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The HUD smoke-free rule: Perceptions of residents post-implementation

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ABSTRACT

In July 2018, the U.S. Department of Housing and Urban Development (HUD) implemented a new Public health Agency rule prohibiting the use of tobacco in and within 25 feet of HUD housing. A convenience sample of 574 residents living in Milwaukee, Wisconsin multi-unit HUD complexes completed a survey from May through July 2019, designed to assess their perceptions of the new policy and its impact. Knowledge of the policy was strong, although continued educational efforts are needed. Attitudes about the policy were generally positive, although smokers held more negative attitudes than non-smokers. Some residents desired more and fairer policy enforcement. Most residents reported that smoke incursions were reduced post policy compared to pre policy, although such incursions still occurred. The policy has had a favorable health impact on smokers; over 80% made at least one positive change in their smoking, including 6.4% who said the policy motivated them to quit. There was no evidence that residents with mobility challenges were differentially affected by the policy. Overall, the HUD smoke-free policy was well received, reduced self-reported exposure to smoke and led most smokers to make positive changes in their smoking. Additional education on the policy, improved enforcement, and cessation services are needed.

1. Introduction

In February 2017 a new smoke-free rule from the US Department of Housing and Urban Development (HUD) went into effect. This rule directed all public housing agencies (PHAs) to implement a smoke-free policy banning the use of tobacco products in all public housing living units, indoor common areas, and within 25 feet of public housing buildings. Including e-cigarettes was optional and left to the individual PHAs to decide (Housing and Urban Development Department, 2016a) (The Milwaukee PHA elected to include e-cigarettes). PHAs were given 18 months, until July 1, 2019, to implement this policy.

The impact of this rule was substantial, effecting approximately 940,000 HUD units nationwide (Housing and Urban Development Department, 2016b). It does not apply to dwelling units in mixed-finance projects, housing assisted under Section 8, PHA properties that have converted to project-based rental assistance contracts under the Rental Assistance Demonstration Program, or tribal housing. Justification for this rule was based on an expected favorable impact on the heath of residents, a decrease in maintenance costs, and avoidance of catastrophic fires (Housing and Urban Development Department, 2016b). Objections to this rule included the following (Fagundes and Roberts, 2018): a) the policy permits eviction for violations and residents evicted could experience worse health due to loss of housing; b) this policy can also be viewed as an invasion of privacy in that it forbids a legal activity from taking place within the home; and c) the onerous aspects of this policy fall disproportionately on the poor who are more likely to live in HUD housing, thereby exacerbating social injustice. This policy is also the subject of a lawsuit that alleges the rule violates the tenth amendment to the constitution because: a) it represents a federal agency directing state action; b) it has the potential for home searches; c) HUD lacks jurisdiction to make the rule; and d) it is arbitrary and capricious (Public Health Law Center, 2019). In this context of potential benefits as well as concerns, it is important to assess resident perceptions of the HUD rule now that it has been implemented.

Some HUD public housing and non-HUD multiunit housing units elected to become smoke free before the 2017 HUD rule and these early experiences have been evaluated both qualitatively and quantitatively. Generally, residents were knowledgeable of the smoke-free policy and

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supportive of it (Kennedy et al., 2015; Rokicki et al., 2016), with non-smokers more supportive than smokers (Kennedy et al., 2015). However, enforcement of the policy was a concern, with some evidence that such enforcement was poor (Hernandez et al., 2019; Jiang et al., 2018; Kennedy et al., 2015). Consistent with these concerns, evaluations of these smoke-free housing policies documented reductions, but not elimination, of smoking within the buildings (Hernandez et al., 2019; Pizacani et al., 2012; Rokicki et al., 2016).

A tobacco free policy can have a favorable impact on reducing smoking among multiunit residents (Pizacani et al., 2012; Rokicki et al., 2016). Pizacani et al. (2012) measured self-report quitting among residents of smoke-free subsidized multi-unit housing and found an annual quit rate of 14.7%, far above a baseline population quit rate of about 8% (Centers for Disease Control and Prevention, 2019). Of those who quit, 41% said that the policy was part of the reason while 27% said it was the main reason. Almost half of the smokers reported that they were smoking less. Research to date has emphasized the need for ongoing communication about a smoke-free policy to residents, their active involvement with its implementation and assistance for those who want to reduce or quit tobacco use (Hernandez et al., 2019). While instructive, the smoke free policies evaluated to date prior to July 2018 were not necessarily the same as the new HUD policy. For example, some of the policies had a grandfather clause such that it only applied only to new residents, exempting the individual who smoked and lived in the multi-unit housing at the time of policy implementation (Kaufman et al., 2018; Rokicki et al., 2016). Thus, it is important to assess resident perceptions to the new nationwide HUD rule. The purpose of this research is to assess resident knowledge of the new HUD rule, attitudes about/acceptance of the rule, perceptions of its effectiveness and enforcement, changes in self-report smoking behavior, and need for support and assistance in quitting.

