Migration & Climate: A Research Example Integrating Health

Lori M. Hunter, Ph.D.

Director, CU Population Center, Institute of Behavioral Science
Department of Sociology, University of Colorado Boulder
Lori.Hunter@colorado.edu

Daniel H. Simon

CU Population Center, Institute of Behavioral Science
Department of Sociology, University of Colorado Boulder
Daniel.H.Simon@colorado.edu

PERN Cyberseminar on Climate, Migration, and Health: An Underexplored Intersection
12 November 2018 – 16 November 2018

So much has been accomplished by the demographic research community over the past two decades regarding migration and climate intersections. Case studies from across the globe have shed light on the myriad ways in which environmental factors intersect with socioeconomic and political ones to influence human movement. Yet as the social consequences of climate change become increasingly visible, our work as a research community takes on ever-more importance. Climate pressures continue to lay bare differential social vulnerabilities and differential access to migration as a climate adaptation strategy represents part of those vulnerabilities. We must continue to investigate the many factors that shape migration propensity as well as migration's implications; Health represents one of those factors and this background paper first briefly presents climate-migration research and then offers an empirical example of migration-climate-health intersections through review of one of our recent publications. We look forward to dialogue around other ways to investigate this three-way nexus.

Climate and Migration

Migration represents an important livelihood strategy for millions of households across the globe, and the practice of sending a household member elsewhere can be seen as livelihood diversification in that households then tap into the potential of different labor markets, expanding income generation possibilities. This process has been identified in a wide variety of settings and fits squarely within the "New Economics of Labor Migration" theoretical framework (Stark and Bloom 1985). Particularly intriguing for the purposes of this cyberseminar are the environmental dimensions of this livelihood migration.

Many recent reviews have provided a summary of the scholarship examining migration-environment linkages (Gemenne and McLeman 2018; Hunter et al. 2015; Obokata et al. 2014), so a thorough exploration is not necessary here. In general, however, case studies continue to document climate "signals" within migration patterns. In some cases, environmental stress such as drought acts as a "push" factor, increasing the likelihood of migration especially from dry, agriculturally-dependent regions. Such association has been identified in Mexico (Riosmena et al. 2018), Cambodia (Bylander 2015) and Burkina Faso (Henry 2004) among other settings. On the other hand, in a few regions, greater access to 'natural capital' has been associated with migration, suggesting that in some cases, households are more likely to send migrants when locally-based livelihoods are more secure. Such association has been identified in South Africa (Hunter et al. 2013) and Ecuador (Gray 2009, 2010), for example.

Of course, migration as an adaptive strategy is differentially available – and recent scholarship has begun to focus on households that stay in place even when confronted with environmental stressors. Many individuals may be "trapped" in vulnerable areas, lacking the resources to fuel a move. Yet decisions to stay are complex and an increasing body of evidence also adds nuance to our understanding of staying put. In particular, some households that remain in areas of challenge choose to do so for a variety of reasons, including strong commitment to place. Home can garner strong emotions and communities can be hard to leave (Adams 2016; Zickgraf 2018).

The use – and non-use – of migration as an adaptive strategy is tremendously shaped by socioeconomic characteristics of individuals and households, as well as socioeconomic and political contexts. A highly-used framework by Black et al (2011) usefully summarizes these intersections and has guided much subsequent scholarship (Figure 1).

