Disentangling the Mental Health Consequences of Serial Wars: A Migration-based Approach to Assessing War Exposure

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Abstract:

The literature documenting the physical and mental health effects of war is extensive, however, few studies examine how serial wars, especially wars of differing intensities, affect long-term health either distinctly or in combination. This study uses data from the Vietnam Health and Aging Study, historical bombing records, and media reports of war events to evaluate the mental health effects of exposure to the violent events of both the Second and Third Indochina Wars. We leverage the VHAS's detailed migration histories and the GDELT events database to estimate exposure to violence during the "lesser" conflicts of the Third Indochina War. Our preliminary analyses indicate that VHAS respondents' exposure to armed conflict after the American War was non-negligible. Our analyses will illuminate the impact of serial wars, especially wars of vastly different intensities focusing on how different wars are both distinct and intricately intertwined in their long-term effects on mental health.

Keywords: Vietnam War, mental health, deployment, migration, displacement

INTRODUCTION

Vietnam's history is colored by a series of wars spanning multiple decades. These wars, known as the Indochina Wars began at the end of World War II with a quest for independence after nearly a century of colonial rule (Cady, 1966; Clodfelter, 1995; Goscha, 2012). However, the Second Indochina War, known in the U.S. as the "Vietnam War" and in Vietnam as "Kháng chiến chống Mỹ," or the "American War," was, by far, the most devastating. It is described by Miguel and Roland (2011) as "the most intense aerial bombing episode in history" outpacing the combined bombing tonnage of World War II and the Korean War (Clodfelter, 1995; Miguel & Roland, 2011, p. 2).

The societal impacts of the American War on Vietnam were far-reaching and diverse, stunting economic growth and infrastructure development, displacing populations, disrupting education and employment, damaging the environment, and impacting public health. Historians estimate that the war resulted in between one and two million Vietnamese deaths. The excess mortality was concentrated among men in their young adulthood as a result of their widespread incorporation into the Democratic Republic of Vietnam's (DRV, former North Vietnam) military machine (Clodfelter, 1995; Hirschman & Nguyen, 2002; Merli, 2000). The DRV's campaign of society-wide mobilization, incorporated women and men across diverse ages and social class backgrounds into formal and informal military service, interrupting the traditional timing of education, family formation, migration, and employment (Goscha, 2012; Teerawichitchainan, 2009). Further, formal military service typically required deployments to warzones and myriad dangerous duties.

Though military service brought soldiers *into* harm's way, civilians were also impacted by the brutal conflict. The environmental scars rendered in America's extensive bombing campaigns can still be found in all corners of the country (Stellman & Stellman, 2018). The scars on the health of Vietnam's populace are also considerable, with long-term illnesses and injuries linked to a wide range of violent, traumatic stressors (Korinek et al., 2020; Rydstrøm, 2012). However, little is known about the impacts of later wars on the physical and mental health and wellbeing. This paper uses data from the Vietnam Health and Aging Study, coupled with historical bombing records and media reports of war events to simultaneously evaluate exposures to the violent events of both the Second and Third Indochina Wars. The VHAS is a uniquely rich data source providing detailed migration histories along with self-reports of respondents' exposure to specific wartime events. We use these histories to estimate exposure to bombing during the American War and armed conflict events during the Third Indochina War for the purpose of evaluating a well-documented negative health outcome: disordered mental health. This analysis allows us to compare the mental health impacts of two wars of differing intensities and diverse qualitative characteristics, isolating their impacts and evaluating their interacting effects. This study contributes to the growing body of research on conflict and health, offering insights into patterns of mental health morbidity in countries afflicted with serial wars.

BACKGROUND

Internal migration in Vietnam

The history of migration in Vietnam is intimately tied to political and cultural structures. Colonial rule, communist central planning for economic development, patrilocal family norms, and household registration systems characterize overall migration patterns. These were punctuated by three major migrations (depicted in Figure 1) related to shifting political power and armed conflict.

