

**Table S1. Characteristics of average demographic data, meteorological conditions, socioeconomic factors, medical resources and the HR of RA patients among 122 districts and counties in Hunan in 2019**

Variables	Percentile				
	$X_{\min}$	$P_{25}$	$P_{50}$	$P_{75}$	$X_{\max}$
<b>Population</b> (10,000 people)	6.21	34.60	57.06	81.07	135.13
<b>Sex portion</b> (F/M)	0.82	0.92	0.94	0.96	1.08
<b>Age</b> (years)	40	45	52	60	63
<b>Temperature</b> (°C)	14.44	16.49	19.17	23.20	28.16
<b>Air pressure</b> (Kpa)	918.63	982.28	990.19	997.53	1009.49
<b>Temperature range</b> (°C)	6.43	7.40	7.67	7.94	8.66
<b>Rain fall</b> (mm)	1578.63	1596.27	1598.92	1606.81	1874.64
<b>GDP</b> (100 million yuan)	31.18	117.59	234.72	364.87	2075.77
<b>PGDP</b> (10,000 yuan)	1.93	2.90	4.42	6.72	22.11
<b>Doctors</b> (per 10,000 people)	11.30	19.31	22.47	29.36	68.75
<b>Beds</b> (per 10,000 people)	21.15	50.75	58.69	78.39	198.71
<b>Hospitals</b> (per 10,000 people)	1.95	6.70	8.53	10.09	15.82
<b>HR of RA patients</b> (per 10,000 people)	.01	.88	1.65	2.75	26.57

F: female; M: male; GDP: Gross Domestic Product; PGDP: GDP per capita; HR: Hospitalization rates

**Table S2. Different cluster patterns of the HR of RA patients in Hunan in 2019**

District/county	Local Moran's $I$	Z Score	$P$	Patterns
Ningxiang county <sup>a</sup>	$4.46 \times 10^{-6}$	2.16	0.04	HH
Shuangfeng county <sup>b</sup>	$1.51 \times 10^{-3}$	2.85	0.02	HH
Chaling county <sup>c</sup>	$1.86 \times 10^{-5}$	0.88	0.04	LL
Yanling county <sup>c</sup>	$1.99 \times 10^{-5}$	0.87	0.04	LL
Zhuhui district <sup>d</sup>	$8.80 \times 10^{-5}$	0.99	0.03	LL
Yanfeng district <sup>d</sup>	$5.59 \times 10^{-5}$	1.17	0.00	LL
Shigu district <sup>d</sup>	$1.04 \times 10^{-4}$	1.10	0.02	LL
Zhengxiang district <sup>d</sup>	$1.07 \times 10^{-4}$	1.00	0.02	LL
Hengnan county <sup>d</sup>	$5.51 \times 10^{-5}$	0.98	0.03	LL
Hengdong county <sup>d</sup>	$3.21 \times 10^{-5}$	1.19	0.02	LL
Sangzhi county <sup>e</sup>	$1.52 \times 10^{-5}$	0.85	0.00	LL
Guidong county <sup>f</sup>	$1.04 \times 10^{-5}$	0.87	0.05	LL
Jianghua county (Yao Autonomous) <sup>g</sup>	$2.98 \times 10^{-6}$	0.69	0.03	LL
Ningyuan county <sup>g</sup>	$-1.53 \times 10^{-4}$	-1.15	0.04	HL
Shaoshan city <sup>h</sup>	$-1.36 \times 10^{-4}$	-3.01	0.01	LH
Dongkou county <sup>i</sup>	$-3.22 \times 10^{-5}$	-3.01	0.03	LH
Louxing district <sup>b</sup>	$-6.75 \times 10^{-5}$	-3.55	0.02	LH
Xinning county <sup>i</sup>	$-2.50 \times 10^{-5}$	-1.51	0.05	LH
Zhongfang county <sup>j</sup>	$-3.36 \times 10^{-5}$	-2.17	0.05	LH

HR: Hospitalization rates; HH: high-high pattern; LL: low-low pattern; HL: high-low pattern; LH: low-high pattern; a: belongs to Changsha city; b: belongs to Loudi city; c: belongs to Zhuzhou city; d: belongs to Hengyang city; e: belongs to Zhangjiajie city; f: belongs to Chenzhou city; g: belongs to Yongzhou city; h: belongs to Xiangtan city; i: belongs to Shaoyang city; j: belongs to Huaihua city.