2. Methods

HUD provides housing to 10,600 Milwaukee households of which 3802, across 19 buildings and 380 scattered sites, are subject to the HUD rule. The survey was administered in 18 of the 19 buildings and in three of the scattered sites. Eligibility included currently residing in a HUD housing residence. Only one person per residence was surveyed (few residences had more than one person). Data was collected at a variety of existing gatherings within the buildings such as resident meetings, food truck visits, resident wellness visits or at group events specifically sponsored as an opportunity to take the survey such as movie nights and fish fries. Light food/refreshments were provided at some of these events by survey staff. The events were promoted through resident meetings, in the monthly resident newsletters, word-of-mouth, and announced over the loud speakers before each event.

Data was collected by seven HUD housing residents, three medical students, and four public heath interns who were trained to administer the survey and occasionally monitored during data collection. Data collectors completed twenty hours of training that included data collection techniques, human subjects' certification and American Lung Association Cessation Navigator certification. Following obtaining verbal consent, survey questions were read to the residents by surveyors using a tablet or smartphone to record answers. Surveyors clarified some questions such as drawing attention to the difference between smelling smoke before the policy and smelling smoke after the policy. Paper surveys were used when there was no internet service. Following completion of the survey, residents were asked to select a thank you gift from among an array of items. Items were of modest value and household items such as dish soap and laundry detergent proved most popular.

The survey consisted of 29 items including demographic/descriptive information, smoking status, mobility challenges, which tobacco products were covered by the policy, what indoor areas were covered, non-smoking distance from building, and to whom the policy applies. The survey also asked if the policy was enforced appropriately and perceptions regarding smoke in resident units and common areas. Respondents were also asked to indicate strength of agreement (5 category Likert scale from strongly disagree to strongly agree) to 15 statements designed to measure attitudes about the policy. Smokers were asked if they quit, changed their smoking, or used cessation medicines because of the policy. Finally, current smokers were asked which of 11 possible types of support for quitting they need from the Milwaukee Housing Authority.

SPSS was used for data analysis. Categorical data was analyzed using Chi Square and Fisher exact test for 2x2 contingency tables. Ordinal data about the frequency of smoke incursions in the residences and in common areas were treated as interval in nature and analyzed via repeated measures *t*-test and ANOVA.

This project was conducted as quality improvement and policy/program evaluation that did not require IRB approval.

3. Results

Of 617 people initially asked to complete the survey, 574 submitted valid surveys between May and July 2019. Excluded individuals included those who were not eligible (did not live in HUD housing), refused, had taken the survey before, or submitted a blank, or nearly blank survey. These 574 surveys represented 15% of the households impacted by the HUD rule in Milwaukee. The survey took approximately 10 min to complete.

4. Demographics

Compared to the general public in Milwaukee, respondents were older, female, more likely to be African American, have lower educational attainment, and have mobility challenges (see Table 1). The smoking prevalence among residents was 29%, markedly higher than the overall adult Wisconsin smoking rate of 16% (Centers for Disease Control and Prevention, 2017a) and amongst people 65 years or older nationally (8%) (Centers for Disease Control and Prevention, 2017b;

Table 1
Demographics/Background variables (Milwaukee, WI; May 2019).

	Percent (N = 574)
Age	
18–20	1.0
21–29	3.3
30–39	7.5
40–49	7.5
50–59	22.5
> 60	58.2
Gender (percent female)	71.1
Race (percent African American)	86.7
Ethnicity (percent Hispanic)	5.3
Education	
No school or just kindergarten	0.6
Grades 1–8	4.7
Grades 9–11	21.2
High school diploma or GED	43.6
1–3 years of college	24.3
College graduate	5.6
Sexual orientation (percent heterosexual)	97.5
Smoking status	
Use a tobacco product	29.0
Do not currently use tobacco product	71.0
Never smoker	35.8
Ex-smoker	35.2
Mobility	
None	42.0
Little – some pain but no aid needed	14.2
Moderate – occasional use of aid like a cane	15.3
Significant – always use cane or walker	24.5
Mobility only possible with a wheelchair	4.0

Centers for Disease Control and Prevention, 2018).

