Data supplement for Gu et al., Association Between Ambient Air Pollution and Daily Hospital Admissions for Depression in 75 Chinese Cities. Am J Psychiatry (doi: 10.1176/appi.ajp.2020.19070748)

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Figure S12. Overall percent changes in daily hospital admissions for depression per 10$\mu g/m^3$ increases in $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3 and 1mg/m^3 increase in CO at different lag days in 75 Chinese cities stratified by insurance type.

TABLE S1. Number of monitoring sites in 75 Chinese cities.

Northern cities	No. of monitoring sites	Southern cities	No. of monitoring sites
Aletai	2	Bazhong	8
Anshan	7	Binzhou	5
Anyang	6	Changde	8
Baoji	8	Changsha	10
Changji	3	Changzhou	9
Chengde	5	Chengdu	10
Datong	7	Chongqing	21
Dezhou	4	Chuxiong	2
Handan	4	Dazhou	5
Hebi	3	Enshi	2
Heze	3	Ganzi	3
Jilin	8	Guangzhou	12
Jinan	8	Hangzhou	11
Jining	3	Honghe	4
Jinzhou	5	Huaihua	5
Lanzhou	6	Jiaxing	6
Liaocheng	5	Jinhua	4
Qingyang	3	Lishui	3
Qiqihaer	5	Liuan	4
Shenyang	13	Nanchong	6
Siping	3	Puer	2
Tacheng	1	Qingyuan	4
Taian	3	Quzhou	3
Tangshan	6	Shantou	6
Tianjin	20	Shaotong	2
Weifang	8	Shaoyang	5
Weihai	3	Shiyan	4
Weinan	4	Taizhou	3
Wuhai	3	Tongling	6
Wulumuqi	8	Wuhan	11
Xianyang	4	Wuhu	4
Yanan	4	Wuxi	8
Yanbian	3	Xiangyang	5
Yantai	7	Yueyang	6
Yuncheng	6	Yuxi	5
Zaozhuang	5	Zhuzhou	7
Zhumadian	3	Zigong	6
Zibo	6		

TABLE S2. Spearman correlation coefficients among the ambient air pollutants and weather variables in 75 Chinese cities during 2013-2017.

	$PM_{2.5}$	**PM_{10}**	**NO_2**	**SO_2**	**O_3**	**CO**	**Temperature**	**Relative humidity**
$PM_{2.5}$	1·00	0·88††	0·67††	0·58††	-0·06††	0·06††	-0·27††	<0·01
PM_{10}		1·00	0·67††	0·59††	-0·01†	0·07††	-0·24††	-0·16††
SO_2			1·00	0·57††	-0·10††	0·07††	-0·38††	-0·24††
NO_2				1·00	-0·06††	0·06††	-0·26††	-0·08††
O_3					1·00	-0·01††	0·45††	-0·14††
CO						1·00	-0·04††	-0·02††
Temperature							1·00	0·21††
Relative humidity								1·00

$^{†}P$<0·05, $^{††}P$<0·01.

TABLE S3. Metaregression results of city-specific variables for the significant associations between ambient air pollutants and daily hospital admissions for depression.

	Mean air pollutant concentration*		Temperature (℃)		Relative humidity (%)		GDP per capita	
	Percent Change	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**
$PM_{2.5}$ (10μg/m^3)								
lag1	0.02	-0.19, 0.22	-0.05	-0.17, 0.08	0.03	-0.04, 0.10	-0.03	-1.24, 1.20
lag01	-0.13	-0.40, 0.13	-0.01	-0.17, 0.15	0.03	-0.06, 0.11	-0.47	-1.98, 1.06
lag02	-0.04	-0.33, 0.25	-0.07	-0.24, 0.10	0.05	-0.05, 0.14	-0.31	-1.94, 1.34
PM_{10} (10μg/m^3)								
lag1	0.01	-0.06, 0.07	-0.02	-0.12, 0.08	0.02	-0.03, 0.07	-0.02	-0.92, 0.89
lag01	-0.03	-0.12, 0.06	-0.01	-0.14, 0.12	0.03	-0.03, 0.09	-0.31	-1.49, 0.87
lag02	-0.01	-0.11, 0.09	-0.03	-0.17, 0.11	0.03	-0.04, 0.10	-0.29	-1.56, 1.00
lag03	0.00	-0.12, 0.13	-0.03	-0.19, 0.14	0.00	-0.08, 0.09	-0.07	-1.58, 1.47
NO_2 (10μg/m^3)								
lag0	-0.24†	-0.48, -0.00	-0.09	-0.37, 0.19	0.06	-0.07, 0.20	-1.87	-4.04, 0.35
lag1	-0.02	-0.47, 0.42	0.17	-0.18, 0.53	0.02	-0.15, 0.19	-1.74	-4.60, 1.21
lag01	-0.17	-0.54, 0.19	0.03	-0.32, 0.39	0.05	-0.13, 0.22	-2.40	-5.15, 0.43
lag02	-0.11	-0.58, 0.37	0.05	-0.38, 0.48	0.10	-0.11, 0.31	-2.93	-6.24, 0.50
lag03	-0.10	-0.75, 0.56	0.02	-0.51, 0.55	0.10	-0.16, 0.36	-2.70	-6.81, 1.59
lag04	-0.10	-0.99, 0.79	0.07	-0.58, 0.73	0.08	-0.24, 0.39	-1.87	-7.01, 3.55
SO_2 (10μg/m^3)								
lag0	-0.07	-0.53, 0.39	0.03	-0.35, 0.41	0.09	-0.06, 0.25	-1.04	-4.65, 2.70
O_3 (10μg/m^3)**								
-	-		-		-		-	
CO (1mg/m^3)								
lag05	-0.90	-4.05, 2.36	-0.12	-2.24, 2.05	0.37	-0.69, 1.43	-2.54	-20.22, 19.06
lag06	-0.88	-4.42, 2.80	0.58	-1.76, 2.97	0.14	-1.02, 1.31	-8.15	-26.19, 14.32
lag07	-0.91	-4.38, 2.69	0.66	-1.70, 3.08	0.11	-1.06, 1.30	-9.93	-27.85, 12.44

Data are shown as percent changes and 95% confidence intervals (CIs).

*Mean air pollutant concentration indicated whether estimates of the association between one air pollutant and depression admissions were modified by the mean levels of the air pollutant.

**We only examined the modification effect on the significant effect estimates of each air pollutant in the main analysis (Figure 2) and no estimate of O_3 was significant at $P<0{\cdot}05$.

† $P<0{\cdot}05$.

TABLE S4. Associations between ambient air pollutants and daily hospital admissions for depression in two-pollutant models.

