Armed Conflict, Mass Media and Migration

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February 25, 2009

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Abstract

This article is an investigation of the role of the mass media as a key structural factor that affects migration during periods of armed conflict. Although there is a large body of literature on aggregate patterns of migration during armed conflict, there is little theoretical or empirical research at the micro-level that addresses the specific structural factors that affect systematic individual variation in migration during periods of violence. To address these questions, we use a unique combination of records of violent events and detailed individual data from Nepal which feature measures of media use before conflict and migration responses throughout the conflict. Results from event history models show that migration responses to violent events were conditioned on media use; specifically those who read the newspaper or listened to the radio on a regular basis were more likely to migrate in the immediate aftermath of major gun battles in the local area than their counterparts who did not use these media sources. In addition to migration, these results are broadly relevant to the role of the mass media in moderating other behaviors during armed conflict as well as other exogenous shocks such as terrorist attacks, natural disasters, and climate change.

ARMED CONFLICT, MASS MEDIA AND MIGRATION

A large body of research in the past few decades has demonstrated that armed conflict results in increased migration at the aggregate level with significant consequences for human well-being and political stability around the world (Davenport, Moore, and Shellman 2003; Jacobsen 1997; Kibreab 1997; Moore and Shellman 2004; Richmond 1994; Schmeidl 1997; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989). There is also consistent evidence from the United Nations that migration responses to armed conflict vary considerably across a variety of contexts. Furthermore, research on migration during periods of relative peace shows that numerous structural factors affect systematic individual-level variations in migration (Borjas 1989; Harris and Todaro 1970; Massey 1990a; Massey and Espinosa 1997; Massey et al. 1987; Massey et al. 2002; Stark and Bloom 1985; Stark and Taylor 1991). However, there is little theoretical or empirical research at the micro-level that addresses possible explanations for systematic individual-level variations in migration during periods of armed conflict. This severely restricts our understanding of migration during armed conflict and the ability of social scientists and policy makers to address the wide ranging consequences of this persistent problem.

This article is a micro-level investigation of migration during armed conflict and addresses the role of one specific and powerful structural factor on the migration decision – the mass media. The approach we use here advances beyond existing macro-level research on the causes of migration in situations of armed conflict to investigate this relationship at the micro-level, allowing us to both draw upon the full existing body of sociological knowledge regarding migration decisions and to advance our understanding of the mechanisms through which conflict produces behavioral responses (Castles 2003; Mazur 1988; Richmond 1988). We use a unique combination of data with unprecedented detail in measurement of both armed conflict and

individual characteristics and behaviors. This opportunity provides the empirical grounding for equally significant theoretical advances in the study of armed conflict and its consequences.

The micro-level approach provides a number of important theoretical advances. First, it allows us to move beyond the historical but unrealistic dichotomy of 'forced' versus 'voluntary' migration upon which many macro-level studies are based (Dowty 1987, Richmond 1988). By focusing on individuals, we are able to show that people who are exposed to the same levels of violence do not all react in the same way, some migrate and many do not. Second, the micro-level approach allows us to investigate specific micro-level mechanisms that influence this variability in migration responses to conflict. We draw upon social psychological theories of fear of crime, media consumption, and subsequent behavioral responses and argue that media exposure not only provides information that influences migration decisions in general, but that in times of conflict media exposure interacts with the timing of violent events to provoke migration. Third, consideration of these issues at the micro-level allows us to refine how such mechanisms of response to armed conflict may differ across subgroups of the population. Specifically, we argue that pre-existing differences in literacy determine the type of media exposure most likely to provoke a migration response to armed conflict. Together these new theoretical tools provided by the micro-level approach and social psychological theory highlight the fundamental role of perceptions of risk and the power of macro-level forces such as the media to shape these perceptions and produce behavioral responses. These advances provide a powerful new framework for understanding the variations in behavioral reactions to large-scale violence or other disasters.

The empirical basis for such theoretical advance is rare because it requires detailed measurement of specific violent events, including the timing of those events, linked with detailed

individual-level measurement of behavioral responses, such as migration, including the timing of those responses. Even more demanding, the model we advocate requires measurement of pre-conflict behaviors, such as mass media consumption, and key population differences, such as literacy, along with a wide range of potential confounders. This is difficult to measure retrospectively after a conflict has occurred. Instead, empirical testing of such a model requires substantial individual, family, and community-level measures before a conflict begins in the context of a longitudinal study of individuals that spans the period of the conflict and measures behavioral response throughout. This requires both extensive resources and serendipity as it is never known exactly when and where a conflict will occur. Such studies are rare, to say the least.

This paper reports empirical tests based on survey measures meeting exactly these requirements. The Chitwan Valley Family Study (CVFS) preceded the recent decade long conflict between the Government of Nepal and the Nepalese Maoist party. It features intensive individual, family and community-level measurement before the conflict began, and prospective panel measures of migration on a monthly basis spanning the entire period of conflict. Extremely important, measures of media consumption come from before the conflict began, so that these measures reflect individual variation that is not a direct response to the conflict itself. Combined with precise records of the timing of specific violent events, these data provide an exceptional opportunity to directly document the relationship between violent events, mass media, and migration. In addition, this quantitative data is complemented by qualitative data from a series of in-depth interviews undertaken in the same area and designed to elicit narratives of respondent's experiences and concerns during the period of conflict, their migration decisions, and perceptions of the mass media.

The conflict in Nepal provides an ideal case study because it is not unique or exceptional in the world. The violence in Nepal was not as extreme as the exceptional circumstances in Darfur, Iraq, or Afghanistan today. Instead, the generally poor living conditions of the population and moderately intense violence that Nepal experienced make this case study comparable to many of the on-going, moderately intense, intrastate conflicts around the world today. Though not exceptional, intrastate conflicts to which Nepal's compares together comprise the majority of recent armed conflicts—84% of the 31 conflicts in 2005[1]. Together these conflicts affect about 20% of the world's population (Mack 2006). What makes this case study in Nepal unique is the availability of detailed micro-level quantitative and qualitative data on behaviors and violent event records in both the pre- and during conflict periods, which provide an exceptional opportunity to investigate fundamental questions regarding behavioral responses to armed conflict.

This study provides insight into possible explanations of variability in migration during armed conflict in Nepal and in other areas of the world and likely relates to other important behavioral responses as well. Our documentation of the key role of media in altering behavior is also relevant to behavioral responses to other types of exogenous shocks that feature largely in the media, such as terrorist attacks, natural disasters including large tsunamis and earthquakes, and climate change.

Theoretical Background

The study of migration has advanced significantly in the last few decades towards identifying a wide range of key determinants of migration. However, it has largely been developed to explain mobility during periods of relative peace. Armed conflict constitutes a specific and significant contextual difference that can affect all aspects of daily life, creating a special situation that is

not well addressed by the migration literature. Periods of armed conflict are characterized not just by violence, but also political instability, economic insecurity, degradation in the rule of law, and disruptions in social relationships (Collier et al. 2003; Hoeffler and Reynal-Querol 2003; Jimeno 2001; Mack 2005; Modell and Haggerty 1991; Stewart, Huang, and Wang 2001). Thus there is good reason to expect that there will be differences in the micro-level determinants of migration during armed conflict compared to periods of relative peace.

Our framework for studying migration during conflict builds directly on the existing body of migration theory, and adds theoretical insights about the additional considerations taken when making migration decisions during the context of conflict. Wage differentials, human capital, and social capital are each likely to be important predictors of migration even during periods of conflict (Bohra and Massey forthcoming; Czaika and Kis-Katos 2009; Engel and Ibanez 2007; Harris and Todaro 1970; Massey 1990b; Massey et al. 1987; Massey and Espinosa 1997; Palloni et al. 2001; Sjaastad 1962; Stark and Bloom 1985; Stark and Taylor 1991; Todaro 1969). For each of these, conflict may heighten responses to these factors. For example, wage differentials between the origin and potential destinations may create a baseline motivation to migrate. Once armed conflict begins, wage differentials may increase, thus strengthening the desire to migrate. This prediction is consistent with the macro-level prediction that armed conflict will increase out-migration (Davenport, Moore, and Shellman 2003; Moore and Shellman 2004; Schmeidl 1997; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989). It may be that such a response is simply the sum of pre-existing motives to move that loom larger in migration decisions during periods of conflict.

