Journal of Critical Public Health, **Volume 3 (2026), No. 3, pp. 4-19**

Research Paper

Drivers of rural inequities in nicotine and tobacco use: A qualitative study of emerging and early established adults in California's North State in the USA

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Rural residents throughout the Global North experience inequities related to nicotine and tobacco use, including heavier and more frequent smoking, compared to people living in urban areas. These inequities are evident in rural northern California, where the prevalence of smoking among adults is double that of the state average. To understand the social and structural drivers underlying these tobacco-related inequities, we conducted a qualitative study with 87 rural emerging and early established adults in California's north central and northeastern counties, who all had current or past experiences with nicotine and tobacco products. From a pattern- and constitutive-level analysis of the narrative data, we interpreted six themes related to the social and structural determinants of nicotine and tobacco use for younger rural adults in our sample: rural hardship, social acceptance of smoking, stigmatization of smoking, isolation, pleasure, and harm reduction amid competing crises. We contextualize these themes within the broader literature to illustrate the unique meanings and roles of nicotine and tobacco use within the lives of rural younger adults. By attending to these social and structural processes, public health can more effectively envision alternative approaches to tobacco prevention and treatment that simultaneously support overall health equity for rural adults.

Introduction

The prevalence of smoking in the United States (US) has decreased during the past five decades (Vuong et al. 2019), but this decrease has not been experienced equitably. One neglected population in tobacco research is rural adults, who experience substantial inequities related to nicotine and tobacco (NT) use

(American Lung Association 2012, Buettner-Schmidt et al. 2019, Cornelius 2023, Doescher et al. 2006, Doogan et al. 2017, Liu et al. 2016). Smoking is not only more prevalent among rural residents compared to urban residents (Cornelius 2023, Liu et al. 2016), but rural adults smoke more heavily, are more likely to use other NT products (e.g., smokeless tobacco), and are less likely to quit smoking than urban adults (American Lung Association 2012, Doescher et al. 2006).

In California – often considered a leader in tobacco control in the US – precipitous drops in smoking prevalence have been largely attributed to public health approaches that aim to denormalize tobacco use and the tobacco industry (CA Department of Public Health 2024). While these policies have been linked to broad reductions in tobacco use, they have also been associated with further concentrating the burdens of tobacco-related diseases and social stigmas within marginalized populations – including, for example, people who identify as LGBTQ2S+, people with lower socioeconomic status, and Native Americans (Bell et al. 2010, Marbin et al. 2021, Stuber et al. 2008, Wiley 2017). Similarly, for the relatively small proportion of the US population that lives in rural areas, studies suggest that reductions in smoking have lagged compared to urban areas (Cornelius 2023, Doogan et al. 2017). Consequently, rural communities experience inequities related to NT use (American Lung Association 2012, Buettner-Schmidt et al. 2019, Doescher et al. 2006, Doogan et al. 2017, Liu et al. 2016). This phenomenon is especially evident in California's rural north central and northeastern counties, often referred to as the North State (NS), where smoking prevalence among adults ages 18 and older is double that of the state (~20%) as a whole (Vuong et al. 2019).

Most adults who use NT products begin during adolescence or in young adulthood (Bernat et al. 2012, Mayhew et al. 2000, US Department of Health and Human Services 2012). As a result, many public health interventions are designed to prevent initiation and, therefore, target youth. However, limited research suggests that inequities in NT use, particularly smoking, may be especially prominent for emerging (18-25) and early established (26-35) rural adults. For example, US-based research shows that rural emerging adults are 27% more likely to smoke compared to urban emerging adults (American Lung Association 2012). Likewise, pooled data between 2020-2022 from CA suggest that both rural emerging and rural early established adults in California's NS are more than twice as likely to report current smoking compared to their counterparts in the CA general population (UCLA Center for Health Policy 2022). Despite evidence of rural inequities in smoking for these age groups, emerging and early established rural adults have received little attention in the literature. Consequently, little is known about the circumstances surrounding their everyday lives that may help to explain these inequities.

Studies have hypothesized several factors unique to rural settings in the Global North that may increase risk of NT use for all rural adults, including harsh socio-economic conditions (e.g., poverty, underemployment); favorable community, familial, and peer norms related to NT use; insufficient health and social services; a lack of reach of tobacco control and prevention efforts; and exposure to tobacco industry marketing (Agunwamba et al. 2017, American Lung Association 2012, Buettner-Schmidt et al. 2019). However, these factors remain underexplored (for exceptions, see Agunwamba et al. 2017, Bernat & Choi 2018), and they have not yet been considered within the context of emerging and early established adulthood. While research on NT use among rural emerging and early established adults is limited, a meta-ethnography of 30 studies examining smoking among young adults in general suggests that social identity construction during the transition to adulthood plays an important role in shaping the role of smoking. Smoking may function as a means of stress management, a performance of adulthood or rebelliousness, or as a way to cope with emerging responsibilities such as those related to family and finances (Poole et al. 2022).

But what happens to the meanings and roles of smoking when the social and structural conditions of rural locations intersect with the life transitions that characterize emerging and early established adulthood? Given that earlier stages of adulthood may be a particularly vulnerable period for rural residents (Fenton et al. 2022), it is crucial to better understand how emerging and early established rural adults interpret the meanings and roles of NT use in their lives. Only then can 'adjustments or new responses to prevention and cessation' be imagined (Greaves 2015, p. 1452). Because no framework

exists for understanding rural emerging and early established adults' inequities in NT use, we conducted an interpretative, qualitative study in CA's NS to uncover the social and structural drivers that may link rural settings to NT use for rural residents during these earlier stages of adulthood.

Drawing on cumulative disadvantage theory, we theorize that rural NT inequities are due to the systemic social and structural disadvantages unique to rural communities that accumulate over a person's life (Dannefer 2003, Ozga et al. 2021). Rural communities throughout the Global North are not homogenous, but they often share similar systemic conditions that disenfranchise the people who live there (Antin & Hunt 2025). Understanding these cumulative disadvantages and their links with NT use for emerging and early established adults can yield a holistic framing that depicts the ways in which rurality intersects with earlier stages of adulthood to compound disadvantage and sustain inequities in health. By uncovering the cumulative disadvantages affecting the lives of emerging and early established rural adults, we attempt to produce a rich and complex understanding from a single case that is theoretically generalizable to other rural communities similarly disenfranchised (Carminati 2018). Revealing these hidden systemic processes is essential for developing tailored tobacco prevention and treatment strategies that are compassionately grounded in the lives of emerging and early established rural adults.

