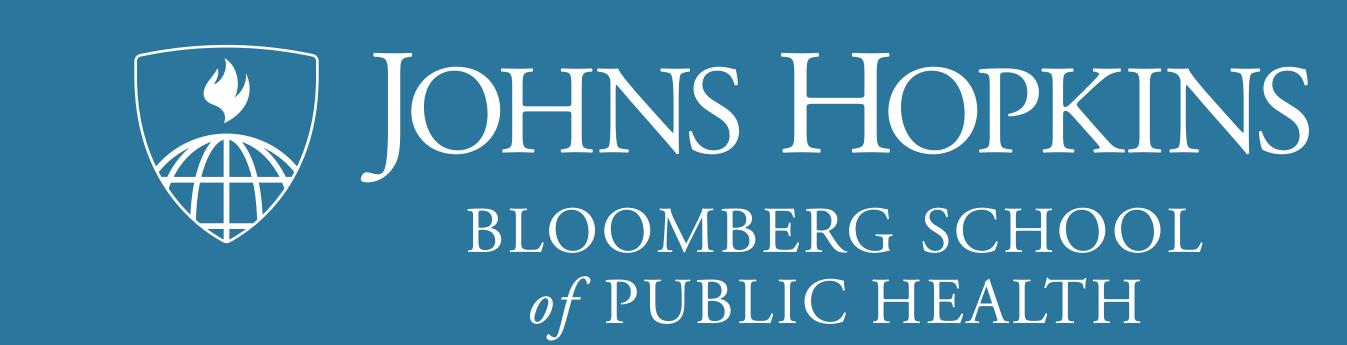
# Clear Skies and Grey Areas

## Exposure to secondhand smoke, respiratory health, and attitudes toward smoke-free policy in airports among flight attendants



Institute for Global Tobacco Control

#### **Objective**

To assess exposure to secondhand tobacco smoke (SHS), respiratory health status, and attitudes concerning secondhand smoke polices among flight attendants who regularly service international flights. In the first phase of this two-part study, the specific aim was to assess flight attendants' continued exposure to SHS after the smoking ban on flights, and to examine flight attendant attitudes toward air quality and smoke-free public places.

## **Background**

- In-flight smoking was banned on all U.S. domestic flights in 1990, and on U.S.-based international flights in 2000
- Occupational exposure to SHS and other air quality issues remains a significant concern among flight attendants, particularly in other places frequented during international travel, including but • Demographics not limited to airports, hotels, and restaurants
- Association between respiratory illnesses and SHS exposure in flight attendants remains an issue



