

Secondhand smoke, third hand smoke, and flats

Trimbos Institute

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Karen Wilson, MD, MPH

Debra and Leon Black Professor and Division Chief
of General Pediatrics

Vice-Chair for Clinical and Translational Research

Icahn School of Medicine at Mount Sinai



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Julius B. Richmond Center of Excellence



...dedicated to protecting children from secondhand smoke, and ensuring that *all* clinicians ask the right questions about tobacco and SHS exposure



American Academy
of Pediatrics



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Objectives

1. Learn about the risks of smoke exposure from other flats
2. Understand the risk of SHS and THS for children in multi-unit housing

Residents of public housing in the US

- ▶ 32% of households in public housing included elderly residents
- ▶ 35% included disabled persons
- ▶ 41% included children

Vulnerable populations are especially likely to live in public multi-unit housing

Associated factors

- ▶ Factors associated with housing exposures:
 - Older apartments with thin walls, floors, and outdated ventilation systems
 - Through open windows and doorways
 - Drift from decks and porches
 - Communal areas
 - Outdoor exposures
- ▶ However even comprehensive air sealing and ventilation improvement often can't eliminate transfer

The most effective option is to ban smoking from all indoor and outdoor areas of the building

The Bacon Analogy



Exposure



Exposure



Exposure



Exposure



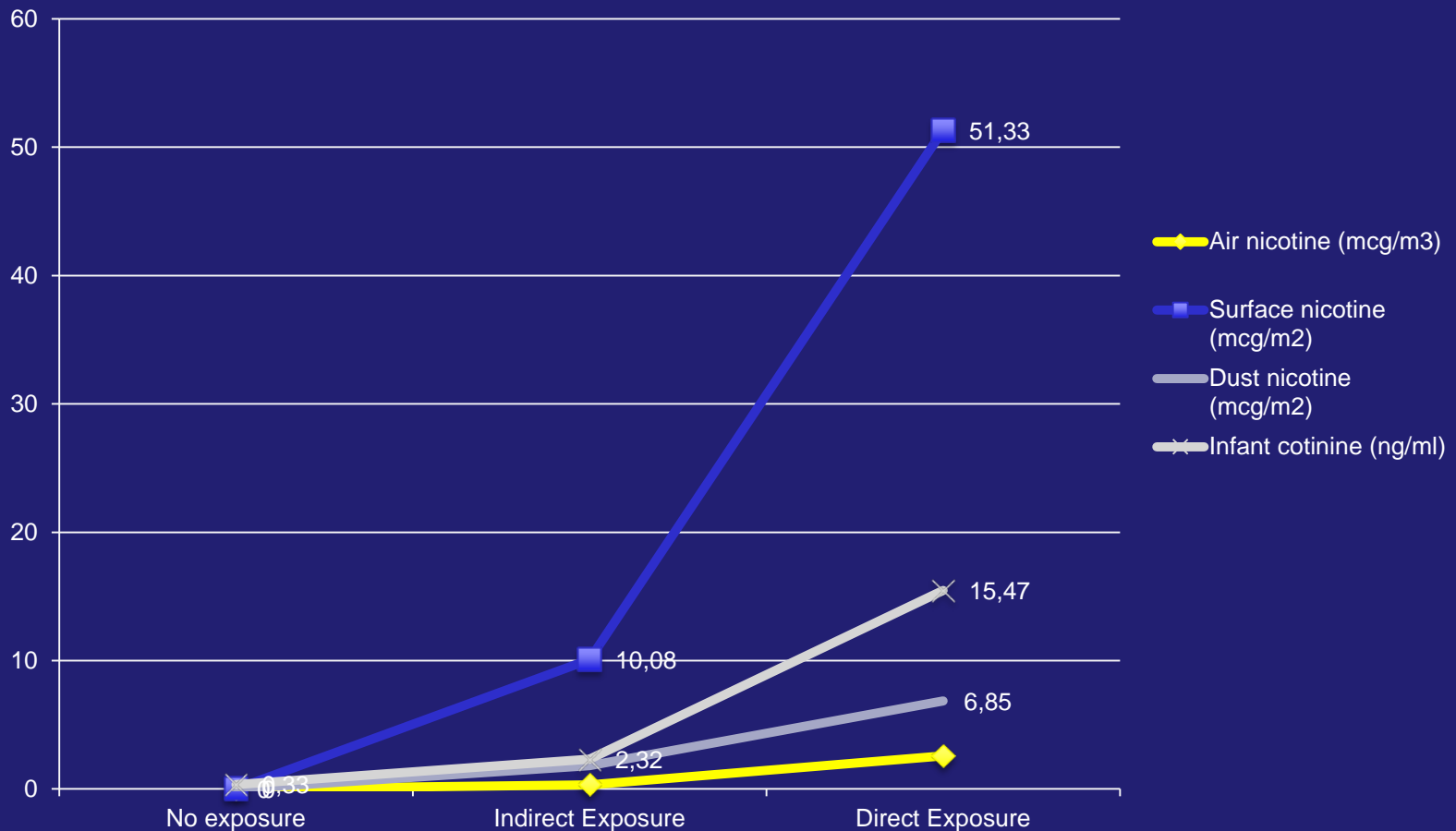
Exposure



Exposure



Households Contaminated by ETS: Infant Exposures



Free market at work

- ▶ Increasing pressure from tenants to restrict smoking in private multi-unit housing
 - Most US residents *do not smoke*.
 - Most multi-unit housing residents want their buildings to be smoke free
 - Landlords see increased costs for cleaning up smoking apartments, increased fire risks, and increased complaints from tenants
- ▶ Municipalities also banning smoking in multiunit housing

Non-health effects

- ▶ When non-smokers move into apartments previously occupied by smokers, they are exposed to tobacco residues, even after 2 months of vacancy and thorough cleaning.
- ▶ A study in CA concluded that having a smoking ban would save each property \$1339 per year.
- ▶ Smoking in apartments causes damage from fires, cigarette burns, and lingering odors.

Benefits of banning tobacco

