Methods of mapping ethnographic data on migration, tourism labor, and health risk in the Dominican Republic

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Abstract

This paper focuses on a mixed-method approach to quantifying qualitative data from the results of an ongoing NIDA-funded ethnographic study entitled "Migration, Tourism, and the HIV/Drug-Use Syndemic in the Dominican Republic". This project represents the first large-scale mixed method study to identify social, structural, environmental, and demographic factors that may contribute to ecologies of health vulnerability within the Caribbean tourism zones. Our research has identified deportation history as a critical factor contributing to vulnerability to HIV, drugs, mental health problems, and other health conditions. Therefore, understanding the movements of our participants became a vital aspect of this research. This paper describes how we went about translating 37 interviews into visual geographic representations. These methods help develop possible strategies for confronting HIV/AIDS and problematic substance use by examining the ways that these epidemics are shaped by the realities of people's labor migration and the spaces they inhabit. Our methods for mapping this qualitative data contribute to the ongoing, broadening capabilities of using GIS in social science research. A key contribution of this work is its integration of different methodologies from various disciplines to help better understand complex social problems.

Background

The Dominican Republic is the most visited tourist destination in the Caribbean region, with 5,141,377 tourists visiting in 2014, the majority of whom came from the United States and Europe (Caribbean Tourism Organization Latest Statistics 2014 2015). Currently, the Caribbean region has the second largest prevalence rates of HIV following Sub-Saharan Africa (UNAIDS 2013), and faces increasing geo-political, social, and economic challenges related to the growth of drug addiction and drug trafficking in the region.

The research presented in this paper draws on work being conducted under a five year, multi-method research project funded by the National Institute on Drug Abuse (NIDA) entitled "Migration, Tourism, and the HIV/Drug-Use Syndemic in the Dominican Republic".[1,2] Our

international team refers to this simply as the *Syndemics Project* (or *Proyecto Sindemias* in Spanish). This research uses syndemic theory (Singer et al. 2006; Singer and Clair 2003; Singer 1996) to theorize the social and structural factors that may result in a HIV/Drug use syndemic among tourism workers in the Dominican Republic.
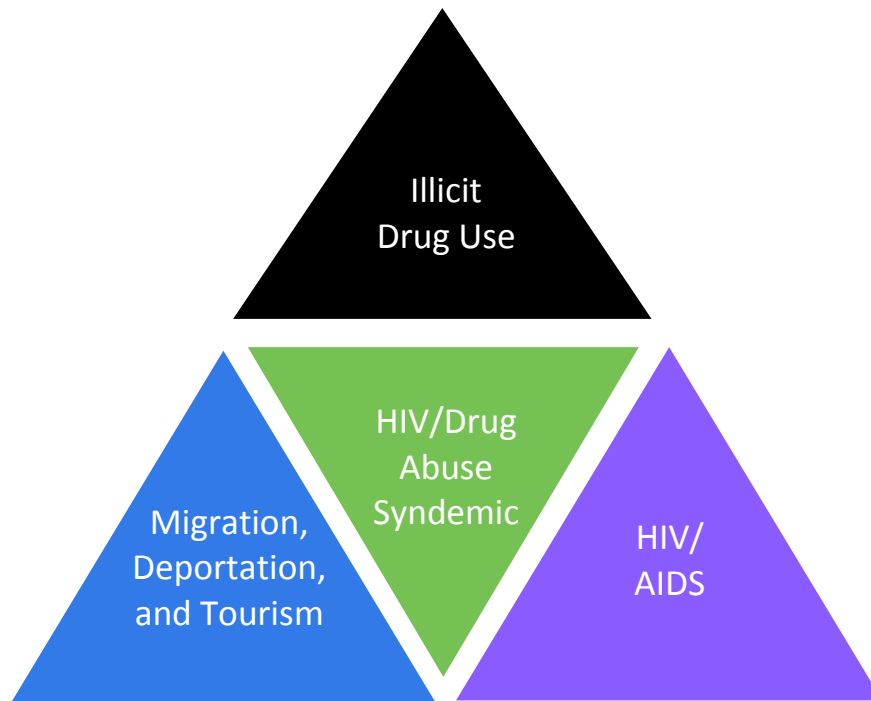
Figure 1. Adaptation of the Syndemic Theory Model

