

Public support for national comprehensive smoke-free legislation and its setting-specific components: a multijurisdiction cross-sectional survey in China

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Research Article

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Abstract

Background

High reported support for smoke-free legislation may not reflect support for every setting covered by comprehensive protection. This study compared general and setting-specific support for national comprehensive smoke-free legislation in a multijurisdiction survey in China.

Methods

A quota-sampled online cross-sectional survey was conducted in 48 prespecified jurisdictions from 1 November to 31 December 2022. Adults first received a standardized policy definition and brief background information. General support was measured in all adults and setting-specific support among supporters. Complete setting-specific support required ratings of 4 or 5 for all 13 indoor settings. Modified Poisson regression with jurisdiction-clustered robust standard errors estimated adjusted prevalence ratios (aPRs).

Results

Prompted support after the standardized preamble was 97.9% (3,119/3,187; 95% CI 97.3–98.3). Among adult supporters, 94.4% selected the summary option covering the three core indoor domains, 65.5% supported smoke-free policy in all 13 indoor settings, and 34.1% strongly supported all 13. Support was lowest for bars/karaoke venues/cinemas (74.8%), hotels (83.8%), and restaurants (89.9%). In a separate item, 85.0% supported the questionnaire's managed 'smoking room' option; 10.6% both supported all 13 indoor settings and opposed this option. Complete setting-specific support was lower among current smokers (aPR 0.83, 95% CI 0.74–0.92) and higher among respondents reporting clear knowledge of secondhand smoke (aPR 1.12, 95% CI 1.01–1.24) and thirdhand smoke (aPR 1.20, 95% CI 1.13–1.29).

Conclusions

Prompted support was near universal in this quota sample, but support was lower in hospitality and entertainment venues than in most other settings. The smoking-room item was difficult to interpret because it did not specify whether the proposed space was indoors. Future surveys should distinguish indoor smoking rooms from outdoor designated areas and report general and setting-specific support separately.

Background

Protection from exposure to tobacco smoke is a core obligation of Article 8 of the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). The Article 8 implementation

guidelines call for 100% smoke-free environments in indoor workplaces, indoor public places, and public transport; approaches that allow designated indoor smoking rooms, even when supported by ventilation or other engineering controls, do not provide equivalent protection [1]. Thus, comprehensive smoke-free policy is defined not only by a general prohibition on smoking, but also by the breadth and consistency of the settings covered.

China has made substantial progress in tobacco control, but secondhand-smoke exposure has remained an important public-health concern. The 2018 China Adult Tobacco Survey reported that 68.1% of nonsmokers were exposed to secondhand smoke, while more than 90% of adults expressed support for smoke-free indoor public places [2, 3]. At the same time, local smoke-free legislation has historically varied in scope. A review of subnational laws found that many local regulations were incomplete and that designated indoor smoking rooms were still permitted in more than half of the laws assessed [4]. More recent legal mapping through the end of 2024 identified 46 cities with comprehensive smoke-free regulations, covering more than 200 million people, but also documented substantial gaps in restaurants, bars, hotels, and general indoor workplaces and confirmed the continued absence of a national-level comprehensive smoke-free regulation at that time [5].

Previous Chinese studies have consistently shown high support for smoke-free policy, but support differs by setting and respondent characteristics. In the International Tobacco Control China Survey, nonsmokers were generally more supportive than smokers [6]. Among government workers in six cities, support exceeded 90% for most settings but was lower for bars and hotels; greater knowledge of secondhand-smoke harms was associated with stronger policy support [7]. Longitudinal and policy-evaluation studies have also shown that support and exposure can change as smoke-free policies are introduced and strengthened [8, 9]. International studies likewise report lower support for hospitality venues than for many other settings, and support can rise after comprehensive smoke-free policies are implemented [10–14]. A single general support question may therefore miss variation across specific policy settings.

Less is known about how general support for national comprehensive smoke-free legislation relates, within the same respondents, to support for the indoor settings such legislation would cover. A respondent may support the overall policy while taking a different view of restaurants, hotels, entertainment venues, or designated smoking spaces. Measuring both general and setting-specific support can show where acceptance is less consistent without assuming that any difference reflects a knowledge deficit.

This study used data from a 2022 multijurisdiction survey in China to quantify prompted general support for national comprehensive smoke-free legislation and, among adults who expressed support, to describe support across specific indoor settings. Secondary analyses examined selected correlates of complete setting-specific support. A separate smoking-room item was analyzed descriptively because its wording did not explicitly distinguish indoor smoking rooms from outdoor designated smoking areas.

