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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Appendix**  **Table A1**. Coefficient estimates for healthcare utilization models. | | | | | | | | | | | | | | | | | | |
|  | Outpatient services | | | | | | Inpatient services | | | | | | Prescription drugs | | | | | |
|  | Use | | | Expenditure | | | Use | | | Expenditure | | | Use | | | Expenditure | | |
| Variable | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. |
| HHI | 0.020 | \*\*\* | 0.004 | 0.012 | \*\* | 0.005 | 0.002 |  | 0.002 | 0.014 |  | 0.029 | 0.032 | \*\*\* | 0.009 | 0.005 | \*\* | 0.002 |
| Store density | -0.001 | \* | 0.001 | -0.010 | \* | 0.006 | -0.001 |  | 0.002 | -0.009 |  | 0.006 | -0.003 |  | 0.006 | -0.000 | \* | 0.000 |
| Age | -0.001 | \*\*\* | 0.000 | 0.022 | \*\*\* | 0.000 | 0.002 | \*\*\* | 0.000 | 0.016 | \*\*\* | 0.000 | 0.000 | \*\*\* | 0.000 | 0.037 | \*\*\* | 0.000 |
| Male | -0.062 | \*\*\* | 0.001 | -0.142 | \*\*\* | 0.003 | -0.002 | \*\*\* | 0.001 | 0.102 | \*\*\* | 0.005 | -0.081 | \*\*\* | 0.001 | -0.034 | \*\*\* | 0.006 |
| Income | 0.005 | \*\*\* | 0.000 | -0.053 | \*\*\* | 0.002 | -0.006 | \*\*\* | 0.000 | -0.011 | \*\*\* | 0.001 | 0.001 | \*\* | 0.000 | -0.081 | \*\*\* | 0.002 |
| Labor insurance | 0.038 | \*\*\* | 0.001 | -0.033 | \*\*\* | 0.007 | -0.004 | \*\*\* | 0.001 | -0.102 | \*\*\* | 0.006 | 0.040 | \*\*\* | 0.001 | -0.109 | \*\*\* | 0.009 |
| Government insurance | 0.061 | \*\*\* | 0.001 | 0.117 | \*\*\* | 0.011 | -0.003 | \*\*\* | 0.001 | -0.130 | \*\*\* | 0.009 | 0.070 | \*\*\* | 0.002 | 0.080 | \*\*\* | 0.014 |
| Farmer insurance | 0.050 | \*\*\* | 0.001 | 0.008 |  | 0.008 | 0.007 | \*\*\* | 0.001 | -0.124 | \*\*\* | 0.008 | 0.055 | \*\*\* | 0.002 | -0.024 | \*\* | 0.011 |
| Medical institution | -0.003 |  | 0.002 | -0.002 |  | 0.007 | -0.001 |  | 0.001 | 0.008 |  | 0.016 | -0.006 |  | 0.004 | -0.002 |  | 0.009 |
| Beds | 0.000 |  | 0.000 | 0.000 |  | 0.000 | 0.000 |  | 0.000 | 0.001 |  | 0.001 | 0.000 |  | 0.000 | 0.000 |  | 0.001 |
| Medical personnel | 0.014 | \*\*\* | 0.004 | 0.008 |  | 0.011 | 0.003 |  | 0.002 | -0.010 |  | 0.027 | 0.021 | \*\*\* | 0.006 | -0.011 |  | 0.013 |
| Population | 0.010 | \*\*\* | 0.002 | -0.010 | \* | 0.006 | 0.000 |  | 0.001 | 0.013 |  | 0.010 | 0.006 | \*\* | 0.003 | -0.017 | \*\* | 0.009 |
| Air quality | 0.000 |  | 0.000 | 0.000 |  | 0.000 | 0.000 |  | 0.000 | -0.001 |  | 0.001 | 0.001 | \*\*\* | 0.000 | 0.001 | \*\* | 0.001 |
| Garbage | 0.000 |  | 0.000 | 0.001 | \*\* | 0.000 | 0.000 |  | 0.000 | 0.000 |  | 0.001 | 0.000 |  | 0.000 | 0.001 | \*\*\* | 0.001 |
| Dust | 0.000 | \*\* | 0.000 | 0.000 |  | 0.000 | 0.000 | \*\* | 0.000 | 0.001 | \*\* | 0.001 | 0.000 |  | 0.000 | 0.001 |  | 0.000 |
| Car density | 0.005 | \*\*\* | 0.001 | 0.005 |  | 0.004 | 0.000 |  | 0.001 | 0.012 |  | 0.009 | 0.006 | \*\*\* | 0.001 | 0.003 |  | 0.005 |
|  | | | | | | | | | | | | | | | | | | |

