

Supplementary material and tables for

**The Impact of Shanghai's comprehensive smoke-free legislation on
Hospital Admission and Mortality Rates for Ischemic Heart Disease:
An interrupted time series analysis**

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Appendix : Comprehensive Public Smoking Ban in Shanghai, China

1. Overview of the *Regulations of Shanghai Municipality on Smoking Control in Public Places*

The Regulations of Shanghai Municipality on Smoking Control in Public Places (hereinafter referred to as the Regulations) were enacted on March 1, 2010, prohibiting smoking in specific indoor public spaces, workplaces, public transportation, and waiting areas for public transport¹. On November 11, 2016, the Shanghai People's Congress introduced its first amendment, extending the ban to encompass all indoor spaces, thereby instituting a comprehensive indoor smoking prohibition effective March 1, 2017. A subsequent amendment on October 28, 2022, further expanded the scope to include e-cigarettes within the public smoking ban. Consequently, smoking (including e-cigarettes) is now strictly prohibited in all indoor public spaces, workplaces, public transportation, and select outdoor areas such as schools, hospitals, and cultural sites².

Following the initial amendment, the tobacco control environment and the establishment of smoke-free spaces in various venues significantly improved, with standardized smoking prohibition signage (including no-smoking symbols and reporting hotlines) becoming more prevalent³. Since the implementation of the total indoor smoking ban, Shanghai has imposed annual fines exceeding 2.2 million CNY for smoking violations, cumulatively reaching nearly 16 million CNY by the end of 2023. The violation rate in designated no-smoking areas decreased from 37.5% prior to the legislation to 12.3%, with e-cigarette usage at 2.2%. Adult smoking rates have also declined steadily, from 26.9% in 2010 to 19.42% in 2023⁴.

In 2022, enforcement efforts were further intensified, with 301,163 venues inspected, 469 venues fined, and 340 individuals penalized. Total penalties amounted to 1,675,650 CNY, comprising 1,648,750 CNY from venues and 26,900 CNY from individuals. The violation rate in legally designated no-smoking areas remained at 12.3%⁵. The concept of a “total indoor smoking ban and no smoking in outdoor areas” has emerged as a new health trend among citizens, fostering a shared commitment to building a smoke-free environment. This approach has provided a “Shanghai solution”

for innovative urban governance.

2. Participants in Tobacco Control

Effective tobacco control necessitates the collaborative efforts of the following participants:

- a) **Government agencies, public institutions, and their staff** must adhere to tobacco control regulations and lead by example in fulfilling their obligations.
- b) **Shanghai Municipal Center for Health Promotion** should organize relevant departments to strengthen monitoring and evaluation of tobacco control efforts, conduct regular tobacco control inspections, and publish annual reports on tobacco control.
- c) **Relevant administrative departments and industry associations** should integrate tobacco control into their routine management practices within their respective systems and industries.
- d) **The health department** is responsible for organizing smoking behavior intervention programs, establishing a hotline, and providing tobacco control consultation services.
- e) **Medical institutions** should provide smoking cessation guidance and support to smokers.
- f) **Volunteer organizations, social groups, and individuals** are encouraged to engage in public education initiatives, organize social supervision, assist smokers in quitting, and provide feedback on tobacco control efforts.
- g) **Units and individuals** are encouraged to report violations through the “12345” citizen hotline or relevant industry regulatory hotlines.

3. Smoking Restrictions in the 2017 Regulation Amendment

Indoor Restrictions

All indoor public places, indoor workplaces, and public transportation vehicles are designated as smoke-free. Specific expansions of smoke-free restrictions include:

- a) **Hotels** must enforce a comprehensive smoking ban in all indoor areas;
- b) **Restaurants and entertainment venues** are no longer permitted to designate smoking areas;
- c) **Government offices** must prohibit smoking in meeting rooms, dining areas, and shared workplaces;
- d) **Airports, railway stations, and port terminals** are required to remove smoking rooms.

Outdoor Restrictions

The following outdoor public areas are designated as smoke-free:

- a) Facilities primarily used by minors, including nurseries, kindergartens, primary and secondary schools, youth activity centers, and children's welfare institutions;
- b) Maternal and child health hospitals and children's hospitals;
- c) Sports venues, performance venues, and areas designated for audiences, competitions or performances;
- d) Publicly accessible cultural heritage sites;
- e) Public transportation vehicle waiting areas with large crowds;
- f) Other public places as specified by laws, regulations, or rules.

Municipal and district/county governments may designate additional outdoor areas as permanent or temporary smoke-free zones based on local conditions.

4. Supervision and Enforcement of the 2017 Regulation Amendment

Tobacco control enforcement in Shanghai is implemented as follows:

- a) **The education administrative department** is responsible for supervising and enforcing tobacco control work in all educational institutions.
- b) **The cultural law enforcement agency** is responsible for supervising and enforcing tobacco control in cultural, sports, entertainment venues, hotels, and publicly accessible cultural heritage sites.
- c) **Airport and railway law enforcement institutions, transportation administration agencies, and metro operators** is responsible for supervising and enforcing tobacco control on public transport and related public spaces within their jurisdictions.
- d) **The food and drug administration (market supervision department)** is responsible for supervising and enforcing tobacco control in the foodservice industry.
- e) **The public security department** is responsible for supervising and enforcing tobacco control in internet cafes and other online service venues.
- f) **The housing and urban-rural construction department** is responsible for supervising and enforcing tobacco control in public elevators within property management areas.
- g) **The health and family planning administrative department** is responsible for supervising and enforcing tobacco control in medical institutions and other public spaces and workplaces not covered by the above departments.

5. Penalties under the 2017 Regulation Amendment

Tobacco-free Areas

Entities violating the Regulations will be ordered to rectify the issue within a specified period and fined between 2,000 to 10,000 CNY. Severe violations may incur fines ranging from 10,000 to 30,000 CNY.

Individuals

Individuals smoking in tobacco-free areas who refuse to comply with warnings will be ordered to correct their behavior and fined between 50 to 200 CNY.

References

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Table S1. Degree of Hospital Admission Rate Model Fit by Poisson and Negative Binomial

	Poisson		Negative Binomial
Degree of model fit	AIC	BIC	AIC
Over 35	112.0157	9859.816	20.28596
35-64	42.44637	2907.584	17.47024
Over 65	84.98428	7131.363	19.72183

Table S2. Degree of Mortality Rate Model Fit by Poisson and Negative Binomial

	Poisson		Negative Binomial
Degree of model fit	AIC	BIC	AIC
Over 35	22.84241	928.7967	17.05286
35-64	7.805736	-306.154	11.20749
Over 65	21.60006	807.7309	16.94177