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The Association between Interpersonal Violence and Unstable Housing among Veterans

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Key Words: interpersonal violence, trauma, unstable housing, homelessness, mental illness, substance use

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Abstract

Background: Despite programs to address housing for Veterans, they continue to be at high risk of unstable housing. Interpersonal violence is also highly prevalent among Veterans and may contribute to unstable housing. Our study aimed to determine whether interpersonal violence was associated with unstable housing among Veterans, and how this association was influenced by common co-occurring conditions such as substance use and mental illness.

Methods: Veterans in the Mind Your Heart Study (N = 741) completed survey data on history of interpersonal violence and access to housing in the prior year. Interpersonal violence was defined as experiencing sexual violence, physical violence or mugging/physical attack using the Brief Trauma Questionnaire. Multivariable models examined associations between interpersonal violence and unstable housing. Primary models were adjusted for age and sex. Potential explanatory factors were added in subsequent models, including marital status, education, income, substance use disorder, PTSD, and other mental illness.

Results: Veterans who had experienced interpersonal violence had almost twice the odds of unstable housing after adjustment for age and sex (AOR 1.9, 95% CI 1.2-3.0). This association was attenuated in the fully adjusted model including substance use, PTSD, and other mental illness, illustrating the inter-dependence of these factors (AOR 1.5, 95%CI 0.91-2.5). Subtypes of interpersonal violence were individually associated with increased odds of unstable housing after adjustment for age and sex (physical abuse AOR 1.7, 95%CI 1.2-2.5; mugging/physical attack AOR 1.8, 95%CI 1.2-2.7; sexual violence AOR 1.4, 95%CI 0.89-2.2), but were no longer significant in the fully adjusted model.

Interpersonal Violence and Unstable Housing

57 **Conclusions:** Previous experiences of interpersonal violence were associated with unstable
58 housing among Veterans. Substance use, PTSD and other mental illness played an important role
59 in this relationship - highlighting the potential to improve health outcomes through trauma
60 informed approaches that address mental health, substance use and housing concurrently.
61

62 **Introduction**

63 Unstable housing is a growing public health concern in the United States, where over half
64 a million people experience homelessness on any given night.¹ The definition of unstable
65 housing varies, but generally includes being without fixed housing, or experiencing
66 homelessness, poor housing quality, overcrowded living spaces and disproportionately high
67 living costs.²⁻⁴ Veterans are at particularly high risk of experiencing unstable housing despite
68 existing government-led programs to address housing for Veterans. In comparison to the general
69 population, Veterans have up to three times the risk of experiencing homelessness.^{1,5}

70 According to the World Health Organization, interpersonal violence “involves the
71 intentional use of physical force or power against other persons by an individual or small group
72 of individuals.” Interpersonal violence includes intimate partner violence and stranger violence.
73 It can manifest as physical, sexual or emotional abuse during childhood or later in life.⁶ Veterans
74 are disproportionately impacted by interpersonal violence.⁷ A study have found that over half of
75 Veterans experience childhood verbal abuse, 45% experience childhood physical abuse and 17%
76 experience childhood sexual abuse.⁸ Furthermore, as many as one in three female Veterans and
77 one in eight male Veterans experience intimate partner violence.^{9,10} Unstable housing and
78 interpersonal violence both negatively impact physical and psychological health.^{11,12}

79 Various forms of interpersonal violence have been associated with unstable housing.^{13,14}
80 Interpersonal violence may lead to unstable housing through disruption of social networks and
81 social attachment.¹⁵ It likely interacts with individual, environmental and societal factors to
82 increase risk of unstable housing over a lifetime.¹⁶ However, few studies of interpersonal
83 violence and unstable housing among Veterans have analyzed the influence of common co-
84 occurring conditions such as substance use disorder (SUD), poverty and mental illness.¹⁷⁻¹⁹

Interpersonal Violence and Unstable Housing

85 Furthermore, many studies of interpersonal violence have focused primarily on experiences of
86 intimate partner violence among women Veterans.^{10,20,21} Although the prevalence of intimate
87 partner violence is likely higher among women, it is also important to examine it among men and
88 to evaluate other subtypes of interpersonal violence.²²

89 This study aimed to understand whether exposure to interpersonal violence across the
90 lifespan could be associated with unstable housing among male and female Veterans. Given the
91 high prevalence of interpersonal violence and unstable housing among Veterans, this question
92 was particularly relevant for this large population.^{8,22,23} We further evaluated whether lower
93 income, substance use disorder, PTSD, and other mental illness, which are frequently associated
94 with interpersonal violence, explained any connection between interpersonal violence and
95 unstable housing.