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| **Table A1**. Coefficient estimates for healthcare utilization models (continued). | | | | | | | | | | | | | | | | | | |
|  | Outpatient services | | | | | | Inpatient services | | | | | | Prescription drugs | | | | | |
|  | Use | | | Expenditure | | | Use | | | Expenditure | | | Use | | | Expenditure | | |
| Variable | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. |
| Motorcycle density | 0.056 | \*\*\* | 0.007 | 0.067 | \*\*\* | 0.025 | 0.008 | \*\* | 0.004 | 0.207 | \*\*\* | 0.065 | 0.089 | \*\*\* | 0.010 | 0.027 |  | 0.032 |
| Constant | 0.890 | \*\*\* | 0.008 | 7.999 | \*\*\* | 0.025 | 0.015 | \*\* | 0.006 | 9.577 | \*\*\* | 0.058 | 0.785 | \*\*\* | 0.016 | 5.765 | \*\*\* | 0.035 |
| Township fixed effects | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Year fixed effects | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| Township\*Time trend | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| *R2* | 0.021 | | | 0.127 | | | 0.021 | | | 0.111 | | | 0.016 | | | 0.192 | | |
| N\*T | 9,353,987 | | | 8,498,051 | | | 9,353,987 | | | 731,352 | | | 9,353,987 | | | 7,793,687 | | |

Notes: Standard errors are cluster-corrected at the township-level. \*\*\*, \*\*, \* indicate statistical significance at the 1%, 5% and 10% level.