Methods

Study design and setting

A cross-sectional online survey was conducted from 1 November to 31 December 2022. The sampling frame comprised 48 prespecified jurisdictions in China: 24 jurisdictions that, as of 31 October 2022, had smoke-free legislation meeting the study definition of comprehensive protection and 24 comparison jurisdictions. Comprehensive protection was defined a priori as complete prohibition of smoking in all indoor public places, all indoor workplaces, and public transport, without allowance for indoor smoking rooms. Two graduate researchers independently reviewed local legislation against this definition and reached fully concordant classifications; a third researcher had been designated to resolve disagreements if needed. Comparison jurisdictions were selected at the design stage using geographic region, administrative level, population size, and economic development as comparability criteria. The original one-to-one pair identifiers were not retained, and no matched-pair statistical analysis was performed. Supplementary Table S4 in Additional file 1 lists the design-stage classifications and the legal basis used for each qualifying jurisdiction. A later cross-check found that 22 of the 24 qualifying city-level units also appeared in a 2026 published inventory of 23 Article 8-compliant cities based on the Healthy China Smoke-Free Legislation platform [15]. Lanzhou met the study criterion at the 2022 cut-off through time-limited 2018 implementation rules that expired in November 2023 [15]. Hainan was the only province-level sampling unit and was examined separately in a sensitivity analysis.

A commercial online survey company recruited participants according to prespecified quotas for jurisdiction, sex, age, and urban/rural residence. The quotas were intended to ensure adequate representation for subgroup comparisons rather than to reproduce the national population distribution. The target sample of 3,200 was determined by the prespecified quota allocation across jurisdictions and demographic strata rather than by a sample-size calculation for a nationally representative prevalence estimate. Participants were required to have lived in the sampled jurisdiction for at least six months. No additional cash, points, or other participation incentive was provided.

Questionnaire development and survey procedures

The questionnaire was reviewed by tobacco-control experts and then pilot-tested with 10 respondents. Wording and survey logic were revised before field deployment. Core questions were mandatory. The order of options in multiple-response items and the row order of list/matrix items were randomized to reduce order effects. Duplicate participation was restricted using Internet Protocol address controls. The survey company applied quality-control rules and excluded questionnaires with logical inconsistencies or excessively short completion times before delivery of the final dataset. The archived study records available for the present analysis did not retain the original invitation denominator, response rate, numbers excluded by each quality-control rule, or the exact short-completion-time threshold; these metrics could therefore not be reported. The final analytic dataset and questionnaire modules used in

this article have not previously been published or submitted for publication; other questionnaire modules address distinct tobacco-control topics and are outside the scope of the present article.

Before the first substantive question, all respondents were shown a standardized preamble describing comprehensive smoke-free legislation as legislation that completely prohibits smoking in all indoor public places, public transport, and indoor workplaces, including no smoking rooms. The preamble also provided brief contextual information on secondhand-smoke exposure in China and the absence of national comprehensive smoke-free legislation at the time of the survey. Respondents then reported whether they supported national comprehensive smoke-free legislation. The questionnaire did not provide a dedicated mechanism to reopen the initial definition on later pages.

Participants and analytic sample

The quality-controlled dataset contained 3,200 respondents. The survey was intended for adults, but 13 delivered records had reported birth years indicating age younger than 18 during fieldwork. Archived fieldwork records do not show how these records passed the intended age-eligibility screen, and they were excluded before analysis. The primary descriptive sample therefore comprised 3,187 adults. Setting-specific analyses were restricted a priori to the 3,119 adults who reported supporting national comprehensive smoke-free legislation because the main question was how broadly that stated support extended across concrete settings. For comparison, setting-specific estimates for all 3,187 adults are reported in Supplementary Table S1B.

Measures

General support and direct core-domain endorsement

General support was measured with a binary item asking whether the respondent supported national comprehensive smoke-free legislation. Among supporters, a subsequent multiple-response item asked which types of places should be completely smoke-free. Direct core-domain endorsement was defined as selecting the option covering the three domains specified in the survey definition: indoor public places, public transport, and indoor workplaces.

Setting-specific support and complete all-setting support

Respondents rated support for complete smoking prohibition in 13 specified indoor settings on a five-point scale from 1 (strongly oppose) to 5 (strongly support): indoor workplaces; government buildings; healthcare facilities; shopping malls/supermarkets; restaurants; hotels; public transport; transport terminals; primary/secondary schools and kindergartens; universities/colleges; bars, karaoke venues and cinemas; libraries/museums; and indoor sports/swimming venues. For each setting, responses of 4 or 5 were classified as support and a response of 5 as strong support.

The primary study-defined all-setting outcome, termed complete setting-specific support, required a rating of 4 or 5 for all 13 indoor settings. Because support for all 13 settings is a stricter criterion than support for any single item, it was treated as an all-setting summary indicator rather than as a psychometric scale or a direct measure of policy understanding. The number of settings supported (0–13) and the proportion strongly supporting all 13 settings were also calculated.

Smoking-room preference

A separate binary item asked whether respondents supported setting up a 'smoking room' (吸烟室) in public places where smoking was prohibited. The fielded item described the space as meeting fire-safety requirements, having clear signage, being separated from nonsmoking rooms/areas, and being located away from crowded areas and major pedestrian routes. The Chinese term and several management cues make an indoor-room interpretation plausible, but the item did not explicitly state 'indoors' and also contained wording compatible with an outdoor designated area. The item was therefore analyzed separately from the primary all-setting outcome. An exploratory Article 8-oriented combined criterion was also calculated: support for all 13 indoor settings plus opposition to the smoking-room option. Because the item did not specify location, this combined criterion was treated as exploratory.

