



Smoke-Free Policy in Low Income Housing

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Smoke-free Policy in Low Income Housing

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A Dissertation Submitted to the Faculty of

The Harvard T.H. Chan School of Public Health

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Abstract

Statement of Problem.

There are inequities in tobacco use and second hand smoke exposure by socioeconomic status. Smoke-free housing is advanced as a strategy to reduce these inequities. In 2016, HUD issued a smoke-free rule for all Public Housing Authorities, however best-practice implementation and impact are largely unknown. My dissertation aim is to examine processes and outcomes of smoke-free implementation in low income housing by: assessing impact on smoking behaviors; examining factors affecting compliance; exploring how individuals and communities influence and are influenced by the policy; and, providing recommendations for implementation.

Methods and procedures used.

Study 1 compared smoking outcomes among participants in a cluster-randomized smoking cessation intervention study conducted among Boston Housing Authority residents. Participants completed baseline and three-month follow-up questionnaires before (n=73) or after (n=93) adoption of a smoke-free policy. Cluster-adjusted regression was used to examine the impact of policy on smoking outcomes. **Study 2** used focused ethnography to identify the social-ecological factors affecting compliance with a smoke-free policy. Property observations, 17 staff interviews and 9 focus-groups with resident smokers (n=28) and non-smokers(n=47) in four HUD-assisted properties in Massachusetts were conducted. Theory-driven immersion-crystallization was used to identify themes across sites and respondent types. **Study 3** used mixed-methods research to understand factors that facilitate implementation while furthering residents' individual agency and collective power. Measurements of self-

and collective efficacy were collected from 208 survey-respondents and 75 focus-group participants, to describe residents' collective and individual ability to affect their community.

Results or conclusions of the research.

Findings suggest that the policy reduces smoking and SHSe. Factors affecting compliance result in new insights for policy implementation including: consistent and clear enforcement; messages that reach older residents; resident engagement (e.g resident ambassadors & committees) for decision-making (e.g. designated outdoor smoking, e-cigarettes); positive roles for non-smokers; transparent communication; forum for staff to discuss concerns; and individualized cessation support by community organizations. The smoke-free policy should be part of a broader community health and wellness effort. Future studies should use multi-level quantitative methods, with qualitative assessment to describe social dynamics and property context. Policy evaluation should include impact on self- and collective-efficacy, and attitudes/behaviors among smokers by stage of change, age and family status.

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Paper 1. Smoking cessation among public housing residents: Does adoption of a smoke-free housing policy enhance outcomes?

Abstract.

Introduction. Smoke-free residential policies may encourage residents to consider quitting, but no data are available to inform whether a smoke-free policy enhances cessation among smokers who are motivated to quit. The impact of the initiation of a smoke-free residential policy was assessed among residents of public housing in Boston, Massachusetts who were participants in a smoking cessation trial.

Methods. Data were derived from a cluster-randomized (intervention, comparison groups) smoking cessation intervention trial. The trial included smokers who expressed an interest in quitting. Participants completed baseline and three-month follow-up questionnaires either before (n=78) or after (n=98) adoption of a smoke-free policy. Adjusted logistic and linear regressions were used to examine the impact of policy on 7-day point prevalence abstinence (PPA) and change in the number of cigarettes smoked per day.

Results. Analyses suggested that smoking abstinence modestly increased after policy adoption (OR: 1.5; 95% CI: 0.7, 3.1). Participants enrolled after policy adoption smoked 3.9 (95%CI: -7.4, -0.4) fewer cigarettes/day at three months than those enrolled prior to policy adoption. Among participants in the comparison group, there was a noticeably larger reduction in cigarette consumption post-policy (-5.8, CI: -9.0, -2.6) compared to pre-policy (-2.1; CI: -5.3, 1.2). There was no difference within the intervention group (Post-policy: -7.8, CI: -12.8, -2.8; Pre-policy: -6.3; CI: -10.1, -2.6).

Conclusion. Public housing residents seeking smoking cessation support were more successful at reducing their cigarette consumption after a smoke-free residential policy was adopted.

Implications (55 words). With the enactment of the new Federal rule for smoke-free housing, we may find improved cessation outcomes among low-income residents. We observed modest quit rates and significant reduction in cigarette consumption. These findings suggest that smoke-free residential policies may effectively reach a population where there are the greatest disparities in tobacco use and related mortalities.

INTRODUCTION:

The prevalence of smoking has declined dramatically in recent decades, however the decline in use has not been evenly distributed among all sections of the population. Recent evidence has shown that persons of higher socioeconomic position (SEP), including those with higher educational attainment and income levels, have experienced the greatest decline in smoking rates (Garrett, 2013). In contrast, the prevalence of cigarette smoking is highest among adults with low education attainment and income level (Jamal, 2016), driven by both higher rates of smoking initiation and progression to regular smoking, as well as lower likelihood of smoking cessation (Gilman et al., 2003; MMWR, 2011; Zhuang, 2015). Accordingly, tobacco-associated mortality rates are highest among persons from low socioeconomic position (SEP) groups (CDC 2016; CTFK 2015), a marked health disparity.

Smoke-free residential policies, which seek to prevent indoor smoking in multi-unit housing (MUH) settings, represent an important emerging tobacco control strategy to address these persistent inequities. In November, 2016, the US Department of Housing and Urban Development (HUD) issued a rule that requires Public Housing Authorities (PHAs) to implement smoke free policies over an 18-month roll-out period (FRN, 2016). The rule was developed to reduce chronic exposure to secondhand smoke (SHS) among public housing residents who often live in multiunit dwellings that are subject to SHS infiltration from neighboring apartments. The rule will apply to approximately 3,400 public housing authorities, impacting an estimated 2 million residents, including 748,000 children (HUD, 2016).

Public housing residents smoke at an even higher rate than low income smokers in general (Helms, 2017; Howell, 2005; Rivo, 1992; Digenis-Bury, 2008). In theory, the smoke-free housing rule could enhance smokers' motivation to make a quit attempt, as opportunities to smoke in a residential setting become more restrictive and less personally convenient. Recent findings from public housing communities that adopted a smoke-free policy before the promulgation of HUD's rule suggest that annualized self-reported smoking quit rates increased almost six-fold, from 2.6% to 14.7%, 16 months after adoption. The increase in quitting may have been due primarily to the policy rather than increased cessation support, because most smokers did not use an advertised quit line and no other coinciding

cessation opportunities were identified (Pizacani, 2012). A more recent study, also in an urban public housing setting, found that introduction of a smoke-free policy was associated with increased self-reported cessation, and reductions in daily smoking and number of cigarettes smoked per day, one-year after adoption of the smoke-free policy; of the 18 resident who reported smoking pre-policy, 6 reported quitting, and 8 reported smoking less post-policy (Young, 2016). These findings suggest that cessation rates may increase among residents of public housing during the period of implementation of the rule and beyond. However, there are no available data to inform whether the policy will enhance cessation outcomes among smokers who are motivated to quit and seek formal cessation support.

In September 2012, the Boston Housing Authority (BHA) adopted a smoke-free policy that prohibits all indoor smoking, including residential units, and outdoors within 15 feet of any buildings. We sought to compare outcomes after the implementation of the smoke-free policy, compared with before the policy went into effect, among participants in a smoking cessation intervention study conducted among BHA residents. We hypothesized that residents who attempted to quit after the smoke-free policy was adopted would experience an additional motivational benefit and thus be more likely to be abstinent from smoking and smoke fewer cigarettes per day when assessed at 3-month follow-up, than residents who attempted to quit in the absence of a smoke-free residential environment.

METHODS

Design and Procedure

Data for the present analyses were derived from the parent “Kick it for Good” study: a 2-arm cluster-randomized smoking cessation trial conducted among residents of 22 BHA public housing developments. The study bridged the period before and after BHA’s adoption of a smoke-free residential policy. Housing developments, and their residents, were invited to participate in a stepped fashion over the course of two years. Thus, participants were unable to self-select into the study based on policy timing. Participants at comparison (n=11) sites met once with a TTA who provided usual care in the form of self-help materials, and information on smoking cessation services including a telephone quitline and local clinic-based programs. Participants at the (n=10) intervention sites were given an opportunity to receive up to 9 one-on-one visits from a trained Tobacco Treatment Advocates (TTAs), using Motivational Interviewing as the primary cessation intervention, in addition to the usual care delivered to comparison group participants. In-person questionnaires were administered to participants at baseline, 3 months, 7 months, and 12 months. For the current analysis, we used the in-person questionnaires administered at baseline and at 3 months only, because there were too few participants who completed the 7 or 12-month questionnaires before the smoke-free policy was adopted.

Participants

Eligible participants were currently smoking BHA residents who were considering quitting within the next six months. Three hundred and thirty-two residents enrolled in the parent study and there was a 75% response rate. Of these, 176 study participants were included in the current analyses because they had completed both their baseline and three-month follow-up questionnaire either before (n=78) or after (n=98) the smoke-free policy was adopted. Of these, complete primary outcome data were available for N=166 participants.

Measures

Primary outcomes: We focused on two outcomes measured at 3 months: (1) *7-day point prevalence abstinence* (PPA), based on self-report of not having smoked a cigarette for the last 7 days accompanied by an exhaled CO (carbon monoxide) reading below 8 ppm (SRNT 2002); (2) *change in cigarettes/day* from baseline to 3 months based on self-report among those who reported that they were still smoking.

Independent variables: The primary variable of interest was timing of study participation in relation to the policy adoption date. Thus, participants were classified as members of Pre-Policy or Post-Policy groups, depending on when they completed both their baseline and 3-month follow-up, ie. completion of both questionnaires *before* adoption compared to *after* adoption of the smoke-free policy. Participants who completed the baseline survey before policy adoption but did not complete the 3-month survey until after policy adoption were excluded from the analysis.

Covariates: Variables measured to control for confounding and/or for effect modification, all measured at baseline, were: intervention vs. comparison *group assignment*; *nicotine dependence*, using the Fagerstrom Test for Nicotine Dependence (FTND), dichotomized as low (0-5) or high (6-10) dependence (Fagerstrom, 1996); age (continuous), gender, race/ethnicity, education, number of lifetime quit attempts, employment status, presence of other smokers in household, children living at home, The Center for Epidemiologic Studies Depression Scale (CESD-10) (continuous) (Radloff, 1977), and general health status.

Data analysis Because of the group-randomized design, we used the cluster robust standard error option in Stata 12.0 for all analyses to account for clustering by housing development. To identify covariates for the models, we estimated the crude association between Policy Timing and PPA, and then added other variables of interest individually to investigate whether they changed this association. We stopped adding new variables when they changed the point estimate by <5% or substantially increased the confidence interval width. The final model included policy, group assignment, race/ethnicity, gender, age, education, and depression score. We did not include nicotine dependence in the model for cigarette

consumption, because part of the dependence score is consumption.

Logistic regression was used to examine the association between Policy Timing and PPA. Linear regression was used to examine the association between Policy Timing and change in cigarettes per day from baseline to three-months. To examine whether Intervention group assignment moderated the relationship between Policy and smoking outcomes, we first tested statistical interaction in a separate model by including a cross-product term for the binary study Policy and group assignment along with the main effect terms for each in the regression models. We conducted a stratified analysis for smoking abstinence but variability was too great for meaningful interpretation owing to the small number of outcomes.

RESULTS

The characteristics of the study participants by Pre- and Post-policy groups are presented in Table 1.1. The average age was 48, with most of the survey participants being female (69%), Black Non-Hispanic (60%) and with a high school degree (54%) or less (31%). Forty-one percent (41%) had a child under the age of 18 living in the home, 16% were working, 42% had fair or poor health, and 55% lived with other smokers. On average respondents had 4.0 lifetime quit attempts and 28% were characterized as highly dependent on nicotine. Differences between Policy Timing groups were seen for gender (Pre-Policy, 78% female vs. Post-Policy 62% female; $p = 0.02$), and nicotine dependence (22% high dependence pre-policy vs. 33% post-policy; $p = 0.003$). The proportion of participants who reported 7-day PPA at three months was similar for the pre- and post-policy groups, with 14% of each group reporting no smoking in the past 7 days. At baseline, there was no difference in mean number of cigarettes smoked by policy group (11.5 pre-policy vs. 13.3 post-policy) or at 3-months (8.5 pre-policy vs 7.7 post-policy).

Table 1.2 presents multivariable analyses of the association between Policy Timing and 7-day PPA. In the crude model, the OR was 1.0 with no apparent association between Policy Timing and 7-day

PPA. Adjustment increased the point estimate, suggesting a possible increase in smoking abstinence in the post-policy group compared to the pre-policy group (OR: 1.5; 95% CI: 0.7, 3.1).

Table 1.3 presents multivariable analyses of the association between Policy Timing and reduction in cigarettes smoked per day from baseline to 3-months, among those who were not abstinent (n=143/168). In the crude model, we found that on average those in the post-policy group smoked 3.1 (CI: -6.1, -0.1) fewer cigarettes per day at the three-month follow-up, compared to those in the pre-policy group. After adjusting for covariates, on average, those in the post-policy group smoked 3.9 (CI: -7.4, -0.4) fewer cigarettes per day at the three-month follow-up than those in the pre-policy group.

Analysis of effect modification by intervention group assignment on the association between policy and reduction in cigarettes smoked per day suggested that the policy increased the extent of reduction among those assigned to the comparison group but not in the intervention group. Figure 1.1 illustrates the adjusted differences in average change by policy and group assignment. Among participants in the comparison group, there was a noticeably larger reduction in cigarette consumption post-policy (-5.8, CI: -9.0, -2.6) compared to pre-policy (-2.1; CI: -5.3, 1.2). There was no difference within the intervention group (Post-policy: -7.8, CI: -12.8, -2.8; Pre-policy: -6.3; CI: -10.1, -2.6).