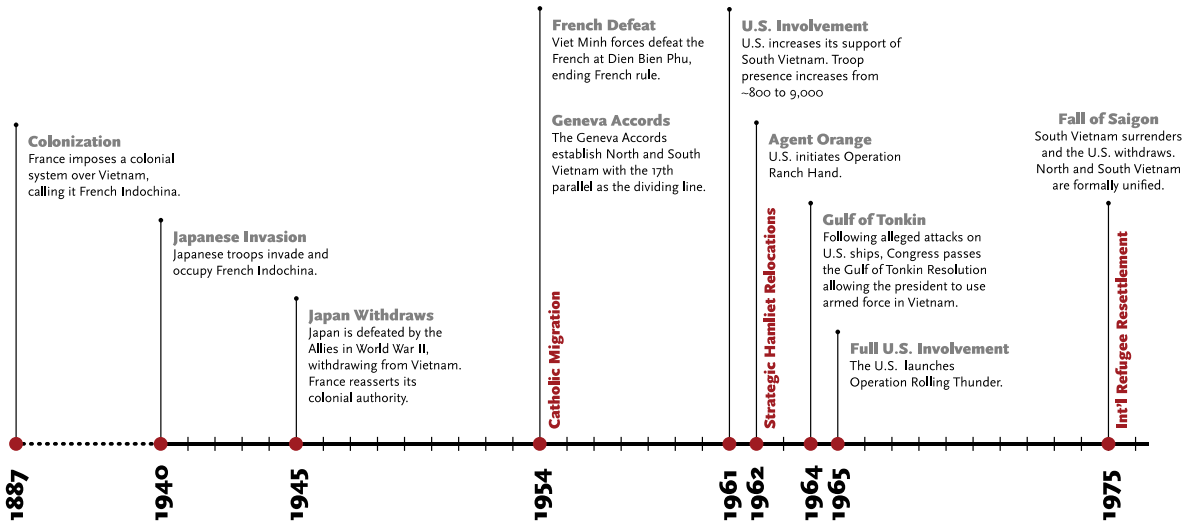


Figure 1. Historical timeline showing major migrations.

However, the DRV's population distribution policies acted to quell urban growth and decentralized collectivized production (Anh et al., 2012; Dang, 1999; Porter, 1993; Thrift & Forbes, 1985). Though the American War spawned military movements and displacements, it simultaneously reduced migration for education, employment, and family formation. In the immediate aftermath of the American War wartime damage to infrastructure and an underdeveloped transportation infrastructure, also constrained internal migration (Porter, 1993).

The household registration system, or *ho khau,* instituted in the North as part of centralized planning and population control efforts of the Communist leaders, further constrained mobility after the American War (Desbarats, 1987; Hardy, 2001). *Ho khau* functioned as a village-level census and a means of resource distribution. Registered members of the community were afforded access to public services and communal land. However, the *ho khau* also acted to control movement, limiting (although not entirely restricting) labor mobility, by requiring aspiring migrants to obtain a 'moving certificate' from both their home and destination village leaders. However, centralized planners and the *ho khau* system encouraged migration to rural and upland areas, even relocating some workers to develop industry in rural regions. In contrast, it generally depressed migration to urban areas (Desbarats, 1987; Hardy, 2001; Thrift & Forbes, 1985).

In the 1980s, Vietnam engineered an economic transition to a market economy. This transition, of *Doi Moi*, brought a resurgence of economically motivated migration, with many migrating to attain higher incomes or broader employment opportunities. The reduced need for military personnel brought widespread demobilization and a reduction of military migrations. As such a smaller percentage of the populace was exposed to armed conflicts occurring after the conclusion of the American War. However, while the patterns of migration associated with *Doi Moi* have received scholarly attention (Anh et al., 2012; Dang, 1999; Hardy, 2001), military mobility and exposure to armed conflict have received little attention.

The significance of war-related migration

During the American War, bombing blanketed the country and virtually no one was left untouched by war's violence. However, those in the North were less affected by the ground war unless, as members of the military, they traveled to regions where ground warfare was prevalent. Previous research informs us that the probability of experiencing devastating and traumatic war-related events was much higher for those in the military. More importantly, exposure to the violence and destruction of armed conflict has been associated with a myriad of physical, cognitive, and psychological health conditions that persist over decades, well into older ages (Akbulut-Yuksel, 2022; Drozdek et al., 2020; Miller & Rasmussen, 2010; Palmer et al., 2019; Ramirez & Haas, 2021; Zimmer et al., 2021).

After the American War, during the conflicts with Cambodia and China, experiences of violence and destruction were no longer ubiquitous. They were concentrated near Vietnam's borders and in other countries. Additionally, it was no longer only soldiers who migrated. As a result, little is known about the relationship between migration, war exposure, and long-term health resulting from smaller, less violent wars. For example, were civilians exposed to the conflict or was exposure more limited to military personnel? And, did these more "minor" exposures carry the same or lesser physical and mental health penalties? Finally, did these exposures exacerbate the health conditions, especially mental health conditions generated by those experienced in earlier more intense and protracted wars?