Syndemic theory, developed by the medical anthropologist Merrill Singer, examines the interconnections between two seemingly separate epidemic events through the analysis of social structures (Singer and Clair 2003). In this study, the HIV/AIDS and drug epidemics in the Dominican Republic cannot be understood outside the set of transnational political, economic, and social relationships that structure the tourism industry. Notably, tourism is the most important industry in the country, which accounts for approximately 15% of the formal labor force (Turner 2015).

This project examines the way internal and transnational migration is linked to tourism ecologies in the Dominican Republic. Prior research by Mark Padilla and colleagues has demonstrated the extent of migration among men employed in Dominican tourism areas (Padilla and Castellanos 2009; Padilla et al. 2010). The notion of "tourism ecologies" theorizes touristic areas as distinct environments in which political, economic, and social factors converge to place local migrants who work in these areas in particularly vulnerable positions. In addition to their many other effects, Caribbean tourism zones often generate emerging social geographies that facilitate "escapist" practices such as high levels of drug and alcohol use, transactional sex, and higher rates of sexual risk behavior, due in part to the ways that Caribbean nations and peoples have been historically defined in terms of race, sexuality, and

2

culture (Kempadoo 1999). The effects of these practices on health and well-being are compounded by the presence of large numbers of vulnerable migrant laborers, intense social inequalities, and mobile foreigners. Some studies have suggested a link between these ecologies and the continued spread of HIV and drug use or addiction, not only in the host country but also in tourists' countries of origin (Guilamo-Ramos et al. 2010).

There are three main aims of the Syndemics Project. First, the project aims to describe and map the social context of men's labor migration, drug use, and HIV risk in two primary tourism areas in the Dominican Republic. The second aim is to explain drug use and HIV risk behaviors among male tourism migrants in terms of migration history, tourism ecologies, and social-cognitive dimensions of HIV risk and drug use practices. Our multi-level theoretical model aims to link social and structural factors to the immediate decisions that people make under circumstances of social disadvantage, marginalization, and structural violence. In this sense, we follow the theoretical principles of critical medical anthropology (CMA) as described by leading scholars using this approach (Singer 1992). Socio-structural characteristics that are central to the project include sexual and drug related stigma, social isolation, availability and demand for drugs and sex, business norms promoting sexual exchanges, and "touristic escapism". Our project used the term "touristic escapism"- a concept we have developed in a prior conceptual publication (Padilla et al. 2010) - to describe the normative characteristics of tourism areas, which often facilitate disinhibition, pleasure-seeking, and a range of atypical behaviors among tourists and tourism employees. Finally, the project seeks to develop an HIV and drug-related intervention with male tourism migrants based on the research.

To achieve these aims, the Syndemics Project unfolds in three phases. At the time of this writing, the project is completing its first phase, which involves conducting ethnographic observations and in-depth semi-structured interviews with a diverse group of male labor migrants who work in tourism jobs in Boca Chica and Santo Domingo, DR. Our sample was intentionally diversified in terms of migration (international and internal), employment type (formal and informal), and distance from community of origin (visited regularly or not). Male tourism workers were the focus of the project due to prior research suggesting that an understanding of these men's experiences of migration and tourism labor were critical to unraveling the complex nature of the evolving HIV and drug epidemics in the country (Padilla 2007; Padilla 2013). Finally, the first phase also involves developing targeted ethnographic mapping procedures to describe the social ecologies of drug use, commercial sex, and work in tourism areas. The project includes both qualitative and quantitative methods, and uses a multidisciplinary approach that aims to address social problems by using mixed-method research to identify the interventions or policies that could be implemented to address the health needs of the Dominican population.