96 **Methods:**

97
98 This study used retrospective data from the Mind Your Heart Study cohort. The detailed methods
99 of the study have been previously described.²⁴ Between February 2008 to June 2010, 746
100 outpatients from the Department of Veteran Affairs (VA) sites in San Francisco and Palo Alto
101 completed in-person baseline examinations. Participants were recruited for this study through
102 mailed letters, flyers posted at VA facilities and provider referrals. The letters were mailed to
103 patients who had attended the VA general medical clinics in the last 5 years. They were mailed
104 to individuals with an International Classification of Disease, 9th revision (ICD-9) code for PTSD
105 and to age matched patients without an ICD-9 PTSD diagnosis. A validated clinical practice
106 guideline for diagnosing PTSD was used to confirm the PTSD diagnosis. All participants
107 provided written informed consent and the University of California San Francisco Committee on
108 Human Research approved the study. We excluded three participants from these analyses

Interpersonal Violence and Unstable Housing

109 because they were not Veterans and one participant for missing housing data, leaving 741
110 participants for these analyses.

111

112 **Measurements**

113 **Interpersonal Violence**

114 We assessed interpersonal violence using the Brief Trauma Questionnaire (BTQ), which has
115 been validated as a survey instrument in clinical interviews.²⁵ The BTQ is a 10 item
116 questionnaire. Participants experienced interpersonal violence if they reported “yes” to questions
117 about childhood physical abuse, lifetime mugging/physical attack, or lifetime sexual violence on
118 the BTQ. The question on physical abuse asked, “Before the age of 18, were you ever physically
119 punished or beaten by a parent, caretaker, or teacher so that: you were very frightened; or you
120 thought you would be injured; or you received bruises, cuts, welts, lumps or other injuries?” On
121 mugging/physical attack it asked, “Not including any punishments or beatings you already
122 reported in Question 5 (on physical abuse), have you ever been attacked, beaten, or mugged by
123 anyone, including friends, family members or strangers?” On sexual violence it asked, “Has
124 anyone ever made or pressured you into having some type of unwanted sexual contact?”

125 **Unstable Housing**

126 At the baseline examination at the San Francisco VA, participants were asked “Which category
127 best describes your current housing?” with response options: (1) house, (2) apartment/flat, (3)
128 hotel room/boarding house/permanent shelter, (4) retirement community, (5) other. At the end of
129 the recruitment period, two additional housing questions were asked of 147 participants, “In the
130 last year, has there been a period of time when you did not have a permanent place to stay” and
131 “In the last year, have you been without shelter or stayed in a homeless shelter?” Participants

Interpersonal Violence and Unstable Housing

132 could answer “Yes” or “No” to those questions. These two questions were repeated at the three
133 year follow up interview for all participants. Our measure of unstable housing was defined as
134 Veterans who reported living in a hotel/boarding house/permanent shelter or “other” (meaning
135 not living in a house, apartment/flat or retirement community), as well as those who reported no
136 permanent place to stay, being without shelter or staying in a homeless shelter in the previous
137 year, during the baseline survey or the three-year follow up survey.

