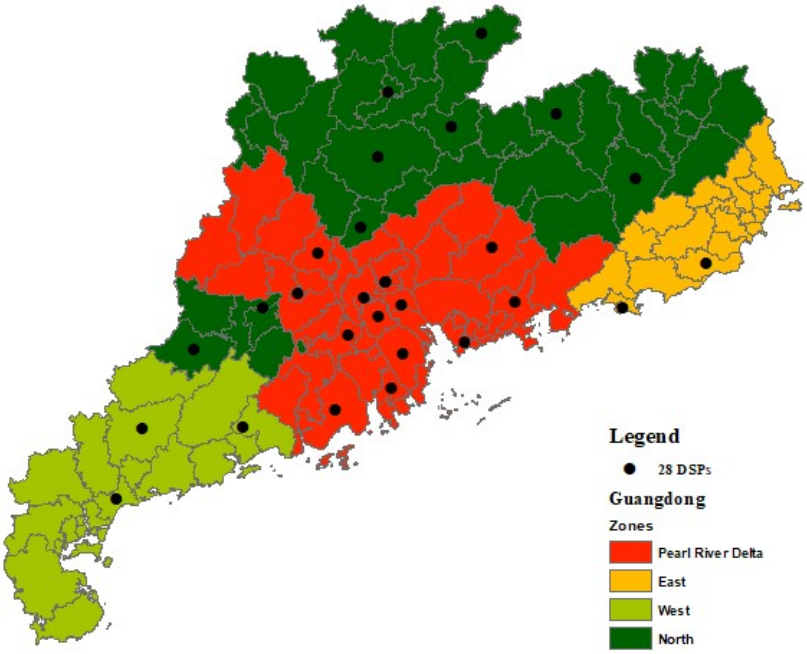
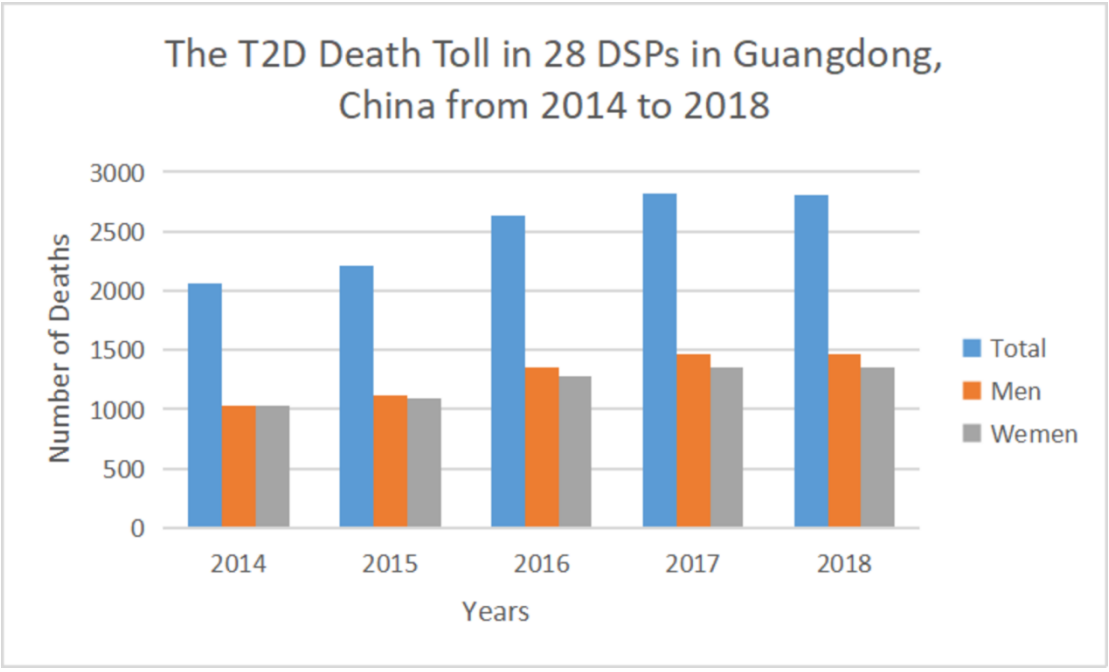
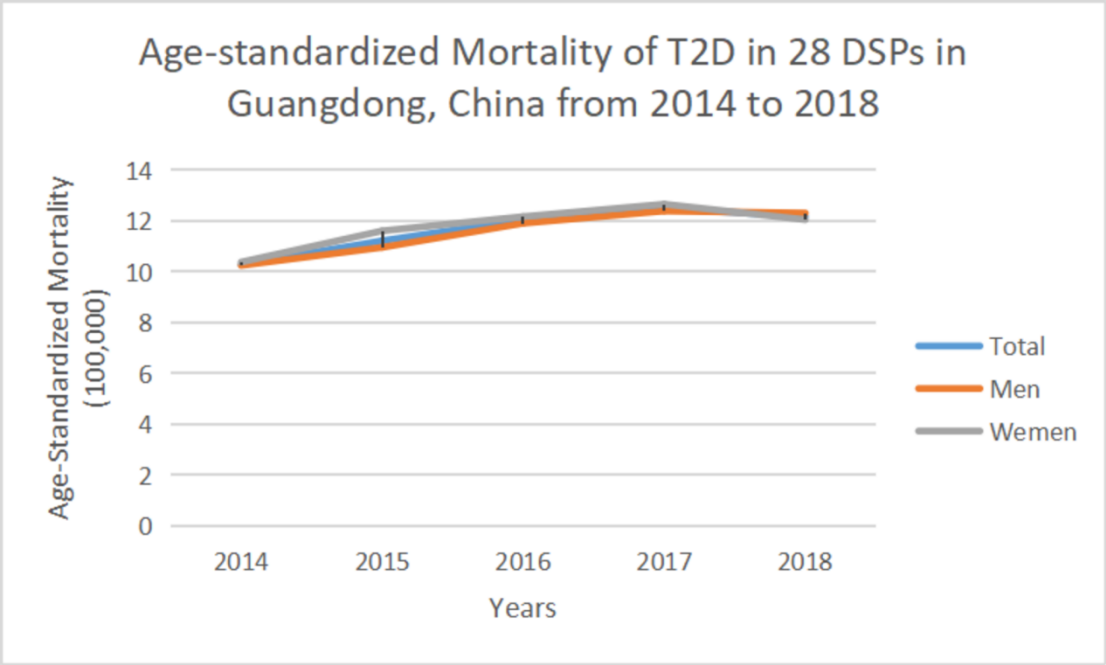
Supplementary Material