Table 1.1 Key Characteristics of Study Population by Policy

Characteristic	Total Sample (n=166) Mean (95%CI) or %	Pre-policy (n=73) Mean (95%CI) or %	Post-policy (n=93) Mean (95%CI) or %
Demographics			
Age	48(46-50)	50(47-53)	46(43-49)
Gender (Female)*	69%	78%	62%
Race/Ethnicity			
Black, Non-Hispanic	60%	60%	59%
White, Non-Hispanic/Other	21%	16%	25%
Hispanic	19%	23%	16%
Children <18 living in home	41%	40%	42%
Education			
Less than high school	31%	30%	31%
HS graduate or GED	54%	51%	56%
>HS	16%	19%	13%
Working	16%	16%	16%
Nicotine dependence at baseline (6+ FTND Score)***	28%	22%	33%
Group Assignment			
Intervention	41%	42%	40%
Comparison	59%	58%	60%
CESD Depression Score (0-25)	11.1(10.4-11.8)	10.8(9.9-11.7)	11.3(10.3-12.3)
General Health: Fair/poor	42%	49%	37%
Other smokers in household	55%	56%	55%
Number of lifetime quit attempts	4.0(2.8-5.1)	3.6(2.1 -5.0)	4.2(2.7 – 5.8)
Smoking abstinence (Biochemically verified, didn't smoke in last 7 days)	14%	14%	14%
Baseline # of cigarettes smoked	12.5(11.0, 14.1)	11.5(9.6, 13.5)	13.3(11.6, 15.0)
3-months # of cigarettes smoked	8.0(7.2, 8.9)	8.4(7.3, 9.6)	7.7(6.2, 9.1)

*p=0.02

**Number of respondents characterized as 'other' = 3

***p=0.03

Table 1.2 Association between 7-day smoking abstinence, Policy, and demographic characteristics (n=166)

	Crude Model					Adjusted model				
	OR	SE	95% CI	CI	p-value	OR	Robust SE	95% CI	CI	p-value
Policy: post policy	1.02	0.43	0.45	2.35	0.96	1.5	0.6	0.7	3.1	0.34
Group Assignment: intervention						2.5	1.5	0.8	7.9	0.12
Race Ethnicity (Ref: Black, N-H)										
White N-H/Other						0.4	0.3	0.1	1.5	0.18
Hispanic						3.2	1.9	1.0	10.5	0.06
Gender: Female						1.8	0.8	0.8	4.1	0.19
Age						1.0	0.0	0.9	1.0	0.40
Education: >HS						2.3	1.6	0.6	9.0	0.22
CESD Depression Score						1.0	0.1	0.9	1.1	0.71
Nicotine dependence: High						0.2	0.2	0.0	1.1	0.07

Table 1.3 Association between Change in cigarettes smoked/day from baseline to 3-months, Policy, and demographic characteristics (n=143)

	Crude Model					Adjusted model					Interaction Model				
	Coef	SE	95%	CI	p-value	Coef	SE	95%	CI	p-value	Coef	SE	95%	CI	p-value
Policy: post policy	-3.1	1.4	-6.1	-0.1	0.04	-3.9	1.7	-7.4	-0.4	0.03	-5.2	1.1	-7.5	-3.0	0.00
Group Assignment: Intervention						-3.0	1.4	-6.0	0.0	0.05	-5.0	1.1	-7.2	-2.8	0.00
Race Ethnicity (Ref: Black, N-H)															
White N-H/Other						1.2	1.5	-2.0	4.5	0.43	1.5	1.3	-1.2	4.2	0.26
Hispanic						-1.9	2.6	-7.3	3.6	0.49	-1.8	2.5	-7.1	3.5	0.48
Gender: Female						-1.7	1.2	-4.3	0.8	0.17	-1.8	1.2	-4.3	0.6	0.13
Age						-0.1	0.1	-0.2	0.0	0.03	-0.1	0.0	-0.2	0.0	0.02
Education: >HS						-3.0	2.3	-7.7	1.7	0.20	-3.1	2.3	-7.9	1.7	0.19
CESD Depression Score						-0.4	0.1	-0.7	-0.1	0.01	-0.4	0.1	-0.7	-0.1	0.02
Nicotine dependence: High						n/a									
Interaction (Policy*Group Assignment)											3.5	2.6	-2.0	9.0	0.20

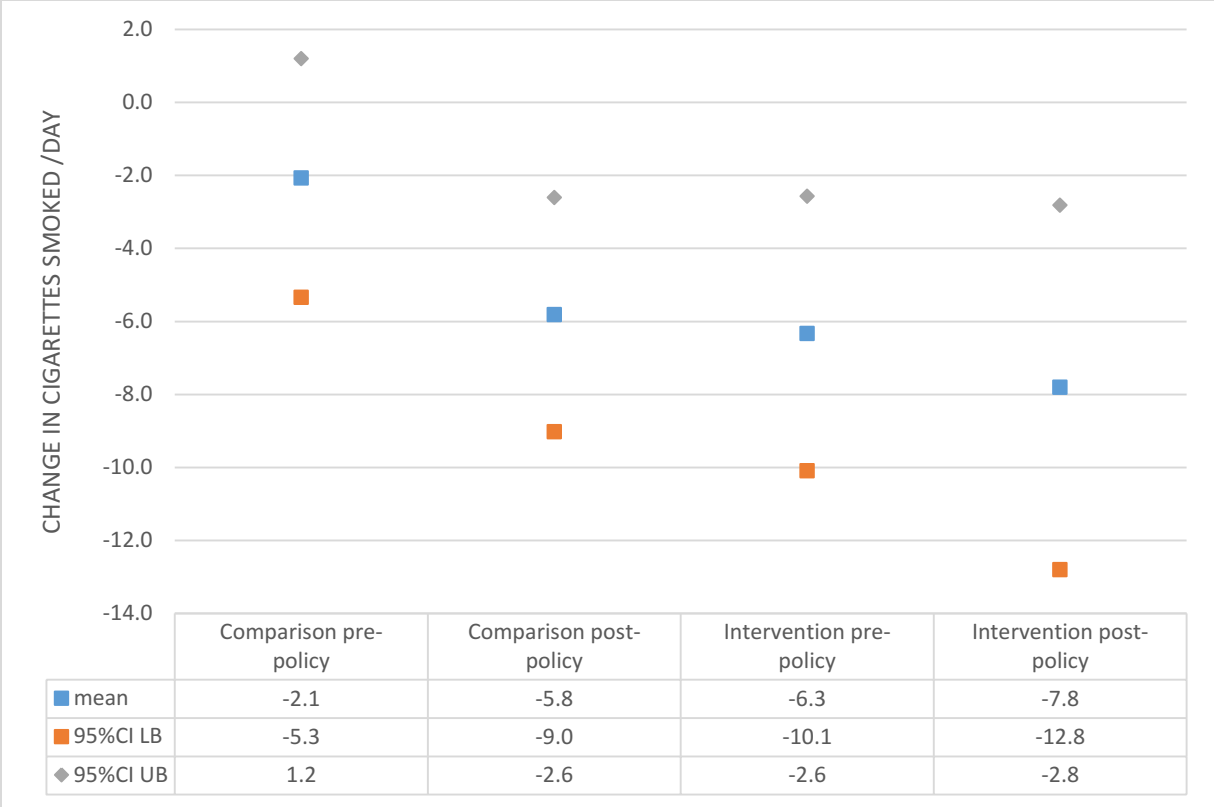


Figure 2. Average Change in Cigarettes Smoked/Day from Baseline to to 3-Month Follow-Up.

DISCUSSION

Among public housing residents who volunteered for a smoking cessation intervention, a greater reduction in cigarettes smoked per day was observed among the Post-Policy group compared with the reduction observed among the Pre-Policy group, with the primary difference being among those in the comparison group. Post-policy comparison group participants had similar outcomes to the intervention group participants. These findings suggest that public housing residents seeking smoking cessation support were more successful at reducing their cigarette consumption after a smoke-free residential policy was adopted.

There was a modest increase in the primary outcome measure – 7-day PPA at 3-months post-policy compared to pre-policy. The failure to find an association between smoking cessation and policy arm is possibly the consequence of a small sample size and overall small proportion of participants who quit at three months. To observe an adjusted Odds Ratio of 1.5, with a 14% rate of abstinence prevalence in the comparison (pre-policy) group, we would have needed a sample of 473.

Our findings differed from the other two studies that showed the smoke-free policy having a significant positive impact on smoking abstinence. Perhaps our reliance on in-person, biochemically verified measurement (with a relatively high response rate of 75%) rather than self-report mailed surveys, contributes to the difference in findings. It is also possible that our study population - those who volunteered for a smoking cessation intervention – were different than the general public housing population that was included in the other studies. It is possible that they were more addicted and found it more difficult to quit than other smokers. On the other hand, their motivation to participate in the trial suggests that they might be more likely to quit than the general population.

There are potential limitations of these data merit consideration. The reliance on self-report for the primary outcome measure of consumption is subject to concerns about validity. Moreover, the context in which the study was conducted – with a pending or recently adopted smoke-free policy – may have encouraged implicit response bias among participants who feared the consequences of failing to comply with the policy. However, it is important to note that the number of cigarettes smoked at baseline were

similar regardless of policy arm-if the desire to conform to policy was driving their reporting of cigarettes smoked it would have likely influenced their baseline status as well. Additionally, because the policy was impending or already adopted, we are unable to compare those exposed to a policy to those living in a property where there was no plan to adopt a policy. Future studies that examine the impact of a smoke-free residential policy should examine how it influences smoking attitudes and behaviors among smokers at various stages of change. How the policy affects smoking behaviors long-term should be considered as well.

As policy makers and researchers consider how to effectively roll-out the smoke-free policy in low-income housing, it may be useful to consider how the policy could motivate more cessation attempts by capitalizing on the external support the policy provides. It is noteworthy that smokers reduced their cigarette consumption after the adoption of the policy, even when receiving a brief comparison intervention. This observation suggests that a combination of a smoke-free policy with efforts to engage smokers and offer cessation opportunities may yield important benefits, even when those interventions are relatively modest in dose. Certainly, optimal evidence-based interventions, including personalized counseling with pharmacotherapy may yield the best possible outcomes, including complete cessation of smoking.

In conclusion, with the enactment of the new Federal rule for smoke-free housing, we may find improved cessation outcomes among low-income residents. We observed modest quit rates and significant reduction in cigarette consumption. These findings suggest that smoke-free residential policies may effectively reach a population where there are the greatest disparities in tobacco use and related mortalities.

REFERENCES

- Albano JD, Ward E, Jemal A, et al. Cancer mortality in the united states by education level and race. *J Natl Cancer Inst.* 2007;99(18):1384-1394.
- Arheart, K., Lee, D., Fleming, L., LeBlanc, W., Dietz, N., McCollister, K., & ... Erard, M. (2008). Accuracy of Self-Reported Smoking and Secondhand Smoke Exposure in the US Workforce: The National Health and Nutrition Examination Surveys. *Journal Of Occupational And Environmental Medicine*, 50(12), 1414-1420.
- Asfar T, Ebbert JO, Klesges RC, Relyea GE.(2011) Do smoking reduction interventions promote cessation in smokers not ready to quit? *Addict Behav.* 36:764–8. doi: 10.1016/j.addbeh.2011.02.003.
- Begh, R., Lindson-Hawley, N., & Aveyard, P. (2015). Does reduced smoking if you can't stop make any difference? *BMC Medicine*, 13, 257. <http://doi.org.ezp-prod1.hul.harvard.edu/10.1186/s12916-015-0505-2>
- Benjamin R. (2010) How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services CfDCaP, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- Berg, C. J., Haardörfer, R., Windle, M., Solomon, M., & Kegler, M. C. (2015). Smoke-Free Policies in Multiunit Housing: Smoking Behavior and Reactions to Messaging Strategies in Support or in Opposition. *Preventing Chronic Disease*, 12, E98. <http://doi.org.ezp-prod1.hul.harvard.edu/10.5888/pcd12.140479>
- Chaiton, M., Cohen, J., O'Loughlin, J., & Rehm, J. (2009). A systematic review of longitudinal studies on the association between depression and smoking in adolescents. *Bmc Public Health*, 9:356
- Centers for Disease Control and Prevention (2016). Cigarette Smoking and Tobacco Use Among People of Low Socioeconomic Status. <http://www.cdc.gov/tobacco/disparities/low-ses/index.htm> Accessed 27 Sept 2016.
- CDC (Centers for Disease Control and Prevention). 2015. Vital Signs: Disparities in Nonsmokers' Exposure to Secondhand Smoke—United States, 1999–2012. *Morbidity and Mortality Weekly Report*;64(4):103–8. Accessed on 060315.
- CTFK (Campaign for Tobacco-Free Kids).2015. Tobacco and Socioeconomic Status. <https://www.tobaccofreekids.org/research/factsheets/pdf/0260.pdf> accessed on 28 Sept 2016.
- Digenis-Bury, E. C., Brooks, D. R., Chen, L., Ostrem, M., & Horsburgh, C. R. (2008). Use of a Population-Based Survey to Describe the Health of Boston Public Housing Residents. *American Journal Of Public Health*, 98(1), 85.
- Fagerstrom KO, Schneider NG (1989). Measuring nicotine dependence: a review of the Fagerstrom Tolerance Questionnaire. *J Behav Med*;12:159-82.
- Fagerstrom, K. O., Kunze, M., Schoberberger, R., Breslau, N., Hughes, J. R., Hurt, R. D., Puska, P., Ramstrom, L., & Zatoriski, W. (1996). Nicotine dependence versus smoking prevalence: Comparison among countries and categories of smokers. *Tobacco Control*, 5, 52 – 56.
- (FRN) Federal Register Notice, 2016. Instituting Smoke Free Public Housing. Document Citation: 81 FR 87430. Accessed on 1/10/2017 at <https://www.federalregister.gov/documents/2016/12/05/2016-28986/instituting-smoke-free-public-housing>
- Fichtenberg C. M., Glantz S. A. (2002). Effect of smoke-free workplaces on smoking behaviour: Systematic review. *British Medical Journal*, 325, 188-194.
- Garrett BE, Dube SR, Winder C, Caraballo RS. Cigarette smoking—United States, 2006–2008 and 2009–2010. *MMWR Suppl* 2013;62(No. Suppl 3).
- Geller AC, Rees VW, Brooks DR (2016). The Proposal for Smoke-Free Public Housing: Benefits, Challenges, and Opportunities for 2 Million Residents. *JAMA*.. doi:10.1001/jama.2016.1380.

- Gilman SE, Abrams DB, Buka SL, (2003). Research report: Socioeconomic status over the life course and stages of cigarette use: initiation, regular use, and cessation. *J Epidemiol Community Health*;57:10 802-808 doi:10.1136/jech.57.10.802
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO (1991). The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict* 86:1119-27.
- Hefler, M., Chapman, S., 2014. Review - Disadvantaged youth and smoking in mature tobacco control contexts: a systematic review and synthesis of qualitative research. *Tob Control* doi:10.1136/tobaccocontrol-2014-051756
- Helms, V. E., King, B. A., & Ashley, P. J. (2017). Cigarette smoking and adverse health outcomes among adults receiving federal housing assistance. *Preventive Medicine*, 99, 171-177. doi://dx.doi.org/10.1016/j.ypmed.2017.02.001
- Howell, EM, LE Harris, and SJ Popkin. 2005. "The health status of HOPE VI public housing residents." *Journal Of Health Care For The Poor & Underserved* 16, no. 2: 273-285. CINAHL with Full Text, EBSCOhost (accessed September 6, 2016).
- Hughes JR, Carpenter MJ. Does smoking reduction increase future cessation and decrease disease risk? A qualitative review. *Nicotine & Tobacco Research*. 2006;8(6):739–749.
- HUD (2016) Resident Characteristic Report System. Washington (DC): <https://pic.hud.gov/pic/RCRPublic/rcrmain.asp>. Accessed September 6, 2016.
- HUD (US Department of Housing and Urban Development) (2015), Instituting Smoke-Free Public Housing, Proposed Rule, 24 CFR Parts 965 and 966, Docket No. FR 5597-P-02 RIN 2577-AC97.
- Jamal A, King BA, Neff LJ, Whitmill J, Babb SD, Graffunder CM. Current Cigarette Smoking Among Adults — United States, 2005–2015. *MMWR Morb Mortal Wkly Rep* 2016;65:1205–1211.
- Jarvie, J. A., & Malone, R. E. (2008). Children's secondhand smoke exposure in private homes and cars: an ethical analysis. *The American Journal Of Public Health*, (12), 2140.
- Jun, H.J. and D. Acevedo-Garcia, The effect of single motherhood on smoking by socioeconomic status and race/ethnicity. *Soc Sci Med*, 2007. 65(4): p. 653-66
- Kanjilal, S., et al., (2006) *Socioeconomic status and trends in disparities in 4 major risk factors for cardiovascular disease among US adults, 1971-2002*. *Arch Intern Med*. 166(21): p. 2348-55.
- Krieger J, Higgins DL (2002). Housing and health: time again for public health action. *Am J Public Health*. 92(5):758–68
- Lee, C., & Kahende, J. (2007). Factors Associated With Successful Smoking Cessation in the United States, 2000. *American Journal of Public Health*, 97(8), 1503–1509. <http://doi.org/10.2105/AJPH.2005.083527>
- Lopez AD, Disease Control Priorities Project: Global burden of disease and risk factors. 2006, Washington, DC: Oxford University Press
- Lindson-Hawley N, Aveyard P, Hughes JR. (2013) Gradual Reduction vs Abrupt Cessation as a Smoking Cessation Strategy in Smokers Who Want to Quit. *JAMA*.310(1):91-92. doi:10.1001/jama.2013.6473
- Macy JT, Middlestadt SE, Seo D-C, et al (2012). Applying the Theory of Planned Behavior to explore the relation between smoke-free air laws and quitting intentions. *Health Educ Behav*;39:27–34.
- MMWR (2010). Vital signs: nonsmokers' exposure to secondhand smoke—United States, 1999-2008. *MMWR Morb Mortal Wkly Rep.*;59(35):1141-1146.
- MMWR (2011). Quitting Smoking Among Adults ---United States, 2001-2010. 60(44); 1513-1519.
- Nagelhout, G. E., Zhuang, Y.-L., Gamst, A., & Zhu, S.-H. (2015). Do Smokers Support Smoke-free Laws to Help Themselves Quit Smoking? Findings from a Longitudinal Study. *Tobacco Control*, 24(3), 233–237. <http://doi.org.ezp-prod1.hul.harvard.edu/10.1136/tobaccocontrol-2013-051255>
- Patel, K., Schlundt, D., Larson, C., Wang, H., Brown, A., & Hargreaves, M. (2009). Chronic illness and smoking cessation. *Nicotine & Tobacco Research*, 11(8), 933–939. <http://doi.org/10.1093/ntr/ntp088>
- Patrick DL, Cheadle A, Thompson DC, et al. The validity of self-reported smoking: a review and meta-analysis. *Am J Public Health*. 1994;84:1086–1093. 28.