138 **Covariates**

139 Participants self-reported age, sex at birth, race/ethnicity, income, educational attainment, and
140 medical history on the baseline questionnaire. Income was defined as the total household income
141 (before taxes) for the last 12 months from all sources such as wages, Veteran’s benefits, social
142 security, retirement income, rent from properties, etc. The Clinician Administered PTSD Scale
143 (CAPS) assessed for PTSD using criteria from the *Diagnostic and Statistical Manual of Mental*
144 *Disorders (DSM)*, Fourth Edition, Text Revision.²⁶ Licensed clinical psychologists with expertise
145 in PTSD assessment supervised the trained clinicians who conducted the in-person interviews.
146 Substance use disorder was defined as a self-reported history of a doctor or nurse telling the
147 participant that they had “alcoholism/drinking problem” or “drug addiction/abuse.” Our
148 category, “other major mental illness,” included bipolar disorder, major depressive disorder,
149 psychosis, and schizophrenia. The World Health Organization World Mental Health Composite
150 International Diagnostic Interview (WHO WMH-CIDI) was used to assess for lifetime bipolar
151 disorder (type I and type II). DSM IV criteria defined lifetime major depressive disorder.²⁶
152 Participants self-reported psychosis or schizophrenia.

153 **Statistical Analysis**

Interpersonal Violence and Unstable Housing

154 We analyzed differences in characteristics between those who did and did not have a history of
155 interpersonal violence using t-tests for continuous variables and chi-square tests for binary or
156 categorical variables. We examined associations between interpersonal violence and unstable
157 housing using multivariable logistic regression models. Using a staged analysis approach, the
158 models were first adjusted for potential confounders that were associated with interpersonal
159 violence with a p-value <0.10: age and sex. Potential explanatory factors, including marital
160 status, education, income, PTSD, SUD, and other major mental illness, were then added to the
161 models. There were 115 patients who reported their current housing status only on the baseline
162 interview (“Which category best describes your current housing?”) and were missing the two
163 questions asked at the end of the recruitment period (“In the last year, has there been a period of
164 time when you did not have a permanent place to stay” and “In the last year, have you been
165 without shelter or stayed in a homeless shelter?”). We conducted sensitivity analyses excluding
166 these patients from all regression models. Based on *a priori* hypotheses, we also examined
167 additive and multiplicative interactions between interpersonal violence and income. STATA/SE
168 16.1 (StataCorp; College Station, Texas) was used for all analyses.

169 **Results:**

170

171 **Study population characteristics overall and by history of interpersonal violence**

172 In this study sample, the mean age was 58.4 (SD 11.3) years. The majority of participants were
173 male (94.3%), white (59.6%) and had graduated from high school (96.4%). Approximately two-
174 thirds of participants were not married (64.6%). One-third reported an income <\$20,000, or
175 made less than minimum wage, in the past 12 months (32.0%) and 44.3% reported more than
176 one person living off that income. Sixty-eight percent reported at least one chronic disease.
177 Thirty-eight percent had a substance use disorder, 45.9% had PTSD and 43.9% had other mental

Interpersonal Violence and Unstable Housing

178 illness including bipolar disorder, major depressive disorder, and psychosis/schizophrenia.

179 Overall, 17.8% of the participants had experienced unstable housing in the last 12 months.

180 More than two-thirds of the participants had experienced interpersonal violence over their
181 lifetime (69.1%). Characteristics of those with a history of interpersonal violence compared to
182 those without a history of interpersonal violence are shown in Table 1. Those with interpersonal
183 violence history were slightly younger, were less frequently married and reported a lower
184 income. They also reported higher rates of PTSD, substance use disorder and other major mental
185 illness. A greater proportion of women reported interpersonal violence on the BTQ compared to
186 men. Of the 42 women who participated in the study, 38 reported experiencing interpersonal
187 violence (90.5%). Sexual violence also disproportionately impacted women. Approximately 89%
188 of women Veterans (35 of 44) endorsed experiencing sexual violence. By comparison only 19%
189 of men Veterans did so (134 of 699) ($p < 0.05$) (Table 1).

190 **Interpersonal violence and unstable housing**

191 More Veterans with interpersonal violence history reported unstable housing in the previous year
192 when compared to those without interpersonal violence history (20.9% vs 10.9%, $p < 0.01$)
193 (Figure 1). Veterans who had experienced interpersonal violence had significantly higher odds of
194 unstable housing (OR 2.2, 95% CI 1.4-3.4, $p < 0.01$) (Table S1). Even when adjusting for age
195 and sex, the odds of unstable housing remained elevated and statistically significant (AOR 1.9,
196 95% CI 1.2-3.0, $p < 0.01$) (Table 2). When potential explanatory covariates, such as income,
197 SUD and other major mental illness were added to the model, the odds of unstable housing
198 decreased and was no longer significant (AOR 1.5, 95% CI 0.91-2.5, $p = 0.07$). Sensitivity
199 analyses excluding the patients with incomplete housing data did not show substantial

Interpersonal Violence and Unstable Housing

200 differences (see Table S2). There was also no significant additive or multiplicative interaction
201 between interpersonal violence and income.