We argue, however, that more complex forces are likely at work. The general assumption that conflict increases migration may not be valid in all situations. Instead, periods

of conflict may in some cases reduce the propensity to move, especially in a context of high migration before the conflict. This is likely because conflict disrupts many ongoing dimensions of the local context, including transportation systems and work opportunities. It may also increase fears of travelling which can expose people to additional violence (Bohra and Massey forthcoming). Thus, in a context of high and ongoing migration, it is possible that conflict reduces rather than increases migration. This possibility renders the interaction between other pre-existing micro-level motives to move and a period of armed conflict difficult to determine. They could act to either mitigate or enhance the consequences of conflict.

We argue that mass media consumption is a crucial exception. Mass media consumption is a form of social capital that spreads information about opportunities at various potential destinations, information about the process of moving, and even ideas about the potential consequences of moving. As such, in general mass media consumption is thought to increase the propensity to migrate (Piotrowski forthcoming; Sun 2002). However mass media consumption can take on a special character during periods of conflict. This is because the media is a key source of information about conflict, with the power to shape perceptions of conflict and the likely behavioral responses.

Mass Media and Migration During Periods of Relative Peace

Research has shown that the mass media are an important, yet understudied, factor in migration decisions (Piotrowski forthcoming; Sun 2002). The main mechanisms through which the media affects migration have been identified as ideational and informational (Piotrowski forthcoming). Similar to the role of social networks (Massey et al. 1987), media can provide information about migrant destinations, job opportunities, and travel. As a result, exposure to media is likely to increase migration in the same way that other forms of migration-related social capital increase

the likelihood of migration (Espinosa and Massey 1997; Massey et al. 1987, Massey 1990a, Palloni et al. 2001).

The concept behind the ideational mechanism is that media provide exposure to ideas and lifestyles which change people's desires and aspirations, especially for amenities and new lifestyles that are positively portrayed in the media (Barber and Axinn 2004; Johnson 2000, 2001; Katz and Wedell 1977; Thornton 2001). People who develop these new aspirations might use migration as a means to gain access to amenities and alleviate a sense of relative deprivation. In the terms of neo-classical migration theory, the media plays a role by increasing the desirability of migration destinations and thereby leading peoples to expect better economic and lifestyle outcomes if they migrate (Todaro 1969).

Mass Media, Perceptions of Violence, and Migration during Armed Conflict

During armed conflict, there is no reason to believe that the informational and ideational roles of the media would influence migration less. However, consumption of the media likely takes on an additional role. The news media can change perceptions of the context within which people live. In the language of classic push-pull migration theory, media can increase pull factors at any time, during armed conflict or periods of relative peace. During periods of armed conflict, we argue that the news media also serves to increases push factors for migration by conveying negative perceptions of the origin context.

Our hypothesis is based on the idea that people's responses to exposure to violence depend not just on the actual violence but also on their perceptions of the threat that this violence constitutes to their safety. Even if two people are exposed to the same violent events they can cognitively process their experiences differently and as a result perceive different levels of threat to their safety.

The media can affect perceptions of threat in two ways. First, it provides information about specific violent events, such as gun battles, bombs, or demonstrations, when and where they happened, and the intensity of these events. Thus, people who consume media are more likely to know about events that could constitute a threat to their safety in their homes and in public areas while conducting routine activities of daily life or travelling.

Second, the media can affect how people perceive these events. The media do not just provide information, they also guide people's thinking about the information and the importance they attach to particular events. Research on agenda setting in the media has shown that the images and events that are more prominent in the news become more prominent in their audience's perceptions of reality (Iyengar and Simon 1993; McCombs and Shaw 1972). In the case of armed conflict, or even violence in general, the media often report heavily on these events, often out of proportion with the reality of the events and more so than other less dramatic stories (Iyengar and Simon 1993; Chiricos, Padgett, and Gertz 2000; Vishwanath, Ramanadhan, and Kontos 2007).

Furthermore, the content of media stories is also important. Just as the media often extensively report dramatic stories, the way in which they present these stories is often overdramatized, showing powerful visual images of injured or dead people or destroyed buildings. This is especially the case in many countries outside the United States, where pictures of bloody corpses on the front page of the newspaper are not uncommon. These powerful and dramatic images can lead audiences to perceive an event as more dangerous than they otherwise might have.

Thus, the media can shape reality in the minds of its audience; people who use news media might be more likely to perceive any given violent event as more salient and more

threatening to their safety, out of proportion with the actual reality of the threat. Research on fear of crime in the United States and the United Kingdom has consistently found this to be the case- those who watch television news, listen to the radio, and read newspapers are more fearful of crime (Chiricos, Eschholz, and Gertz 1997; Eschholz, Chiricos and Gertz 2003; Heath 1984; Liska and Baccaglini 1990; Williams and Dickinson 1993). Neighborhood crime in the United States is clearly a different situation from armed conflict in rural Asia. However, the general theory of response to violence is informative in both settings. Nevertheless, a detailed understanding of the specific setting and context is essential for the construction of empirical predictions based on this framework.

Setting

Information regarding three dimensions of the specific setting – the conflict, the local context, and the nature of the mass media in this context – are essential to the construction of specific empirical predictions.

The Conflict in Nepal

The context of this study is the recent conflict in Nepal which began in 1996. In February 1996 the Communist Party of Nepal (Maoist) made a formal declaration of "People's War", with the aim to unseat the current constitutional monarchy and install a democratic republic. The earlier stages of the conflict were contained primarily in several mid-western districts and had little impact on the rest of the country. From mid-2000, the Maoists progressively expanded their campaign nationwide. In January 2001, the Nepalese government responded by creating a special armed police force to fight the Maoists, beginning the nationwide armed conflict. In November, 2006, the government and Maoists signed a comprehensive peace agreement declaring an end to the conflict.

Because this conflict was staged mainly as a guerrilla war, there was generally no 'frontline', it was largely unknown where fighting would break out, and civilians were often unintentionally caught up in firefights and bomb blasts. Reported violent acts by the Maoists and Nepalese government security forces against civilians include torture, extra-judicial killings (both discriminate[2] and indiscriminate), and abductions (South Asia Terrorism Portal 2006; Hutt 2004; Pettigrew 2004). In addition to overt violence, citizens experienced arrests without warrant, house raids, varying forms of intimidation, forced conscription, billeting, extortion, and general strikes. Recent in-depth interviews in the Chitwan area indicate that most people felt threatened on a continuous basis and adjusted their daily activities accordingly[3]. For example, in recent in-depth interviews, respondents consistently reported statements such as the following, "The people were really terrorized. It was insecure even to go to town to purchase things. It was difficult to send children to school," and, "It was difficult to go anywhere… You never knew if a person who went outside would come back or not. The situation was very dangerous."

The Chitwan Valley of Nepal

Our study investigates behavioral response to this conflict in the western part of the Chitwan District located in south-central Nepal. The administrative district of Chitwan borders India and is about 100 miles from Kathmandu. There is one large city, Narayanghat, and the rest of Chitwan's population, like much of Nepal, lives in small, rural villages. The valley is dominated by agriculture with the majority of the population operating on a subsistence level. Historically, there has been significant migration from the Chitwan Valley to other areas of Nepal and nearby areas of India. Nepal and India share an open border, so there are no restrictions on Nepalese cross-border travel to India, making international migration no more difficult than internal migration. The 2001 census estimated that 2.5-5.0% of Chitwan residents were living abroad in

2001 (HMG et al 2002) and 77% of them were in India. Data from a nationally representative sample survey allow us to estimate that about as many Chitwan residents were internal migrants (HMG et al 2004). Much of this migration is seasonal and is viewed as a strategy to supplement regular farm and household incomes (Kollmair et al 2006; Thieme and Wyss 2005).