The data used to generate ethnographic maps are derived from the ethnographic field notes written during Phase 1, as well as transcripts of the semi-structured interviews with male migrant laborers. Through participant observation in tourism areas, the team gathered information regarding the social context of these environments, writing detailed descriptions of the social and political-economic features of men's lives and work in tourism areas of Santo

Domingo and Boca Chica – two of the primary tourism destinations on the south coast. In addition, key informant interviews were conducted with 36 public and private organizations and institutions within the *Distrito Nacional*, the province containing the capital of Santo Domingo. These were intended to provide an understanding of the institutional context encountered by men who work in tourism, and are consistent with the "upstream" structural orientation of CMA. Next, mental mapping (described further below) and in-depth qualitative semi-structured interviews were conducted with a diverse sample of 37 migrant tourism workers, 36 of whom were interviewed twice. During the interviews, participants worked with the interviewers to generate "mental maps," which we define as ethnographically rendered stories of how each interviewee conceptualizes his social and physical environment.

A nonprobability theoretical sample was designed to diversify the migratory histories of the participants. In qualitative research, a theoretical sample is a broad range of participants intentionally selected to maximize the diversity of perspectives or experiences related to a phenomenon of interest (Strauss and Corbin 1998). While equivalent distribution across categories is often the ideal in this approach, it is common to adjust recruitment based on a balance of time, feasibility, and availability of specific participant characteristics. The graph below summarizes the migratory histories of the 37 workers recruited and interviewed during this ethnographic phase of the project.
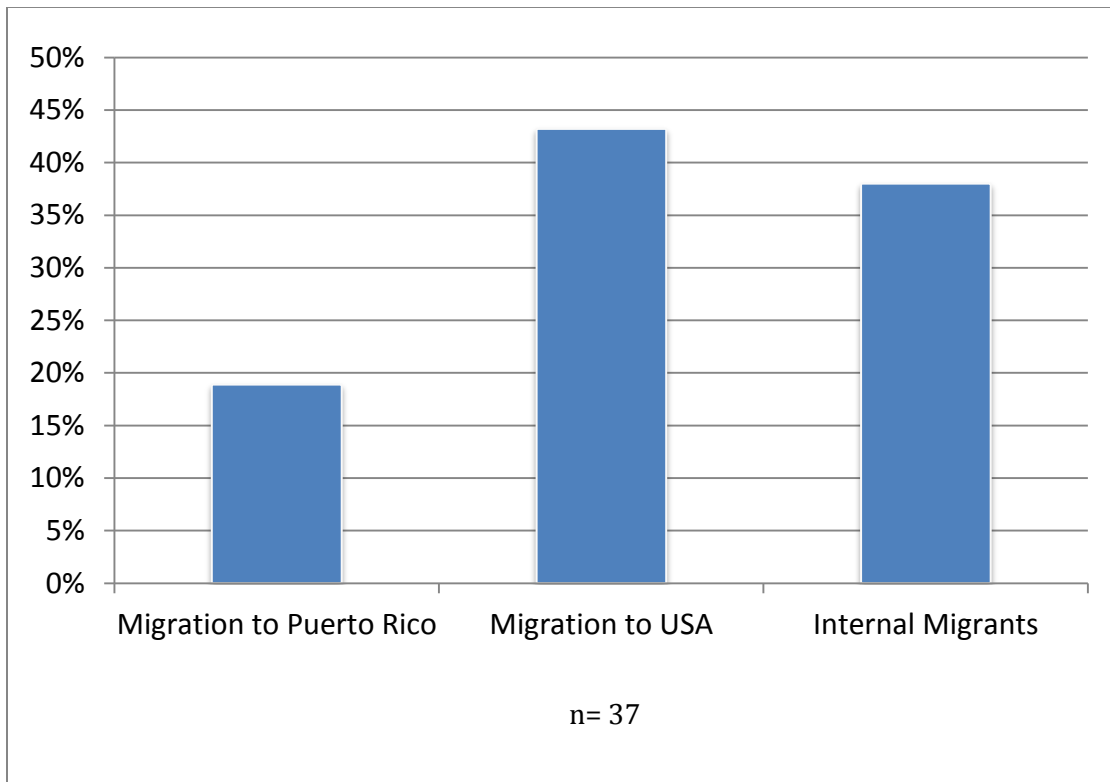

