

Chitwan Valley Family Study (CVFS)

Data Summary

April 2017

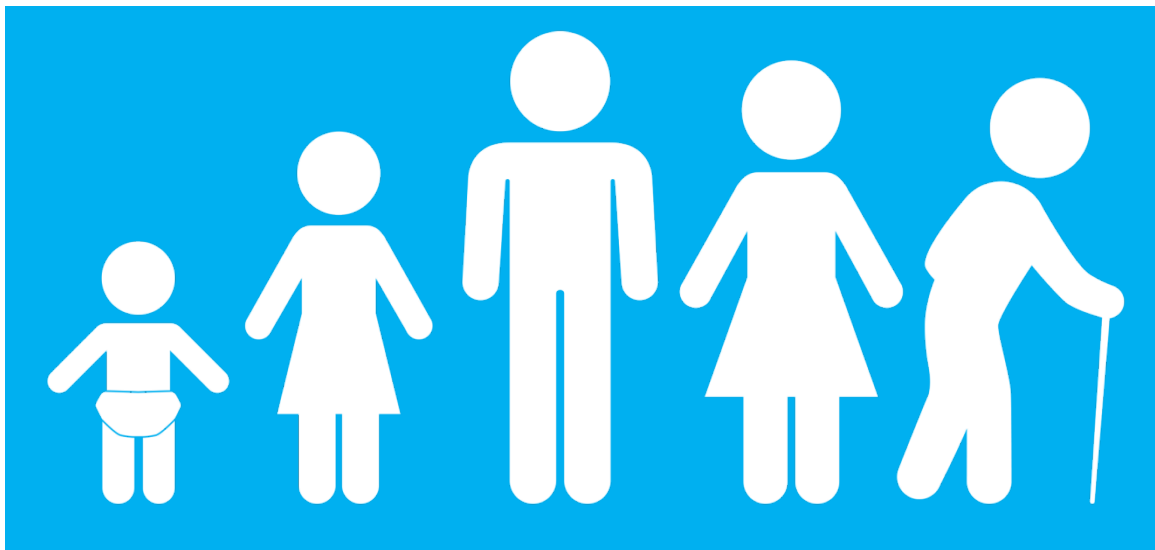


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Public and Restricted Data List

Currently available through ICPSR (icpsr.umich.edu):

	Public Data	Restricted Data
DS1 & DS2: Baseline Agriculture and Consumption Data Time 1 (1996)	x	x
DS3 & DS4: Individual-Level Household Census Data Time 1 (1996)	x	x
DS5: Child-Level Data (Individual Interview) Time 1 (1996)	x	
DS6 & DS7: Family Planning Data (Months 1-54)	x	x
DS8: Healthpost History Data Time 1 (1996)		x
DS9 & DS10: Household Registry Data (Months 1-54)	x	x
DS11 & DS12: Individual Interview Data Time 1 (1996)	x	x
DS13: Individual Life History Calendar Data Time 1 (1996)	x	
DS14: Neighborhood History Data Time 1 (1996)		x
DS15 & DS16: Household Relationship Grid Time 1 (1996)	x	x
DS17: School History Data Time 1 (1996)		x
DS18: Agriculture and Consumption Data Time 2 (2001)		x
DS19: Agriculture and Consumption Data Time 3 (2006)		x
DS20: Land Use Data Times 1-3 (1996, 2001, 2006)		x
DS21: Household Registry Away Data (Months 1-36)		x
DS22: Neighborhood History Data Time 2 (2006)		x
DS23: School History Data Time 2 (2006)		x
DS24: Healthpost History Data Time 2 (2006)		x
DS25 & DS26: Household Registry Data (Months 1-126)	x	x
DS27: Individual Interview Data Time 2 (2008)		x
DS28: Individual Life History Calendar Data Time 2 (2008)	x	
DS29: 1996 and 2008 Panel Data Combination (Individual Level)		x
DS30: Flora Survey Data Times 1-3 (1996, 2001, 2006)		x
DS31: Neighborhood Distances File		x
DS32: Community Forest Calendar Data		x

ICPSR Data Access Instructions

1. Go to icpsr.umich.edu
2. Inside the search bar type 'Chitwan' and click 'Search'
3. Click 'Chitwan Valley [Nepal] Family Study: Changing Social...'
4. Under 'Dataset(s)' click files to download

Note: CVFS makes every effort to archive its data at ICPSR as quickly as possible. For the protection of human subjects some of these data are restricted use. For data not yet archived at ICPSR please contact us at psc-socpopenv@umich.edu.

