Table S1. Accuracy Evaluation of Land Surface temperature Reconstruction in China from 2010 to 2020

Year	MAE	RMSE	Pearson
2010	2.920	3.723	0.916
2011	2.885	3.677	0.918
2012	2.959	3.747	0.920
2013	2.771	3.515	0.925
2014	2.793	3.548	0.924
2015	2.837	3.613	0.918
2016	2.898	3.711	0.913
2017	2.785	3.553	0.915
2018	2.874	3.654	0.910
2019	2.829	3.603	0.920
2020	2.975	3.776	0.913

Table S2. Indicators related to respiratory diseases

Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WLST_1th	+			
WLST_75th	+			
WPM10_YM	+			
AQI	+			
WRH	bi	59.86	—*	↑
WWS10m	-			
Age_0_4	bi	5.717	↑	↓
Age_15_19	-			
Age_20_39	bi	30.647	↓	↑
Age_60_79	bi	13.918	↓	↑
Age_80	+			
PriInd_Ratio	bi	18.259	—	↑
SecInd_Ratio	+			
TerInd_Ratio	bi	25.103	↑	↓
Unemp_Rate	+			
Res_Ratio	+			
Oil	+			
Meat	bi	21.2	→	↑
Fruit	-			
Sugar	+			
Uni_PTP	-			
Green_Ratio	-			
FreshFood_Ratio	-			

* indicates that the indicator has no significant correlation with the corresponding chronic disease mortality within this interval (p>0.05), and the following tables are the same.

Table S3. Indicators related to heart diseases

Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WTSD	+			
WDTD_90th	+			
NO2_YM	+			
CO_YM	+			
O3_YM	+			
AQI	+			
Age_0_4	bi	5.074	↓	↑
Age_15_19	-			
Age_40_59	+			
Age_60_79	bi	13.932	↑	↓
PriInd_Ratio	-			
AquaProducts	bi	16.126	↑	↓
Egg	+			
Uni_PTP	-			
High_PTP	-			
School_PTP	-			

Table S4. Indicators related to cerebrovascular diseases

Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WIITV_90th	bi	6.252	↑	↓
WPM25_IT3	+			
NO2_YM	+			
O3_YM	+			
WSP	bi	85972.3	↓	↑
Age_5_14	-			
Age_15_19	-			
Age_40_59	+			
Age_60_79	+			
MF_Ratio	bi	1.062	↓	↑
SecInd_Ratio	+			
Ind_Ratio	+			
AquaProducts	bi	16.113	↑	↓
Egg	+			
High_PTP	-			
School_PTP	-			
Attractions_Ratio	-			

Table S5. Indicators related to malignant tumors

Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WLST_75th	+			
WDTD_50th	+			
WPM25_IT3	+			
NO2_YM	+			
O3_YM	+			
Age_5_14	-			
Age_15_19	-			
Age_40_59	+			
Age_60_79	+			
Age_80	+			
MF_Ratio	bi	1.076	↓	↑
PriInd_Ratio	-			
SecInd_Ratio	+			
Ind_Ratio	+			
AquaProducts	bi	7.802	↑	—
Egg	bi	9.742	↑	—
GDP_PC	-			
High_PTP	-			
School_PTP	-			

Table S6. Indicators related to endocrine nutrition metabolic diseases

Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WLST_75th	+			
WIITV_25th	-			
WPM10_IT3	+			
CO_YM	+			
WWS10m	+			
Age_0_4	-			
Age_15_19	-			
Age_20_39	bi	37.894	↑	↓
Age_40_59	+			
Age_80	+			
TerInd_Ratio	bi	34.792	↑	↓
Ind_Ratio	+			
Meat	bi	29.1	↑	↓
AquaProducts	+			
NHT_PTP	bi	8.62	↑	↓
Uni_PTP	bi	0.285	↑	↓
High_PTP	-			
School_PTP	-			
ParkArea_PC	-			
Green_Ratio	-			

