**Table S1.** Principal component score coefficient matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicator** | **Code** | **Principal component score coefficient** | | | |
| **Principal Component 1** | **Principal Component 2** | **Principal Component 3** | **Principal Component 4** |
| Zscore(K1(Outcoming)) | X1 | 0.055 | 0.003 | -0.026 | 0.754 |
| Zscore(K1(Incoming)) | X2 | -0.02 | -0.065 | 0.007 | 0.549 |
| Zscore(K2(Outcoming)) | X3 | 0.085 | 0.195 | 0.00 | -0.092 |
| Zscore(K2(Incoming)) | X4 | -0.086 | 0.199 | -0.05 | 0.093 |
| Zscore(K3(Outcoming)) | X5 | 0.096 | 0.187 | -0.032 | -0.026 |
| Zscore(K3(Incoming)) | X6 | -0.077 | 0.189 | -0.093 | 0.181 |
| Zscore(K4(Outcoming)) | X7 | 0.12 | 0.185 | -0.048 | -0.032 |
| Zscore(K4(Incoming)) | X8 | -0.094 | 0.195 | -0.055 | 0.088 |
| Zscore(K5(Outcoming)) | X9 | 0.025 | 0.042 | 0.531 | 0.03 |
| Zscore(K5(Incoming)) | X10 | 0.038 | 0.049 | 0.522 | 0.063 |
| Zscore(K6(Outcoming)) | X11 | 0.202 | 0.019 | -0.043 | -0.063 |
| Zscore(K6(Incoming)) | X12 | -0.194 | 0.048 | 0.064 | -0.1 |
| Zscore(K7(Outcoming)) | X13 | -0.196 | 0.049 | 0.07 | -0.096 |
| Zscore(K7(Incoming)) | X14 | 0.198 | 0.019 | -0.021 | -0.075 |

**Table S2.** Results of metro station classification

|  |  |  |  |
| --- | --- | --- | --- |
| **Cluster** | **Type** | **Number** | **Typical Station name** |
| 1 | Residence-oriented type | 47 | Beizulin, Benxi Road, Bianxing, University of Finance and Economics, Changling Road, Chenglin Road, Cuifu New Village, Dengzhou Road, Donggu Road, No. 2 Bridge, Gaozhuangzi, Guoshan Road, Hongqi South Road, Honghuli, Hujiayuan, Huashanli, Jiayuanli, Jianchang Road, Jiefang South Road, Mustard Garden West Road, Jinshi Bridge, Jinzhonghe Street, Jinzhong Street, Jingjiang Road, Lilou, Liahe North Road, Liu Yuan, Meilin Road, Minquanmen, South Station, Ruijing Xinyuan, Shuanglin, Shunchi Bridge, Siyuan Road, Tanggu, Tiantai Road, Tiedong Road, Wangdingdi, Xiaodongzhuang, Yixingbu, Yixingbu North, Yudongcheng, Yueya River, Zhangguizhuang, Zhangxingzhuang, Zhicheng Road, Zhongshanmen |
| 2 | Employment-oriented type | 19 | Anshan Road, Dawangzhuang, Donghai Road, Southeast Corner, Gaoxin District, Gulou, Haiguangsi, Heping Road, Huayuan, Exhibition Center, Jianguo Road, Jinwan Square, Eleventh Jing Road, East Water Park Road, Sports Center, Cultural Center, Xiaobailou, Xuefu Industrial Zone, Yingkou Road |
| 3 | Residence-oriented hybrid type | 28 | Beichen Road, Beichen Science and Technology Park North, Beining Park, Caozhuang, Dabizhuang, University City, Dongting Road, Fuxingmen, Steel Pipe Company, Huaihe Road, Jintang Road, Military Food City, Meijiang Park, South Cuiping, Qinjian Road, People's Hospital, Xianyang Road, Xinli, Happiness Park, Yang Wuzhuang, No.1 Bridge, Yibin Road, Yingfeng Road, Changhong Park, Vocational University, Zhongshan Road, First Affiliated Hospital of Traditional Chinese Medicine, Zuojiang Road |
| 4 | Employment-oriented hybrid type | 17 | Anshan West Road, Dongxing Road, Erwei Road, Guorui Road, Paradise Road, Lingbin Road, Nanhezhuang, Nanlou, Nansunzhuang, Citizen Square, Taihu Road, Tianjin Hotel, Tianta, Northwest Corner, Xikang Road, Xinkaihe, Xuzhuangzi |
| 5 | Residence-employment mixed type | 28 | North Station, Chen Tangzhuang, Danhe North Road, Dongli Development Zone, Fountain River Road, Fuxing Road, Guangkai Fourth Road, Heiniucheng Road, North China Group, Jianshan Road, Airport Economic Zone, Meijiang Road, Meijiang Exhibition Center, Taida, Tianshi Li, Tiantu, Tucheng, Foreign Hospital Annex, Wujiayao, Southwest Corner, Southwest Building, Xiaowafang, Xiaodian, First Central Hospital, Ocean International Center, Zhigu, Cancer Hospital, Zhou Deng Memorial Hall |
| 6 | Special functional type | 4 | Tianjin Station, Tianjin West Station, Binhai International Airport, National Convention and Exhibition Center |