Theoretical framework

The life course perspective posits that there are patterned timings of life events related to age. Migrations for education and marriage are most common when people are in their early twenties, while moves for work span a slightly longer timeframe but still center on the period of early adulthood (Findlay et al., 2015; Rogers & Castro, 1981). Historical events can disrupt these patterns, however. For example, armed conflicts shift population-wide migration patterns, particularly in countries where wars occur. Wars reduce or restrict migration for traditional reasons, such as work, marriage, and education, particularly for those in their early adult years. In contrast, military mobilization generates deployment-related migration (Hirschman & Nguyen, 2002; Williams et al., 2012).

DATA AND METHODS

Data

The present paper uses data from the Vietnam Health and Aging Study (VHAS), collected in between 2018 and 2021. The study, which involved face-to-face survey interviews with older adults in four northern Vietnamese districts, was designed to investigate the lasting effects of war exposure on the long-term health and well-being of older adults (Korinek et al. 2019). The investigators interviewed 2,447 Vietnamese adults aged 60 and older in four districts in northern and north-central Vietnam that were purposively selected to represent an array of exposures to war, as indicated by the intensity of bombings during the 1960s and 1970s (ibid.; Miguel & Roland 2011). Investigators randomly sampled within subdomains of gender and military service to allow gender-specific analyses of military participation as it relates to war exposure and later life health. The sampling methods are described in full detail elsewhere (see Korinek, et al. 2019). The omnibus survey instrument contained modules detailing military service history, wartime experiences, health, income and assets, migration history, and social connections and support, among others.

Measures

<u>Dependent Variables</u>

We use two dependent variables to capture the relationship between war exposure and later life mental health—psychological distress and self-report of a diagnosed mental health condition. We assess general psychological distress using the Self-Reporting Questionnaire (SRQ) which has been culturally adapted and validated in the Vietnamese population (Beusenberg, Orley, and WHO 1994; Chipimo and Fylkesnes 2010; Giang et al. 2006; Richardson et al. 2010). The VHAS included nine of the SRQ's 20 items inquiring whether the respondent experienced specific emotional or physical expressions of distress in the past month. For example, VHAS asked whether respondents had the urge to cry more than usual, sensed daily life as suffering, thought about suicide, or experienced physical manifestations such as insomnia or indigestion. Following previous studies that validated reduced question indices (Chipimo and Fylkesnes 2010), we weighted these items according to their severity and then created a summative index. The VHAS SRQ index has a Cronbach's alpha of 0.73. The self-reported measure is incorporated in a battery of health questions, each asking whether a person has a condition, and if they have it, whether it was diagnosed by a doctor or they feel they have the condition. Given the limited availability of mental health treatment outside of large urban centers in Vietnam and the reticence of many in the older generations to discuss mental health issues, we treat either answer as an affirmative response.

Independent Variables

Migration—The VHAS collected extensive migration histories, focusing first on moves occurring during the American War and then on postwar migrations. Investigators documented each move lasting at least three months where the respondent crossed province boundaries. For each of these moves, VHAS data details the destination province, the year of the move, and the reason for moving. Reasons for moving included military deployments, formal village evacuations, displacements due to bombing or destruction, education, employment, caring for family members, and other reasons. Though Vietnam experienced a series of wars before and after the American War, the American War was, by far, the most intense and destructive. Thus, we use the term *wartime migrations* to describe moves undertaken during the American War and *postwar migrations* to describe moves occurring after the American War.

War Exposure—We assess exposure to the events of war in two ways. For the period from 1965-1975, we rely on respondents' self-reported experiences of military service, engaging in combat, encountering war casualties, and residing in inhospitable wartime conditions. We also estimate exposure to bombing aggregated at the province level based on respondents' locations during the American War. Geo-referenced bombing data come from official U.S. Department of Defense records of U.S. and allied aerial bombing missions (Defense Digital Service of the U.S. Department of Defense, 2016). We capture bombing intensity by dividing the number of bombing missions in a given province and year by the province area (in square kilometers). No publicly available administrative records exist for estimating exposure to wars occurring after 1975. Further, curated data documenting historical events such as the Armed Conflict Location & Event Data Project (ACLED) only extends to 2010 and the Uppsala Conflict Data Program which contains only country-level data for Vietnam. Thus, we rely on media coverage of conflict events documented in the GDELT Event Database (Leetaru & Schrodt, 2013). GDELT coverage spans from 1979 to the present, documenting more than 300 types of events including military conflict, unconventional violence (i.e., not associated with governments or militaries), military posturing, coercion, threats of violence, and diplomatic actions. Events are classified using CAMEO event codes (Schrodt, 2012). Each event is geocoded to at least province-level precision. We pair this event data with respondents' locations from 1979 to 2021, distinguishing between moves undertaken for military service versus those for other reasons.