202 **Types of interpersonal violence and unstable housing**

203 After adjusting for confounders, participants with childhood physical abuse had 1.7 times the
204 odds of unstable housing compared to those who had never been physically abused during
205 childhood (AOR 1.7, 95%CI 1.2-2.5, $p < 0.01$) (Table 3). The odds decreased to 1.4 (95%CI
206 0.90-2.1, $p = 0.11$) with the addition of the potential explanatory covariates. Participants who had
207 ever been attacked, beaten, or mugged by someone had 1.8 (95%CI 1.2-2.7, $p < 0.01$) times the
208 adjusted odds of unstable housing than those who had not experienced this trauma. This risk was
209 reduced to 1.4 (95% 0.89-2.1, $p = 0.11$) with the addition of potential explanatory covariates.
210 Lifetime sexual violence was similarly not associated with unstable housing in the fully adjusted
211 models (AOR 1.1 95%CI 0.67-1.8, $p = 0.58$). Findings from sensitivity analyses excluding the
212 patients with incomplete housing data were comparable (Table S3).

213 **Discussion:**

214
215 In a cohort of adult Veterans, we found that interpersonal violence was associated with
216 greater risk of unstable housing. Our study focused on the impact of being a target or victim of
217 interpersonal violence rather than a perpetrator. After adjusting for age and sex, Veterans who
218 had a history of interpersonal violence had almost two-fold higher odds of unstable housing
219 when compared to those without it. Income, substance use disorder, PTSD and other major
220 mental illness were important explanatory factors in the relationship between interpersonal
221 violence and unstable housing. The association between interpersonal violence and unstable
222 housing was no longer significant when these potential explanatory factors were placed into the
223 model.

Interpersonal Violence and Unstable Housing

224 Our findings expanded upon important prior work, which has identified an association
225 between interpersonal violence and unstable housing among Veterans.¹⁷⁻¹⁹ Although we also
226 found a positive association between interpersonal violence and unstable housing, it is important
227 to note the potential bidirectionality between them. Interpersonal violence can lead to unstable
228 housing through lost employment, medical costs, legal expenses and loss of social network that
229 may protect against unstable housing.²⁷⁻²⁹ However, unstable housing can also increase risk of
230 interpersonal violence^{30,31}; people who are chronically homeless or who work panhandling,
231 recycling or trading sex for goods are at particularly high risk of suffering interpersonal
232 violence.³² Our research furthered understanding of the interaction between interpersonal
233 violence and unstable housing by examining how it was influenced by common co-occurring
234 conditions among a predominately male Veteran population and for multiple subtypes of
235 interpersonal violence.

236 We found accounting for socioeconomic and psychosocial factors decreased the
237 association between interpersonal violence and unstable housing. Our findings agree with prior
238 theoretical work postulating that pathways to unstable housing are multifactorial.¹⁶ The addition
239 of individual level factors (e.g. substance use disorder, PTSD, other major mental illness) and
240 systemic factors (e.g. income, education) attenuated our results in the fully adjusted models. This
241 attenuation was likely due to the bidirectional pathways that exist between these factors.
242 Substance use disorders, PTSD and mental illness may disrupt social support networks and lead
243 to unstable housing.^{33,34} They can also increase victimization or perpetration of interpersonal
244 violence due to intoxication or mental health crises.^{11,35} Finally, unstable housing and
245 interpersonal violence can give rise to substance use disorders, PTSD and mental illnesses owing
246 to the psychological stress and trauma they incur.^{36,37}