Figure 1 shows the monthly out-migration, including internal and international migration, from the Chitwan Valley from June 1997 through January 2006. Out-migration steadily declines from a high of about 3% per month in early 1997 until the middle of 2000. After this time, the percent of the population that moved out of the area in each month remains at a relatively stable, but low rate of around 0.6% per month, with occasional large spikes.

[Figure 1 about here]

Mass Media and Censorship in Nepal

Access to mass media, from both public and private sources, in the general population is widespread. Radio is a major source of information for much of Nepal and is of particular importance for those who are not literate and have no functional access to print media. Radio Nepal, the official state broadcaster, continues to be the most prominent, with the ability to broadcast into most areas of the country (Barber and Axinn 2004; Radio Nepal 2009). By 1996 there were 56 radio licenses issued, increasing the diversity of radio programming from different private and public perspectives (International Federation of Journalists 2005). By 2005 there were eight government daily newspapers, a number of weekly tabloids, and hundreds of local weekly or monthly papers being published (International Federation of Journalists 2005). Most of these publications are inexpensive.

During the conflict, access to these media was not always consistent, and at times the news presented had a distinct political slant. Of particular note, in February 2005, King

Gyanendra issued a Royal Proclamation, declaring a state of emergency, cutting off communications with the rest of the world, and suspending freedom of the press. Further, in March 2005, the government announced new regulations prohibiting dissemination of any information related to security matters without the prior permission of the government (International Federation of Journalists 2005; Lim 2006). Subsequently various newspapers and radio broadcasters around the country were closed by security forces and others significantly curtailed the information they provided. This censorship of the media continued through May 2006.

The censorship during this period resulted in increasingly pro-government news. However, for the purposes of this study, it is important to note that while the information provided by the media during this period was likely biased, there was continual news service about violent events that reached the general populace. In examining the threat that people perceive when using the media, it is likely that reports of violence perpetrated by any belligerent party will increase perceptions of threat. In recent in-depth interviews in the Chitwan area, respondents consistently reported experiencing fear of both the Maoists and the government security forces. For example, one man succinctly stated a common fear "I was worried that I was in a trap between these two conflicting powers." Although many felt that the news media presented biased coverage, it nonetheless increased their sense of fear. One informant reported, "Some news items were disgusting, especially the reports about people being killed. We used to get terrorized hearing such news, we couldn't sleep well at night. The stories of frightening events and murder terrorized us badly." Another woman stated that when she watched news of people who were killed, "I used to visualize them as my own children."

Empirical Predictions

In this context, we expect that specific high intensity events, such as gun battles, will increase migration. This hypothesis is consistent with empirical evidence from studies in many other countries that find increased migration during periods of armed conflict (Davenport, Moore, and Shellman 2003; Moore and Shellman 2004; Schmeidl 1997; Weiner 1996; Zolberg, Suhrke, and Aguayo 1989).

We expect that consumption of mass media in general will affect migration, during conflict and periods of peace, and consumption of media will have an additional affect on migration during armed conflict. In the specific context of Nepal, factors such as literacy and availability of different types of media likely condition the relationship between conflict, media use, and migration.

Both newspapers and radio are generally accessible in Nepal, but those who are not literate do not have functional access to newspapers. They are thus dependent on the radio as a main source of media for information. Literacy is of particular importance in the Nepali context, where a significant proportion of the population is not functionally literate. In the Chitwan Valley Family Study, 21% of the men were illiterate. As shown in Table 1, illiteracy is particularly associated with older age groups, ethnic minorities, and residence in rural areas. Although people who are illiterate generally differ from those who are literate in several ways that could affect their migration propensities, there is little theoretical reason to believe that the media would influence them differently during periods of relative peace, or that the news media would alter their perceptions of violence any more or less than those who are literate.

As a result, we hypothesize that of those who are not literate, people who listen to the radio will be more likely to migrate. Furthermore, those who listen to the radio will be more likely to migrate after specific violent events than people who do not listen to the radio.

[Table 1 about here.]

Literate people, on the other hand, have functional access to both the radio and newspapers. We hypothesize that among those who are literate, people who listen to the radio or read newspapers will be more likely to migrate than those who do not use these media. However, during armed conflict, we expect reading newspapers to be particularly powerful. This form of media generally has higher credibility among the literate than radio programming. Research in the United States has shown that amongst news sources, newspapers are considered credible sources of information, and in a comparative study, they were considered more credible than radio news (Kiousis 2001; Johnson and Kaye 2004). Although there is no comparable research on media credibility in Nepal, respondents of in-depth interviews reported higher trust in newspaper than radio news. For example, one man who used both sources of news stated a distinct distrust in the radio, "The radio brought out one-sided news. I used to listen to the BBC and I believed in that. BBC is better than Radio Nepal. I don't believe Nepal's radio." Thus we predict that literate people who read the newspaper will be more likely to migrate after violent events, compared to those who do not read newspapers.

Overall, we expect the migration response to violent events to depend on individual variation in media exposure. We expect the occurrence of specific violent events to shape immediate subsequent migration activity. This short term response to gun battles, in turn, we expect to be stronger among those with higher exposure to the mass media. Finally, we expect

this behavioral response to gun battles to be conditioned on literacy, such that the literate respond to both newspapers and radio and the illiterate respond to radio.

Data and Measures

Three kinds of data are used in this study- survey data about individuals, records of violent events during the conflict, and qualitative data from in-depth interviews. Measures of violent events come from the South Asia Terrorism Portal (SATP), an Indian-based NGO that compiles records of all violent events in South Asia. Measures of individual and household characteristics come from the Chitwan Valley Family Study (CVFS), a large-scale multidisciplinary study of the western part of the Chitwan Valley of Nepal, designed to investigate the impact of macro-level socioeconomic changes on micro-level behaviors (Axinn, Barber, and Ghimire 1997; Axinn, Pearce, and Ghimire 1999; Barber et al. 1997).

The CVFS includes a variety of data sets, including an individual interview and life history calendar that were collected in 1996, a prospective demographic event registry that has been collected regularly[4] beginning in 1996, and household agriculture and consumption surveys in 1996 and 2001. Overall, the CVFS prospective registry includes 151 neighborhoods that were selected with an equal probability, systematic sample. All people between the ages of 15 and 59 and their spouses within these neighborhoods were included in the study. At 97% of the original sample, the response rates are exceptional.

The sample used in this study is restricted to those who were between the ages of 18 and 59 at the beginning of this study in June 1997[5]. This age range excludes those who were too young or old to be living independently and have significant power to make migration decisions. It also excludes young people who may still be enrolled in school, which past research in this area has shown to be a strong predictor of migration (Williams 2009).

We also restrict the sample to men only and do not address women's migration in this analysis. This is because Nepali society is strongly stratified by sex. In general, men are responsible for many of the decisions about the household and household members, leaving women with restricted personal autonomy and less decision-making power (Fricke, Axinn, and Thornton, 1993; Niraula and Morgan, 1996; Yabiku, 2005). Thus women likely contribute little to the migration decision-making process. Furthermore, empirical evidence suggests that independent of media use, women experience and perceive violence differently than their male counterparts (Rountree and Land 1996a; Skogan and Maxfield 1981; Warr 1984; Williams and Sainju-Pradhan 2009). As a result, women's migration may be less tied to their own personal characteristics and the effect of women's media use may be realized through different pathways. Thus, we focus here on the effects of violence and media use on men's migration and leave analysis of women's responses to these events for future research that can address the processes that determine women's migration behaviors more thoroughly[6].

