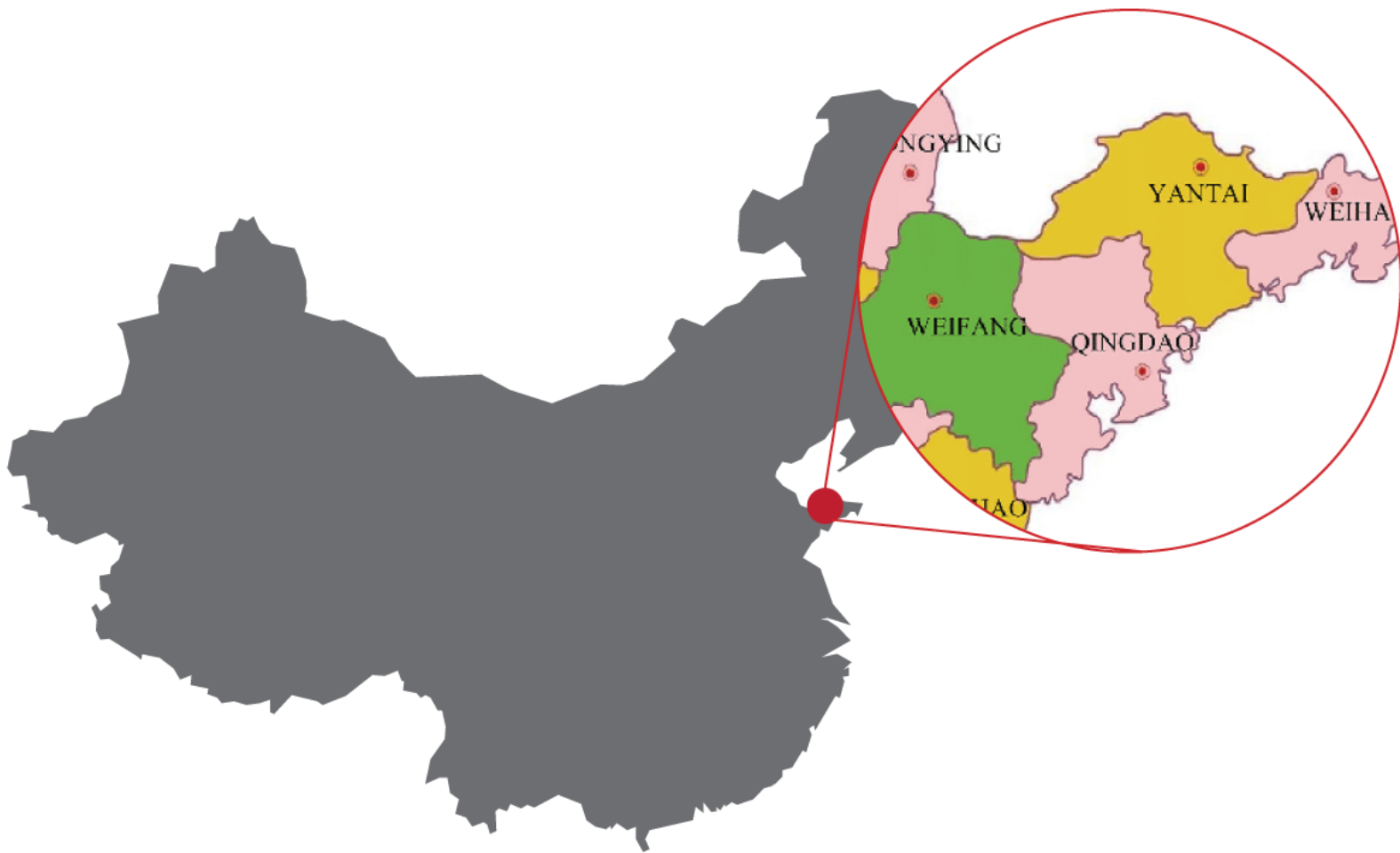


Assessment of Compliance with Smoke-free Policies in Qingdao, China

Technical Report



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EXECUTIVE SUMMARY

Qingdao City in Shandong Province, North East China, passed the Qingdao Tobacco Control Ordinance in 2013 banning smoking in indoor public places and requiring no-smoking signage be displayed at these venues. The Institute for Global Tobacco Control (IGTC) at the Johns Hopkins School of Public Health (JHSPH) in collaboration with the International Union Against Tuberculosis and Lung Disease (The Union) and Vital Strategies Inc. (U.S.A.) Jinan Representative Office (Vital Strategies China) assessed compliance with the smoke-free policy in Qingdao. This technical report describes our efforts to assess compliance with smoke-free policies in Qingdao. This report describes the methodology used, where observations were conducted, and results by venue type. This report also includes recommendations on how to improve compliance with smoke-free policies in Qingdao.

Thirteen venue categories were visited in October and November 2018. A mix of urban (Laoshan, Shibe, Shinan) and suburban (Huangdao, Pingdu) districts in Qingdao were selected as the study area. Trained data collectors observed 791 venues for evidence of smoking (observed smoking, presence/absence of cigarette litter and presence/absence of ashtrays or similar accessories) as well as the presence, location and content of no-smoking signs. Data were analyzed by JHSPH using descriptive statistics.

Smoke-free observations: “Evidence of smoking” was found in most venue types and in all of the observed districts in Qingdao. All children’s and maternity hospitals and the airport observed were compliant, while hospitality venues—such as bars/pubs, internet bars, game rooms, billiard rooms, clubs and karaoke entertainment establishments (KTV)—had much lower compliance rates (19%). Among these hospitality venues, it was found that no clubs were compliant and only 5% of pubs/bars were compliant. Business office buildings and government office buildings also had low compliance, at 38% and 59% respectively. Compliance was 62% for all restaurants, however this dropped to 54% after 6.30pm.

When assessing compliance with “evidence of smoking,” results also differed by district. Approximately three quarters of venues observed in Pingdu (75%) and Laoshan (73%) were compliant, whereas only 39% of the venues observed in Huangdao were compliant. Compliance within districts also varied by type of venue. In Huangdao, none of the government buildings (n=12) observed were compliant, and less than 25% of hotels (19%) and other hospitality venues (23%) were compliant. For general hospitals, the majority of those observed in Pingdu (91%) and Shinan (100%) were compliant compared with about 20% in Shibe (n=5) and 29% in Huangdao (n=14). While the majority (86%) of middle and elementary schools were compliant, only 57% of schools in Shibe were compliant. Pingdu had good compliance in restaurants (86%), “other public places” (89%), and children and maternity hospitals (100%) but poor compliance in business office buildings (25%). In Shinan, there was poor compliance in restaurants (33%) but good compliance in hotels (84%).

The display of warning signs was found to vary greatly across venue types and districts. The posting of no-smoking signs at the main entrance of venues was poor overall, particularly at hotels (3%), restaurants (9%) and other hospitality venues (11%). No-smoking signs were found posted inside only 37% of observed shopping malls and retail stores, and 50% of taxis. Compliance with no-smoking signs is a particular issue for other hospitality venues: signs were not posted at the main entrance of any of the observed pubs/bars, game rooms or comprehensive hospitality venues, and only one third of game rooms had no-smoking signs posted inside the venue. The posting of no-smoking signs varied by district but compliance was particularly low in Shinan where only 6% of venues posted no-smoking signs at their entrance and 46% inside. No government buildings in Shinan or Shibeil had signs posted at their entrances.

No-smoking signs were further examined to assess whether they contained all of the required components as per the regulation. Results varied across venue types and districts but few venues contained no-smoking signs with all the required components; compliance rates were below 20% in nine out of the 13 venue categories. Sixty-nine percent of government buildings observed contained fully compliant no-smoking signs, compared with 80% of taxis observed which had no-smoking warnings signs with none of the required components. Shinan had the lowest compliance, with 84% of venues observed with signs containing none of the required components.

In addition, observations were made as to whether the staff/owner/venue manager of the premises tried to dissuade the individual(s) from smoking if one or more individuals were observed to be smoking. No attempt was observed in any of the instances at any venue.

Recommendations: Implementing Qingdao's Tobacco Control Policy uniformly, including improved enforcement and coordination mechanisms as well as targeting poor-performing districts and venues, may substantially improve compliance and reduce exposure to secondhand smoke. Moreover, standardized guidelines and enforcement protocols may help authorities enforce the policy across all districts and venue types, and the strategic use of compliance data will ensure effective and efficient interventions.

There is a need to target enforcement efforts in all hospitality venues, restaurants, banks, business offices and government buildings across all districts, with a particular focus on schools, general hospitals and malls in Shibeil, restaurants in Shinan, and all venues in Huangdo. The findings also reveal a need to increase awareness among business owners and managers about their responsibility in ensuring compliance at their venues.

Improvement in the presence, location and content of no-smoking signage is also a priority, particularly in shopping and retail stores, other hospitality venues, hotels, and restaurants, and for all venue types in Shinan. Clear instructions from concerned authorities on where to place the signs, wider distribution of standardized no-smoking signs, and strong enforcement are needed. With such a concerted effort it is possible to achieve 100% compliance with smoke-free indoor public places in Qingdao in the near future.

I. INTRODUCTION

China is the largest producer and consumer of tobacco in the world, with over 300 million smokers. Accordingly, tobacco use is a major public health issue for the country, resulting in approximately one million deaths each year. The most recent Global Adult Tobacco Survey (GATS) conducted in China shows that 28.1% of Chinese adults smoke (52.9% of men and 2.4% of women) and 70% of adults were exposed to second-hand smoke in 2010.¹

In order to tackle this epidemic, China has developed and made some progress in implementing tobacco control policies, especially in establishing smoke-free areas.²⁻⁸ Despite the absence of a national smoke-free law, a number of subnational jurisdictions in China have developed and enforced smoke-free laws.⁹⁻¹⁴ Qingdao, a city in eastern Shandong province with a population of 9 million, enacted its Tobacco Control Regulation in September 2013.¹⁴ The regulation went into effect in September of the same year. It bans smoking in all indoor public places, work places, and public transportation.

In order to help these second-tier cities strengthen compliance with smoke-free public places, the International Union Against Tuberculosis and Lung Disease (The Union) and Vital Strategies China along with their local partners are planning to develop interventions aimed at strengthening enforcement efforts. The primary purpose of this observational study is to assess smoke-free compliance in Qingdao prior to the implementation of these interventions.

This report summarizes the results from the observational study that was conducted in Qingdao to assess compliance with its smoke-free regulation. The work was led by the Institute for Global Tobacco Control (IGTC) at the Johns Hopkins School of Public Health (JHSPH) in collaboration with The Union and Vital Strategies China.

II. METHODS

Sampling Approach

A mix of urban (Laoshan, Shibei, Shinan) and suburban (Huangdao, Pingdu) districts in Qingdao were selected as the study area. These districts were chosen to reflect geographic diversity and because they had a higher concentration of venues of interest. These venues were determined by reviewing the local laws and finalized based on recommendations made by The Union in consultation with their local partners.

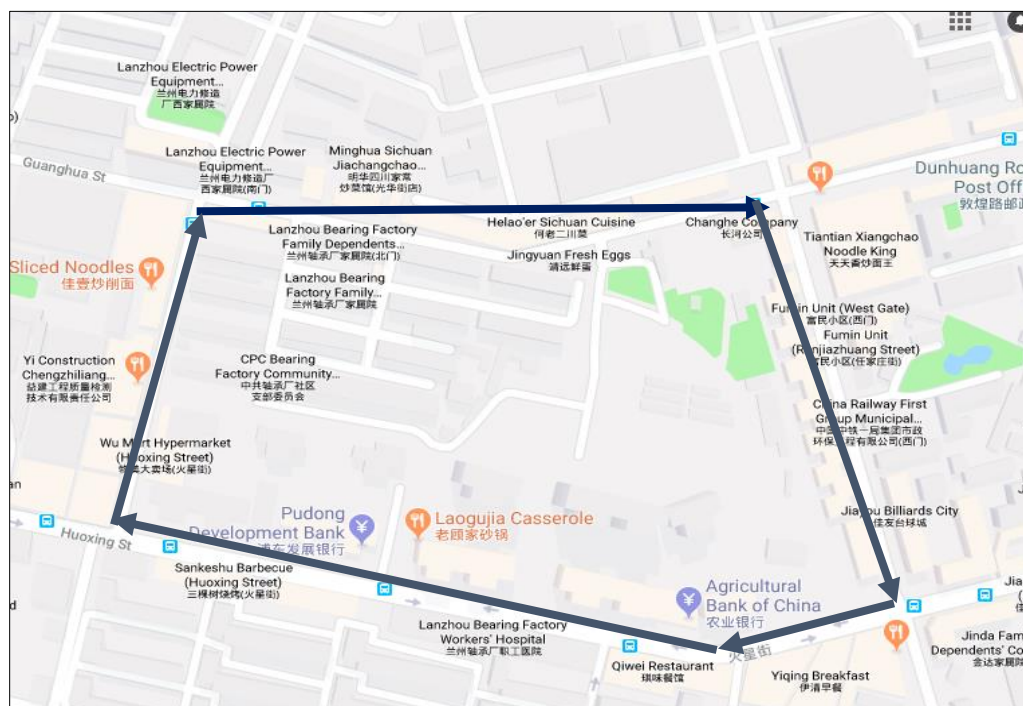
Comprehensive lists were identified where they existed and a random sample of venues were subsequently selected for observations (Table 1). For venue categories for which there were no comprehensive lists, a walking protocol was used (refer to Table 1 and Figure 1).

Table 1: Methods used to select venues for sample

Venue Type	Method
Restaurants	List and randomization
Other hospitality venues: pubs/bars, game rooms, billiard rooms, clubs and karaoke entertainment establishments (KTV)	Walking protocol
Other hospitality venues: internet bars	List and randomization
Shopping malls and retail stores	List and randomization & walking protocol
Other public places: gymnasiums and stadiums, other cultural places, banks, post offices, museums, libraries, movie theatres	Walking protocol
Hotels	List and randomization
Public transportation buildings	List and randomization
Taxis	When traveling from venue to venue
Business office buildings	Walking protocol
Government buildings	List and randomization
Universities	List and randomization
Middle and elementary schools	List and randomization
General hospitals	List and randomization
Children and maternity hospitals	List and randomization

For the walking protocol, data collectors were instructed to arrive at a pre-identified hub and walk to the right for 10 minutes and observe all the relevant venues on the way. Once the initial 10 minutes were over, they were instructed to take another right and walk for 10 minutes and observe all the relevant venues on the way. They were asked to repeat the previous step three more times until they returned to the original hub. If the number of venues that the data collectors were required to observe had not been reached, they were asked to proceed on to the next hub and follow the steps above. Figure 1 illustrates the route taken for the walking protocol.

Figure 1: Route for walking protocol



Training

Training was held between October 16, 2018 and October 18, 2018 for 10 data collectors from Qingdao. The first day of the training introduced the data collectors to the city's smoke-free policies and provided them with an overview of the data collection protocol and the observation tools. The subsequent days were spent on practicing using the observation tools using a survey application on smart phones and conducting a field test. The data collectors had the opportunity to practice using the survey on the mobile application and follow the data collection procedures outlined in the protocol. Subsequently the data collectors had a chance to meet with the JHSPH team to review and verify additional questions.

Observations

Data collection took place between October 21, 2018 and November 12, 2018. Data were collected through direct observation in venues using a checklist that had been uploaded to a mobile data collection application (Appendix A - Observation Form). The observation form included questions regarding the presence/absence of smoker(s); presence/absence of cigarette butts, and presence/absence of ashtrays (or other instruments used to hold cigarette ash). In addition, questions regarding the placement of no-smoking signage at the entrance and inside the venues were also included. A separate observation form was developed for taxis which observed whether the driver was smoking, evidence of cigarette butts and ashtrays, and the presence of a no-smoking sign in the taxi.

Observations were conducted during normal business hours when people were most likely to be present. For restaurants, for example, the data collectors were instructed to visit during lunch or dinner hours. For hospitals, data collectors conducted observations during visitor hours. A backup list of venues was also provided in case the locations to be visited were closed or otherwise unavailable. For venues without lists, addresses for hubs were provided and the walking protocol was used.

Data collectors were paired up in teams that comprised of a male and a female individual since many venues specified a visit to the male restroom as an observation site. Each team of data collectors received a list of venue types with names and addresses they were to visit during each day of data collection. Once they entered the premises, the data collectors followed the study protocol (Appendix B - Data collection protocol) which outlined specific areas to observe. The recorded observations included the start and end time of data collection, thus indicating how much time the data collector spent at each venue. The data collectors were instructed to behave as customers or visitors in certain venues (e.g. restaurants, hospitality venues, hospitals, public transportation buildings).

Data were uploaded daily and sent to JHSPH for monitoring and quality assurance.

III. RESULTS

Sample

Data were collected at different venue types including restaurants, offices (both government and other business office buildings), hotels, hospitals (children's/maternity and general hospitals); middle and elementary schools, universities and shopping malls/retail stores. "Other public places" include gymnasiums and stadiums, other cultural places, banks, post offices, museums, libraries, movie theatres. "Other hospitality venues" include pubs/bars, internet bars, game rooms, billiard rooms, clubs and karaoke entertainment establishments (KTV). The public transportation building observed in Qingdao was an airport.

Observations were conducted at 791 venues; the number of observations conducted in each venue type is detailed in Table 2.

Table 2: Sample by venue type

Venue	n	%
Restaurants	152	19
Other hospitality venues	84	11
Shopping malls and retail stores	63	8
Other public places	66	8
Hotels	69	9
Public transportation buildings	1	0
Taxis	30	4
Business office buildings	60	8
Government buildings	61	8
Universities	61	8
Middle and elementary schools	62	8
General hospitals	68	9
Children and maternity hospitals	14	2
Total	791	100

Results by specific venue types

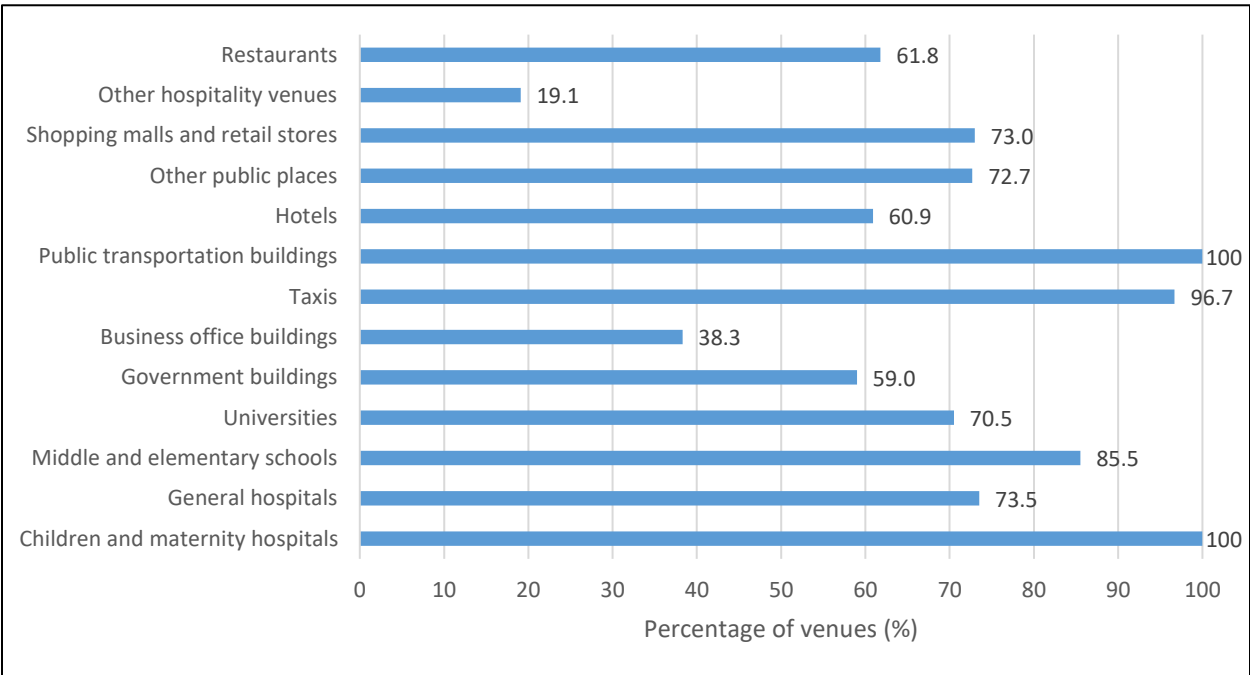
This section presents compliance for all venue types combined.