5. Knowledge of the smoke free policy

Generally, about three quarters of respondents had a correct understanding of the smoke free policy. Least accurately understood items included: incorrectly thinking that chew was included in the policy (or did not know) (66%); incorrectly thinking that nicotine patches were included in the policy) (or did not know) (50%); incorrectly thinking that the policy did not apply to e-cigarettes (or did not know) (43%); and incorrectly thinking that the policy did not apply to private patios and balconies (or did not know) (30%).

6. Policy enforcement

Regarding level of enforcement, 42% didn't think there was enough enforcement; 45% thought enforcement level was about right, and 13% thought there was too much enforcement. In addition, 55% thought that policy was enforced fairly, 22% did not think enforcement was fair, and 22% did not know.

7. Policy effectiveness

There was a significant reduction in both perceived smoke in the home (paired $t = -5.41$, $df = 536$, $p < .01$) and perceived smoke in the building, outside the home (paired $t = -6.74$, $df = 527$, $p < .01$). The percent of residents who perceived smoke in the home daily fell from 26.7% to 17.2% pre- to post-policy and fell from 34.2% to 22.8% pre-to post-policy in common areas (see Fig. 1).

8. Attitudes about the policy

There were two distinct patterns of responses to the attitude questions (see Table 2). Across both patterns, the middle response ("neither agree/nor disagree/no opinion") was least often endorsed. In the first pattern, a sizable proportion of respondents strongly disagreed with statements while a sizable proportion strongly agreed, suggesting polarization. For example, 30.0% strongly disagreed that the tobacco policy will help smokers quit while 32.9% strongly agreed. As another example, 28.0% strongly disagreed that the tobacco policy is unfair to smokers while 33.7% strongly agreed. The second pattern was a preponderance of strongly agree responses. However, even with these, a non-trivial percent strongly disagreed. For example, 51.4% strongly agreed that the provided outdoor smoking space should be more comfortable and better protected from the weather while 19.9% strongly disagreed. As another example, 68.1% strongly agreed that the tobacco policy protects the rights of non-smokers while 8.0% strongly disagreed.

9. Residents' change in smoking behavior

The percent of smokers who reported that they quit because of the tobacco policy was 6.4%. Among all smokers, including those who quit, the most common quitting behavior was trying to quit (55.6%) followed by reducing smoking (48.8%). By comparison, 35.0% established a routine to smoke 25 feet from the building and 10.6% reported making no change at all (see Table 3). A little over 80% either quit because of the policy or made at least one of the changes consistent with trying to quit.

10. Perception of needed help/support in quitting

Desired support/help in quitting endorsed by 30% or more of the smokers were to provide: on-site support groups (36.3%); incentives/rewards to quit (36.3%); on-site cessation programs (31.3%); and cessation medicines on-site at no cost (30.0%) (See Table 3). Forty-one percent of the smokers did not endorse a desire for any of the types of support.

11. Smokers vs. non-smokers

There were no differences between current tobacco users and non-users on any of the demographic variables (age, race, ethnicity, education, housing location, gender, sexual orientation, or mobility limitations) or in knowledge of the policy. More smokers thought that the tobacco policy was enforced too much compared to non-smokers (22.5% vs. 10.2%, respectively, $p < .01$) and that the policy was enforced unfairly (33.6% vs. 18.5%, $p < .01$). There were no differences between smokers and nonsmokers regarding change in smoking incursions. Smokers held more negative attitudes about the tobacco policy. For example: more smokers strongly agreed that the policy is unfair to smokers (52.5% vs. 26.0%, respectively); strongly agreed that expecting people to move 25 feet from the building to smoke in the winter is expecting too much (65.5% vs. 35.5%, respectively); strongly agreed that the policy should be changed to permit smoking in homes (64.2% vs 22.8%, respectively); and strongly disagreed that the policy makes living spaces healthier (15.9% vs. 9.0%, respectively (all difference less than 0.05) (see Table 2).