Methods

Sample

This analysis is based on the narratives of 87 participants, ages 18-35, living in the NS region of California who participated in in-depth qualitative interviews exploring the roles and meanings of NT use among emerging (18-25) and early established (26-35) adults in rural areas. Eligibility criteria included English fluency, reporting any lifetime use of NT, being between 18-35 years old, and either currently living in the study area or having previously lived there and only moved within the past year. Data were collected between July 2021 and March 2023. Demographic details for the sample are provided in Table 1. Participants were predominantly white, heterosexual, and cisgender. The mean age of participants was 25.8 (SD=4.5). A little over one-third of participants had not attended any college. Based on multiple survey indicators, most participants were struggling with economic insecurity, and many had experienced other forms of socioeconomic adversity, including housing insecurity and difficulty accessing medical care (Antin et al. 2024). On a five-point scale from 'poor' (1) to 'excellent' (5), on average participants rated their general physical health as 3.0 (SD=1.0) and mental health as 2.6 (SD=1.2). The majority of participants reported past-month use of at least one NT product. Of those, most reported cigarette smoking (58.2%), 20.7% reported smoking cigars/cigarillos/little cigars, 12.6% reported using smokeless tobacco, and 55.2% reported nicotine vaping. To maximize variation of NT perspectives and experiences within the sample, we included a small proportion of participants who did not currently use NT products but did report lifetime NT use (17.2%) (Maxwell 2013).

Study Procedures

Participation involved a 30-minute online survey with a $20 honorarium, followed by an audio-recorded online Zoom or phone interview that ranged between 40 minutes to 2.5 hours, and included an additional $50 honorarium. We used a multi-tiered recruitment strategy involving posting flyers throughout the study area, paid social media and radio advertisements, outreach to local organizations, and paid referrals. To reduce sampling bias, each participant was limited to three referrals. Recruitment advertisements were visually attractive but simple in their design, stating that 'we are recruiting people ages 18-35 living in the NS to participate in a paid research study about nicotine and tobacco use.' Information about the honorarium was provided, along with a QR code to direct them to our study website. Volunteers were

screened online or in-person, and if eligible were then contacted by the project manager to receive additional information and schedule the interview. Prior to the interview, participants received a unique link to complete the study consent form and confidential online survey. The survey included demographic, community, and NT use questions.

Three local interviewers, who lived and worked within the study area and were within the age range of participants, were hired and trained to complete more than half of study interviews, contributing valuable community-based knowledge to the research process. The remaining interviews were conducted by experienced research staff with substantial qualitative interviewing expertise. The in-depth interview instrument began with questions about the participant's daily life and background, followed by a section focused on perceptions of their local communities and meanings of rurality. Next, the instrument was designed to elicit participant narratives about their various identities, before shifting into questions about their NT use practices, histories, and access strategies, as well as their perceptions of NT-related policies, family and community attitudes, health considerations, and social meanings. The final questions centered on pressing issues in the community and how these issues may relate to wellbeing. Interview questions were designed to be open-ended, with interviewers trained to probe for additional details or ask follow up questions to encourage further elaboration. See Appendix I for the Interview Instrument. All interviews were professionally transcribed and transcripts reviewed by interviewers for accuracy. Study procedures were approved by the Institute for Scientific Analysis' Institutional Review Board.

		N	**%**
Age Groups	18-20 years old	10	11.5
	21-25 years old	39	44.8
	26-30 years old	22	25.3
	31-35 years old	16	18.4
Gender	Man	44	50.6
	Woman	43	49.4
Sexual Identity	Straight or Heterosexual	61	70.1
	Gay or Lesbian	4	4.6
	Bisexual	21	24.1
	Unknown	1	1.2
Race/Ethnicity	Asian	1	1.2
	American Indian/Alaska Native	3	3.5
	Black/African American	1	1.2
	Non-Hispanic/Latine White	61	70.1
	Latine	13	14.9
	More than one race/ethnicity	7	8.1
	Unknown or not reported	1	1.2
Employment Status	Full time	24	27.6
	Part-time	29	33.3
	Unemployed, but looking for a job	22	25.3
	Neither employed nor looking for a job	5	5.8
	On disability	3	3.5
	Unknown or not reported	4	4.6
	Post graduate degree	2	2.3
Socioeconomic Status	Reported perceived SES below average	58	66.7

Housing Insecurity	Insecure housing, lifetime	53	60.9
	Insecure housing, past month	18	20.7
Insecure Income, Past Year	Evicted from your home for not paying rent or mortgage	2	2.3
	Did not pay the full amount of the gas or electricity bill	24	27.6
	Had a phone disconnected because payments were not made	25	28.7
Health Insurance	Currently covered by Medi-Cal or have no health insurance	61	70.1
General Perceived Physical Health	Poor	5	5.8
	Fair	21	24.1
	Good	29	33.3
	Very good	26	29.9
	Excellent	5	5.8
	Unknown	1	1.2
General Perceived Mental Health	Poor	16	18.4
	Fair	30	34.5
	Good	21	24.1
	Very good	12	13.8
	Excellent	7	8.1
	Unknown	1	1.2
Any Past Month NT Use		72	82.8

Table 1: Sample Characteristics (N=87)

Analytical Procedures

The research team coded all transcripts using qualitative analysis software ATLAS.ti to organize the data into analytically meaningful segments, which facilitates retrieval of relevant data for subsequent analysis targeting particular topics. The initial codebook included topical domains relevant to study aims (e.g., 'NT Use Practices,' 'Personal Background,' 'Local Area'), and was revised throughout data collection to capture additional salient topics in participants' narratives (e.g., 'Structural Issues,' 'Accessibility,' 'Class/SES'). The research team collaborated throughout the course of data collection and coding to identify themes related to the social and structural drivers of NT use, especially smoking, across participants' narratives. Our preliminary data analysis process included: a) regular, ongoing discussions about emerging themes; b) iterative readings of the data across multiple rounds of coding; and c) recording detailed analytical memos throughout data collection, coding, and analysis. Reflecting on our preliminary analysis, the lead author developed a list of initial themes related to the social and structural drivers of NT use among study participants, by interpreting relationships between the identified patterns. Next, the lead author and EP conducted a secondary analysis of narrative data germane to theorizing social and structural drivers of NT use in rural areas. They retrieved all narrative data indexed with the codes 'Rurality,' 'Structural Issues,' 'Accessibility,' 'Other Drugs,' 'Isolation,' and/or 'Stigma' which overlapped with 'Context of NT use,' 'Exposure to NT Use' and/or 'NT Use Practices' codes. Drawing on tenets of pattern- and constitutive-level analysis (LeCompte & Schensul 2013), they interpreted the following six themes related to the social and structural determinants of NT use: rural hardship, social acceptance of smoking, stigmatization of smoking, isolation, pleasure, and NT as harm reduction amidst

competing crises. Themes are described below and summarized in Appendix II using direct quotes as evidence from participants' interviews. All quoted narratives are attributed using pseudonyms selected by participants to ensure anonymity.

