in inland provinces	9365	0.54	0.50	0	1	7470	0.53	0.50	0	1

		2006				2009			
Variables	Observation	Mean	S.D.	Min	Max	Observation	Mean	S.D.	Min	Max
Yearly Income	7123	13043.28	18394.69	-18067.28	366671.40	7548	19800.18	30558.89	-136629.20	730000.00
Education and Experience										
Schooling(years)	11137	7.39	4.58	0	18	11284	7.49	4.46	0	18
Experience(age - years schooling - 6)	10480	32.75	19.41	0	90	10611	34.15	19.26	0	92
Health Status										
Excellent/ Good	11860	0.53	0.50	0	1	12178	--	--	0	0
Fair	11741	0.29	0.45	0	1	11929	--	--	0	0
Poor	11741	0.06	0.25	0	1	11929	--	--	0	0
Habits(% sample reporting)										
Smoking or not	11321	0.24	0.42	0	1	11583	0.24	0.43	0	1
Heavily drinking alcohol	11742	0.13	0.33	0	1	11930	0.12	0.32	0	1
Drinking tea	11741	0.30	0.46	0	1	11929	0.31	0.46	0	1
Adequately exercising	11742	0.12	0.33	0	1	11929	0.11	0.32	0	1
Drinking Coffee	11741	0.02	0.13		1	11929	0.02	0.15	0	1
Jobs										
Tech worker	9912	0.05	0.21	0	1	10163	0.05	0.21	0	1
Manager	9912	0.02	0.15	0	1	10163	0.02	0.15	0	1
Office staff	9912	0.03	0.16	0	1	10163	0.03	0.16	0	1
Farmer	9912	0.27	0.45	0	1	10163	0.26	0.44	0	1
Worker	9912	0.09	0.29	0	1	10163	0.09	0.29	0	1
Other job	9912	0.12	0.32	0	1	10163	0.12	0.33	0	1
Other										
Being a female	11742	0.51	0.50	0	1	11930	0.51	0.50	0	1
Living in urban areas	11742	0.33	0.47	0	1	11929	0.33	0.47	0	1
Living in inland provinces	7123	0.53	0.50	0	1	7548	0.52	0.50	0	1

		2011				2015			
Variables	Observation	Mean	S.D.	Min	Max	Observation	Mean	S.D.	Min	Max
Yearly Income	10,021	24370.49	29539.88	-417285.30	714285.70	10,373	33807.15	74666.31	-84782.76	4528302.00
Education and Experience										
Schooling(years)	14,638	8.14	4.64	0	18	15,541	8.69	4.58	0	18
Experience(age - years schooling - 6)	13,747	34.08	19.22	0	94	14,396	34.86	19.24	0	94
Health Status										
Excellent/ Good	15,725	--	--	0	0	16,627	0.51	0.50	0	1
Fair	15,636	--	--	0	0	16,299	0.36	0.48	0	1
Poor	15,636	--	--	0	0	16,299	0.06	0.23	0	1
Habits(% sample reporting)										
Smoking or not	15,071	0.23	0.42	0	1	15,898	0.19	0.39	0	1
Heavily drinking alcohol	15,641	0.12	0.33	0	1	16,473	0.09	0.29	0	1
Drinking tea	15,636	0.34	0.47	0	1	16,299	0.00	0.00	0	0
Adequately exercising	15,639	0.16	0.37	0	1	15,291	0.11	0.31	0	1
Drinking Coffee	15,636	0.05	0.23	0	1	16,299	0.00	0.00	0	0
Jobs										
Tech worker	13,121	0.06	0.24	0	1	14,018	0.06	0.24	0	1
Manager	13,121	0.03	0.18	0	1	14,018	0.02	0.16	0	1
Office staff	13,121	0.04	0.19	0	1	14,018	0.05	0.21	0	1
Farmer	13,121	0.20	0.40	0	1	14,018	0.10	0.30	0	1
Worker	13,121	0.10	0.29	0	1	14,018	0.10	0.30	0	1
Other job	13,121	0.15	0.35	0	1	14,018	0.13	0.34	0	1
Other										
Being a female	15641	0.52	0.50	0	1	16473	0.51	0.50	0	1
Living in urban areas	15,639	0.40	0.49	0	1	15291	0.38	0.49	0	1
Living in inland provinces	10021	0.54	0.50	0	1	10373	0.56	0.50	0	1