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| **Table A2**. Coefficient estimates for NHIST obesity and BMI Z-score models. | | | | | | | | | | | | | | | | | | |
| Dependent Var. | Obesity | | | | | | | | | BMI Z-score | | | | | | | | |
|  | Full sample | | | Urban sample | | | Rural sample | | | Full sample | | | Urban sample | | | Rural sample | | |
| Variable | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. | Coefficient | | S.E. |
| HHI | 0.034 | \*\*\* | 0.010 | 0.021 | \* | 0.011 | 0.056 | \*\*\* | 0.001 | 0.137 | \*\* | 0.052 | 0.138 |  | 0.111 | 0.203 | \*\*\* | 0.018 |
| Store density | -0.015 | \* | 0.081 | -0.024 |  | 0.022 | -0.028 | \*\*\* | 0.005 | -0.081 | \* | 0.047 | -0.110 |  | 0.081 | -0.109 | \* | 0.062 |
| Age | 0.002 | \*\*\* | 0.000 | 0.002 | \*\*\* | 0.000 | 0.002 | \*\* | 0.001 | 0.021 | \*\*\* | 0.001 | 0.021 | \*\*\* | 0.001 | 0.017 | \*\*\* | 0.002 |
| Male | 0.060 | \*\*\* | 0.010 | 0.059 | \*\*\* | 0.013 | 0.065 | \*\*\* | 0.004 | 0.290 | \*\*\* | 0.051 | 0.294 | \*\*\* | 0.062 | 0.274 | \*\*\* | 0.012 |
| Junior high | -0.063 | \*\*\* | 0.009 | -0.064 | \*\*\* | 0.010 | -0.060 | \*\*\* | 0.013 | 0.005 |  | 0.066 | -0.007 |  | 0.079 | -0.035 | \*\* | 0.015 |
| Senior high | -0.063 | \*\*\* | 0.013 | -0.061 | \*\*\* | 0.010 | -0.071 | \* | 0.035 | 0.035 |  | 0.065 | 0.034 |  | 0.070 | -0.046 |  | 0.051 |
| College | -0.093 | \*\*\* | 0.013 | -0.093 | \*\*\* | 0.010 | -0.092 | \*\* | 0.032 | -0.031 |  | 0.063 | -0.033 |  | 0.065 | -0.118 | \* | 0.066 |
| Graduate | -0.117 | \*\*\* | 0.020 | -0.126 | \*\*\* | 0.009 | -0.027 |  | 0.063 | -0.038 |  | 0.071 | -0.065 |  | 0.052 | 0.095 |  | 0.102 |
| Employment | 0.019 | \*\*\* | 0.006 | 0.017 | \*\*\* | 0.005 | 0.027 |  | 0.021 | 0.143 | \*\*\* | 0.033 | 0.142 | \*\*\* | 0.038 | 0.161 | \*\*\* | 0.009 |
| Income | -0.001 |  | 0.001 | -0.001 |  | 0.001 | -0.003 | \*\*\* | 0.001 | -0.006 | \*\*\* | 0.002 | -0.006 | \*\*\* | 0.002 | -0.007 | \*\*\* | 0.000 |
| HHSIZE | 0.000 |  | 0.000 | 0.000 |  | 0.000 | 0.000 |  | 0.001 | 0.000 |  | 0.000 | 0.000 |  | 0.000 | 0.005 | \*\* | 0.002 |
| Area | 0.011 | \*\*\* | 0.002 | 0.009 |  | 0.006 | 0.011 | \*\*\* | 0.003 | 0.031 | \*\* | 0.013 | 0.070 |  | 0.046 | 0.030 | \*\*\* | 0.009 |
| Population | 0.002 | \* | 0.001 | 0.002 |  | 0.002 | 0.008 | \*\*\* | 0.000 | -0.005 |  | 0.019 | -0.008 |  | 0.025 | 0.009 | \*\* | 0.004 |
| Medical institution | -0.018 |  | 0.067 | -0.020 |  | 0.065 | -0.016 |  | 0.011 | -0.072 | \*\* | 0.034 | -0.085 | \*\* | 0.036 | -0.015 |  | 0.020 |
| Beds | 0.000 |  | 0.000 | 0.000 |  | 0.001 | -0.001 |  | 0.003 | -0.001 |  | 0.002 | -0.001 |  | 0.002 | -0.002 | \*\*\* | 0.000 |
| Medical personnel | 0.043 | \*\*\* | 0.005 | 0.047 | \*\*\* | 0.005 | 0.029 | \* | 0.017 | 0.148 | \*\*\* | 0.031 | 0.176 | \*\*\* | 0.025 | 0.032 |  | 0.083 |
| Constant | 0.094 | \*\*\* | 0.009 | 0.103 | \*\*\* | 0.018 | 0.074 | \*\* | 0.028 | -0.858 | \*\*\* | 0.037 | -0.859 | \*\*\* | 0.079 | -0.774 | \*\*\* | 0.100 |
| County FE | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | | Yes | | |
| *R2* | 0.027 | | | 0.026 | | | 0.034 | | | 0.291 | | | 0.309 | | | 0.146 | | |
| *N* | 22,423 | | | 17,606 | | | 4,817 | | | 22,423 | | | 17,606 | | | 4,817 | | |

Notes: Sampling weights are used and standard errors are cluster-corrected at the county-level. \*\*\*, \*\*, \* indicate statistical significance at the 1%, 5% and 10% level.

**Table A3**. Percentage of total sales for products sold at convenience stores.

|  |  |  |
| --- | --- | --- |
|  | All products | Private label products |
| General food products | 10% | 3% |
| Meal boxes, ready-to-eat food | 15% | 51% |
| Non-alcoholic drinks | 25% | 12% |
| Coffee | 6% | 29% |
| Alcoholic drinks | 6% | 0.5% |
| Cigarettes | 28% | - |
| Personal items | 3% | 5% |
| Books and magazines | 3% | - |
| Other products | 2% | <0.001% |
| Services | 3% | - |
| Total | 100% | 100% |

Notes: These data are from the TFTC (2016).