	Adjusted for $PM_{2.5}$		**Adjusted for PM_{10}**		**Adjusted for NO_2**		**Adjusted for SO_2**		**Adjusted for O_3**		**Adjusted for CO**	
	Percent Change	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**	**Percent Change**	**95% CI**
$PM_{2.5}$ (lag02)	-		-0.04	-0.16, 0.08	0.01	-0.04, 0.07	0.05	-0.01, 0.11	0.06 †	0.00, 0.11	0.03	-0.02, 0.09
PM_{10} (lag02)	0.07	-0.02, 0.17	-		0.02	-0.03, 0.06	0.04	-0.01, 0.09	0.05 †	0.01, 0.09	0.04	-0.01, 0.08
NO_2 (lag0)	1.49 ††	0.53, 2.45	1.48 ††	0.51, 2.46	-		1.31 ††	0.37, 2.26	1.61 ††	0.86, 2.37	1.29 ††	0.34, 2.25
SO_2 (lag0)	0.04	-0.01, 0.09	0.02	-0.07, 0.12	0.20 †	0.01, 0.39	-		0.06	-0.01, 0.14	0.75 †	0.13, 1.37
O_3 (lag0)	0.44	-0.02, 0.90	0.44	-0.02, 0.91	0.56 †	0.08, 1.05	0.44	-0.03, 0.91	-		0.45	-0.03, 0.93
CO (lag07)	0.73 †	0.03, 1.45	0.68	-0.05, 1.42	0.49	-0.21, 1.19	0.77 †	0.08, 1.47	0.76 †	0.14, 1.39	-	

Two-pollutant models were conducted only for the most significant effect estimate of each air pollutant (with the smallest p value) by controlling for another air pollutant at the same lag time. Data are shown as percent changes and 95% confidence intervals (CIs).

† *P*<0·05, †† *P*<0·01.

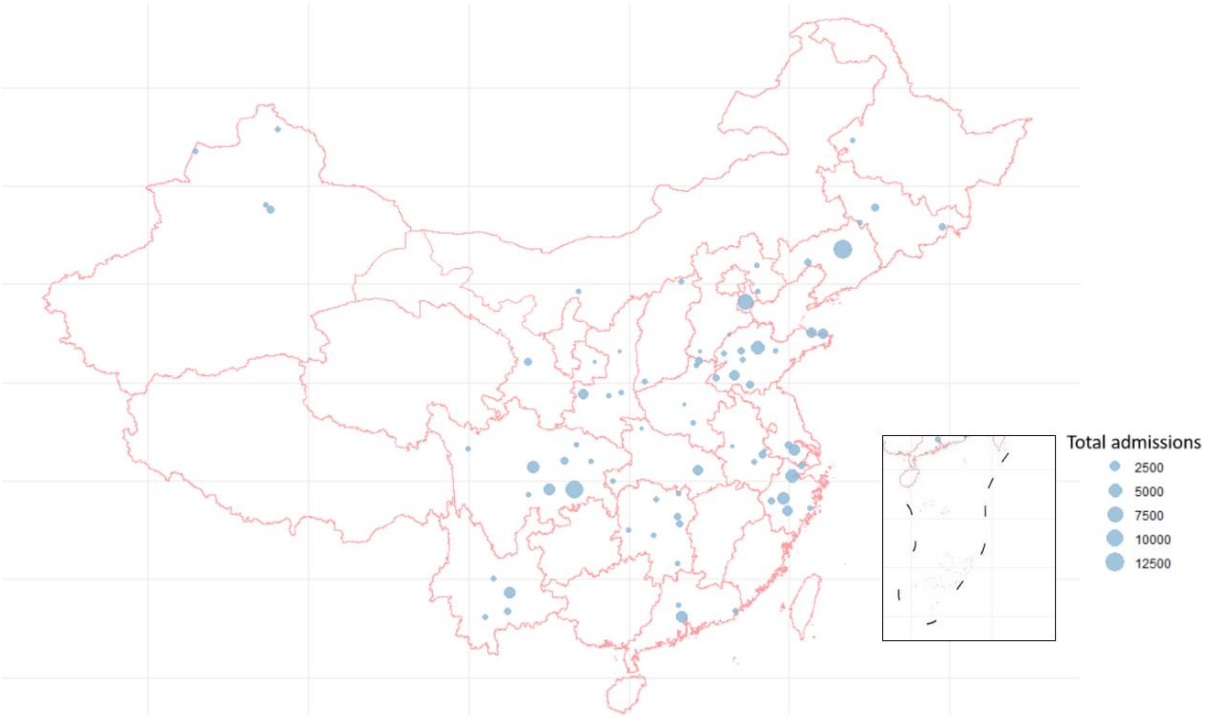

FIGURE S1. Locations of the 75 Chinese cities included in this study. Total admissions indicate the total number of hospital admissions for depression in each city during 2013-2017.