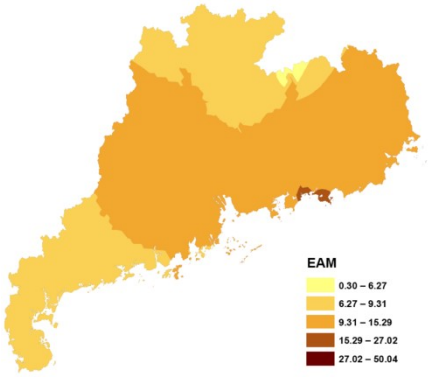
Supplementary Figure S1. Geographic Zones of Guangdong Province, China: East, North, Pearl River Delta and West, and the Distribution of 28 National DSPs.



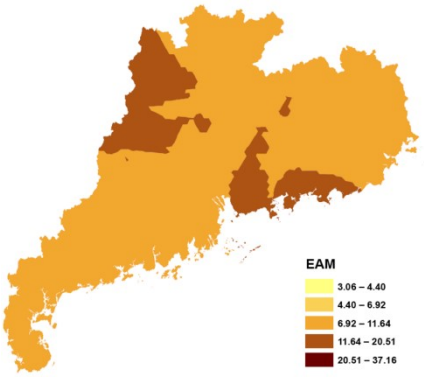
Supplementary Figure S2. The T2DM Death Toll in 28 DSPs of Guangdong Province, China from 2014 to 2018.