Qualitative data come from a series of 25 in-depth interviews conducted in the Chitwan Valley during the spring of 2009. The semi-structured interviews were loosely based on guidelines designed to elicit narratives on respondent's general perceptions of and personal experiences during the conflict, their priorities and considerations in making migration decisions during this time, and their perceptions of the media. Respondents were purposively selected to represent a broad spectrum of the population of this area in terms of socio-economic status and migration histories. The interviews lasted an average of about one hour. Efforts were made to ensure privacy; interviews were typically conducted inside respondent's homes with only the interviewer and respondent present. All interviews were tape recorded with prior permission of

the respondent and later transcribed by the interviewer and translated into English by professional translators in Nepal.

Measures of Violent Events

We use one measure of a specific kind of violent event—major gun battles. SATP provides records of the date and place of each major gun battle in Nepal. The data cover 51 months, from November 2001 through January 2006. We create a measure of the number of major gun battles per month in the local area. The local area that can influence Chitwan residents' perceptions of threat is defined as Chitwan and the six neighboring districts (Nawalparasi, Tanahu, Gorkha, Dhading, Makwanpur, and Parsa). In this area, there were gun battles in 12 of the 51 months of records. The largest number of major gun battles in one month in this area was four, in April 2005.

For the time period that these data do not cover, from the beginning of the study in June 1997 until November 2001, we impute the number of major gun battles to be zero. News reports and research show that the conflict was at a very low intensity during this time (Hutt 2004) and CVFS research staff who were resident in the area report that there were few of these events before 2002. Thus this imputation strategy for the period before 2002 is likely the closest representation of reality. It is also a conservative approach that is more likely to underestimate than overestimate the effect of gun battles on migration.

These event records from SATP were "compiled from official sources and the English language media in Nepal." (South Asia Terrorism Portal 2006). The accuracy, or more to the point the inaccuracy, of these news reports should be examined, particularly in the case of Nepal, which has been repeatedly accused of severely restricting freedom of the press (Amnesty International 2005; International Federation of Journalists 2005; UNOHCHR 2005). The

government has been accused of falsifying official figures of casualties from the insurgency (Dixit 2002; Hutt 2004). It is argued that "for greater precision government casualties be doubled and Maoist losses be halved against official figures." (Mehta 2002). However, while news reports of the numbers of deaths or injuries are likely less accurate, reports that a violent event happened and the time and date of the event are likely to be relatively accurate. It is easier to misrepresent the size or impact of an event such as a gun battle than it is to misrepresent that it happened at all. For this reason, we use records of major events (gun battles) and not the number of people that were involved or injured in each event.

To test for robustness of our results, we also used an alternate measure of gun battles that was collected by the Institute for Social and Environmental Research (ISER) located in Chitwan, the same organization that collected the CVFS data. The ISER records are preliminary. Results on the moderating effects of media use on migration from this test were substantively similar to those using the SATP measure. Here we report results from models using the SATP measure of gun battles because these data are already available in the public domain, making it easy to replicate our results.

Migration

The measure of migration comes from the CVFS prospective demographic event registry that was collected on a monthly basis. These data feature residence records for each person in the sample for every month. We present results from models that define migration as an absence of one month or longer from one's original 1996 residence. Over the 104 month period of this study, 59% of the sample population migrated at least once using this definition. Table 2 shows the descriptive statistics for this and all other measures used in this study.

[Table 2 about here]

The use of a prospective demographic event registry collected on a monthly basis allows for this uniquely precise recording of migration as well as the ability to carefully define what length of time away constitutes migration. The measure we present captures short- as well as long-term migration. This is important in the case of conflict, where research has shown that migration is often temporary. Although the contrast between temporary and permanent migration is analytically important, differentiating between these two types of migrants is complex in an investigation of the causes of migration because the duration of migration is often not determined at the time of departure. Although migrants often have intentions about how long they will stay away, the actual duration is not determined until the day a migrant returns and this can be affected by a wide range of political, social, and economic factors in the home and host communities (Chavez 1992; Chavez 2009; Hagan 1994; Massey 1986; Piore 1979). This situation is exacerbated in the context of armed conflict, when migrants may leave with the expectation that they will be away temporarily until the violence subsides. Unfortunately, many conflicts (including that in Nepal) last many years, turning temporary migrants into long-term and even permanent migrants after their departure. An extreme example is the Palestinian refugees who left their homes in 1948, with the intention that their flight would be temporary, and still have not returned (Morris 2004).

Nevertheless, to test the robustness of our results, we also estimated models using several alternative definitions of the length of absence required to be defined as a "migrant". The monthly data are extremely flexible, facilitating this exercise. Further detail on these tests and results is provided in the Analytical Strategy section.

Media Use

As with all analyses of the effects of media exposure on behavior, our models face a common set of problems that could threaten the validity of the results. The primary issue in this case is the possible endogeneity of media exposure, i.e. the characteristics that influence certain people to use the media can also affect their responses to media and subsequent migration. Consequently, migration could be a result of mass media consumption, or a result of some other factor that made certain people more likely to consume the media in the first place. In the case of armed conflict, the primary problem lies in that those who are more concerned about the conflict will be more likely to seek out information about it in the news media. Thus, if we find a positive association between news media consumption and migration after violent events, this could be a result of an actual causal relationship between concern about conflict and subsequent migration.

In this study we use a unique set of measures to address this issue. Our measures of media use come from the CVFS individual interview in 1996, before the conflict began. These measures of each respondent's pre-existing media use habits cannot be shaped by their response to the conflict because it had not yet begun. We hypothesize that this pre-conflict measure reflects key variance in respondent's pre-conflict disposition toward media consumption that will then shape their use of media during the conflict itself.

In the interview, respondents were asked how often they read the newspaper and listened to the radio. Their responses were coded into dichotomous measures with a value of '1' if they used newspapers or the radio at least once a week, and '0' if they used these media less than once a week. For literate men, there was a weak but statistically significant correlation between newspaper and radio use, with a correlation coefficient of 0.16. Newspaper and radio use were also weakly correlated with a measure of periodic (at least three times per year) exposure to

movies in the cinema with coefficients of 0.21 and 0.06 respectively. For illiterate men, there was no significant correlation between radio and movie exposure.

Individual Characteristics

In order to accurately estimate the effects of violence and media consumption on migration, we include a variety of individual characteristics that could confound these relationships. It is particularly important to address the selection of those who are likely to have access and use media in the first place, which could be contingent on literacy, age, education, employment, and economic and social status. In addition, there are a number of characteristics that research has shown to affect the likelihood of migration in this setting and in other countries. Therefore, we include measures of age, ethnicity, marital status, children, urban proximity, past migration experience, education, literacy, ownership of land, ownership of livestock, and months of the year. Most of these measures come from the CVFS Individual Interview in 1996; only the time-varying measure of marital status comes from the prospective panel study.

We use a dichotomous measure for literacy. All respondents that completed at least three years of school were assumed to have achieved basic literacy. Those who reported that they completed less than three years of school were asked if they could read a letter in Nepali. Those who answered 'No', are defined as illiterate for this study. Those who answered 'Yes' to this question or had completed three or more years of school are defined as literate.

We use a spline function to measure age that allows the models to be sensitive to rates of migration that change non-linearly with age. Five age categories are included as follows: 18-25, 26-30, 31-40, 41-50, and 51 years and older. Dichotomous measures record if a respondent had ever migrated by 1996, had any children in 1996, and was employed outside the home in 1996. A series of dichotomous measures characterize the five functional ethnic groups in this area as

well as marital status. We use interval-level measures for educational attainment in 1996 and urban proximity (distance of one's community from the urban area of Narayanghat).