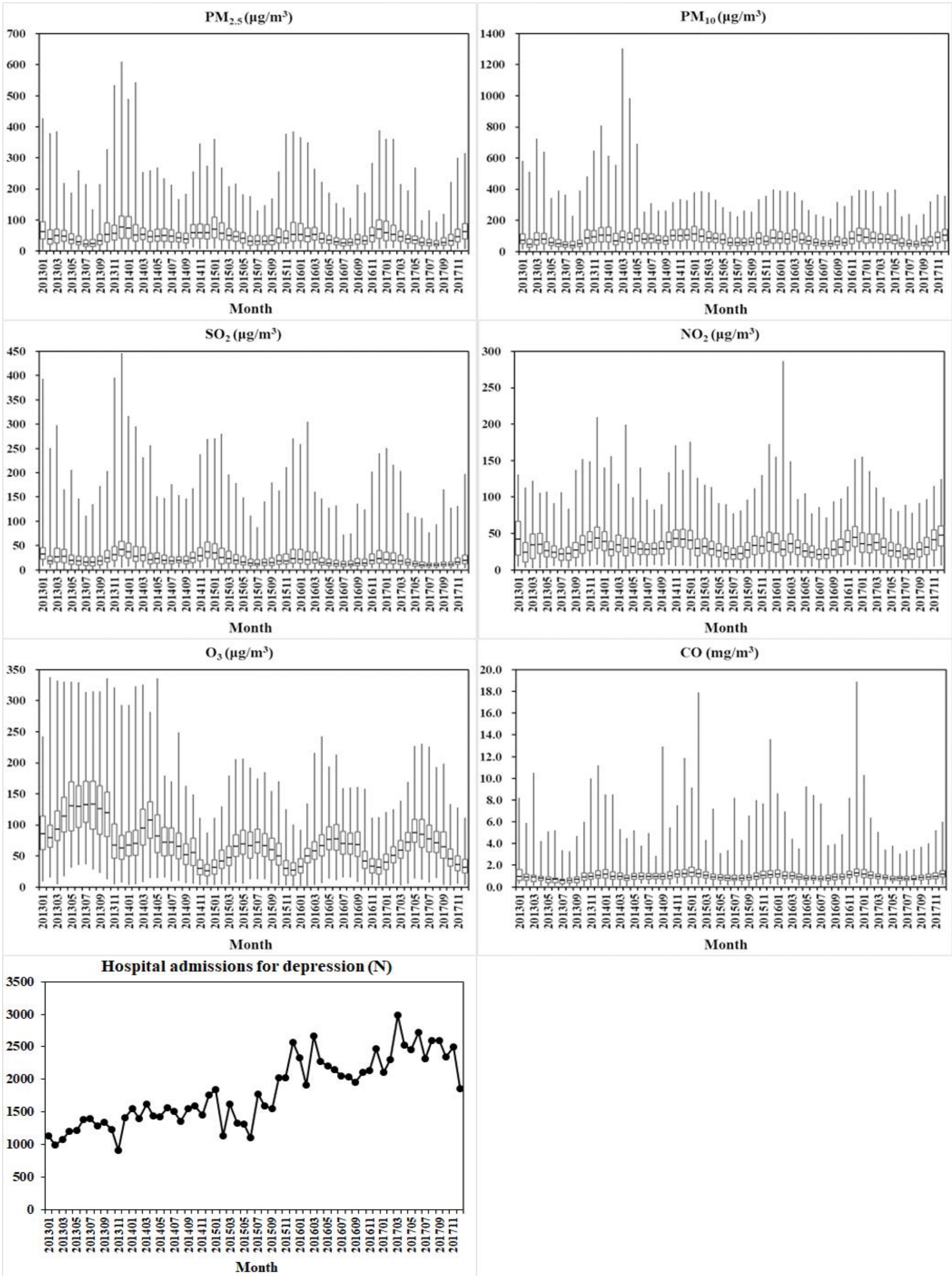

FIGURE S2. Monthly variation of daily concentrations of ambient $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3, and CO and number of hospital admissions for depression in 75 Chinese cities during the study period (2013-2017). The lower and upper edges of the boxplot represent the 25th and 75th percentiles of the daily air pollutant concentrations, respectively, the horizontal line inside the boxplot indicates the median of the daily air pollutant concentrations, and the straight lines extending from the lower and upper edges of the boxplot connect the minimum and maximum values of the daily air pollutant concentrations.

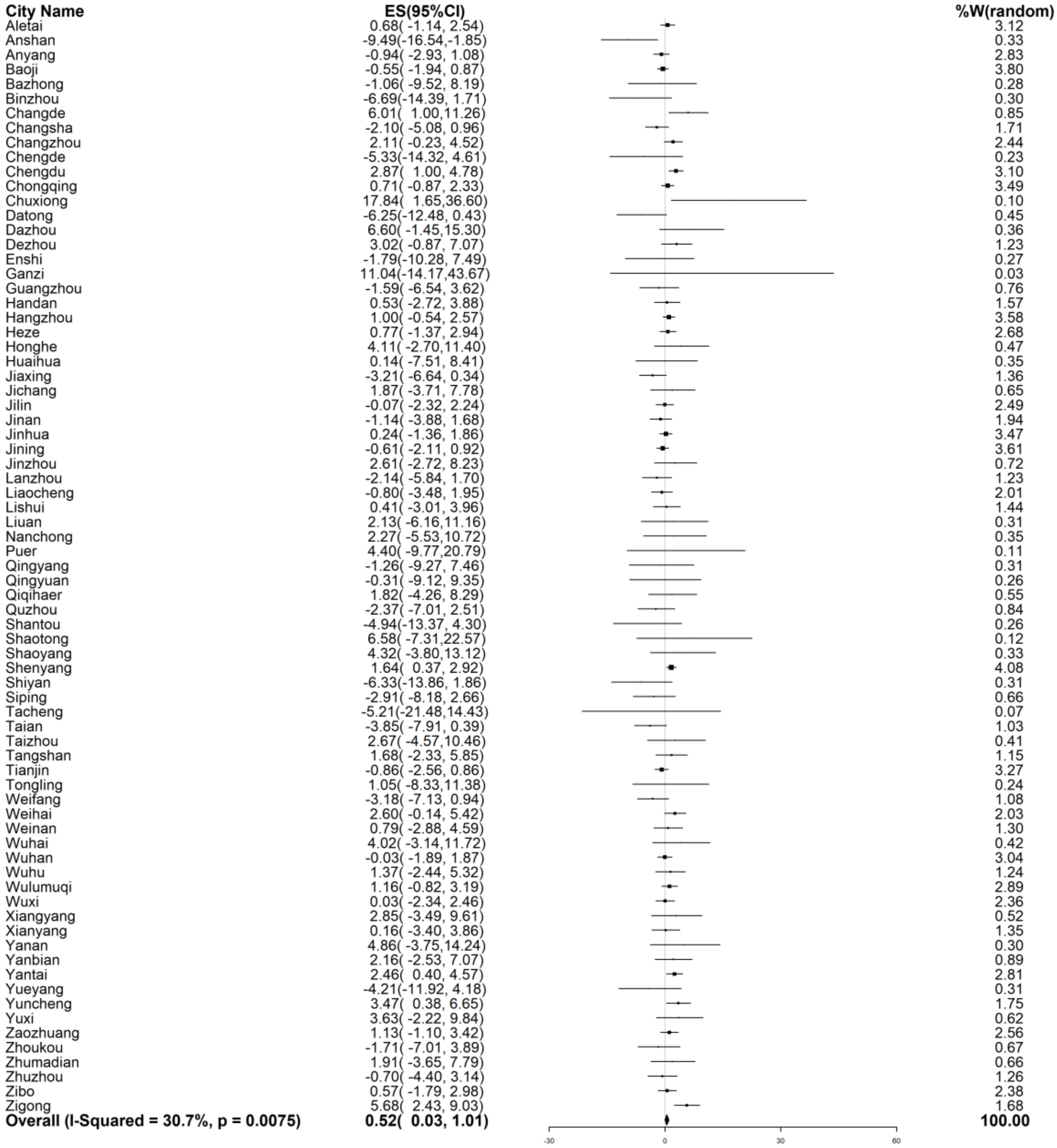

FIGURE S3. Forest plots for overall analyses of daily hospital admission for depression associated with an increase of 10 μg/m^3 in $PM_{2.5}$ at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