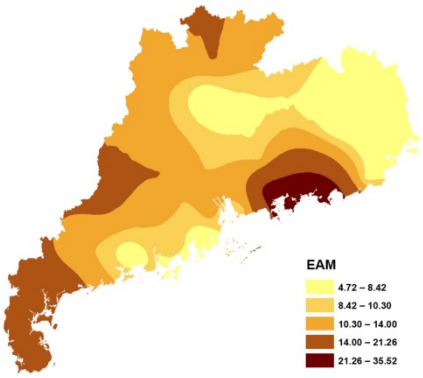
Supplementary Figure S3. Age-standardized Mortality of T2DM in 28 DSPs over Guangdong Province, China from 2014 to 2018.



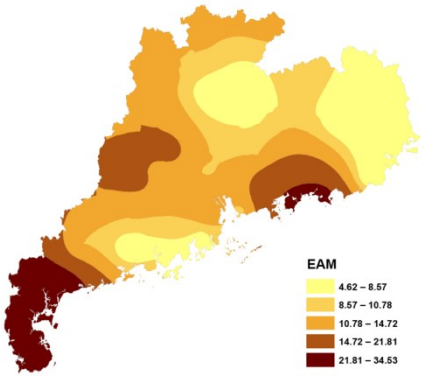
a. 2014



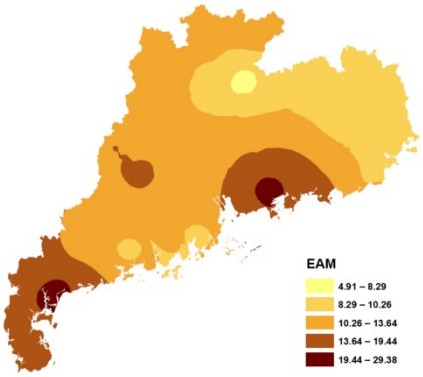
b. 2015



c. 2016

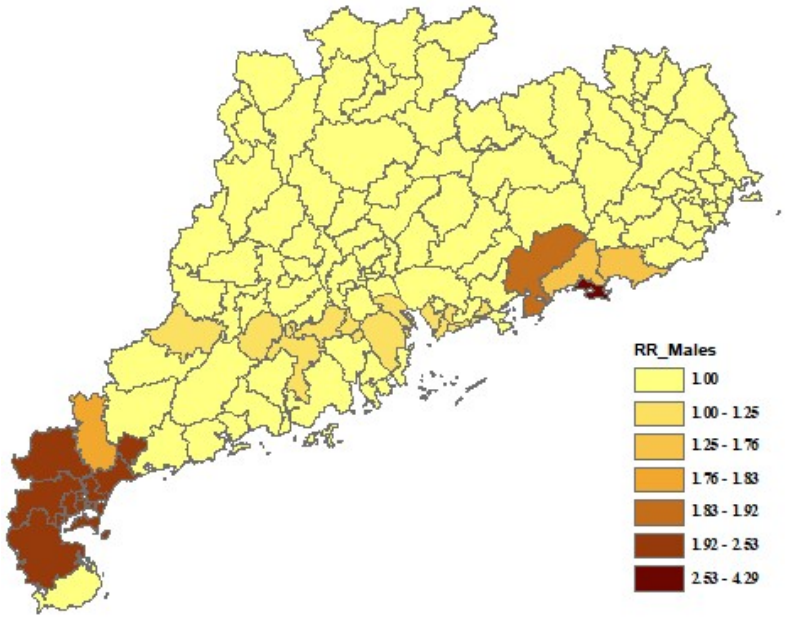


d. 2017

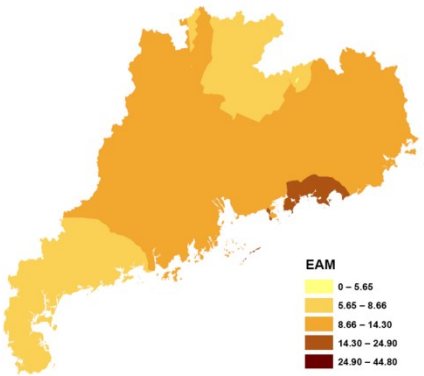


e. 2018

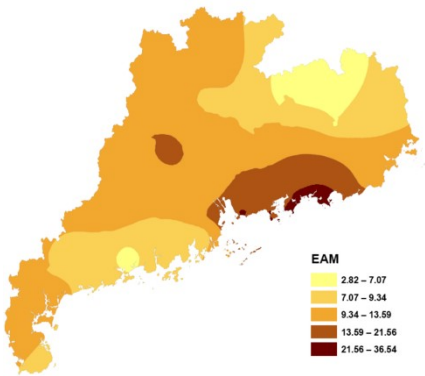
Supplementary Figure S4. The Spatial Distribution of EAM on T2DM in Males over Guangdong Province, China from 2014 to 2018.