Selected correlates

Secondary analyses considered a limited set of variables selected for relevance to policy exposure or tobacco-related knowledge: smoking status (never, previous, current); residence in a jurisdiction with qualifying comprehensive smoke-free legislation; prior awareness of comprehensive smoke-free legislation; clear self-reported knowledge of secondhand smoke; clear self-reported knowledge of thirdhand smoke; and exposure during the previous 30 days to messages about smoking harms, smoking cessation, or smoke-free public places (none, one medium, multiple media). Models additionally adjusted for sex, age group, education, and urban/rural residence. Recent information exposure was retained as an adjustment covariate but was not treated as a focal correlate because its descriptive association with the outcome was non-monotonic.

Smoking status came from Q45. 'Current' was defined by the questionnaire as smoking daily or occasionally at present; 'previous' indicated having smoked previously but now having quit; and 'never' indicated never smoking. The item did not include a lifetime-consumption threshold (such as 100 cigarettes). Accordingly, the previous-smoking category is not directly equivalent to the standard epidemiological definition of a former established smoker and was not used to calculate a cessation rate.

Statistical analysis

Primary analyses were unweighted because the quota design was intended for subgroup coverage rather than national population calibration. Categorical variables were summarized as counts and percentages, with Wilson 95% confidence intervals (CIs) for key proportions. Venue-specific support was described among adult general supporters, with all-adult estimates reported as a sensitivity reference. Because complete setting-specific support was common, adjusted prevalence ratios (aPRs) were estimated using modified Poisson regression with a log link and sandwich standard errors clustered by the 48 sampling jurisdictions [16]. The model included smoking status, qualifying-law jurisdiction, prior awareness, secondhand- and thirdhand-smoke knowledge, recent information exposure, sex, age, education, and residence. Statistical significance was set at a two-sided alpha of 0.05; no multiplicity adjustment was applied, and interpretation emphasized effect estimates and 95% CIs. Sensitivity analyses included: (1) cluster-robust logistic regression and generalized estimating equations; (2) a leave-one-jurisdiction-out cluster jackknife for key coefficients; (3) a Poisson model for the count of supported settings (0–13); (4) exclusion of Hainan Province; and (5) targeted calibration of current-smoking prevalence within sex to 2018 and 2024 national survey margins. Full age-sex-smoking-status calibration was not attempted because the survey's previous-smoking category lacked the lifetime-consumption criterion used in population tobacco surveillance. Variance inflation factors were examined for multicollinearity. Core items were mandatory, so no imputation for missing outcome or covariate data was required. Analyses were conducted in Python 3.13.5 using statsmodels 0.14.6, SciPy 1.17.0, and NumPy 2.3.5. Reporting followed STROBE guidance for cross-sectional studies.

Use of generative AI and AI-assisted technologies

During preparation of the manuscript, KIMI (K3) was used to assist with statistical code development and language editing. The author reviewed and verified the analyses, references, and text and takes full responsibility for the final content.

Results

Participant characteristics and general support

The adult analytic sample included 3,187 respondents (Table 1). Approximately half were women (49.1%), 63.2% were aged 25–59 years, 59.0% had a bachelor degree or higher, and 11.5% were current smokers. Current smoking was reported by 19.9% of men (323/1,623) and 2.8% of women (44/1,564); the questionnaire's broader previous-smoking category was reported by 35.8% of men and 9.5% of women. Most respondents had previously heard of comprehensive smoke-free legislation (83.8%); 89.6% reported clearly knowing what secondhand smoke was and 56.1% reported clearly knowing what thirdhand smoke was. Almost half (49.9%) resided in a jurisdiction classified as having qualifying comprehensive smoke-free legislation at the survey cut-off.

Prompted support after the standardized preamble was 97.9%: 3,119 of 3,187 adults supported national comprehensive smoke-free legislation (95% CI 97.3–98.3). The preamble supplied a policy definition and directional background information, and Q1 offered only support/do-not-support response options. The

estimate is therefore treated as prompted survey support rather than an unprompted population benchmark. Subsequent setting-specific analyses focus primarily on adult supporters unless otherwise stated.

Table 1
Characteristics of adult survey respondents (N = 3,187)

Characteristic	n	%
Sex		
Male	1,623	50.9
Female	1,564	49.1
Age, years		
18–24	563	17.7
25–59	2,015	63.2
≥60	609	19.1
Residence		
Urban	1,820	57.1
Rural	1,150	36.1
Urban–rural fringe	217	6.8
Education		
Bachelor degree or higher	1,881	59.0
College diploma	820	25.7
High school or lower	486	15.2
Smoking status		
Never smoker	2,091	65.6
Previous smoker	729	22.9
Current smoker	367	11.5
Previously heard of comprehensive smoke-free legislation	2,670	83.8
Clearly knows what secondhand smoke is	2,855	89.6
Clearly knows what thirdhand smoke is	1,788	56.1
Recent tobacco-control information exposure		
None	494	15.5
One medium	899	28.2
Note: Percentages may not sum to 100 because of rounding. Qualifying-law status was defined as of 31 October 2022 using the study criteria described in Methods.		