12. Smokers motivated to change by the policy

To understand differences between smokers who reported changing their smoking and those that did not, smokers were divided into three groups: those that made no changes, those who made one positive

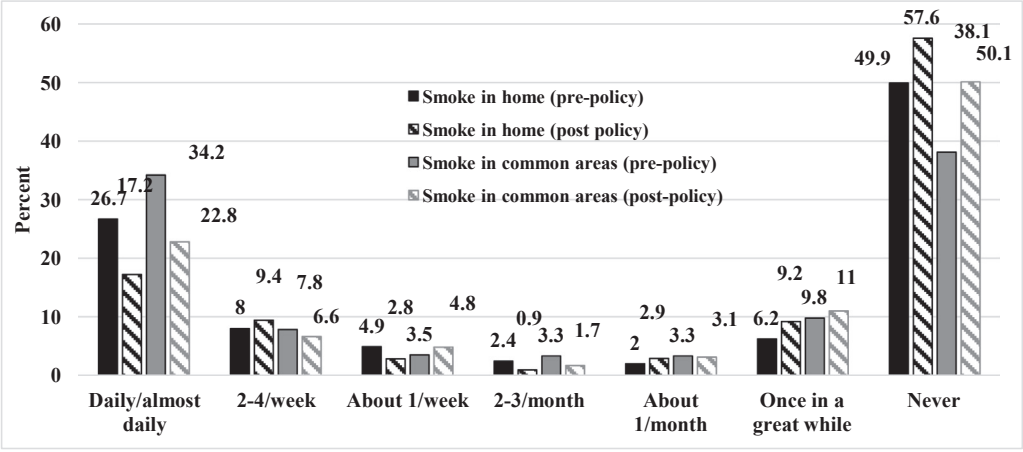

Fig. 1. Perceived Smoke Pre and Post Policy (Milwaukee, WI; May 2019).

Table 2
Tobacco Policy Attitudes (Milwaukee, WI; May 2019).

Attitude	All (n = 574)	Tobacco users (n = 166)	Non tobacco users (n = 408)
Makes living spaces healthier			
Strongly disagree	11.0[1]	15.9**	9.0
Strongly agree	68.2	51.6	74.9
Makes living spaces smell better			
Strongly disagree	8.3	15.6**	5.3
Strongly agree	69.9	60.6	73.7
Living spaces are safer because the risk for fire is less			
Strongly disagree	7.4	13.2**	5.1
Strongly agree	73.1	62.3	77.6
Protects rights of non-smokers			
Strongly disagree	8.0	9.6*	7.4
Strongly agree	68.1	57.7	72.2
Unfair to smokers			
Strongly disagree	28.0	12.0**	34.5
Strongly agree	33.7	52.5	26.0
Policy violation should never result in eviction			
Strongly disagree	26.5	24.2[2]	27.5
Strongly agree	36.0	45.3	32.0
The first violation should result in eviction			
Strongly disagree	53.1	63.0**	49.0
Strongly agree	11.0	6.8	12.8
Eviction should occur only after numerous violations			
Strongly disagree	18.3	25.9*	15.1
Strongly agree	50.8	41.8	54.6
The policy will help smokers quit			
Strongly disagree	30.0	39.1*	26.2
Strongly agree	32.9	26.7	35.5
The policy should be changed so that people can smoke closer to the building			
Strongly disagree	37.0	21.7**	43.4
Strongly agree	27.1	47.8	18.4
The policy should be changed so that people can smoke in their homes			
Strongly disagree	36.7	19.5**	43.7
Strongly agree	34.7	64.2	22.8
The space to smoke should be more comfortable and better protected from the weather			
Strongly disagree	19.9	7.4**	25.1
Strongly agree	51.4	69.9	43.5
People are not safe when they are smoking outside			
Strongly disagree	22.9	22.9[NS]	23.0
Strongly agree	38.6	42.7	36.9
People in wheelchairs shouldn't have to go so far away to smoke			
Strongly disagree	19.4	12.9**	22.2
Strongly agree	46.8	65.0	38.9
Expecting people to move 25 feet from the building to smoke in the winter is expecting too much			
Strongly disagree	25.5	11.0**	31.6
Strongly agree	44.1	65.6	35.0

[1] Percent.
[2] p = .058.
** p < .01.
* p < .05.
[NS] Not significant.

change, and those that made more than one positive change, including those that quit. There were no demographic differences between these groups except those that made more than one change were more likely not to have completed high school than those that either made one change or made no change (36.7% vs. 21.8% and 22.6%, respectively, p < .05). There were no differences between the groups in knowledge of the policy nor perceived effectiveness. Regarding the attitude questions, those who made changes in their smoking were more likely to strongly agree that the policy produced a better smelling residence (more than one change – 65.9%, one change – 65.5%, no change-41.9%, p < .05) and that the policy helps residence quit (more than one change – 40.0%, one change – 23.6%, no change – 12.1%, p < .05). Regarding enforcement, more of those who made more than one change agreed that the policy was enforced fairly (65.3%) compared to those who made one change (39.6%) who in turn were more likely to agree than those who made no change (13.8%) (p < .01). Regarding cessation support, fewer of those that made no change asked for free on-site cessation medicines compared to those who made one change and those that made more than one change (9.1% vs. 17.9% and 45.1%, respectively, p < .01) and desired on-site support (6.1% vs. 30.4% and 47.6%, respectively, p < .01).