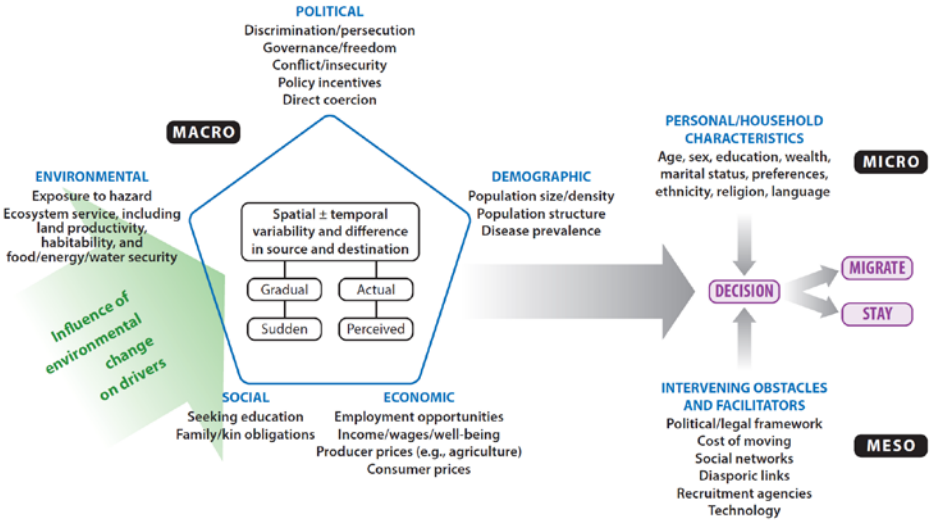


Figure 1

A conceptual framework for the drivers of migration as presented by Black et al. (2011, p. S5). Reprinted from *Global Environmental Change*, Vol. 21S, Black R, Adger WN, Arnell NW, Dercon S, Geddes A, Thomas D, The effect of environmental change on human migration, pp. S3–11, Copyright (2011), with permission from Elsevier.

Source: Hunter, Luna and Norton 2015

As examples of these intersections, the importance of political context is demonstrated by scholarship from Kenya where local institutions that foster inter-group dialogue moderate connections between climate stress, migration and violence (Linke et al. 2018). An illustration of the importance of social context is provided by work in Mexico that migration as related to drought is influenced by the presence of social networks that facilitate movement (Nawrotzki et al. 2015). And finally, the importance of environmental context is demonstrated by the enduring vulnerability of particular locales as related to extreme events. For instance, research in climate-stressed regions of Bangladesh demonstrate patterns of movement likely established through repeated exposure to extreme events (Lu et al. 2016).

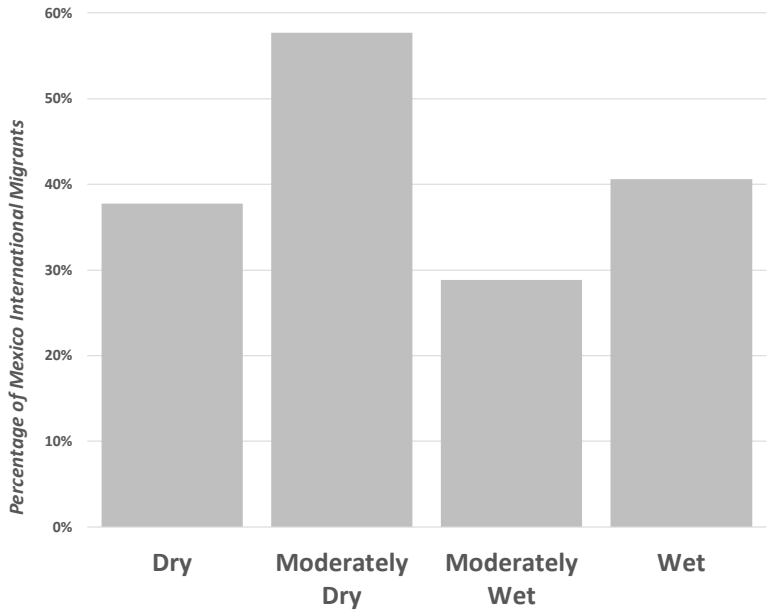
Yet missing from the above framework is health. At the individual scale, health has been connected to migration through research on health selectivity (reviewed for this cyberseminar by Riosmena). At the community scale, health may influence migration through movement away from health challenges or through health issues arising from, for example, concentration in displacement camps (reviewed for this cyberseminar by Koning). Within this background paper, we review an empirical example from our own scholarship to demonstrate one potential connection between migration, climate and human health.