Findings

Rural Hardship

> It is not simply that there are multiple forms of disadvantage, but when those multiple forms clump together they create a deep and enduring form of hardship (Desmond & Western 2018, p. 309).

Hardship has long been implicated in NT-related inequities (Ozga et al. 2021), and yet little attention in public health has been paid to understanding the complexity of rural hardship (Conrad & Ronnenberg 2022), let alone its relationship to NT use. While participants in our study expressed gratitude for their communities and appreciation for the natural beauty surrounding them, they also described the lived experience of rural hardship as a backdrop to NT use, particularly smoking. For example, Loki, a 33-year-old father and veteran who does manual labor and smokes half a pack a day, discussed being laid off after a traumatizing wildfire destroyed his workplace and much of the town, leaving him trying to scrape together odd jobs to support his family. He described how conditions in some rural areas, including lack of industry and infrastructure, contextualize the hardships and sense of hopelessness that he perceives as contributing to rural smoking:

> There's a lot of hopelessness that goes along with the socioeconomic impact of living in a rural area that doesn't have any industry...The lifestyle up here is very rough...there's no internal infrastructure to get like, natural gas and stuff like that…Anyplace that's…socioeconomically poorly…you're gonna find a lot of smokers there…I've gone through the couch a few times to find change for a [cigarillo]…And I've known everybody else to do it too...Rich people don't smoke. They have more to live for...the top is a lot prettier than the bottom.

Managing stress and feeling stuck about one's ability to improve their current situation were often described as fundamental causes underlying the health and health behaviors of rural residents (see Appendix II, quotations A1, A2, A3). Data from the 2020 US Census suggests that NS residents are more likely to experience poverty compared to the CA general population (California Census Bureau 2020). A dearth of livable wage jobs combined with high housing costs in the North State further compounds disadvantage for the least privileged NS residents, making it extremely difficult to overcome rural hardship (Albrecht & Albrecht 2000, Antin et al. 2024). In geographically isolated rural regions where resources are scarce and challenges to daily living widespread, NT use, especially smoking, can offer a momentary sense of relief, essentially serving as a palliative in the face of ongoing hardship (see Appendix II, quotation A2). While not all study participants experienced the same level of rural hardship, even participants who experienced relatively more privileges (due often to generational family wealth) drew attention to the challenges facing those with fewer advantages, in some cases directly positioning NT use as a buffer against rural hardship.

Social Acceptance of Smoking

> [S]moking facilitates social connections with others who smoke, and can be normative group behaviour in certain circumstances (Dono et al. 2020, p. 241).

Participants emphasized widespread social acceptance of NT use, especially smoking, within their communities. John, a 28-year-old father who started smoking at age 11 and currently smokes heavily, said that 'pretty much everybody that I've had in my life has smoked…I grew up thinking everybody smoked…it just seems like a regular thing.' Given the role of community norms in perpetuating smoking, California has long spearheaded environmental-level approaches designed to shift such norms. Nevertheless, our participants described smoking as a 'regular thing,' suggesting that broad environmental approaches may be less successful in rural communities.

In addition to community-level acceptance, participants emphasized social group acceptance of smoking, especially within worksites characteristic of many rural NS communities. For example, John J., a 23-year-old man who lives with his parents due to high housing costs and mostly smokes pipe tobacco, explained:

> Being a firefighter makes [smoking] kind of normal for me…we'd get off of a call, and everyone would be there smoking…it didn't seem like it was a bad thing because you know, these are my role models…the people I look up to, and they smoke. And they're successful. So, why can't I? And then…the smoke exposure - it seems like it's no big deal because, 'Oh, well, I'm already breathing smoke. Why not breathe more?'…When I worked in the fire department, everyone smoked. When I worked a tree-harvest job, just about everyone smoked…

Social group norms related to smoking serve to reinforce group belonging. Yet such group norms do not emerge solely on their own, they are also shaped by external forces. For example, some participants observed that tobacco industry marketing likely influenced the products adopted within their social groups, a phenomenon far from overlooked in research on NT-related inequities in rural communities (Cruz et al. 2019). For example, Zach, a 23 year-old outdoor guide who used to smoke and now uses nicotine pouches, expressed his suspicion that the tobacco industry effectively promoted the adoption of specific nicotine products in his social group (see Appendix II, quotation B2).

Given the acceptability of smoking within both their communities and social groups, participants also stressed how not smoking could make you an 'outcast' (see Appendix II, quotation B1). Participants often attributed the widespread social acceptance of smoking to the acceptability of smoking across generations, particularly within one's family, leading to the intergenerational transmission of smoking, a phenomenon documented in the literature (Bierut et al. 1998, Kandel et al. 2015, Ozga et al. 2021, Vandewater et al. 2014). In rural communities, where generations of families are likely to live in close proximity, elder family members may have more influence on younger generations. For instance, Sara, a 20-year-old woman whose parents smoke and who herself recently switched from smoking to vaping, maintained that 'if everybody's grandparents and parents are smoking and it's not frowned upon…one day when you're of age and start smoking…nobody really says anything. It's just like, Okay. Well, now they smoke.'