Measures of land and livestock ownership come from the CVFS Agriculture and Consumption surveys. These household based studies were undertaken in 1997 and again in 2001. Respondents were asked how many parcels of land and how many cows, water buffaloes, sheep, goats, and pigs their household owned. Land and livestock ownership are interval-level measures. Livestock ownership is measured with livestock units, where 1 livestock unit = 1 water buffalo = 0.83 cows = 3.33 pigs = 4 goats = 5 sheep (Agrawal and Gupta 2005). For the years 1997-2000, measures of land and livestock ownership come from the 1996 study; for the years 2001-2006, the measures come from the 2001 study.

In order to control for regular seasonal migration patterns, particularly in relation to the harvesting and planting cycles, we use a series of twelve dichotomous measures for each month of the year. We also include a series of dichotomous measures for each year of the study.

Analytic Strategy

A series of discrete-time event history models predict men's first out-migration from the Chitwan Valley since the beginning of the study period in 1997. Person-months are the unit of exposure to risk. The models test the monthly hazard of moving out of Chitwan after June 1997, contingent upon the conflict period, gun battles, and media use. We lag the measure of gun battles by one month in order to assure that the result being measured (migration) occurred chronologically after the event. For example, the models test the effect of a gun battle in April on out-migration in May.

The logistic regression equation used is given below:

$$\ln\left(\frac{p}{1-p}\right) = a + \sum (B_k)(X_k) \tag{1}$$

where p is the probability of migrating out of the Chitwan neighborhood, $\frac{p}{(1-p)}$ is the odds of migrating out, a is a constant term, B_k is the effect of independent measures in the model, and X_k is the value of these independent measures.

To address differential access to media sources by literacy, separate models are used to analyze the interactions of media and violence for literate and illiterate men. Models 1 and 2 include the full sample of all men. All subsequent models separate illiterate men (who can only access radio) and literate men (who can access both radio and newspapers).

These models use a dichotomous measure of migration as an outcome that separates no migration from any migration longer than one month. Despite the problematic nature of analytically separating permanent and temporary migrants, in order to comprehensively examine the questions at hand, we also investigated the possibility of different analytical results for short, medium, and long term migrants. We used logistic regression models to test migration definitions of three and six months, and ordered logistic regression models with a four category measure of migration, including no migration, migration between one and eleven months, 12 and 24 months, and greater than 24 months. Results for these tests were substantively similar to those presented in this paper from logistic regression models using a dichotomous measure of greater than one month migration or no migration.

We use a fixed effects approach to control for duration effects, or the selectivity in migration as a result of duration since the study started. To implement this approach, we include in all models a series of dichotomous measures for each year of the study. This is a relatively

conservative strategy that controls for duration effects as well as any other exogenous changes that occurred over the study period, leaving a greater chance that the effects over time that we observe are due to variations in the number of major gun battles with time.

Results and Discussion

Our presentation of results begins from the simplest models investigating the overall consequences of demographic characteristics and gun battles and then we discuss measures of media exposure before the conflict began. From this base, we then investigate the interactions between media exposure and conflict for literate and illiterate men.

Demographic Characteristics and Migration

The measures of demographic characteristics all produce results as expected. As shown in Model 1, positive and significant odds ratios indicate that past migration experience, higher education, and rural residence resulted in higher likelihoods of migration. Being married and living with a spouse, older ages, and livestock ownership all resulted in lower likelihoods of migration. Employment in 1996, land ownership, and having any children had no significant effect on the odds of migration. These results are generally consistent with past research in this study area as well as theoretical and empirical research in other areas of the world (Massey and Espinosa 1997; Massey et al. forthcoming; Todaro 1969; VanWey 2003; Williams 2009).

The yearly fixed effects also produced expected results. For each year after the beginning of the study, the likelihood of migration progressively decreased in all models. This means that independent of all other control measures, as those with a greater migration propensity left the study area, the population was increasingly comprised of those with lower general migration propensities.

Before investigating the role of gun battles and media in migration during armed conflict, we further examine how the duration since the study began (measured with yearly fixed effects) affected the impact on migration of each of the control measures used in this study. We test interactions of each control with a year counter in separate models. Results show that there were no statistically significant interactions between the duration and ethnicity, education, livestock or land ownership, and age, indicating that the effect of these measures on migration was no different over the course of the study.

Of the statistically significant interactions, the role of previous migration experience, rural residence, and work was smaller as time progressed. For example, at the beginning of the study, those with previous migration experience were much more likely to migrate, but over time the difference declined such that by the end of the study period, they were no more likely to leave than their counterparts with no migration experience.

Alternately, the role of marital status became greater over time. At the beginning, those who were unmarried had slightly higher rates of migration than their married counterparts, but by the end of the period, they were almost twice as likely to migrate.

Gun Battles and Migration

Model 2, for the full sample of men, tests the direct effects of gun battles and media use on out-migration. In this model, gun battles had a positive and significant effect on migration, with an odds ratio of 1.11, indicating that in a month following one major gun battle, there was an 11% higher rate of migration. Odds ratios are multiplicative, so that in a month following two major gun battles there was a 23% likelihood of migration, and following four major gun battles there was about a 52% higher likelihood. In Model 3, which includes only literate men, the effect of

gun battles is also positive, but not statistically significant. The effect of gun battles for illiterate men (in Model 4) is much stronger, with an odds ratio of 1.59, and statistically significant.

[Table 3 about here.]

The effect of gun battles is notably different for literate and illiterate men. These effects are much stronger and in all cases statistically significant for illiterate men, and not significant for literate men. Although it is possible that literacy conditions people's reactions to violent events, it is likely a more complex relationship than this. Further research will be required to fully understand this disparity in migration after violent events by literacy.

Media Use and Migration

Turning to the independent effects of media, newspapers had a significant and positive effect on migration. As shown in Model 1, the odds ratio for newspaper was 1.27, meaning that those who read the newspaper weekly were about 27% more likely to migrate away than their peers who did not read newspapers with this frequency. On the other hand, listening to the radio on a weekly basis had a negative effect on migration, with an odds ratio of 0.90 in Model 1. These results for newspapers are similar throughout the remainder of the models for literate men and support the theory that the entertainment and news programming from these media sources might affect aspirations, make migrant destinations appear more desirable, and provide useful information that encourages out-migration.

Media Use, Violent Events, and Migration

Results in Table 4 show that use of the news media moderated the relationship between violent events and migration as hypothesized. As shown in Model 5 for literate men, the interaction between gun battles and weekly use of the newspaper was positive and statistically significant with an odds ratio of 1.46. Gun battles however, did not produce statistically significant effects

on migration. This means that men who read the newspaper at least once a week had about an 80% higher likelihood of migration immediately after one gun battle (calculated by multiplying the independent effect of newspapers (1.23) and the interaction of newspapers and gun battles (1.46)). Alternately, their counterparts who did not read the newspaper had no significant migration response to gun battles.

[Table 4 about here.]

These results are graphically presented in Figure 2 which shows the predicted probability of migration after any number of gun battles per month (ranging from zero to four). As shown in this figure, after any number of gun battles, literate men who read the newspaper were much more likely to migrate than those who did not read the newspaper.

[Figure 2 about here.]

There was a similar pattern of results for illiterate men. As shown in Model 6 (Table 5) the moderating effect of listening to the radio was positive and statistically significant. The odds ratio for the interaction term was 1.69. Considering the negative effect of the independent radio term, illiterate men who listened to the radio were about twice as likely to migrate after gun battles as at another time (1.69*0.91*1.31). This is much higher than their non-radio listening counterparts who were about 31% more likely to migrate after gun battles.

[Table 5 about here.]

These results are presented graphically in Figure 3, which shows the predicted probabilities of migration of illiterate men after gun battles. As with literate men, illiterate men who listened to the radio at least once a week had a higher likelihood of migration after any number of gun battles than those who did not use the radio as regularly.