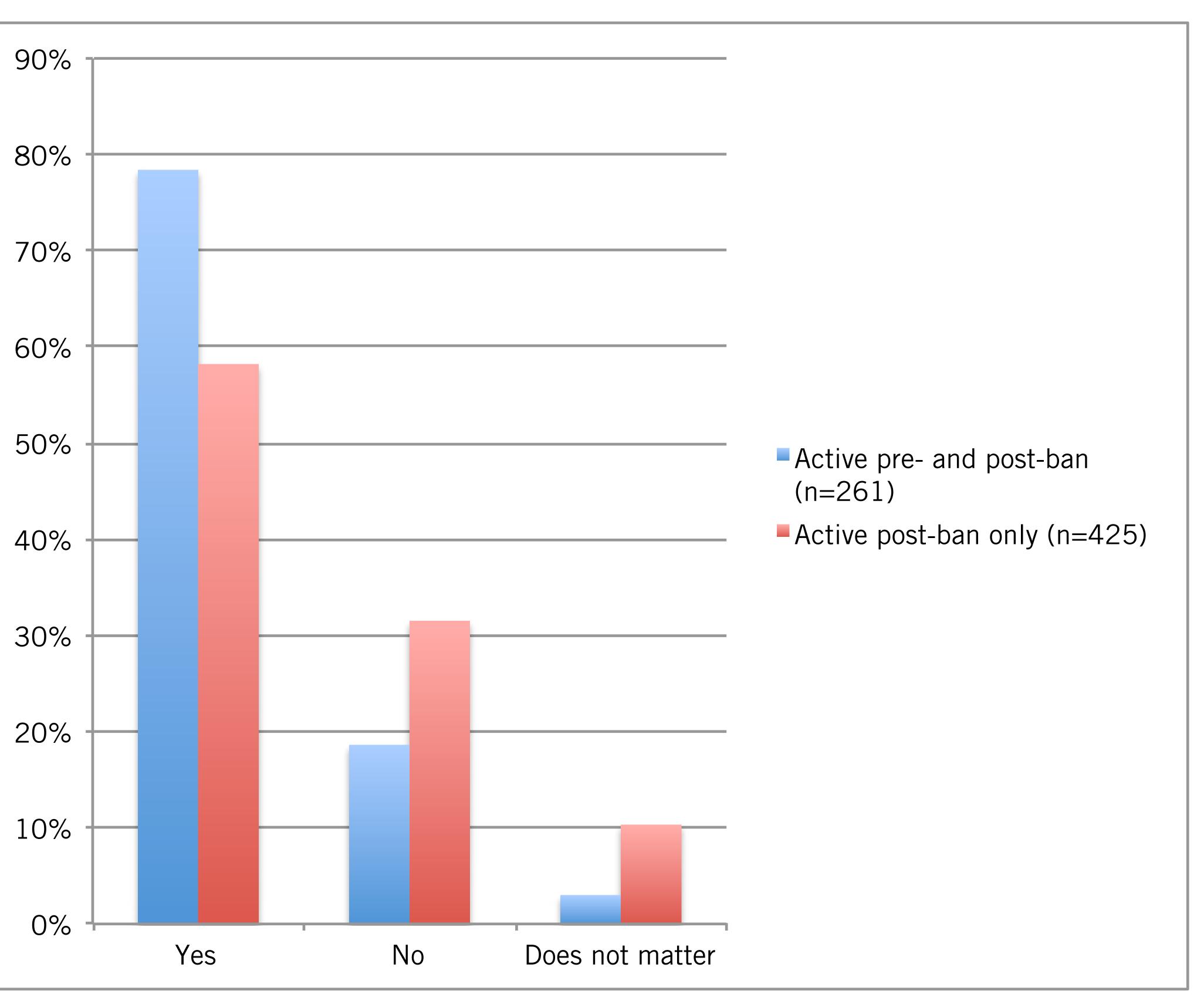
Sample: Flight attendants who worked at least one year in their current position and serviced a minimum of two international flights per month. The study focused on U.S. airlines, but the option to participate was open to all English-speaking adult flight attendants.

Survey: A web-based survey was conducted in 2012. Participants were recruited through an electronic flyer distributed by a major flight attendant union, and from online advertisements placed on Facebook group pages subscribed to by flight attendants. Participants received a \$15 gift card for participation.

#### Survey questions included respondents'

- Self-reported exposure to SHS in
  - Public areas of airports
  - Restricted or employee-only areas of airports
  - Hotels, restaurants and bars, outdoor work areas, and transportation to and from airports
- Attitudes toward smoke-free places and policies
- Health issues including presence and severity of respiratory symptoms

Figure 1. Flight attendant responses to the question "Do you believe that airports need to implement further policies to control tobacco smoking within or outside airports?"



Secondhand smoke variables were generated from questions regarding amount of time participants were exposed to SHS. Participants were asked to provide the duration of exposure (in minutes) to SHS exposure in various parts of airports and public places (hotels, restaurants, transportation, and others). The number of minutes from each location was summed to create a variable for total SHS exposure (in minutes), and these were divided into tertiles.

A Respiratory Questionnaire Score (RQS) was generated from the respiratory symptoms components from the survey (sinusitis, asthma, and rhinitis). The total RQS score is the sum of the individual components (symptoms). Participants who have higher RQS scores have more symptoms and/or more severe symptoms.

#### Analysis:

A total of 723 flight attendants participated in the study. Descriptive analyses were performed for demographic characteristics. Chi Square was used to compare across groups. For the assessment of the relationship of exposure to symptoms we excluded 118 participants who had missing values for sinusitis, asthma, and rhinitis status, and an additional 22 were excluded for missing work history metrics, leaving 583 flight attendants. Continuous variables were grouped into tertiles according to SHS exposure in minutes. Correlation matrices were generated for correlation coefficients of the components of the RQS questionnaire and the different metrics of work history. All analyses were performed with Stata 13.0 (Stata Corporation).

