**Appendix 1:**

**Socioeconomic characteristics of Dangyang and Zhijiang**

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| --- | --- | --- |
| 说明: E:\我的坚果云\GIS\新建文件夹\省2.jpg | 县21 | Socioeconomic characteristics of Dangyang(1)Administrative districts: 10 towns(2)Population: 486 thousand (3)Aging population rate: 18.7% (4)Urbanization rate: 50.0%(5)Per capita annual income (urban/rural): 27433/16928 yuan |
| 说明: E:\我的坚果云\GIS\新建文件夹\市2.jpg | Socioeconomic characteristics of Zhijiang(1)Administrative districts: 9 towns(2)Population: 496 thousand (3)Aging population rate: 15.2% (4)Urbanization rate: 54.0%(5)Per capita annual income (urban/rural): 23675/15285 yuan |

**Appendix 2:**

**1.PSM model**

**1.1 PSM model setting[21-23]**

A propensity score is the probability of a unit (e.g. person, classroom, school) being assigned to a particular treatment given a set of observed covariates. Propensity scores are used to reduce selection bias by equating groups based on these covariates. For the marked individual I, suppose that we have a binary treatment T (T=0 denotes being assigned to the control group, T=1 denotes being attached to the control group), an outcome Y (Propensity Score), and background variables X (Sex, age, annual income and blood pressure). The propensity score is defined as the conditional probability of treatment given background variables:

Let Y(0) and Y(1) denote the potential outcomes under control and treatment, respectively. Then treatment assignment is (conditionally) unconfounded if possible results are independent of treatment conditional on background variables X. This can be written compactly as:

Where ⊥ denotes statistical independence.

If unconfoundedness holds, then

**1.2 The parameter setting of Standardized Difference in PSM**

For dichotomous variables, the standardized difference is defined as

In formula (4), pT and pC denote the proportion of treated and untreated subjects, respectively, for whom the condition denoted by the dichotomous variables is present.

For continuous variables, the standardized difference is defined as

In formula (5), and denote the mean of the continuous variable in treated and untreated subjects, respectively. and denote the variances of the continuous variable in the treated and untreated subjects, respectively. It has been suggested that a standardized difference of greater than 10 percent represents meaningful imbalance in a given variable between treatment groups.

**2. Difference-in-differences model setting** [24, 25]

The DID method pretends to capture the effects related to event through time between a treatment group and a control group. For the observed individual *I*, the basic settings for DID model were:

*yi = β0 + β1*·*timei + γ*·*groupi + δ*·*groupi*·*timei +εi.*

The estimated coefficients in this linear regression had the following interpretation:

: Mean outcome for the control group at baseline.

*+*: Mean outcome for the control group at follow-up.

: The single difference between treatment and control groups at baseline.

*+*: Mean outcome for the treatment group at baseline.

*+**+**+*: Mean outcome for the treatment group at follow-up.

: The DID or impact of the intervention.

*εi*: The random error.