13. People with mobility challenges

For analysis purposes, the five mobility categories were collapsed into three groups in order to have sufficient size in each: no mobility challenges (42.1%), some mobility limitations (29.4%), and significant mobility limitations (28.5%). People with no mobility limitations were younger than those with some or significant mobility challenges (p < .01) and were more likely to have at least a high school diploma (p < .05). Those with mobility challenges were as likely to be smokers as those with no mobility challenges and there were no differences in the number of smokers who quit or made other changes consistent with quitting because of the policy based on mobility status. Among the eleven types of help/support, smokers without a mobility challenge were more likely to desire information about how to obtain affordable cessation medicine compared to smokers with some and smokers with significant mobility challenges (30.0%,. 17.0%, 6.1%, respectively p < .01) and desired peer counselors (30.0%, 19.1%, 6.1% , respectively p < .01). Smokers with significant mobility challenges were less likely to desire on-site, free cessation aids than smokers with no mobility challenges and smokers with some mobility challenges (16.3% vs. 33.3% and 36.2%, respectively, p < .05).

14. Discussion

In this convenience sample of residents of multiunit HUD housing in Milwaukee, Wisconsin the new HUD smoke-free policy was well received overall and resulted in residents self-reporting reduced environmental tobacco smoke exposure. Moreover, residents reported that the policy resulted in 80% of smokers making at least one positive change in their smoking (e.g. quitting, cutting down on the number of cigarettes smoked). Nonetheless, this study identified concerns to address.

First, a non-trivial proportion had misinformation about the policy, especially about the inclusion of e-cigarettes and smoking on private balconies and porches. This suggests a need for ongoing efforts to inform residents about the policy. Second, while a majority of residents felt that the enforcement of the policy was at the right level and fair, 42% felt that enforcement was not adequate including 22% who thought that enforcement was unfair. There may be value in gathering additional information from residents about desired enforcement and how to make enforcement fairer. Third, while residents perceived a reduction in smoke incursions in their homes and in their buildings, such incursions still occur. Perhaps continued education and more enforcement would further reduce smoke incursions. Fourth, sizable portions of survey respondents indicated both strong agreement and strong disagreement with some statements about the policy. Perhaps meetings amongst residents to discuss attitudes about the policy would be beneficial. Fifth, while most smokers found the HUD policy motivating and 80% made positive changes to their smoking, the policy did not influence all smokers and some expressed frustration with the policy. Of the 20% reporting no positive changes, about half declined to respond to what help they needed. Comments supplied to this question included things such as "Don't need help", "Let me smoke", "They (Milwaukee Housing Authority) can't (help)", "Not ready to quit. Nothing can be done until ready", "I can quit on my own and with God's

Table 3
Changes Made Help/Support Requested by Smokers (Milwaukee, WI; May 2019).

Change	Percent of smokers (n = 160)	Help/support requested	Percent of smokers (n = 160)
Quit	6.4%	On-site support groups	36.3%
		Incentives to quit/rewards for quitting	36.3%
Tried to quit	55.6%	On-site cessation programs	31.3%
Reduced	48.8%	On-site cessation medicine at no cost	30.0%
Saw a doctor to get help to quit	26.3%	Information about the health risks of smoking	25.6%
Used quit aids such as nicotine patch or cessation medicines	21.9%	Self-help information about how to quit	23.1%
Called the Wisconsin Tobacco Quit Line	8.8%	Peer-counselors	20.0%
Joined Freedom From Smoking	7.5%	Train residents to help others	20.0%
Switched to e-cigarettes	5.6%	Information about how to get affordable cessation medicines	18.8%
Joined First Breath program	1.9%	Conduct a quitting contest	18.1%
		Better enforcement of the tobacco policy	15.0%
Established a routine of smoking at least 25 feet from the building	35.0%		
Made no change	10.6%		

help", and "Mind their own business", suggesting possible resentment and a perceived inability to be helped. It is possible that this group of smokers now feel more alienated and isolated than before policy implementation. PHAs should consider providing targeted outreach to these smokers to encourage inclusion and to mitigate this unintended consequence. Toward this goal, smokers who made no positive changes were less likely to think that the policy helps smokers quit. Perhaps messaging that challenges that belief could be helpful.