Characteristic	n	%
Sex		
Multiple media	1,794	56.3
Jurisdiction status		
Qualifying comprehensive smoke-free legislation	1,592	49.9
Comparison jurisdiction	1,595	50.1
Note: Percentages may not sum to 100 because of rounding. Qualifying-law status was defined as of 31 October 2022 using the study criteria described in Methods.		

Comparison of prompted general and all-setting support

Among the 3,119 adult supporters, 2,945 (94.4%, 95% CI 93.6–95.2) selected the direct summary option covering indoor public places, public transport, and indoor workplaces. At the setting-specific level, 2,043 (65.5%, 95% CI 63.8–67.2) supported smoke-free policy in all 13 specified indoor settings, and 1,063 (34.1%, 95% CI 32.4–35.8) strongly supported all 13 (Table 2). The median number of settings supported was 13 (interquartile range 12–13), with a mean of 11.81 (SD 2.60); the full 0–13 distribution is reported in Supplementary Table S5 and Supplementary Figure S1. Among respondents who selected the core-domain summary item, 67.1% also supported all 13 specific settings; among the 174 who did not select that multiple-response option, 38.5% nevertheless supported all 13 specific settings. Non-selection in a multiple-response item should not be interpreted as explicit opposition. Because the all-13 indicator requires support for every setting, it is more stringent than a single general or broad-domain item; these measures differ in specificity and should not be read as a direct estimate of a knowledge deficit.

Table 2
General and setting-specific smoke-free policy support indicators

Indicator	Denominator	n (%)	95% CI, %
Prompted general support for national comprehensive smoke-free legislation	All adults (n = 3,187)	3,119 (97.9)	97.3–98.3
Direct endorsement of core indoor domains	Adult supporters (n = 3,119)	2,945 (94.4)	93.6–95.2
Complete setting-specific support: support for all 13 indoor settings	Adult supporters (n = 3,119)	2,043 (65.5)	63.8–67.2
Strong support for all 13 indoor settings	Adult supporters (n = 3,119)	1,063 (34.1)	32.4–35.8
Note: Complete setting-specific support is an intentionally stringent all-setting indicator requiring support for all 13 specified indoor settings. The separate smoking-room item is reported in the following subsection rather than as part of this sequence.			

Setting-specific support

Support remained above 90% for 10 of the 13 specified indoor settings (Fig. 1; Supplementary Table S1A). The highest support was observed for indoor workplaces (94.9%), healthcare facilities (94.7%), libraries/museums (94.3%), and primary/secondary schools and kindergartens (94.2%). Support was lower for restaurants (89.9%) and hotels (83.8%), and lowest for bars, karaoke venues, and cinemas (74.8%). The same pattern was more pronounced for strong support: 81.9% strongly supported smoke-free schools and kindergartens, compared with 57.5% for hotels and 47.8% for bars, karaoke venues, and cinemas.

Smoking-room preference

A total of 2,651 adult general supporters (85.0%, 95% CI 83.7–86.2) supported the managed 'smoking room' described in the questionnaire. This preference was common even among respondents who supported all 13 specific indoor settings: 1,711 of 2,043 (83.7%) supported the option. Conversely, 332 of 3,119 supporters (10.6%, 95% CI 9.6–11.8) both supported all 13 indoor settings and opposed the smoking-room option. The Chinese term 吸烟室 ('smoking room') and the requirement for separation from nonsmoking rooms/areas make an indoor interpretation plausible. However, the item did not explicitly say the space was indoors and also referred to distance from crowded areas and pedestrian routes. The 10.6% combined estimate is therefore exploratory rather than a definitive estimate of support consistent with Article 8.

Correlates of complete setting-specific support

In descriptive comparisons, complete setting-specific support was observed in 68.3% of never-smokers, 62.0% of previous smokers, and 55.4% of current smokers. It was also more common among respondents who reported clear knowledge of secondhand smoke (67.2% vs 50.9%) and thirdhand smoke (72.2% vs 56.7%) (Supplementary Table S2). Recent information exposure showed a non-monotonic pattern (66.2% for no exposure, 53.3% for one medium, and 71.4% for multiple media). Coding was rechecked against the original three response options and no missing/unknown category was present; this variable was retained as an adjustment covariate but was not interpreted further.