- Pizacani BA, Maher JE, Rohde K, *et al* (2012). Implementation of a smoke-free policy in subsidized multiunit housing: effects on smoking cessation and secondhand smoke exposure. *Nicotine Tob Res*;14:1027–34
- Pomerleau CS, Carton SM, Lutzke ML, Flessland KA, Pomerleau OF (1994). Reliability of the Fagerstrom Tolerance Questionnaire and the Fagerstrom Test for Nicotine Dependence. *Addict Behav*;19:33-9.
- Radloff, L. S. (1977). CES-D scale: A self report depression scale for research in the general populations. *Applied Psychological Measurement*,1, 385–401.
- Rivo ML, Gray K. Health comers: reducing chronic disease risks among black public housing residents in the nation's capital. *Am J Public Health*. 1992;82:611-612.
- Shiffman, S. (2009). How many cigarettes did you smoke? Assessing cigarette consumption by global report, time-line follow-back, and ecological momentary assessment. *Health Psychology : Official Journal of the Division of Health Psychology, American Psychological Association*, 28(5), 519–526. <http://doi.org/10.1037/a0015197>
- Snyder K, Vick JH, King BA. (2016) Smoke-free multiunit housing: a review of the scientific literature. *Tob Control*;25:9–20
- SRNT Subcommittee on Biochemical Verification (2002). Biochemical verification of tobacco use and cessation. *Nicotine Tob Res*;4:149-59
- Thornton, R. J., Glover, C. M., Cené, C. W., Glik, D. C., Henderson, J. A., & Williams, D. R. (2016). Evaluating Strategies For Reducing Health Disparities By Addressing The Social Determinants Of Health. *Health Affairs*,35(8), 1416-1423.
- Thun M, Day-Lally C, Calle E, Flanders W, Heath C. Excess mortality among cigarette smokers: Changes in a 20-year interval. *American Journal of Public health*. 1995;85(9):1223–1230.
- Thun, M.J., et al., *50-year trends in smoking-related mortality in the United States*. *N Engl J Med*, 2013. **368**(4): p. 351-64.
- Trosclair A., Dube S. R. (2010). Smoking among adults reporting lifetime depression, anxiety, anxiety with depression, and major depressive episode, United States, 2005–2006. *Addict Behav* ; **35**: 438–443.
- U.S. Department of Health and Human Services (2012). Preventing tobacco use among youth and young adults: a report of the surgeon general. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.
- U.S. Department of Health and Human Services (2014) The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- US Department of Health and Human Services (2006). The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2006. Available at <http://www.surgeongeneral.gov/library/secondhandsmoke/report/fullreport.pdf>
- Young W, Karp S, Bialick P, Liverance C, Seder A, Berg E, et al. (2016) Health, Secondhand Smoke Exposure, and Smoking Behavior Impacts of No-Smoking Policies in Public Housing, Colorado, 2014–2015. *Prev Chronic Dis*, 13:160008.
- Zhang, Y., Florath, I., Saum, K., & Brenner, H. (2016). Self-reported smoking, serum cotinine, and blood DNA methylation. *Environmental Research*, 146395-403. doi:10.1016/j.envres.2016.01.026
- Zhuang, Y.-L., Gamst, A. C., Cummins, S. E., Wolfson, T., & Zhu, S.-H. (2015). Comparison of Smoking Cessation Between Education Groups: Findings From 2 US National Surveys Over 2 Decades. *American Journal of Public Health*,105(2), 373–379. <http://doi.org.ezp-prod1.hul.harvard.edu/10.2105/AJPH.2014.302222>

Paper 2: Qualitative Assessment of a Smoke-free policy in Low-income Housing: implementation lessons for resident compliance

I. Introduction

The U.S. Surgeon General has determined that there is no risk-free level of Second Hand Smoke (SHS) exposure. (USDHHS, 2006). One significant risk factor for SHS exposure is residence in multi-unit housing. Smoke travels in common areas and through vents exposing both smokers and non-smokers alike (King, 2010). This exposure is particularly concerning for the individuals living in government-subsidized multi-unit housing who are already at heightened risk for poor health because they are low-income, children, racial/ethnic minorities and the elderly.

In an effort to reduce SHS exposure, the U.S. Department of Housing and Urban Development (HUD) issued a rule in December 2016 requiring all public housing authorities to implement a smoke-free policy. Public Housing Authorities have 18 months to phase in the rule which will prohibit smoking in apartments, common areas, administrative buildings, and a 25-foot perimeter around all buildings (FRN, 2016). The rule could potentially impact nearly 1.1 million households (NLIHC, 2012). In addition, HUD has encouraged managers of other HUD-assisted housing – specifically The Housing Choice Voucher Program (serving 2.1 million households), and project-based rental assistance (serving 1.3 million households) - also to adopt smoke-free policies (HUD, 2016). It is estimated that between 9 - 19% of private residential management companies currently have smoke-free building policies (Snyder 2014).

Most research to date has not focused on implementation of smoke-free policies, but rather residents' and multi-unit property managers' perceptions about motivations/barriers for choosing to adopt a smoke-free policy. Most residents support a property-wide policy (Licht, 2012; King, 2010a; Hood, 2013; Baezconde-Garbanati, 2011), with non-smokers, those with children, minorities and those with an existing elective home smoking ban most supportive of the policy (Henrikus, 2003; Cook, 2014; King, 2010a). Research also suggests that multi-unit housing owners and directors see the benefits of a smoke-free policy such as decreased maintenance, fire and insurance costs, reduced resident turnover, ability to attract more non-smokers, fewer resident conflicts and better resident health (Cramer, 2011; Hewett,

2007; King, 2010b). However, while this body of research is instructive about attitudes towards adopting a policy, there is a lack of evidence to inform the strategies for planning and implementing the policy, with the goal of assuring resident compliance.

This paper examines smoke-free policy implementation of a private residential management company that provides project-based rental assistance. Our methods and analysis were informed by the social-ecological model in order to broadly contextualize implementation efforts; examining the intrapersonal, interpersonal, organizational and community factors that influence resident compliance (Sallis, 2008; Broffenbrenner, 1979). We used focused ethnography to conduct interviews with staff, focus groups with residents, and property observations (Knoblauch, 2005). This design allowed for the study of the complexities surrounding a distinct issue in specific settings (Muecke, 1994; Cruz, 2013), namely the smoke-free policy from resident and staff perspectives in low-income housing. Specifically, this paper seeks to address the following research question: What are the factors that influence self-reported compliance with the smoke-free policy in privately managed, affordable housing? Understanding these factors can inform future implementation strategies for HUD-assisted housing managers and their public health partners as the HUD rule is implemented nationwide.

II. Methods

Study Setting

In August, 2015, a private residential management company that provides project-based rental assistance adopted a 100% smoke-free policy across its 52 properties in 6 states. The company's smoke-free policy states that smoking, including e-cigarettes, is not permitted on any of the properties, including apartments, common areas, parking lots, landscaped areas or at any corporate office. The implementation plan included: a one-year pre-adoption planning process with multiple resident meetings, a video made and distributed about the benefits of going smoke-free, and monthly reminders about the policy and cessation support opportunities; required lease addendums; enforcement process with three lease violations and then pursuance of eviction; training for all levels of staff; and certification of Resident Service Coordinators (those responsible for providing support to residents and issuing lease violations) as

American Lung Association group cessation counselors; and ongoing offering of 8-week cessation classes. Staff and resident perceptions of the implementation of this plan was a focus of this study.

To examine the experiences at the property level and limit differences in state and corporate contexts, we focused our study on four properties in Massachusetts. Eligibility criteria of housing properties included having at least 20 apartments, a resident service coordinator (RSC), and offering housing to families. These criteria were chosen because properties with RSCs offered onsite cessation support and family housing provided an opportunity to explore whether having children in the house may influence attitudes and behaviors. From the eligible list of properties, we utilized a maximum variation purposive sampling approach (Kuzel, 1999) to ensure that the sample included a diversity of geographic locations and housing type (Table 2.1). Within each property, we used purposive-stratified sampling (Kuzel, 1999) to identify focus group participants based on smoking status. Our rationale was that previous studies suggest there are different responses to the policy by smoking status.

Table 2.1. Site Description

	# of units	Type of housing	General Property Description	Proximity to Street	Evidence or witnessing smoking
Property #1 (Boston)	967	Garden and townhouse	Large, sprawling, surrounded by forest, multiple clean playgrounds, laundry facilities, common rooms. No evidence of trash; landscape grounds	Some units are near the end of the property but from center of property to off-property is approx. 1 mile.	No evidence of smoking on property. Two people off property smoking.
Property #2 (Brockton)	547	Garden and townhouse			Saw three 'visitors' smoking on property; others smoking off property on street.
Property #3 (Springfield)	845	High-rise	Two connected buildings with clean inner courtyard; large community space with new computers, decorated for Halloween by residents.	City sidewalk within 50 feet of building entrance. Empty lot across street.	Smoking near entrances and bus stops (off property, away from building)
Property #4 (Framingham)	190	Mid-rise	Buildings near one another with courtyards and green space between. Newly painted/renovated. New gym, community and computer room.	City street within 100 feet of any entrance.	Many people smoking directly in front of property

Procedures. Data collection took place during September-November 2016, one year after the adoption of the policy, and was performed by the first and fourth authors. Each site visit was 1 to 1.5 days. Data collection strategies included property observation, semi-structured interview and resident focus groups,

with the goal of enhancing and explicating findings from any single source (Yin 1994, Casey and Houghton 2010). Observation forms were used to guide collection of information on the physical environment, including the size of the property, upkeep, type of housing, playgrounds and how such spaces were used, evidence of smoking and the proximity to city streets were documented. The use of semi-structured interviews with program staff allowed for obtaining detailed opinions as well as assuring confidentiality when discussing the smoking policy. Interviews lasted approximately 60 minutes and were held in a private room on the property. Focus groups provided information on residents' perceptions about the smoke-free policy and possible messages and cessation support. The focus groups were uniquely suited for understanding the social dynamics in face of this policy change (Kitzinger, 1995). Focus groups lasted approximately 90 minutes and were held in a private room on the property. Interviews and focus groups were audio recorded and transcribed verbatim to facilitate joint analysis by the research group. Individuals were provided with a written statement about the research. A waiver of documentation of consent was granted from the IRB as the research presented no more than minimal risk of harm to study participants and involved no procedures for which written consent is normally required outside of the research context.

Participants. Seventeen one-on-one interviews with property staff were held: four Property Managers; four Resident Service Coordinators; four Maintenance Managers; three Patrol Officers; and two 'other' staff who self-identified as smokers and wanted their perspective also to be heard. These categories of staff were chosen because each had a unique perspective and role that, when analyzed together, offered a more comprehensive understanding of the environment they collectively created at each property site. Residents were recruited to the focus group through fliers, announcements in monthly written newsletter and at property events, and word of mouth. Four focus groups were held with smokers (n=28) and five groups with non-smokers (n=47).

Data Analysis. A theory-driven Immersion/Crystallization analytic process was used to cycle through stages of examining portions of the raw data in great detail and then identify patterns and themes, framed by the social-ecological model (Borkan 1992; Sallis, 2008; Bronfenbrenner) (Figure 2.1). Specifically,

two members of our study team examined each transcript in MAXQDA (2016) and coded the broad social-ecological model categories of intrapersonal/interpersonal, organizational, and community factors, and some other high-level codes within these categories, such as ‘knowledge’, ‘beliefs/opinions’, ‘behaviors’. During this process they also kept a running memo for ideas about each separate transcript. Code reports were then shared with a four-member research team. Each member of this team was responsible for summarizing and understanding one specific site. They developed an MS Excel file where they identified and sorted themes with thoughts and illustrative quotes, allowing for patterns to emerge. These themes were then discussed with the wider research team on two levels: 1) across respondent type to determine if there were themes common across sites for all managers, RSCs, residents, etc.; 2) site specific, assessing the environment in which the policy was being implemented. As part of these discussions we included an open reflection of our beliefs and biases in order to seek out and consider alternate explanations and themes. The broader team meetings then motivated the data analysts to go back to the transcripts to examine other ideas and themes as appropriate. This iterative process was considered complete when no new themes were generated from transcript review and discussion.

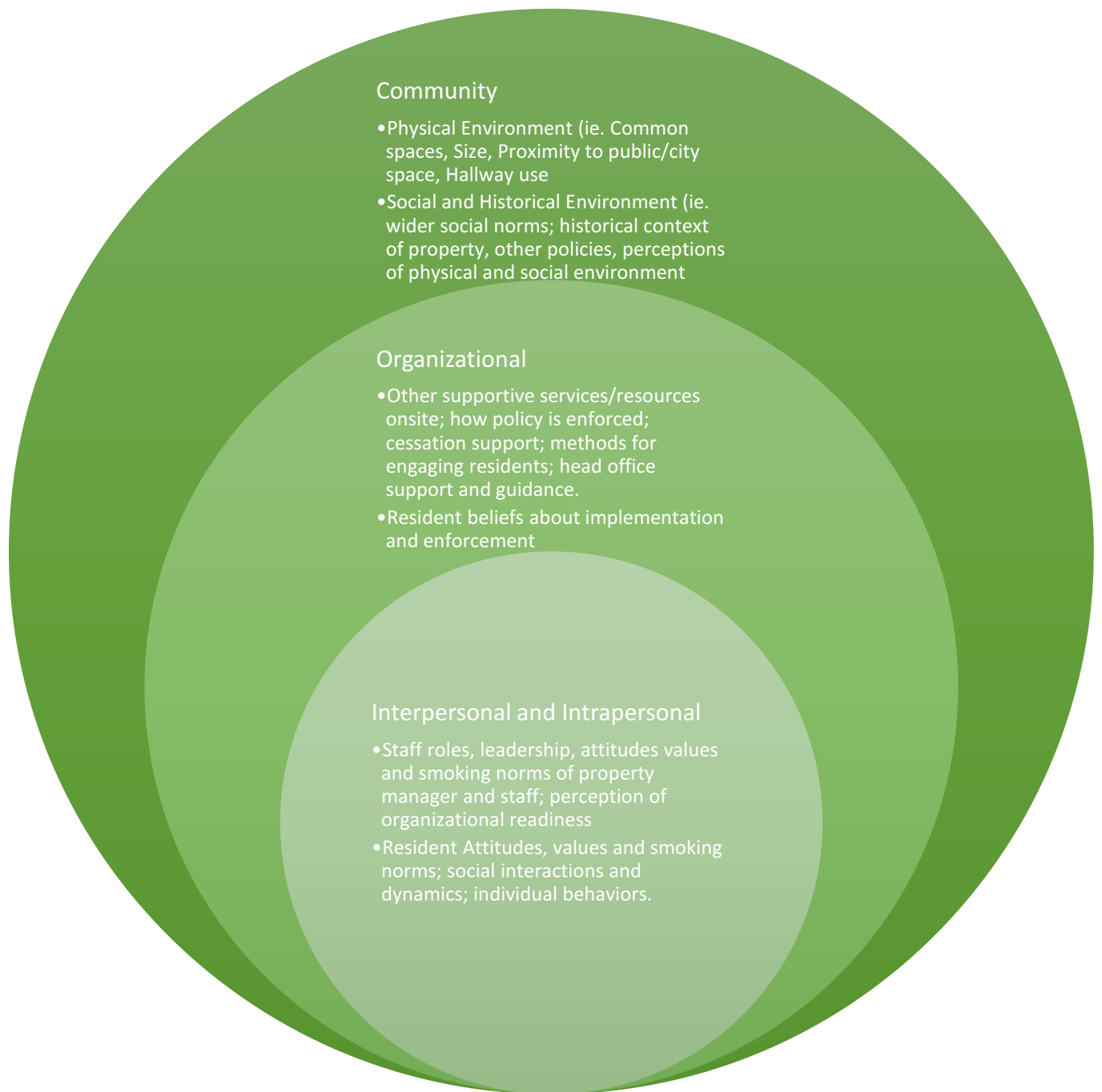


Figure 2.1. Study Conceptual Model of the Social-ecological Factors that May Influence Compliance with the Smoke-free Policy

III. Results

Self-reported compliance, and the most salient factors influencing compliance by social-ecological level were identified across respondent type and site. Illustrative quotes by respondent type are listed in Table 2.2.