Table S7. Indicators related to digestive system diseases

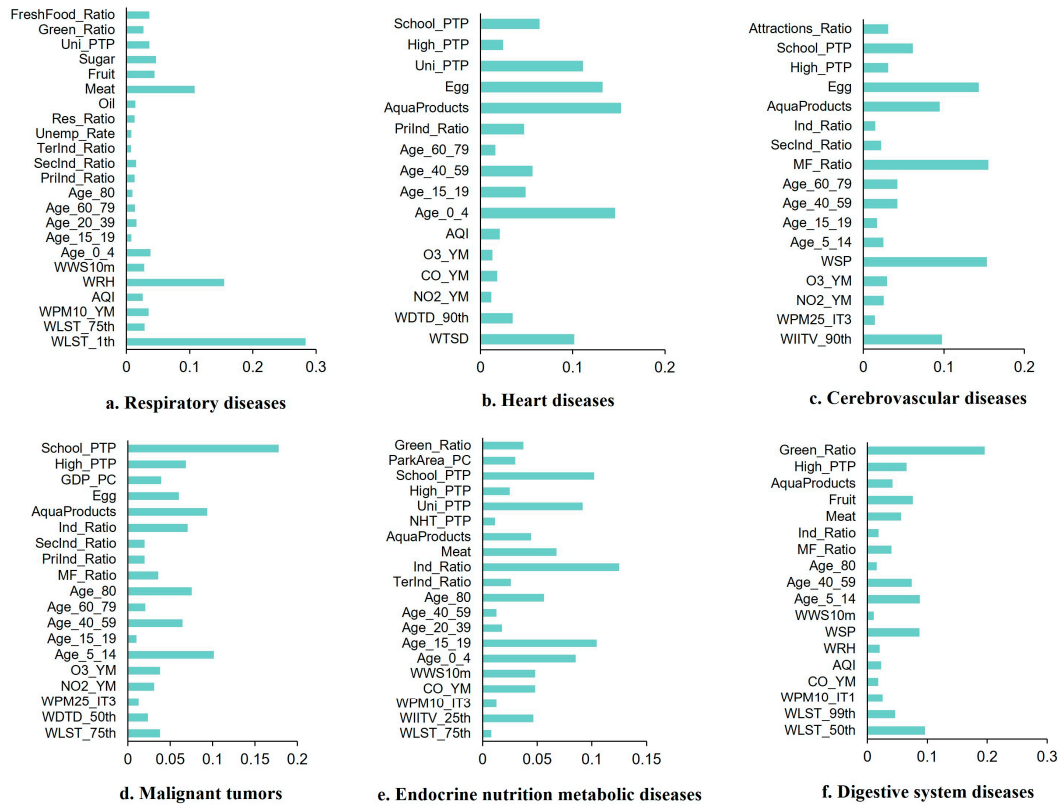| Indicators	Indicator direction	Turning point	Change trend less than the turning point	Change trend larger than the turning point
WLST_50th	bi	18.657	↓	↑
WLST_99th	bi	31.77	↓	↑
WPM10_IT1	+			
CO_YM	+			
AQI	+			
WRH	bi	59.6	↓	↑
WSP	-			
WWS10m	bi	0.871	↓	↑
Age_5_14	bi	14.307	↓	↑
Age_40_59	bi	27.322	↓	↑
Age_80	+			
MF_Ratio	bi	1.094	↑	↓
Ind_Ratio	bi	48.745	↓	↑
Meat	+			
Fruit	-			
AquaProducts	bi	2.566	↓	↑
High_PTP	bi	5.684	↓	↑
Green_Ratio	-			

Figure S1. Distribution of indicators and corresponding weights obtained by FAHP related to the six kinds of chronic diseases
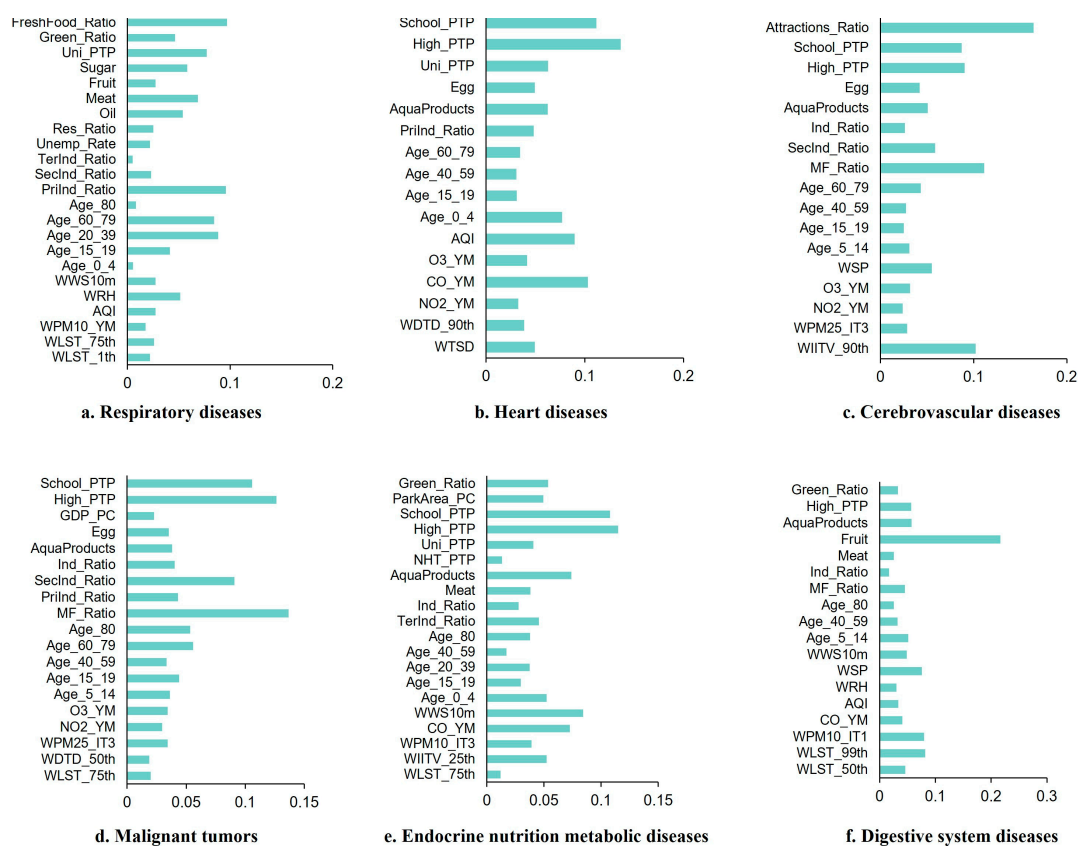
Figure S2. Distribution of indicators and corresponding weights obtained by the entropy weight method related to the six kinds of chronic diseases