4.2. Methods

The methods employed were to create a model; in which income is the dependent variables and all other variables such as educational experience, health status, and health-related behaviors status are independent variables; and estimate the correlative or casual relationship between income and health-related behaviors in a quantitative way.

4.2.1. OLS Regression Model

This study used Ordinary Least Square (OLS) regression for analysis of selected data from several years: 2000, 2004, 2006, 2009, 2011, and 2015. Natural logarithm of income has been applied to show the percentage change that can be affected by each factor. Results of OLS regression estimated coefficients of linear regression equations below that describe the relationship between income and other independent quantitative variables, with equation shown below.

$$Y_i = \beta_0 + \beta_1 \text{Smoking}_i + \beta_2 \text{Alcohol}_i + \beta_3 \text{Tea}_i + \beta_4 \text{Exercising}_i + \beta_5 \text{Coffee}_i + \beta_K X_{Ki} + \varepsilon_i \tag{1}$$

4.2.2. Fixed Effect Model

Although Ordinary Lease Square (OLS) has aimed to minimize the sum of square differences between the recorded and predicted values, namely income, the errors could be minimized further by the creation of a fixed effects model. Using this panel data where longitudinal observations are fixed, the fixed effects estimator is used as an estimator for the coefficients that are estimated in income regression model. Thus, I could control the bias due to omitted variables which are constant over time.

After countering all the time constant omitted variable, I can conclude the following equation:

$$\tilde{Y}_{it} = \beta_1 \tilde{X}_{it} + \cdots + \tilde{u}_{it} \tag{2}$$

4.2.3. Interaction Effect Model

To confirm the existence of inequality between coastal and inland provinces, this study created an interaction model. As income might not only depend on one's health-related behaviors, but also might be the result of one's location; an interaction effect occurred. This test determined whether one independent variable, such as drinking alcohol heavily, could create stronger positive correlation with income when the observation is in coastal province or when the observation is in inland province. The model also indicated the difference of the percentage of the extent of one independent variable could affect income.

5. Results

5.1. OLS Regression Results

According to Table 2, results suggest one's behavior of consuming cigarettes has a negative link with wage income. In other words, on average, people who

Table 2. Regression results by year.