Control Variables. Our models also include control for demographic and social characteristics associated with mental health, including respondents' sex, age, marital status, military service history, and socioeconomic status (e.g., education, main lifetime occupation), social support, and recent life stressors.

Analytical Approach

To understand the lifelong effects of conflict and migration on older Vietnamese adults, this paper first compares patterns of wartime and postwar migrations. Next, we summarize war exposures for the two periods. Since the measures aren't strictly comparable, we standardize the measures to allow comparisons. Finally, we model the mental health consequences of war exposure controlling for both time periods using survey-adjusted linear regressions with sampling weights for generalized distress and survey-adjusted logistic regressions with sampling weights for self-reported mental health conditions.

RESULTS

Descriptive Statistics

During the American War in Vietnam, 30% of VHAS respondents moved at least once, crossing province boundaries, and remaining for at least 3 months. Of those who migrated, 53% only migrated once during the war with the remainder migrating between two and nine times. Twenty-five percent of the sample moved at least once due to military deployments. Many in the military were deployed multiple times. As a result, 81% of all migrations were undertaken for military deployments.

Table 1. Percent of respondents who migrated

	During American War	**After American War**
	%	%
All interprovince migrations of 3+ months	28.4 (n = 715)	33.1 (n = 530)
Military deployments	23.9	16.9
Village evacuations/displacements	1.2	—
Employment	2.9	8.5
Family reasons (including marriage)	0.5	5.3
Education	1.7	1.3
Other	1.9	14.2
Sample Size	2419	2094

*Other reasons include demobilization and moves due to injury and convalescence.

Postwar migrations were surveyed during the second wave of VHAS data collection. As a result, the sample size is smaller due to attrition. Thirty-three percent of the Wave 2 sample reported migrating at least once after the American war. Of those who migrated, 45% migrated only once after the war. The balance migrated between two and 12 times. Though Vietnam's most intense and violent war was over, 17% of respondents migrated at least once to perform military duties. After the American War, migrations remained dominated by military deployments, followed by "other" types of moves which include demobilizations (i.e., returns home after military service). However, migration for more traditional reasons such as employment rebounded somewhat after the American War concluded.

The VHAS data document wartime exposures during the peak decade of American involvement of the Second Indochina War. Respondents describe their exposures to war casualties (i.e., the dead or severely injured), being wounded, knowing others who were wounded, engaging in combat, and a host of environmental conditions stemming from bombings and wartime destruction (See Figure 1). These measures offer a level of detail seldom found in conflict research. To improve model parsimony, we incorporate these measures as two indices: an exposure to violence index and an index of inhospitable wartime conditions. These and other measures are summarized in Table 1.