- ▶ Parents who introduce a home smoking ban are more likely to quit smoking
- ▶ Parents who have a workplace ban are more likely to attempt to quit smoking
- ▶ Bans in workplaces and public buildings have resulted in decreased rates of:
 - Acute myocardial infarction
 - Stroke
 - Asthma

Studies on apartments

▶ Boston:

- Kraev, et al studied nicotine concentrations in 49 low income multi-unit housing units
- Detectable nicotine levels found in 94% of homes, including 89% of non-smoking homes
- Residents of non-smoking homes who reported frequent tobacco smoke odor were exposed to higher nicotine concentrations

Objective

- ▶ To determine whether children who live in attached housing have higher cotinine levels than children who live in detached housing

Methods

- ▶ Data from the 2001-2006 National Health and Nutrition Examination Survey (NHANES)
- ▶ 4,782 children ages 6 to 18 years
- ▶ Housing type: Apartment, attached house, detached house
- ▶ Controlled for demographics and SES
- ▶ Cotinine cut off .015 ng/mL (HPLC)

Results

- ▶ Among children not living with a smoker:
 - 73% had cotinine levels indicating exposure
- ▶ Exposure by housing type:
 - 84% of children living in apartments
 - 80% of children living in attached houses
 - 70% of children living in houses
 - $p < .001$

Results

Cotinine level (ng/mL)	Single house	Attached house	Apartment	p-value
<.015	29.7	20.4	15.5	<.001
.015 - <.05	34.2	32.9	28.1	
.05 - <.1	33.1	40.1	48.9	
1 - <2	1.4	4.0	4.4	
2 and greater	1.6	2.6	3.1	

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Race by housing type (% exposed)

Variable		% exposed (95%CI)	p-value
House	White	68% (61, 74)	<.001
	African-American	89% (85, 92)	
	Hispanic	66% (60, 71)	
	Other	74% (60, 85)	
Attached house	White	76% (61, 86)	<.05
	African-American	92% (83, 96)	
	Hispanic	70% (52, 83)	
	Other	80% (54, 94)	
Apartment	White	99% (91, 99)	<.001
	African-American	96% (92, 98)	
	Hispanic	73% (64, 81)	
	Other	64% (40, 82)	

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	African-American	96% (92, 98)	
	Hispanic	73% (64, 81)	
	Other	64% (40, 82)	

Results: Tobit regression analysis

- ▶ Controlling for SES, race/ethnicity
- ▶ White children living in apartments had a 208% increase in their cotinine level over those living in detached homes (p.003)
- ▶ Black children living in apartments had a 45% increase in cotinine over those living in detached homes (p=.024)
- ▶ Relationships for those of Hispanic and Other ethnicity were not significant.

What did we find?