[Figure 3 about here.]

We also investigated the effects of periodic exposure to movies in the cinema. Like newspapers, we would expect movies to have a positive independent effect on migration. However, because movies offer primarily entertainment-oriented programming, we would expect little additional moderating effects on migration during armed conflict. Results, which are not shown here, support this hypothesis. For both literate and illiterate men, movies had a strong and statistically significant direct effect on migration, but the interaction between movies and gun battles was not significant.

These results provide evidence that for both literate and illiterate men, regular use of the news media had significant and positive effects on the likelihood of migration after gun battles. This evidence supports the theory that using these news media alters people's perceptions of violent events, such that they perceive a higher level of threat from violent events and react accordingly. In the case of illiterate men, whose choice of news media is limited, listening to the radio produced this effect. In the case of literate men, newspapers produced this moderating effect. Alternately, sources of media that primarily provide entertainment, such as movies, had no additional effect on migration after violent events. This further supports the proposition that the mechanism through which media affects migration in the context of violence is the provision of information as opposed to entertainment.

Conclusion

Prior research on forced migration has shown that periods of armed conflict increase migration on an aggregate level. However, this subject is more complex than previous models reveal. Armed conflict is rarely a single event and migration streams are composed of individuals who experience and perceive these conflict events in diverse ways. The main contribution of this paper is the construction and empirical evaluation of an initial theoretical model of individual

migration during armed conflict, examining how people are exposed to, perceive, and subsequently respond to specific conflict events that constitute a period of armed conflict and how the mass media affects these relationships. In addition, we provide theoretical reasoning and empirical evidence of a new role that the media takes on during armed conflict.

Using detailed data from the Chitwan Valley of Nepal both before and during the recent conflict between the Government of Nepal and the Nepal Maoist party, this study provides evidence that the media is an important factor in migration. Results show that the independent effects of reading the newspaper are positive, increasing migration. However, in the immediate aftermath of major violent events such as gun battles, the news media had an additional positive effect, such that people who used the news media (newspapers for literate men and radio for illiterate men) were more likely to migrate after gun battles than their counterparts who do not use these media sources. Consequently, perceptions of higher violence can serve as a push factor, leading people to expect better (safer) outcomes through migration. In essence, this is analogous to neo-classical economic theory of migration, in which the comparative value of the origin and possible destinations are important predictors of migration.

These results are clearly context specific. In interpreting how these results relate to contexts outside Nepal, several issues should be considered. Evidence presented here shows that gun battles increased migration. This is in a context of high rates of pre-conflict migration as a common livelihood strategy. However in other contexts, underlying rates of and cultural norms regarding migration might be different (Massey 1990b). Different types of violent events should be considered, as well as how the level of threat of each event might be perceived. In terms of the mass media, the political situation can also be important and might dictate what type of information is allowed to be broadcast, how much, and how it is presented in the media.

Theoretically, this paper highlights the centrality of perceptions about context. People behave according to what they perceive their context to be. For example, if one does not know that a gun battle has occurred or that it was particularly large, long, and bloody, we have much less reason to expect that they will migrate away from it. Clearly the media can play a powerful role in altering these perceptions of threat and subsequent behavioral responses.

These ideas are certainly not new in the area of social psychology. In fact, a number of studies based in the United States and the United Kingdom on media and fear of crime have found evidence of similar patterns of media use, perception and behavior. For example, studies have shown that use of the mass media can increase perceptions of violence and fears of crime (Chiricos et al. 1997; Eschholz et al. 2003; Heath 1984; Liska and Baccaglini 1990; Rountree and Land 1996a; Williams and Dickinson 1993) and that these fears of crime can be translated into important behavioral changes (Keane 1998; Liska, Sanchirico, and Reed 1987; Mesch 2000; Rountree and Land 1996b).

Our contributions are in employing these tools from social psychology to a different area of study to provide evidence of analogous relationships. The similar patterns of media use and perceptions of violence in three very different settings, the United States, the United Kingdom,and Nepal, underscore the importance of using perception as a theoretical tool in the study of migration and other behavioral responses to armed conflict and disaster. It also emphasizes the power of the mass media, be it in Nepal or New York, in altering people's perceptions and experiences of the context within which they live. The relationship between the media and perceptions of threat is integral to the study of the consequences of armed conflict and will likely figure strongly in understanding behavioral responses to other violent disruptions that have received high media attention, such as the 2001 terrorist attacks in New York and suicide

bombings throughout Asia and the Middle East. Furthermore, these theories are also relevant to understanding perceived threat and subsequent behaviors in the face of climate change and natural disasters that have received heavy media attention, such as the large tsunamis and earthquakes around Asia in the last few years.

Finally, our results also contribute more generally to the study of social change. This article provides an empirical example of one specific macro-level structure, the mass media, that can take on a new role during armed conflict that is additional to and different from the role it played during periods of relative peace. Expanding beyond this specific example, we argue that to comprehensively understand patterns of contextual influence on behavioral change scholars cannot examine contextual factors alone and assume that consequences and the mechanisms producing those consequences will remain static over time. We must also address the new meanings and values that may be attributed to structural factors during the course of contextual change, and the possibility that the mechanisms that drive behaviors, or the relationships between structures and behaviors, can change over time.

Endnotes

[1] Data come from the Uppsala Conflict Data Program (UCDP) at Uppsala University Sweden. Accessed at: http://www.pcr.uu.se/research/UCDP/.

[2] There is no evidence that individuals who were educated, literate, or used the news media were specifically targeted for abduction or extra-judicial assassination. Furthermore, reports indicate that individuals of both higher and lower classes and castes were targeted. Wealthy people and those of higher caste were often targeted by the Maoists, whereas those of lower wealth and caste were targeted by the government for supposedly supporting the Maoists.

[3] Details on the in-depth interviews is provided below in the Data and Methods section.

[4] Interviewers visited each household monthly for most of the study period. However, to protect both interviewers and respondents during a few periods when the violence was particularly intense, interviewers visited households less often, usually once every few months. In these cases, interviewers questioned respondents about their residence during the previous few months when they did not visit.

[5] The study period for this analysis begins in June 1997. Although the demographic registry began in February 1997, migration data during the first few months of data collection are likely biased. Initial individual interviews were collected in 1996. People who migrated during the several months between the individual interviews and the beginning of the registry were recorded as migrants during the first months of the registry. Thus, migration rates during these first months are exaggerated. In addition to the models here, we tested models using February 1997 as a start date. Results were substantively equivalent to what we present here.

[6] We analyzed women's migration with a similar set of models as we use in this paper to analyze men's migration. Results from this preliminary analysis do not show similarly statistically significant relationships between violence, women's media use, and migration.

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Tables

Table 1. Multi-Variate Associations with Literacy, Men Only. Logistic Regression Estimates from Chitwan Valley, Nepal

	Literacy
Age	0.93 ***
	(10.09)
Salaried work in 1996	1.16
	(0.65)
Wage work in 1996	0.34 ***
	(6.41)
Distance to Narayanghat	0.97 ^
	(1.54)
Have any children	0.95
	(0.20)
ETHNICITY	
Low-caste Hindu [a]	0.22 ***
	(5.96)
Hill Tibeto-Burmese	0.43 ***
	(3.68)
Terai Tibeto-Burmese	0.17 ***
	(8.55)
Newar	1.28
	(0.55)
-2 log likelihood	1080
No. of Observations (people) = 1426	
Percent of male population literate = 79	

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.
[a] Reference category is Upper Caste Hindu.
^p<.10 *p<.05 **p<.01 ***p<.001 (one-tailed tests).