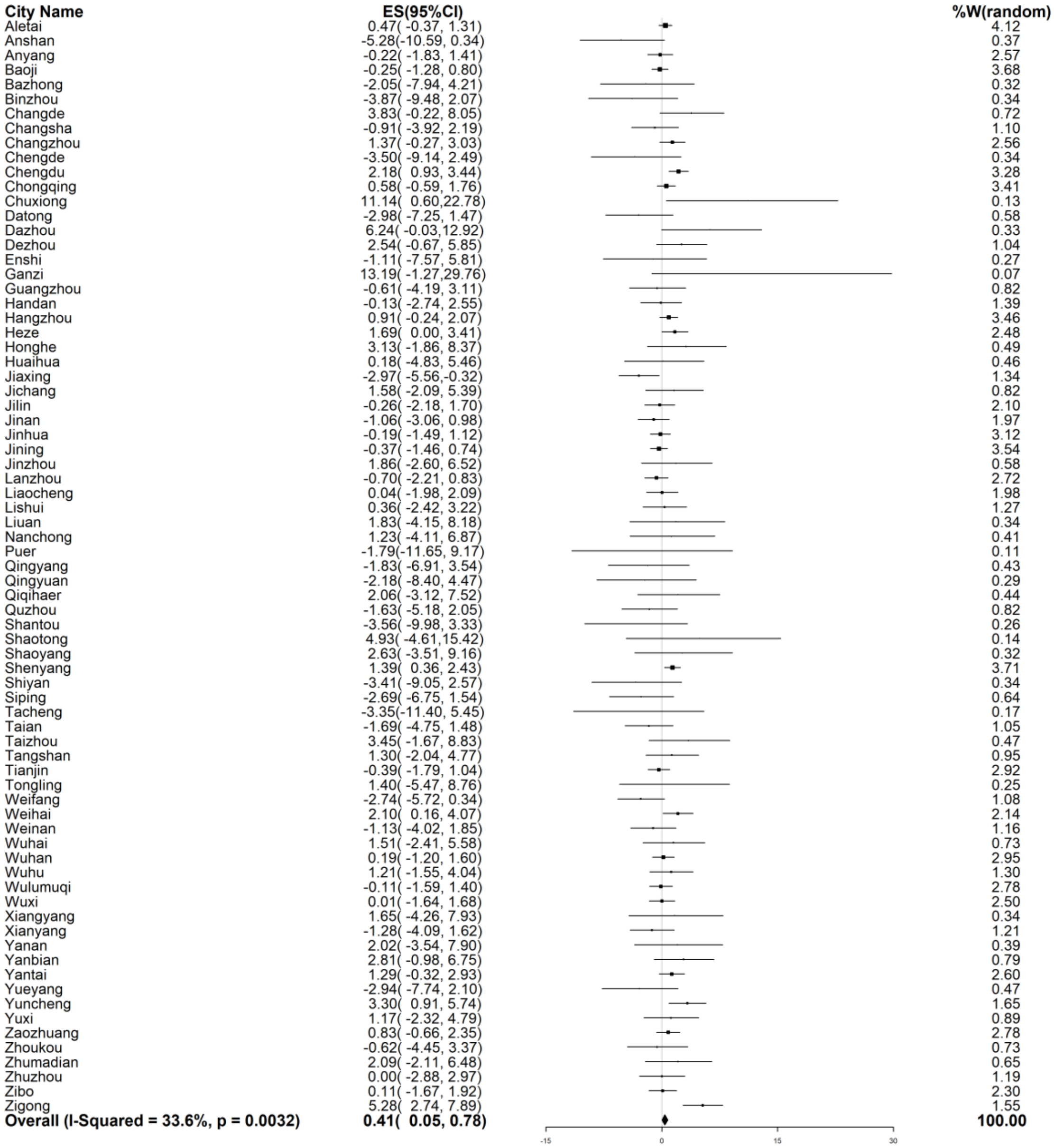

FIGURE S4. Forest plots for overall analyses of daily hospital admissions for depression associated with an increase of 10 μg/m^3 in PM_{10} at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

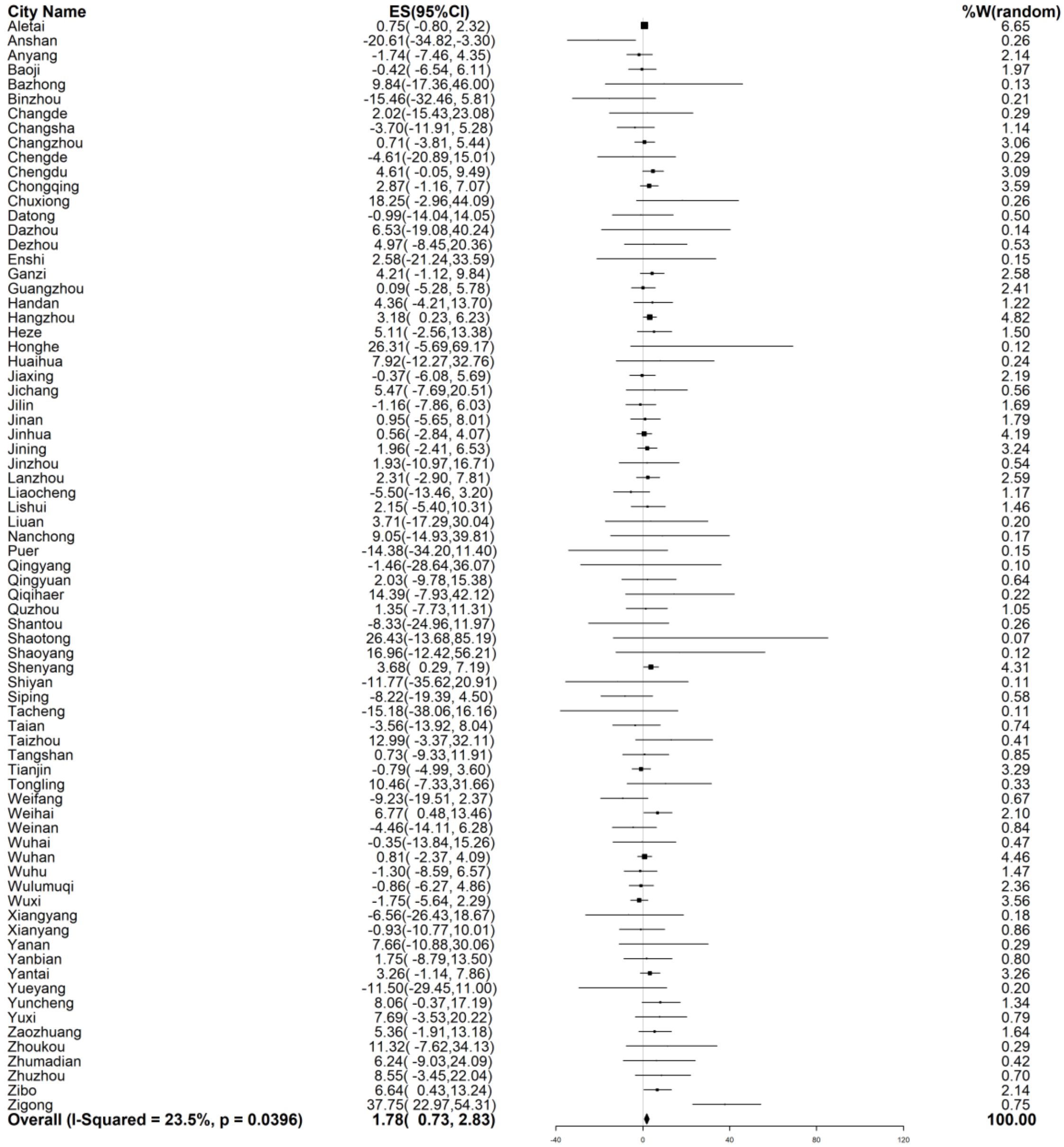

FIGURE S5. Forest plots for overall analyses of daily hospital admissions for depression associated with an increase of 10 μg/m^3 in NO_2 at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