Currently available through UK Data Service (ukdataservice.ac.uk):

	Public Data	Restricted Data
<i>Labour Outmigration, Agricultural Productivity and Food Security</i>		
SN 852537 Household Agriculture and Migration Survey	x	
SN 852239 Women's Time Use Survey	x	

UK Data Service Data Access Instructions

1. Go to ukdataservice.ac.uk
2. Inside the search bar type 'Chitwan' and tap 'Enter' on the keyboard
3. Click 'Download' under the desired dataset(s)

Neighborhood-Level Data

Neighborhood History Data. In order to collect detailed neighborhood histories, we developed an innovative new procedure we call the Neighborhood History Calendar. This procedure is described in detail in a paper by Axinn, Barber, and Ghimire (1997) published in *Sociological Methodology*. The key innovations include: (1) an explicit integration of archival, ethnographic, and survey methods; (2) the creation of timing cues to assist recall of the timing of neighborhood-specific events potentially difficult to remember; (3) the development of a standardized recording device (the calendar and accompanying questionnaire) to create uniform measurement across all neighborhoods; and (4) a multiple interview, multiple respondent strategy to maximize discovery of relevant changes.

In 1995 (Time 1), the neighborhood history calendars were administered in 171 sample neighborhoods to record the history for the prior fifty years of neighborhood access to electricity, schools, health services, bus services, grain mills, agricultural cooperatives, dairies, markets, banks, employment opportunities, small farmers' development programs, women's groups, youth groups, temples, and police stations in each neighborhood. For services such as schools and banks, the opening date for the nearest facility, the date for the nearest facility before that one opened, and the beginning date for the nearest facility before that, were recorded on the calendar. The precise timing of these events was established by reconciling the reports of several respondents with government and other independent records of events (Chayovan and Knodel 1985). Direct observation served as additional confirmation that the event in question had occurred. Additional information about each service that could not be easily recorded on the calendar (e.g., time to reach by bus and by foot) was recorded in an accompanying questionnaire. Ethnographic techniques were also used to discover neighborhood changes of which the investigators could not be aware before entering the field. These ethnographic methods were successful in measuring highly localized events and programs with important consequences for family formation behavior that could not have been anticipated before the beginning of the data collection (Axinn 1992; Axinn, Fricke, and Thornton 1991). Global Positioning System (GPS) equipment was also used to gather the latitude and longitude of each neighborhood.

To provide continuous measures of neighborhood characteristics, the neighborhood histories were updated in 2006 (Time 2) and 2015 (Time 3). This data collection was performed using the exact same methods and procedures as the previous neighborhood history data collection, with some additional attention to achieving continuity between the end of the previous calendar (July-December 1995) and the beginning of this new calendar. The procedure is designed to produce a continuous record of neighborhood contextual changes through 2006. It also measures a small number of new organizations that moved into the study area since 1995, such as internet access centers and cafes. While Time 3 data are still in the processing stage, Time 1 and Time 2 neighborhood history calendar data are available through the Interuniversity Consortium for Political and Social Research (ICPSR) at icpsr.umich.edu.

In addition, we also measure the distance from each sample neighborhood to the nearest school (in 1996), health service (1956-1996), sample forest plot (1996) and bus route (1996) as well as the distance from each sample neighborhood to Narayangarh/Bharatpur, the main town in Chitwan. These data are available through ICPSR at icpsr.umich.edu.

Other Histories. Although neighborhood residents were able to provide high quality information about their access to various types of nearby services, they were less able to provide reliable details about those services. Therefore, special calendars were designed to collect data directly from schools, health services, banks, government programs, and bus (transportation) routes (Axinn, Barber, and Ghimire 1997). We describe the school, and the

health service history data collection below. These data are available through ICPSR at icpsr.umich.edu.