Table 2. Descriptive Statistics for the Male Sample of the Chitwan Valley Family Study

MEASURE		Mean/ Median	Std dev		
Violent Events [a]					
Gun battles		0.19 / 0	0.62		
		Literate Men		**Illiterate Men**	
		Mean	Std dev	Mean	Std dev
Employment & Household Economic Status [b]					
Read newspapers weekly	(0,1)	0.57	0.49		
Listened to radio weekly	(0,1)	0.58	0.49	0.23	0.42
Individual Characteristics					
Migration (during study period)	(0,1)	0.69	0.46	0.47	0.50
Ever migrated by 1996	(0,1)	0.44	0.50	0.22	0.41
Employed in 1996	(0,1)	0.47	0.50	0.65	0.48
Amount of farmland owned in 1996	(0-149)	14.59	23.93	7.65	15.10
Amount of livestock owned in 1996	(0-15)	2.90	2.47	2.35	2.29
Educational Attainment in 1996	(0-16)	7.02	4.07	0.07	0.35
Have any children in 1996	(0,1)	0.73	0.45	0.91	0.29
Distance to Narayanghat	(0-18)	8.28	4.08	9.49	4.03
Marital Status					
Never married	(0,1)	0.14	0.34	0.02	0.14
Married, living with spouse	(0,1)	0.80	0.40	0.89	0.35
Married, not living with spouse	(0,1)	0.05	0.21	0.04	0.20
Divorced, Separated, Widowed	(0,1)	0.02	0.12	0.08	0.27
Age (in 1997)					
18-25 years old		0.27	0.44	0.06	0.25
26-30 years old		0.17	0.37	0.08	0.28
31-40 years old		0.27	0.44	0.21	0.41
41-50 years old		0.18	0.38	0.32	0.47
51 + years old		0.11	0.32	0.32	0.47
Ethnicity					
Upper Caste Hindu	(0,1)	0.52	0.50	0.22	0.41
Lower Caste Hindu	(0,1)	0.08	0.27	0.18	0.38
Hill Tibeto-Burmese	(0,1)	0.16	0.36	0.16	0.37
Terai Tibeto-Burmese	(0,1)	0.17	0.38	0.41	0.49
Newar	(0,1)	0.06	0.24	0.02	0.15

[a] The unit of measure for this calculation is months.
[b] Besides gun battles, the unit of measure for all other calculations is persons.

Table 3. Gun Battles and Migration. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley

	Model 1 All men	**Model 2 All men**	**Model 3 Literate men**	**Model 4 Illiterate men**
VIOLENT EVENTS				
Gun Battles		1.11 ^	1.01	1.59 **
(# per month)		(1.29)	(0.05)	(2.94)
MEDIA USE				
Newspaper Weekly	1.27 **	1.27 **	1.27 **	
	(2.92)	(2.92)	(2.89)	
Radio Weekly	0.90	0.90	0.86	1.03
	(1.43)	(1.42)	(1.92)	(0.15)
CONTROL MEASURES				
Ever migrated	1.60 ***	1.60 ***	1.68 ***	1.19
	(6.51)	(6.50)	(6.53)	(0.83)
Employed	1.08	1.08	1.05	1.15
	(1.07)	(1.06)	(0.70)	(0.64)
Amount of farmland owned	1.00 ^	1.00 ^	1.00 ^	1.00
	(1.29)	(1.29)	(1.58)	(0.08)
Amount of livestock owned	0.96 **	0.96 **	0.97 *	0.91 *
	(2.38)	(2.39)	(1.75)	(1.83)
Educational attainment	1.02 *	1.02 *	1.02 ^	0.89
	(1.98)	(1.96)	(1.60)	(0.46)
Have any children	0.95	0.95	0.96	0.96
	(0.45)	(0.44)	(0.31)	(0.11)
Never married	1.22 ^	1.24 ^	1.27 *	1.11
	(1.55)	(1.61)	(1.73)	(0.17)
Married, living w/ spouse	Reference	Reference	Reference	Reference
Married, not living w/ spouse	1.59 ***	1.60 ***	1.51 **	2.46 **
	(3.08)	(3.09)	(2.47)	(2.38)
Divorced/Separated/Widowed	1.40 *	1.38 ^	1.06	1.88 *
	(1.45)	(1.39)	(0.17)	(1.82)
Upper Caste Hindu	Reference	Reference	Reference	Reference
Lower Caste Hindu	0.98	0.98	0.96	1.00
	(0.17)	(0.17)	(0.27)	(0.02)
Hill Tibeto-Burmese	1.21 *	1.21 *	1.17 ^	1.27
	(1.95)	(1.96)	(1.46)	(0.88)
Terai Tibeto-Burmese	0.76 **	0.76 **	0.76 **	0.77
	(2.74)	(2.75)	(2.49)	(1.02)
Newar	0.55 ***	0.55 ***	0.57 **	0.28
	(3.25)	(3.25)	(3.02)	(1.24)
18-25 years old [a]	0.94 *	0.94	0.94 *	0.95
	(1.96)	(1.94)	(1.85)	(0.33)
26-30 years old	0.94 *	0.94 *	0.94 *	0.92
	(1.88)	(1.88)	(1.78)	(0.71)
31-40 years old	0.94 ***	0.94 ***	0.94 ***	0.94 ^
	(4.06)	(4.06)	(3.68)	(1.62)
41-50 years old	0.97 *	0.97 *	0.97 ^	0.98
	(1.86)	(1.85)	(1.63)	(0.63)
51+ years old	1.01	1.01	1.02	0.98
	(0.41)	(0.40)	(0.91)	(0.68)

Distance to Narayanghat	1.03 ***	1.03 ***	1.04 ***	0.98
	(3.35)	(3.34)	(4.12)	(0.73)
1997	Reference	Reference	Reference	Reference
1998	0.66 ***	0.67 ***	0.69 ***	0.57 *
	(4.11)	(3.92)	(3.35)	(1.92)
1999	0.48 ***	0.49 ***	0.49 ***	0.52 *
	(6.07)	(5.89)	(5.43)	(2.09)
2000	0.43 ***	0.43 ***	0.38 ***	0.75
	(6.41)	(6.26)	(6.41)	(0.96)
2001	0.31 ***	0.31 ***	0.31 ***	0.31 **
	(7.45)	(7.31)	(6.69)	(2.90)
2002	0.30 ***	0.31 ***	0.31 ***	0.29 **
	(7.11)	(7.05)	(6.37)	(2.93)
2003	0.24 ***	0.24 ***	0.22 ***	0.33 **
	(7.47)	(7.37)	(6.85)	(2.58)
2004	0.26 ***	0.24 ***	0.28 ***	0.11 ***
	(6.83)	(6.87)	(5.66)	(3.77)
2005-Jan. 2006	0.30 ***	0.28 ***	0.29 ***	0.23 ***
	(6.23)	(6.34)	(5.58)	(3.07)
Months of the year not shown				
-2 log likelihood	9038	9036	7436	1558
No. of Obs. (person-months)	72,789	72,788	52,677	20,111

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.
[a] Age is measured with spline measures. Therefore there is no omitted category.
^p< .10 *p<.05 **p<.01 ***p<.001 One tailed tests

Table 4. Gun Battles, Media Use, and Migration for Literate Men. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley

	Model 5 Newspaper Interaction
Interaction- Gun Battles*Newspaper weekly	1.46 *
	(1.95)
VIOLENT EVENTS	
Gun Battles	0.77
(# per month)	(1.46)
MEDIA USE	
Newspaper weekly	1.23 *
	(2.43)
Radio Weekly	0.86
	(1.93)
Control measures not shown.	
-2 log likelihood	7432
No. of Observations (person-months) = 52,677	
No. of Individuals = 1129	

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.
*p<.05 **p<.01 ***p<.001 One tailed tests