" Might Climate Change the 'Healthy Migrant Effect' " *(Hunter and Simon 2017)*

Migrants from Mexico to the U.S. tend to be healthier than non-migrants in their origin – part of a pattern termed the "healthy migrant effect" (see Riosmena's background paper). With climate change altering livelihoods across the globe, we asked how the migration-health connection may be altered by environmental strain. On the one hand, positive health selectivity may be intensified if migration becomes more challenging – and therefore increasingly likely to be undertaken by only the healthiest. On the other hand, positive health selectivity may decline if the "push" associated with environmental strain acts upon individuals regardless of health.

We used Mexican Migration Project survey data to empirically examine this three-way connection. The focus was on Mexico-US movement by household heads, and from climate regions classified by rainfall. Based on this stratification, a slight "healthy migrant" bivariate association can be identified (Figure 2). US-bound migrants from "moderately-dry" regions were most likely to have reported "excellent" health at age 14, potentially indicating some positive health selectivity from these regions. Positive health selection was also indicated for "wet" regions, although this association was of lower magnitude.

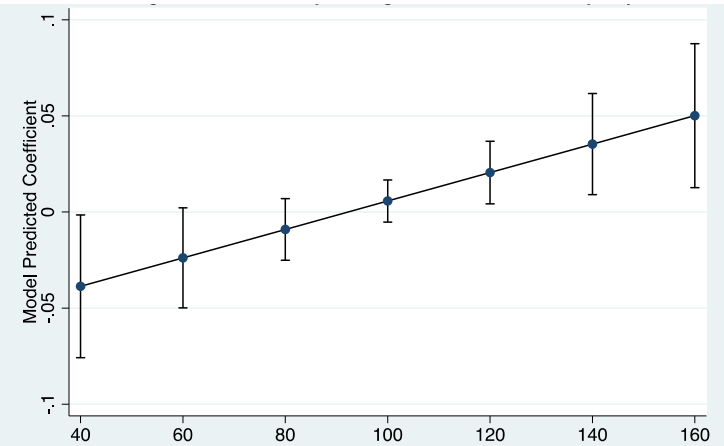
Figure 2:
Percentage International Migrants from Mexico
Reporting "Excellent" Health at Age 14, by Climate Zone*



* P<0.01; Source: results from Hunter and Simon (2017)

When exploring the interactions, and controlling for sociodemographic and contextual characteristics, the resulting coefficients indicate that health and recent rainfall interact to shape U.S. migration of household heads from areas that are typically moderately-dry (see Figure 3).

Figure 3:
Interaction between height and recent rainfall on the probability of migration from moderately dry areas of Mexico, Mexican Migration Project 1982-2010 *



* Source: results from Hunter and Simon (2017)

In these regions, healthy selectivity is actually *negative* in times of rainfall scarcity. In other words, in periods where climate stress challenges livelihoods, during environmentally stressful periods, less healthy individuals (as measured by adult height) are more likely to migrate. On the other hand, in periods of more rainfall, health selectivity is positive. During these times, livelihoods are less challenged and relatively healthy households have a greater likelihood of emigrating. In this way, periods of reduced environmental strain might allow for greater selection in that there is less migration and those that do move are healthier.

While this association is puzzling, social networks may be at play. Social networks have long been associated with Mexico-US migration as they influence the distance and type of movement (Massey and Riosmena 2010), especially from rural sending areas (Fussell and Massey 2004). Social networks help connect migrants to labor markets in the U.S. (Massey and Riosmena 2010) and provide information to assist with the migration process itself.

The establishment of migrant social networks has spatial dimensions. Moderately dry regions have historically had greater levels of international migration, perhaps in response to the need for livelihood diversification within these variable and challenging settings. As a result of these long-term trends, residents of these regions likely have greater access to social networks established through prior migration. These networks reduce the "cost" associated with migration by facilitating housing and labor searches, for example, and as a result, positive health selectivity may be less necessary in times of stress (Hunter and Simon 2017).

Conclusion

As noted at the onset of this background paper, climate pressures continue to lay bare differential social vulnerabilities and differential access to migration as a climate adaptation strategy represents part of those vulnerabilities. It is possible that health status is one dimension of differential access to adaptive migration. Future work should continue to investigate these connections, while also exploring differences in health

selection following different forms of climate-related strain. For example, migration-health selectivity may vary as related to slow-onset strain such as drought compared to rapid-onset events such as hurricanes.