City Name	ES(95%CI)	%W(random)
Aletai	0.00(-0.76, 0.77)	4.72
Anshan	-24.23(-35.38,-11.17)	0.64
Anyang	-4.56(-9.02, 0.11)	3.02
Baoji	-5.67(-12.98, 2.24)	1.80
Bazhong	135.91(-28.86,682.33)	0.01
Binzhou	-6.21(-26.08, 19.00)	0.31
Changde	1.29(-14.46, 19.94)	0.58
Changsha	-6.88(-21.66, 10.68)	0.55
Changzhou	5.72(-1.25, 13.17)	2.19
Chengde	13.40(-15.20, 51.65)	0.21
Chengdu	6.33(-5.51, 19.66)	1.05
Chongqing	12.22(5.01, 19.92)	2.25
Chuxiong	5.12(-13.70, 28.04)	0.44
Datong	-2.46(-7.76, 3.15)	2.66
Dazhou	35.90(-17.14,122.88)	0.08
Dezhou	10.36(1.76, 19.68)	1.78
Enshi	15.62(-19.54, 66.15)	0.14
Ganzi	11.18(-19.17, 52.93)	0.18
Guangzhou	2.48(-16.60, 25.93)	0.40
Handan	-2.51(-9.68, 5.24)	1.92
Hangzhou	7.25(-0.18, 15.22)	2.07
Heze	1.96(-3.46, 7.68)	2.71
Honghe	5.18(-1.51, 12.32)	2.27
Huaihua	4.29(-13.61, 25.90)	0.47
Jiaxing	4.17(-5.19, 14.45)	1.46
Jichang	-10.70(-30.09, 14.07)	0.29
Jilin	-0.23(-7.80, 7.95)	1.85
Jinan	-2.55(-7.67, 2.85)	2.74
Jinhua	-1.37(-6.55, 4.09)	2.74
Jining	-1.14(-3.71, 1.49)	4.07
Jinzhou	6.00(-2.70, 15.48)	1.66
Lanzhou	5.60(-8.07, 21.30)	0.81
Liaocheng	-8.12(-14.27, -1.53)	2.15
Lishui	-0.44(-11.29, 11.74)	1.09
Liuan	6.50(-21.68, 44.81)	0.19
Nanchong	5.05(-31.89, 62.03)	0.10
Puer	17.18(-15.19, 61.90)	0.17
Qingyang	-3.18(-17.96, 14.25)	0.60
Qingyuan	-5.19(-29.09, 26.76)	0.21
Qiqihaer	-0.15(-20.19, 24.92)	0.35
Quzhou	-5.78(-17.96, 8.21)	0.81
Shantou	-0.14(-25.90, 34.56)	0.20
Shaotong	4.51(-11.62, 23.58)	0.58
Shaoyang	5.45(-10.66, 24.46)	0.60
Shenyang	1.96(0.14, 3.83)	4.42
Shiyan	-14.60(-44.14, 30.56)	0.10
Siping	-6.10(-17.48, 6.86)	0.91
Tacheng	4.28(-38.98, 78.21)	0.06
Taian	-0.51(-7.99, 7.59)	1.86
Taizhou	4.23(-22.81, 40.76)	0.20
Tangshan	-4.49(-12.65, 4.43)	1.57
Tianjin	-3.73(-8.72, 1.53)	2.78
Tongling	21.28(4.17, 41.21)	0.69
Weifang	-3.68(-11.43, 4.76)	1.71
Weihai	2.30(-3.99, 9.01)	2.35
Weinan	-4.36(-20.24, 14.69)	0.51
Wuhai	1.63(-2.85, 6.33)	3.15
Wuhan	0.40(-7.48, 8.94)	1.77
Wuhu	-16.02(-25.04, -5.92)	1.11
Wulumuqi	-0.11(-12.63, 14.20)	0.86
Wuxi	-4.80(-13.84, 5.20)	1.35
Xiangyang	12.15(-27.02, 72.35)	0.10
Xianyang	-5.34(-20.32, 12.46)	0.56
Yanan	2.96(-14.95, 24.63)	0.46
Yanbian	7.95(-4.18, 21.61)	1.03
Yantai	4.28(-1.69, 10.61)	2.53
Yueyang	1.81(-17.86, 26.18)	0.37
Yuncheng	5.97(1.65, 10.46)	3.32
Yuxi	3.57(-8.82, 17.65)	0.93
Zaozhuang	1.64(-2.61, 6.08)	3.26
Zhoukou	-11.56(-34.16, 18.78)	0.21
Zhumadian	15.05(-11.32, 49.26)	0.26
Zhuzhou	5.87(-3.74, 16.44)	1.44
Zibo	2.68(0.06, 5.38)	4.09
Zigong	56.68(38.05, 77.83)	0.94
Overall (I-Squared = 53.2%, p < 0.0001)	**1.16(-0.21, 2.56)**	**100.00**

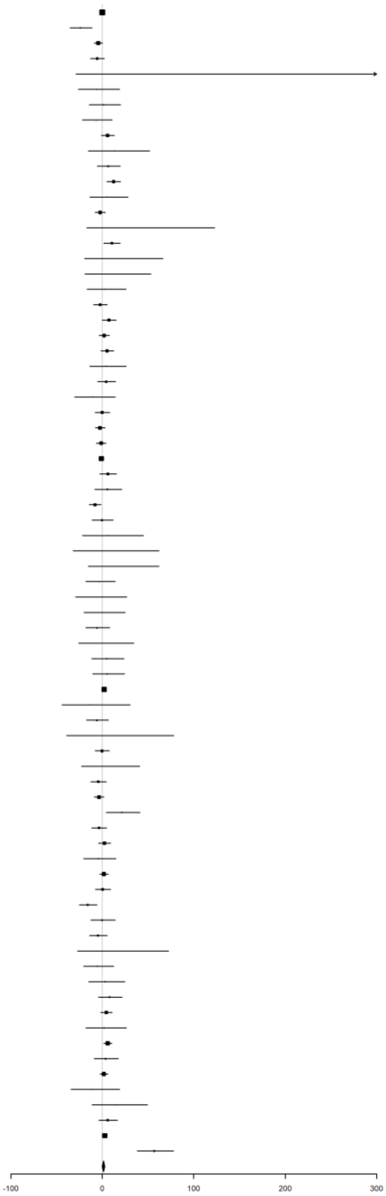

FIGURE S6. Forest plots for overall analyses of daily hospital admissions for depression associated with an increase of 10 μg/m^3 in SO_2 at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