- ▶ 9 of 10 white and African-American children who live in an apartment without a smoker in the home have evidence of tobacco smoke exposure.
- ▶ These children also have higher mean cotinine levels than those living in detached houses.
- ▶ This relationship persists even when controlling for socioeconomic status

Objective

- ▶ To examine factors associated with tobacco smoke incursions into multi-unit housing in a nationally representative sample of US adults

Methods

- ▶ 2011 Social Climate Survey
- ▶ US Nationally representative online panel sample
 - Knowledge Networks
- ▶ Fielded September-November 2011
- ▶ Completion rate of 65%
- ▶ Survey included questions on:
 - Type of housing- single family attached, single family detached, apartment
 - Tobacco smoke incursion: defined as smelling tobacco smoke in one's building or unit
 - Personal smoking behaviors and home smoking bans
 - Demographics, presence of children, building smoking restrictions
 - Attitudes about smoking in multi-unit housing

Methods

- ▶ Participants were included if they:
 - Reported living in multi-unit housing
 - Reported that no one had smoked in their home during the previous 3 months
- ▶ Chi-square analyses and regression models were done using SPSS
- ▶ Data were weighted to be nationally representative

Results

- ▶ 323 eligible respondents
- ▶ 54.4% female
- ▶ Average age: 42.6 years
- ▶ Residence policy:
 - 37 % reported smoking is allowed anywhere
 - 16% reported smoking is allowed only in units
 - 20% report that smoking is not allowed
 - 28% don't know
- ▶ 31% reported incursions in their building
 - 49% of these reported incursions in their unit
 - 38% reported weekly unit incursions
 - 12% reported daily unit incursion