Though the transmission of smoking across generations is well known, few scholars have sufficiently considered precisely why it is so difficult to disrupt this legacy. One contribution is Thirlway's (2016) ethnographic research in a rural coal mining town in the North of England where she found smoking to be symbolically important for young women to emotionally connect with their mothers. Due to this affective meaning of smoking, Thirlway suggests that cessation may risk fracturing social relationships that are nurtured by smoking, a phenomenon that we observed in interviews particularly with young women (Thirlway 2016). For example, take V, a 24 year-old woman living with her mother after recently being released from prison and recovering from a decade-long heroin addiction. Although V doesn't 'associate' with most of her large family, which she described as 'full of felons' and 'addicts,' V regularly smokes with her mom and explained how smoking together provides a meaningful time to connect (see Appendix II, quotation B3).

Social Stigma of Tobacco

> The goal of the California Tobacco Control Program is to change the social norms surrounding tobacco use…by creating a social milieu and legal climate in which tobacco becomes less desirable, less acceptable, and less accessible (CA Department of Public Health 2024).

Despite the social acceptance of smoking within their communities, social groups, and families, participants suggested that people who use NT products are simultaneously vulnerable to tobacco-related stigma. Some participants, especially those with more privileges and who were less likely to smoke cigarettes, reluctantly admitted pejorative stereotypes about people who smoke. For example, Maria, a 22-year-old woman from a relatively privileged background, had never smoked cigarettes but qualified for the study because of her lifetime blunt [an emptied cigar or other tobacco-based wrap filled with cannabis] use and reported nicotine vaping. She described associating cigarette smoking with 'white trash' from 'a small, really hick town' who are 'not really caring about other people.' Her comments illustrate how tobacco-related stigma often reinforces class-based stigmatization, potentially resulting in troubling consequences for people who smoke. For instance, already hard-to-access socioeconomic opportunities may be further diminished in a small community where there is an increased likelihood of being 'caught' smoking by people in positions of power who control access to opportunities (see Appendix II, quotation C1).

The stigmatization of tobacco can also result in other social consequences, especially for women who internalized the belief that tobacco use was not 'ladylike' or 'classy' for them. For example, V (introduced above) explained that one of her few social connections wants her to stop smoking so she can conform to 'proper' femininity: 'a woman is supposed to be clean and gentle and smell good and ... cigarettes have a more masculine air to them.' Similarly, Anna, a 24-year-old woman who began using chew at age 9 with her father, switched to cigarettes at age 14 to avoid being viewed as overly masculine by peers. She only vapes now when she is stressed and described how her gender and previous experiences with homelessness encouraged her to shed her smoking habit so that she could be perceived as 'a classy person' (see Appendix II, quotation C2).

Tobacco-related stigma can operate as a structural determinant of smoking for pockets of Californians experiencing cumulative disadvantages and who may be unwilling or who lack the resources they need to quit. This may be due, in part, to the way in which stigmatization processes intentionally relegate people who smoke to the margins of society, which has the unintended consequence of creating 'smoking islands' where smoking is reinforced rather than discouraged (Barnett et al. 2017, Thompson et al. 2007). For example, Jenna, a 27 year-old woman who works multiple jobs and is trying to establish a career in recovery services, explained how her vaping and occasional smoking impacts how she is viewed professionally and also who she feels comfortable being around:

> [Smoking's] just frowned upon, like professionally. There's just a lot of stigma to it…It's just hard for me because I do…have…a professional career and try to be a part of the community…But then it's hard because there's other people that are…constantly judging me. So then I feel kind of safe with the other people who do smoke, because they're more openminded and nonjudgmental.

Social Isolation in Rural Communities

> The health and societal impacts of social isolation and loneliness are a critical public health concern in light of mounting evidence that millions of Americans lack adequate social connection in one or more ways (US Office of the Surgeon General 2023, p. 9).

Participants' narratives frequently touched on experiences with social isolation, often as a result of living in geographically isolated communities, as a reason for smoking. For example, Bob, a 31-year-old father

who quit smoking and vaping upon becoming a self-identified orthodox Christian, unequivocally attributed inequities in rural smoking to 'isolation':

> Isolation...most of the time when I see people smoking…it's more on the outskirts…because there's not a large amount of people who are close to each other all the time and then interacting with each other, having real human interaction…that was a large part of the reason that I turned to it. I was like, 'Well, [I'm] on a break', and I didn't really connect to the people at work or - I was living out in [tiny town]…sort of a disaffected, young adult. Isolation just sort of kept me [smoking].

While strong, close-knit communities are often described as a part of the 'rural idyll,' Sherman (2023) has argued that "'rural" and "tightly knit" are not synonymous' due in part to the social inequalities that that exist within rural communities (Sherman 2023, p. 130). In her ethnographic work in the US's rural Pacific Northwest, she found that poorer residents faced several structural barriers that undermined 'their abilities to create and maintain social support,' which is a profoundly important resource for surviving in under-resourced rural communities (p. 112). Interviews with our participants further emphasized the health-compromising legacy of social isolation, which included anxiety and depression as well as smoking as a tool for coping (see Appendix II, quotation D1). For instance, V, introduced above, described living in an area that's 'very secluded' and gives her 'anxiety,' causing her to smoke 'way more cigarettes' especially at times when she doesn't have access to cannabis.

In 2023, the US Surgeon General issued an advisory drawing attention to social isolation as a pressing public health problem, arguing that the lack of social connection 'can increase the risk for premature death as much as smoking up to 15 cigarettes a day' (US Office of the Surgeon General 2023, p. 8). The advisory also suggests that rural residents may be especially affected, though acknowledges that more research is needed. Our study supports the salience of social isolation for emerging and early established rural adults and illustrates how smoking may be perpetuated within this context, further compounding the health effects of rural social isolation.

Pleasure

> …expecting people to voluntarily give up what might be seen as small pleasures, or the only ones they perceive that they have, is asking a lot (Thompson & Coveney 2018, p. 123).

Our participants, especially those in geographically isolated communities with limited opportunities, often brought up boredom as a feature of rural life that contributes to smoking (see Appendix II, quotation E1). Relief from boredom, as well as from feelings of hopelessness or 'being stuck,' may be important pleasurable aspects of NT use alongside the more obvious perceived physiological effects like enhancing mood and temporarily reducing stress. For example, Scarlett, a 20-year-old woman who works a foodservice job and vapes infrequently, explained how NT use was a pleasurable way to escape boredom in rural places where leisure and recreational opportunities are lacking:

> I think, in a rural area, why so many people smoke is because there's really…not much to do besides like, just sit there…and hang out with your friends…So, they say, 'Oh, you don't need substances to have fun.' Yeah, you don't, but they do make it more fun. You know? Plus, it's just like something to do.