Table 2.2. Illustrative Quotes by Respondent Type

	Resident Smokers	Resident Non-Smokers	Staff
Compliance Behaviors	I guess they can't smell it cuz I'm in the storage, and I'm by the vent, so how can they smell it?	In the weekdays, they don't do it. You can walk in the hallway, and it smells like heaven in there, but then weekends, [laughter] it's really bad. That's when I'm like, "Oh!" and I need to start rushing [out of the hallway].	I don't think the problem's gonna go away 100 percent. It's gone down a lot. I think that's just a hard transition, especially for someone that has been doin' it for so long. ..Then you have to deal with snow, or think of gettin' in your car and losing your parking spot or driving all the way out to the main road. It's either they're going to hide it, or they're gonna try some way of maybe comin' off of it. –Security Officer
Intrapersonal: Beliefs	We're not criminals. We're not animals. We're smokers. We gotta go out on the street in a blizzard, in the cold, with wild animals, like we committed felonies or something, like it's a crime. It's sad.	For those who don't smoke, they make us partial smokers, and then it has effect on our health. For those that have asthma, it chokes them. It chokes them. It affects them one way or the other.	I have to replace the whole faucet, but I have to stay there one hour and a half with that smoke. They smoke next to you. They don't stop. They don't care about you there. Then I have to go outside all the time to breathe a little bit. That was the change. I like it, to go in the apartment without smoke. – Maintenance Manager
Organizational: Enforcement	A lot of them [maintenance staff] said they're not getting involved in security. They can't tell a grown person what to do.	Sometimes, some people, they're saying, 'Don't go there. Talk to me first,' but there are others that you can get in big trouble. There are people that have a really bad attitude. They can even hit you.	In probably a week or two [I'll report it]. It was five or six of us [maintenance staff in the apartment] so who are you going to point the finger at? Good luck with that. It was him. No, it was her. It might have been all of us. – Maintenance manager
Organizational: Smoking Cessation and support	They couldn't tell me any more than I already knew. I'd done all the things that were suggested. The more they talked about smokin', the more I wanted a cigarette.	I had a one on one counselor at the WIC program. They would help by giving you the patches. When I had her, it was like going to see a therapist. When I talked to her, I got out all my stuff I needed to get out about it, and I was able to stay quit cuz I had somebody to be accountable to every week.	It's a great thing that we offer [classes], but I think because it's coming from us, it's me, the person who would potentially send you the lease violation, also helping you to quit. I think a referral would be more successful. I think the reason why we haven't seen people come is because we're the ones saying, "We're not telling you 'you can't live here if you smoke.' You just can't smoke in your apartment, and guess what? We're gonna' help you stop smoking. – Resident Service Coordinator
Organizational: Opinions for Change	If they said no smokin' in the apartment, I would advertise for them, but outside in the free air? Do they [company] own the air?	Telling them to go across the street to smoke is not an answer.	I can understand smoking outside being a problem because of windows and people next door—the wind might blow it that way. I'm just saying, though. If you can step away a little further, I don't see the big deal— Maintenance Manager
Community	It used to be a nice community everybody worked here for years. When you went outside you saw Joe Schmoe, you'd say, "Hey, Peter. Hi, Mike," and a lot of them knew you by name. Then they contract everything out. You call them, and if they don't feel that it's an emergency, they don't come in to do what you asked them to do.	When I first got here this building was identified as a building for elderly clientele. It seemed like a bunch of younger people came in all at once, like they let everyone and anyone come in there. It's like this influx of cigarette smoking and drug dealing and marijuana started to evolve....and noone is doing anything about it.	It was a big change for them. We were a new management company. The previous management company did not enforce a lot of rules, and they didn't have a lot of activities, they didn't engage with the residents like we do. It was just a huge change for them, and a lot of residents who like to keep to themselves, didn't like that. - Property Manager

Participant Characteristics

The majority of the participants were females (67%) and without children <18 years old living in their home (76%). Just over half of participants categorized their race as White (56%), 25% as Black, and 19% as mixed race or other. More than half of the participants either had a high school degree/GED (33%) or did not complete high school (19%). The average age was 54 (range: 20-86) and number of years living in the community was 12 (range: 0-61). None of the participant characteristics differed significantly by smoking status (Table 2.3).

Table 2.3. Resident Participant Characteristics

	N=75	Percent
Non-Smoker	47	63%
Smoker	28	37%
Female	50	67%
No children <18 in household	57	76%
Hispanic/Latino	19	25%
Race		
White	42	56%
Black	19	25%
Mixed Race/Other	14	19%
Education		
<High school	14	19%
High school graduate or GED	25	33%
Technical/some college	16	21%
College graduate	18	24%
Age (mean, range)	54(20-86)	
Number of years in community (mean, range)	12(0-61)	

Compliance with the Smoke-free policy

All categories of respondents – resident smokers, resident non-smokers and staff - reported a reduction in smoking and secondhand smoke exposure. When the policy was first adopted there were frequent reports of smoking incursions by neighbors and staff reports of witnessing smoking on campus. However, as smokers realized the potential for eviction - by seeing others get a lease violation, rumors of such, or receiving one themselves – they increasingly complied with the policy.

As long as I can use this scooter [mechanical wheelchair], I will go off the property and smoke my cigarettes. Both of my sons smoke too so they get in their car and they drive somewhere and have a smoke...but not without saying something like, "What do they mean you can't smoke around here? This is outside." I'm like, "Hey, do you wanna see your mother pushing a packed carriage with all her stuff in it? Don't smoke in front of my house."

– Resident smoker

However, the overall reduction in SHS does not imply a 100% smoke-free campus. Most smokers reported that they will go off campus when convenient, and instead have adapted their behavior in order not to get caught. They wait until nights and weekends to smoke on property when there are few or no staff to report a smoking violation, or they have devised methods for ‘hiding’ their smoke by sitting near vents (typically in their bathroom) or using air filters within their apartments. For many of these smoker what was once a behavior that was outside in courtyards or balconies, often in the company of friends, had now become an indoor, hidden behavior.

Social-ecological Factors Influencing Compliance

Intrapersonal and Interpersonal: Beliefs

Both smokers and non-smokers felt that the smoke-free policy had a direct and substantive effect on their human rights. While smokers realized that smoking was not a protected constitutional ‘right’, most felt a loss of autonomy, human dignity, and a lingering questioning of why they were being singled out when deeper mental health, substance abuse and violence issues exist in the community.

You would have to wait two full years to get another subsidized or any kind of public housing if you get kicked out of something like this, just for smoking a cigarette. There’s people in here that smoke crack. Are you serious? Or there’s been people that overdosed or committed suicide in their apartments. None of that’s being addressed, but you’re gonna pick on a smoker that just needs a cigarette.

– Resident smoker

Pre-policy there were some residents who only smoked outside – typically because they did not want the smoke to linger in their apartments or affect their children. However, the vast majority of smokers interviewed lived without children (~78%), with other smokers, or alone and did not readily mention the potential impact their smoking was having on others. After probing by the interviewer, some would acknowledge that exposure to tobacco smoke was dangerous for non-smokers, but they did not seem convinced that someone in another apartment could be exposed to their smoke. On the other hand, the non-smokers were also vocal about their right for smoke-free air. They spoke about their own health and vulnerability:

I understand [about addiction], but I also understand that I have a health problem, and I'm responsible for my own health. It is my problem because if you're smoking right next to me, I'm gonna become a secondhand smoker, and even if I never smoked in my life.

– Resident non-smoker

Non-smokers also described how the policy provided them a means to advocate for their own health:

It's something that's affecting your health, and you're at least able to now make a complaint about it, where before, you couldn't. You were forced into accepting it.

- Resident non-smoker

Organizational: Enforcement

Without fail, staff at the properties felt that the head office created a detailed and well-thought out plan for enforcing the policy. Staff praised the clear guidelines for addressing violations and possible evictions. They also praised the year-long pre-adoption planning period where each property held numerous meetings with residents, made addendums to leases and offered cessation classes.

When [management company] wants to implement something they put a lot of effort into it. There were panels of people, surveys, so much time and energy invested in it...I think it makes it easier because that support is there. It's so important, and it's not just your immediate supervisors, but it goes on up. When the president of your company is sayin', "Hey, I wanna sit in on this to see what's going on," it means a lot. Even our attorneys are like, "Let's look at it this way. I know that it's tough. Let's go ahead and do an agreement." We're not an automatic, "You're out." We try to give them the opportunity to say, "This is your last shot. Here's the agreement. As soon as you break it, though, that's it." It also shows the judges in court that, "Seriously? They did everything they could for you. What are you thinking? It's a cigarette—" That's beneficial as well.

– Maintenance Manager

Staff, like the residents themselves, reported that residents understood the potential for eviction and this was a primary motivator in compliance. Staff reported various discussions with residents where they reiterated their commitment to enforcement and that they had the will and the mechanisms in place to pursue an eviction if it came to that:

The possibility of you losing your home couldn't be any more consequential than that. "That's your home. You will be homeless because of a cigarette." That was the one fact that I used at one of my meetings because I need you to understand how serious we are about this. "It's your home." That's worked tremendously.

– Property Manager

Despite the planning period with clarity and consistency in the enforcement process, there remained numerous challenges to addressing smoking violations. For one, the role of maintenance and grounds staff changed significantly. They typically had the most day-to-day interaction with residents because they walked the grounds, attended to maintenance requests in resident apartments, and performed regular apartment inspections. They were the ‘eyes and ears’ of property management, and were relied on to report smoking violations. Most maintenance staff were ambivalent about this role, feeling concerned about a deterioration in trust between themselves and residents, or fearing retaliation:

I knew as soon as they said that that it was gonna put a lotta stress on us, the maintenance people, because of the fact that we were gonna be the eyes and ears for the policy, and it also sets us up, too, which I didn't feel was fair, but in the same regard, we are, more or less, the eyes and ears for the office. It's hard to establish a positive relationship with a lotta residents. It's a fine line already, and, now, you put that burden on us, too.

– Maintenance Manager

Therefore, there seemed to be an ad hoc system in place where maintenance staff would witness a smoking violation and then wait to report it so the lease violation would not be tracked back to them.

In addition to maintenance staff's role in enforcement, residents have been asked by management to report their neighbors:

[Non-smokers] start paying attention to their surroundings and try to do their investigation themselves. They'll come in and say, "I think it's the guest of my neighbor two doors down", Unlike with other concerns that they may have, they're willing to work with us for the smoking. When it's a noise complaint, they come in and they don't wanna' hear any reasons why we haven't been able to quiet down the neighbor. They know who it is. They told you who it is. Fix it. When it's smoking, they don't know who it is. We don't know who it is.

- Resident Service Coordinator

But residents reported uncertainty, fear and resentment about being placed in this role:

Management told me, "Try to see which door it's coming from," and I walked the hallway, but I couldn't figure it out, but that shouldn't be on me. I mean, if they're gonna pay us to be detectives, I'll be smelling every door.

– Resident non-smoker

On the other hand, the smokers who abided by the rule felt emboldened to hold others accountable as well:

There was a delivery guy outside, and he was just standing there smoking, and the [resident smoker] said, "Oh, this is a nonsmoking building. You have to take it across the street." He was

like, "Oh, really?" and she's like, "Yeah, it's a hassle, but it's policy. I'm sorry." I was like, "Oh, wow, a smoker standing up for nonsmoking"....she's a hero

- Resident non-smoker

Both smokers and non-smokers reported a hazy understanding of how the policy was being enforced by management. There were rumors of violations and evictions, but in general, unless a resident was individually affected, they were unsure of management's actions:

We don't know what they're doing...We're not privy to that. You can make a complaint. You have no idea whether or not the management has addressed the issue. The management does not say to you, "Gee, we addressed it with that person before"

. – Non-smoking resident

Organizational: Smoking cessation and support

Most resident smokers believed the ostensible requirement of the smoke-free policy was for them to quit smoking. In part this was because the policy forced them to change where they typically smoked, i.e. in their home and immediate vicinity. In addition, management's method to support adherence to the policy (other than enforcement via lease violations) was to offer smoking cessation guidance in their newsletters and through group classes.

Residents differed in their response to this perceived requirement to quit. Almost everyone interviewed was a long-time smoker with multiple quit attempts, yet some felt the policy provided a new motivation for them to quit, while others felt that the policy encouraged smoking, almost as an act of rebellion. Most people, however, fell somewhere in the middle; they did not believe they could quit but also wanted to comply with the policy,

I don't really wanna rebel, but it ain't that I wanna quit either...It's like a rock and a hard place.

– Resident smoker

Only one of the four properties had anyone participate in the smoking cessation group class offered by the property Resident Service Coordinators. In that site, some of the participants quit short-term but began again by the time of this data collection. The lack of participation in the smoking cessation classes was partly due to smokers' beliefs that the class would not be helpful since they had already 'tried

everything'. In addition, there was a perceived inherent issue with the class being offered by staff, playing both 'good cop and bad cop'.

Residents who were former smokers had a unique perspective on what it might take for smokers to adhere to the policy and potentially quit smoking. They suggested that as former smokers they could play a supportive role, that group classes were unlikely to help long-term smokers, but that regardless of options offered, ultimately the smoker had to want to stop:

Have some shuttle services that can take them to clinic or get products they can use. Give 'em a voucher to show they care, and that they wanna help them. Not just say, "Okay. Here's a piece of paper. That's the policy." We're all human - we don't work like machines. Find out exactly who are the heavy smokers or the disabled people that are smokin'...work a little bit with them one on one.