Data collection went very smoothly with few residents refusing to complete a survey. This could be attributed to using well-trained residents to administer the survey. These residents knew the HUD housing milieu well and had credibility with other residents. Moreover, the modest incentives appeared to have a motivational effect on survey completion. This last factor is consistent both with the smoking cessation literature documenting the impact of modest incentive on low income smokers (Fraser et al., 2017; Volpp et al., 2009) and requests from residents for incentives for quitting.

Most smokers (about 60%) reported wanting assistance in quitting as part of the HUD smoking policy. On-site assistance was preferred which may be particularly advantageous for those with mobility challenges. Eight percent of smokers said they called the Wisconsin Tobacco Quit Line (WTQL) in response to the policy. This is higher than the overall annual use of the WTQL by smokers of less than 1% (North American Quitline Consortium, 2019). This relatively high self-reported utilization probably reflects the promotion of the WTQL that accompanied implementation of the HUD tobacco policy in Milwaukee. While the WTQL does not provide on-site assistance, this finding suggests that continued promotion would be a good adjunct to more intense assistance provided on-site (Fiore et al., 2008).

Among this sample of respondents with generally lower educational attainment than the general population, those with the lowest educational attainment were more likely to report positive changes in response to the policy. This finding is in contrast to literature which generally finds that the more educated are more likely to quit in part because they try more often (Zhuang et al., 2015). If this finding is replicated, it might represent a particularly positive outcome of the new HUD policy.

In general, study results are consistent with evaluations of tobacco policies in public or multi-person housing prior to the nationwide HUD rule. Specifically: a) residents have good knowledge, and are supportive, of the policy, especially non-smokers (Kennedy et al., 2015; Rokicki et al., 2016); b) residents are concerned that there isn't enough enforcement (Hernandez et al., 2019; Jiang et al., 2018; Kennedy et al., 2015); c) tobacco policies reduce, but do not eliminate self-reported smoking exposure in the building (Hernandez et al., 2019; Pizacani et al., 2012; Rokicki et al., 2016); and d) the policy motivates smokers to make positive changes in their tobacco use (Rokicki et al., 2016). Regarding quitting, Pizacani et al. (2012) reported a higher policy associated quit rate (14.6%) than in this study (6.4%).

There are a number of study limitations. First, results are based on a convenience sample and may not be representative of the overall population of Milwaukee residents living in HUD housing. For example, residents with mobility challenges may be underrepresented because the surveys were often administered at gatherings of residents. Moreover, observations made by data collectors suggest that younger HUD residents were not well represented. Second, all responses were self-reported and prior data suggests that self-report quit rates tend to be higher than quit rates subject to biochemical verification (Noonan et al., 2013; Scheuermann et al., 2017). Third, there may have been recall bias. In particular, residents may not accurately recall smoke incisions from the more remote time period before policy implementation compared to the more recent period post implementation. Finally, data analyses entailed multiple statistical significance tests. While the error rate was controlled for each individual test, the experiment wide error rate is unknown. The decision not to correct for the effect of multiple tests was deliberate given the exploratory nature of this study and the acknowledged need to replicate findings in additional settings and contexts.

In summary, the HUD tobacco policy had an overall favorable impact on residents of HUD housing in Milwaukee including reducing perceived smoke incursions and motivating positive changes amongst smokers. However, the survey identified remaining opportunities including the need to: continue educational efforts about the policy; consider greater enforcement; provide on-site support to smokers; develop special outreach to those smokers who may have been isolated by the policy; and work toward further reductions in smoke incursions.

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CRediT authorship contribution statement

Lorraine S. Lathen: Project administration, Funding acquisition, Resources, Conceptualization, Methodology, Investigation, Writing - review & editing. **Monique L. Plears:** Conceptualization, Methodology, Resources, Writing - review & editing. **Emile L. Shartle:** Funding acquisition, Writing - review & editing. **Karen L. Conner:** Funding acquisition, Writing - review & editing. **Michael C. Fiore:** Writing - review & editing. **Bruce A. Christiansen:** Conceptualization, Methodology, Data curation, Formal analysis, Writing - original draft, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pmedr.2020.101159.

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