The pleasures participants associated with NT use – from escaping 'boredom', to experiencing a 'rush', to enjoying relaxation – were also described as being more accessible and affordable forms of pleasure for lower income rural residents, a phenomenon observed in other studies of people living in poverty where smoking is 'the only pleasure they can afford' and 'the one thing that offers them "a little moment of happiness"'(Peretti-Watel & Constance 2009, p. 618). See also Appendix II, quotation E2.

Jane, a 27-year-old mother who quit smoking upon having kids but recently picked up vaping, explained that in her community:

> The cost of living is the biggest problem…not having…the opportunity to spend money in the ways that they want…they spend the money in the ways that they think they need…It's like, 'Oh. I can't afford to take a trip. I'm going to instead just go buy a six pack and a pack of smokes.'…Because they look at it as 'Well, this is what I can afford to be able to have a better…day or a better week.'

If we ignore the pleasures experienced from NT use, our public health efforts risk becoming disconnected from people's actual needs and experiences, compromising their reach and their ability to eliminate NT-related inequities.

NT as Harm Reduction Amid Compteting Crises

> Long-term drug users often encounter health and social problems…Left largely on their own, drug users must devise their own ways of solving problems in a practice of self-care (Duff 2015, p. 94).

Participants, many of whom discussed personally struggling with addictions to illicit drugs, saw drug abuse as a major issue in many of their communities, often associated with overdose-related deaths, debilitating addiction, dysfunctional intoxication, psychosis, and/or crime such as DUIs, assaults, and theft. Within this context, NT use was not perceived as equally concerning (see Appendix II, quotation F1). For example, Tom, a 28-year-old father who was proud that he had switched to vaping from smoking at age 24, compared his own drug use practices to those of other young adults in his community:

> I feel like I'm doing good that I don't smoke cigarettes anymore. Most people my age are on f*ckin' meth…are on the streets, don't have their own car, don't have their own house. Most people my age are doing that right now...So, I'm proud of myself, man. I could be out killing people. I could be out robbing people. I could be out doing all that crazy stuff. But I work every day and come home…I feel like I'm doing good...

Not only did participants describe smoking as relatively trivial given widespread problems with drug abuse, but in some cases, participants described smoking as a direct and intentional substitute for their other drug use which they were trying to cut down on or quit entirely. For example, Christine is a 33-year-old mother who used to use meth and currently smokes a pack a day, occasionally also vaping at work. She explained that she regularly encounters meth-related triggers in her life and community that are challenging to overcome, so she smokes cigarettes and practices psychological techniques she learned in treatment to support her recovery from meth (see Appendix II, quotation F2). For participants like Christine, smoking filled the space and time left over after stopping their use of other drugs or helped them cope with cravings. Perhaps the mildly intoxicating benefits of nicotine that enable 'individuals to maintain normality rather than escape it,' (Keane 2020, p. 54) positions cigarette smoking as suitable substitute for other drug addiction.

Although smoking certainly carries its own stigma (Bell et al. 2010, Stuber et al. 2008), participants' narratives suggest that NT may still be perceived as a comparatively manageable risk in the context of other competing crises, namely illicit drug abuse. When other forms of intoxication are viewed as more harmful, disruptive, and incompatible with daily responsibilities, NT use can become a more desirable option. The possibility that NT use poses more predictable or longer-term risks compared to the use of other drugs warrants further consideration, particularly given tobacco's legal availability and the widespread concern surrounding drug use in many rural communities (Peterkin 2022).

Conclusion

Participants in this study positioned their own NT use within a context of cumulative disadvantages marked by rural hardship, where inadequate industry and infrastructure further compounded the effects of geographic isolation. Furthermore, geographic isolation can heighten the negative impact of social isolation for rural residents who have little social capital and are living in poverty (Sherman 2021). Participants in our study described how social isolation within their communities served as a catalyst for psychological distress and ill health. In this context, smoking served as an accessible source of pleasure and stress relief, as well as a practice of self-care for some participants, though such beliefs may conflict with mainstream public health perspectives. Alternative public health approaches in response might incorporate components designed to address features of rural cumulative disadvantage and social isolation. For example, approaches that increase access to affordable housing (Antin et al. 2024), assist in the development of local job opportunities, provide social opportunities and support, seek to reduce stigma through compassionate approaches, and acknowledge the importance of pleasure can benefit rural communities and overtime filter down to ameliorate tobacco-related inequities.

The themes interpreted from our participants' narratives also draw attention to the conflicting discourses in which NT use emerged as meaningful within people's everyday lives. Specifically, across interviews, smoking was described as both stigmatized and normalized, as a behavior that could both jeopardize and solidify social connection, as a coping strategy for social isolation even as it simultaneously created opportunities for belonging, and as both a practice of pleasure and a means for managing addiction. These tensions illustrate how smoking is wrapped up in negotiations of risk, identities, and self-care. As previous research has shown, ambiguities can reveal different lenses through which people make sense of their experiences and behaviors, shedding light on the complexity of the human experience (Antin et al. 2015, Watson 2006).

Within public health, we often attempt to isolate a single predictor (e.g., social isolation) of a particular outcome (e.g., smoking), yet the present analysis reminds us that such relationships are dynamic and shifting. Social isolation, for instance, is not a static concept that either exists or not, but its relevance and importance shift depending upon the context. One might be fortunate to have the social support of their family yet still experience profound isolation due to geographic distance, constrained resources, stigma, or societal marginalization. Likewise, the stigmatization of smoking may be deeply felt within workplaces or through tobacco control policies, while smoking simultaneously operates as a valued social practice. Together these themes remind us that NT use cannot be understood apart from the intersecting social and structural conditions that shape rural life, particularly for those who experience cumulative disadvantage at a time in their lives when they transition into adulthood.

Finally, it is important to acknowledge the ways in which some groups of people—particularly those who are historically marginalized such as people who use drugs, rural populations, women, people living in poverty—create 'counterdiscourses' that may conflict with mainstream public health values but that are nevertheless grounded within people's 'identities, interests, and needs' (Warner 2002, p. 85; see also Balshem 1991, Race 2009). For example, some participants used NT to help them maintain abstinence from other, more immediately life-threatening substances. In rural communities impacted by disastrous consequences of opioids and other drugs – especially deaths from overdose – achieving abstinence from NT may be understood as relatively trivial, and even harmful for people who struggle to abstain from other substances simultaneously. By working to understand the various meanings of NT use that may conflict with dominant public health messages, it becomes clear that public health efforts which stress abstinence from nicotine along with the protracted risks associated with NT use may have little effect on people who perceive far more immediate and severe risks to their everyday lives. It is only through an empathic understanding of the perspectives of people who continue to use NT products that we can envision alternative and more equitable approaches to supporting the health and wellbeing of populations experiencing NT-related inequities.