Interpersonal Violence and Unstable Housing

247 Few studies explicitly look at the relationship between interpersonal violence *and*
248 psychosocial factors as an explanatory model for unstable housing in the Veteran population. A
249 study of homelessness among male Veterans of the Vietnam war found that childhood
250 interpersonal violence, mental illness, and substance use disorder were risk factors for
251 homelessness after discharge from military service. The authors postulated that these childhood
252 traumas derailed normal personal development, leading to psychological damage that increased
253 risk for unstable housing.³⁸ In the general population, mood, substance use and personality
254 disorders have been implicated in mediating the relationship between Adverse Childhood Events
255 (ACEs) and homelessness.^{17,39} Our study findings support a similar interdependence between
256 interpersonal violence, psychosocial factors and unstable housing.

257 Income has been shown to be a strong predictor of homelessness.⁴⁰ Given this knowledge,
258 we hypothesized that the relationship between unstable housing and interpersonal violence may
259 be dependent on income. Although significantly more Veterans with interpersonal violence
260 reported an income of <20,000/year than those without interpersonal violence, we found no
261 multiplicative or additive interaction between income (<\$20,000/year) and interpersonal violence
262 that impacted unstable housing. This suggests that interpersonal violence may be associated with
263 unstable housing at various income levels.

264 Our research showed that multiple subtypes of interpersonal violence were associated
265 with unstable housing. Our subtypes included childhood physical assault, lifetime
266 mugging/physical attack and lifetime sexual violence. Studies have shown that trauma that
267 occurs during childhood may place individuals at higher risk of psychiatric disorders and
268 associated with unstable housing.¹⁴ Similarly, intimate partner violence has been strongly
269 associated with unstable housing among women.¹³ Therefore, it could be expected that measures

Interpersonal Violence and Unstable Housing

270 of childhood interpersonal violence and lifetime sexual violence would have greater impact on
271 unstable housing. However, we found that the strength of the association with unstable housing
272 was similar among all our subtypes. This finding should be confirmed in larger, diverse
273 populations of Veterans across the United States.

274 Veterans are over-represented in homeless populations in the United States despite
275 having access to more robust housing resources than the general population. In 2019, the U.S.
276 Department of Veterans Affairs spent \$1.8 billion on programs to serve Veterans experiencing
277 homelessness.¹ Our research supports directing funds towards trauma informed housing
278 programs with fully integrated, on-site social work and mental health services, as well as
279 embedded community-based-organizations that address interpersonal violence. The Aspire to
280 Re-Imagine Safety & Equity (ARISE) is a model of trauma informed care in the healthcare
281 system that demonstrates the importance of pairing screening for interpersonal violence with
282 screening for co-occurring depression and substance use disorder, integrative behavioral health
283 services, and expedited access to counseling.⁴¹ Housing programs could similarly undergo a
284 trauma informed transformation that expands initiatives linking trauma informed care principles
285 and practices with onsite services. In doing so, they may further improve the safety, health, and
286 wellbeing of Veterans who have experienced interpersonal violence. Additionally, to prevent
287 unstable housing among Veterans, our research supports early identification and treatment of
288 interpersonal violence, substance use disorder and mental illness for military personnel while
289 they are in active duty or early in transitioning to civilian life. This may include expanding the
290 Transition Assistance Program (TAP) to include universal education on available resources in
291 the Veterans Health Administration or broader civilian community to address interpersonal
292 trauma and common co-occurring conditions.⁴²