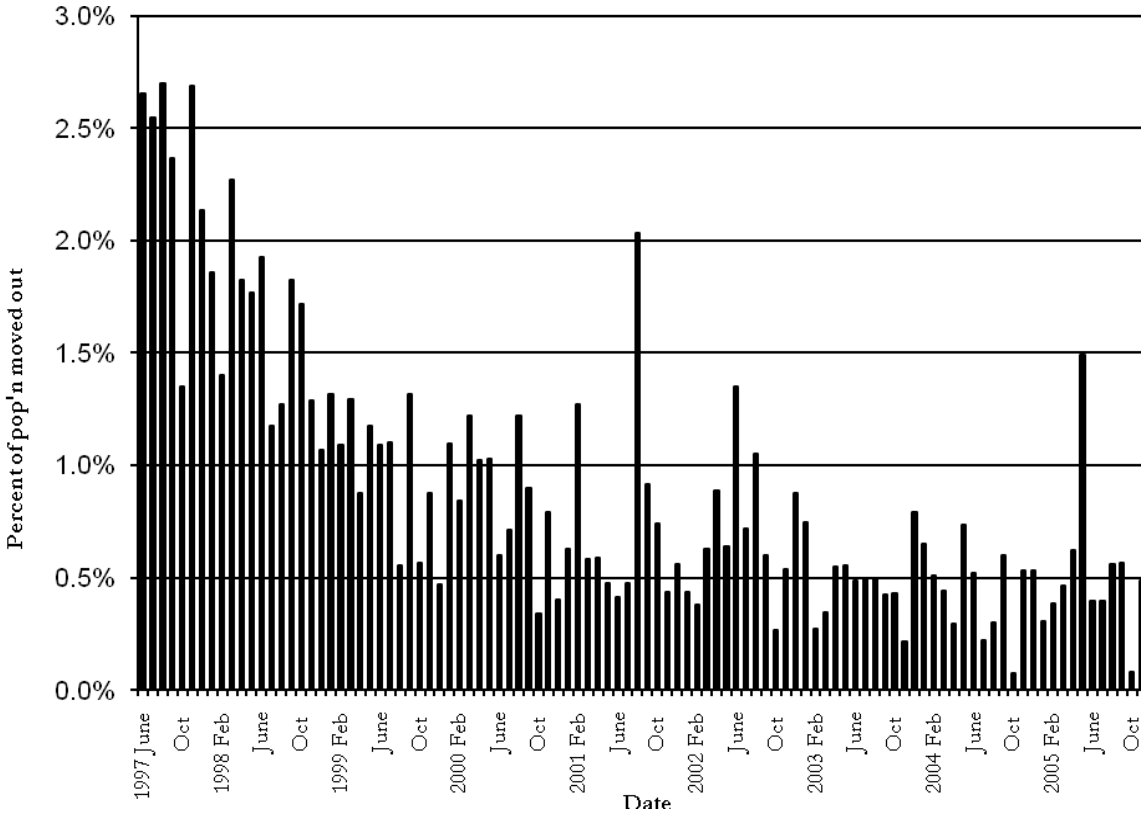
Table 5. Gun Battles, Media Use, and Migration for Illiterate Men. Logistic Regression Estimates of Discrete-Time Hazard Models of Out-Migration from Chitwan Valley

	Model 6 Radio Interaction
Interaction- Gun battles * Radio weekly	1.69 *
	(2.18)
VIOLENT EVENTS	
Gun Battles	1.31 ^
(# per month)	(1.35)
MEDIA USE	
Radio Weekly	0.91
	(0.44)
Control measures not shown	
-2 log likelihood	1553
No. of Observations (person-months) = 20,111	
No. of Individuals = 297	

Note: Estimates are presented as odds ratios. Z-statistics are given in parentheses.
^p< .10 *p<.05 **p<.01 ***p<.001 One tailed tests

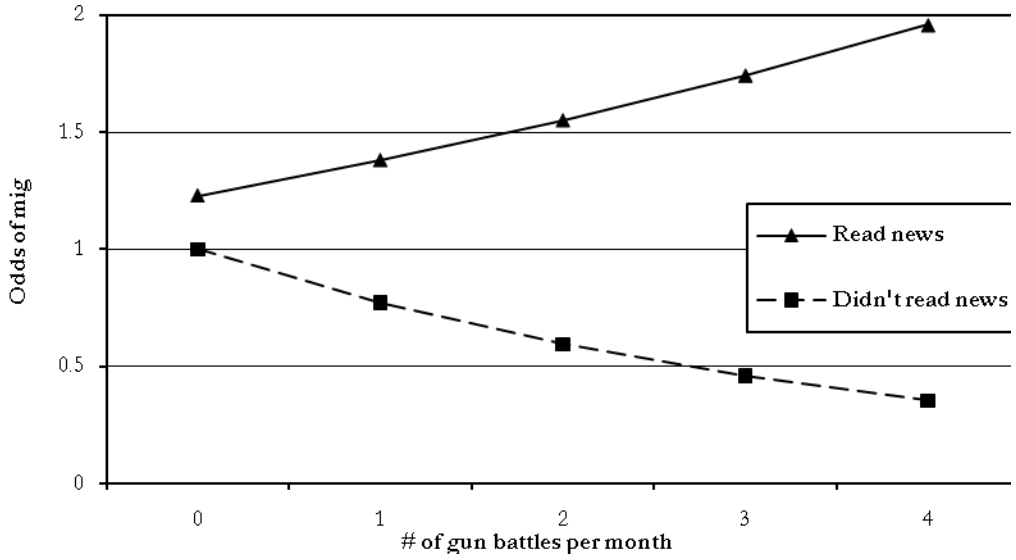
Figures

Figure 1. Monthly Out-Migration Rates, Chitwan Valley, Nepal



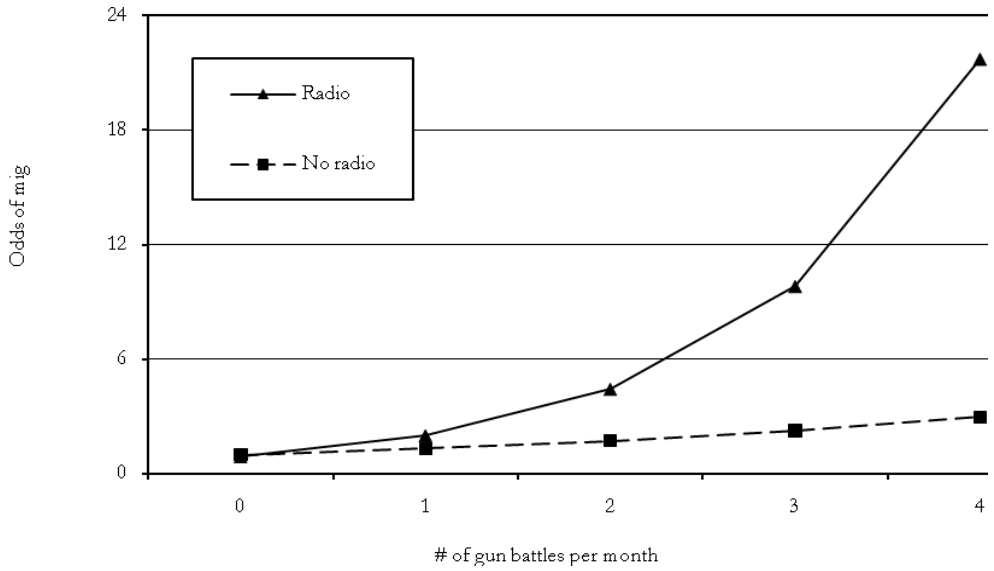
Note: Data are from the full sample of Chitwan Valley Family Study in 1997.

Figure 2. Predicted Probability of Migration Following Gun Battles, by Newspaper Consumption, for Literate Men.



Note: Data come from Model 5.

Figure 3. Predicted Probability of Migration Following Gun Battles, for Illiterate Men.



Note: Data come from Model 6.