Acknowledgments

This manuscript has a history shaped by the contemporary political context in which public health research is produced and disseminated in the USA. We withdrew an earlier accepted version of this manuscript from a federally-affiliated US public health journal in 2025 due to editorial direction during the proofing stage to remove or modify language deemed out of compliance with presidential executive orders. We acknowledge this history to underscore the importance of journals, scholars, and communities committed to adhering to principles of scientific integrity and preserving critical, independent, and equity-oriented public health research.

Sincere appreciation is due to the participants who volunteered their time and stories to us. Without them, this research would not have been possible. We would also like to thank co-author, Shelly Brantley's many colleagues at RISE, the Rural Initiatives Strengthening Equity project of the California Health Collaborative. We are so grateful for their support and guidance throughout the study. Additional appreciation is due to Ida Wilson, the study's initial Project Manager, who contributed greatly to the project, including troubleshooting recruitment issues, managing data collection, and providing ongoing support and training to local interviewers.

Generative AI was used sparingly in the preparation of this manuscript to improve the clarity of some sentence phrasing.

Funding

This research is supported by funds from the Tobacco-Related Disease Research Program (TRDRP), grant number T31IR1513 (Tamar Antin, PI). The content provided here is solely the responsibility of the authors and does not necessarily reflect the opinions of TRDRP.

Conflicts of interest

N/A

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Appendix I – Interview Instrument

I. Circumstances of Participant's Everyday Life

A. Introductions and Background

1. Just to start off, can you tell me a little bit about yourself? *[Probes: How would you describe yourself? How would you describe your personality to someone who doesn't know you? What are some things about you that you think are important for people to know?]*
2. Where did you grow up? What was it like growing up there? *[If different than current location, probe: How was it different than living where you do now? Tell me about the people in your community. What brought you here/to this area?]*
3. Tell me a bit about your family. [*Probe: Who did you grow up with? How connected are you to your family at this point in your life?]*
4. What is your daily life like? [*Probes: Do you work, go to school? How do you spend your time? Where are some places you often go? Who are people you see regularly?*
5. Are there any challenges in your life related to wellbeing or living well?

B. Local Area and Perceptions of Rurality

1. Can you tell me a little bit about where you live? [*Probes: How do you refer to the area where you live? What is your current living situation?]*
2. How big is the city/town where you live? [*Probe local resources and infrastructure by asking about setup of the town - especially access to schools, medical care, grocery stores, public events, etc.]*
    - Where is the nearest city/biggest town?
3. What do you think are some things that people think about when they hear you're from [name of town]?
    - What is [name of town] known for?
    - What are some things that *you* think about when you think of [name of town]? *[Probe: Is there anything that makes living here unique?]*
    - What are some benefits to living here?
4. What is it like living in this area?
5. What is it like for young people here?
6. How would you describe your local community?
    - Who makes up your local community? [*Probe: What kind of people are you around? What are the people like in your town?*]
    - To what extent do you consider yourself a member of your local community? [*Probe for connections to or alienation from others, physical place, history of local area]*
    - What does community mean to you? [*Probe any differences between personal sense of community and previous answers about local community, especially if participant mentions any connections to or sense of community with non-local groups, e.g. online community.*]

7. When you hear a place being described as "rural" what comes to mind?
8. Would you consider where you live to be a rural area? Why/why not? [*Probes: How does this compare to other places where the participant has been or lived?]*

C. Identity

1. What are some things about you that are important to your experiences and/or sense of who you are?
    - On the survey you filled out, we asked you to check a box about things like your gender, race, ethnicity, politics, religiousness, sexuality, education, wealth, etc. I'm wondering if you could tell me about whether any of those aspects of your identity are important to you? How so/why not?

2. What's important or meaningful to you about being [**insert** identities listed as important by participant from previous questions]?
    - How has being [**insert** identities listed as important by participant from previous questions] affected your life experiences? [*Probe about the extent to which these experiences are shaped/affected by living in their community and/or a rural community in general]*

II. Nicotine and/or Tobacco (NT) Use

A. NT Use Practices and Experiences

1. Tell me about the extent to which you've been exposed to smoking and/or nicotine or tobacco products throughout your life. *[Probe: family, friends, school, home, First memory of seeing someone smoke or use an NT product.]*
2. Tell me about the first time you remember using any form of tobacco or nicotine.
3. Since you first started using nicotine and tobacco, how has your use changed over time? *[Probes: Have there been different periods of your life when you were using different products, or significantly more or less than you do now? Can you describe when you first started using [product(s)] more regularly?]*
    - Why do you think these changes occurred? *[Probe about correlated changes in work and/or school status or engagement, stressors, family life, market availability, and social or peer groups.]*
4. Tell me about the NT products you currently use.
    - Do you use certain NT products more than others? Please explain. *[Probe: Which one(s)? Why do you use certain products more than others?]*
    - Are there other kinds of NT you used in the past but not anymore? If so, which ones and why? [*Probe for reasons, which products, methods for stopping*]
5. Have you ever thought about stopping your use of any nicotine or tobacco products you currently use? Please tell me a bit about that. *[Probe for reasons, which products, methods for stopping, perceived barriers to cessation, feelings regarding cessation/quitting, future intention to quit.]*
    - Have you ever taken any steps or used any strategies to stop using this/these? Please explain. *[Probe cessation methods or substitution practices and pathways as applicable.]*

*[**If reports any past quit experiences with a specific product, ask**]*

- Please describe your experience(s) quitting [NT product]. *[Probe for reasons, methods, feelings]*
- How has it been since you stopped using {insert NT}? *[Probes: Have you noticed any major changes in particular aspects of your life or experiences? Probe physical, psychological, and social changes.]*
- Do/did you do anything or take any steps to avoid negative consequences of NT use?