Female respondents comprised most of the sample (68%) (Table 1). More than 2/3 of the sample (67%) reported that they had never smoked.

#### Exposure:

- Nearly 59% of flight attendants reported being exposed to SHS (always/often) in outdoor areas of the airport (near doors, taxi and bus stands and pick up/drop off locations) (Table 2)
- 43% reported extensive exposure near designated smoking rooms or areas in airports
- Mean level of exposure per flight attendant over the past month was 249 minutes (range 9 to 128,000)

## Attitudes:

- Majority of flight attendants supported implementing further smoke-free airport policies (Figure
- Support for implementing further smoke-free policies differed significantly by whether they had worked before the ban or only after the ban -- 78% vs. 61%, respectively

## Symptoms:

- Sinusitis was more common among participants over 50 and among those who had worked as flight attendants when smoking was allowed on airplanes
- The median RQS score was significantly higher among flight attendants with higher second hand smoke exposure (Table 1)

#### Conclusions

- Flight attendants are still reporting exposure to SHS during international work travel
- Reports of respiratory symptoms and the percent of reported symptoms were significantly associated with ongoing exposure to SHS
- Flight attendants favor smoke-free policies and want to see further restrictions
- There is a need to focus SHS exposure and air quality awareness and education efforts toward newer flight attendants
- Continued improved airport restrictions on smoking are necessary in order to reduce exposure to secondhand smoke in the U.S. and around the world

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Table 1. Sample demographics, secondhand smoke exposure, and respiratory illness among flight attendants

	SHS Tertile 1	SHS Tertile 2	SHS Tertile 3	P-trend
Median exposure (IQR), in minutes	16 (7, 31)	16 (7, 31)	16 (7, 31)	
N	177	177	175	
Gender (n=526) Male	34.1	38.3	27.6	
Female	33.4	31.5	35.1	
Age (n=519)	44.7 (11.8)	42.2 (11.9)	40.7 (11.3)	<0.01*
Country of origin (n=519)				
US	32.0	32.9	35.1	0.04
Smoking Status (n=528)				
Never	34.5	31.9	33.6	0.79
Flight attendant when smoking was allowed on flights (n=525)  No  Yes	29.1 39.6	31.9	36.4 27.8	<0.01* 16 (7, 3)
RQS Score (n=500)**	38.6 (11.3)	39.5 (11.0)	44.6 (12.1)	<0.01*
Sinusitis <sup>†</sup> No Yes	34.2 31.3)	33.9 32.1	31.9 36.6	0.36
Asthma No Yes	34.5 27.0	34.1 29.7	31.4 43.3	0.06
Rhinitis No Yes	34.8 28.0	32.9 35.5	32.3 36.5	0.21

Table 2. Flight attendant self-reported exposure to secondhand smoke during international work trips in the past month, by area

\*\*RQS score reported as median (IQR) in subset with RQS scores (N=500)

†Chronic sinusitis includes chronic rhinosinusitis

Exposure Area	Always/Often	Sometimes/Rarely	Never
Airport: Indoor restricted or employee-only areas (N=583)	11.7%	28.4%	59.9%
Airport: Outdoor areas <sup>1</sup> (N=580)	58.5%	35.2%	6.4%
Airport: Designated smoking rooms/areas <sup>2</sup> (N=582)	43.3%	40.2%	16.5%
Hotel: Lobby or other indoor public areas (N=582)	17.9%	33.1%	49.0%
Hotel: Restaurant, café, or bar (N=580)	20.5%	44.7%	34.8%
Restaurant, café, or bar: Indoor areas (N=578)	21.3%	44.1%	34.6%
Restaurant, café, or bar: Outdoor areas (N=577)	44.2%	40.7%	15.1%
			111

1. Area defined as passenger drop off and pick up areas, taxi and bus waiting areas, patios with access from

2. Area defined as outside of or near enclosed indoor designated smoking rooms or areas