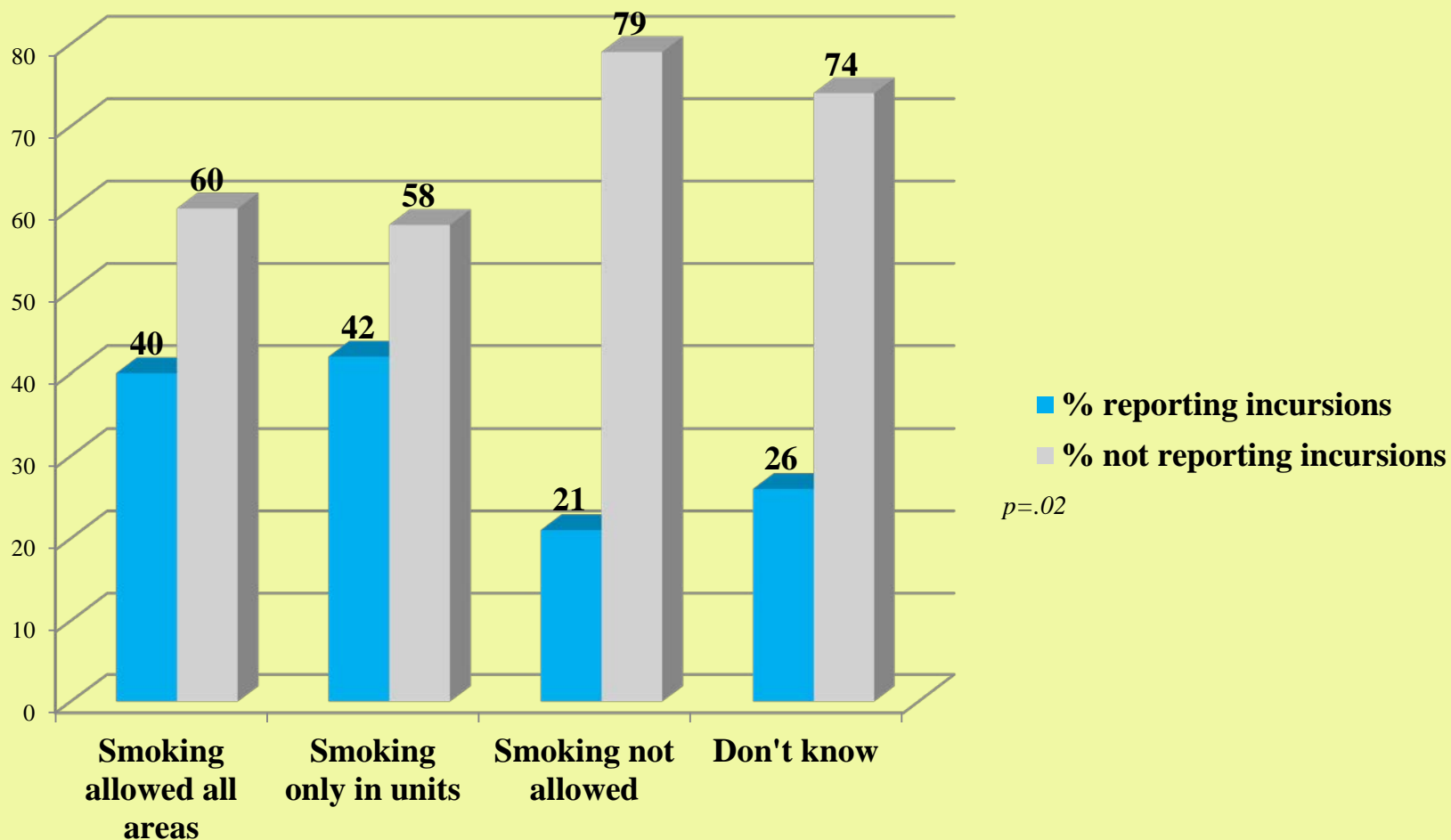
Building incursions by demographics

Variable	% reporting building incursion	% not reporting building incursions	P-value
Living in subsidized housing	50	50	.004
Not in subsidized housing	27	73	
Less than HS education	77	23	.000
High School	26	74	
Some college	25	75	
College grad	30	70	
White, non Hispanic	28	72	.080
Black, non Hispanic	30	70	
Other, non Hispanic	24	76	
Hispanic	47	31	
Multiracial	40	60	
Male	36	64	.057
Female	27	73	
Child in household	41	59	.005
No child in household	26	74	