6. Do you do any drugs or use any substances other than NT? *[Probe for which substances, polysubstance use, frequency, quantity, reasons, and social context.]*

- To what extent are these other substances connected to your NT use? *[Probe for managing high, concealing substance use]*

7. In your opinion, are there specific pressures or barriers to quitting or reducing NT use in the place where you live that people outside of your community may not experience? [*Probes: accessibility, stressors, environments or circumstances that encourage NT use that may make it difficult to quit]*

8. Do you anticipate using any NT products in the future? Why/why not?

- Which NT products?
- Why those and not other products?

B. NT Settings: Accessibility and Social Contexts

1. In your daily life, when do you use NT? Why those situations and not others? *[Probe for location, cost, convenience, crowd, surveillance/control, changes over time, if underage probe access and legal consequences/concerns.]*

- Do/did you use different kinds of NT at different times or places?
  o In what situations do/did you use {insert NT product/s from previous questions}? *[Probe for use practices e.g. frequency and quantity, and contexts for each NT product mentioned in previous questions.]*

• Which places do/did you feel most comfortable using {NT products}? Least comfortable?

- Which places do/did you feel it was more acceptable to use {NT products}? Least acceptable?

2. Who do you usually use {insert NT} with? *[Probe for alone vs. with others, as well as the identities of the people that participant use these products with]*

- Are there certain people that you use {insert NT} with most often? *[Probe: Why these people/this person?]*
- How are your experiences and interactions with these individuals different when you're using NT vs not?
- Are there certain people you would use {insert NT} around and other with whom you wouldn't? If so, how do you make these distinctions?

3. *[Ask if applicable]:* You talked about {other substances} earlier, how do they fit into your daily life? *[Probe in relation to NT]*

4. Are there specific places where you see people using NT products more often? If so, where?

5. In your opinion, how accessible is nicotine or tobacco in your community? Where is nicotine and tobacco available in your community? *[Probe about available outlets such as stores, online retailers, as well as informal access sources.]*

6. Where do you usually get nicotine and tobacco? *[Probe about available outlets like stores, online retailers, as well as informal access strategies like obtaining through family, peers, theft, or fraudulent identification. Probe for relative risks and benefits of different outlets or access sources/strategies, as well as changes over time.]*

C. Meanings and Perceptions of NT Use

1. Tell me as many different reasons that come to your mind about why people use nicotine and/or tobacco. *[Probe different reasons for different products]*

2. What are the main reasons that *you* use nicotine and/or tobacco? *[Probe comparisons between different NT products used by participant]*

- Do any of those other reasons you mentioned previously not apply to you at all? Which ones?

3. How do you feel about people who smoke cigarettes? *[Probe: stereotypes, negative and positive judgments, social meanings of various products in participant's everyday life]*

- What about people who use other forms of nicotine or tobacco?

4. What do people around you think about your NT use? [*Probe friends, family, coworkers, authority figures, strangers/general*]

- How did you come to that opinion, or what makes you think that? [*Probe explicit vs implied feedback and reactions from others, experiences with NT-related stigma, how it may be viewed differently by different people and why, differences by NT product if participant uses or has used multiple*]

5. What are some **positive** effects or outcomes of using nicotine and/or tobacco that you can think of? [*Probes: What are the short-term vs. long-term effects? Physical or emotional vs. social outcomes? How typical are these? Which do you have any experiences with? How commonly do you experience a positive outcome from using NT? How and what positives are different for different products, like vaping vs chewing vs smoking?]*

- Which of these positive outcomes do you think are especially common for young people in your community? *[Probe: how does this compare to other areas (neighboring rural areas, rural areas in general, urban areas]*

6. What are some **negative** effects or outcomes of using nicotine and/or tobacco that you can think of? *[Probes: What are the short-term vs. long-term effects? How typical are these? Which do you have any experiences with? How commonly do you experience a negative outcome from using NT? How and what negatives are different for different products, like vaping vs chewing vs smoking?]*

- Which of these negative outcomes do you think are especially common for young people in your community? *[Probe: how does this compare to other areas (neighboring rural areas, rural areas in general, urban areas]*

7. To what extent is using NT common in your community? *[Follow up for differences between groups, i.e., by age, race, gender, SES, etc.]*

- How accepted do you think it is to use these products in your community? [*Probe for perceptions of how acceptable NT use is as well as for whom it is deemed acceptable]*

8. In general, how accepted do you think it is today to smoke cigarettes, to use nicotine, or to use tobacco?

- Are there circumstances where smoking or using other NT products is more acceptable? *[Probes: inquire about different products, the extent to which NT is perceived as acceptable or unacceptable for certain people e.g certain groups/communities as well as differences among age, ethnicity, gender, sexuality, SES, educational level, ability, place/space, etc.]*

- Are there circumstances where smoking or using other NT products is less accepted? *[Probes: inquire about different products, the extent to which NT is perceived as acceptable or unacceptable for certain people e.g certain groups/communities as well as differences among age, ethnicity, gender, sexuality, SES, educational level, ability, place/space, etc.]*

D. Perceptions of Tobacco Control

1. Do you ever experience restrictions on where or when you can use NT products? Please describe any restrictions you've encountered.
    - How do you feel about those restrictions?

2. Can you tell me about any public health *anti-smoking and/or nicotine use* campaigns that you've seen?
    - What do you think about those campaigns? *[Probe general impressions. perceived purpose & efficacy, especially in relation to specific tactics or campaigns brought up by participant.]*
    - To what extent do you feel these campaigns are appropriate for young adults who live in northern California?
    - How appropriate are these campaigns for people who live in rural communities? *[Probe for specific ages, genders, sexual identities, ethnicities, SES, etc.]*
    - Do you think they are effective? Why or why not?
    - If not, what would be more effective?
3. In general, how do you feel about the nicotine and tobacco industry?
    - How did you come to that opinion?

III. Identities and NT Use

1. How does being [**insert** intersectional or multiple identities listed earlier as important by participant from previous questions] relate to your experiences with nicotine and tobacco?
    - What does it mean to you to use {insert NT}?
    - To what extent do you think these experiences relate to being a young person?
    - Have you ever felt pressure or expectations to use or avoid nicotine and tobacco based upon any aspects of your identity? If yes, how so?
2. What are some reasons why young people use NT? How do these reasons compare to other age groups, in your opinion?
    - To what extent are reasons for smoking different for different groups? Please explain. *[Probes: age, rural/urban, men/women, occupation, ethnicity, SES]*
    - In your opinion, how does being a young person living in a rural area relate to experiences with nicotine and tobacco?
    - In your opinion, how does living in a rural area relate to your own experiences with nicotine and tobacco use? *[Probes: Can you think of any examples of this? Probe also geographical*

isolation and socioeconomic factors related to poverty, education, family and employment as related to NT use experiences and/or attitudes.]