School History Data. Regional and government records, interviews with residents, and interviews with former school employees were used to list every school in Chitwan, including schools that had closed by the time of data collection. School histories were then collected in 1996 (Time 1) from every school that had ever been located in the valley, even if it was no longer in operation. Measures were drawn from a combination of school records, interviews with school administrators, and interviews with teachers. For older schools in which none of the current staff knew the early history of the school, or schools that were no longer open, former administrators and teachers were located and interviewed in their homes. The following information was recorded annually on the school history calendar: highest and lowest grade available, number of classrooms, number of students, number of female students, tuition for grades 1 and 10, other fees for grades 1 and 10, type of curriculum, curriculum on family planning, number of students in dormitory, number of female students in dormitory, number of teachers, number of teachers with Bachelor's degrees, number of female teachers, and the medium of instruction (English or Nepali). Additional information, such as the school location, the date the school opened, and the funding source to open the school, was recorded on a companion questionnaire. We also used GPS equipment to gather the latitude and longitude of each school. Initially, data were gathered for 145 schools for the prior fifty years. Similar to the neighborhood history calendar, we updated the school history data collection in 2006 (Time 2) for 155 schools and in 2015 (Time 3) for 180 schools. Based on lessons learned from our ongoing ethnographic field work, we modified our original school history instrument by adding a number of new attributes and facilities. These are now cross checked for discrepancies, cleaned and merged with previous waves of data. While Time 3 data are still in the processing stage, Time 1 and Time 2 data are available through ICPSR at icpsr.umich.edu.

Healthpost History Data. We followed a similar procedure to collect histories of all the health services in the study area. We began by using regional government records and interviews with local residents to create a list of every health service that had ever operated within the study area regardless of whether it was still operating at the time of the study. Health services included hospitals, clinics, dispensaries, and pharmacies. Such a broad definition was necessary to include all facilities providing any type of contraceptive method. As with the school history calendars, data were collected from the records of each health service, interviews with managers, and interviews with workers. When current workers or managers were not available, or their knowledge was insufficient, we found former employees and interviewed them in their homes. The following information was recorded annually on a health service history calendar: years operating, number of days of service per week, number of hours of service per day, number of staff (doctors, nurses, and health workers), number of rooms and related facilities (examination tables and inpatient beds), contraceptive methods available (pills, IUD and loop, Depo-Provera, condom, foam, laproscopy, vasectomy), costs of each contraceptive method, association with mobile sterilization camps, other family planning programs or services offered, and other maternal and child health programs or services offered (birthing, child vaccinations, diarrhea treatments, nutritional programs, and prenatal care). Other information was recorded on the accompanying questionnaire. We also used GPS equipment to gather the latitude and longitude of each health service center. In 1996 (Time 1), we gathered data for 116 health services for the prior fifty years. To provide continuous measures of health service characteristics, we updated the health service history data collection in 2006 (Time 2) for 212 health services and in 2015 (Time 3) for 267 health services. In order to provide dynamic measures of health service, based on lessons learned from our ongoing

ethnographic field work, we modified our original health service history instrument by adding a number of new attributes and facilities. These data are now cross checked for discrepancies, cleaned and merged with previous waves of data. While Time 3 data are still in the processing stage, Time 1 and Time 2 data are available through ICPSR at icpsr.umich.edu.

Household-Level Data

We began survey measurement in 1996 with a household-level survey administered to all 1,805 households in the 171 sample neighborhoods. We allowed any household member to act as an informant and encouraged multiple household members to participate in the interview. The survey consisted of two types of information: (1) the census and (2) the within-household relationship grid.

Household Census and Relationship Grid. The census form listed all members of the household who ate and slept in the household for more than half the time during the previous six months. This list was supplemented by anyone who was married to someone on the initial list. Once the household listing was complete, it was used to record relationships among all household members as of the interview date in 1996 (Time 1). This relationship grid measured the relationships of each household member to every other household member (parent, child, sibling, spouse, or other). This complete relationship enumeration has important advantages over more typical measures of relationships to the “household head” – it allows for the use of spousal, parental, and sibling characteristics in models of individual behavior. The Time 1 data are available through ICPSR at icpsr.umich.edu.

In 2002 (Time 2), the within household relationship grid was updated in 151 of the original sample neighborhoods. Due to budget constraints, updates could not be obtained from all 171 of the original sample neighborhoods. New members of the original households were added and relationship information was collected for new households that joined our monthly demographic event registry.