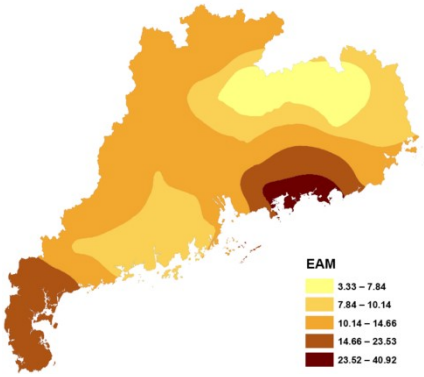
Supplementary Figure S5. The Map of RRs on Mortality on T2DM in Males over Guangdong Province, China from 2014 to 2018.



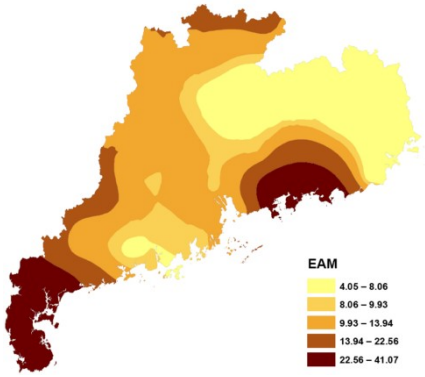
a. 2014



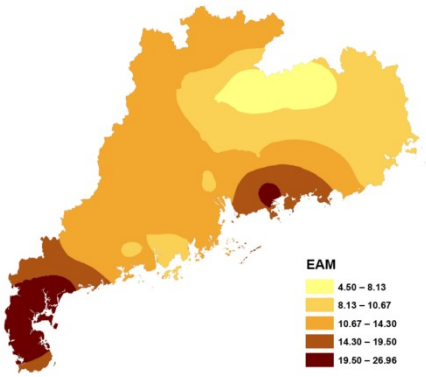
b. 2015



c. 2016

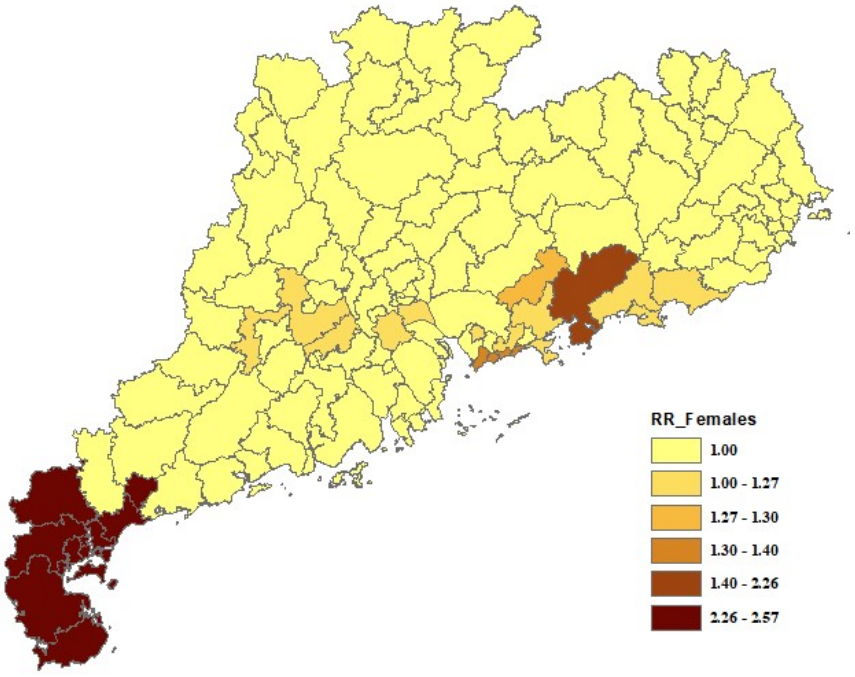


d. 2017



e. 2018

Supplementary Figure S6. The Spatial Distribution of EAM on T2DM in Females over Guangdong Province, China from 2014 to 2018.