In the adjusted modified Poisson model (Table 3; Fig. 2), current smokers were less likely than never-smokers to show complete setting-specific support (aPR 0.83, 95% CI 0.74–0.92), as were previous smokers (aPR 0.92, 95% CI 0.86–0.98). Clear self-reported knowledge of secondhand smoke (aPR 1.12, 95% CI 1.01–1.24) and thirdhand smoke (aPR 1.20, 95% CI 1.13–1.29) were positively associated with complete support. Adults aged 25–59 years had higher complete support than those aged 18–24 years (aPR 1.29, 95% CI 1.19–1.40). Residence in a qualifying-law jurisdiction was modestly below one (aPR 0.94, 95% CI 0.89–1.00) and was not interpreted causally. Sensitivity analyses using alternative correlation structures, cluster jackknife standard errors, the 0–13 count outcome, and exclusion of Hainan yielded materially similar conclusions for current smoking and tobacco-smoke knowledge (Supplementary Tables S6–S8; Supplementary Figure S3).

Table 3

Adjusted prevalence ratios for complete setting-specific support among adult supporters (n = 3,119)

Characteristic	aPR	95% CI	P value
Smoking status: never	1.00	Reference	
Smoking status: previous	0.92	0.86–0.98	0.008
Smoking status: current	0.83	0.74–0.92	< 0.001
Qualifying-law jurisdiction	0.94	0.89–1.00	0.037
Previously heard of comprehensive legislation	1.09	0.98–1.21	0.109
Clearly knows secondhand smoke	1.12	1.01–1.24	0.027
Clearly knows thirdhand smoke	1.20	1.13–1.29	< 0.001
Female sex	1.05	1.00–1.10	0.040
Age 18–24 years	1.00	Reference	
Age 25–59 years	1.29	1.19–1.40	< 0.001
Age > = 60 years	1.10	0.99–1.22	0.067
Note: aPR, adjusted prevalence ratio; CI, confidence interval. Modified Poisson regression with log link and sandwich standard errors clustered by 48 sampling jurisdictions. The displayed model also adjusted for recent information exposure, education, and residence; the full model is reported in Supplementary Table S6 and Supplementary Figure S2. P values are two-sided, unadjusted for multiple comparisons, and calculated from unrounded estimates; interpretation emphasizes effect sizes and 95% CIs.			

Discussion

In this multijurisdiction survey, almost all adult respondents supported national comprehensive smoke-free legislation after receiving a standardized definition and brief policy context. Support was less uniform across individual indoor settings. Among general supporters, 94.4% endorsed the core policy domains when presented as a summary category, 65.5% supported complete smoking prohibition across all 13 specified indoor settings, and 34.1% strongly supported all 13. Because the all-13 indicator is necessarily more stringent than a single general item, these percentages should not be read as a direct estimate of a knowledge gap. The clearest differences were between venues: support remained high in most settings but was lower in bars, karaoke venues and cinemas, hotels, and restaurants.

The venue pattern is consistent with earlier evidence from China. Kegler and colleagues found that support among government workers was lowest for bars and hotels and higher for workplaces, restaurants, schools, hospitals, and public transport [7]. Earlier ITC China data likewise showed lower support among smokers and variation by venue [6]. Similar setting-specific patterns have been reported internationally, including lower support for hospitality venues than for health- or child-related settings [10, 14]. Longitudinal evidence from Ireland, Mexico City, and the ITC Four Country Survey indicates that

support for comprehensive smoke-free policies can increase after stronger policies are implemented [11–13]. In the present survey, the same respondents answered both a national-level general support item and a detailed set of indoor-setting items after a common policy preamble.

The smoking-room result is harder to interpret. WHO FCTC Article 8 guidance is explicit that designated indoor smoking rooms do not constitute 100% smoke-free protection [1]. The Chinese wording asked about a 'smoking room' (吸烟室), and the fire-safety, signage, and separation requirements make an indoor reading plausible. If respondents understood the item this way, only 10.6% of prompted supporters both supported all 13 indoor settings and opposed the smoking-room option, while 83.7% of respondents who supported all 13 settings still accepted the room. However, the item did not explicitly say the space was indoors and also referred to locating it away from crowded areas and main pedestrian routes. If some respondents pictured an outdoor designated area, the 10.6% criterion would be too strict. The item therefore cannot provide a definitive estimate of support for Article 8-inconsistent indoor smoking rooms. Future surveys should ask separately about indoor smoking rooms and outdoor designated areas.

Current smokers showed lower complete setting-specific support than never-smokers, consistent with previous studies in China and internationally [6, 7, 10, 13]. The questionnaire's previous-smoking category also showed lower support, but it should be interpreted cautiously because Q45 did not require a lifetime smoking threshold. Clear self-reported knowledge of secondhand and thirdhand smoke was associated with greater complete support; previous research has similarly linked awareness of secondhand-smoke harms with stronger support for smoke-free policy [7, 13]. The non-monotonic recent-media variable was not interpreted further.