- Resident Non-smoker

Organizational: Resident and Staff Opinions

Smokers discussed how compliance to the policy could be made easier. All smokers wanted a designated outside smoking area and the ability to smoke in one's car on property. From the perspective of smokers, allowing for smoking on the property would help them not smoke inside, support their sense of autonomy and respect, and provide a safer environment than on a city sidewalk or park. In addition, both staff and residents described how large groups of people standing in front of the property smoking was unsightly and complaints from neighbors from properties nearby were common.

If I could quit smoking, I would. I smoked so many years. I started smoking when I was nine years old. Again, I do understand [not smoking inside]. I just don't feel that if you're out in the outside where it's really gonna affect anybody, because you got open air.

- Resident Smoker

Staff and non-smokers also discussed the idea of having a designated outdoor smoking area. While some supported the idea they also wondered if it was feasible:

If [you can direct them to a smoking area] then it's not like you're taking their rights away. [But], it's like where can you really put a smoking area where it's not gonna affect other people? I can think of maybe one or two spots where that's about it. You think those people are really gonna walk that far? Then you would have to maintain them. Make sure it's shoveled and salted, and there's no 1,200 cigarette butts everywhere.

- Maintenance Manager

Smokers also advocated for allowing e-cigarettes, feeling it would be an effective way to address their addiction while inside, “*You can’t use a vaporizer or nothing to try to get yourself off of cigarettes.*” “*No vaping either. I would do vaping, but no vaping either.*”

In three of the four properties, resident smokers described how difficult it was to comply with the policy when their existing apartment remained infused with tobacco odor. It was a constant trigger for smoking and they wondered what additional ‘harm’ they could do to the apartment. They felt that an apartment with fresh paint and curtains would be a strong motivation to help them not smoke.

They don’t want me to smoke in my apartment. Well, why didn’t you come in and give me new walls and new ceilings and new floors and new appliances, and then tell me, “This is all brand-new. We don’t want you to get it dirty”? No, we’ll just let you stay in your apartment. It’s hard to give up when you have the odor in your unit.

– Resident smoker

Community

The properties varied by number of units, ranging from 967 garden/townhouse units in a sprawling urban campus, to 190 mid-rise units in a small, suburban community. Each of the properties had renovated, clean common spaces and landscaped grounds. Two of the properties had easy access to a city street and observations were made of people smoking off-property. There was no immediate evidence of smoking on-property (no odor and no cigarettes butts) either during the day or in the early evening (Table 2.3).

The residents responded to the smoke-free policy in the context of the broader historical and social environment. Two of the four properties were in transition from being a largely older, single resident community to integrating younger families, many of whom had different cultures and languages. The third property was acquired from a largely absent management company that rarely enforced rules; drugs and crime were rampant. How residents understood enforcement of the policy, who was being singled out, and the impact on the community was understood within these contexts.

If you have somebody illegally living with you, they don’t track it down, but if you’re a smoker, they’ll track it down, and that’s not right. They don’t bother them, but they bother us for smoking. That’s not on the lease. - Resident smoker

While these broader social and historical factors seemed to play a role in implementation of the policy, the differences in physical environment, i.e. the size and type of property, did not seem to influence overall perceptions and adherence to the policy. Whether the smoker had to travel across a large property or take an elevator and cross the street, the same issues of inconvenience, concern for safety, infringement of rights, enforcement roles, and challenges with smoking cessation existed.

IV. Discussion

This study contextualized a smoke-free policy in HUD-assisted housing by examining the social-ecological factors influencing resident compliance. We found that while the physical housing environments varied –sprawling suburban campus, urban high-rises – the issues, opinions and behaviors of residents and staff were quite similar across properties. Participants agreed that the smoke-free policy decreased – but did not eliminate – their exposure to second hand smoke. However, while staff felt that strong and consistent enforcement of the policy was most important for compliance, residents noted how effective policies should also respond to the issue of slow behavioral change in smoking habits. Challenges to implementation included reliance on ambivalent maintenance staff and residents to report violations, and staff to provide smoking cessation. In addition, resident smokers believed they were being told to quit smoking while also not feeling convinced that their smoke harms neighbors' health. Yet the single greatest challenge to compliance reported by smokers was the property-wide ban. Resident smokers wanted a smoking area on property and allowance of e-cigarettes. Otherwise, they felt that they would continue to find ways to 'hide' their smoking inside.

These findings raise a number of ideas for further reflection, discussion, and research. At the individual/intrapersonal level, there should be an explicit recognition that this policy diverges from previous smoke-free policies in restaurants/public spaces because it requires individuals to change what they do in their homes. It confronts the meaning of 'home' as it relates to residents' personal agency and power; with conflicting outcomes for smokers and non-smokers. Indeed, previous research found that the most persuasive messages to promote a smoke-free policy related to non-smokers' individual rights such

as, “You have the right to breathe clean air in your home’ and the most persuasive messages against the smoke-free policy related to smokers’ rights such as, “People have the right to smoke in their own homes” (Berg, 2015). Possible strategies to address these challenges could include: clearer messages about how smoke travels through vent systems and the dangers of SHSe, ensuring the focus is on the smoke rather than the smoker; tangible activities to involve non-smokers in promoting (rather than only enforcing) the policy, e.g. stories about their need for clean air, former smokers providing peer support, etc. At the organizational level, there should be a recognition that the smoke-free policy is implemented in typically low resource environments. Round-the-clock enforcement with over-burdened staff and addressing other high priority issues are significant challenges. Potential strategies that rely less on enforcement could include: partnerships with community organizations to provide individualized and confidential cessation support; forums for maintenance staff to discuss concerns about their role in enforcement and identify solutions; and resident inclusion in decision making about smoking areas and e-cigarettes. At the community level, we found that the management company’s investment in an appealing physical environment and related community amenities were appreciated by residents, and in turn residents took pride in their community. However, while this investment was valued, it was not sufficient in ensuring compliance to a smoke-free policy. Couching the policy as only one part of a broader health and wellness initiative may prove useful. Taken together, our findings suggest that compliance with the smoke-free policy requires enforcement along with transparent communication, and opportunities for staff and resident input into policy implementation details.

Our study has its limitations. We examined the smoke-free policy one year after its adoption. It is unknown whether behaviors would adapt to the policy with more time and continued enforcement efforts, and we would see a continued decline in tobacco smoke exposure, or whether efforts on all sides would lapse and smoking on property would regress to pre-policy exposure levels. Because this study focused solely on the experience of one management company’s policy implementation at one point in time, we were unable to say with certainty whether a different planning and implementation process would be more effective in compliance. However, because our study gathered nuanced and in-depth data from

multiple levels of staff, resident smokers, and nonsmokers, we were able to identify factors that likely are important in other settings. Future research should include a diversity of geographic sites, both public and private management companies, and objective data on SHSe.

Conclusion

This qualitative study examined social-ecological factors that influenced resident compliance of a smoke-free policy in low-income housing. Accordingly, implementation efforts should address these factors with multi-level strategies that support and enhance resident health and well-being, and research efforts should evaluate such comprehensive strategies in various contexts

References

- Baezconde-Garbanati, L. A., Weich-Reushé, K., Espinoza, L., Portugal, C., Barahona, R., Garbanati, J., Unger, J. B. (2011). Secondhand Smoke Exposure Among Hispanics/Latinos Living in Multiunit Housing: Exploring Barriers to New Policies. *American Journal of Health Promotion : AJHP*, 25(50), S82–S90.
- Berg, C. J., Haardorfer, R., Windle, M., Solomon, M., & Kegler, M. C. (2015). Smoke-free policies in multiunit housing: Smoking behavior and reactions to messaging strategies in support or in opposition. *Preventing Chronic Disease; Prev.Chronic Dis.*, 12 doi:10.5888/pcd12.140479
- Borkan J.(1992) Immersion/Crystallization. In: Crabtree BF, Miller WL, eds. *Doing qualitative research. Research methods for primary care ; v. 3.* Newbury Park, Calif.: Sage Publications.
- Brofenbrenner, U. (1977). *Toward an experimental ecology of human development* American Psychologist.
- (CDC) Centers for Disease Control and Prevention.(2015). Vital Signs: Disparities in Nonsmokers' Exposure to Secondhand Smoke—United States, 1999–2012. *Morbidity and Mortality Weekly Report*;64(4):103–8. Accessed on 060315.
- Cook, N. J., Hollar, L., Chavez, S., Quinn, D. L., Phillips, T., DeLucca, M., & Corrales, L. (2014). Support for Smoke-Free Multi-Unit Housing Policies among Racially and Ethnically Diverse, low-Income Seniors in South Florida. *Journal of Cross-Cultural Gerontology*, 29(4), 405–415. <http://doi.org.ezp-prod1.hul.harvard.edu/10.1007/s10823-014-9247-4>
- Cramer ME, Roberts S, Stevens E (2011). Landlord attitudes and behaviors regarding smoke-free policies: implications for voluntary policy change. *Public Health Nurs*; 28:3–12
- Darke, P., Shanks, G., & Broadbent, M. (1998). Successfully completing case study research: Combining rigour, relevance and pragmatism. *Information Systems Journal*, 8(4), 273-289.
- Federal register. (2016). *Federal Register (National Archives & Records Service, Office of the Federal Register)*, 81(248), I.
- Hennrikus D, Pentel PR, Sandell SD.(2003) Preferences and practices among renters regarding smoking restrictions in apartment buildings. *Tob Control.*;12 (2):189--194.
- Hewett MJ, Sandell SD, Anderson J, *et al* (2007). Secondhand smoke in apartment buildings: renter and owner or manager perspectives. *Nicotine Tob Res*;9:S39–47.
- Hood, N. E., Ferketich, A. K., Klein, E. G., Wewers, M. E., & Pirie, P. (2013). Individual, Social, and Environmental Factors Associated With Support for Smoke-Free Housing Policies Among Subsidized Multiunit Housing Tenants. *Nicotine & Tobacco Research*, 15(6), 1075–1083.
- HUD (2014). Change is in the Air: An Action Guide for Establishing Smoke-Free Public Housing and Multi-family Properties. Accessed Feb 23, 2017 at <https://portal.hud.gov/hudportal/documents/huddoc?id=smokefreeactionguide.pdf>
- HUD (2016). HUD SECRETARY CASTRO ANNOUNCES PUBLIC HOUSING TO BE SMOKE-FREE. HUD No. 16-184. Accessed on 1/10/2017 at https://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2016/HUDNo_16-184
- Jarvie, J. A., & Malone, R. E. (2008). Children's secondhand smoke exposure in private homes and cars: An ethical analysis.(HEALTH POLICY AND ETHICS)(author abstract). *The American Journal of Public Health*, 98(12), 2140.

- King BA, Cummings KM, Mahoney MC, Juster HR, Hyland AJ. (2010a) Multiunit housing residents' experiences and attitudes toward smoke-free policies. *Nicotine Tob Res.*;12(6):598--605
- King BA, Travers MJ, Cummings KM, *et al* (2010b). Prevalence and predictors of smoke-free policy implementation and support among owners and managers of multiunit housing. *Nicotine Tob Res.* 12:159–63.
- Kitzinger J. (1995) Qualitative research: Introducing focus groups. *BMJ*; 311:299-302.
- Krieger, J., & Higgins, D. L. (2002). *Housing and health: Time again for public health action*
- Kuzel AJ.(199) Sampling in Qualitative Inquiry. In: Crabtree BF, Miller WL, eds. *Doing Qualitative Research*. 2nd ed. Thousand Oaks, Calif.: Sage Publications; 33-45.
- Licht AS, King BA, Travers MJ, Rivard C, Hyland AJ. (2012) Attitudes, experiences, and acceptance of smoke-free policies among US multiunit housing residents. *Am J Public Health*. Oct; 102(10):1868-71.
- MAXQDA, software for qualitative data analysis, 1989-2016, VERBI Software – Consult – Sozialforschung GmbH, Berlin, Germany.
- Sallis, J. F., & Owen, N. (2015). Ecological models of health behavior. In K. Glanz, B. K. Rimer, K. ' . Viswanath, K. Glanz (Ed), B. K. Rimer (Ed) & K. ' . Viswanath (Ed) (Eds.), (pp. 43-64). San Francisco, CA, US: Jossey-Bass.
- Schofield, J. W. (1993). Increasing the generalizability of qualitative research. In M. Hammersley, & M. Hammersley (Ed) (Eds.), (pp. 200-225). Thousand Oaks, CA, US; Maidenhead, BRK, England: Sage Publications, Inc; Open University Press.
- Snyder, K., Vick, J. H., & King, B. A. (2016). Smoke- free multiunit housing: A review of the scientific literature. *Tobacco Control*, 25(1), 9. doi:10.1136/tobaccocontrol-2014-051849
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA, US: Sage Publications, Inc.
- Thornton, R. L. J., Glover, C. M., Cene, C. W., Glik, D. C., Henderson, J. A., & Williams, D. R. (2016). Evaluating strategies for reducing health disparities by addressing the social determinants of health. *Health Affairs*, 35(8), 1416-1423.
- Ulin, Robinson and Tolley, (2005) *Qualitative Methods in Public Health: A Field Guide for Applied Research*, Chapter 4: Collecting Qualitative Data, the Science and the Art, Jossey-Bass, 71-95.
- United States Public Health Service Office of the, Surgeon General. (2006). *The health consequences of involuntary exposure to tobacco smoke : A report of the surgeon general*. Rockville, Md.:
- Vital signs: Nonsmokers' exposure to secondhand smoke— united states, 1999- 2008. (2010). *Jama*, 304(17), 1892-1894.
- Yin, R. K. (2014). *Case study research : Design and methods* Los Angeles : SAGE; Fifth edition.

Paper 3: Collective and self-efficacy in HUD-assisted housing: a mixed-methods study of a smoke-free policy.

I. Introduction

Second hand smoke exposure (SHSe) causes illness like heart disease, stroke, and lung cancer in nonsmoking adults and sudden infant death syndrome, acute respiratory infections, exacerbated asthma, and decreased lung function in children (USDHHS, 2006). SHSe is disproportionately concentrated in communities of low socioeconomic position that shoulder other major economic and social burdens. Such exposure is highest among children, non-Hispanic blacks, and persons living in poverty. In 2011–2012, 40% of children ages 3 to 11 in the United States—including almost 70% of black children—were exposed to secondhand smoke (CDC, 2015).

Residents in multi-unit housing are at increased risk of SHSe. Children living in multi-unit housing have been shown to have 45% higher cotinine levels (a biomarker for exposure to SHS) than children living in detached homes, even without having an active smoker in the home (MMWR, 2010). Evidence suggests that the only effective way to eliminate the risks associated with indoor exposure to SHS in multi-unit housing is to eliminate smoking activity in and around residential dwellings (CDC, 2006). Indeed, smoke-free policies have been advanced as an issue of social justice for children in public housing by addressing one aspect of their social disadvantage (Jarvie, 2008). In addition, there have been numerous studies showing that the vast majority of multi-unit housing residents already maintain an elective home smoking ban, and most support a property-wide policy (Licht, 2012; King, 2010; Hood, 2013; Baezconde-Garbanati, 2014). Support in favor of smoke-free residential policies is highest among non-smokers, those with children, and racial/ethnic minorities (Henrikus, 2003; Cook, 2014; King, 2010).

Informed by scientific evidence and resident support, the U.S. Department of Housing and Urban Development (HUD) issued in December 2016 a smoke-free rule for all Public Housing Authorities (PHAs) across the U.S., affecting an estimated 2 million individuals, of whom 760,000 are children. This

rule prohibits smoking in resident apartments, anywhere inside the apartment and administrative buildings, and all outdoor areas within 25 feet of the buildings (FRN, 2016).