Interpersonal Violence and Unstable Housing

293 We acknowledge several limitations in this study. Since this study took place, it is likely
294 that new housing programs for Veterans have been developed. Therefore, their impact will not be
295 observed in our current analysis. The majority of participants identified as white. Prior studies
296 have found demographic variations in rates of homelessness among Veterans.⁵ This disparity in
297 unstable housing is linked to a history of racial and ethnic discrimination in the United States.⁴³
298 Although we did not find significant differences in housing outcomes by race or ethnicity, this
299 may be due to insufficient sample size. The cohort was enriched for participants with PTSD, and
300 prevalence rates should not be extrapolated to the general population of Veterans. Lifetime
301 history of interpersonal violence was only assessed at baseline but the questions on housing were
302 asked at the baseline and/or Year 3 follow up interviews. It is possible that people in our “no
303 interpersonal violence” group could have experienced interpersonal violence between the
304 baseline and Year 3 assessments. This would likely bias our results towards finding a weaker
305 association between interpersonal violence and unstable housing than the true relationship. Some
306 information on medical conditions were self-reported, which may introduce additional bias
307 through recall bias or underreporting of medical conditions. The BTQ has limitations in its
308 measurement of interpersonal violence. It doesn’t measure various types of violence (e.g.,
309 psychological, combat-related violence, forms of childhood abuse other than physical abuse,
310 psychological or financial abuse), address the burden or timing of interpersonal violence over
311 one’s lifetime, nor separate intimate partner violence from stranger violence. These factors might
312 have differential impact on the acquisition of housing. Additionally, unstable housing was
313 recorded for the previous year and thus, likely underestimates unstable housing over the lifespan.
314 Most of the variables in the study were measured at single time points. Longitudinal and mixed

315 methods studies that capture these varied experiences of interpersonal violence and unstable
316 housing across the lifespan could help untangle their connections.

317 **Conclusions:**

318 This study illustrated the interconnected relationships between interpersonal violence,
319 psychiatric comorbidities, and unstable housing. As the public health challenges of unstable
320 housing and homelessness continue to escalate, identifying interventions for high-risk
321 populations is necessary. Our findings suggest that programs to prevent homelessness and
322 support housing among Veterans may be more successful if they address the traumatic
323 experiences and common co-occurring conditions that people have endured over a lifetime.

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Interpersonal Violence and Unstable Housing

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Interpersonal Violence and Unstable Housing

Table 1. Characteristics of Participants by History of Interpersonal Violence

	Factor	No History of IV	History of IV	p-value
426	N	229 (30.9)	512 (69.1%)	
427	Age, yr. mean (SD)	61.5 (12.7)	57.0 (10.3)	<0.01
	Sex			<0.01
	Male	225 (98.3%)	474 (92.6%)	
	Race/ethnicity			
	Latinx/Latin American	17 (7.4%)	39 (7.6%)	0.49
	Asian/Pacific Islander	26 (11.4%)	39 (7.6%)	
	Black/African American	44 (19.2%)	116 (22.7%)	
	White	134 (58.5%)	294 (57.4%)	
	Other	8 (3.5%)	24 (4.7%)	
	Education			0.67
	High school graduate	222 (96.9%)	492 (96.1%)	
	Marital status			0.02
	Married/partnered	96 (41.9%)	166 (32.4%)	
	Income			0.03
	<\$20,000/year	60 (26.2%)	177 (34.6%)	
	Income			0.28
	\$20,000-\$29,999	27 (11.8%)	62 (12.1%)	
	\$30,000-\$39,999	41 (17.9%)	77 (15.0%)	
	\$40,000-\$49,999	24 (10.5%)	53 (10.4%)	
	\$50,000-\$60,000	26 (11.4%)	48 (9.4%)	
	<\$20,000	60 (26.2%)	177 (34.6%)	
	>\$60,000	50 (21.8%)	92 (18.0%)	
	Number dependents on income			0.22
	1 person	118 (51.5%)	292 (57.0%)	
	2 people	85 (37.1%)	146 (28.5%)	
	3-4 people	21 (9.2%)	59 (11.5%)	
	5-6 people	3 (1.3%)	8 (1.6%)	
	Chronic Medical Conditions			
	Hypertension	117 (51.1%)	258 (50.4%)	0.94
	Heart Attack	23 (10.0%)	52 (10.2%)	1.00
	Heart Failure	14 (6.1%)	30 (5.9%)	1.00
	Stroke	15 (6.6%)	30 (5.9%)	0.74
	Diabetes	40 (17.5%)	90 (17.6%)	1.00
	Substance Use Disorder	60 (26.2%)	222 (43.4%)	<0.01
	PTSD	68 (29.7%)	272 (53.1%)	<0.01
	Major Mental Illness	64 (27.9%)	261 (51.0%)	<0.01
	Unstable Housing	25 (10.9%)	107 (20.9%)	<0.01
	House	106 (46.3%)	188 (36.7%)	0.05
	Apartment/Flat	98 (42.8%)	239 (46.7%)	
	Hotel/Boarding House	10 (4.4%)	36 (7.0%)	
	Retirement Community	1 (0.4%)	5 (1.0%)	
	None of the above/Other	11 (4.8%)	43 (8.4%)	
	Homeless Shelter	6 (2.6%)	46 (9.0%)	<0.01
	No Permanent Place to Stay	11 (4.8%)	65 (12.7%)	<0.01