Figure 2. Theoretical Sampling of Migrant Tourism Workers

Methodological Approach

The mixed-method approach we took in translating the qualitative data into quantitative visual representations in Arc-GIS were as follows. Once all the interviews were conducted and transcribed in Spanish, multiple bilingual trained researchers translated and coded using a textual analysis software program. Parallel to this process, a specific sub-set of geo-codes was developed to highlight important geographical or spatial data that emerged from the ethnographic analysis. Later, these codes were integrated into ArcGIS and used to map out the individual's socio-spatial experiences. As interviews were geo-coded, researchers went through all the codes and continually revised the geo-code book to ensure it was grounded in men's narratives and local socio-cultural understandings. Discussions of specific sites or areas were referenced through consultations amongst the ethnographers who were involved in data collection in the Dominican Republic with Arc-GIS experts, who assisted with technical aspects of data translation. An additional innovation of the mapping involved the geo-referencing of mental maps drawn on by participants during their in-depth interviews, which permitted a layer of men's hand-drawn mental maps in the ethnographic-GIS geodatabase. Through this process of qualitative analysis, grounded coding, and development of geo-codes, the interview data were converted into quantifiable measures and linked to georeferenced maps within ArcGIS, which represented migratory pathways rendered at different scales, meaningful local routes and sites, and maps that represent a particular grounded reality for our participants.

Mental Maps

Figure 3. Mental Map

For the purpose of this research *mental maps* are understood to be cartographic illustrations of a person's understanding and representation of their spatial environment (Peake and Moore 2004; Lopez and Lukinbeal 2010). In our ethnographic research, these mental maps represent collaboratively developed spatial representations of participants' environments and migratory histories, which they were invited to produce interactively in the course of the interview. Each participant was provided 11 printed Google maps for him to use as a geographic reference and was asked to draw on any of them as desired in order to aid in the telling of their stories. Not all of the maps were used by each participant, since they were provided as tools to support the qualitative narrative, rather than to overly structure this narrative in social or geographic terms.

Pictured above, is an example of a participant's mental map. As can be seen, this participant circled and wrote on the map. He was depicting areas that he perceived were associated with male and female sex work, which are both common in tourism areas. An excerpt of the in-depth interview transcript associated with this map illustrates this:*"...Lope de Vega [a street name] ... look at this area here ... I have [been to] places of women and men [referring to sex workers]. There are five or six houses of men. Yes ... and of women too."* This is just one example of the various ways the participants used the maps throughout their interviews, and the complexity of the ethnographic data, which involved participant-generated drawing as well as audio-recorded narratives elaborating on the maps at the moment of their creation.

Once all the interviews were completed, each was assigned a geodatabase associated with its interview number. The hand-illustrated mental maps were scanned, saved as JPEG's, and uploaded as layers to their corresponding geodatabase. Each individual map was then georeferenced to the base map. The geographic information that was coded from the interviews was added to these geodatabases respectively. In other words, feature classes were created for any data physically drawn on the printed maps along with any other geographic data that was collected verbally from the recorded interviews. Often information was triangulated with what the participant stated and drew on the map. This data helped give the researchers a better understanding of how the individual interpreted their neighborhoods in relation to important themes, such as danger, drugs, sex work, and tourism.

