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**Supplementary file 1.** Contains Tables S1- S5
### Table S1. The sample data of outpatient visits

| Date     | Sex       | Age (years) | Marriage  | Education                                      | ICD 10                  | Number of outpatient visits |
|----------|-----------|-------------|-----------|------------------------------------------------|-------------------------|----------------------------|
| Distinct values: | Distinct   | Distinct 0; | Distinct  | Distinct values:                                | Distinct values:        |                            |
| 2017-01-01; | values:    | 1;          | values:   | Elementary school or less;                      | A00-B99;                |                            |
| 2017-01-02; | Male;      | 2;          | Married;  | Middle school;                                  | C00-D48;                |                            |
| 2017-01-03; | Female;    | 3;          | Unmarried | High school or vocational school;               | D50-D89;                |                            |
| …       | Other      | 4;          |.;         | College/university or above                     | E00-E90;                |                            |
| 2017-02-01; |            | 5;          | Other     | F00-F99;                                       |                         |                            |
| 2017-02-02; |            | 6;          |           | G00-G99;                                       |                         |                            |
| 2017-02-03; |            | 7;          |           | H00-H59;                                       |                         |                            |
| …       |            | 8;          |           | H60-H95;                                       |                         |                            |
| …       |            | 9;          |           | I00-I99;                                       |                         |                            |
| 2018-01-01; |            | 10;         |           | J00-J99;                                       |                         |                            |
| 2018-01-02; |            | 11;         |           | J09-J11;                                       |                         |                            |
| 2018-01-03; |            | 12;         |           | J12-J18;                                       |                         |                            |
| …       |            | 13;         |           | J19-J99;                                       |                         |                            |
| …       |            | 14;         |           | K00-K93;                                       |                         |                            |
| Date       | Age Range | Codes                          |
|------------|-----------|-------------------------------|
| 2019-01-01 | 15-18     | L00-L99                       |
| 2019-01-02 | 19        | M00-M99                       |
| 2019-01-03 | 20-24     | N00-N99                       |
| ...        | 25-29     | O00-O08                       |
| ...        | 30-34     | O10-O16                       |
| 2020-01-01 | 39        | O20-O29                       |
| 2020-01-02 | 40-44     | O30-O48                       |
| 2020-01-03 | 45-49     | O60-O75                       |
| ...        | 50-54     | O80-O84                       |
| ...        | 55-59     | O85-O92                       |
| 2020-04-28 | 60-64     | O94-O99                       |
| 2020-04-29 | 65-69     | P00-P96                       |
| 2020-04-30 | 70-74     | Q00-Q99                       |
|           | 75-79     | S00-T35+V01-V99+W00-X19+X30-X39+Y20- |
|           | ≥80       | Y31                           |
|           |           | T36-T65+X20-X29+X40-X49+Y10-Y19; |
|           |           | U04                           |
|           |           | V01-V99+Y32;                 |
|           |           | X60-X84;                      |
Table S2. The sample data of outpatient expenditure

| Date      | Sex      | Age (years) | Marriage | Education                        | Number of outpatient visits | Total of outpatient expenditure |
|-----------|----------|-------------|----------|----------------------------------|-----------------------------|---------------------------------|
| 2017-01-01; | Distinct | 0;          | Distinct | Distinct values:                 |                             |                                 |
| 2017-01-01; | values:  | 1;          | values:  | Elementary school or less;       |                             |                                 |
| 2017-01-02; | Male;    | 2;          | Married; | Middle school;                   |                             |                                 |
| 2017-01-03; | Female;  | 3;          | Unmarried; | High school or vocational school; |                             |                                 |
| ...       | Other    | 4;          | Other    | College/university or above      |                             |                                 |
| 2017-02-01; |          | 5;          |          |                                  |                             |                                 |
| 2017-02-02; |          | 6;          |          |                                  |                             |                                 |
| 2017-02-03; |          | 7;          |          |                                  |                             |                                 |
| ...       |          | 8;          |          |                                  |                             |                                 |
| ...       |          | 9;          |          |                                  |                             |                                 |
| 2018-01-01; |          | 10;         |          |                                  |                             |                                 |
| 2018-01-02; |          | 11;         |          |                                  |                             |                                 |
| Date            | Value |
|-----------------|-------|
| 2018-01-03;     | 12;   |
| ...             | 13;   |
| ...             | 14;   |
| 2019-01-01;     | 15-18;|
| 2019-01-02;     | 19;   |
| 2019-01-03;     | 20-24;|
| ...             | 25-29;|
| ...             | 30-34; 35-39;|
| 2020-01-01;     | 40-44;|
| 2020-01-02;     | 45-49;|
| 2020-01-03;     | 50-54;|
| ...             | 55-59;|
| ...             | 60-64;|
| 2020-04-28;     | 65-69;|
| 2020-04-29;     | 70-74;|
| 2020-04-30;     | 75-79;|
| ≥80             |       |
Table S3. Number of new COVID-19 cases in Yinchuan, Ningxia, and China in weeks of 2020