Figure 1. Proportion of respondents experiencing various wartime events

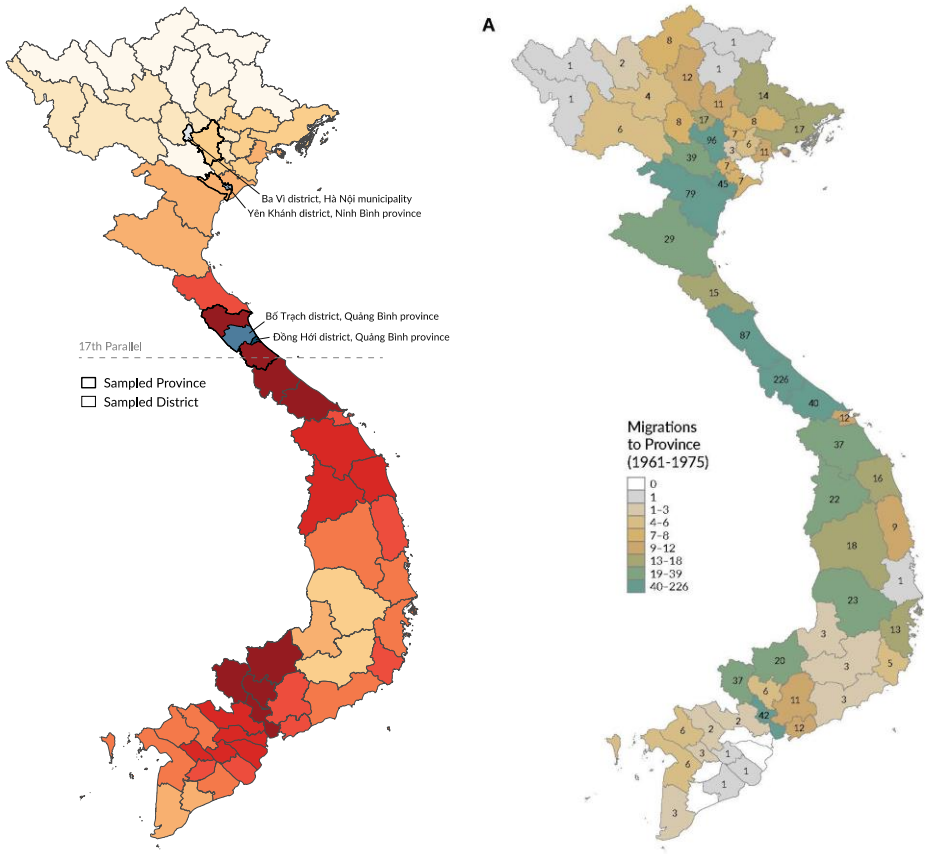
Sadly, we lack such rich information for the period after the American War. As such we use aggregated event data (GDELT) and the respondent's location to approximate exposure to armed conflict after the American War. To complement the GDELT data for the American War period, we also examine aggregate province-level bombing data using wartime locations taken from the migration histories. Figure 2 juxtaposes wartime migrations with bombing. These measures are moderately, but statistically significantly correlated with indices of self-reported war exposure. Among the individual war exposure measures, bombing exposure is most heavily correlated with encountering casualties ($r = .6$). However, from prior studies using this data, we know that the effect of aggregate measures such as bombing exposure on mental health outcomes disappears in many multivariate models when self-reported exposures are added, whether added as individual exposures or indices. Thus, in this paper, we report both types of measures. Over the peak decade of the war, more than 20 million aerial bombing missions were flown, and the midpoint of the war (1969) witnessed more than 3 million bombing sorties. Based on their migration histories and locations during the war we estimate that the average VHAS respondent was exposed to more than 700 bombing missions per square kilometer of their province(s) over the decade. Critically, these exposure levels vary by military service, with civilian exposures averaging 537 bombing missions per km^2 and those with military service averaging 838.

Table 2. Summary statistics by military service status

	All	Civilians	Informal Military	Formal Military
Psychological distress (SRQ score, max = 20)	3.18	2.45	3.52	3.56
Self-report of having mental health problems	14.83%	16.78%	16.33%	12.33%