Compliance with composite indicator assessing evidence of smoking in all venues

A venue was classified as compliant with the composite indicator assessing evidence of smoking if each of the following criteria were met: 1) there was no observed smoking during the period of data collection, 2) no cigarette butt litter was found, and 3) no ashtrays or other instruments used to hold cigarette ash were found.

Compliance with the composite indicator assessing evidence of smoking by venue type is reported in Figure 2. The percentage of venues that were compliant ranged from 19% in other hospitality venues to 100% in the airport and children and maternity hospitals.

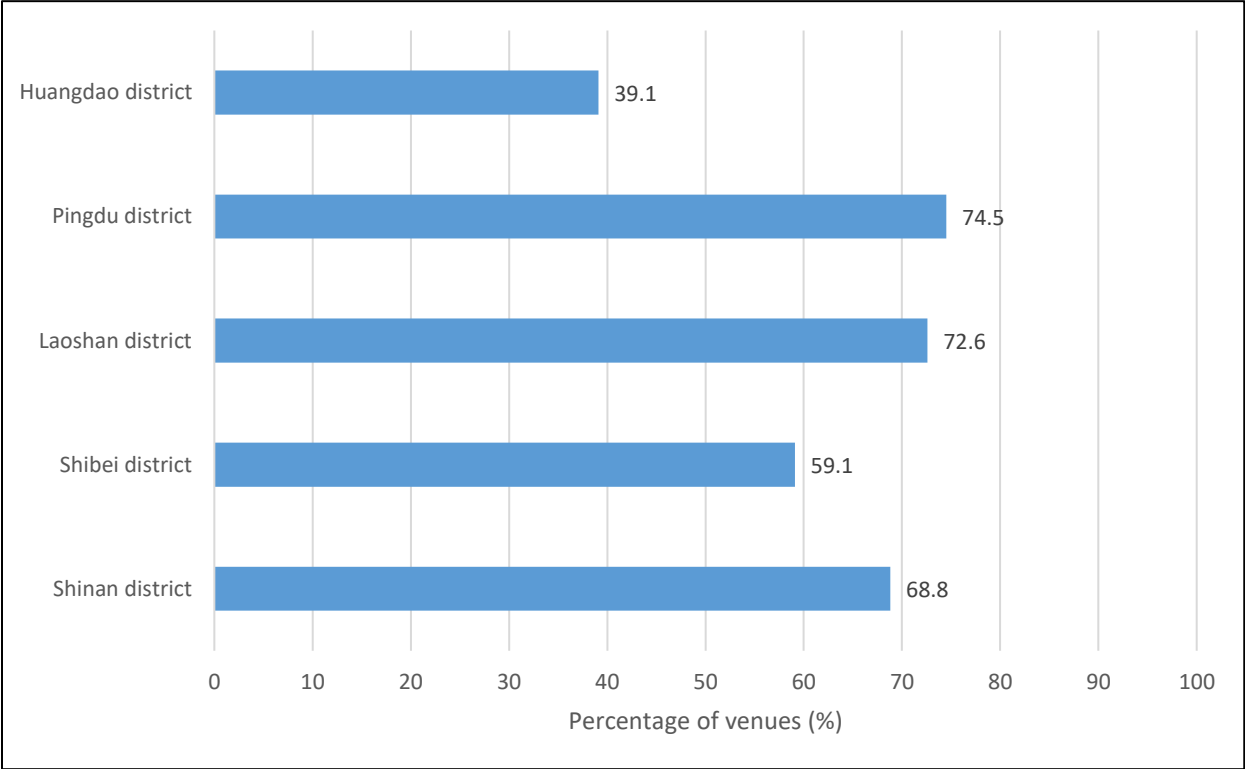
Figure 2: Compliance with composite indicator assessing evidence of smoking by venue type



Compliance with composite indicator assessing evidence of smoking in all venues by district

Compliance with the composite indicator assessing evidence of smoking by district is reported in Figure 3. The percentage of venues in each district that were compliant with the composite indicator assessing evidence of smoking was approximately 75% in Pingdu, 73% in Laoshan, 69% in Shinan, 59% in Shibeij, and 39% in Huangdao.

Figure 3: Compliance with composite indicator assessing evidence of smoking by district

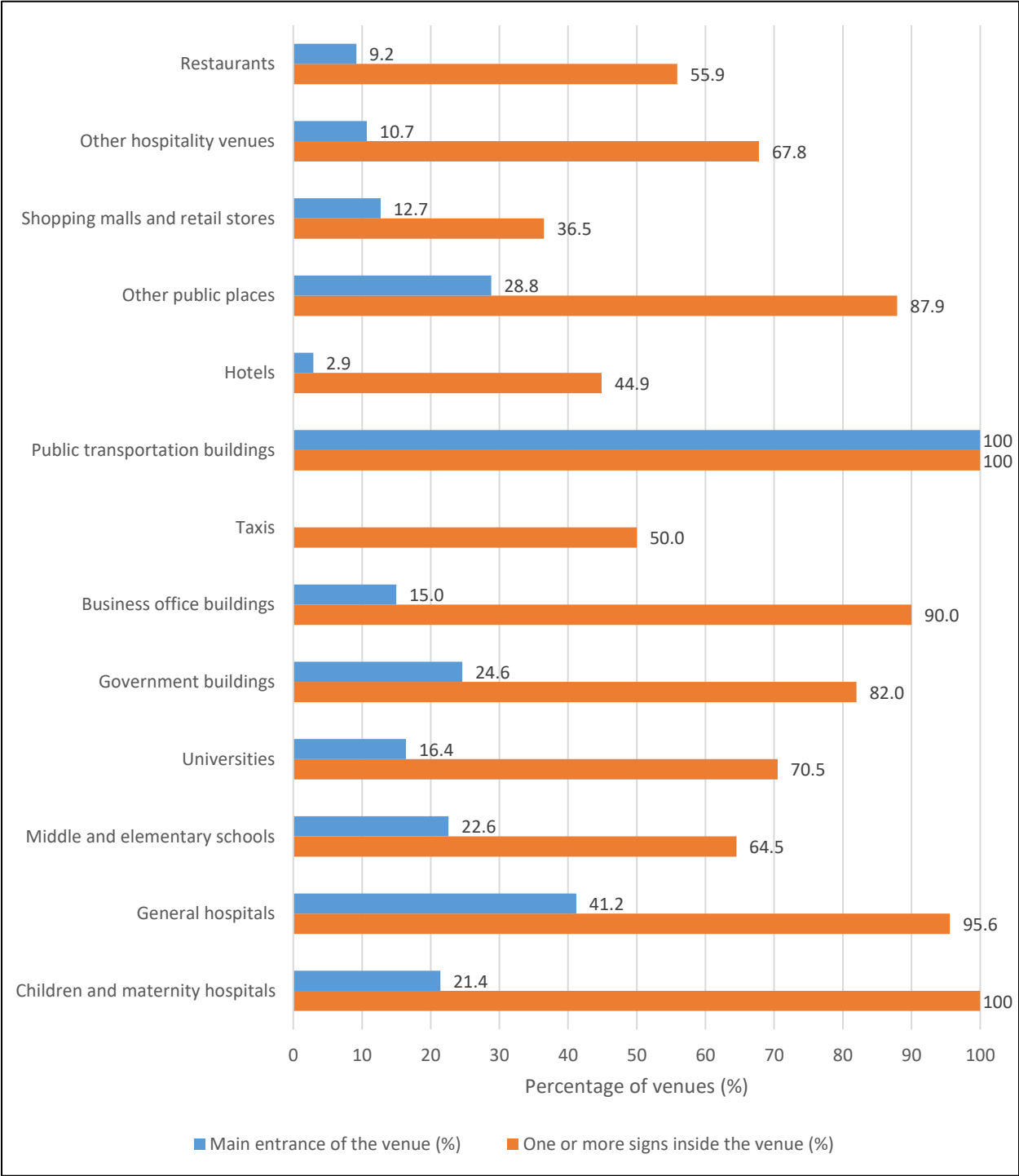


Compliance with no-smoking signage regulations in all venues

According to the Qingdao law, public venues are required to place warnings and no-smoking signs in conspicuous locations.

Compliance with no-smoking signage regulations by venue type is presented in Figure 4. As Figure 4 shows, the presence or absence of no-smoking signs was observed at the main entrance as well as inside the venue. Seven of the 13 venue categories had fewer than 20% of observed venues posting no-smoking signs at their main entrance, including approximately 3% of hotels and 9% of restaurants. All (100%) children's and maternity hospitals and about 96% of general hospitals had one or more no-smoking signs posted inside the building. Approximately 37% of shopping malls and retail stores and 50% of taxis had one or more no-smoking signs posted inside. No-smoking signs were also examined to assess whether they contained all the required components. For additional information regarding this by venue type, please refer to Figure 6.

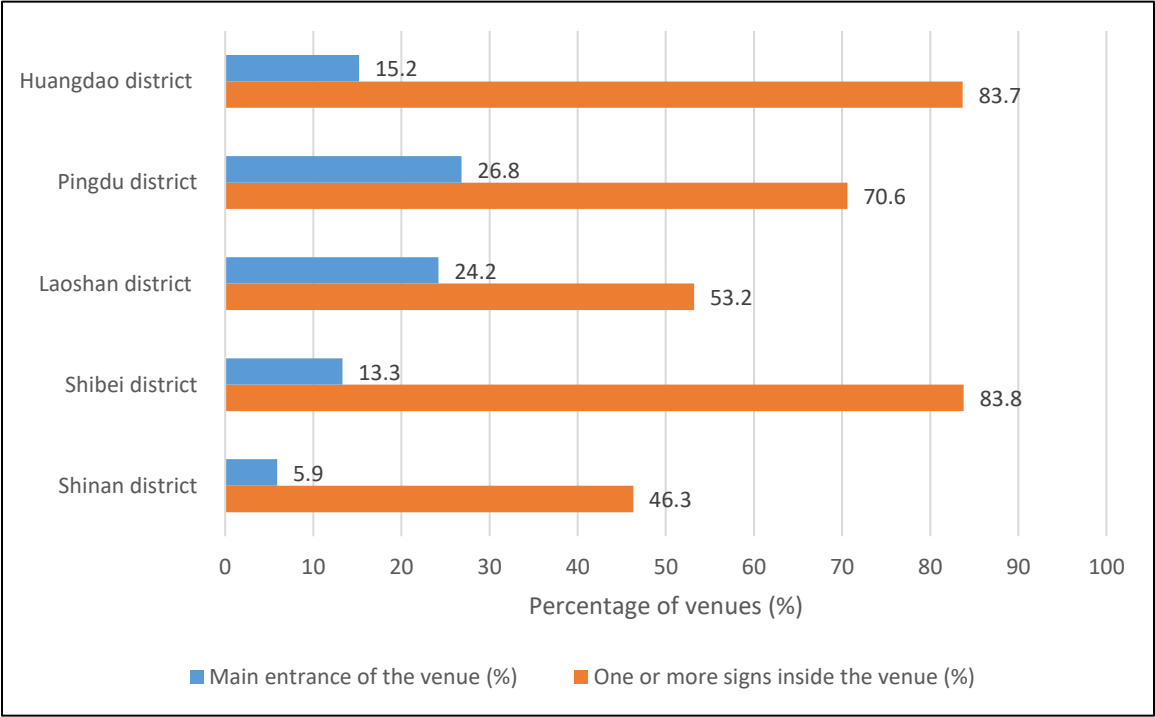
Figure 4: Compliance with no-smoking sign regulations by venue type



Compliance with no-smoking signage regulations in all venues by district

Compliance with no-smoking signage regulations by district is presented in Figure 5. Approximately 27% of venues in Pingdu had a no-smoking sign visibly posted at the main entrance compared with only about 6% of venues in Shinan. About 84% of venues in Huangdao and Shibeibei had one or more no-smoking signs posted inside the venue. No-smoking signs were also examined to assess whether they contained all the required components. For additional information regarding this by district, please refer to Figure 7.

Figure 5: Compliance with no-smoking signage regulations by district

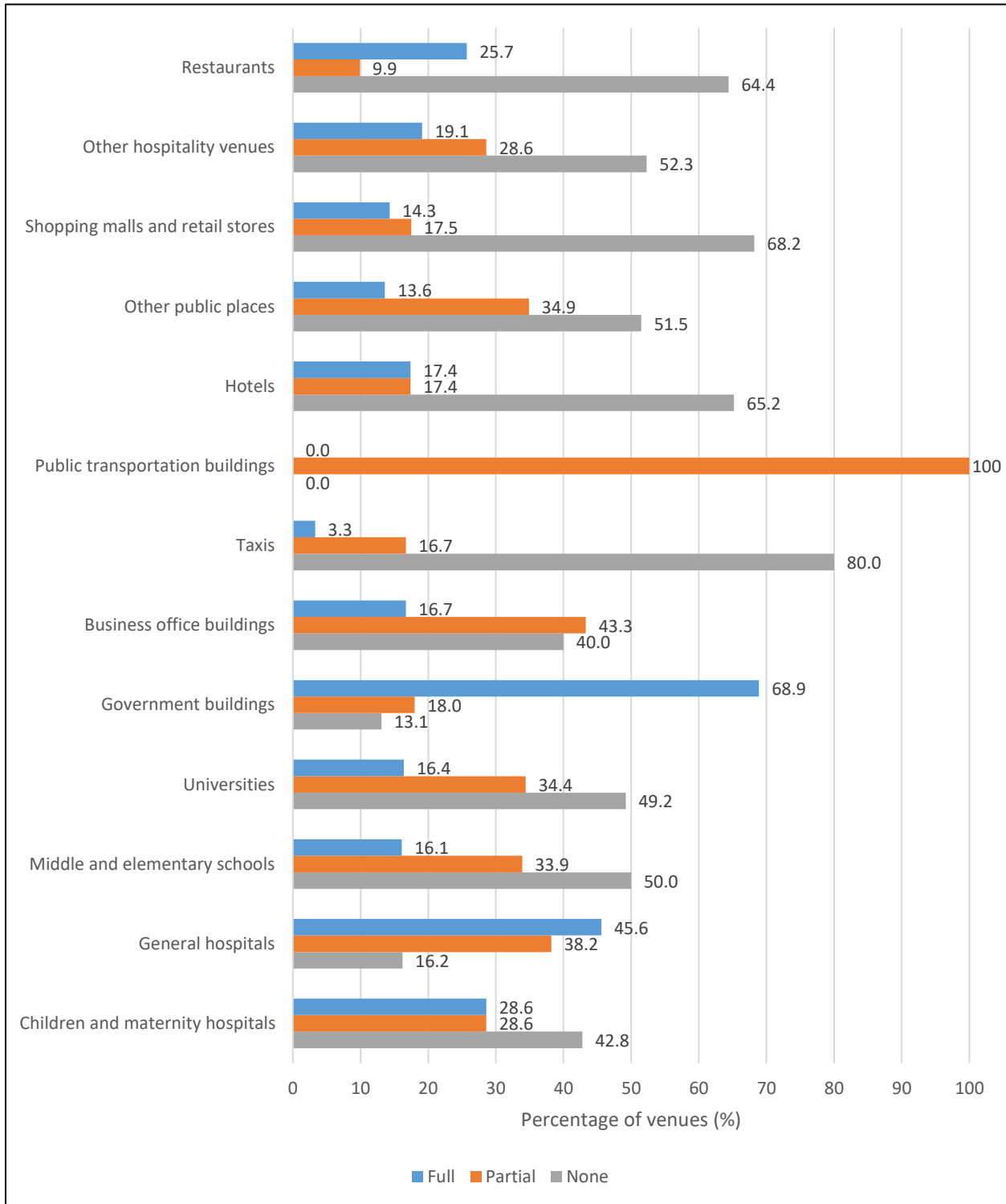


Compliance with no-smoking signage requirements in all venues

According to the Qingdao law, no-smoking signs are required to include all of the following components: (1) no-smoking texts and figure, 2) penalties and fines, 3) complaint hotline number, and 4) date that the law officially becomes effective.

No-smoking signs were examined to assess whether they contained all the required components, and compliance with no-smoking signage requirements by venue type is presented in Figure 6. As Figure 6 shows, compliance rates were below 20% in nine out of the 13 venue categories. Approximately 69% of government buildings had no-smoking signs which were fully compliant whereas 80% of signs observed in taxis contained none of the required components.

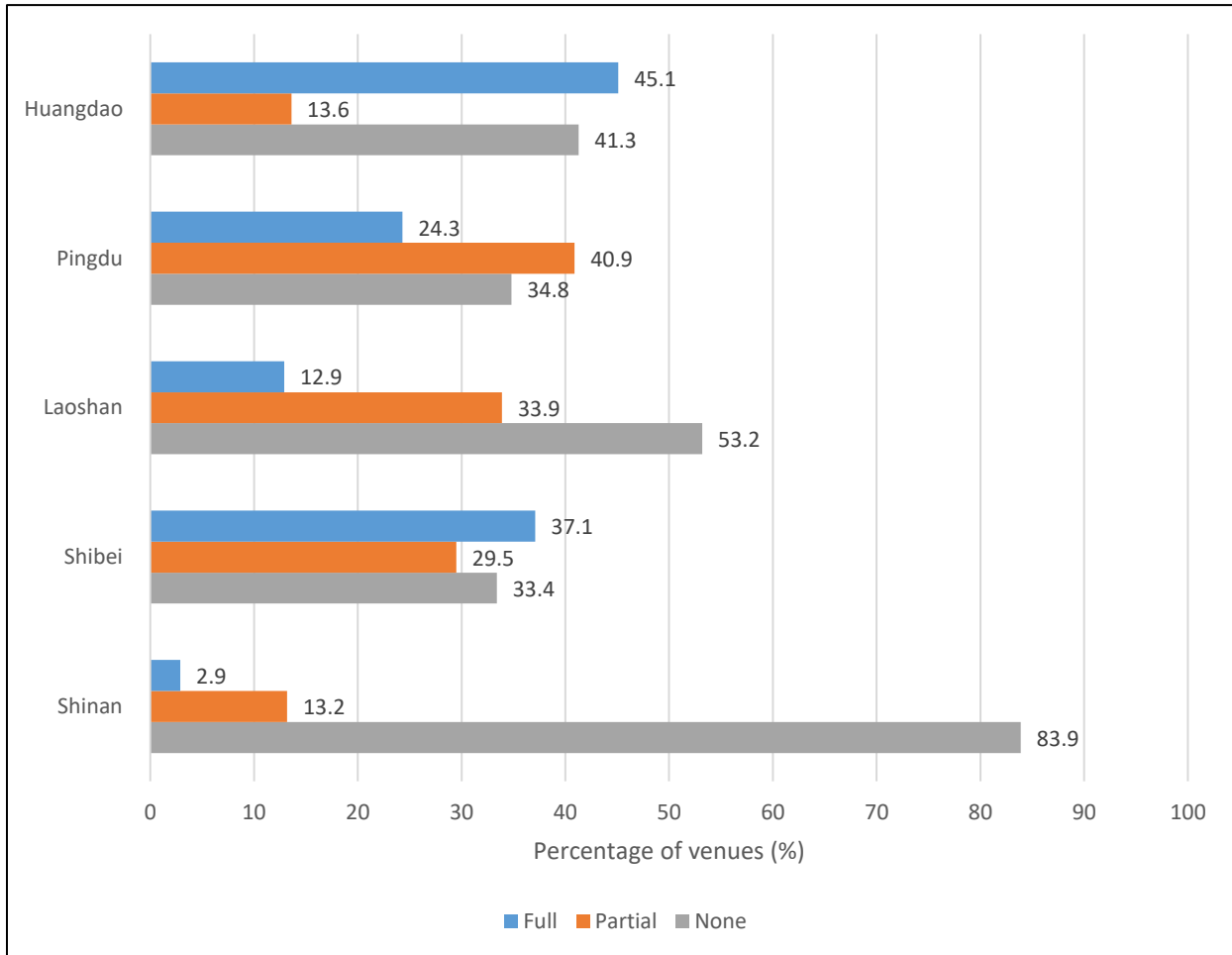
Figure 6: Compliance with no-smoking signage requirements by venue type



Compliance with no-smoking signage requirements in all venues by district

Compliance with no-smoking signage requirements by district is presented in Figure 7. Approximately 45% of venues observed in Huangdao had no-smoking signs which were fully compliant whereas only 3% of venues observed in Shinan had all the required components. Shinan also had the highest proportion of non-compliant signs (84%).