Supplementary Figure S7. The Map of RRs on Mortality of T2DM in Females over Guangdong Province, China from 2014 to 2018.

Note: The map used in this paper is under the approval number of GS (2019) 1822.

Supplementary Table S1. Demographic Characteristics of the T2DM Deaths in 28 DSPs of Guangdong Province, China

Category	Group	Percentage %
Age	<30	0.19
	30-35	0.26
	35-40	0.52
	40-45	1.15
	45-50	2.57
	50-55	4.99
	55-60	5.93
	60-65	9.07
	65-70	11.54
	70-75	13.23
	75-80	16.17
	80-85	17.23
	≥85	17.16
Education	Junior high school and below	89.17
	Technical school	0.08
	Technical secondary school	1.62
	High school	6.33
	Junior college	1.03
	University	1.72

	Postgraduate	0.06
Occupation	Self-employed persons	0.82
	Worker	3.16
	Civil servants	0.30
	Retirees	22.29
	Farmer	47.90
	Other	8.91
	Business manager	0.13
	Unemployed	13.59
	Active duty soldier	0.02
	Student	0.10
	Staff	0.90
	Professional technician	0.81
	Freelancers	1.06
Location of death	Unknown	0.15
	At home	65.23
	On the way to the hospital	0.77
	Other places	0.73
	Elderly nursing homes	1.76
	Medical and health institutions	31.35

Supplementary Table S2. The Spatiotemporal Clusters on Mortality of T2DM and Related RRs in Males over Guangdong Province, China from 2014 to 2018

Cluster	District/ County	City	Time frame	Cases	Expected cases	LLR	P value	RR
1	Chengqu	Shanwei	2014/1/1 to 2014/12/31	131	30.67	90.07	<0.01	4.29
2	Chikan Xiashan Potou Mazhang Suixi Lianjiang Leizhou Wuchuan Maonan	Zhanjiang Maoming	2017/1/1 to 2017/12/31	1294	526.67	406.86	<0.01	2.53
3	Huidong	Huizhou	2016/1/1 to 2016/12/31	102	53.22	17.62	<0.01	1.92
4	Huazhou	Maoming	2017/1/1 to 2017/12/31	203	111.02	30.68	<0.01	1.83
5	Haifeng Lufeng Nansha Luohu	Shanwei Guangzhou	2016/1/1 to 2016/12/31	297	170.01	38.99	<0.01	1.76
6	Futian Nanshan Baoan Yantian Pingshan Longhua Pengjiang Jianghai Kaiping Heshan Zhongshan Luoding Xinxing	Shenzhen Jiangmen Zhongshan Yunfu	2018/1/1 to 2018/12/31	734	589.31	16.85	<0.01	1.25

Supplementary Table S3. The Spatiotemporal Clusters on Mortality of T2DM and Related RRs in Females over Guangdong Province, China from 2014 to 2018

Cluster	District/ County	City	Time Frame	Cases	Expected cases	LLR	P value	RR
1	Chikan Xiashan Potou	Zhanjiang	2017/1/1 to 2017/12/31	2692	1082.33	868.20	<0.01	2.57

	Mazhang Lianjiang Leizhou Wuchuan Suixi Xuwen Maonan	Maoming						
2	Huidong	Huizhou	2017/1/1 to 2017/12/31	1518	683.29	383.64	<0.01	2.26
3	Luohu Futian Nanshan Yantian	Shenzhen	2015/1/1 to 2015/12/31	1280	921.88	63.20	<0.01	1.40
4	Huicheng	Huizhou	2014/1/1 to 2014/12/31	289	223.4	8.85	<0.01	1.30
5	Panyu Longgang Guangming Shunde Gaoming Gaoyao Huiyang Chengqu Haifeng Lufeng Yunan	Guangzhou Shenzhen Foshan Zhaoqing Huizhou Shanwei Yunfu	2017/1/1 to 2017/12/31	496	392.94	12.80	<0.01	1.27