The adoption of this rule means that approximately 400,000 public housing residents who smoke (HUD, 2008) will have to abstain from smoking indoors. With limited human and financial resources, along with HUD's primary goal of providing housing to those who need it, relying on enforcement of the policy through evictions alone is neither feasible nor wanted (Geller, 2016). Instead, there will need to be alternative strategies that promote compliance, yet there is very little research on best practices to do so (Snyder, 2016).

Any such strategies will need to consider the complex interplay of individual and social factors that influence behavior. Previous research suggests that while most residents want a smoke-free environment there are still a minority that oppose it (Snyder, 2016) which may influence community dynamics. Additionally, given that the policy affects behaviors and exposures in individuals' homes, such individuals who are historically vulnerable because of income, age or disability, there are considerable issues of individual agency as well (Levy, 2016).

By directly engaging residents to understand their attitudes and preferences, this paper seeks to understand factors that facilitate policy implementation in a more deliberate, transparent and affirming manner while furthering residents' individual agency and collective power. Thus, the goal of this research is to inform future policy implementation and evaluation efforts. We frame this assessment of resident engagement using the constructs of self- efficacy, ie. individual's beliefs in their own agency to exert influence over their functioning or specific actions (Bandura, 2006), and collective efficacy, ie. the extent that residents feel they share the same values with their neighbors (social cohesion), and can collectively act for social good (social control) (Sampson, 2012). In the context of a smoke-free policy in low income housing, high collective efficacy could influence smooth implementation of the policy if there is a general sense that neighbors want the policy and are willing to abide and/or enforce it; or the introduction of a smoke-free policy could undermine collective efficacy if the policy pits smokers and non-smokers against one another. Similarly, the policy may strengthen self-efficacy by providing a vehicle to advocate for a

smoke-free property or support smokers who want to quit, or the policy could weaken self-efficacy of non-smokers if the policy is not consistently enforced, or smokers feel they lose agency in choosing where they smoke.

This mixed-method study examined the perceptions and experiences of residents and staff within low-income properties who adopted a 100% smoke-free campus policy ahead of HUD's nationwide rule to 1) understand how self- and collective efficacy influence and are influenced by the policy; and 2) provide insights for housing providers and public health practitioners working to implement and evaluate smoke-free policies. Quantitative surveys evaluated self- and collective efficacy as they related to the smoke-free policy before policy adoption and 6 months post-policy adoption. Qualitative data were collected 12-months after policy adoption.

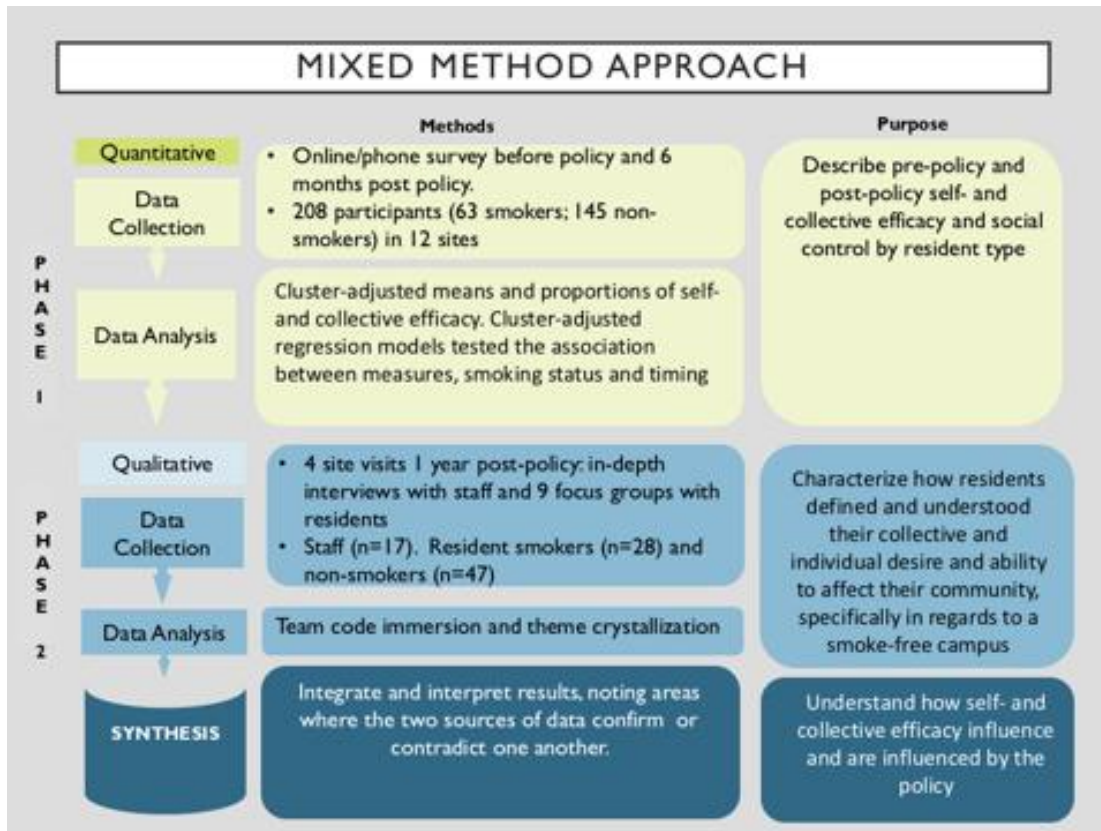
II. Methodology

Study Approach

We employed a sequential mixed-method study approach, whereby findings from quantitative surveys inform qualitative data collection and analysis (Figure 3.1) (Ivankova, Creswell, and Stick, 2006). The quantitative closed-ended questions described self- and collective efficacy measures and how they differed over time and by smoking status. The qualitative interviews and focus groups illuminated the survey findings with an in-depth exploration of how residents defined and understood their individual and collective autonomy and ability to affect their community¹ (Fetters, 2013; Castro, 2010).

¹ All references to 'community' in the study were at the housing property level.

Figure 3.1. Mixed Method Approach



Study setting and sample

This study took place at HUD-assisted properties owned by a private company. Smoking is prohibited within 15 feet of the campus (all indoor and outdoor areas). The management company surveyed residents before deciding to go smoke-free. Company decision-makers created a steering committee made up of various levels of staff to determine key aspects of the policy including enforcement, education and support strategies. They announced the policy in August 2015, for enactment to begin August 2016. The management company’s year-long planning phase included changes to leases and a series of community meetings to inform residents about the policy.

Twelve of the company’s 52 housing development sites, located in 4 states (MA, CT, VA, & MD), were randomly selected by strata: geography (New England and mid-Atlantic), type of property

(family or elderly), and size of the property. Quantitative surveys were collected from the 12 sites 2-3 months before policy adoption, and 6-months post-adoption.

Four of the 12 properties were then selected for qualitative data collection. Property eligibility criteria included: at least 20 apartments, family housing, and located in Massachusetts. From this list, we used a maximum variation sampling approach (Kuzel, 1999) to ensure that the sample included a diversity of geographic locations, age of properties, and housing type. We then used purposive-stratified sampling (Kuzel, 1999) to identify focus group participants based on smoking status. Residents 18 years and older were recruited to the study through fliers, announcements in monthly written newsletters, at property events, and by word of mouth.

We held four focus groups with residents who were smokers (n=28) and 5 groups with non-smokers (n=47). Seventeen one-on-one interviews with property staff were held: four Property Managers; four Resident Service Coordinators; four Maintenance Managers; three Patrol Officers; and two 'other' staff who self-identified as smokers and wanted their perspective to also be heard.

Measures. This research is informed by principles of community building (Minkler, 2014) and collective efficacy (Sampson, 2012). We used Robert Sampson's construct of collective efficacy because it includes *social cohesion*, defined by the extent that people feel they can trust their neighbors and share their same values, and *social control*, which is shared expectations for social action (Sampson, 2012). These concepts are compatible with previous studies of social capital and smoking (Andrews, 2014) as well as the youth empowerment framework for tobacco control developed by The Legacy Foundation (Holden, 2004). Data collection instruments were reviewed by experts and members of the community, pilot tested in one comparable site, and slight modifications were made as appropriate.

Quantitative measures. Collective efficacy was measured with a modified version of the Raudenbush & Sampson's *social cohesion* scale where we selected 4 of the 5 original items, and modified the answer categories from a 5-point Likert scale to a 3-point Likert scale to be more consistent with other scales in our study and easier to conduct using a phone survey. In our sample, internal consistency reliability (coefficient alpha) was 0.73 at baseline and 0.77 at follow-up which is typically satisfactory and suggests

a relatively good inter-temporal reliability (Devellis, 2012). Respondents reported how strongly they agreed on whether 1) people are close, 2) willing to help their neighbors, 3) can be trusted, and 4) generally get along with each other (Raudenbush & Sampson, 1999). *Social control* was measured as whether respondents had participated in a specific meeting about the policy in the past 12 months and whether post-policy the community was a better/worse/same place to live. *Self-efficacy* was measured as the extent that respondents felt they had an impact in making their housing complex a better place to live, responses were dichotomized to moderate/big versus no/small impact (SCBS, 2017).

Qualitative assessment. Questions of collective efficacy were examined with a series of open-ended questions to both staff and residents about how well neighbors got along and trusted one another, staff-resident relationships, and how residents exercised control in their community. These topics were assessed broadly and then more specifically vis a vis the smoke-free policy. We also examined what residents like/didn't like about living in their property. Self-efficacy was explored with a series of open-ended questions that focused on residents' sense of agency in their ability to control their physical and social environment, particularly as it related to engaging with staff and other residents around the smoke-free policy (sample questions in Table 3.1).

Table 3.1. Sample questions of self- and collective efficacy (without probes)

- | |
|---|
| <ol style="list-style-type: none"> 1. In what ways has the policy impacted you personally? 2. Tell me about the ways [the management company] has shared information about the smoke-free policy. 3. What have they done to get your opinions and input into how the policy would work in this community? 4. Have you or any residents you know been involved in helping people get connected to these services? 5. How do you feel about how the property staff have enforced the policy? What have been residents' role in enforcing? 6. What's good about living here? And bad? 7. How do residents generally get along with one another? 8. How much do you think residents trust one another? what helps people around here trust one another? what makes it more difficult? 9. In what ways, if at all, has the smoke-free policy affected the overall feeling between neighbors? 10. Overall, thinking about residents as a group – more than just you - how much say do residents have in what goes on at this property? 11. In what ways do residents voice their concerns? As individuals? as a group? 12. How much do you think the residents and staff trust one another? Does this differ by staff member? Are there some trusted more/less? Why? What supports trust? what erodes it? |
|---|

Data analysis

Statistical analysis described the sample and provided cluster-adjusted means and proportions of the self- and collective efficacy measures. Cluster-adjusted regression models tested the association between measures and smoking status and timing. All quantitative analysis used STATA 12.0. Qualitative analysis used a theory-driven immersion/crystallization analytic process whereby we cycled through stages of examining portions of the raw data in great detail and then identified patterns and themes, framed by the concepts of self- and collective efficacy (Borkan 1992). Coded reports were then shared with a four-member research team where they sorted themes or topic areas with thoughts and illustrative quotes, allowing for patterns to emerge. These summaries were then discussed with the wider research team, whereby the data analysts went back to the transcripts to examine other ideas and themes as appropriate. This iterative process was considered complete when no new themes were generated from transcript review and discussion.

III. Results

Participant Characteristics

A total of 208 residents participated in the quantitative survey; of those, 63 (30%) were smokers, and 145(70%) were non-smokers. Most of the survey participants were female (86%) and without children living in their home (74%). On average, residents had lived in their respective neighborhood for 5 years. A total of 74 residents participated in the focus groups. Of those, 28(37%) were smokers, females (67%) and without children <18 years old living in their home (76%). Just over half of participants categorized their race as White (56%), 25% as Black, and 19% as mixed race or other. More than half the participants either had a high school degree/GED (33%) or did not complete high school (19%). The average age was 54 (range: 20-86) and the number of years living in the community was 12 (range: 0-61). Compared to survey respondents, there were a greater proportion of men and White non-Hispanics in the focus groups. For neither the survey nor focus groups did participant characteristics differ significantly by smoking status (table 3.2).

Table 3.2. Demographics of Study Population

	Quantitative Survey Participants (n=208)		Qualitative Focus Group Participants (n=75)	
	n	%	n	%
Smokers	63	30%	28	37%
Female	178	86%	50	67%
Children <18 living in home	75	36%	18	24%
Hispanic/Latino	39	19%	19	25%
Race				
Black	92	44%	19	25%
White	76	37%	42	56%
Mixed/Other	29	14%	14	19%
Education				
<HS	34	16%	14	19%
HS/GED	70	34%	25	33%
Tech/some college	60	29%	16	21%
College	43	21%	18	24%
	Mean (range)		Mean (range)	
Age	54 (18-91)		54(20-86)	
Years living at property	TBD		12(0-61)	

Quantitative Survey Findings

Among survey respondents, smokers and non-smokers reported similar levels of social cohesion at baseline, but at follow-up, the resident smokers reported a statistically significant decrease from a mean of 2.3 at baseline to 1.9 at follow-up ($p=0.001$), while there was no change among non-smokers. Similarly, at baseline 58% of smokers and 67% of non-smokers felt they could make a moderate/big impact, but at follow-up far fewer smokers (35%) expressed this view compared to non-smokers (60%) ($p=0.003$). There was a similar level of attendance at community meetings regarding the smoke-free policy by smoking status (36% of smokers; 43% of non-smokers). There were also significant differences in responses about whether the community is better/worse/same since going smoke-free. Twenty-nine percent of smokers thought the community was worse compared to 6% of non-smokers; while 51% of non-smokers thought it was better compared to 19% of smokers ($p<0.001$) (Table 3.3).

Table 3.3. Self- and Collective Efficacy Measures by Smoking Status and Time

	Overall Mean(95% CI) Or % N=208	Smokers N=63	Non-smokers N=145
Social Cohesion (1)			
at baseline	2.3 (2.2, 2.4)	2.2(2.0, 2.4)	2.3(2.2, 2.4)
at follow-up	2.2 (2.1, 2.3)	1.9(1.6, 2.2)	2.3 (2.1,2.5)
Moderate/big impact in making community a better place to live(2)			
At baseline	64%	58%	67%
At follow-up	52%	35%	60%
Attended a community meeting about policy	41%	36%	43%
Since going smoke-free community is(3)			
Better	41%	19%	51%
Worse	13%	29%	6%
Same	46%	52%	43%
(1) Change from baseline to follow-up was significant for smokers: p=0.001 At baseline there was no significant difference in social cohesion score by smoking status At follow-up difference there was significant difference in social cohesion score by smoking status: p=0.04			
(2) Change from baseline to follow-up overall and for each smoking category: p<0.01 At baseline, no significant difference by smoking status At follow-up, there was a significant difference by smoking status: p=0.003			
(3) p<0.001			

Qualitative Assessment

Individual agency and self-efficacy

In general, most residents felt they could not afford to move from the property. They felt fortunate to have their housing, which many had waited for years on the waiting list before gaining a slot. In addition, most residents described safe, clean, pleasing grounds, and convenient locations. They appreciated the social activities available to them -- from Zumba, to a swimming pool, to flag football for their children -- even if they did not actively participate. The value placed on the property motivated some smokers to comply with the policy, even if they were unhappy with the rules:

I love livin' in this building. It's like everywhere: there's rules and there's certain stuff that you ain't gonna like. You just gotta deal with it.

- Resident smoker

While others were defiant and felt that to maintain their rights they would continue to smoke.

Inside the apartment, I'm allowed to do what I wanna do, as long as I'm not breaking the law.... I'm the type of person, I don't like to be controlled. If you tell me, "Don't do it," I'm gonna do it.

We know right from wrong, so who are you to deprive that from us? The next thing is they're gonna come to my house and tell me what time to go to bed.