VARIABLES	2000 Coef.	2000 Std. Err.	2004 Coef.	2004 Std. Err.	2006 Coef.	2006 Std. Err.	2009 Coef.	2009 Std. Err.	2011 Coef.	2011 Std. Err.	2015 Coef.	2015 Std. Err.
Education and Experience												
Years at School	0.031***	0.005	0.033***	0.006	0.044***	0.006	0.046***	0.005	0.039***	0.005	0.041***	0.006
Experience	0.053***	0.005	0.03***	0.006	0.026***	0.005	0.037***	0.005	0.019***	0.004	0.02***	0.005
Experience (squared)	-0.001***	0.000	0.000***	0.000	0.000***	0.000	-0.001***	0.000	0.000***	0.000	0.000***	0.000
Health												
Excellent/Good	0.264***	0.094	0.117	0.082	0.314***	0.078	---	---	---	---	0.494***	0.095
Fair	0.124	0.096	0.000	0.084	0.251***	0.081	---	---	---	---	0.366***	0.096
Missing	0.328***	0.124	0.405	0.372	-0.011	0.167	---	---	---	---	0.067	0.185
Habits												
Smoking												
Yes	-0.053	-0.035	-0.113***	0.041	-0.042	0.038	-0.041	0.037	-0.062**	0.031	0.04	0.040
Missing(Smoking)	0.162	0.179	0.941	0.628	-0.986**	0.384	-0.97	0.642	0.170**	0.073	0.343*	0.189
Heavily Drinking Alcohol												
Yes	0.047	0.035	0.058	0.041	0.083**	0.04	0.129***	0.041	0.028	0.033	-0.071	0.049
Missing(Alcohol)	0.065	0.074	-0.116	0.114	0.197	0.122	0.291**	0.14	0.030	0.096	0.016	0.278
Tea Drinking												
Yes	0.130***	0.028	0.078**	0.032	0.123***	0.030	0.050*	0.030	0.093***	0.023	---	---
Missing(Tea)	0.113	0.201	0.518*	0.303	0.552***	0.193	0.200	0.297	0.413	0.348	---	---
Adequately Exercise												
Yes	0.037	0.041	-0.015	0.048	0.118***	0.039	0.048	0.041	0.104***	0.028	0.079*	0.044
Missing(Exercise)	-0.051	0.049	-0.071	0.179	---	---	---	---	---	---	0.584**	0.28
Coffee Drinking												
Yes	0.062	0.108	0.250***	0.064	0.196***	0.065	0.117*	0.064	0.199***	0.035	---	---
Missing(Coffee)	-0.011	0.158	0.263	0.254	-0.245	0.269	-0.288	0.251	0.167	0.263	---	---
Occupation												
Tech Worker	0.211***	0.051	0.334***	0.050	0.393***	0.051	0.343***	0.047	0.349***	0.037	0.302***	0.041
Manager	0.228***	0.054	0.181***	0.063	0.390***	0.066	0.337***	0.068	0.339***	0.046	0.261***	0.060
Staff	0.118*	0.061	0.289***	0.055	0.289***	0.053	0.202***	0.060	0.204***	0.041	0.224***	0.043
Farmer	-0.732***	0.039	-0.909***	0.047	-0.563***	0.048	-0.490***	0.044	-0.453***	0.041	-0.484***	0.056
Worker	0.082**	0.040	-0.011	0.046	0.203***	0.044	0.101**	0.043	0.149***	0.032	0.134***	0.042
Missing(Occupation)	-0.649***	0.077	-0.758***	0.054	-0.795***	0.060	-0.612***	0.059	-0.543***	0.049	-0.837***	0.049
Additional Information												
Being Female	-0.081**	0.034	-0.223***	0.040	-0.193***	0.037	-0.093**	0.036	-0.150***	0.030	-0.115***	0.035
Living in Urban	0.127***	0.030	0.195***	0.033	0.252***	0.031	0.106***	0.030	0.098***	0.025	0.152***	0.030
Living in Inland Province	-0.242***	0.027	-0.058*	0.030	-0.150***	0.030	-0.016	0.027	-0.050**	0.023	-0.037	0.028
Constant	7.882***	0.131	8.432***	0.128	8.213***	0.127	8.669***	0.099	9.18***	0.082	9.045***	0.138
Observations	5,279		5,227		4,918		5,107		6,484		5,559	
R-squared	0.263		0.260		0.289		0.207		0.218		0.236	
Adjusted r-square	0.263		0.260		0.289		0.207		0.218		0.236	

Note: *** p<0.01, ** p<0.05, * p<0.1

smoked received higher wages compared to non-smokers. People who smoke have poor health, leading to lower productivity and resulting in lower earnings. Another possibility is that smokers will have potential health problems including but not limited to short-term diseases like fatigue and cough to long-term diseases such as lung cancer and chronic bronchitis. Hiring such employees will bring the risk of more financial burden to employers than do non-smoking employees; thus, employers will take this into account when hiring employees who smoke when consider compensation of the employees, resulting in the wages of smokers are at a disadvantage relative to others, who do not smoke.