Figure 7: Compliance with no-smoking signage requirements by district



Results by specific venue types:

This section presents compliance for each specific venue type.

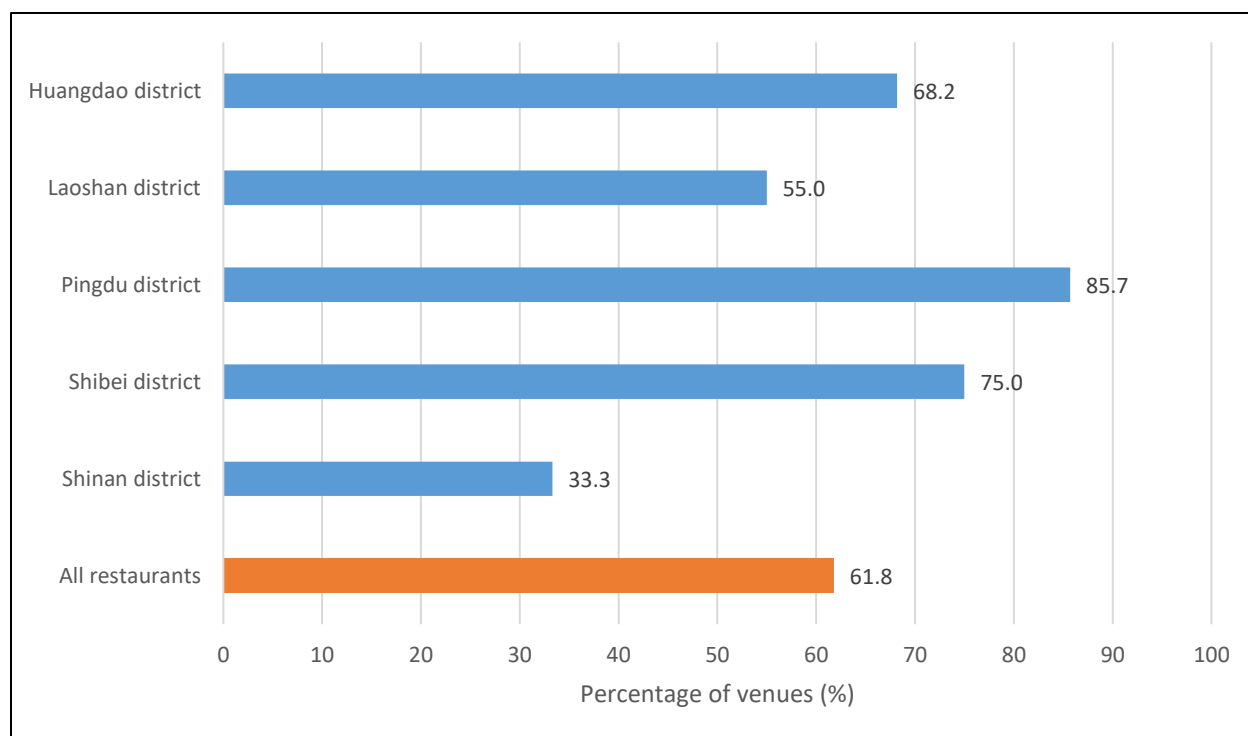
Restaurants

The sample included one-hundred and fifty-two restaurants in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in all restaurants by district is presented in Figure 8. The percentage of restaurants that were compliant with the composite indicator assessing evidence of smoking was approximately 33% in Shinan, 55% in Laoshan, 68% in Huangdao, 75% in Shibei, and 86% in Pingdu.

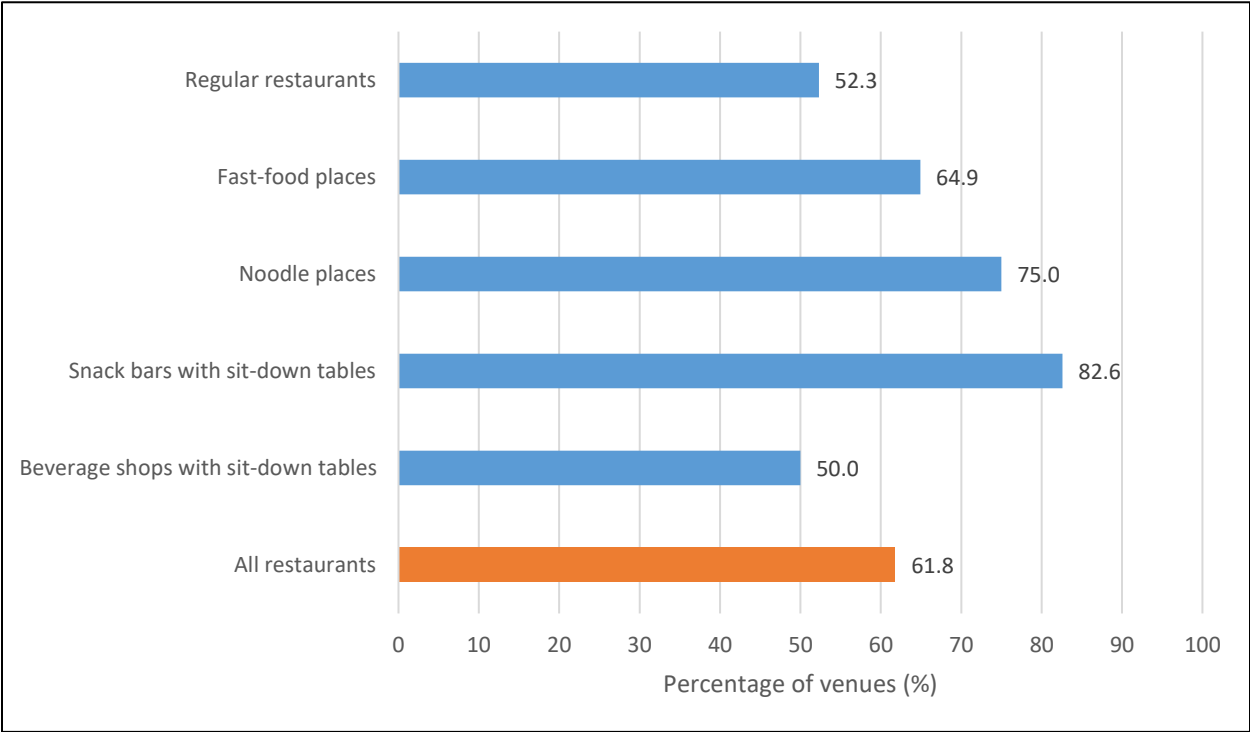
Figure 8: Compliance with composite indicator assessing evidence of smoking in restaurants by district



Compliance with composite indicator assessing evidence of smoking by restaurant type

Compliance with the composite indicator assessing evidence of smoking by restaurant type is presented in Figure 9. The percentage of restaurants which were compliant with the composite indicator assessing evidence of smoking was approximately 50% in beverage shops, 52% in regular restaurants, 65% in fast-food places, 75% in noodle places, and 83% in snack bars. When comparing compliance between restaurants according to size, there was no major difference between big restaurants (50%) and small restaurants (53%). One cafeteria was observed and was non-compliant. Compliance was also observed at various times during the day; before 12 pm, approximately 67% of restaurants were compliant; after 6:30 pm, approximately 54% of restaurants were compliant.

Figure 9: Compliance with composite indicator assessing evidence of smoking in restaurants by type

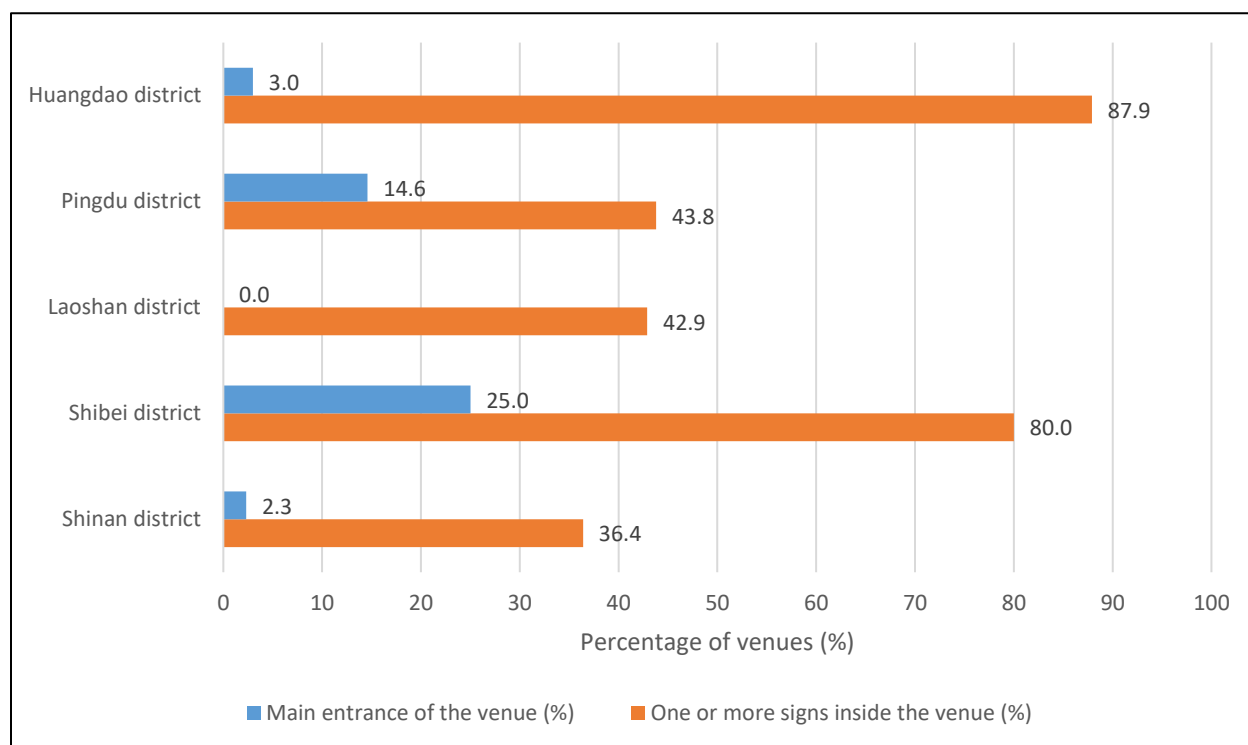


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in restaurants by district is presented in Figure 10. None (0%) of the restaurants observed in Laoshan (n=7) had no-smoking signs posted at the main entrances. Only 2% and 3% of the restaurants observed in Shinan and Huangdao respectively had no-smoking signs posted at the main entrances. One or more no-smoking signs was posted inside about 88% of restaurants in Huangdao and 80% of restaurants observed in Shibe.

All (100%) of the restaurants in Shinan and Huangdao had no-smoking signs posted inside all of their elevators. About half (50%) of the restaurants in Shibe and Laoshan had no-smoking signs posted inside all of their men's bathrooms. None (0%) of the restaurants observed in Shinan had all the required components of the no-smoking signs, whereas 58% of the restaurants observed in Huangdao had all the required components of the no-smoking signs. For additional information, refer to Appendix C, Table 3.

Figure 10: Compliance with no-smoking signage regulations in restaurants by district

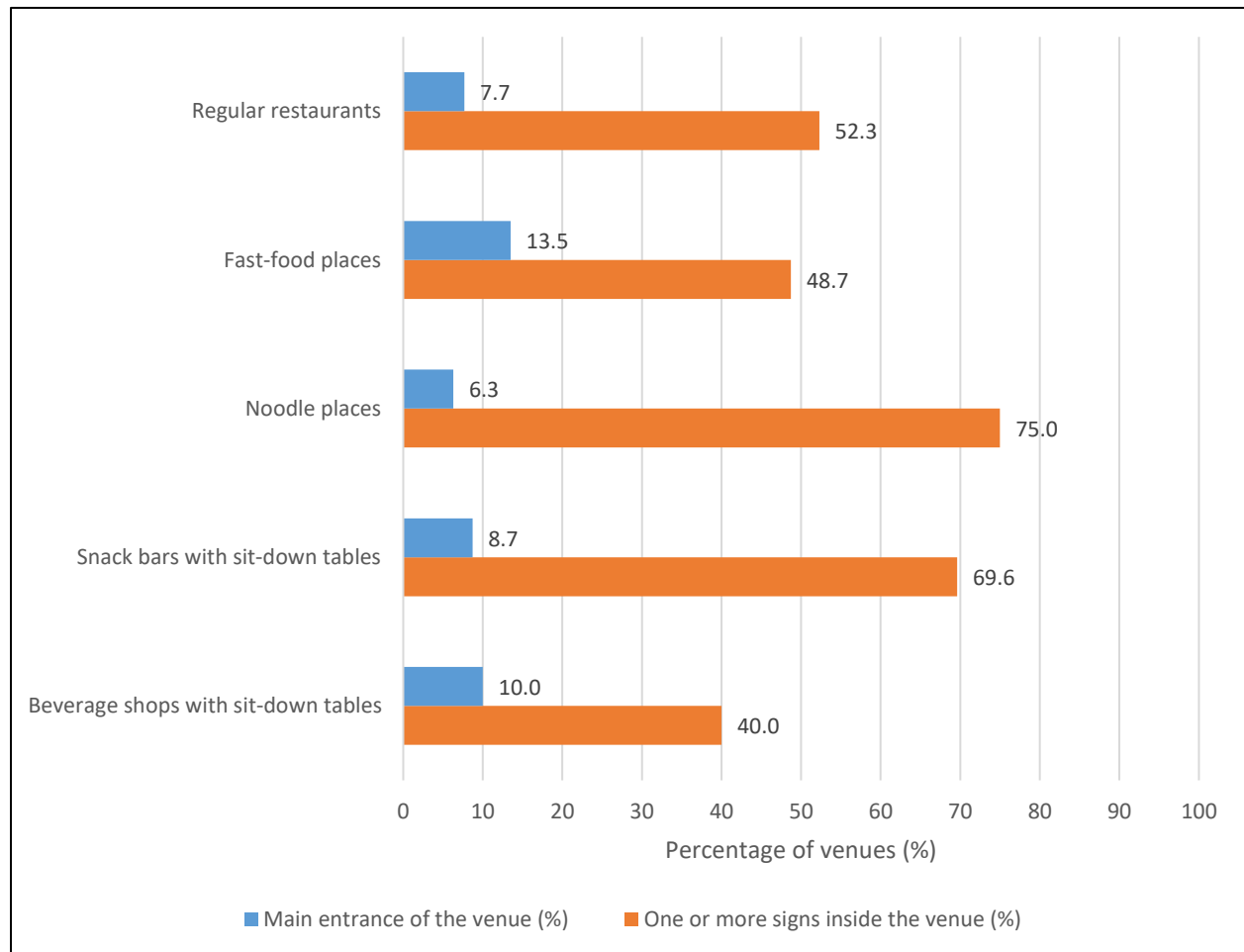


Compliance with no-smoking signage regulations by restaurant type

Compliance with no-smoking signage regulations by restaurant type is presented in Figure 11. Approximately 14% of fast-food places had a no-smoking sign posted at the main entrance, and approximately three quarters (75%) of noodle places had one or more no-smoking signs posted inside. Approximately half of the regular restaurants (52%) and fast-food places (49%) had one or more no-smoking signs posted inside. Only one cafeteria was observed, which had one or more no-smoking signs posted inside.

About 67% of fast food places had no-smoking signs posted inside all of their elevators. Fifty percent of the noodle places had no-smoking signs posted inside all of their men's bathrooms. For additional information, refer to Appendix C, Table 4.

Figure 11: Compliance with no-smoking signage regulations by restaurant type



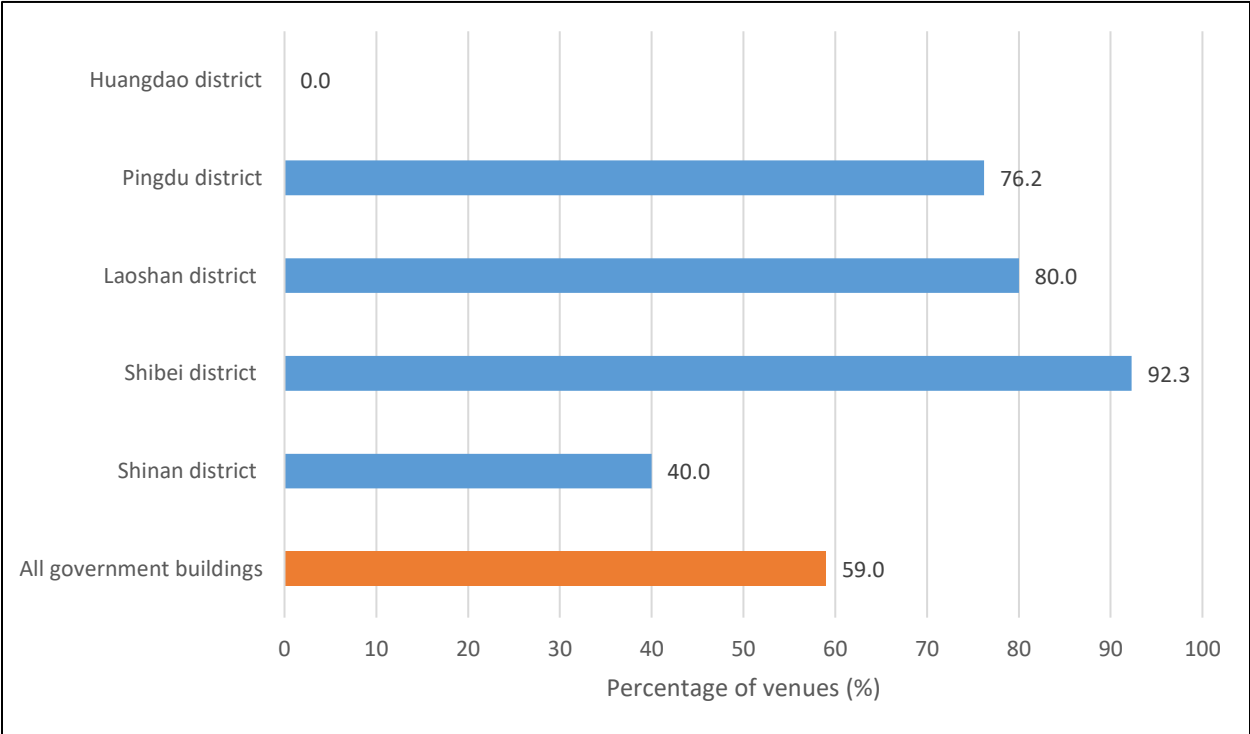
Government Buildings

Sixty-one government buildings were observed in Qingdao. Observations were only carried out at buildings affiliated with the Executive Branch and Government Affiliated Institutions.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in all government buildings by district is illustrated in Figure 12. The percentage of government buildings that were compliant was approximately 40% in Shinan, 76% in Pingdu, 80% in Laoshan, and 92% in Shibe. Although 12 government buildings were observed in Huangdao, none (0%) of them were compliant.