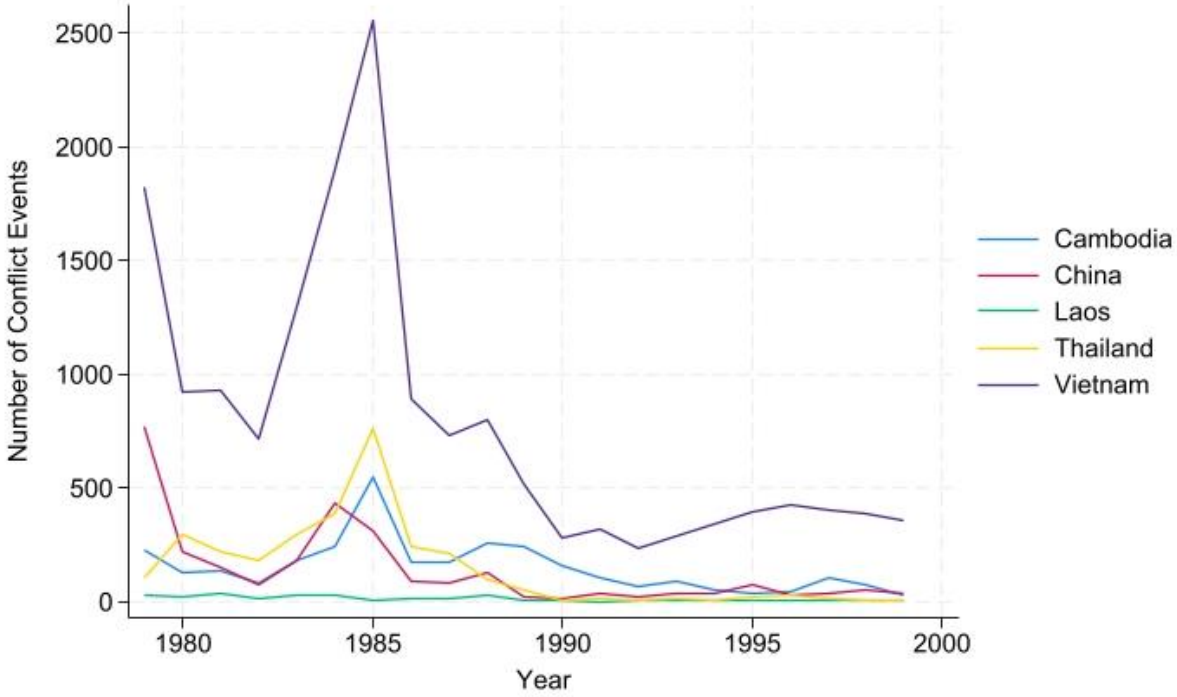
War Exposure				
# times exposed to war violence	10.77	4.95	10.24	15.86
# times exposed to inhospitable conditions	10.69	9.01	12.12	11.13
Bombs/km^2 - Most intense exposure	121.19	66.72	129.80	161.15
Control Variables				
Gender				
Male	48.87%	18.10%	24.41%	90.36%
Female	51.13%	81.90%	75.59%	9.64%
Age at the start of the war				
Age < 15 in 1965	45.97%	45.08%	36.69%	52.69%
Age 15-18 in 1965	17.85%	13.37%	20.47%	19.90%
Age 19-24 in 1965	14.61%	13.97%	17.01%	13.60%
Age 24+ in 1965	21.57%	27.58%	25.83%	13.81%
Currently married	71.48%	56.19%	61.60%	90.66%
Military Service				
None/civilian	33.69%	—	—	—
Informal Military Service	25.99%	—	—	—
Formal Military Service	40.32%	—	—	—
Complete High School Education or higher	14.6%	12.94%	8.33%	20.04%
Main lifetime occupation				
Farmer	67.40%	71.90%	76.54%	57.76%
Professional	11.96%	12.65%	9.13%	13.20%
Other	20.64%	15.45%	14.33%	29.04%
Social/Emotional Support Index (max = 4)	3.46	3.38	3.40	3.55
Recent Life Stressors (max = 6)	0.83	0.83	0.99	0.73

Figure 2. Bombing intensity by province and wartime migrations



After the American War, Vietnam dealt with insurgencies in the Central Highlands and in Laos beginning in 1975. The series of wars with Cambodia and China comprising the Third Indochina War spanned the years from 1977-1999. The GDELT data, which begins in 1979, unfortunately, lacks data on the first two years of these wars. In 1979 alone, the GDELT data documents 3,188 distinct events classified as military conflict, including events in 23 locations in Cambodia, 27 locations in China, 4 locations in Japan, 3 locations in Laos, 13 locations in Thailand, and 32 locations on Vietnamese soil. Event severity, captured by the number of times the particular event was mentioned in news sources, ranges from 1 to 385 with a mean of 5.2 (std. dev. = 13.1). Over the two decades of the Third Indochina War, GDELT documents 29,918 conflict events in which Vietnam was involved. Figure 3 shows the number of events per year from 1977 to 1999.

Figure 3. Conflict Events involving Vietnam by Event Location (1977 to 1999)



Locations of VHAS respondents included many of the most heavily impacted provinces, typically border provinces, as well as Cambodia, Laos, Thailand, and China.

Preliminary Multivariate Results

	SRQ Score	SRQ Score	Self-report	Self-report
War Exposure				
# times exposed to war violence	0.386*		0.415**	
# times exposed to inhospitable conditions	0.428*		0.099	
Bombs/km^2 - Most intense exposure		0.002+		0.002***
Control Variables				
Sex (ref = Male)	1.388*	1.360*	0.769**	0.663*
Age at the start of the war				
Age < 15 in 1965	0.705*	0.753**	-0.078	-0.039
Age 15-18 in 1965	-0.109	0.084	-0.101	0.025
Age 19-24 in 1965	0.355	0.639*	-0.460*	-0.22
Age 24+ in 1965	0.705*	0.753**	-0.078	-0.039
Currently married	0.008	0.012	-0.196	-0.175
Military Service				
None/civilian	0.254	0.067	0.02	-0.152
Informal Military Service	0.802+	0.698+	0.468	0.218
Formal Military Service	0.254	0.067	0.02	-0.152
Complete High School Education or higher	-0.313	-0.29	-0.07	-0.078
Main lifetime occupation				
Farmer	-1.166**	-1.132**	-0.498	-0.477