In 2008 (Time 3), we repeated the household census and household relationship grid in all 151 sample neighborhoods for the third time. This was done to add new members of the original households and to add relationship information for households that joined our monthly demographic event registry. The Time 2 and 3 data will be available through ICPSR at icpsr.umich.edu.

Although the household census and relationship measures were repeated only in certain intervals until 2013, once the data collection transitioned from Paper and Pencil Based Interview (PAPI) to Computer Assisted Interview (CAI) in 2013, these measures became dynamic with monthly precision and are now available in real time as the information get collected in the field.

Agriculture and Consumption Survey. In 1996 (Time 1), the household agriculture and consumption survey was administered to gather information about farming (e.g., farming versus non-farming household, land holdings, farming practices); livestock (e.g., number, management, feeding practices); household possessions (radio, television, motorcycle, tractor, and when each item was first owned); members living away from home; perceptions of environmental change; insects, pests, and diseases; and housing quality.

To measure changes in household agriculture practices and consumption, this household-level survey was repeated in 2001 (Time 2). This included 2,037 households, and achieved a response rate of 98% of eligible households. The 2001 survey included all content from the 1996 survey, plus new questions designed to measure income, assets, and consumption. In 2006 (Time 3), this survey was repeated for a third time, with substantial new measures of exit from farming and resource use. These data include information from 2,361

households, and achieved a response rate of 98.1% of the eligible households. All the data (Time 1, Time 2, and Time 3) are available through ICPSR at icpsr.umich.edu.

In 2015, this survey was repeated for a fourth time, with substantial new measures of exit from farming, migration, and remittance and resource use. This time, information was collected using an innovative household calendar that provides time varying measures of agricultural practices, migration, and remittance and resource use. These data include information from 3,332 households, and achieved a response rate of 98% of the eligible households.

First Wave (1996) of Individual Survey Data

All residents of the sampled neighborhoods between the ages of 15 and 59 and their spouses were surveyed. A “resident” was defined as someone who ate and slept in the household for more than half the time during the previous six months. Because this sample definition omitted some spouses who were away for extended periods, over age 59, or under age 15, this main sample was supplemented by interviewing all spouses of the main sample, regardless of age or residence. The individual-level survey included a questionnaire and life history calendar.

The individual-level interviews began in August 1996. The interviews (life history calendar and questionnaire) were administered by five teams of five interviewers, with one supervisor for each team. More than 90% of the interviews were completed by March 1997. The data collection period was extended until August 1997 to interview respondents who could not be contacted earlier. This effort included locating and interviewing a small number of respondents who had moved between the time of the census and the time of our individual interviewing. A total of 5,271 men and women ages 15-59 and their spouses were interviewed, yielding a response rate of 97%. This overall response rate of 97% reflects a combination of a 99% response rate for our main sample and an 85% response rate for our spouse sample. Our spouse sample was defined as non-resident spouses of our neighborhood residents, with resident spouses 15-59 being part of the main sample. Overall, there were only a few refusals – most of the eligible respondents who were not interviewed were either out of the country throughout the data collection period or could not be tracked for other reasons. The Time 1 (1996) individual-level data are currently available through ICPSR at icpsr.umich.edu.

Individual Interview Data. The questionnaire portion of the individual interview asked about respondents’ communities of childhood residence, non-family experiences, religion and religiosity, marital and family relationships, social networks, and a broad array of attitudes toward marriage, contraception, and childbearing. These attitude measures were designed through a combination of unstructured ethnographic interviewing and repeated pre-testing. Five separate pre-tests of various attitude measures between 1993 and 1996 were conducted. The final measures include Coombs’ scales of preferences for completed family size and the gender of children (Coombs 1974, 1979); preferences for education and non-family careers for children; ideal age at marriage for men and women; attitudes toward remaining single, remaining childless, and having large families; attitudes toward divorce, remarriage, and intermarriage; attitudes toward the gendered division of labor, premarital sex, and contraceptive use; and attitudes toward trade-offs between childbearing, old age care, and expectations of support from children. The questionnaire also included measures of respondents’ perceptions of costs, side effects, and efficacy for each contraceptive method used in this part of Nepal.