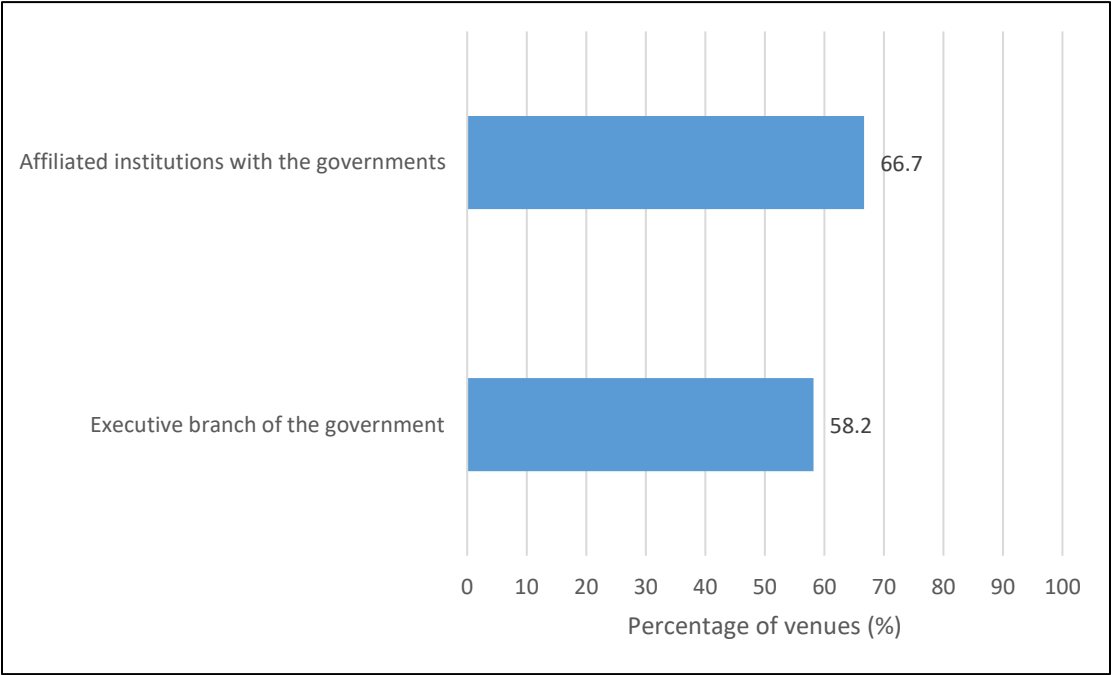
Figure 12: Compliance with composite indicator assessing evidence of smoking in government buildings by district



Compliance with composite indicator assessing evidence of smoking by government building type

Compliance with the composite indicator assessing evidence of smoking by government building type is presented in Figure 13. Approximately 67% of government-affiliated institutions and 58% of the executive branch buildings were compliant.

Figure 13: Compliance with composite indicator assessing evidence of smoking in government buildings by type

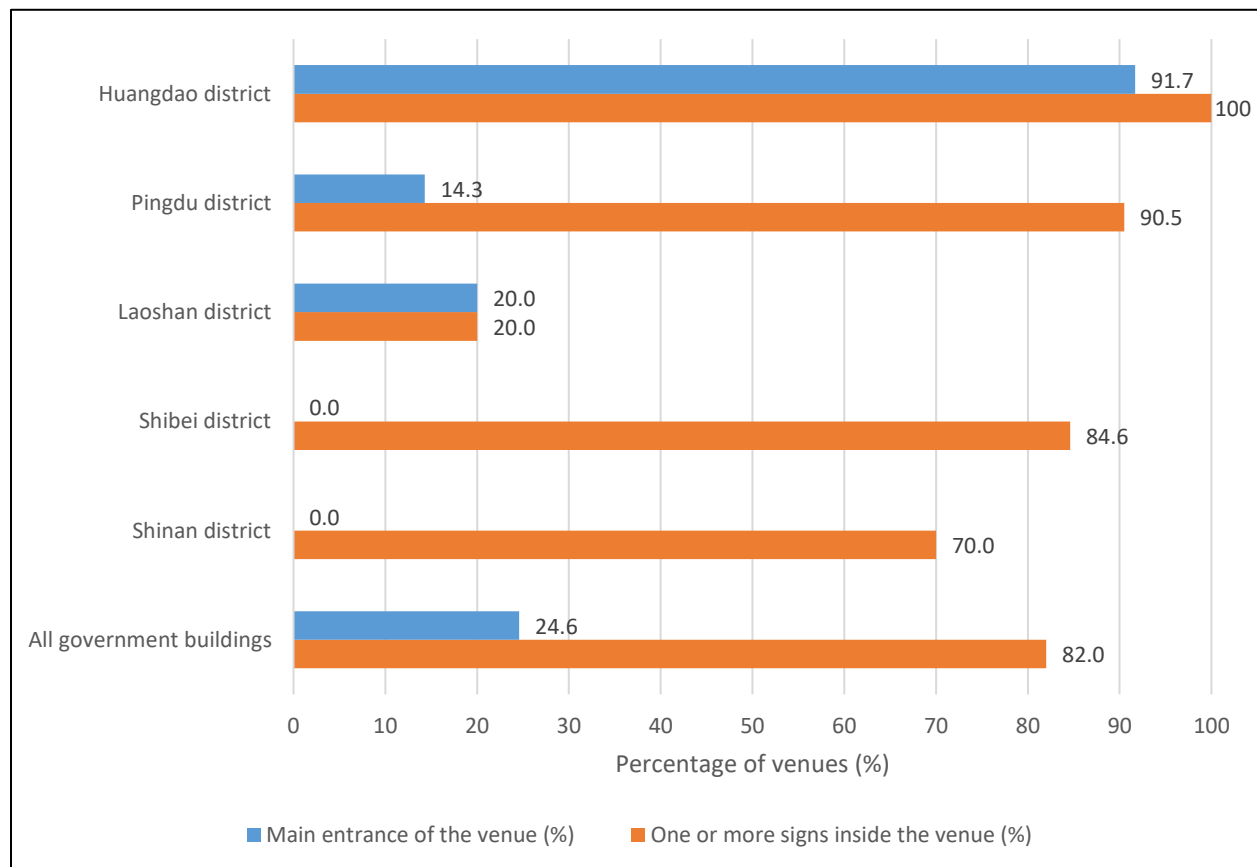


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in all government buildings by district is presented in Figure 14. None (0%) of the government buildings observed in Shinan (n=10) or Shibei (n=13) had no-smoking signs visibly posted at the main entrances. Approximately 92% of buildings in Huangdao had a no-smoking sign posted at the main entrances and all (100%) of them had one or more no-smoking signs posted inside.

All government buildings in Huangdao had no-smoking signs posted inside all of their elevators and all of their men's bathrooms, all of which had the required components. Approximately 20% of the government buildings observed in Shinan had signs with all the required components. For additional information, refer to Appendix C, Table 5.

Figure 14: Compliance with no-smoking signage regulations in government buildings by district

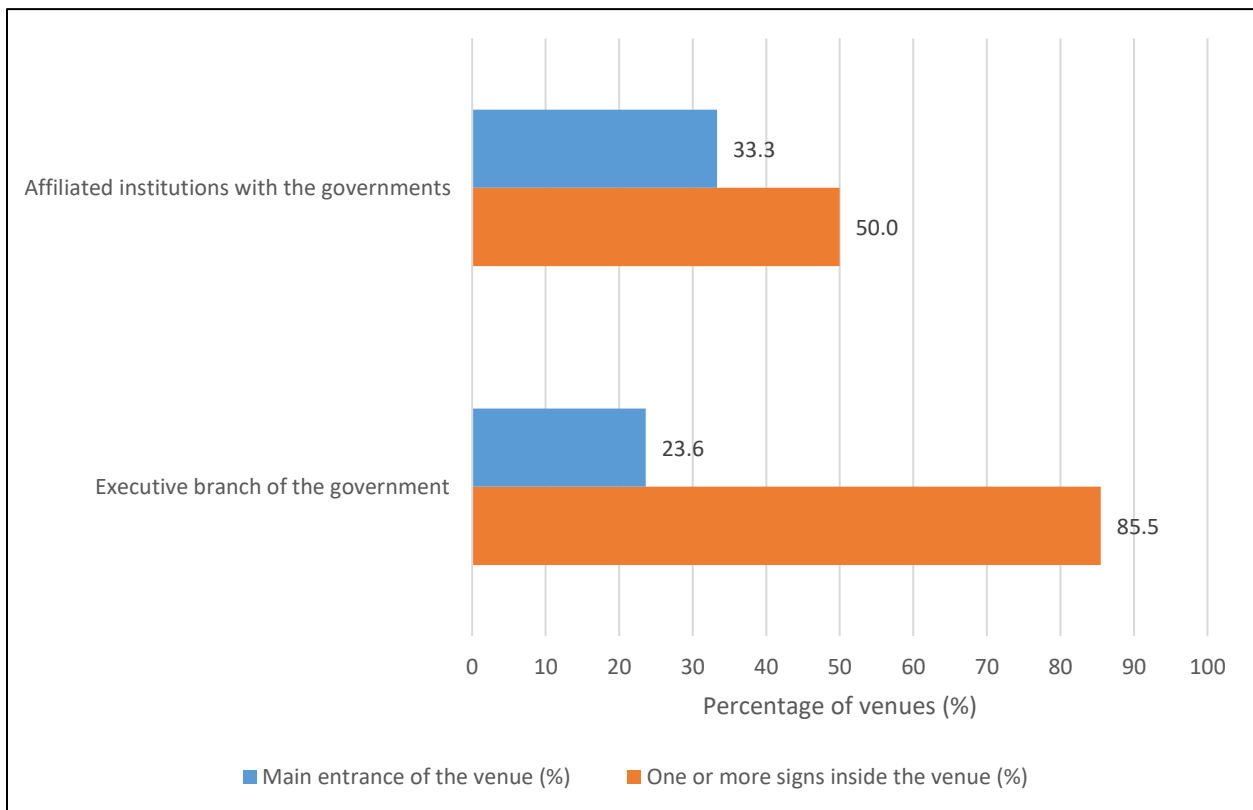


Compliance with no-smoking signage regulations by government building type

Compliance with no-smoking signage regulations by government building type is illustrated in Figure 15. Approximately one-third (33%) of the government-affiliated institution buildings had a no-smoking sign posted at the main entrances. Half (50%) of the government-affiliated institution buildings and 86% of the executive branch buildings had one or more no-smoking signs posted inside.

All of the government-affiliated institution buildings had no-smoking signs posted inside all of their elevators. About 75% of the executive branch buildings and 67% of the government-affiliated institution buildings had no-smoking signs posted inside all of the men's bathrooms. For additional information, refer to Appendix C, Table 6.

Figure 15: Compliance with no-smoking signage regulations by government building type



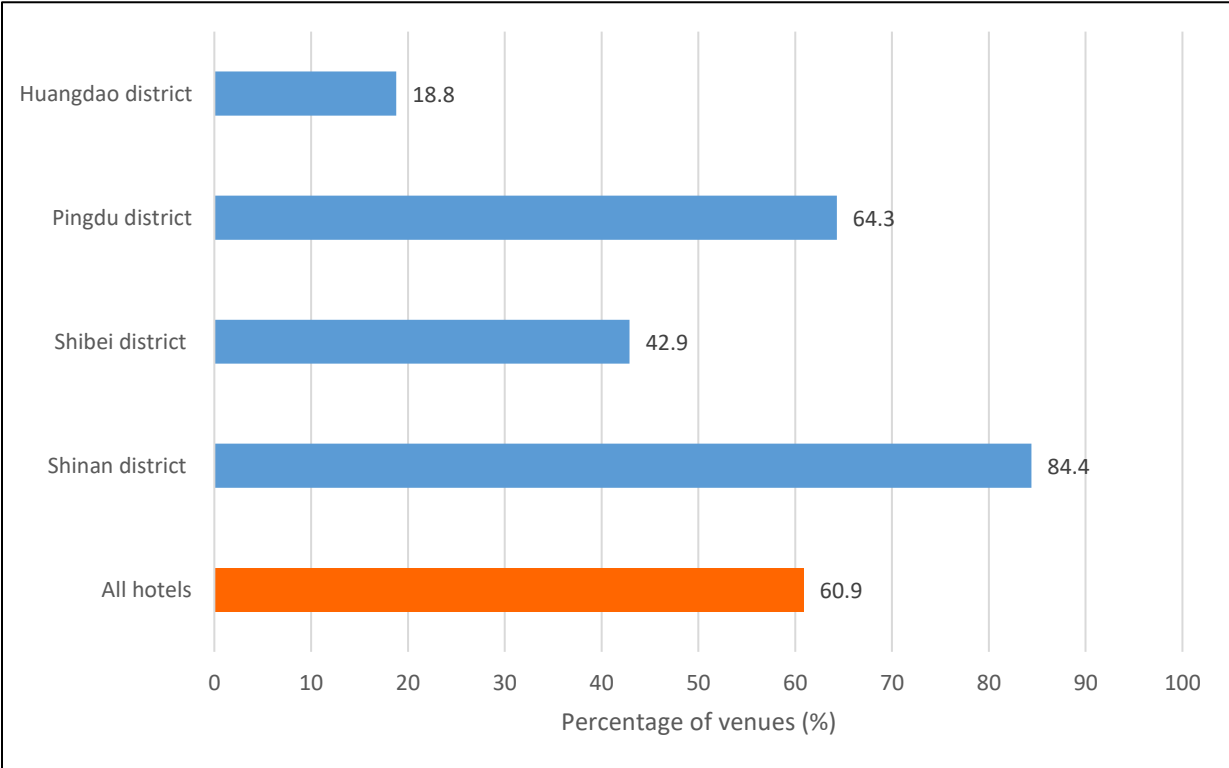
Hotels

Sixty-nine hotels were observed in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in all hotels by district is presented in Figure 16. The percentage of hotels which were compliant was approximately 19% in Huangdao, 43% in Shibe, 64% in Pingdu, and 84% in Shinan. No hotels were observed in Laoshan.

Figure 16: Compliance with composite indicator assessing evidence of smoking in hotels by district



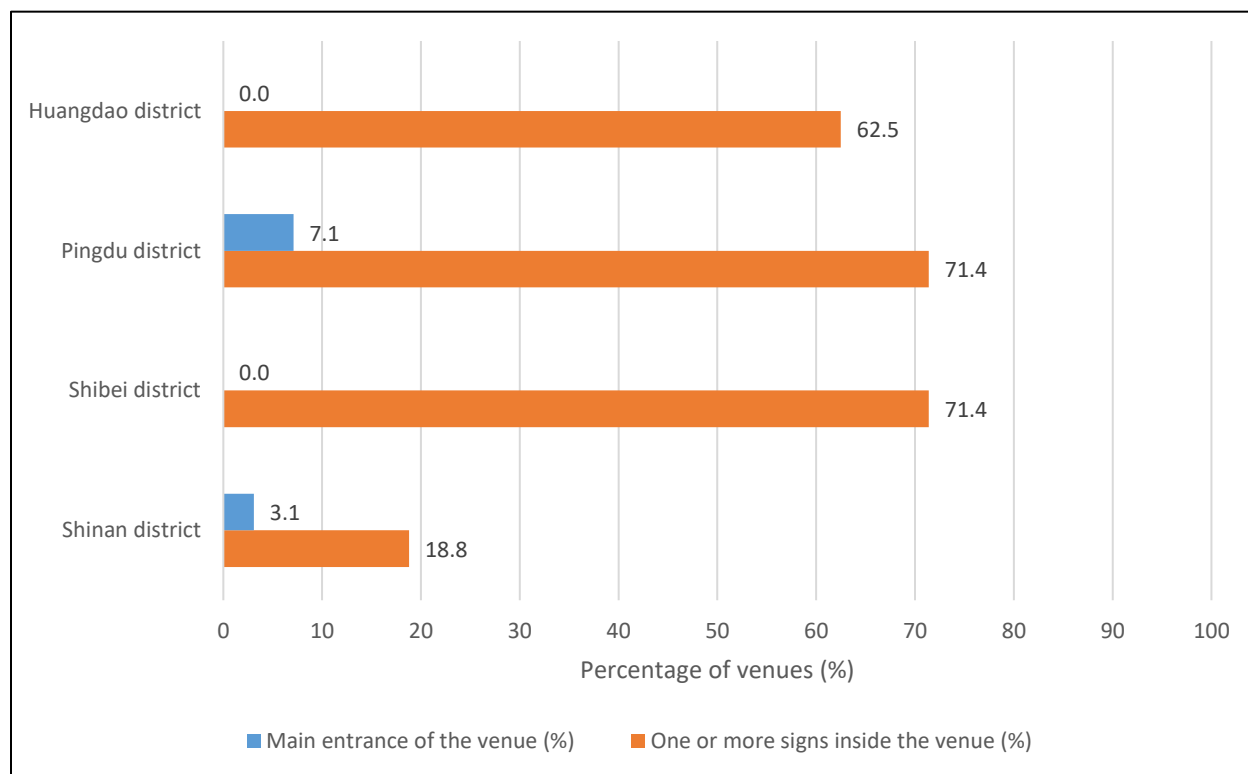
Data were further analyzed to assess compliance with the composite indicator assessing evidence of smoking by hotel scale. Hotels which were 3-star or higher were categorized as big scale (n=3), and hotels which were below 3-star were categorized as small scale (n=66). About 67% of big-scale hotels and 61% of small-scale hotels were compliant.

Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in all hotels by district is illustrated in Figure 17. No-smoking signs were not posted at the main entrance in any of the hotels observed in Shibeï (n=7) and Huangdao (n=16). Approximately 7% of the hotels in Pingdu had a no-smoking sign posted at the main entrance, and approximately 72% of hotels in Shibeï and Pingdu had one or more no-smoking signs posted inside.

All (100%) of the hotels in Shibeï and Huangdao had no-smoking signs posted inside all of their elevators. About 25% of the hotels in Shinan and Huangdao had no-smoking signs posted inside all of the men's bathrooms. None (0%) of the hotels observed in Shinan or Shibeï had all the required components of the no-smoking signs whereas 56% of the hotels observed in Huangdao had all components of the no-smoking signs. For additional information, refer to Appendix C, Table 7.