Attribute Data Table

Shape	Code	Sub Code	Notes	Question Number
Point	CRTLIV	ZNCL	164 ZONA COLONIAL	5
Point	DOMMIG/TURWORK	BCCH	BOCA CHICA	6
Point	INTMIG		ORLANDO FL	20
Point	INTMIG		MICHIGAN	6
Point	INTMIG/PRVLIV		142st BROADWAY	8

Figure 6: Point Attribute Data Table

Figure 6 is a table with examples of the information that was included in an attribute table. Each individual feature was linked to its code, sub-code if appropriate, the actual data, and its corresponding interview question. The question numbers were added so that any inquiries or doubts could quickly be investigated and verified in the interview transcript. Specific locations were represented as points while movement was expressed through lines and areas were signified through polygons.

Mapping International Migration

Below, Figure 7, is a map representing a participant's migration from the Dominican Republic to multiple places in the United States and Puerto Rico. It was typical for deportees to have migrated multiple times. Color coordinated lines with arrows were used to indicate different types of migration and the direction of the movement. Green lines represented international migration while blue lines showed internal migration (here within the United States). The yellow line highlights a prison transfer and the final red line signifies the individual's deportation. Since a complex pattern of migration appeared during interviews with our participants, we found it necessary and useful to map out their movement and deportation history. Data of this type not only documented patterns across the entire sample but it also allowed for analysis in correlations between movement and life experiences.
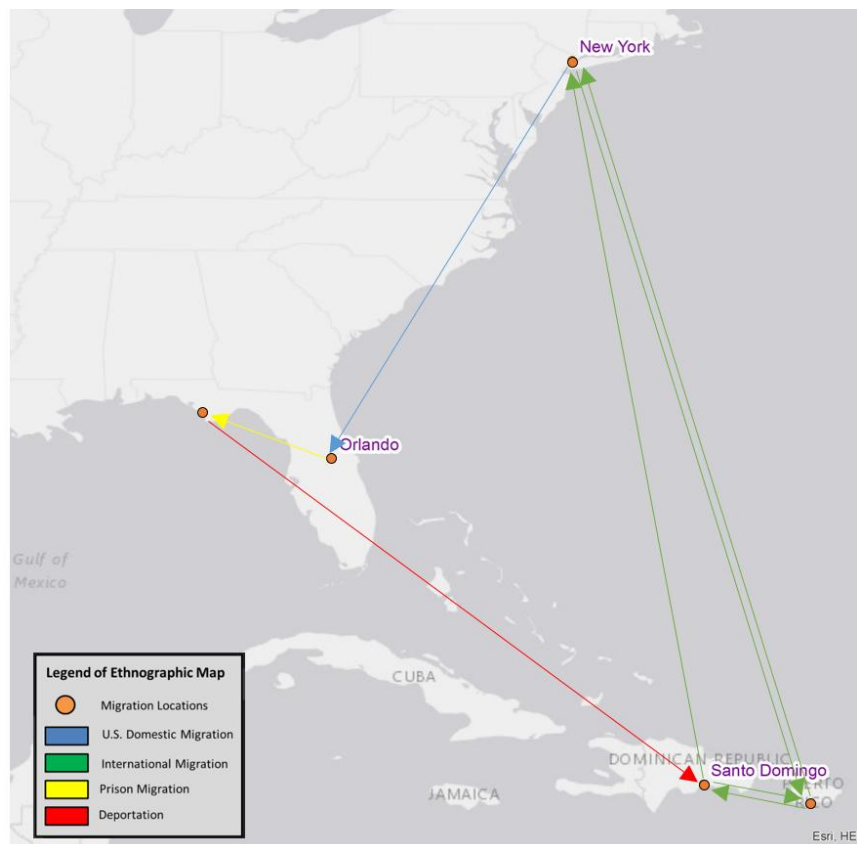