Smoking status also limits comparability with national surveillance. Current smoking was 19.9% among men and 2.8% among women in this sample, compared with 50.5% and 2.1%, respectively, in the 2018 China Adult Tobacco Survey [2] and 43.9% and 1.8% in the 2024 National Adult Tobacco Survey [17]. At the same time, 22.9% of the sample was classified as having smoked previously. Because Q45 defined previous smoking simply as having smoked in the past and now having quit, without the lifetime-consumption criterion used in standard surveillance, this percentage should not be read as a population former-smoking prevalence or used to derive a cessation rate; the 2024 national surveillance cessation rate was 22.65% under its own established-smoker definition [18]. Targeted calibration of current-smoking prevalence within sex reduced the prompted support estimate only modestly, from 97.9% unweighted to 96.7% using 2018 margins and 96.9% using 2024 margins; complete all-13 support among prompted supporters changed from 65.5% to 64.3% and 64.6%, respectively (Supplementary Table S7). These sensitivity analyses suggest that underrepresentation of current smokers does not explain the setting-specific pattern, while the broad previous-smoking category remains a measurement limitation.

Residence in a jurisdiction classified as having qualifying comprehensive smoke-free legislation was not associated with higher complete setting-specific support in the adjusted analysis. This finding does not

show that local laws reduce support. The study was cross-sectional, the original matched-pair identifiers were unavailable, implementation intensity and direct awareness of the local law were not measured, and one sampling unit (Hainan) was province-level rather than city-level. Excluding Hainan produced materially similar estimates (Supplementary Table S8). The design-stage legal classification was also compared with later published inventories. Twenty-two of the 24 qualifying city-level units were independently corroborated in a 2026 inventory of Article 8-compliant cities; Lanzhou was compliant at the 2022 cut-off through implementation rules that later expired, while Hainan is not directly comparable to city-only inventories [15]. The larger count of 46 cities reported in a 2025 national mapping reflects a later 2024 time point and a different inventory frame [5], and should not be expected to match the 2022 sampling frame. Longitudinal designs with implementation measures remain better suited to evaluating whether policy exposure changes public acceptance.

The way support is measured matters. The 97.9% figure is a prompted estimate obtained after respondents received a definition, information about secondhand-smoke exposure, and the statement that China lacked national comprehensive smoke-free legislation; Q1 also required a binary support/do-not-support choice. It should not be compared directly with unprompted population-surveillance estimates. A general question is useful for summarizing broad acceptability, but setting-specific items show where support is lower, particularly in hospitality and entertainment venues. Survey and policy communication should also distinguish indoor smoking rooms from outdoor designated smoking areas.

This study has several strengths. It included a large adult sample across a wide range of jurisdictions, used the same respondents to measure general and setting-specific policy support, and applied a pre-specified legal definition independently by two reviewers to classify local legislative environments. The questionnaire was expert-reviewed, pilot-tested, and implemented with mandatory core items and survey quality controls. The analysis also separated the clearly indoor 13-setting outcome from the more ambiguous smoking-room item and treated the all-13 indicator as a transparent summary measure rather than a psychometric scale.

Several limitations should be considered. First, the study used an online quota sample designed for subgroup comparison rather than national representativeness, and primary estimates were unweighted. Current smoking, particularly among men, was substantially underrepresented; targeted current-smoking calibration showed only modest changes in the two main support estimates but cannot correct all selection differences. Second, the previous-smoking item lacked a lifetime-consumption threshold, so the unusually large previous-smoking category is not directly comparable with surveillance definitions. Third, prompted general support was measured after a directional policy preamble and with a binary response, creating a likely ceiling effect; the 97.9% estimate is not an unprompted baseline. Fourth, invitation numbers, response rate, detailed quality-control exclusion counts, and the exact short-completion-time threshold were not retained. Fifth, the delivered dataset unexpectedly contained 13 records below the intended adult eligibility age; they were excluded, but the archived records cannot reconstruct how they passed the fieldwork screen. Sixth, the cross-sectional, self-reported design is subject to social-desirability and other response biases and cannot establish causal mechanisms.

Seventh, the all-13 outcome is intrinsically more stringent than a single global item and should not be equated with misunderstanding. Eighth, the smoking-room item did not explicitly distinguish indoor rooms from outdoor designated areas. Ninth, although comparison jurisdictions were selected using matching criteria, the original pair identifiers were not retained; Hainan was also the sole province-level unit. Finally, data were collected in 2022 and should be interpreted as a historical multijurisdiction assessment rather than current 2026 public opinion.

Conclusions

In this 2022 multijurisdiction survey in China, prompted support for national comprehensive smoke-free legislation was near universal, but support was lower in hospitality and entertainment venues than in most other indoor settings. The separate smoking-room item was widely endorsed, although its wording did not specify whether the proposed space was indoors or outdoors. Reporting both general and setting-specific measures gives a fuller account of policy acceptability than relying on a single headline percentage.

Abbreviations

aPR

adjusted prevalence ratio

CI

confidence interval

FCTC

Framework Convention on Tobacco Control

SHS

secondhand smoke

THS

thirdhand smoke

WHO

World Health Organization.