To approach drinking behaviors, observations in most years indicates a positive association, except for the one in 2015, suggesting that people who have habits drinking alcohol have a greater potent to earn higher income. A reason for not meeting expectations could be that people who drink alcohol themselves attend more social occasions that contain alcohol. Another possibility is that people with more income have a higher capacity to consume alcohol and have higher consumption power to consume more alcohol.

Tea-drinking variable results match expectation in every wave. People who drink tea earn typical higher wages than those who do not drink tea. The reason for this trend is that besides the fact that drinking tea is good for one's health and makes one work more efficiently leading to an increase in income, it is also possible that tea drinkers themselves belong to a group of people who have a good income to have the leisure to drink tea. Or, similar to the drinking crowd, the habit of drinking tea increases the chances of this group to participate in business social occasions, which is also an opportunity to obtain higher income.

Regarding exercise status, adequately exercise presents statistically significant coefficient in 2006, 2011, 2015. This result confirms our expectation: people who take adequately exercise are more likely to have a better annual income. Adequate exercise can make people healthier, which generates higher labor productivity and then higher income. Another possibility for this effect is that people who have the habit of exercising can create stable social networks through group exercise, which helps to progress in work and increase income. More exercise may also improve non-cognitive skills such as teamwork, sociability, and following strict discipline, thus helping to increase earnings. This speculation can also be reflected in the previously mentioned literature (Tovar-García, 2021).

For coffee-drinking's part, data from 2000-2011 (missing recorded in 2015) strongly show statistically significant coefficients with the expected signs. Drinking coffee roundly increases wages in 6.2% to 25%, varied from years. People who drink coffee work longer hours awake; they work more hours and therefore earn more. Another possibility is that people with high income are more stressed; drinking coffee can help them relax and relieve stress, while people with higher income and less stressful work do not need to relieve stress by drinking coffee. As a result, people who have the habit of drinking coffee will have a higher income than those who do not have the habit of drinking coffee.

5.2. Fixed Effect Model Results

Under fixed effects models (Table 3), most results are like those reported with OLS regression model; the omitted variables, which are invariant as time changes, are excluded from the fixed effects models to reduce the bias. Except for one case, the evidence insignificantly suggests that people who smoke have a 2% more income than those who do not smoke. Results of other variables all match the results from OLS regression model: drinking habit increases one's income about 3.7%, adequately exercise increases one's income about 3%, and drinking coffee increases one's income about 3.3%.

Additionally, the results conducted from the fixed effects models suggest that people who have experienced one more education year have a 7.8% increase in annual income, compare to those who have not experienced the same education level. Likewise, having more work time increases the wages about 10.4% more than wages of people not doing so.

Fixed effect estimation significantly indicates the relationship between individual's occupation and one's income. For example, a technical worker has a 7.8% higher income than a person who does other job, which is all other type of job not included in the model; a manager earns 9% more than a person who does other job; an office staff earns 5.3% more; critically, a farmer earns 41.7% less; typical worker earns 11.1% more.

Table 3. Fixed effect estimation.

Variables	Year 2000 - 2015		Variables	Continue	
	Coef.	Std. Err.		Coef.	Std. Err.
Education/ Experience			Coffee-drinking		
Years of Education	0.078 ***	0.006	Yes	0.033 *	0.033
Experience	0.104 ***	0.006	Missing(Coffee)	-0.031	0.126
Experience, square	-0.001 ***	0.000	Occupation		
Health Status			Technical Worker	0.078 **	0.039
Excellent/Good	0.254 ***	0.056	Manager	0.090 **	0.041
Fair	0.178 ***	0.056	Office Staff	0.053	0.035
Missing (Health Status)	0.564 ***	0.057	Farmer	-0.417 ***	0.033
Habits			Worker	0.111 ***	0.031
Smoking					
Yes	0.020	0.031	Missing(Occupation)	-0.609 ***	0.035
Missing(Smoking)	-0.182	0.141	Additions		
Heavily Drinking Alcohol			Being Female	---	---
Yes	0.037	0.024	Living Urbanly	---	---
Missing (Alcohol)	-0.004	0.059	Constant	6.127 ***	0.142
Tea Drinking					
Yes	0.046 **	0.019	Observations	32574	
Missing(Tea)	0.369 ***	0.127	R-squared	0.218	
Adequately Exercise					
Yes	0.030 **	0.021	Adjusted R^2	0.218	
Missing(Exercise)	-0.041	0.062			