Professional	-0.991**	-0.981**	-0.273+	-0.287*
Other	-1.166**	-1.132**	-0.498	-0.477
Social/Emotional Support Index (max = 4)	-1.519***	-1.549***	-0.291***	-0.300***
Recent Life Stressors (max = 6)	1.489***	1.591***	0.443***	0.471***
Constant	6.863***	6.602**	-2.360**	-2.365**
R-squared	0.249	0.236		
N	2303	2305	2237	2239

DISCUSSION

Our preliminary results, looking only at the time period during the American War show strong associations between war exposure and both measures of mental health. However, the aggregate measure is only significant for self-reported mental health problems. Additionally, bombing was only significant when incorporated as the most intense annual bombing experienced, not as the total accumulated bomb exposure over the ten-year period. This speaks to the improved salience of self-reported exposure measures and to the importance of major or intense events over longer-term cumulative exposure. With these insights, we anticipate a similar "dose-response" effect of later wars, whereby more intense events carry a great mental health penalty. However, since the American War was a great deal more intense than later wars, aggregate measures may show little to know independent association. However, since extensive literature documents that mental health conditions such as PTSD can diminish over time, but experience a resurgence in the face of new traumatic experiences, we anticipate that new exposures, even though of lesser intensity, may exacerbate earlier trauma or mental distress. In other words, the traumatic events reported in the VHAS, though related to an earlier war, may exhibit an increased association with mental distress if the respondent experiences new instances of war exposure.

The analyses in this study will map VHAS respondents' post-American War locations onto conflict events, weighting those events for severity. We expect the results to contribute new insights into the value and validity of self-reported war exposures versus exposure estimated in the aggregate. And, though our preliminary analyses suggest the models are less sensitive to aggregate measures, this likely indicates an underassessment of the mental health impact of events measured in the aggregate. Additionally, we will explore whether conflict events experienced after the American War exert an independent influence on mental health or moderate the effects of more serious traumas experienced previously. In doing so, our study will offer new information about heterogeneous exposures across multiple wars and eras interact to shape the mental health of populations affected by serial wars.

REFERENCES

Akbulut-Yuksel, M. (2022). *Children of War: The Long-Run Effects of Large-Scale Physical Destruction and Warfare on Children*. 30.

Anh, L. T. K., Hoang Vu, L., Bonfoh, B., & Schelling, E. (2012). An Analysis of Interprovincial Migration in Vietnam from 1989 to 2009. *Global Health Action*, *5*(1), 9334–13. https://doi.org/10.3402/gha.v5i0.9334

Cady, J. F. (1966). The French Colonial Regime in Vietnam. *Current History*, *50*(294), 72–115.

Clodfelter, M. (1995). *Vietnam in Military Statistics: A History of the Indochina Wars, 1772-1991*. McFarland & Company.

Dang, N. A. (1999). Market Reforms and Internal Labor Migration in Vietnam. *Asian and Pacific Migration Journal*, *8*(3), 381–409. https://doi.org/10.1177/011719689900800307

Defense Digital Service of the U.S. Department of Defense. (2016). *Theater History of Operations (THOR) Data: Vietnam War* [dataset]. https://data.world/datamil. https://www.dds.mil

Desbarats, J. (1987). Population Redistribution in the Socialist Republic of Vietnam. *Population and Development Review*, *13*(1), 43. https://doi.org/10.2307/1972120

Drozdek, B., Rodenburg, J., & Moyene-Jansen, A. (2020). "Hidden" and Diverse Long-Term Impacts of Exposure to War and Violence. *Frontiers in Psychiatry*, *10*, Article 975. https://doi.org/10.3389/fpsyt.2019.00975

Goscha, C. (2012). A 'Total War' of Decolonization? Social Mobilization and State-Building in Communist Vietnam (1949–54). *War & Society*, *31*(2), 136–162. https://doi.org/10.1179/0729247312Z.0000000007

Hardy, A. D. (2001). Rules and Resources: Negotiating the Household Registration System in Vietnam Under Reform. *Sojourn: Journal of Social Issues in Southeast Asia*, *16*(2), 187–212.

Hirschman, C., & Nguyen, M. H. (2002). Tradition and Change in Vietnamese Family Structure in the Red River Delta. *Journal of Marriage and Family*, *64*(4), 1063–1079. https://doi.org/10.1111/j.1741-3737.2002.01063.x

Korinek, K., Teerawichitchainan, B., Zimmer, Z., Brindle, E., Nguyen, T. K. C., Nguyen, H. M., & Tran, K. T. (2019). Design and measurement in a study of war exposure, health, and aging: Protocol for the Vietnam health and aging study. *BMC Public Health*, *19*(1), 1–11.