Individual Life History Calendar Data. Information from the neighborhood history calendars was used to design the individual-level life history calendar. Interviewers used the life

history calendar to record information about respondents' residence (migration), marital events (age at marriage, number of marriages, number of spouses, living arrangements with spouse(s), changes in marital status), childbearing (dates of births, gender, children's education, living arrangements, children's deaths), contraceptive use (methods ever used, dates of first use), living arrangements (with parents, in-laws, other relatives, with housemates, in dormitories or barracks, alone), travel (within Nepal, outside Nepal), education, and employment.

To accommodate the broad age range of the study population and segments of the Nepalese population who do not use calendars to mark personal events, the life history calendar was designed by altering the overall structure as well as the types of timing cues. The re-designed timing cues included descriptions of important national events and neighborhood specific events (gathered in the neighborhood history calendars) that were so memorable that they served as time "anchors" for personal events (Belli 1998). In addition, special recording techniques were developed to facilitate its use in the study site, including: additional lines and symbols to record information for simultaneous multiple spouses, more complex symbols to record information about children (birth, death, living arrangements, school) on a single calendar line, and extra space on the calendar to record the exact date of the first event for domains (e.g., first marriage, childbearing, contraceptive use) that were central to the aims of the study. This exact date information allows the construction of measures of the precise timing of first marriages, childbirths, and contraceptive use to estimate either continuous survival analysis or discrete survival analysis using very short time intervals (such as person-months). For a more comprehensive and detailed description of the life history calendar methods please see Axinn, Pearce, and Ghimire (1999), published in *Social Science Research*.

Child-level Data. In 1996, women who ever had a child/children were asked information about each child. For a living child, information was collected about schooling, school dropout, expectation about her/his educational achievement and breast feeding. For a deceased child, information was collected about the length of survival and whether the child was seen by a doctor before death. These data are available through ICPSR at icpsr.umich.edu.

Second Wave (2008) of Individual Interview with New Ideational Survey Data

In 2008, we conducted the second wave of the 1996 individual survey with a substantial portion of ideational measures on a refreshed sample of individuals that include: (1) both individuals interviewed in 1996 and (2) new individuals who moved to our 151 sample neighborhoods or who became eligible by age. Much of the original content from the 1996 individual survey and life history calendar were included, and many new questions designed to measure the influence of ideational factors on family life were added to the survey. The new ideational measures covered topics such as values and beliefs about societal attributes; modern family life; family change; and freedom and equality. Also included in the survey were Inglehart's measures of traditional/secular-rational and survival/self-expression values (Inglehart 2003), and Schwartz's measures of value orientations (Schwartz 2007).

A total of 5,190 individual interviews were completed with an overall response rate of 97%. This survey sample includes (1) individuals between the ages of 15-34 living in the 151 sample neighborhoods; (2) spouses of these married individuals (referred to in 1 above) who may or may not be living in the sample neighborhoods; (3) parents of any of these unmarried individuals (referred to in 1 above) who may or may not be living in the sample neighborhoods; and (4) all other individuals residing in the sample neighborhoods between the ages of 35-59. Both the individual interview data and life history calendar data are available for analysis through ICPSR at icpsr.umich.edu. In addition, a total of 650 individuals between the ages of

12-14 years in 2008 have also been interviewed as they reached age 15 with a response rate of 98%.

1996-2008 Panel Data. In 2008, we re-interviewed individuals who were interviewed in the 1996 individual survey. Of the total 4,646 individuals interviewed in 1996 from the 151 sample neighborhoods, we excluded 87 permanent Indian residents, 72 individuals living in group quarters and 4 other individuals who were misidentified in 1996. In addition, 219 individuals died between the 1996 interview and the 2008 census, resulting in an eligible sample of 4,264 individuals for panel data collection. Of the total 4,264 eligible individuals, 4,050 respondents were re-interviewed with a response rate of 95%. The data for 3,621 individuals are available for analysis through ICPSR at icpsr.umich.edu. Other remaining cases will be added to the data set soon.