- Resident smoker

Similarly, reactions to the policy among non-smokers differed. Some felt powerless when smoking residents violated the policy, while others felt that the policy emboldened them:

Tenants had to sign [lease addendums] in order to stay here which stated that it was a no smoking development. The landlord is renting you the apartment under the fact that you're not gonna smoke. [One] has a right to call the office and make a complaint.

- Resident non-smoker

All residents, smokers and non-smokers alike, found it difficult to enforce the policy with their family and friends. Attempts to enforce it often added friction or raised the potential for loss of relationships. In fact, in one property, it was the smoking behavior of a guest that ultimately led to a non-smoker moving out.

She did try to explain the policy to her family, she wasn't willing to press it. It must be tough for you to tell your family not to come visit you. When it's family sometimes you're not comfortable saying, 'You can't do this in my house' [when] smoking is not seen as something super bad, especially if you can't smoke outside like most places.

- Resident Service Coordinator

Social cohesion and control

Neighbors reported getting along with one another, which tied into feelings of safety and social cohesion:

My neighbor, I can trust him, we say hi. We talk. We chitchat, and we're cordial. It's not like we're best friends, but we're cordial. Let me put it this way. We have kids. There's a lot of kids in our lot, right? We've got backup.

- Resident smoker

Most non-smokers felt the same level of trust about their neighbors and community both before and after adoption of the smoke-free policy. However, this was not the case for smokers, who felt that there was increasingly a culture of 'snitching' and a subsequent distrust of others.

Yeah, they just want maintenance and the rest of the tenants to fink on each other. That, I'm sorry, is gonna cause friction between your neighbors."

-Resident Smoker

The sense of vulnerability, along with the growing distrust among smokers, undermined their sense of social cohesiveness.

It's just discrimination. If you're gonna try to build a community of something, don't just pick on one thing, like a smoker. It's not fair.....It's not right

– Resident Smoker

While non-smokers did not report a lack of trust per se, they were ambivalent about being asked to help with policy enforcement. Many of the non-smokers were former smokers themselves, had a partner, child, or parent who smoked, or were close friends with smokers. They wanted a smoke-free environment but also felt a deep sense of empathy for smokers and wanted to maintain good relationships with their neighbors.

Social cohesion was also affected by the change in atmosphere among groups of smokers who normally enjoyed one another's company. They were angry to stand off property to smoke, and this spilled over into daily interactions:

Speaker 1: I used to sit outside under these foyers, there wasn't nobody that didn't smoke hanging with us. Only smokers sat out there. They had two orange painter's buckets. All of us used to put the cigarettes out with sand. Everybody was good about it, the smokers. They was more friendly. It was more outgoing. Now it's people feel like they're living in boot camp.

Speaker 2: Or concentration camp."

– Resident Smokers

One of the four properties had active and engaged residents. In this site, residents initiated bingo groups, holiday decorations for the common areas, meals-on-wheels, and recently had hosted a baby shower for one of the property staff. Yet participation was only among the older, long-time residents who were at the property when it only housed seniors. At the other sites, actions to better their property/community happened at the individual rather than collective level:

People are pretty private here. Yeah, I think it's a very clean, very responsive place. If you have a problem and if you talk to [Property Manager], she'll help you with it.

– Resident non-smoker

1st speaker: "Yeah, they had a little meeting for when the management changed, and barely even anyone went. Coming together really isn't our thing. [Laughter]

2nd speaker: It's true.

3rd speaker: I thought it was only me.

-Resident non-smokers

Resident engagement activities and thoughts for future action.

Residents were unclear about the purpose of the pre-policy resident meetings. The majority of smokers thought the meetings were going to be an opportunity to share their opinion and participate in decision-making, but were frustrated and confused when they realized decisions about the policy had already been made:

And that was that. It was nothin' you were gonna do about it and nothin' you was gonna say about it was gonna change it. It was gonna happen one way or another.

– Resident Smoker

Monthly newsletters provided information about the policy, and all residents were offered 6-week group cessation support. However, one year post-policy adoption, resident smokers were not convinced that the policy reflected a genuine concern for their well-being,

“There’s people in here that smoke crack. There’s people in here that drink. We have alcoholics. If they’re so concerned about the welfare and the caring of the community, why isn’t everything being addressed? Why are they going after the lesser evil?”

– Resident smoker

The majority of smokers wanted a say in the policy, especially whether they could have a designated smoking area and whether vaping would be allowed.

“If they said ‘no smokin’ in the apartment’, I would advertise for them but outside in the free air? I think we should have open air rights... At least say smoke 10 feet away from the building.”

– Resident Smoker

Non-smokers were equally vocal about wanting meaningful ways to support their neighbors. One non-smoker even attended the smoking cessation classes so she could be more informed about helping others, but most felt that they were not sure how to help.

Try to find programs for smoke free or using a nicotine patch or something. At the same time not violate other’s rights. Maybe have a have a group discussion with everyone, like once a month or something to see how things are going with the policies.

– Resident non-smoker

Local staff identified other ways that could have been useful to engage residents which they believe would have, in turn, supported self- and collective efficacy. One option was resident planning committees:

If you got together residents committees throughout the different properties and they could talk and send their opinions up to the top or even invite them to the home office and give their opinions, so it was more of a choice rather than, “This is what’s going to happen.”

– Property Manager

Staff also suggested training resident smokers, non-smokers, and recent smokers as ambassadors:

I didn’t feel like all of them were on board, and maybe getting 10 or 15 ambassadors that were really on board, maybe sending them through the cessation training, giving them more smoke-free training and having them be like a positive voice out in the community would’ve been a good way of doing it. “

– Resident Service Coordinator

Messages to residents also needed to be carefully considered. The term ‘smoke-free’ connoted to some a loss of rights, and a focus on ‘healthy living’ instead may have been seen as less authoritative and more positive.

Instead of saying, “smoke-free rollout,” it had to have been a different way of presenting it where smokers didn’t feel like, “Oh, well now I can’t live there.” Maybe it’s like a ‘smoke off property initiative’; more like ‘smoke elsewhere’.

– Property Manager

Discussion

This study found that smokers and non-smokers perceived a similar level of social cohesion (a sub-construct of collective efficacy) and self-efficacy pre-policy, but after the policy was implemented there was social cohesion and self-efficacy was negatively influenced for smokers. The majority of smokers in the focus groups felt less trustful of their neighbors and powerless to the policy change. Non-smokers’ perceptions of social cohesion remained the same after policy adoption, although in the focus groups they did report ambivalence with their role as enforcers; wanting a smoke-free environment but feeling empathy and respect for their smoking neighbor. While community members could be relied on

to protect each other's children playing outside, taking action to reduce those children's exposure to second hand smoke – which required a change in some residents' behavior for the perceived benefit of others – was not understood as a similar case of collective protection. Instead, action (expressed as a concern about “snitching”) was perceived to pit neighbors against one another, undermining collective efficacy. Although the management company made a substantial effort to plan and inform residents, it did not elicit input into how the policy was implemented, and more generally did not engage in collective decision making for the betterment of the property. This lack of input felt like an infringement of rights for smokers.

Previous work has shown that collective efficacy influences smoking behaviors, but how it affects those behaviors is at least partially dependent on a community's social norms. One study showed that when smoking was socially accepted, higher collective efficacy was associated with more smoking, and when smoking was not socially accepted, higher collective efficacy was associated with less smoking (Ahern, 2009). In addition, communities with high collective efficacy and norms against smoking may be effective in preventing smoking onset while causing individuals who are already smokers to feel more isolated (Karasek, 2012). This was the case in our study: where most residents wanted a smoke-free community, and there was relatively high social cohesion, smokers seemed keenly aware of being in the minority. These collective norms and efficacy influenced smokers' behaviors, prompting some smokers to comply with the policy and others to rebel against it. Shelby suggests that some urban poor, to maintain their sense of agency, often respond by being defiant, and that meaningful engagement born out of values of justice and respect can strengthen self and collective-efficacy (2016).

Our findings support the need for HUD-assisted housing to consider a multi-level strategy that combines the broad smoke-free policy with context-specific, targeted engagement of those that are most impacted – in this case, smokers who currently smoke indoors. Community building principles, with the explicit intention of helping both smokers and non-smokers define shared goals and strategies for implementation can create buy-in, ensure sustainability, and increase collective efficacy (Sorensen, 1998; Roussos, 2000; Kieffer, 2004). Strategies such as leadership development, community representation and

mobilization, have been promoted as essential elements in community based prevention efforts (IOM, 2013).

The qualitative findings of this study indicate that residents and staff would be open to such community building strategies. In fact, residents and staff provided concrete suggestions for how to meaningfully engage residents in policy implementation. They suggested that residents become decision-makers early in the process through strategies such as property resident committees and as resident ambassadors. HUD recommends that housing authorities engage residents – in particular, smoking residents – in key policy implementation decisions such as whether and where a designated outdoor smoking area can be placed, use of e-cigarettes, and community partnerships that would facilitate smoking cessation (HUD, 2014). Our study suggests that engagement of smoking residents in this way will enhance the successful implementation of the smoke-free rule. HUD has also identified promising approaches for resident engagement that seem to lend themselves to strengthening self and collective efficacy because the target is not smokers per se, but instead engaging residents in creating a healthier environment for everyone. For example, the Chicago Housing Authority trained residents to be Community Health Workers, with the primary focus of reducing childhood asthma. They were able to reduce home asthma triggers by 80% (HUD, 2014). This re-framing may help to prevent a potential negative impact of smoke-free rule adoption on the perceived social cohesion and self-efficacy among smokers that was observed in the present study.

This study also supports the need to measure self- and collective efficacy in addition to the health outcomes of second hand smoke exposure and smoking behaviors. Understanding how implementation of the smoke-free policy affects, in particular, smoking residents' perceptions of self- and collective efficacy can help inform what community building strategies can best avoid creating isolation and defiance in this important group. Future research should include robust multi-level quantitative methods to measure social cohesion, participation and perceptions of social control at the individual and property levels, while qualitative assessment should be used to further describe distinct social dynamics and property context.

A limitation of the study were the sparse quantitative collective and self-efficacy measures, and our measurement of them at the individual level. In particular, we modified the previously validated social cohesion scale which may have reduced its validity. However, the internal consistency reliability was still relatively high, and we included qualitative data to verify and illuminate the quantitative data. In addition, our findings may only be generalizable to privately managed low-income properties in Massachusetts. The properties were valued by residents because of their safety, upkeep, and support services. In more resource-poor environments, these benefits may be missing, potentially altering residents' overall opinions about cohesion and a positive living environment. On the other hand, the possibility of eviction from housing is likely a concern for anyone, regardless of property resources.

Despite these limitations, this research is novel in that it explicitly examines resident engagement in implementing the smoke-free policy. It uses a combination of quantitative and qualitative data to provide an in-depth assessment of how self- and collective efficacy of residents are influenced and influence a public health policy in low-income housing. With the HUD rule, this timely study offers practical suggestions for implementation and evaluation that could assist PHAs nationwide and the 2 million people they serve. Moreover, we hope that by bringing to light issues of resident engagement in the implementation of a smoke-free policy, such issues can also be considered and furthered elucidated when addressing other place-based social and public health policies.

References

- Ahern, J., Galea, S., Hubbard, A., & Syme, S. L. (2009). Neighborhood smoking norms modify the relation between collective efficacy and smoking behavior. *Drug and Alcohol Dependence*, (1-2), 138.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2006). *Toward a psychology of human agency*. Blackwell Publishing.
- Berkman, L. F., & Kawachi, I. (2000). *Social epidemiology* Oxford ; New York : Oxford University Press.
- Borkan J. Immersion/Crystallization. In: Crabtree BF, Miller WL, eds. *Doing qualitative research*. Research methods for primary care ; v. 3. Newbury Park, Calif.: Sage Publications; 1992.
- Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). *A methodology for conducting integrative mixed methods research and data analyses*
- DANCER, L. S. (1994). *Scale development - theory and applications - devellis,rf*
- Federal register. (2016). *Federal Register (National Archives & Records Service, Office of the Federal Register)*, 81(248), I.
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs-principles and practices. *Health Services Research*, 48(6), 2134-2156. doi:10.1111/1475-6773.12117
- Geller, A. C., Rees, V. W., & Brooks, D. R. (2016). The proposal for smoke-free public housing: Benefits, challenges, and opportunities for 2 million residents. *Jama*, 315(11), 1105-1106. doi:10.1001/jama.2016.1380
- Glanz, K., B.K. Rimer, and K. Viswanath (2008), *Health behavior and health education : theory, research, and practice*. 4th ed., San Francisco, CA: Jossey-Bass. xxxiii, 552 p.
- Hayward, E., Ibe, C., Young, J. H., Potti, K., Jones, P., Pollack, C. E., & Gudzone, K. A. (2015). Linking social and built environmental factors to the health of public housing residents: a focus group study. *BMC Public Health*, 15, 351. <http://doi.org.ezp-prod1.hul.harvard.edu/10.1186/s12889-015-1710-9>
- Hud secretary castro announces new rule making public housing smoke-free proposed rule open for public comment for 60 days* (2015). States News Service.
- IOM (2013). Evaluating Obesity Prevention Efforts: A Plan for Measuring Progress.*
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3.
- Karasek, D., Ahern, J., & Galea, S. (2012). Social norms, collective efficacy, and smoking cessation in urban neighborhoods. *American Journal of Public Health*, 102(2), 343-351. doi:10.2105/AJPH.2011.300364
- Kieffer, E.C., (2004) *Contributions of Community Building to Achieving Improved Public Health Outcomes*. Aspen Institute.
- Kuzel AJ.(1999) Sampling in Qualitative Inquiry. In: Crabtree BF, Miller WL, eds. *Doing Qualitative Research*. 2nd ed. Thousand Oaks, Calif.: Sage Publications; 33-45.
- Levy, D. E., Adams, I. F., & Adamkiewicz, G. (2017). Delivering on the promise of smoke-free public housing. *American Journal of Public Health*, 107(3), 380-383. doi:10.2105/AJPH.2016.303606
- Raudenbush, S. W., & Sampson, R. J. (1999). *Ecometrics: Toward a science of assessing ecological settings, with application to the systematic social observation of neighborhoods* Blackwell Publishers.
- Roussos, S.T. and S.B. Fawcett, *A review of collaborative partnerships as a strategy for improving community health*. *Annu Rev Public Health*, 2000. **21**: p. 369-402.
- Sampson, R. J. (2012). *Great american city : Chicago and the enduring neighborhood effect* Chicago ; London : The University of Chicago Press.
- Shelby, T. (2016) *Dark Ghettos: Injustice, Dissent and Reform*. Belknap Press
- (SCBS) Social Capital Benchmark Survey (2006) accessed on Feb 23, 2017 from: <https://www.hks.harvard.edu/saguaro/measurement/2006sccs.htm>
- Sorensen, G., et al., *Implications of the results of community intervention trials*. *Annu Rev Public Health*, 1998. **19**: p. 379-416.
- Tester, G., Ruel, E., Anderson, A., Reitzes, D. C., & Oakley, D. (2011). Sense of Place among Atlanta Public Housing Residents. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*, 88(3), 436-453.

Appendix A. Data Collection Instruments

Observation of Campus Form

Place:

Dates, day of the week and times of day visited:

In the comments box describe, where appropriate, how I see the areas being used and by whom.

	COMMENTS
INFRASTRUCTURE	
Type of campus (high rises, townhomes, mixed, other)	
Size of campus	
Approximate number of buildings	
Description of how the buildings look (materials, colors, uniform, eclectic, cheery, dismal, etc.	
Overall state of grounds	
Overall state of buildings	
Places to gather on the campus	
Places for recreation on the campus	
Lighting on the campus	

	COMMENTS
Other features	
Laundry facilities	
# visited	
General description	
Overall cleanliness	
Place to sit?	
Any evidence of smoking?	
Hallways	
# visited	
General description (color, lighting, etc.)	
Overall cleanliness	
Place to sit?	