Interpersonal Violence and Unstable Housing

428 **Table 2. The Association between Interpersonal Violence and Unstable Housing in**
 429 **Veterans.** The first multivariable analyses were first adjusted for the confounders: age and sex.
 430 The second multivariable analyses were adjusted for (1) the confounders: age and sex, as well as
 431 (2) the potential explanatory factors: education, marital status, income, PTSD, other major
 432 mental illness, and substance use disorder.

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	Unadjusted OR (95% CI)	Multivariable AOR (95% CI) Confounders	Multivariable AOR (95% CI) Confounders & Explanatory Factors
Interpersonal Violence	2.2 (1.4-3.4)	1.9 (1.2-3.0)	1.5 (0.91-2.5)
Age, years mean (SD)	--	0.97 (0.95-0.99)	0.97 (0.97-1.0)
Female Sex	--	1.7 (0.83-3.4)	1.5 (0.70-3.1)
High School Education		--	0.56 (0.23-1.4)
Marital status (married/partnered)	--	--	0.67 (0.40-1.1)
Income	--	--	3.2 (2.1-5.0)
PTSD	--	--	1.3 (0.82-2.0)
Other Major Mental Illness	--	--	1.2 (0.79-1.9)
Substance Use Disorder	--	--	1.5 (0.90-2.2)

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Interpersonal Violence and Unstable Housing

437 **Table 3. Multivariable Regressions by Subtype of Interpersonal Violence.** The first
 438 multivariable analyses were first adjusted for the confounders: age and sex. The second
 439 multivariable analyses were adjusted for (1) the confounders: age and sex, as well as (2) the
 440 potential explanatory factors: education, marital status, income, PTSD, other major mental
 441 illness, and substance use disorder.

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	Unadjusted OR (95% CI)	Multivariable AOR (95% CI) Confounders	Multivariable AOR (95% CI) Confounders & Explanatory Factors
Physical Abuse	1.8 (1.2-2.6)	1.7 (1.2-2.5)	1.4 (0.90-2.1)
Mugging/Physical Attack	2.0 (1.3-3.0)	1.8 (1.2-2.7)	1.4 (0.89-2.1)
Sexual Violence	1.7 (1.1-2.5)	1.4 (0.89-2.2)	1.1 (0.67-1.8)

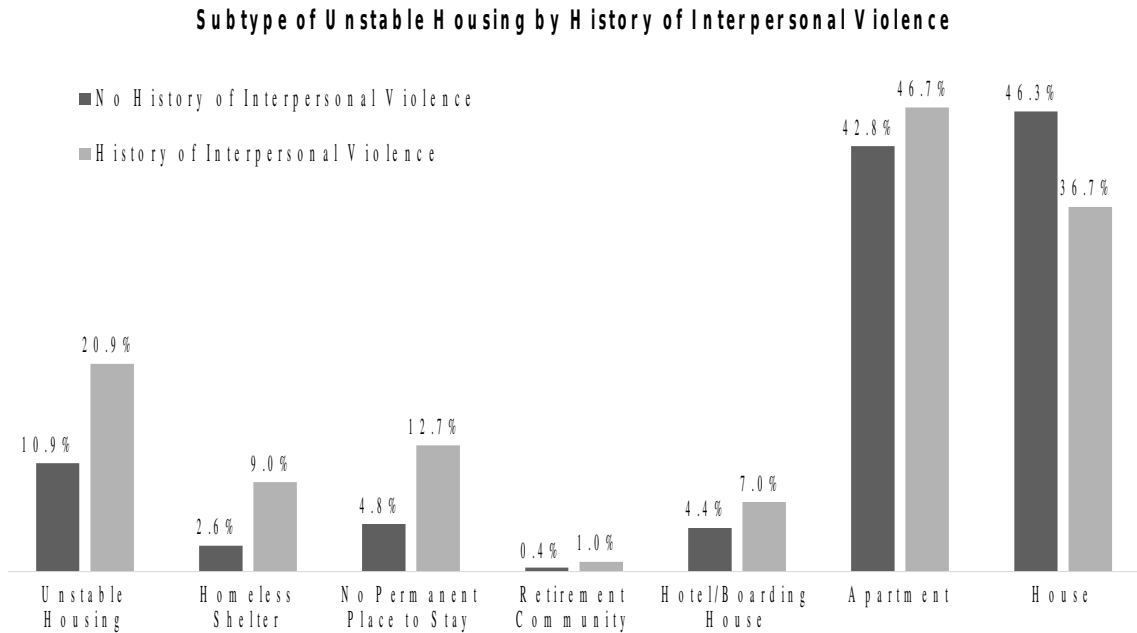
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Interpersonal Violence and Unstable Housing