Figure 7: International Migration
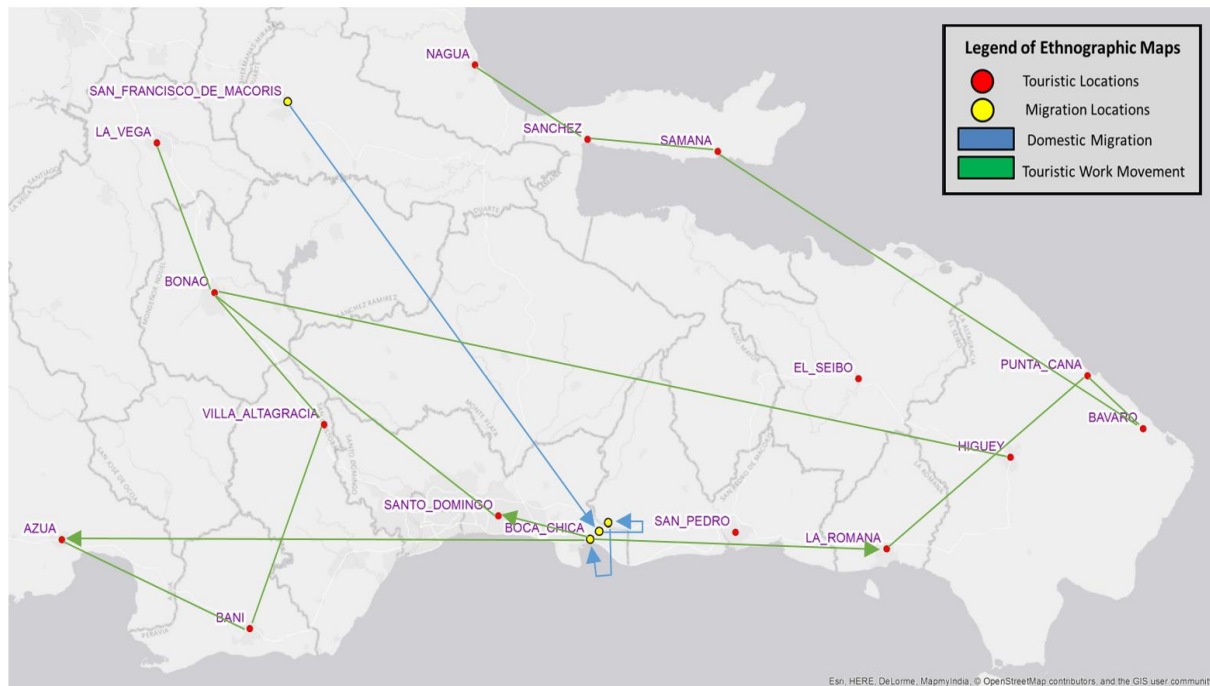
Mapping Domestic Migration

Figure 8: Domestic Migration

Pictured above, in Figure 8, is an example of one participant's domestic migration patterns. The data for this geographical and visual representation was extracted from the qualitative semi-structured interview. It depicts not only the internal migration of the participant, signified by the blue lines, but it also shows other internal movements. A pattern of internal migration emerged revealing that most participants migrated from around the country to tourist areas to find work. The green lines here show travel patterns of movement for this participant's tourist work. They help identify different popular tourist destinations and tourism work paths. Seeing the paths mapped out helped the team understand what areas are being traversed and where further research can be conducted and possible interventions implemented.