We contend that this three-way intersection deserves far more research attention in order to inform policies and programs responsive to climate-related strain on livelihoods across the globe. Explicit migrant health policies may be of particular importance in nations with a substantial proportion of migrants (Rechel et al. 2013) – and especially those nations that tend to be receiving areas for climate-related movement.

References

Adams, H. (2016). Why populations persist: mobility, place attachment and climate change. *Population and Environment*, *37*(4), 429-448.

Bylander, M. (2015). Depending on the sky: Environmental distress, migration, and coping in rural Cambodia. *International Migration*, *53*(5), 135-147.

Fussell, E., & Massey, D. S. (2004). The limits to cumulative causation: International migration from Mexican urban areas. *Demography*, *41*(1), 151-171.

Gemenne, F., & McLeman, R. (2018). Environmental migration research: Evolution and current state of the science. In *Routledge Handbook of Environmental Displacement and Migration* (pp. 3-16). Routledge.

Gray, C. L. (2009). Environment, land, and rural out-migration in the southern Ecuadorian Andes. *World Development*, *37*(2), 457-468.

Gray, C. L. (2010). Gender, natural capital, and migration in the southern Ecuadorian Andes. *Environment and Planning A*, *42*(3), 678-696.

Henry, S., Schoumaker, B., & Beauchemin, C. (2004). The impact of rainfall on the first out-migration: A multi-level event-history analysis in Burkina Faso. *Population and Environment*, *25*(5), 423-460.

Hunter, L. M., Luna, J. K., & Norton, R. M. (2015). Environmental dimensions of migration. *Annual Review of Sociology*, *41*, 377-397.

Hunter, L. M., Nawrotzki, R., Leyk, S., Maclaurin, G. J., Twine, W., Collinson, M., & Erasmus, B. (2014). Rural outmigration, natural capital, and livelihoods in South Africa. *Population, space and place*, *20*(5), 402-420.

Hunter, L. M., & Simon, D. H. (2017). Might climate change the "healthy migrant" effect?. *Global Environmental Change*, *47*, 133-142.

Linke, A. M., Witmer, F. D. W., O'Loughlin, J., McCabe, J. T., & Tir, J. (2018). The consequences of relocating in response to drought: human mobility and conflict in contemporary Kenya. *Environmental Research Letters*, *13*(9), 094014.

Lu, X., Wrathall, D. J., Sundsøy, P. R., Nadiruzzaman, M., Wetter, E., Iqbal, A., ... & Bengtsson, L. (2016). Unveiling hidden migration and mobility patterns in climate stressed regions: A longitudinal study of six million anonymous mobile phone users in Bangladesh. *Global Environmental Change*, *38*, 1-7.

Massey, D. S., & Riosmena, F. (2010). Undocumented migration from Latin America in an era of rising US enforcement. *The Annals of the American Academy of Political and Social Science*, *630*(1), 294-321.

Nawrotzki, R. J., Riosmena, F., Hunter, L. M., & Runfola, D. M. (2015). Amplification or suppression: Social networks and the climate change—migration association in rural Mexico. *Global Environmental Change*, *35*, 463-474.

Obokata, R., Veronis, L., & McLeman, R. (2014). Empirical research on international environmental migration: a systematic review. *Population and environment*, *36*(1), 111-135.

Rechel, B., Mladovsky, P., Ingleby, D., Mackenbach, J. P., & McKee, M. (2013). Migration and health in an increasingly diverse Europe. *The Lancet*, *381*(9873), 1235-1245.

Riosmena, F., Nawrotzki, R., & Hunter, L. (2018). Climate Migration at the Height and End of the Great Mexican Emigration Era. *Population and development review*, *44*(3), 455-488.

Stark, O., & Bloom, D. E. (1985). The new economics of labor migration. *The american Economic review*, *75*(2), 173-178.

Zickgraf, C. (2018). Immobility. In *Routledge Handbook of Environmental Displacement and Migration* (pp. 71-84). Routledge.