IV. Community

1. We've talked a lot about nicotine and tobacco use as well as your local area and community. Overall, how important do you think quitting smoking or other NT use is for young people living in rural areas?
2. In your opinion, what other pressing issues that exist for people living in rural areas? [*Probe: To what extent do these issues affect young people in particular? Are these issues prevalent in your community?]*
    - In your mind, are those issues connected to health and wellbeing? Why/why not?
    - How can public health best address these issues?
3. We spoke a lot about your experiences of living in [participants' town/area], can you tell me a bit more about some positive or good things about living in this area?
4. What are some changes, if any, that you would like to see in your community?
5. What is special or unique about your community?

V. Wrap-Up

1. Was there anything that came up during our conversation that you'd like to discuss in more detail?
2. Is there anything else you wanted to tell us about your thoughts on nicotine and tobacco use among young people in rural areas?
3. Do you have any questions or feedback about this interview or about the study?

Appendix II – Social and Structural Drivers of NT Use for Emerging and Early Established Adults in California's Rural North (2021-2023): Example Quotes

Dimension	Description	Meanings	Participant Quotations
A. Rural Hardship	Disadvantageous socio-economic conditions in rural communities, including few livable wage jobs, a high cost of living, scant resources, and a lack of mental and physical health care	1. Hopelessness	'I am actually living proof of…when…there's no hope for the future and…you are at your lowest, and you're just encountering plight after plight after plight…it's gonna take its toll on you… it makes it…more difficult to quit smoking.' (Maggie, 30-year-old mother)
		2. Stress	'Me and my wife are…are in the middle of finding a place to live...but it turned out to be a little harder than we thought…I'm looking…for a job right now too, which has also been a little harder than I thought it would be…Definitely not any good benefits [to smoking], other than…If I'm in a stressful situation…it…definitely helps in a stressful situation' (Mark, 30-year-old man)
		3. Feeling Stuck	'I'm kind of stuck right now because I have so many bills…that I'm having to pay on that I can't really get out of [this town]…everything's just so expensive...I'm just hoping that I can quit [smoking] sometime soon, like when I get my life back on track...I have so much going…that I'm dealing with …that adding like, "Oh, I'm going to quit smoking nicotine and vaping", it's like, I don't know.' (Duke, 29-year-old father)
B. Social Acceptance of Smoking	Smoking is widely accepted within rural communities and transmitted across contexts (e.g. social groups) and time	1. Community Belonging	'It's socially acceptable in poor communities to be a smoker…you're almost like the outcast if you don't...' (Loki, 33-year-old father)
		2. Social Group Belonging	'I would say that the type of people I'm around use similar nicotine products that have probably been marketed to that category of person pretty specifically…it's probably not a coincidence that all the other fishing guys I

	(i.e. over generations)		work with smoke [specific brand]…And not a coincidence that everyone I know that uses [nicotine pouch brand] is probably between the ages of 21 and 26, white male.' (Zach, 23-year-old man)
		3. Familial Connection	'We get deeper in conversation when we're smoking together. It's when we go and sit down on the porch together. Other than that…we're not really taking the time to interact like that. But when we smoke a cigarette, we'll go sit down and…the night before last, we had a really deep talk on the porch while we were smoking. We were both crying out there, puffing away.' (V, 24-year-old woman)
C. Stigmatization of Smoking	Smoking stigma attaches negative meanings to smoking as well as to the person who smokes, marginalizing people who smoke into 'smoking islands' that reinforce smoking	1. Reduces Opportunities	'There's less people here…so…the people that judge you are fewer, but the impact of their judgment is higher…they might not ever say it out loud, but "Oh, I saw that guy standing outside…smokin' a cigarette the other day. And I don't like cigarettes, and I'm on the City Council..."' (Loki, 33-year-old father)
		2. Reputational Damage	'As I got older and was more comfortable being a woman, I guess I kind of felt like it's not ladylike to smoke or use nicotine or tobacco. [...] I think, classy would be a better word instead of ladylike, I think. This is kind of silly, but because I did smoke cigarettes and hung out with the wrong crowd and partied a lot, and then because I was homeless, I guess, for a while, mentally I felt a lot of pressure to be more of like, a classy person.' (Anna, 24-year-old woman)
D. Isolation	The social and geographic isolation of rural communities reinforces smoking	1. Depression, Loneliness	'You definitely feel isolated, because there's not much to do, and there's not many opportunities when it comes to making friends…When it comes to isolation and stuff, then you're more likely to get depressed.' (Scarlet, 20-year-old woman)

E. Pleasure	Smoking provides pleasure in areas with limited opportunities for fun or in stressful lives defined by hardship	1. Relief From Boredom	'There's nothing to do besides hang out and have big bonfires where everybody drinks and smokes...I think it comes down to the boredom of it all.' (Sara, 20-year-old woman)
		2. Accessible Form of Leisure	'it's not always…the tobacco that I want. It's the pause from everything else and the moment – the ideal moment where maybe you would partake in something like that, and it's just enjoyable and relaxing. Almost like, in the times when your life isn't quite like that…that's what you're trying to give yourself.' (Jordan, 28-year-old woman)
F. NT as Harm Reduction Amid Competing Crises	Smoking is seen as relatively insignificant given other more pressing problems in rural NS communities	1. Significance of Drug Abuse	'[smoking] isn't seen as bad as other things in my community…there's a lot of substance use here, and I think their mind goes to, "Well, it's just nicotine. Right? It's not meth, or, It's not heroin, or, It's not cocaine, or, I'm not drinking and driving" … So, I don't think it's seen as like a priority at all.' (KJ, 29-year-old mother)
		2. Smoking as Harm Reduction	'If…you used to use [meth] … you can usually spot it out pretty quick for the most part. And I feel like I see it every day, every single day…when I get a trigger and stuff, I go out and I'd smoke a cigarette, and I'd probably smoke a little more, you know, to try to get my mind off of that, honestly.' (Christine, 33-year-old mother)