Figure 17: Compliance with no-smoking signage regulations in hotels by district

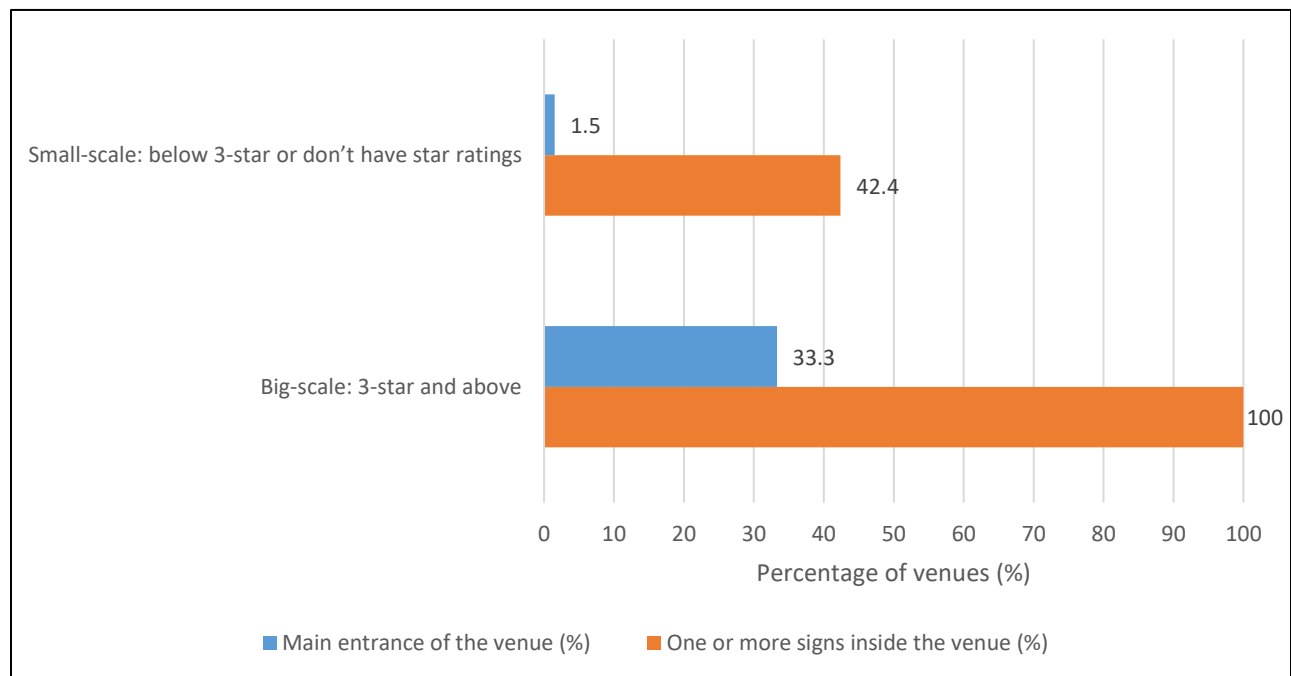


Compliance with no-smoking signage regulations by hotel scale

Compliance with no-smoking signage regulations in all hotels by hotel scale is presented in Figure 18. Approximately 2% of small-scale hotels had a no-smoking sign posted at the main entrance. All big-scale hotels, and approximately 42% of small-scale hotels, had one or more no-smoking signs posted inside.

All (100%) big-scale hotels observed had no-smoking signs inside all of their elevators and men’s bathrooms. Approximately 83% of small-scale hotels had no-smoking signs posted inside all of their elevators. For additional information, refer to Appendix C, Table 8.

Figure 18: Compliance with no-smoking signage regulations in hotels by hotel scale



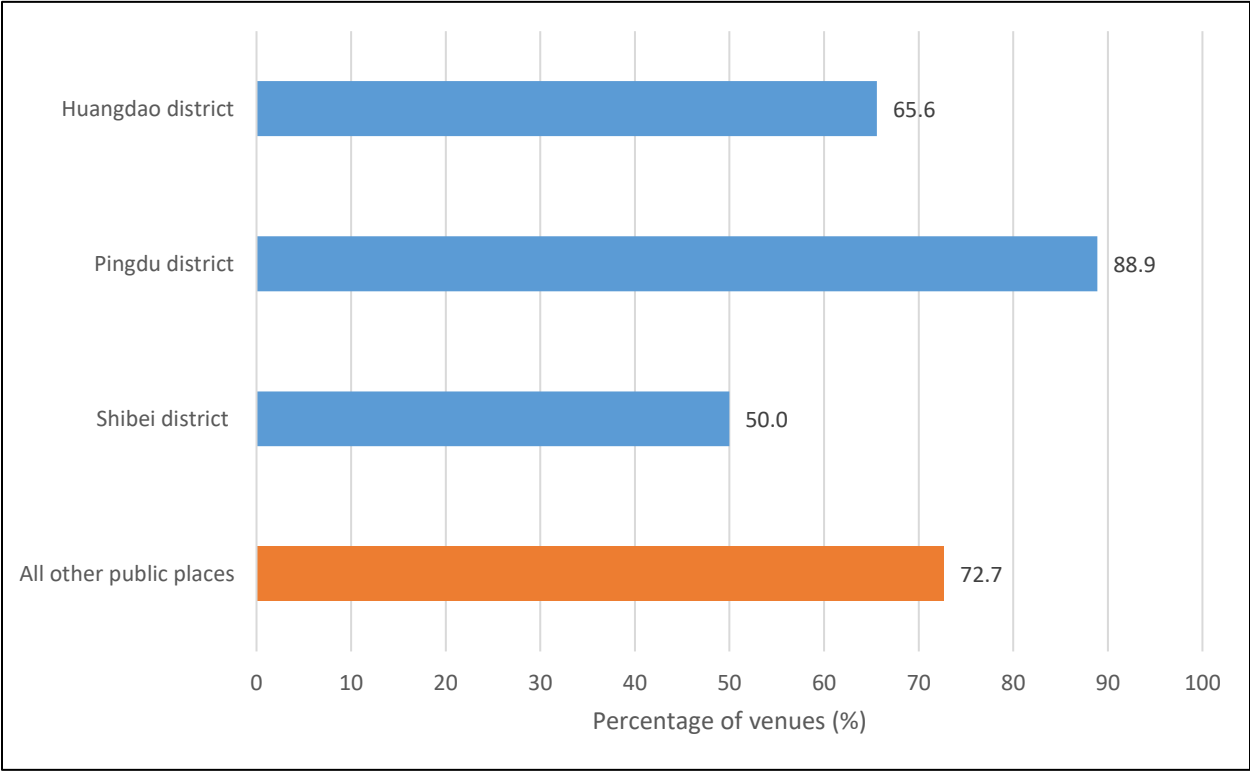
Other Public Places

Sixty-six “other public places” were observed in Qingdao. “Other public places” include cinemas, libraries, museums, post offices, banks, cultural buildings, and gymnasiums.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in “other public places” by district is presented in Figure 19. The percentage of “other public places” which were compliant with the composite indicator was approximately 50% in ShibeI, 66% in Huangdao, and 89% in Pingdu. No “other public places” were observed in Shinan and only one “other public place” was observed in Laoshan, which was found to be non-compliant.

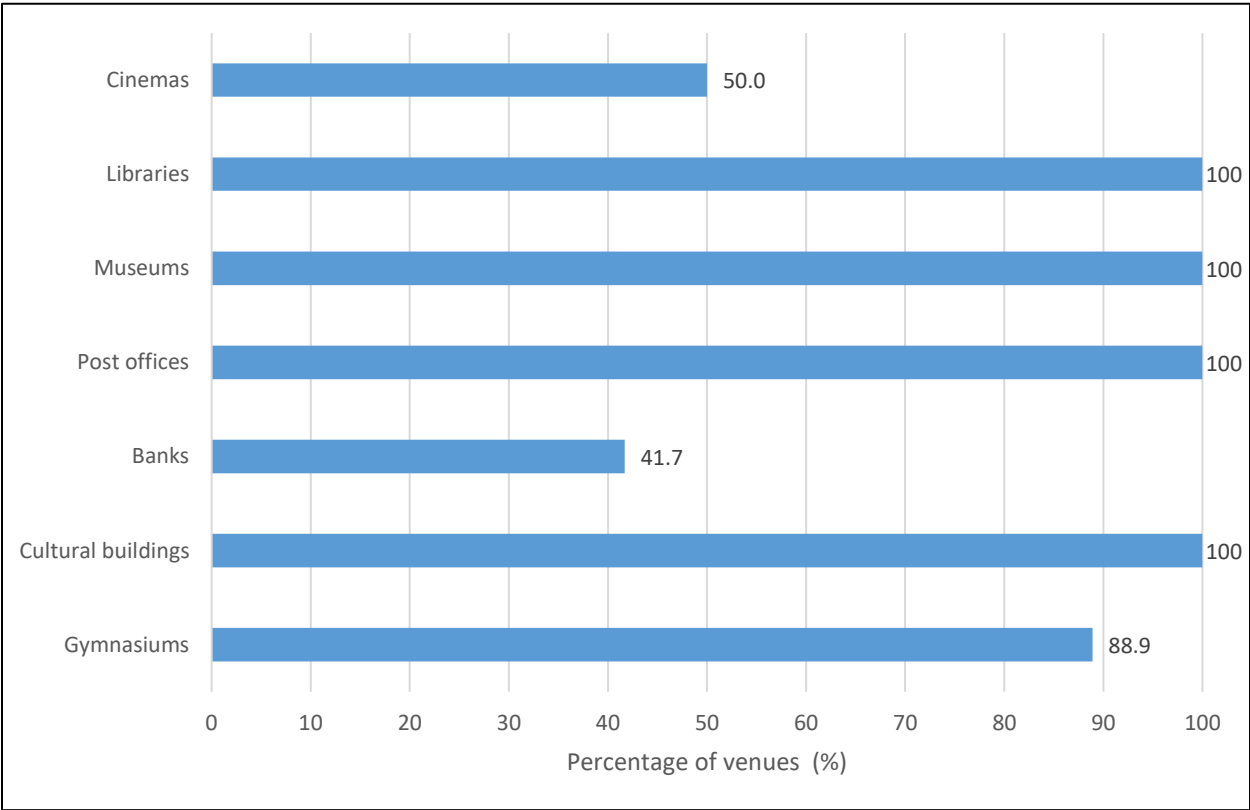
Figure 19: Compliance with composite indicator assessing evidence of smoking in “other public places” by district



Compliance with composite indicator assessing evidence of smoking by type of “other public place”

Compliance with the composite indicator assessing evidence of smoking by type of “other public place” is illustrated in Figure 20. As Figure 20 shows, all cultural buildings (n=9), post offices (n=4), museums (n=12), and libraries (n=2) were compliant. Half (50%) of the cinemas (n=6) and 42% of banks (n=24) were compliant with the composite smoking indicator.

Figure 20: Compliance with composite indicator assessing evidence of smoking by type of “other public place”

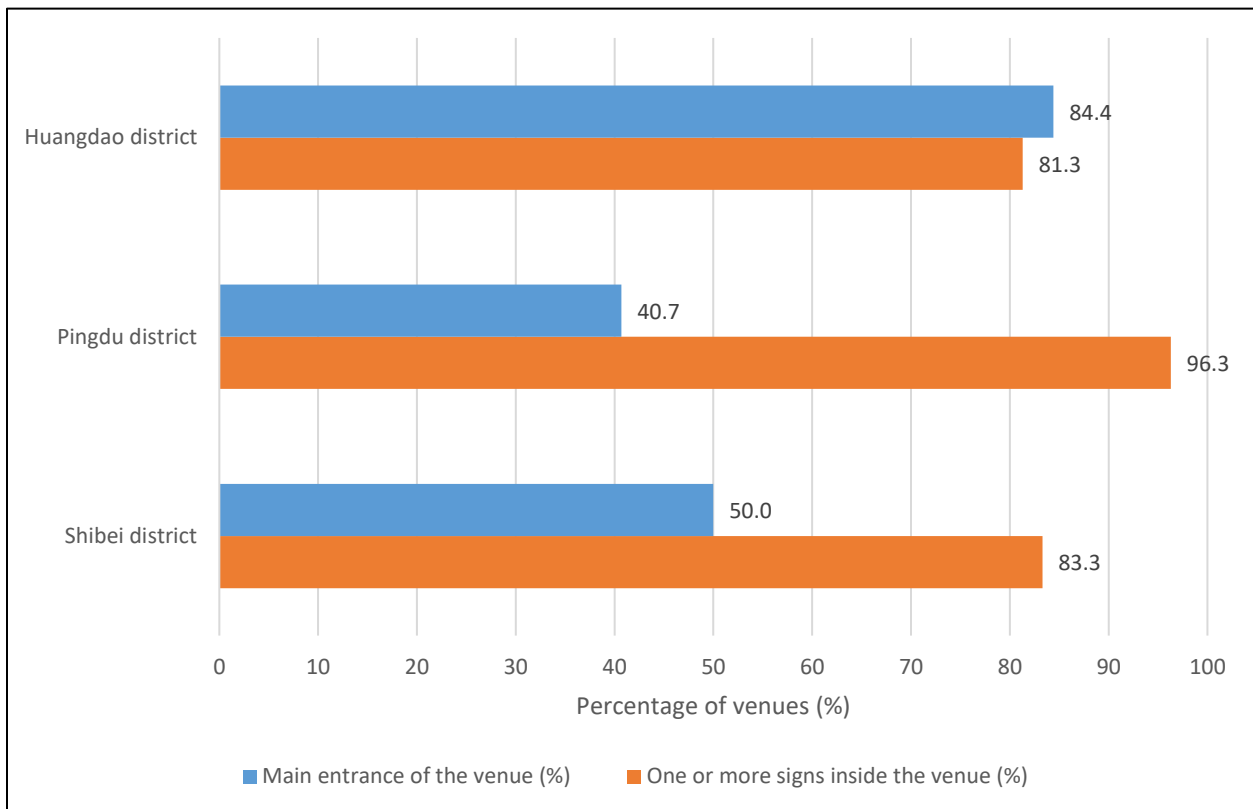


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in “other public places” by district is presented in Figure 21. Approximately 84% of “other public places” in Huangdao had no-smoking signs posted at the main entrances, and approximately 96% of “other public places” in Pingdu had one or more no-smoking signs posted inside the venue.

About 75% of “other public places” in Pingdu had no-smoking signs posted inside all of their elevators; about 67% and 73% of “other public places” in Pingdu had no-smoking signs posted inside all of their men’s bathrooms. For additional information, refer to Appendix C, Table 9.

Figure 21: Compliance with no- smoking signage regulations in “other public places” by district

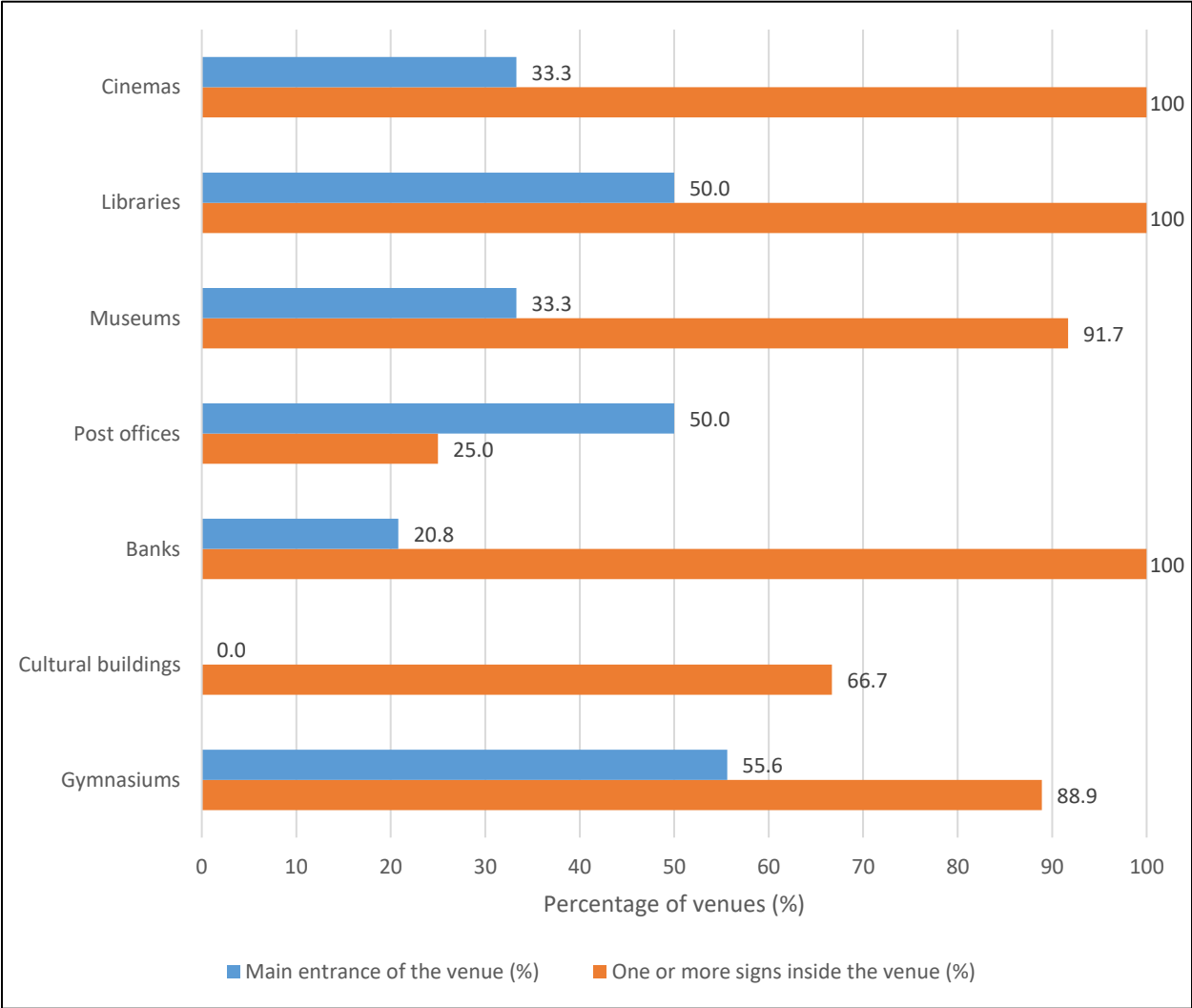


Compliance with no-smoking signage regulations in “other public places” by type

Compliance with no-smoking signage regulations by type of “other public place” is presented in Figure 22. Approximately half (50%) of the post offices and libraries had a no-smoking sign visibly posted at the main entrances. A no-smoking sign was posted at the main entrance of approximately one-third (33%) of the museums and cinemas but none (0%) of the cultural buildings. All (100%) banks, libraries and cinemas had one or more no-smoking signs posted inside.

All (100%) gymnasiums, banks, museums and cinemas had no-smoking signs posted inside all of their elevators. About two-thirds (67%) of cinemas had no-smoking signs posted inside all of their men’s bathrooms. For additional information, refer to Appendix C, Table 10.

Figure 22: Compliance with no-smoking signage regulations in “other public places” by type



Public Transportation Buildings

One public transportation building (airport) was observed in Qingdao. When assessing compliance with the composite indicator assessing evidence of smoking at the airport, it was found to be compliant (Figure 2). As seen in Figure 4, the public transportation building observed contained one or more no-smoking signs at the main entrances and inside the venue. However, none of these signs were fully compliant with all required components of the regulation (Figure 6).

Taxis

Thirty taxis were observed in Qingdao. Most taxi companies observed were compliant with the composite indicator assessing evidence of smoking, with the exception of taxis belonging to 鑫翼出租 company (n=3). None of the taxis observed had all required components of the no-smoking signs, except for one quarter (25%) of the taxis belonging to 温馨的士 company (n=4).