Mapping Zones

The third feature class, polygons, was used to draw out different zones. Figure 9 below, is an example of how we used polygons to display zones either created by the coding team or areas described by the interviewees. For example, as shown on the map, zones like Punta Cana and Santo Domingo were created by the coding team since those were major tourist destinations associated in the Dominican Republic and frequently mentioned by participants. Smaller zones were created depending on the scope and specific narratives of each interviewee. Some codes like "Higuey" and "Bavaro" were incorporated into the codebook, because of the frequency with which they appeared throughout the interviews.
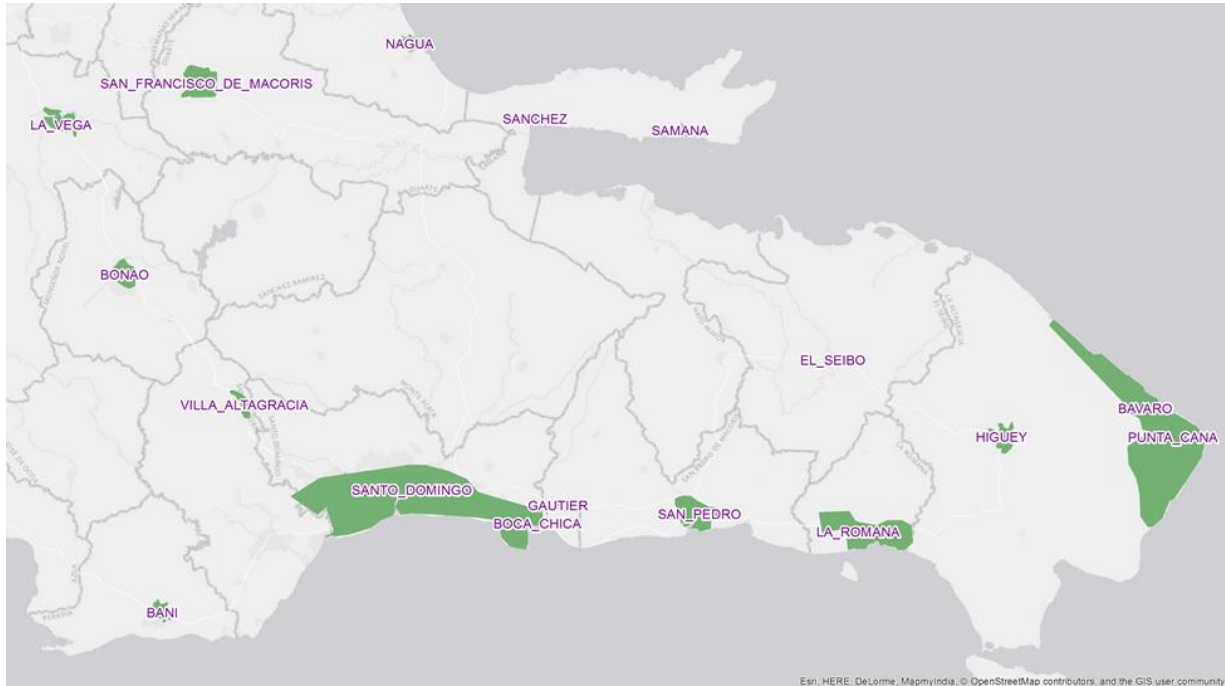
Figure 9: Mapped Zones

Throughout our mapping, zones were also used at smaller scales (which cannot be seen here) to map out other types of zones that emerged in the interviews. Some examples are danger zones, sex work zones, drug-related zones, and participant neighborhoods.
Taken together, locations, movement, and zones help give the researcher a more in-depth and holistic understanding of how participants view and perceive the world they interact with everyday.