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Peking University Health Science Center (IRB00001052-22118). Electronic informed consent was obtained from all participants before they entered the survey.

Consent for publication

Not applicable.

Clinical trial number

Not applicable.

Competing interests

The author declares no competing interests.

Authors' information

Not applicable.

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Author Contribution

HY conceptualized the present study, developed the analytical plan, conducted the statistical analysis, interpreted the findings, and drafted and revised the manuscript. The author read and approved the final manuscript.

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Not applicable.

Data Availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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19. Additional. file.
20. Additional file 1 (.docx). Supplementary material. Contains Supplementary Tables S1A-S9, Supplementary Figures S1-S3, and Supplementary Appendix S1 with the fielded Chinese wording and English translations of questionnaire items used in the analysis.

Figures

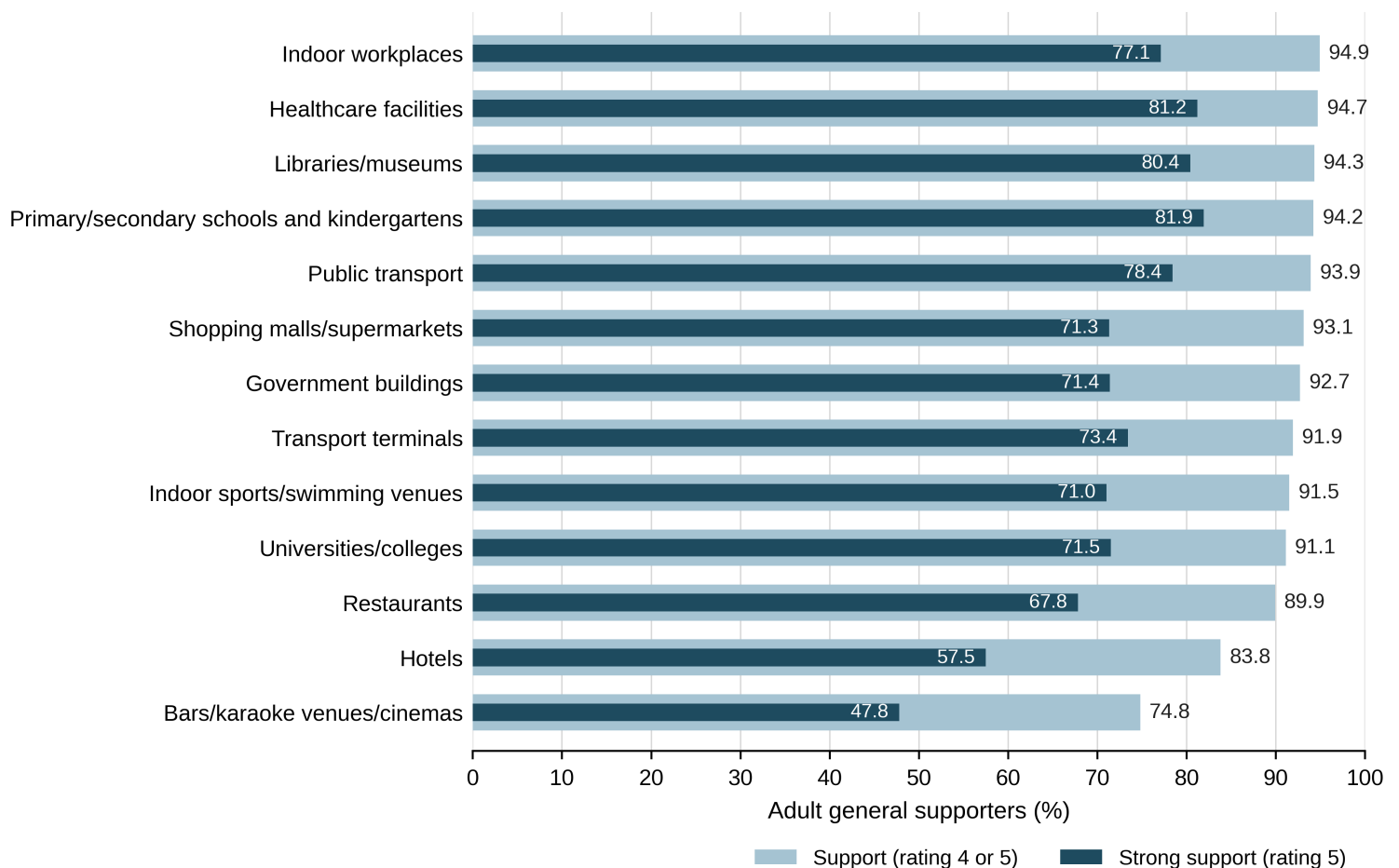


Figure 1

Setting-specific support for smoke-free policy across 13 indoor settings among adult general supporters, China, 2022.