Note: *** p<0.01, ** p<0.05, * p<0.1

5.3. Interaction Effect Model Results

Finally, an interaction effect regression model is conducted by interaction terms between 5 different health-related behaviors and individual's location inland or coastal provinces. With few statistically significant results (Table 4), we cannot conclude that health-related behaviors have a strong association with location variable or can better help people in either location. This means we cannot prove the appearance of disparity between inland and coastal provinces with all other factors the same. Although results from 2006 (0.128) and 2011 (−0.100) suggest the interaction between smoking and living in inland provinces has a significant relationship with one's income, the coefficients of the regression model is too small, or too close to 0, to be used as an inference to consider such relationship as strong; thus, the results can be ignored. Only the interaction between location and either tea or coffee drinking behaviour demonstrates a significant relationship. Using interaction models with data in each wave can yield mixed results, but results generally suggest that tea-drinking behavior has more benefits on inland people's annual income while coffee-drinking behavior has more benefits to people in coastal provinces. This pattern can be explained by the different extent of foreign culture intervention faced by inland and coastal region: people in coastal provinces may deal with more global corporation matters and thus be affected more on coffee-drinking behaviors; while people in coastal provinces may interact with more foreigners who are used to drinking coffee during work and get higher income, people in inland provinces may have business occasions with tea.

6. Conclusion

The literature already highlighted the positive links of ones' wages with physical exercise and alcohol, coffee, and tea consumption; previous researchers have also indicated the negative link between cigarette consumption and income. The conclusions of this research are consistent with previous studies; therefore, policy makers need to pursue policies that facilitate practice of health-related behaviors

Table 4. Interaction effect for provinces.

VARIABLES	2000 Coef.	2000 Std. Err.	2004 Coef.	2004 Std. Err.	2006 Coef.	2006 Std. Err.	2009 Coef.	2009 Std. Err.	2011 Coef.	2011 Std. Err.	2015 Coef.	2015 Std. Err.
Health related activities												
Smoking * Inland	-0.079	0.060	0.097	0.067	0.128 *	0.066	0.065	0.061	-0.100 **	0.050	0.098	0.070
Heavily Drinking Alcohol * Inland	-0.020	0.069	-0.077	0.080	-0.054	0.079	-0.067	0.079	0.015	0.065	0.020	0.099
Tea Drinking * Inland	-0.021	0.055	-0.036	0.063	0.040	0.061	-0.020	0.057	0.127 ***	0.046	---	---
Adequately Exercise * Inland	0.023	0.080	-0.063	0.092	-0.034	0.074	0.019	0.076	-0.071	0.054	-0.020	0.087
Coffee Drinking * Inland	0.183	0.223	-0.237 *	0.127	-0.106	0.129	-0.078	0.126	-0.204 ***	0.068	---	---
Constant	7.866 ***	0.131	8.430 ***	0.129	8.234 ***	0.127	8.665 ***	0.100	9.174 ***	0.084	9.063 ***	0.138
Observations	5,279		5,227		4,918		5,107		6,484		5,559	
R-squared	0.263		0.262		0.290		0.208		0.220		0.237	
Adjusted R^2	0.263		0.262		0.290		0.208		0.220		0.237	

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

because those policies will increase worker's wages and improve average person's living standard.

This research is also a prompt to support public policies on individual's health-related behaviors access, especially for the sport facilities and alcohol consumption regulation, at the national level and for general public; these two variables present high associative relationship with personal income regardless of one's living location' living in coastal provinces or inland provinces do not contribute much to the income disparity.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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