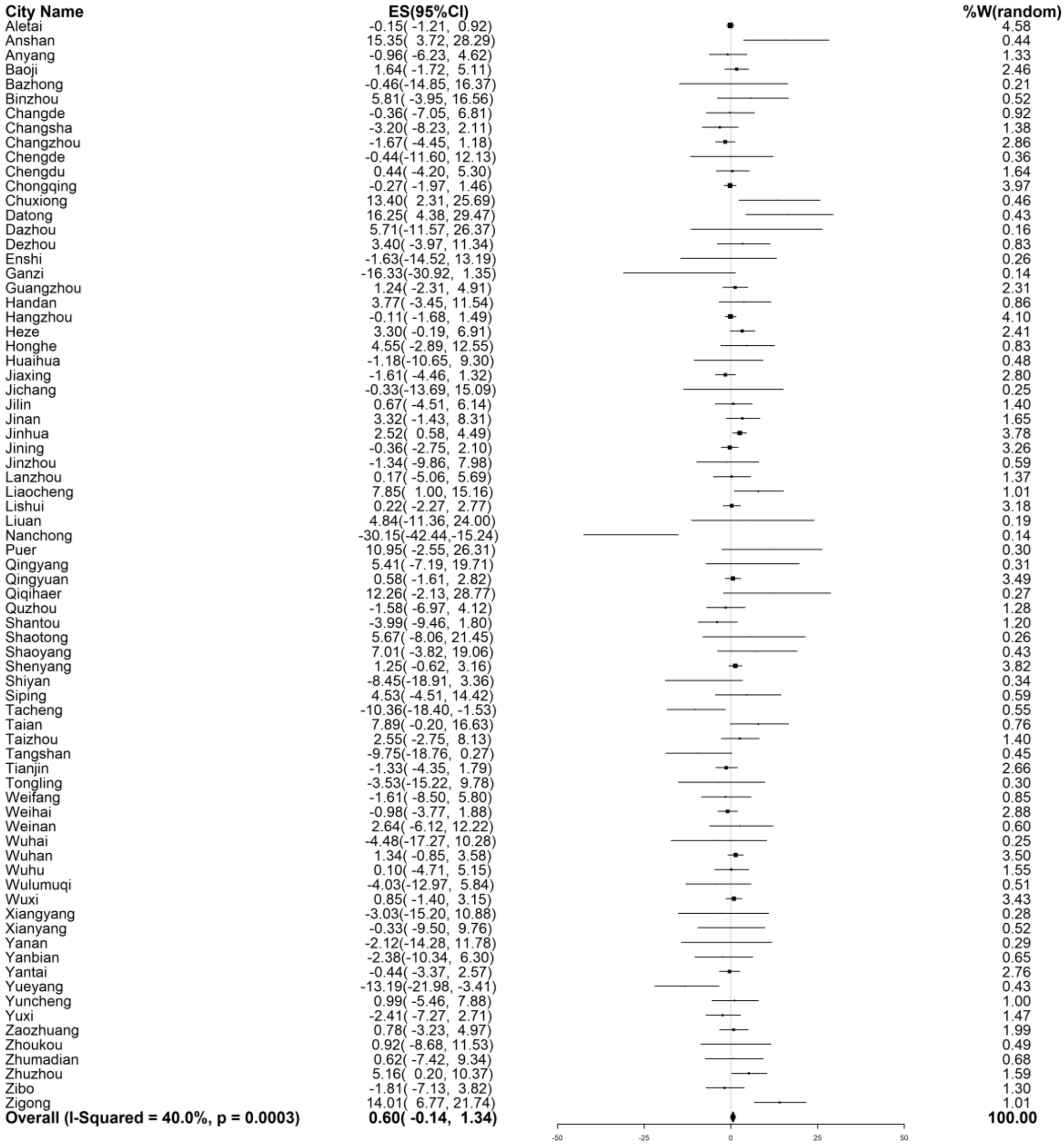

FIGURE S7. Forest plots for overall analyses of daily hospital admissions for depression associated with an increase of 10 μg/m^3 in O_3 at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

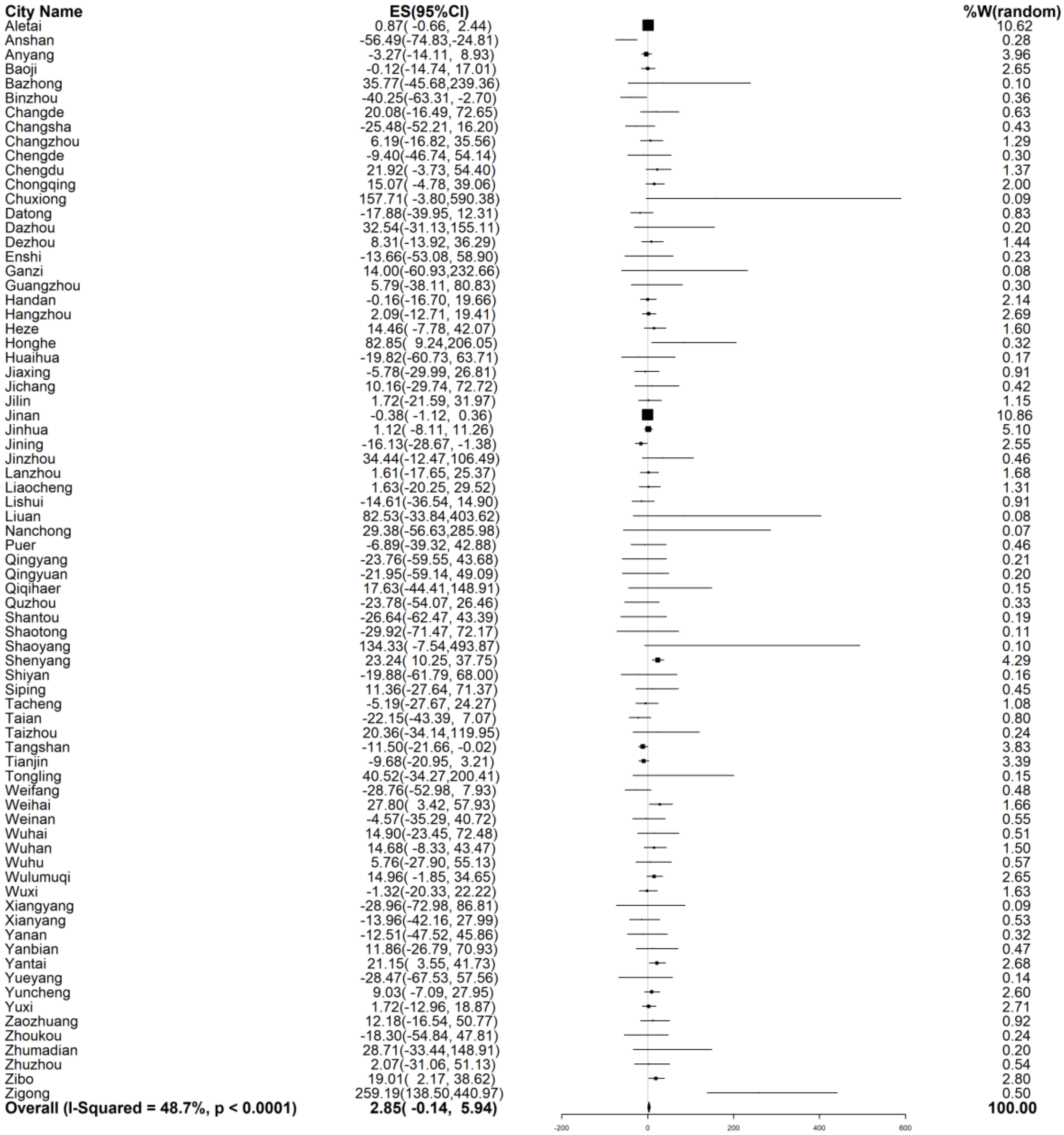

FIGURE S8. Forest plots for overall analyses of daily hospital admissions for depression associated with an increase of 1 mg/m^3 in CO at lag01 in 75 Chinese cities. The size of the percent change data markers is relative to each city's weight.