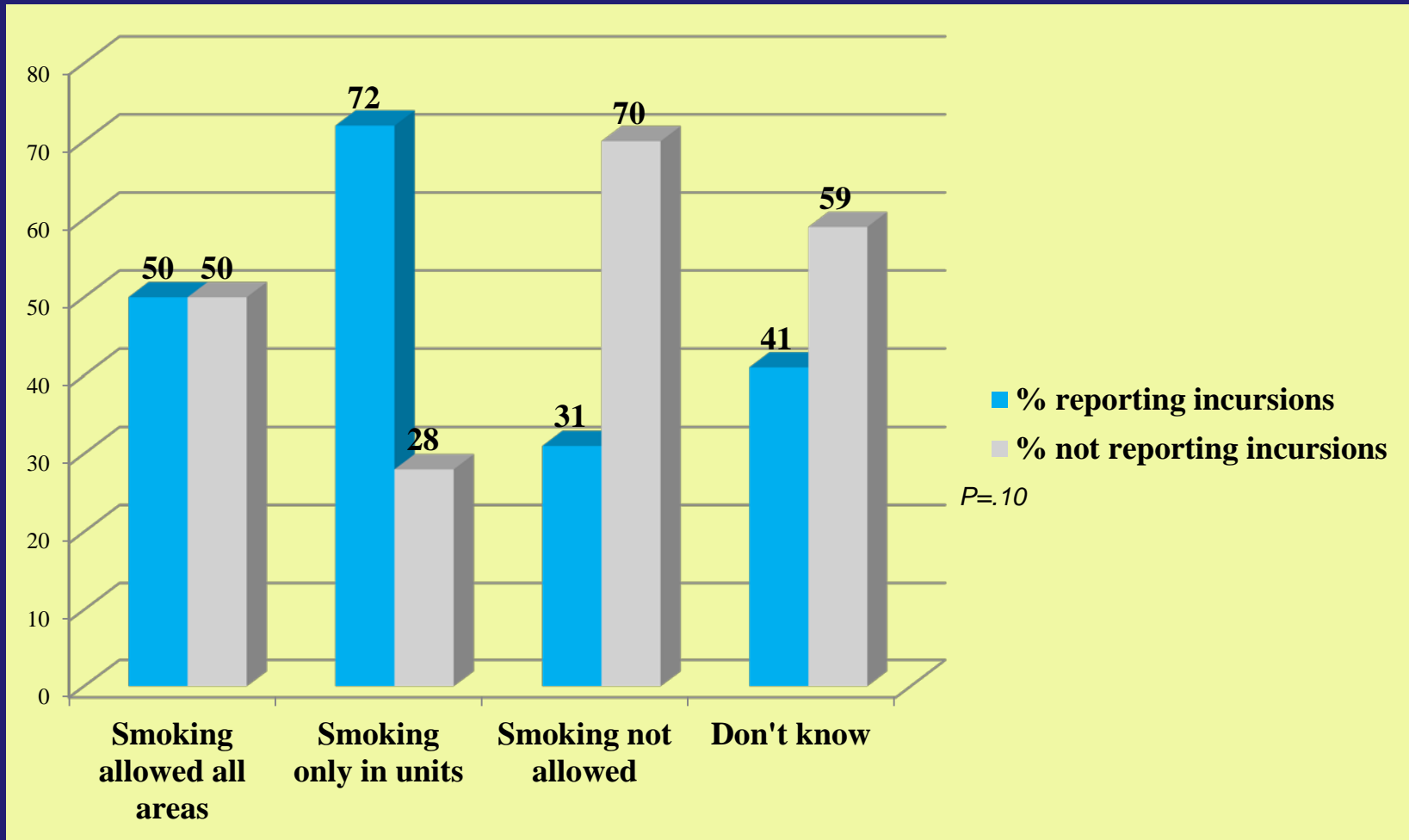
Unit incursions by demographics

Variable	% reporting unit incursions	% not reporting unit incursions	P-value
Receive government assistance	46	54	.143
Does not receive assistance	48	52	
Less than HS education	82	18	.03
High School	40	60	
Some college	43	57	
College grad	44	56	
White, non Hispanic	41	59	.003
Black, non Hispanic	80	20	
Other, non Hispanic	0	100	
Hispanic	59	41	
Multiracial	50	50	
Male	51	49	.673
Female	47	53	
Child in household	34	66	.009
No child in household	60	40	

Restrictions by reported *building* incursions



Restrictions by reported *unit* incursions



Regression model on building incursions

Variable	Odds ratio	95% CI
Age 18-24	2.7	0.7-10.2
Age 25-44	1.0	0.4-2.6
Age 45-64	2.5	0.9-6.7
Age >64	<i>ref</i>	
Gender	1.9	1.0-3.4
Kids in household	1.9	1.0-3.6
Smoke free policy- allowed anywhere	2.7	1.3-6.0
Smoke free policy- allowed in units	2.0	0.8-5.1
Smoke free policy- not allowed anywhere	<i>ref</i>	
Living in subsidized housing	3.7	1.4-10.0
Less than high school	4.9	1.1-21.7
High school	.48	0.2-1.0
Some college	.90	0.5-1.8
College grad	<i>ref</i>	

Regression model on unit incursions

Variable	Odds ratio	95% CI
Age 18-24	8.9	1.4-56
Age 25-44	2.6	0.6-11.7
Age 45-64	9.9	2.2-44.4
Age >64	<i>ref</i>	
Gender	2.0	0.0-4.6
Kids in household	.40	0.2-1.0
Smoke free policy- allowed anywhere	3.2	0.9-10.1
Smoke free policy- allowed in units	3.4	0.9-12.3
Smoke free policy- not allowed anywhere	<i>ref</i>	
Living in subsidized housing	3.9	1.0-14.2
Less than high school	6.4	1.4-30.0
High school	.47	0.16-1.4
Some college	.83	0.3-2.1
College grad	<i>ref</i>	

Discussion

- ▶ Nearly a third of MUH residents with non-smoking homes report smelling tobacco smoke in their building
- ▶ Half of these residents report incursions into their own units
- ▶ Building incursions are more common for those residents who:
 - Have children
 - Have a less than high school education
 - Receive government subsidies for their housing
- ▶ Buildings with the strongest smoke free policies were least likely to have residents reporting smelling smoke
 - Allowing smoking only in units did not seem to have a strong protective effect

Conclusions

- ▶ Subjects living in multiunit homes with Comprehensive Smoke Free Policies were least exposed to tobacco smoke incursions from neighboring apartments.
- ▶ Partial smoke free policies, such as allowing smoking within individual units, were not protective against smoke incursions.
- ▶ Given the health impacts of even low levels of SHS, these data provide justification for expanding smoke free policies in MUH to minimize health impacts.

What about other tobacco products?

- ▶ Difficult topic!
- ▶ Electronic cigarettes are widely promoted, but not regulated
 - Variable nicotine content, no disclosure on ingredients, not child safe
- ▶ Dissolvable tobacco products look like candy
- ▶ Many of these are sold with flavors which appeal to youth
 - 100% of 18-14 electronic cigarette users in our study used flavors
- ▶ No clear evidence of usefulness in quitting
- ▶ No clear evidence of reduced harm
- ▶ No clear evidence of safety
- ▶ Hookah is not good
 - Unsanitary!

In summary

- ▶ Tobacco smoke exposure causes disease and cognitive delays, even with low exposure.
- ▶ Incursions of smoke from other apartments represents a significant potential source of exposure.
- ▶ Smoking is now banned where most adults work and play, but not where young children, the disabled, and the elderly spend most of their time.
- ▶ Residents want smoke free housing.
- ▶ Smoke free housing saves money.
- ▶ Previous bans on smoking have resulted in increased quit attempts and improved health.

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- ❑ Audience-Specific Resources
- ❑ State-Specific Resources
- ❑ Cessation Information
- ❑ Funding Opportunities
- ❑ Reimbursement Information
- ❑ Tobacco Control E-mail List
- ❑ Pediatric Tobacco Control Guide
- ❑ Tobacco Prevention Policy Tool



Thank you

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