Supplementary Table S4. IRR (Incidence Rate Ratio) of T2DM Deaths for Air Pollutants in the District with the Highest Mortality in East Guangdong, China

Pollutants	**Crude IRR**	**95% CI**	**P value**	**Adjusted IRR**	**95% CI**	**P value**
CO	1.77	0.92 - 2.62	<0.05	2.59	1.31 - 3.87	<0.05
O_3	-0.01	-0.02 - -0.00	<0.05	-0.01	-0.02 - 0.00	>0.05
$PM_{2.5}$	0.00	-0.01 - 0.01	>0.05	-0.01	-0.03 - 0.01	>0.05
PM_{10}	-0.00	-0.01 - 0.04	>0.05	-	-	-

NO_2	0.02	0.00-0.05	<0.05	-	-	-
SO_2	-0.01	-0.06-0.05	>0.05	-	-	-

Supplementary Table S5. Minimum, Maximum, Mean and SD of CO, O_3, and $PM_{2.5}$ in the District with the Highest Mortality in East Guangdong, China

Pollutants	Minimum	Maximum	Mean	SD
CO (mg/m^3)	0.61	1.07	0.79	0.10
O_3 ($\mu g/m^3$)	44.74	109.96	71.63	13.84
$PM_{2.5}$ ($\mu g/m^3$)	11.68	48.19	25.78	9.39

Supplementary Table S6. IRR (Incidence Rate Ratio) of T2DM Deaths for Air Pollutants in the County with the Second Highest Mortality in West Guangdong, China

Pollutants	Crude IRR	95% CI	P value	Adjusted IRR	95% CI	P value
CO	-0.90	-1.15 - -0.66	<0.05	-0.98	-1.24 - -0.72	<0.05
O_3	0.01	0.00 - -0.01	<0.05	0.04	-0.00 - 0.01	>0.05
$PM_{2.5}$	0.00	-0.00 - 0.01	>0.05	0.04	-0.00 - 0.01	>0.05
PM_{10}	-0.01	-0.01 - -0.00	<0.05	-	-	-
NO_2	-0.01	0.01 - -0.02	>0.05	-	-	-
SO_2	-0.02	-0.04-0.01	<0.05	-	-	-

Supplementary Table S7. Minimum, Maximum, Mean and SD of CO, O_3, and $PM_{2.5}$ in the County with the Second Highest Mortality in West Guangdong, China

Pollutants	Minimum	Maximum	Mean	SD
CO (mg/m^3)	0.42	1.67	0.89	0.29
O_3 ($\mu g/m^3$)	32.92	104.29	68.02	14.27

$PM_{2.5}$ (μg/m^3)	10.13	57.12	26.14	11.83

Supplementary Table S8. IRR (Incidence Rate Ratio) of T2DM Deaths for Air Pollutants in the District with the High Mortality in Pearl River Delta of Guangdong, China

Pollutants	Crude IRR	95% CI	P value	Adjusted IRR	95% CI	P value
CO	-0.71	-1.67 - 0.25	>0.05	-1.69	-1.15 - -0.28	<0.05
O_3	-0.01	-0.01 - -0.00	<0.05	-0.01	-0.02 - -0.01	>0.05
$PM_{2.5}$	0.00	-0.02 - 0.02	>0.05	0.03	0.01 - 0.02	>0.05
PM_{10}	0.00	-0.01 - 0.01	>0.05	-	-	-
NO_2	-0.01	-0.02 - 0.02	>0.05	-	-	-
SO_2	0.02	-0.09-0.13	>0.05	-	-	-

Supplementary Table S9. Minimum, Maximum, Mean and SD of CO, O_3, and $PM_{2.5}$ in the District with the High Mortality in Pearl River Delta of Guangdong, China

Pollutants	Minimum	Maximum	Mean	SD
CO (mg/m^3)	0.64	1.89	1.00	0.27
O_3 (μg/m^3)	14.29	76.64	41.85	13.87
$PM_{2.5}$ (μg/m^3)	15.75	61.78	34.19	12.12