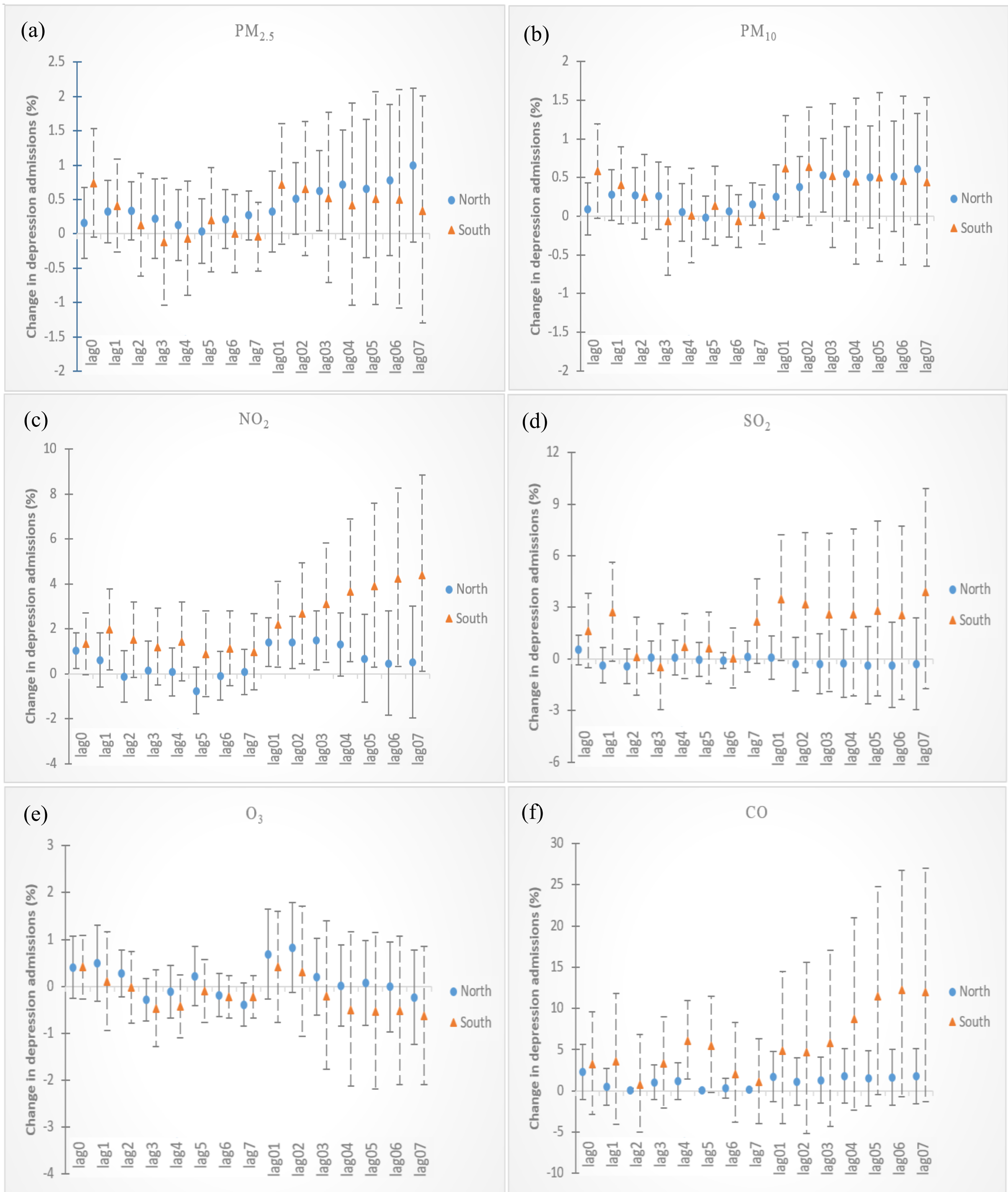

FIGURE S9. Overall percent changes in daily hospital admissions for depression per 10μg/m^3 increases in $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3 and 1mg/m^3 increase in CO at different lag days in 75 Chinese cities stratified by geographical region.

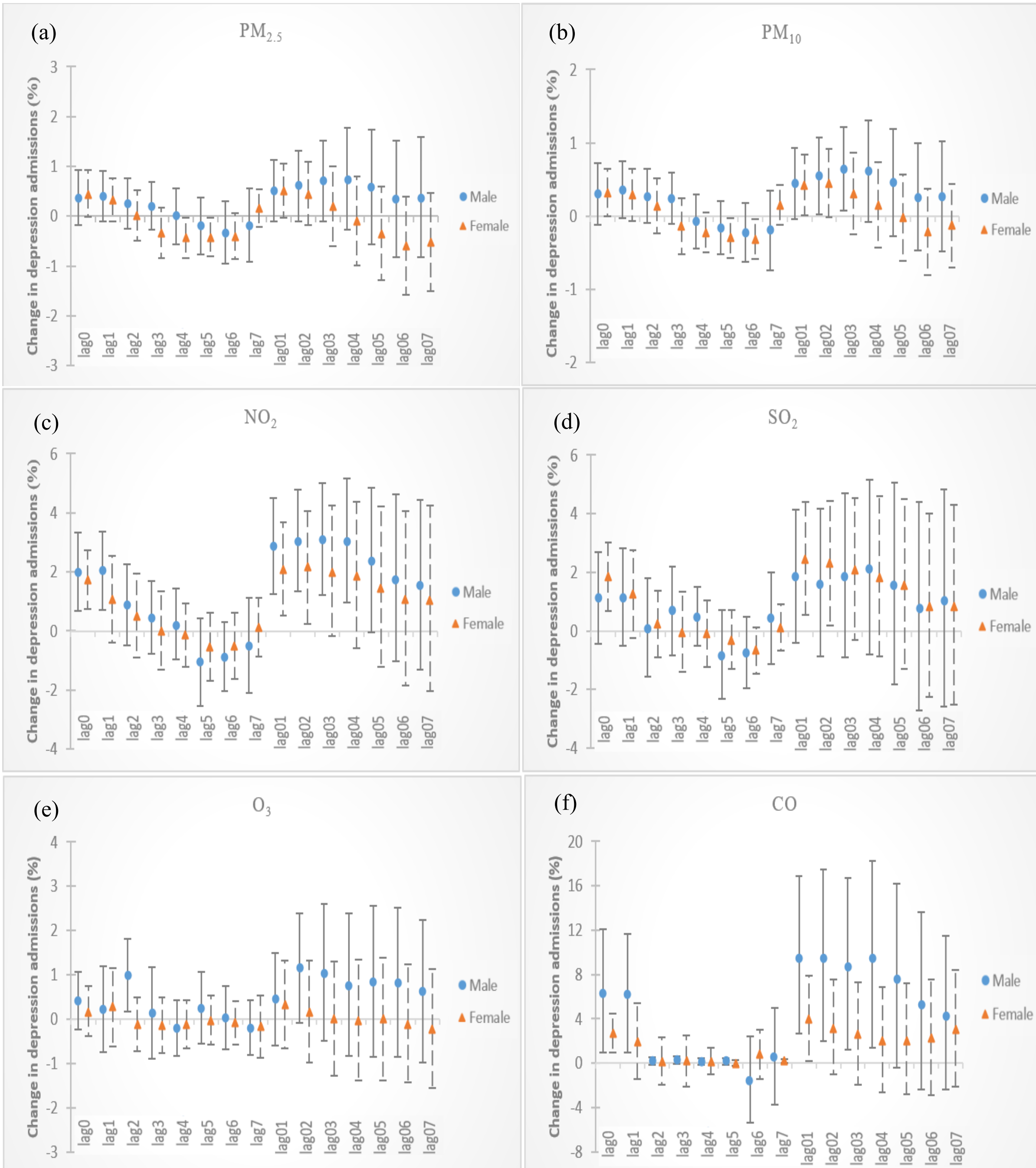

FIGURE S10. Overall percent changes in daily hospital admissions for depression per 10μg/m^3 increases in $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3 and 1mg/m^3 increase in CO at different lag days in 75 Chinese cities stratified by sex.