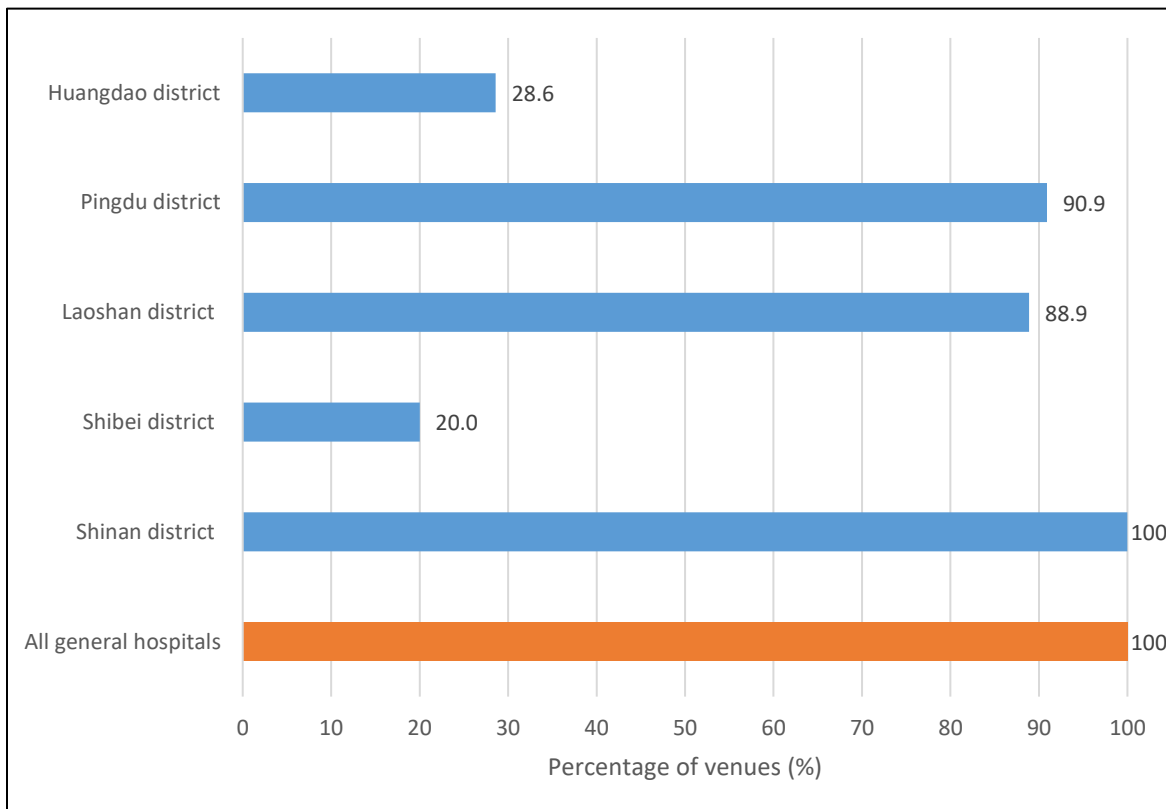
General Hospitals

Sixty-eight general hospitals were observed in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in general hospitals by district is presented in Figure 23. All general hospitals (100%) in Shinan were compliant (n=7), and approximately 20% of general hospitals in Shibe (n=5) and 29% in Huangdao (n=14) were compliant.

Figure 23: Compliance with composite indicator assessing evidence of smoking in general hospitals by district

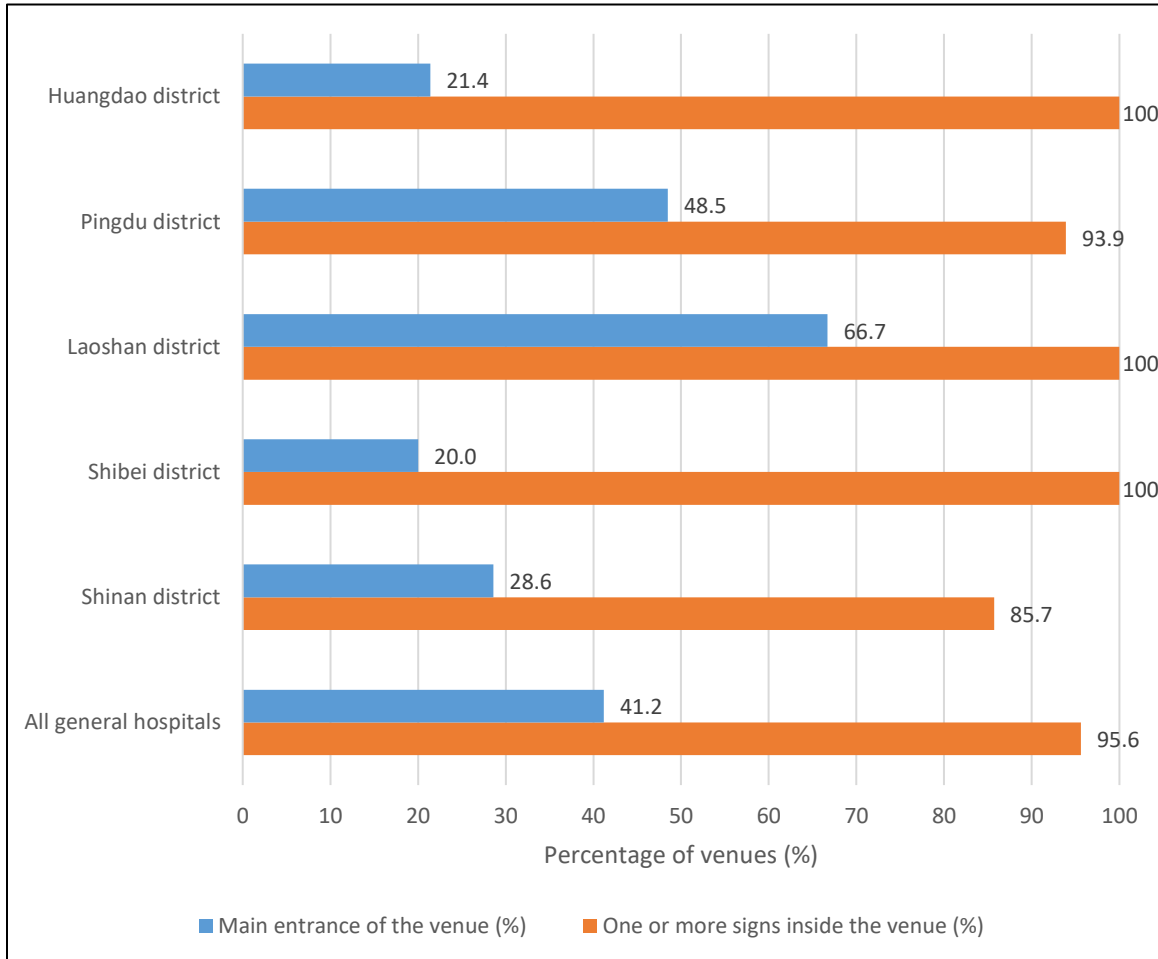


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in general hospitals by district is presented in Figure 24. Approximately two-thirds (67%) of the general hospitals in Laoshan had a no-smoking sign visibly posted at the main entrances compared with approximately 20% of hospitals in Shibe and Huangdao. All (100%) general hospitals in Shibe, Laoshan and Huangdao had one or more no-smoking signs posted inside.

All (100%) general hospitals in Shinan, Pingdu and Huangdao had no-smoking signs posted inside all of their elevators. About half of the hospitals in Laoshan had no-smoking signs posted inside all of their elevators. All of the general hospitals in Shibeil had no-smoking signs posted inside all of their men’s bathrooms. All (100%) general hospitals observed in Shibeil (n=5) had all the required components of the no-smoking signs. For additional information, refer to Appendix C, Table 11.

Figure 24: Compliance with no-smoking signage regulations in general hospitals by district



Children and Maternity Hospitals

Fourteen children and maternity hospitals were observed in Qingdao; none were observed in Shibe, Laoshan and Huangdao.

Compliance with composite indicator assessing evidence of smoking by district

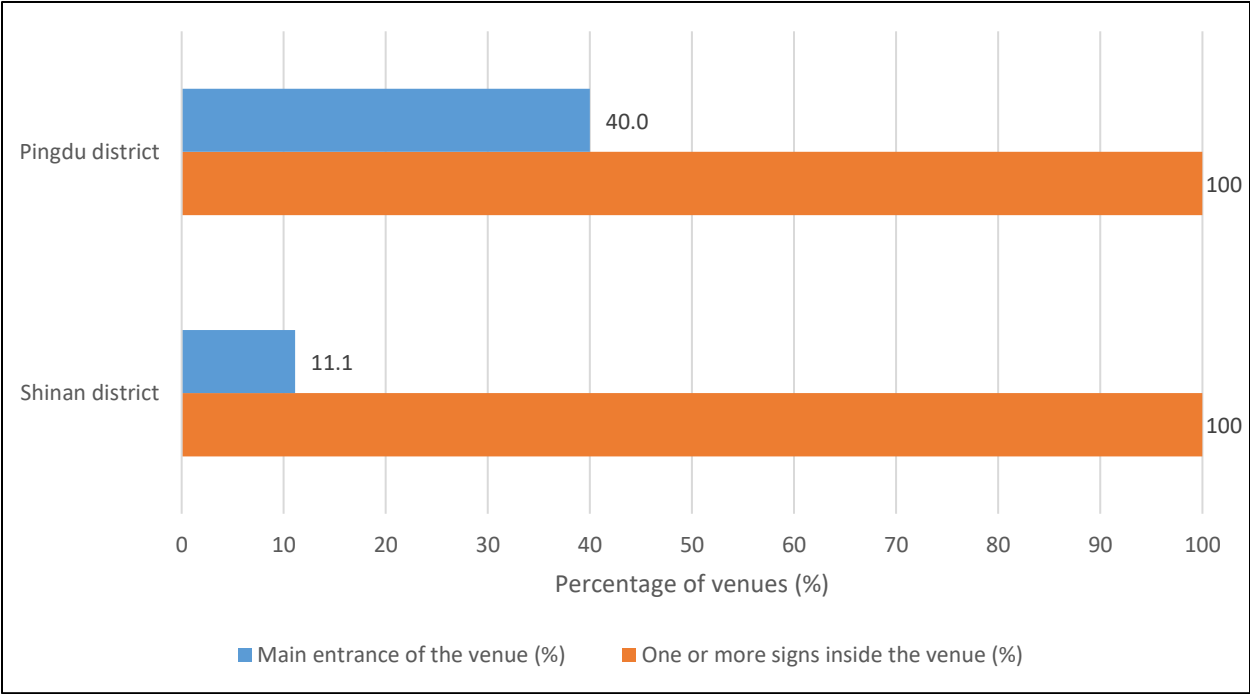
All (100%) children and maternity hospitals observed in Shinan and Pingdu were compliant.

Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in children and maternity hospitals by district is presented in Figure 25. Approximately 40% of hospitals in Pingdu, and 11% in Shinan, had a no-smoking sign visibly posted at the main entrance. All (100%) children and maternity hospitals observed in Shinan and Pingdu had one or more no-smoking signs posted inside.

All (100%) children and maternity hospitals in Shinan had no-smoking signs posted inside all of their elevators. Only a third of the hospitals observed in Shinan had all the required components of the no-smoking signs and 20% of the hospitals in Pingdu had no-smoking signs with all the required components. For additional information, refer to Appendix C, Table 12.

Figure 25: Compliance with no-smoking signage regulations in children’s and maternity hospitals by district



Universities

Sixty-one universities were observed in Qingdao.

As seen in Figure 2, approximately 71% of universities were compliant with the composite indicator assessing evidence of smoking. When assessing compliance with no-smoking signage regulations, approximately 16% of universities had no-smoking signs posted at the main entrance and 71% had one or more no-smoking signs posted inside (Figure 4). Universities were not assessed by district because enforcement responsibility for them is at the city-level.

For additional information regarding no-smoking signage at universities, please refer to Appendix C, Table 13.

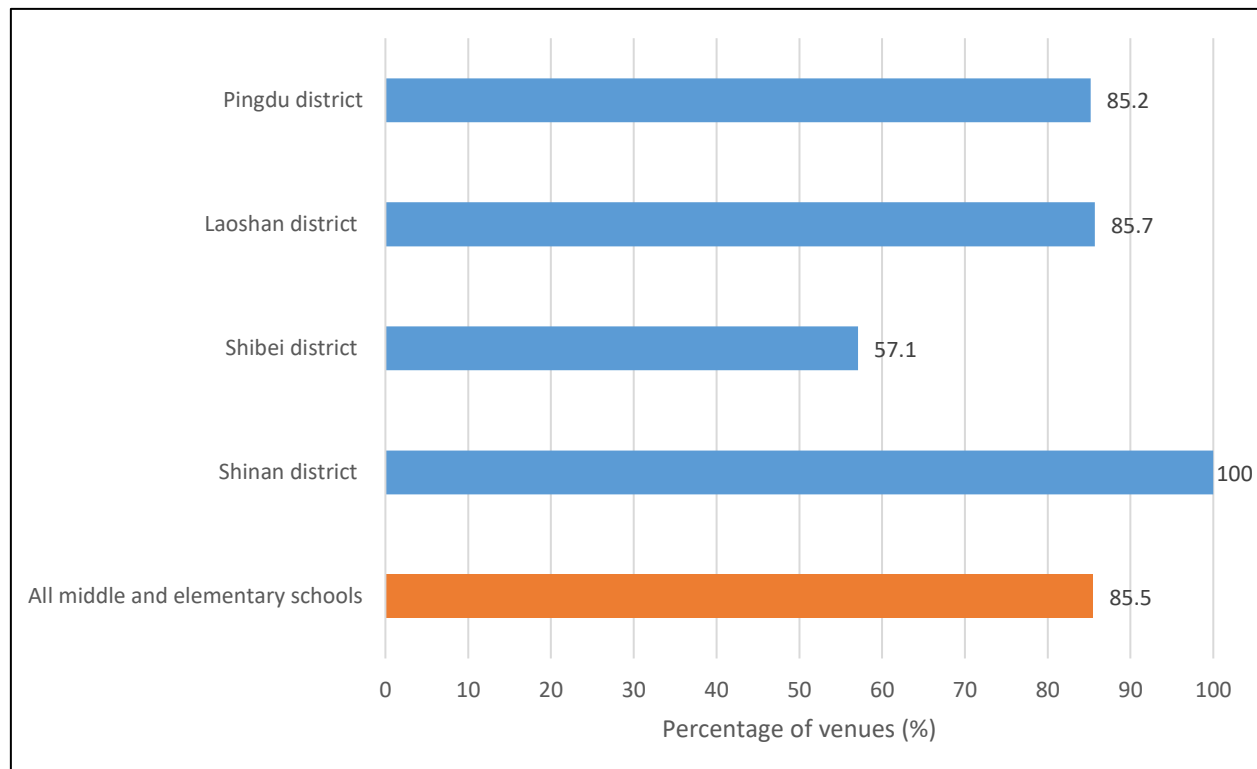
Middle and Elementary Schools

Sixty-two middle and elementary schools were observed in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in middle and elementary schools by district is presented in Figure 26. The percentage of middle and elementary schools which were compliant with the composite indicator was approximately 57% in Shibei, 85% in Pingdu and Laoshan, and 100% in Shinan. Only one school was observed in Huangdao, which was found to be non-compliant.

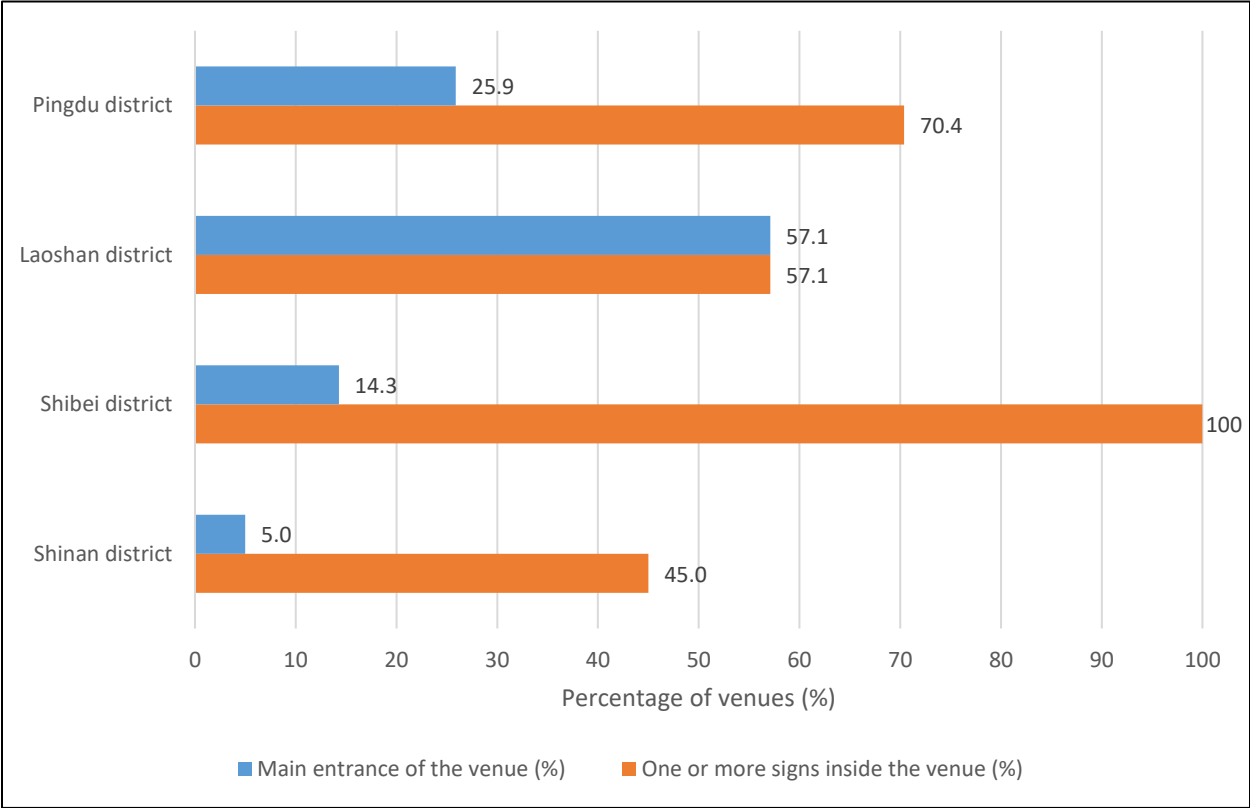
Figure 26: Compliance with composite indicator assessing evidence of smoking in middle and elementary schools by district



Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in middle and elementary schools by district is presented in Figure 27. Approximately 5% and 14% of schools in Shinan and Shibeid districts respectively had a visible no-smoking sign at the main entrances. All (100%) of the schools observed in Shibeid had one or more no-smoking signs posted inside. Approximately 37% of schools in Shinan and Pingdu had no-smoking signs posted inside all of their men’s bathrooms. For additional information, refer to Appendix C, Table 14.