Note: Percentages are among adult general supporters, defined as adult respondents who supported national comprehensive smoke-free legislation after the standardized preamble (n=3,119). Pale bars show support, defined as a rating of 4 or 5 on a five-point scale from 1 (strongly oppose) to 5 (strongly support); dark inner bars show strong support, defined as a rating of 5. Strong support is a subset of support, so the dark bars are nested within the pale bars. Settings are ordered by descending support.

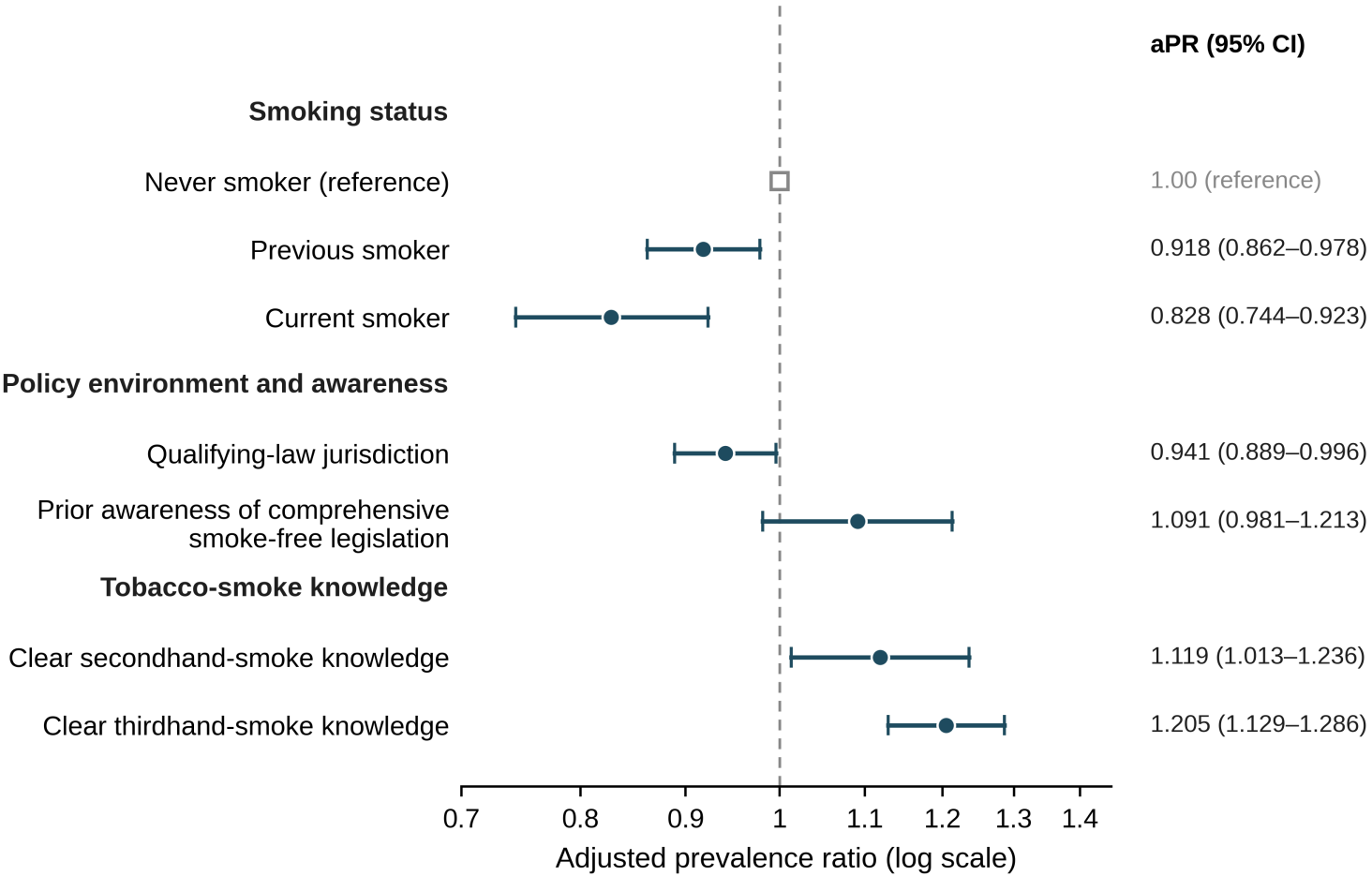


Figure 2

Adjusted correlates of complete setting-specific support among adult general supporters (n=3,119).

Note: Adjusted prevalence ratios (aPRs) with 95% confidence intervals are from modified Poisson regression with a log link and sandwich standard errors clustered by the 48 sampling jurisdictions. Complete setting-specific support required a rating of 4 or 5 in all 13 specified indoor settings. Only focal correlates are displayed; the model additionally adjusted for recent tobacco-control information exposure, sex, age, education, and residence. The full model is shown in Supplementary Figure S2 and Supplementary Table S6. The open square marks the reference category and the dashed vertical line marks the null value of 1.0. The x-axis is logarithmic. Associations are cross-sectional and are not interpreted causally.

Supplementary Files

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