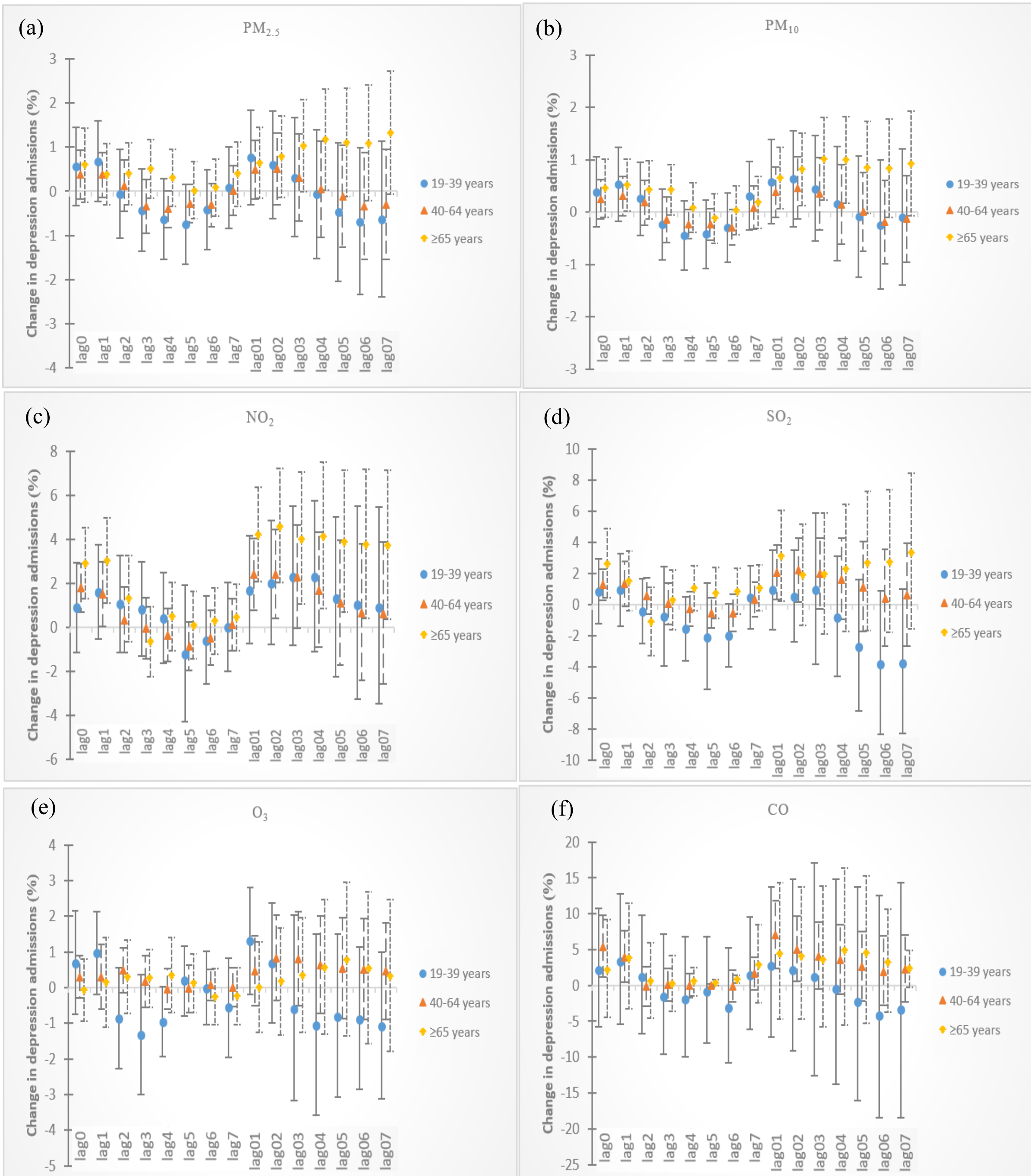

FIGURE S11. Overall percent changes in daily hospital admissions for depression per 10μg/m^3 increases in $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3 and 1mg/m^3 increase in CO at different lag days in 75 Chinese cities stratified by age.

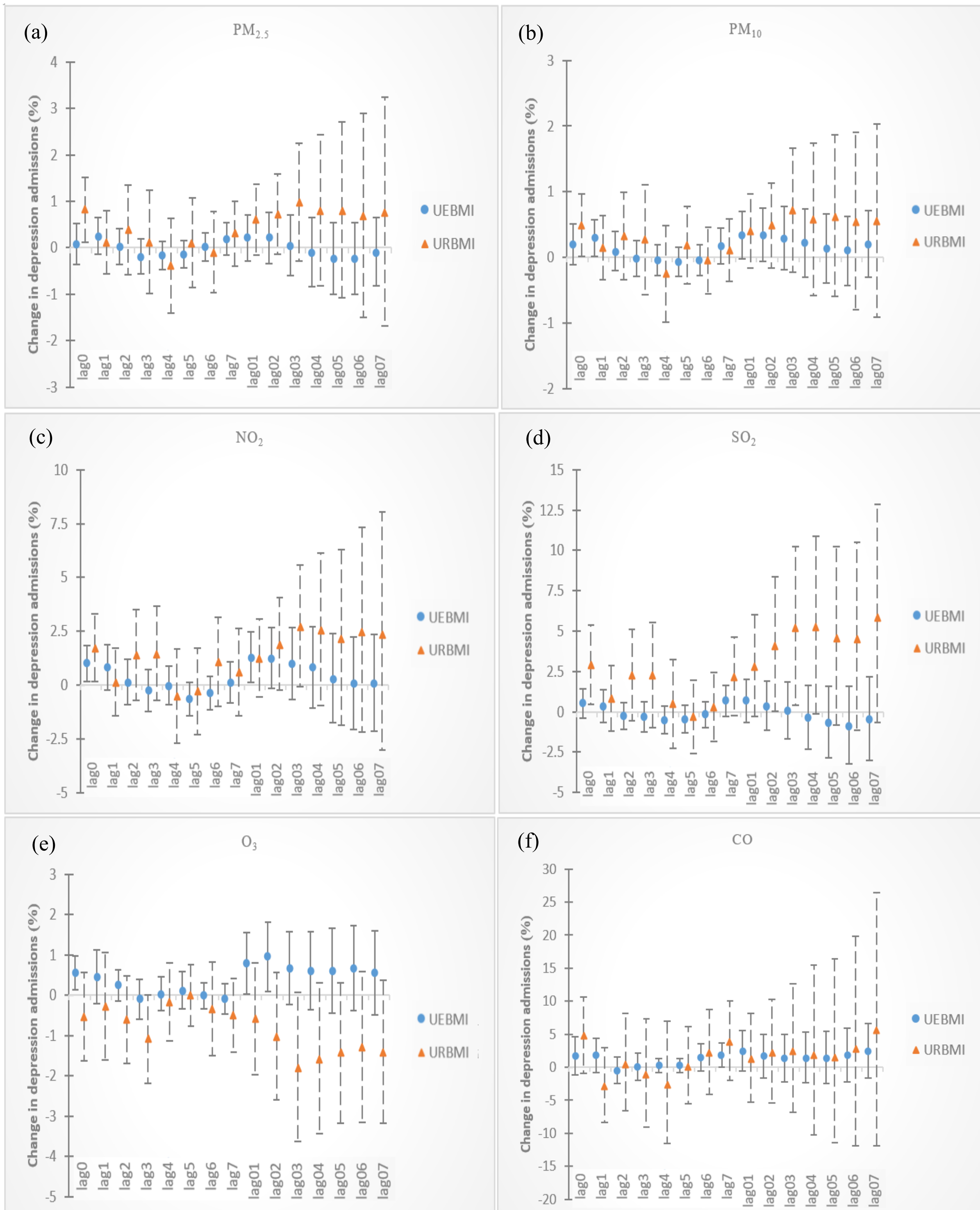

FIGURE S12. Overall percent changes in daily hospital admissions for depression per 10μg/m^3 increases in $PM_{2.5}$, PM_{10}, NO_2, SO_2, O_3 and 1mg/m^3 increase in CO at different lag days in 75 Chinese cities stratified by insurance type.