Monthly Population Panel Study Data

Household Registry and Family Planning Instrument. The Chitwan Valley Family Study includes an extensive prospective panel study. A monthly demographic event registry forms the backbone of the study. Beginning in February of 1997, interviewers visited each household monthly to monitor births, deaths, marriages, divorces, contraceptive use, pregnancies, changes in living arrangements, and household composition. Unfortunately, due to budget constraints, previous projects were unable to collect data from all 171 sample neighborhoods included in our original sample. Instead, this demographic event registry includes 151 of those neighborhoods. The 151 sample neighborhoods include 1,582 households and 4,646 individuals interviewed as part of the original study and new houses and individuals that moved into the neighborhoods between 1996 and the 2008 household census. Data on these 151 sample neighborhoods provide the full contextual and ethnic heterogeneity imbedded in our original study design, even if they provide somewhat fewer cases. Furthermore, all residents of these 1,582 households within the 151 sample neighborhoods and residents of new households added in the 2008 household census were followed over time, including households that moved out of the study area after the 2008 household census. This means that the prospective panel data are maintained for all respondents interviewed in the original study, regardless of migration behavior. Interviewers visited each household monthly and interviewed one household member capable of reporting on all changes in the household.

In addition, we also collected contraceptive use data from individuals. Of course, the household informants may not be fully aware of other household members' contraceptive use, and may misreport it as a result. Thus, to ensure accuracy, we individually interview each household member age 18 to 45 about their contraceptive use. To maintain confidentiality, responses are recorded on a separate form. The interviewing is conducted by the same interviewers and supervisors who collected the original individual interviews (including life histories), so they are familiar to the respondents.

The monthly panel study of demographic events also adds new households or individuals to the sample when they move into a study neighborhood. In other words, all households listed in the 2008 household census are followed for the household-level data collection and included in the panel study regardless of whether and where they move within Nepal; new households are also added to the study but are not followed if they move. Because many of these neighborhoods are migration destinations, the number of new households is substantial (1,151 new households added between 1996 and 2008).

The demographic event registry is conducted with the same quality assurance procedures as our other survey work (Axinn, Ghimire and Williams 2012). Over the first year, we maintained a response rate of 98% for the household interviews and 92% for the individual-

level interviews on contraceptive use. The monthly demographic event registry data through 216 consecutive months (February 1997-January 2015), with a response rate of 98%, are currently being cleaned. Similarly, the response rate for contraceptive use interviews through the 216th month of data collection is 90%. This extremely high response rate helps ensure that attrition from the panel will not be a serious threat to the validity of analyses based on these data. We believe our extraordinarily high response rates are a function of the isolated character of the Nepalese respondent population, the hardworking nature of our Nepalese field staff, and our design that keeps our interviewers in a finite geographic area for lengthy periods of time. We continue to maintain high levels of data checking and all data are double entered into a computerized form to reduce keying errors. Several analyses were performed using months 1-72 of these data (Ghimire and Axinn 2010; Ghimire and Hoelter 2007; Yabiku 2004). Additional data were collected and are currently being processed and linked to the existing panel data.

Both public use data and restricted use data for months 1-126 (1-54 for contraceptive use) are available through ICPSR at icpsr.umich.edu. The data (both for the household registry and contraceptive use) for months 1-216 are currently ready for analysis. The data for months 1-216 are currently being cleaned and will be available through ICPSR upon completion.

Again as the household census and relationship data collection transitioned from PAPI to CAI, the demographic registry data that includes living arrangements (including migrant location), school enrollment with name of school, marriage, childbearing, and death are now available in real time as the information get collected in the field.

Household Registry Away Data. In addition to household event registry and contraceptive use data, we collected data for individuals who were away from home (did not eat and sleep in the household most of the time in the past month), for months 1-36. Information was collected from the respondent about the away person's place of residence, reason for leaving the house, and whether the person sends any remittances. These away data (months 1-36) are available through ICPSR at icpsr.umich.edu. Data collection about the away person was stopped after month 36. We began collecting these data again starting from month 145 of the household registry.

Mental Health Pilot Study

In 2009, a pilot study was conducted to measure the prevalence of and variation in mental health disorders using CVFS sampling methodology (Ghimire, Chardoul, Kessler, Axinn, and Adhikari 2013). We began with the widely used World Mental Health Composite International Diagnostic Interview (WMH-CIDI) and adapted it to the Nepali language and cultural context. An iterative five-step process was used to translate, harmonize, and calibrate the instrument. A blinded clinical reappraisal design was used to validate the instrument. The translation and validation process is described in detail in a paper by Ghimire and colleagues (2013) published in the *International Journal of Methods in Psychiatric Research*. The CIDI instrument was administered to 403 individuals from the Chitwan Valley of Nepal who were selected in a statistically representative manner that closely resembled the Chitwan Valley Family Study sample. Key disorders measured include major depressive episode, mania/hypomania, panic disorder, post-traumatic stress disorder, intermittent explosive disorder, and generalized anxiety disorder. The field period lasted three weeks and the response rate was 91%. The data will be available for analysis through ICPSR at icpsr.umich.edu.