Figure 27: Compliance with no-smoking sign regulations in middle and elementary schools by district



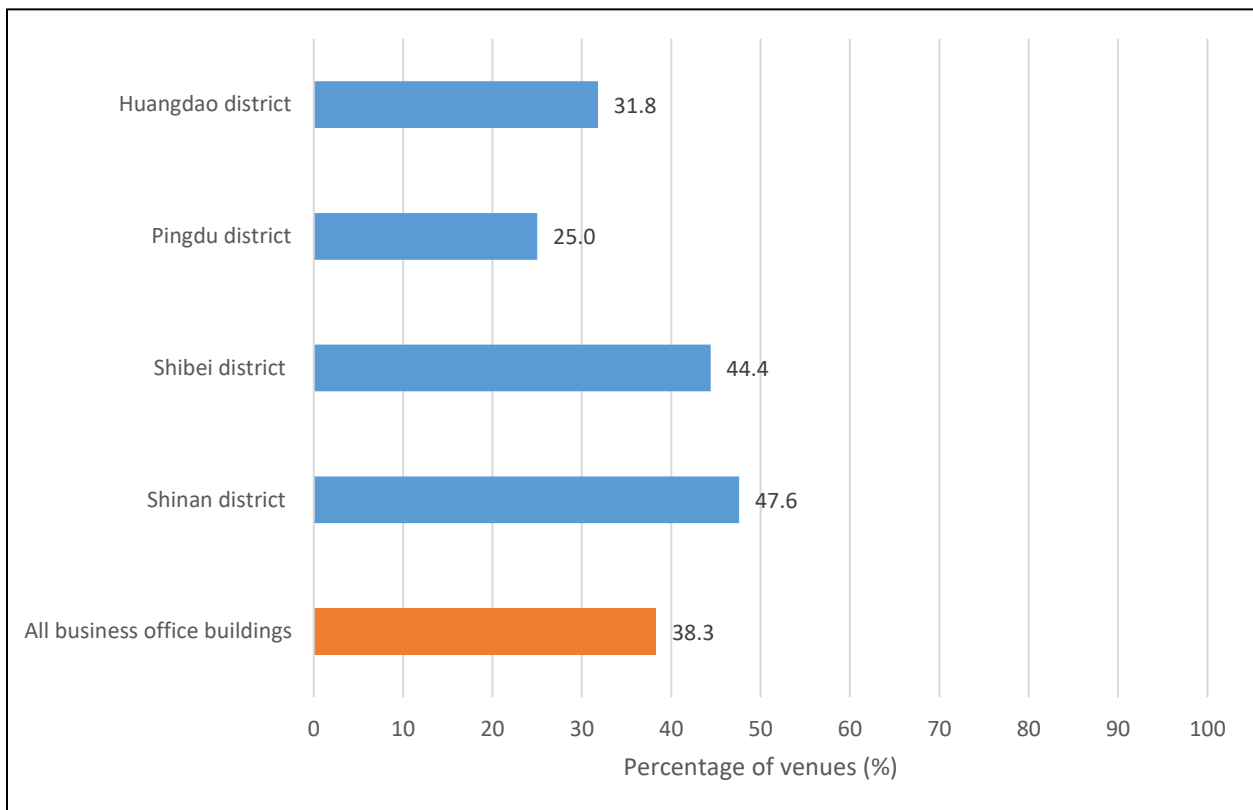
Business Office Buildings

Sixty business office buildings were observed in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with the composite indicator assessing evidence of smoking in business office building by district is presented in Figure 28. Overall, compliance was low. The percentage of business office buildings which were compliant was approximately 25% in Pingdu, 32% in Huangdao, 45% in Shibe, and 48% in Shinan. No business office buildings were observed in Laoshan.

Figure 28: Compliance with composite indicator assessing evidence of smoking in business office buildings by district

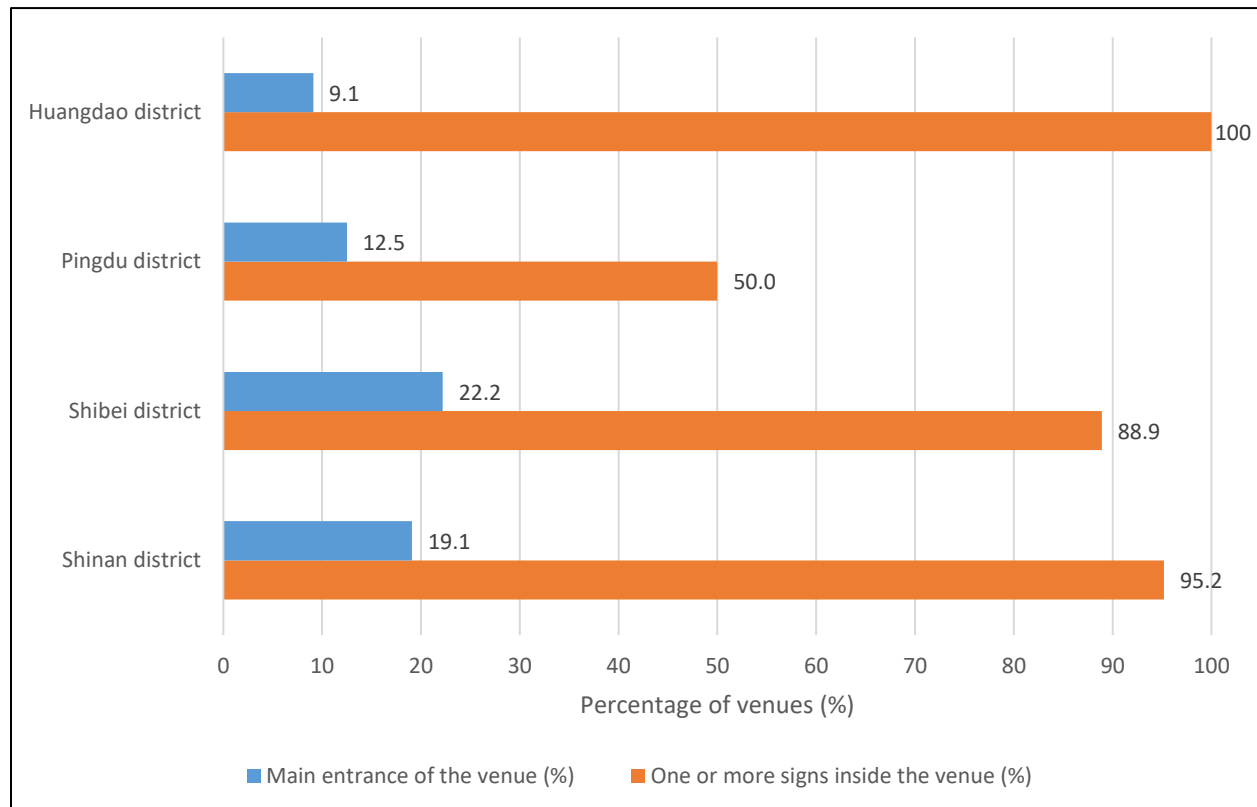


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in business office buildings by district is illustrated in Figure 29. Approximately 9% of business office buildings in Huangdao and 13% in Pingdu had a no-smoking sign posted at the main entrance. All (100%) business office buildings in Huangdao had one or more no-smoking signs posted inside compared with only 50% of the buildings in Pingdu.

All (100%) business office buildings in Shibe and Huangdao had no-smoking signs posted inside all the elevators. About 93% of the office buildings in Huangdao had no-smoking signs posted inside all of their men’s bathrooms. None (0%) of the business office buildings in Shinan and Shibe had all of the required components of the no-smoking signs whereas 46% of the business office buildings observed in Huangdao had all of the required components. For additional information, refer to Appendix C, Table 15.

Figure 29: Compliance with no-smoking signage regulations in business office buildings by district



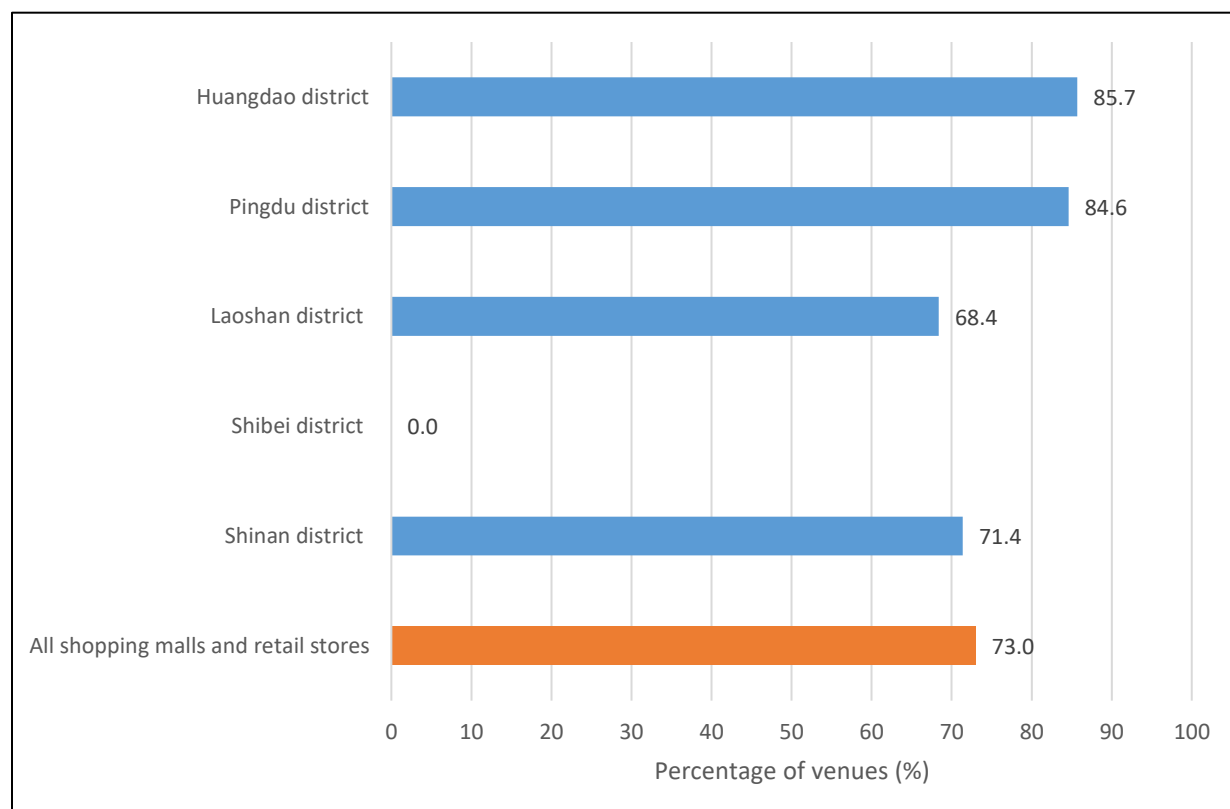
Shopping malls and retail stores

Sixty-three shopping malls and retail stores were observed in Qingdao.

Compliance with composite indicator assessing evidence of smoking by district

Compliance with composite indicator assessing evidence of smoking in shopping malls and retail stores by district is presented in Figure 30. Approximately 85% of malls and stores in Pingdu and Huangdao were compliant. None of the malls and stores observed in Shibei were compliant (n=3).

Figure 30: Compliance with composite indicator assessing evidence of smoking in shopping malls and retail stores by district

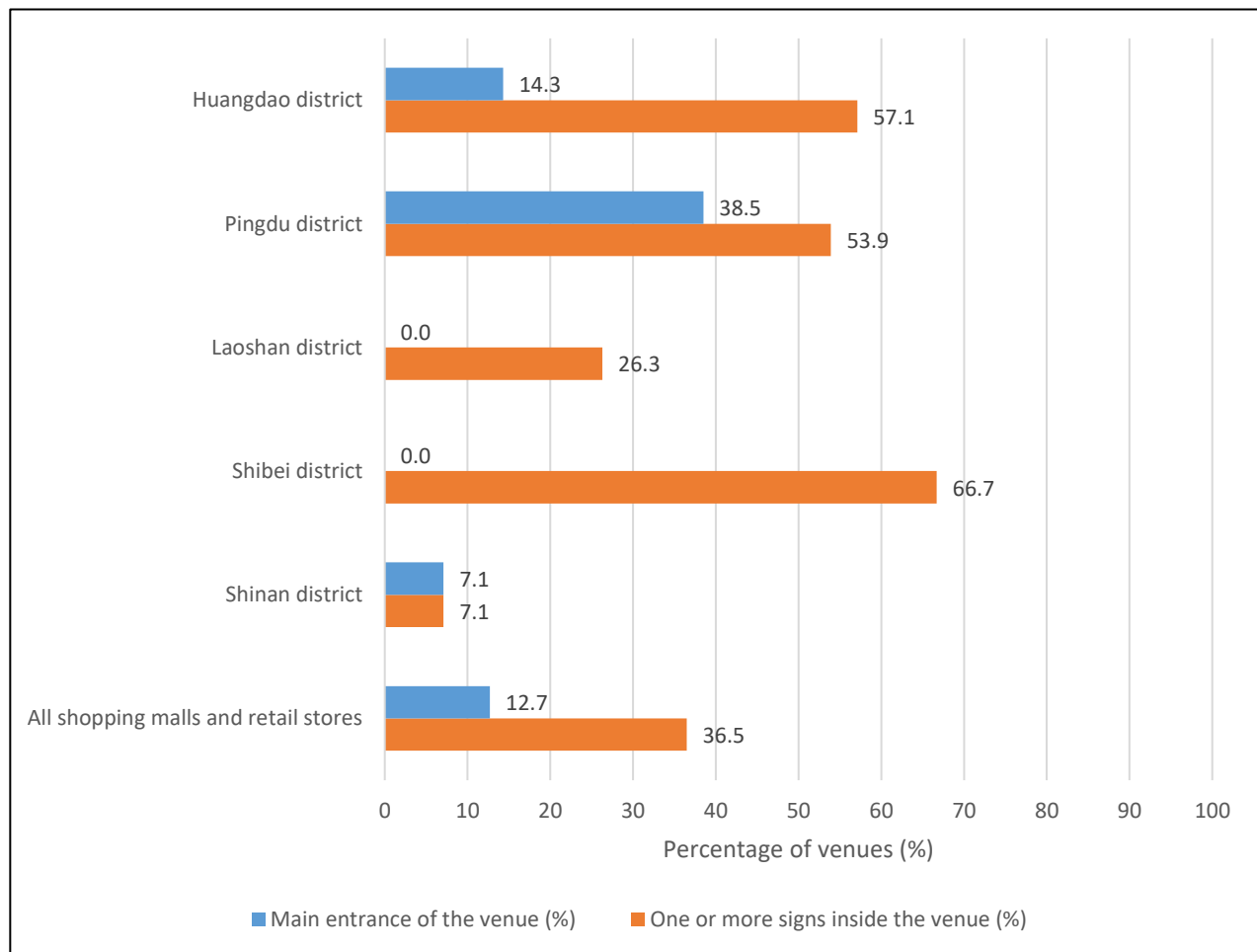


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in shopping malls and retail stores by district is presented in Figure 31. None (0%) of the shopping malls and retail stores in Shibei (n=3) and Laoshan (n=19) had a visible no-smoking sign at the main entrances. Pingdu had the highest compliance with about 39% of the observed shopping malls and retail stores posting a no-smoking sign at the main entrances. About two-thirds (67%) of the shopping malls and retail stores in Shibei, and 7% of outlets in Shinan, had one or more no-smoking signs posted inside.

All retail outlets in Shinan and Huangdao had no-smoking signs posted inside all of their elevators and all of their men’s bathrooms. None of the shopping malls and retail stores observed in Shinan and Pingdu had all the required components of the no-smoking signs. For additional information, refer to Appendix C, Table 16.

Figure 31: Compliance with no-smoking signage regulations in shopping malls and retail stores by district



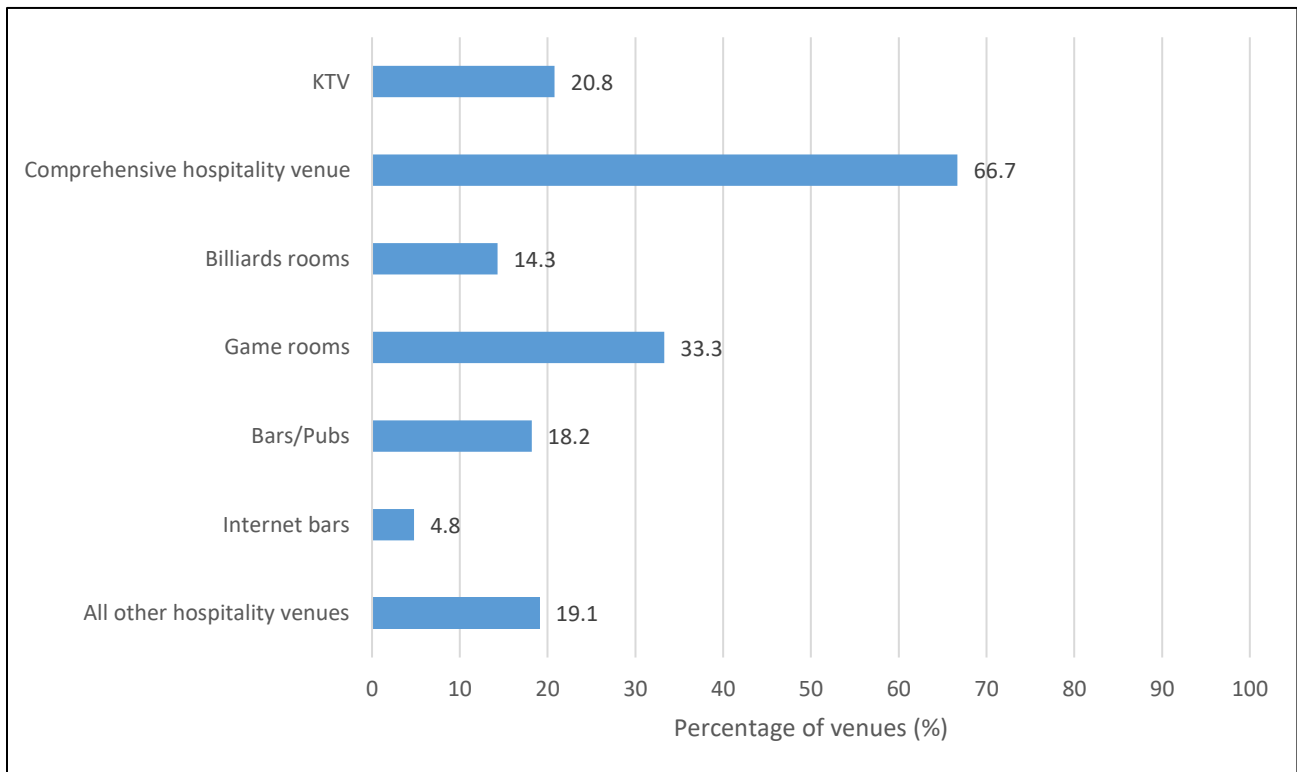
Other Hospitality Venues

Eighty-four “other hospitality venues” were observed in Qingdao. “Other hospitality venues” include KTVs, comprehensive hospitality venues, clubs, billiards rooms, game rooms, bars/pubs, internet bars.

Compliance with composite indicator assessing evidence of smoking

Compliance with the composite indicator assessing evidence of smoking in “other hospitality venues” by venue type is presented in Figure 32. Approximately two-thirds (67%) of comprehensive hospitality venues were compliant. None (0%) of the observed clubs were compliant, and approximately 5% of internet bars (n=9) were compliant.

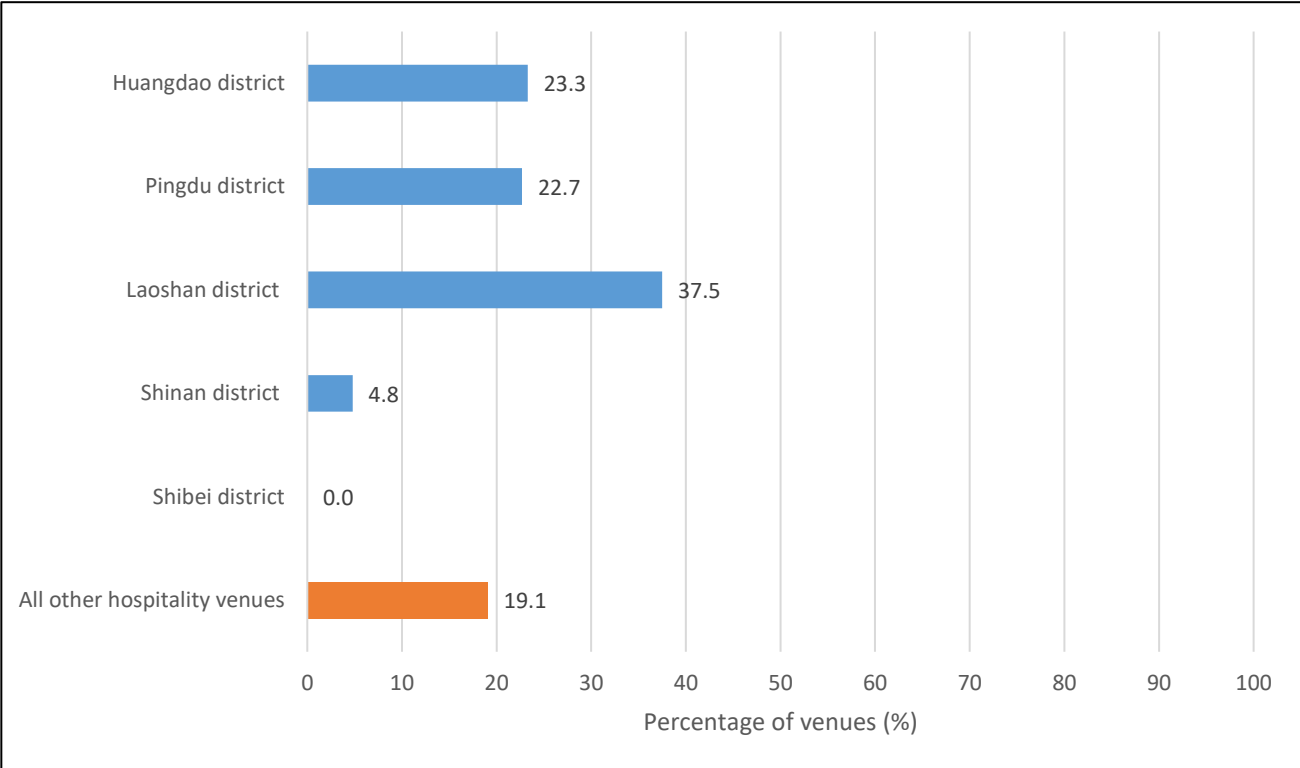
Figure 32: Compliance with composite indicator assessing evidence of smoking in “other hospitality venues” by venue type



Compliance with composite indicator assessing evidence of smoking by district

Compliance with composite indicator assessing evidence of smoking in “other hospitality venues” by district is presented in Figure 33. Approximately one quarter of venues in Pingdu (23%) and Huangdao (23%) were compliant. None (0%) of the “other hospitality venues” in Shibeier were compliant (n=3), and 5% of venues in Shinan (n=21) were compliant.