Korinek, K., Young, Y., Teerawichitchainan, B., Nguyen, C. T. K., Kovnick, M., & Zimmer, Z. (2020). Is War Hard on the Heart? Gender, Wartime Stress and Late Life Cardiovascular Conditions in a Population of Vietnamese Older Adults. *Social Science & Medicine*, *265*, 113380. https://doi.org/10.1016/j.socscimed.2020.113380

Leetaru, K., & Schrodt, P. A. (2013). *GDELT: Global Data on Events, Location and Tone,*. International Sociological Association, San Francisco, CA.

Merli, M. G. (2000). Socioeconomic Background and War Mortality during Vietnam's Wars. *Demography*, *37*(1), 1. https://doi.org/10.2307/2648092

Miguel, E., & Roland, G. (2011). The long-run impact of bombing Vietnam. *Journal of Development Economics*, *96*(1), 1–15. https://doi.org/10.1016/j.jdeveco.2010.07.004

Miller, K. E., & Rasmussen, A. (2010). War exposure, daily stressors, and mental health in conflict and post-conflict settings: Bridging the divide between trauma-focused and psychosocial frameworks. *Social Science & Medicine*, *70*(1), 7–16. https://doi.org/10.1016/j.socscimed.2009.09.029

Palmer, M., Nguyen, C. V., Mitra, S., Mont, D., & Groce, N. E. (2019). Long-lasting consequences of war on disability. *Journal of Peace Research*, *56*(6), 860–875. https://doi.org/10.1177/0022343319846545

Porter, G. (1993). *Vietnam: The politics of bureaucratic socialism*. Cornell University Press.

Ramirez, D., & Haas, S. A. (2021). The Long Arm of Conflict: How Timing Shapes the Impact of Childhood Exposure to War. *Demography*, *58*(3), 951–974. https://doi.org/10.1215/00703370-9114715

Rydstrøm, H. (2012). Gendered Corporeality and Bare Lives: Local Sacrifices and Sufferings during the Vietnam War. *Signs: Journal of Women in Culture and Society*, *37*(2), 275–299. https://doi.org/10.1086/661711

Schrodt, P. (2012). *CAMEO: Conflict and Mediation Event Observations Event and Actor Codebook* (1.1b3) [dataset]. http://eventdata.psu.edu/

Stellman, J. M., & Stellman, S. D. (2018). Agent Orange During the Vietnam War: The Lingering Issue of Its Civilian and Military Health Impact. *American Journal of Public Health*, *108*(6), 726–728. https://doi.org/10.2105/AJPH.2018.304426

Teerawichitchainan, B. (2009). Trends in Military Service in Northern Vietnam, 1950—1995: A Sociodemographic Approach. *Journal of Vietnamese Studies*, *4*(3), 61–97. https://doi.org/10.1525/vs.2009.4.3.61

Thrift, N. J., & Forbes, D. K. (1985). Cities, Socialism and War: Hanoi, Saigon and the Vietnamese Experience of Urbanisation. *Environment and Planning D: Society and Space*, *3*(3), 279–308. https://doi.org/10.1068/d030279

Williams, N. E., Ghimire, D. J., Axinn, W. G., Jennings, E. A., & Pradhan, M. S. (2012). A Micro-Level Event-Centered Approach to Investigating Armed Conflict and Population Responses. *Demography*, *49*(4), 1521–1546. https://doi.org/10.1007/s13524-012-0134-8

Zimmer, Z., Fraser, K., Korinek, K., Akbulut-Yuksel, M., Young, Y., & Tran, T. K. (2021). War across the life course: Examining the impact of conflict exposure on a comprehensive inventory of health measures in an aging Vietnamese population. *International Journal of Epidemiology*, *50*(3), 866–879. https://doi.org/10.1093/ije/dyaa247

Funding

Research reported in this publication was supported by the National Institute on Aging of the National Institutes of Health under Award Number R01AG052537. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Ethics approval and consent to participate (specific and general examples)

Ethics approval for the current study was obtained from the University of Utah's Institutional Review Board (IRB_00099861), Hanoi Medical University's Independent Review Board in Bio-medical Research (IRB No. 00003121), and Vietnam's Ministry of Health Ethical Committee (29-CN/HDDD). Written informed consent was obtained from all study participants.