	COMMENTS
Any evidence of smoking? (either in hallway or in units)	
Just outside of buildings	
# visited	
Overall description	
Place to sit?	
Any evidence of smoking?	
Just off property	
# visited	
Overall description	
Place to sit?	
Any evidence of smoking?	

Interview guide for **Maintenance and Security Managers**

Introduction

Thank you for finding time to meet with me. My name is Jodi Anthony and I'm from the Harvard School of Public Health.

As you know, we are conducting a study funded by HUD to learn about Beacon Communities experience in implementing a smoke-free policy. We are collecting information on the impact of the policy (by measuring smoke exposure and collecting surveys of smokers and non-smokers) as well as meeting with staff and residents to understand attitudes, behaviors, and the factors that help or hinder policy adherence.

*This interview will last no more than an hour. In order to be sure that I don't forget any of what you tell me today, I am planning to audio record the discussion. This recording will be kept very confidential, and no one outside of my study team will hear them. I also will be **taking some notes** during the discussion. **Do you feel comfortable with the recording?***

I'd also like you to know a few things about this conversation:

- *Participating in the conversation is your choice and if you do not want to participate, it will not affect your employment at Beacon Communities in any way.*
- *You may skip any questions that you do not want to answer or stop at any time.*
- *Other Beacon Communities staff may know that you are participating but no one will be shown your individual answers.*
- *I won't use any part of your name in reports or publications from this study.*

***Because this is a research project**, I would like to ask you to **review a consent form** that describes what will be going on today. This is the same form that you received recently by email. I'll review it as you take a look at your copy.*

*Do you have a **question** about this consent form or what we'll be doing today and with the information I hear during our discussion?*

A. Role and responsibilities

Now that we've finished the paperwork, let's begin by telling me about your role and responsibilities:

1. How long have you been with Beacon Communities? At this property?
2. Please briefly describe your role and responsibilities.

B. Personal readiness and Residents' opinions

First, I'd like a general sense of your opinion about the smoke-free policy:

3. What was your initial reaction when you heard BC was going smoke-free?
 - What do you think is good about having such a policy?
 - What isn't good or what's challenging about having the policy?
4. How has the policy personally impacted you? your work? (note: this may touch on much of what's asked about below)
5. What have been residents' attitudes towards the policy? How is this different between residents who currently smoke and residents who do not smoke? What other characteristics seem to influence attitudes?

C. Planning and implementation

Okay, let's dive into the activities you've conducted in planning and implementing the policy.

6. Briefly describe the activities your property has conducted for making this property smoke-free and your role in them? (see what they say, if anything – may not know)

(they may bring up: lease changes, cessation counseling, collaboration with partners – this will be interesting to see what they know of the larger plan but no need to probe – instead, focus on what maintenance and security are doing – make sure to include enforcement questions below)

- 6.a. How is the **policy enforced**? Who is responsible for enforcement? What has your role been? How comfortable do you feel in this role? Does your comfort vary by resident or situation?

Have you found that enforcement varies by resident? How does enforcement impact residents' desire for cessation counselling?

What have residents' roles been in enforcement? How has that worked?

Do you think the enforcement activities have changed relationships between staff and residents? In what ways?

7. What **training or guidance about the policy** have you been given and by whom?

What did you learn? How helpful was it in implementing your role in the policy? How have you put your training into practice? Have you shared what you've learned with other staff?

D. Resident engagement and opinions

8. In general, what structures or processes are in place for residents to voice their opinions about what goes on in this property?
9. What challenges remain in residents' support of the smoke-free policy? What would it take to overcome these challenges?
10. Beyond the smoke-free policy, have residents come together to make changes in the property?
What about in the broader neighborhood?
11. Have there been issues with a lot of disagreement among residents? How was it handled?

E. Monitoring and Support from Beacon head-office (how is this referred?)

Next I'd like to talk about support from the Beacon head-office.

12. In what ways does the Beacon head-office support your implementation efforts?
13. What processes are in place for you to share your concerns and/or ideas with the head office? To what extent do you feel your opinion is heard and acted upon by the head office?
14. Can you tell me about any opportunities you have to learn from the experiences of other properties? (what forums exist for learning from other maintenance managers? Security?) (probe: how satisfied? Like more/less/same? Etc)
15. What flexibility do you have in implementing the policy, if any?
16. Is there anything else you'd like to share about the system in place for monitoring and support from Beacon?

F. Organizational readiness and lessons learned

Given everything you've described:

17. What does it take to implement the smoke-free policy effectively?
probe: human, financial, material, and informational resources
18. Do you feel you have the resources to implement it effectively? What do you need that you don't have? What would it take to get those resources?
19. Is there anything about this specific property or team that makes it easier/difficult to implement the policy?
probe: past experiences/history, existing policies, culture,

20. Is there anything specific about Beacon Communities more generally that makes it easier/difficult to implement the policy?

probe: leadership, past experiences/history implementing change initiatives, existing policies, culture

21. What advice would you offer other PHAs who intend to implement a smoke-free policy?

Interview guide for *Property Managers and Resident Service Coordinators*

Introduction

Thank you for finding time to meet with me. My name is Jodi Anthony and I'm from the Harvard School of Public Health.

I am conducting a study funded by HUD to learn about Beacon Communities experience in implementing a smoke-free policy. We are meeting with staff and residents to understand attitudes, behaviors, and other factors that impact implementation of the policy.

*This interview will last no more than an hour. In order to be sure that I don't forget any of what you tell me today, I am planning to audio record the discussion. This recording will be kept very confidential, and no one outside of my study team will hear them. I also will be **taking some notes** during the discussion. **Do you feel comfortable with the recording?***

I'd also like you to know a few things about this interview:

- *Participating in the interview is your choice and if you do not want to participate, it will not affect your employment at Beacon Communities in any way.*
- *You may skip any questions that you do not want to answer or stop at any time.*
- *Other Beacon Communities staff may know that you are participating but no one will be shown your individual answers.*
- *I won't use any part of your name in reports or publications from this study.*

***Because this is a research project**, I would like to ask you to **review a consent form** that describes what will be going on today. This is the same form that you received recently by email. I'll review it as you take a look at your copy.*

*Do you have any **questions** about this consent form or what we'll be doing today and with the information I hear during our discussion?*

A. Role and responsibilities

Now that we've finished the paperwork, let's begin by telling me about your role and responsibilities:

1. How long have you been with Beacon Communities? And at this property?
2. Please briefly describe your role and responsibilities.

B. Personal readiness and Residents' opinions

First, I'd like a general sense of your opinion about the smoke-free policy:

3. What was your initial reaction when you heard BC was going smoke-free?
 - What do you think is good about having such a policy?

- What isn't good or what's challenging about having the policy?
4. How has the policy personally impacted you? your work? (note: this may touch on much of what's asked about below)
 5. What have been residents' attitudes towards the policy? How is this different between residents who currently smoke and residents who do not smoke? What other characteristics seem to influence attitudes?

C. Planning and implementation

Okay, let's dive into the activities you've conducted in planning and implementing the smoke-free policy. [they likely will have touched on some of these above]

6. So let's begin with **creating and planning** for the smoke-free policy.
 - In what ways did staff from this property contribute to the development of the policy? How were you involved?
 - How did residents become involved in developing the smoke-free policy? (probe: what worked/didn't?)

Probe: What do you think motivated residents to get engaged? Was there something specific that motivated them to get involved? What role(s) do the people who got engaged have in the property? (e.g. care about issue? Already involved in stuff?) Who's been hard to engage?
 - How were residents informed about the policy? What worked well/didn't? What could have been done differently?
7. Next, I'd like to discuss the **lease addendums**. What was the process for changing everyone's leases and how did the process go? What was your specific role? What was resident reaction?
8. Has this property provided any smoking **cessation counseling**? What's the process for recruiting residents for the counseling and providing the counseling? What's uptake been like?
 - Were you personally trained in smoking cessation counselling? [if yes...] Have you shared what you've learned with other staff? How? How are you assessing readiness to quit?
 - Do you have a sense of how residents help, or not help, their neighbors or friends to use the counseling offered?
9. Next, please describe your **enforcement activities**.

How is the policy enforced? Who is responsible for enforcement? What has your role been? How comfortable do you feel in this role? Does your comfort vary by resident or situation?

Do your enforcement strategies vary by resident or situation?

How does enforcement impact residents' desire for cessation counselling?

What have residents' roles been in enforcement? How has that worked?

Do you think the enforcement activities have changed relationships between staff and residents? In what ways?

10. Besides cessation counselling for X staff, what other **training or guidance about the policy** have your staff been given and by whom?

If they themselves received training: What did you learn? How helpful was it in implementing the policy? How have you put your training into practice? Have you shared what you've learned with other staff?

Have you had feedback from staff? What other training needs do you or your staff have that would help in the smoke-free policy implementation?

11. Have you or your staff collaborated with community partners or health centers in policy implementation or cessation counselling?

How satisfied have you been with the partnership? Why? What else could a community partner do that would be helpful?

12. Are there any other components in implementing the policy that I've missed?

D. Resident engagement and opinions

13. In general, what structures or processes are in place for residents to voice their opinions about what goes on in this property?

14. What challenges remain in residents' support of the smoke-free policy? What would it take to overcome these challenges?

15. Beyond the smoke-free policy, have residents come together to make changes in the property? What about in the broader neighborhood?

16. Have there been issues with a lot of disagreement among residents? How was it handled?

E. Monitoring and Support from Beacon head-office (how is this referred?)

Next I'd like to talk about support from the Beacon head-office.

17. In what ways does the Beacon head-office support your implementation efforts?

18. What processes are in place for you to share your concerns and/or ideas with the head office? To what extent do you feel your opinion is heard and acted upon by the head office?
19. Can you tell me about any opportunities you have to learn from the experiences of other properties? (what forums exist for learning from other property managers? Other RSCs?) (probe: how satisfied? Like more/less/same? Etc)
20. In what ways does the Beacon head-office team monitor your implementation of the policy? How does this work – are there specific benchmarks from Beacon that you have to meet? What happens if you're not meeting these benchmarks? What flexibility do you have in implementing the policy, if any?
21. Is there anything else you'd like to share about the system in place for monitoring and support from Beacon?

F. Resources required and Lessons Learned

Given everything you've described:

22. What does it take get people to adhere to the smoke-free policy?
probe: human, financial, material, and informational resources
23. Do you feel you have the resources to make this happen (get people to adhere)? What do you need that you don't have? What would it take to get those resources?
24. Is there anything about this specific property or team that makes it easier/difficult for policy enactment?
probe: past experiences/history, existing policies, culture,
25. Is there anything specific about Beacon Communities more generally that makes it easier/difficult for policy enactment?
probe: leadership, past experiences/history implementing change initiatives, existing policies, culture
26. What advice would you offer other PHAs who intend to implement a smoke-free policy?

Focus Group guide for *Residents*

I. Introduction

“Hello, thank you so much for coming. We’re from Harvard School of Public Health. My name is Jodi Anthony, and also here from our project team are xxxx xxxx.

As you have heard a bit about already, we are conducting a study funded by HUD *to learn about Beacon’s experience with their smoke-free policy. As part of this study we are meeting with staff and residents to understand your opinions about the smoke-free policy.*

We’d like to hear about **what you think about the policy and how it’s worked so far. We’re also going to ask questions more generally about what it’s like living here, relationships among residents and with Beacon.**

Has anyone been part of a focus group before?

OK, so let me explain how this will work. I will be **asking you questions** so that we can learn from you. Once we get started, our discussion will last **about an hour and a half**. Please remember that there are **no right or wrong answers**. The only thing I ask is that you **allow each other to speak their minds as we all have different experiences and different opinions**, and we want to be sure to hear all of yours. Also, it’s important that we all **speak one at a time** so that we can catch the entire discussion on the audio recorder.

In order to be sure that we don't forget any of what you tell us today, we are planning to **audio record** the discussion. These recordings will be kept very confidential, and no one outside of our project team will hear them. Team members will be **taking some notes** during the discussion also. After the focus group we’ll have the **recording transcribed**, and we will **only use your first name**. In other words, no one outside of our project team will ever know the full names of the people who contributed to this discussion today, and we won’t use any part of your name in an reports or publications from this study. In addition, we ask that you not discuss what other people said outside of this room. **Does everyone feel comfortable with the recording?**

OK, to begin, **because this is a research project**, I would like to ask you to **review a consent form** that describes what will be going on today. This is the same form that you received recently by email. I'll review it as you take a look at your copy.

Does anyone have a **question** about this consent form or what we’ll be doing today and with the information we hear during our discussion?

II. Ice breaker question

Now that we've finished the paperwork, let's start off by going around the table and I'll ask each of you to answer the same question.

1. Please tell us your first name only and how long you have lived here.

III. Your opinion about the policy

Great, thanks. So now as I ask further questions, we won't go around the table. Please join the discussion whenever you would like to. So, we're going to go into a lot of details about the policy, but I first want to just get an understanding of your overall opinion:

2. Please first just tell me about the policy....
 - Who does it apply to (residents, staff, guests)?
 - Where are people allowed to smoke?
 - What else do you know about the policy?
3. What was your initial reaction when you heard BC was going smoke-free?
4. How has your opinion changed overtime?
 - What do you think is good about having such a policy? (probe: second hand smoke?)
 - What isn't good or what's challenging about having the policy?
5. In what ways has the policy impacted you personally?
6. Have you noticed any changes in the amount of smoking happening on the property since the non-smoking policy started? (do people seem to smoke less/more/same? Inside/outside? Other?)

IV. Implementation of the policy

Next I'd like to discuss how Beacon Communities has implemented the policy.

7. First, please tell me about the ways that Beacon has **shared information** about the smoke-free policy. (probes: what did you like? dislike? what else could they have done?)
8. What have they **done to get your opinions and input** into how the policy would work in this community? (what's been good/bad about the activities? what could they do differently?)
9. Do you know of any activities they're doing **to help people not smoke?**
(if yes, what are they doing? have people participated, why/why not? what's been good/bad about the activities? what could they do differently?)

9.a. Have you or any residents you know been involved in helping people get connected to these services?

10. How do you feel about how the property staff have **enforced the policy**?
(what's been good/bad about the activities? what could they do differently?)

10.a. What have been residents' role in enforcing? What were the circumstances? What happened after a report was made?

IV. **Community Cohesion and Engagement**

Okay, now I want to talk more generally about what it's like living here at ZZZZ

11. Let's begin with first telling me about how residents generally get along with one another.
[probe: why do you say that?]

12. How much do you think residents trust one another? what helps people around here trust one another? what makes it more difficult?

13. In what ways, if at all, has the smoke-free policy affected the overall feeling between neighbors?

Okay, let's now turn our discussion to how residents and staff get along.

14. Overall, thinking about residents as a group – more than just you - how much say do residents have in what goes on at this property?

15. In what ways do residents voice their concerns?

probe: As individuals? as a group?

16. Can you think of a time when there was an issue that residents/staff worked well together?

Probe: What was it and why do you think you were able to collaborate well? acted as individuals or group?

17. Can you think of a time when there was an issue where staff/residents couldn't come to an agreement? What was it and what happened?

18. How much do you think the residents and staff trust one another? Does this differ by staff member? Are there some trusted more/less? Why? What supports trust? what erodes it?
probe: historical issues, previous policy and rule implementation

V. Overall advice

Given everything we've discussed:

- what's one thing that you would tell another property owner who is about to go smoke-free?
- What would you tell someone who was thinking of moving into the property?