Figure 33: Compliance with composite indicator assessing evidence of smoking in “other hospitality venues” by district

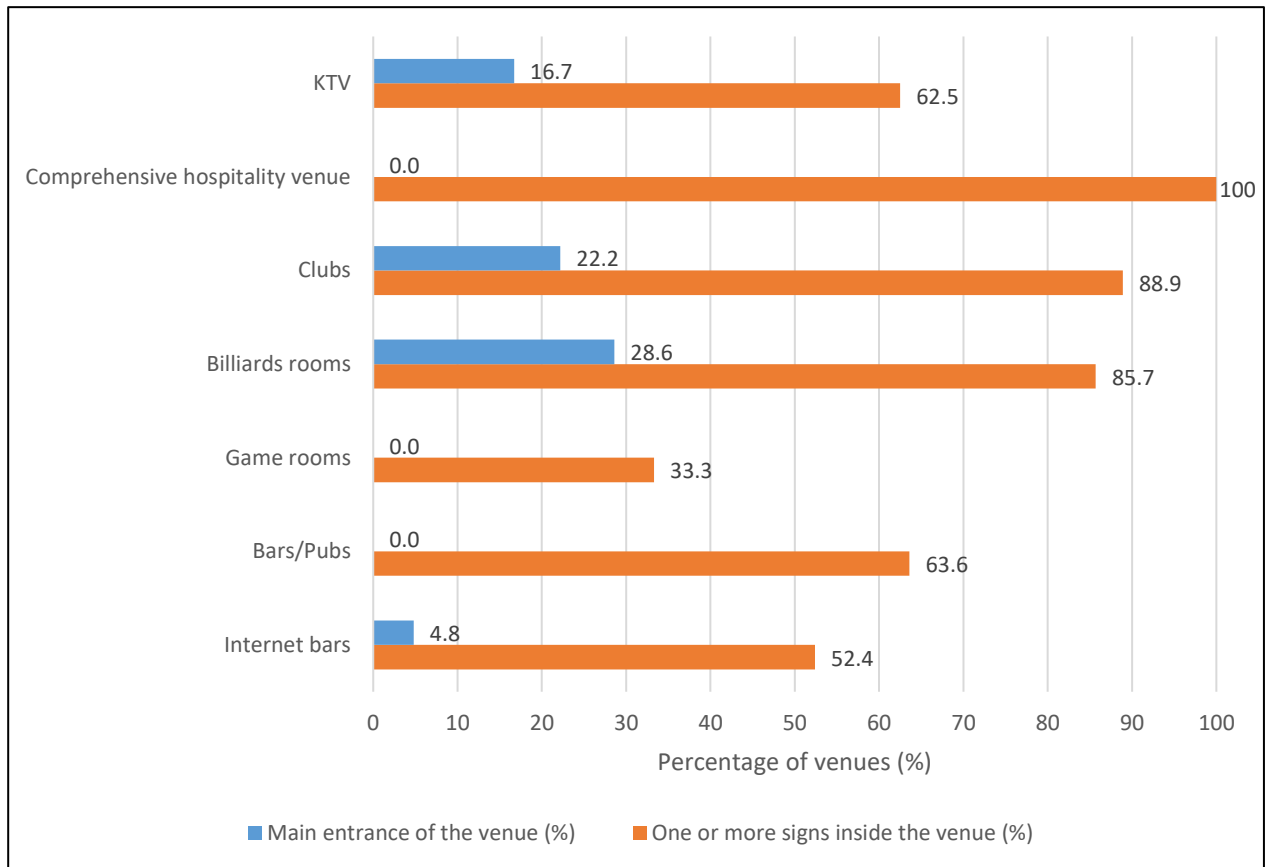


Compliance with no-smoking signage regulations in “other hospitality venues” by type

Compliance with no-smoking signage regulations in “other hospitality venues” by venue type is depicted in Figure 34. No-smoking signs were not posted at the main entrance in any of the observed bars/pubs, game rooms and comprehensive hospitality venues. About 28% of the billiards rooms and 22% of the clubs had a visible no-smoking sign at the main entrance. About 89% of clubs and 86% of billiards rooms had at least one no-smoking sign posted inside.

Approximately 50% of comprehensive hospitality venues had no-smoking signs posted inside all of their men’s bathrooms. For additional information, refer to Appendix C, Table 18.

Figure 34: Compliance with no-smoking signage regulations in “other hospitality venues” by type

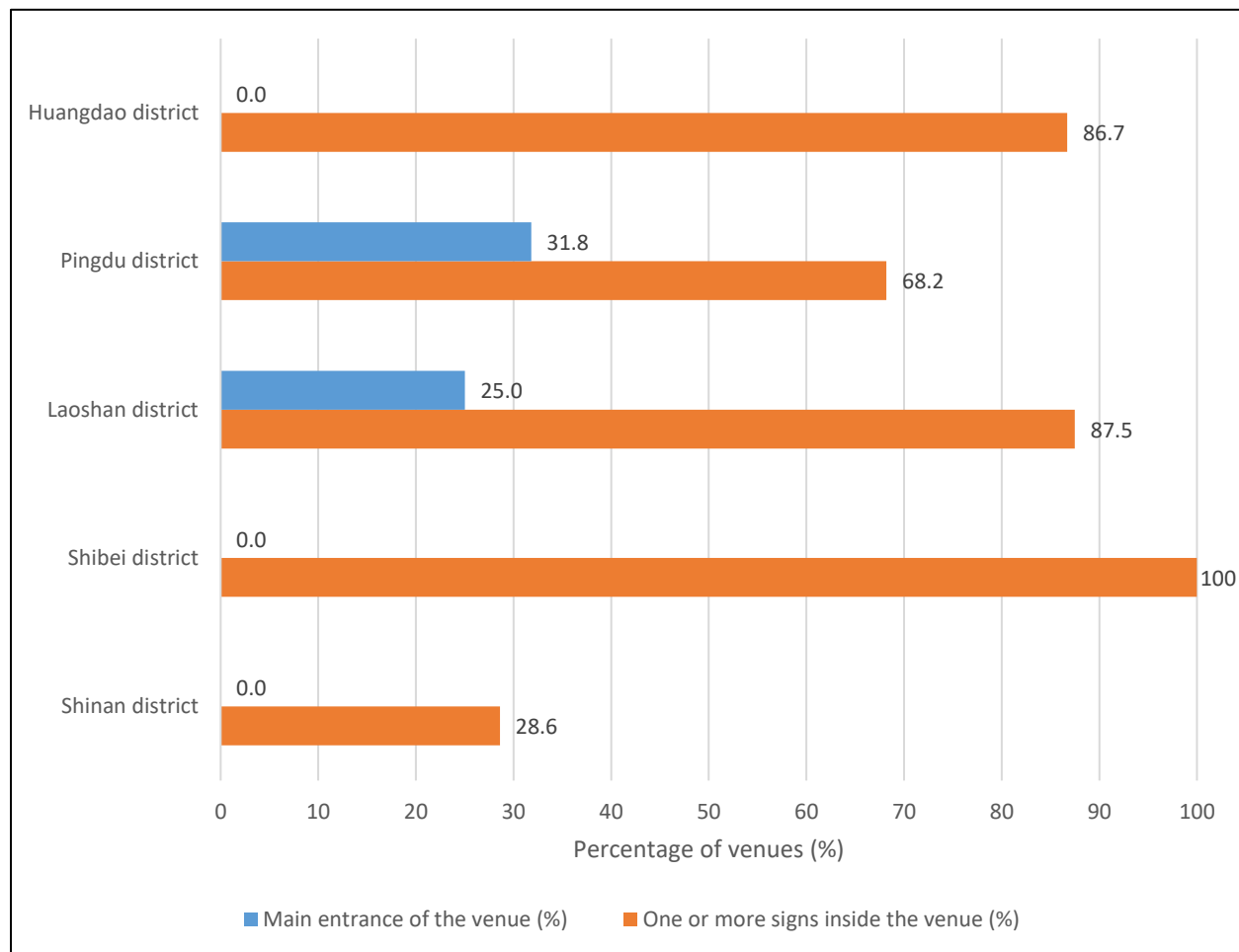


Compliance with no-smoking signage regulations by district

Compliance with no-smoking signage regulations in “other hospitality venues” by district is illustrated in Figure 35. No-smoking signs were not posted at the main entrance in any of the “other hospitality venues” observed in Shinan, Shibei and Huagdao. All (100%) of the venues in Shibei, and about 29% of venues in Shinan, had one or more no-smoking signs posted inside.

All (100%) of the “other hospitality venues” in Shibei had no-smoking signs posted inside all of the men’s bathrooms. None of the “other hospitality venues” observed in Shinan, Laoshan and Pingdu had all the required components of the no-smoking signs. For additional information, refer to Appendix C, Table 17.

Figure 35: Compliance with no-smoking signage regulations in “other hospitality venues” by district



Other Observations

A designated smoking area (DSA) was defined as a specific area within a venue, not physically closed off from the rest of the venue, where smokers were allowed to smoke. Designated smoking areas were not observed in most venue types, except for in 2% of shopping malls and retail stores.

A designated smoking room (DSR) was defined as a physically enclosed room where smokers were allowed to smoke. Designated smoking rooms were not observed in any venue type.

If one or more individuals were observed to be smoking, we also observed whether the staff/owner/venue manager of the premises tried to dissuade the individual(s) from smoking. No such attempt was observed during data collection.

IV. DISCUSSION

The smoke-free legislation in Qingdao was implemented in September 2013, designating all enclosed public places and workplaces smoke-free.¹⁴ Our findings show that compliance varied by venue type and district. When assessing compliance with the composite measure for “evidence of smoking”, compliance in children and maternity hospitals was 100%. Previous studies conducted in China also revealed that hospitals tend to have good compliance.^{3,5} However compliance in general hospitals (74%) was lower; further analysis showed only 20% of general hospitals in Shibei (n=5) and 29% in Huangdao (n=14) were compliant, suggesting a more rigorous enforcement of the smoke-free policy is needed in these districts.

Results showed that only 19% of observed “other hospitality venues” (including pubs/bars, internet bars, game rooms, billiard rooms, clubs and KTVs) were compliant; none of the observed clubs were compliant and only 5% of internet bars. This is consistent with previous observations conducted at hospitality venues in China, which also found poor compliance in these venues.^{3,6,8} Overall, 38% of business office buildings, 59% of government buildings and 62% of restaurants observed were found to be compliant with the composite measure for “evidence of smoking”; further analysis showed compliance was poorer in beverage shops with sit-down tables (50%) and regular restaurants (52%). These findings suggest the need for interventions which target restaurants, business office and government buildings and “other hospitality venues” in order to improve compliance. There is also a need to further explore why compliance differs so greatly between different types of venues.

Compliance with the composite measure for “evidence of smoking” also varied by district. Overall, compliance was good in venues observed in Laoshan and in Pingdu at 73% and 75% respectively, whereas in Huangdao it was only 39%. In Pingdu, compliance in restaurants (86%), “other public places” (89%), and children and maternity hospitals (100%) was good but not as robust in business office buildings (25%). Enforcement efforts need to be improved and consistent across the city. Standardized guidelines may help authorities to uniformly enforce the regulation across all districts and venue types in Qingdao.

No-smoking signage varied considerably by venue type and by district. Only 41% of general hospitals observed had no-smoking signs at the main entrances but 96% of these hospitals had one or more no-smoking signs inside the venue. The posting of signs at main entrances was consistently low across all venue types, particularly hotels (3%), restaurants (9%), other hospitality venues (11%) and shopping malls and retail stores (13%). While more no-smoking signs were observed inside venues, only 37% of shopping malls and retail stores, and 50% of taxis, had posted these signs. Over 80% of venues in Huangdao and Shibei posted one or more no-smoking signs inside venues but both districts need to improve compliance with no-smoking signage at entrances, which was 15% and 13% respectively. Shinan district needs to improve compliance with visible no-smoking signs at entrances (6%) as well as inside venues (46%).

No-smoking signs were also observed to examine if they comprised all of the components required by the law. Compliance was very low across all venue types for no-smoking signs containing all the required components, with rates below 20% in nine out of the 13 venue categories. Forty-five percent of venues observed in Huangdao had all the required

components of the no-smoking signs whereas 41% of the venues observed in Pingdu had partially compliant no-smoking signs. Again, there is a strong demand to improve compliance with signage regulations in Shinan, where only 3% of signs observed were fully compliant and over 80% had none of the required components. Clear instructions from concerned authorities on where to place the signs, wider distribution of standardized no-smoking signs, and strong enforcement are needed in order to improve compliance.

We also observed whether the staff/owner/venue manager of various venues tried to dissuade the individual(s) from smoking if they were observed to be smoking. We did not observe any such attempt being made. The roles and responsibilities of venue managers when they observe violations need to be reinforced in order to see improved results.

V. LIMITATIONS

This study has some limitations. Only five districts were sampled in this study, as such, our results might not be generalizable to all of Qingdao. Moreover, the lists we have identified may not have been fully comprehensive; smaller venues, for example, might have been missed. In addition, observers spent an average of about 10 minutes inside these venues; if they had spent more time at these locations, they might have recorded other observations (e.g. observing active smoking or staff/owner/venue manager asking individuals to stop smoking). Since it was not possible to enter all of the government buildings, observations were only conducted in government buildings affiliated with the Executive Branch and Government Affiliated Institutions.

VI. CONCLUSIONS

The level of compliance with Qingdao's smoke-free regulation varied according to the type of public place and by district. Strong and uniformed enforcement of the regulation is urgently needed to improve compliance and reduce exposure to second-hand smoke. These efforts can be facilitated by improved coordination among various enforcement agencies and venue management authorities. Moreover, standardized guidelines may help authorities to enforce the policy across all districts and venue types and the strategic use of compliance data will ensure effective and efficient interventions. Structured training may improve various stakeholder groups' understanding of Qingdao's tobacco control law and their roles and responsibilities in implementing it. Social marketing campaigns can enhance the general public's awareness and support for "smoke-free public places". Improvement in the presence, location and content of no-smoking signage is a key priority for Qingdao. Clear instructions from concerned authorities regarding the placement of these signs, wider distribution of standardized no-smoking signs, and strong enforcement are needed. With such a concerted effort it is possible to establish 100% smoke-free compliant indoor public places in Qingdao in the near future.

Key Terms and Definitions

Restaurants: Commercial space with indoor space, a certain number of seats, and customers to buy and enjoy cooked food and drinks.

(餐馆): 有室内空间、提供一定数量座位、并让顾客购买及享用烹调好的食物及饮料的商业场所。

Government buildings: Including the government department, the Standing Committee of the People's Congress of Lanzhou City/Qingdao City, the office of the Committee of the Chinese People's Political Consultative Conference (Lanzhou City/Qingdao City), and the office space of the institutions under the above-mentioned institutions.

(政府机构): 政府机构的办公场所。包括政府部门、(兰州市/青岛市)人民代表大会常务委员会、中国人民政治协商会议(兰州市/青岛市)委员会办公场所,以及上述机构的下设事业单位的办公场所。

Hotels: A commercial place that provides users with a place to rest or sleep for a certain period of time.

(酒店/宾馆): 为使用者提供一定时间内休息或睡眠空间的商业场所

Public transportation buildings: including airports, buses and long-distance passenger stations, subway stations, railway stations, ferry terminals, taxis and buses, etc.

公共交通: 包括飞机场、公共汽车及长途客运车站、地铁站、火车站、轮渡码头、出租车及公共汽车等

Children's and maternity hospitals: hospitals that provides medical services for children and pregnant women.

儿童医院和产科医院: 为儿童和孕产妇提供医疗服务的医院

Schools (middle and elementary schools): Primary schools refer to the school that provide primary education. Middle schools are divided into junior high schools

学校: 中学(包括初中和高中)、小学。小学是指接收初等教育的学校, 中学(middle school), 分为初级中学与高级中学, 属于中等教育的范畴。初级中学一般是指九年义务教育的中学, 高级中学是指高中非义务教育阶段的中学。

Universities: higher educational institutions that provide teaching and research environment and are authorized to award degrees. Junior colleges and vocational schools for adults are also under this category.

大学：是指提供教学和研究条件、并授权颁发学位的高等教育机构。控烟执法中该类别还包括大专及供成年人学习的职业学校。

Business office buildings includes work places of enterprise and civil society organizations

商用写字楼：专门用于商业办公的建筑物。控烟执法中该类别包括企业及社会团体的办公场所。

Shopping malls and retails stores: large-scale integrated commercial network group that is assembled by various retail businesses. A retail store is a place where merchant sells goods to customers, mostly in small quantities or single sales, which is different from the wholesale business that sells in large quantities. Supermarkets and wholesale stores are also under this category.

商场/购物中心及零售店：商场/购物中心是指各种零售商业集结在一起的大型综合性商业网点群。零售店是指商家出售商品给消费者的地方，以小额出售或是单一个数售卖为主，区别于大宗货品的批发业务。在控烟执法中该类别还包括超市及批发商店。

Other hospitality venues: profitable venues that are open to public and consumers for entertaining activities, which includes bars/pubs, game rooms, billiards rooms, disco rooms, karaoke, ballrooms, etc.

娱乐场所 娱乐场所等服务业场所：包括酒吧、网吧、游戏厅（棋牌室）、台球厅、迪斯科舞厅、卡拉 OK 厅、舞厅等。娱乐场所一般是指以营利为目的，并向公众开放、消费者自娱自乐的歌舞、游艺等场所，主要包括歌舞厅、卡拉 OK 场所等各类歌舞娱乐场所和以操作游戏、游艺设备进行娱乐的各类游艺娱乐场所。

Other public places: banks, post offices, libraries, cinemas, cultural buildings, museums the category of banks and post offices in the smoke-free law also include venues of finance, banking, telecom and stock exchange services.

其他公共场所：包括银行、邮局、图书馆、电影院、文化类建筑、博物馆等营业场所及文化场所。控烟执法中银行和邮局场所类别中还包括金融、银行、电信服务场所和证券交易所

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