| Week | Yinchuan | Ningxia | China    |
|------|----------|---------|----------|
| 1    | 0        | 0       | 0        |
| 2    | 0        | 0       | 41       |
| 3    | 0        | 0       | 399      |
| 4    | 7        | 11      | 5534     |
| 5    | 13       | 22      | 18389    |
| 6    | 11       | 24      | 20367    |
| 7    | 2        | 13      | 29549    |
| 8    | 0        | 0       | 3911     |
| 9    | 3        | 4       | 2232     |
| 10   | 0        | 0       | 533      |
| 11   | 0        | 0       | 196      |
| 12   | 0        | 0       | 695      |
| 13   | 0        | 0       | 785      |
| 14   | 0        | 0       | 526      |
| 15   | 0        | 0       | 588      |
| 16   | 0        | 0       | 542      |
| 17   | 0        | 0       | 82       |
Table S4. The classifications of treatment purposes according to the International Classification of Diseases

10th version (ICD-10)

| Treatment purposes                                      | ICD-10 codes                          |
|--------------------------------------------------------|---------------------------------------|
| Diseases of the respiratory system                     | J00-J99                               |
| Pneumonia                                              | J12-J18                               |
| Influenza                                              | J09-J11                               |
| Diseases of the circulatory system                     | I00-I99                               |
| Diseases of the digestive system                       | K00-K93                               |
| Endocrine, nutritional and metabolic diseases          | E00-E90                               |
| Diseases of the musculoskeletal system and connective tissue | M00-M99                           |
| Diseases of the genitourinary system                   | N00-N99                               |
| Injury                                                 | S00-T35+ V01-V99+W00-X19+X30-X39+Y20-Y31 |
| Diseases of the skin and subcutaneous tissue           | L00-L99                               |
| Diseases of the nervous system                         | G00-G99                               |
| Diseases of the eye and adnexa                         | H00-H59                               |
| Diseases of the ear and mastoid process                | H60-H95                               |
| Certain infectious and parasitic diseases              | A00-B99                               |
| Diseases of the blood and blood-forming organs         | D50-D89                               |
| Neoplasms                                              | C00-D48                               |
| Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium | O10-O16                               |
Table S5. Results of the subgroup analyses of the autoregressive integrated moving average modelling for the association between PHC outpatient service use per week and the last week’s new COVID-19 cases in China, by age, sex, education, marital status, and diagnostic type of the outpatient visits

| Subgroup                      | The total number of outpatient visits per week | The total outpatient expenditure (million yuan) per week |
|-------------------------------|-----------------------------------------------|--------------------------------------------------------|
|                               | Coefficient | P-value         | Coefficient | P-value |
| Age                           |             |                 |             |         |
| 0-18                          | 0.006       | 0.503           | -0.00002    | <0.001  |
| 19-44                         | -0.168      | 0.414           | -0.00002    | <0.001  |
| 45-64                         | -0.311      | <0.001          | -0.00001    | 0.018   |
| ≥65                           | -0.273      | <0.001          | -0.00001    | 0.079   |
| Sex                           |             |                 |             |         |
| Male                          | -0.448      | <0.001          | -0.00003    | <0.001  |
| Female                        | -0.545      | <0.001          | -0.00004    | <0.001  |
| Education                     |             |                 |             |         |
| Elementary school or less     | -0.192      | 0.001           | -0.00001    | 0.023   |
| Middle school                 | -0.177      | <0.001          | -0.00001    | 0.023   |
| High school or vocational     | -0.119      | <0.001          | -0.000003   | 0.313   |
| College/university or above   | 0.005       | 0.693           | -0.00001    | 0.001   |
| Marital status                |             |                 |             |         |
| Married                       | -0.515      | <0.001          | -0.00002    | 0.038   |
| Unmarried                     | 0.029       | <0.001          | -0.000005   | 0.005   |
| Diagnostic type of the outpatient visits | Weekly Outpatient Expenditure | p-value | NA1 | NA2 |
|----------------------------------------|-------------------------------|---------|-----|-----|
| Diseases of the respiratory system     | 0.079                         | 0.028   | NA  | NA  |
| Diseases of the circulatory system     | -0.145                        | 0.003   | NA  | NA  |
| Diseases of the digestive system       | -0.062                        | 0.003   | NA  | NA  |
| Endocrine, nutritional and metabolic diseases | -0.061                     | <0.001  | NA  | NA  |
| Diseases of the musculoskeletal system and connective tissue | -0.005                     | 0.282   | NA  | NA  |
| Diseases of the genitourinary system   | -0.022                        | 0.002   | NA  | NA  |
| Injury                                 | 0.004                         | <0.001  | NA  | NA  |
| Diseases of the skin and subcutaneous tissue | 0.001                     | 0.146   | NA  | NA  |
| Diseases of the nervous system         | 0.002                         | 0.238   | NA  | NA  |
| Diseases of the eye and adnexa         | 0.002                         | 0.040   | NA  | NA  |
| Diseases of the ear and mastoid process | -0.003                     | 0.029   | NA  | NA  |
| Certain infectious and parasitic diseases | 0.0004                    | 0.862   | NA  | NA  |
| Diseases of the blood and blood-forming organs | 0.001                     | 0.305   | NA  | NA  |

* No available data in weekly outpatient expenditure of different diagnostic types.