Figure 1. Subtype of Unstable Housing by History of Interpersonal Violence. Participant responses to housing questions are shown, grouped by history of interpersonal violence. More participants with a history of interpersonal violence reported unstable housing in the previous year compared to participants without history of interpersonal violence. Values shown are percentages.



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Appendices:

Table S1. Unadjusted Association between Interpersonal Violence and Covariables among Veterans. Univariable analysis illustrating the relationship between each variable and interpersonal violence.

	Univariable OR (95% CI)	p-value
Interpersonal Violence	2.2 (1.4-3.4)	p <0.01
Age, years	0.96 (0.95-0.99)	p <0.01
Female Sex	2.2 (1.1 – 4.3)	p = 0.03
Income	4.2 (2.9-6.3)	p <0.01
Marital status (married/partnered)	0.37 (0.23-0.58)	p <0.01
Race (white)	0.73 (0.50 – 1.1)	p = 0.11
High school Education	0.42 (0.18-0.95)	p = 0.04
Substance Use Disorder	2.3 (1.6-3.3)	p <0.01
Other Major Mental Illness	1.8 (1.2-2.6)	p <0.01
PTSD	1.4 (0.97-2.1)	p = 0.07

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Interpersonal Violence and Unstable Housing

Table S2. The Association between Interpersonal Violence and Unstable Housing in Veterans. Participants who did not answer the second two housing questions were excluded due to incomplete data.

	Unadjusted OR (95% CI)	Multivariable AOR (95% CI) Confounders	Multivariable AOR (95% CI) Confounders & Explanatory Factors
Interpersonal Violence	2.0 (1.2-3.4)	1.8 (1.1-3.0)	1.4 (0.80-2.4)
Age, years mean (SD)	--	0.97 (0.95-0.99)	0.98 (0.96-1.0)
Female Sex	--	1.7 (0.81-3.7)	1.5 (0.67-3.3)
High School Education	--	--	0.43 (0.16-1.1)
Marital status (married/partnered)	--	--	0.75 (0.43-1.3)
Income	--	--	3.6 (2.2-5.9)
PTSD	--	--	1.4 (0.88-2.4)
Other Major Mental Illness	--	--	1.3 (0.83-2.2)
Substance Use Disorder	--	--	1.4 (0.90-2.3)

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Interpersonal Violence and Unstable Housing

Table S3. Multivariable Regressions by Subtype of Interpersonal Violence. Participants who did not answer the second two housing questions were excluded due to incomplete data.

	Unadjusted OR (95% CI)	Multivariable AOR (95% CI) Confounders	Multivariable AOR (95% CI) Confounders & Explanatory Factors
Physical Abuse	1.8 (1.2-2.7)	1.7 (1.1-2.6)	1.3 (0.82-2.1)
Mugging/Physical Attack	1.9 (1.2-2.9)	1.7 (1.1-2.6)	1.3 (0.79-2.1)
Sexual Violence	1.8 (1.1-2.9)	1.5 (0.93-2.5)	1.2 (0.69-2.0)

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