Composite Map

The map pictured below in Figure 10, is one participant's completed map on ArcGIS. The end result is a compilation of all the geographic data collected from one individual interview. The orange lines are depictions of international migrations. The mental maps have been georeferenced to the base map, making the participant's drawings and the spatial data simultaneously visible. The syndemics team found that there were differences in the ways that individuals visually imagine their movement and geographical locations in their mental maps compared to their mapped trajectories. For example, this individual mentioned during his interview that he had been to Michigan, but decided not to draw that on the mental map.
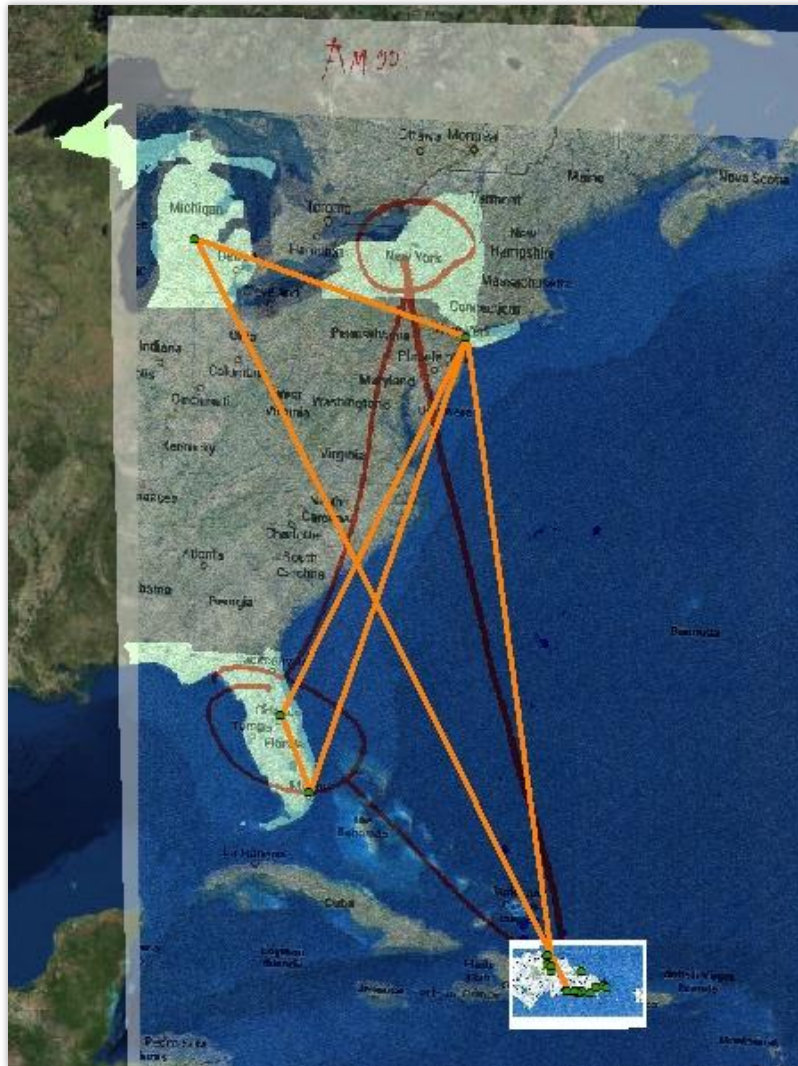
Figure 10: Composite Map

The light green polygons highlight states for visual purposes while the dark green points illustrate actual locations of destination. In addition, at different scales there are multiple mental maps that become visible within this layer. Therefore, as one zooms in, various scanned maps, line, points, and polygons become visible. The researcher can look at the participant's geographical data at different scales within the single map file.

Conclusion: Developing interdisciplinary ethnographic and ArcGIS Approaches

This paper has focused on the process in which the qualitative data gathered from 37 participants' interviews were analyzed and translated into ethnographic maps in ArcMap. The purpose of this methodology is to quantify and map multiple sources of ethnographic and geographic data extracted from in-depth qualitative interviews and participatory mapping. The ongoing development of the geodatabase gives our team the ability to integrate the data from the interviews with aggregate data from the regions such as HIV rates and drug use patterns.

The geodatabase also supports the development of possible strategies for confronting HIV/AIDS and problematic substance use by examining the ways that these epidemics are shaped by the realities of people's labor migration and the spaces they inhabit. It complements the ethnographic data collected by the team, generates new ways of creating representations, and develops innovative interdisciplinary analytic frameworks. The next phase of this analysis will synthesize the interviews into a series of comprehensive maps that display patterns in the whole sample regarding specific key themes, and will put these into conversation with the theoretical approach of syndemic theory and our notion of tourism ecologies.

While transforming qualitative data into quantitative data is innovative and useful, it requires great care and the interdisciplinary collaboration of multiple researchers and experts. It has also been vital to the project for multiple researchers and coders to be working together through every stage. Without reflexivity and great care for detail, there are potential perils in the ways data is interpreted or visually represented. *Thus, a key contribution of this work is its integration of different methodologies from various disciplines to help better understand complex social problems.* It is our hope that other researchers will use our work as one example of how social science theory and ethnographic mapping through ArcGIS can be undertaken to contribute to applied health research.

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