Environment Data

Neighborhood Mapping. A combination of GPS readings and a topographic survey map of the Chitwan Valley were used to determine exact latitude and longitude locations of each sample neighborhood. The 1995-1996 His Majesty's Government of Nepal Topographic Survey Map (scaled 1:25000) was developed from aerial photos taken in 1992 and ground truthed. Coordinates for wooded areas/forests within the Western Chitwan Valley were also digitized. Furthermore, land use mapping teams gathered data on specific locations within communities (e.g., hospitals, schools, and bus stops) that were added to the geographic information system (GIS) digital database. Land capability data were also digitized from 1:50000 Land Systems, Land Capability, and Land Utilization maps from the Government of Nepal's Survey Department. Geographic data gathered in the field were linked to the data digitized from secondary data sources (i.e., topographic and thematic maps of the area) and entered into a GIS database maintained by Stephen Matthews and supported by the Geographic Information Analysis Core at the Population Research Institute at Penn State. Stephen Matthews provided training in these mapping procedures and technologies.

Land Use Survey. A systematic sample of 171 neighborhoods was selected by mapping all households in the Western Chitwan Valley and choosing clusters of five to fifteen households with equal probability. Using this household-based selection of clusters, we established boundaries around our sample neighborhoods so that every unit of land in Chitwan had one and only one chance of falling in our sample. These neighborhood boundaries became the perimeters for our land use measures. The first round of measures was collected between January and April of 1996 (Time 1). Using compasses and tape measures, teams of field workers mapped the geographic area of all 171 sample neighborhoods, including all boundaries within neighborhood land parcels. Many distinct categories of land use were identified and mapped on these parcels, including common land (grazing, forest, plantation), multiple types of agricultural land [up land (fallow or cultivated), irrigated low land (fallow or cultivated), rain-fed low land (fallow or cultivated), private grazing land, and private plantations], and other uses (e.g. household residences, schools, temples, mills, roads, irrigation canals, rivers, or ponds and waterways). The land area data were computerized and used to calculate the area of land used for each category in each neighborhood. The area of the neighborhoods ranges from 4,049 to 2,764,242 square feet (Shivakoti, Axinn, Bhandari, and Chhetri 1999).

The same measurement procedures were followed again in 2000 (Time 2) and 2006 (Time 3) to create panel data on land use at the neighborhood-level. The 2000 and 2006 data collection activities were also updated in all 171 sample neighborhoods.

We also have measures of land use from the household agricultural practices and environmental consumption survey (described above) that include land owners' reports of the distribution of land being used for different purposes (such as cultivated land, garden land, grazing land, and forest), and specific details of agricultural practices on cultivated land (including crop rotations, seed varieties used, applications of fertilizers and pesticides, and use of mechanized implements). These data are currently available through ICPSR at icpsr.umich.edu for restricted use.

Forest Plot and Common Land Plot Flora Surveys. In 1996 (Time 1), flora samples were collected and analyzed from 265 land plots in the study site. These plots were of two types: forest plots and common land plots. The sample of 127 forest plots were drawn from three forest areas surrounding the Chitwan Valley: Barandabar Forest (62 plots), Royal Chitwan National Park (34 plots plus 10 grassland plots), and forest land near the Naranyani River (21 plots). The forest plots in Barandabar Forest are arranged at 250 meter intervals along equally spaced (1 km) transects that extend 1,250 meters into the forest. In Chitwan National Park, the

transects are equally spaced (1 km) but consist of two plots at 250 and 1,250 meters in depth from the edge of the forest. The Naranyani River forests are quite small in size (less than 1.25 km wide) and did not permit the use of the transect sampling frame. Instead, the sampling frame was drawn from along a W-shaped transect, producing plots that are either easily accessible (near the edge of the forest) or not very accessible (on the farthest side of the forested area). Each forest plot consists of a series of overlapping sample areas. A tree plot measures 10 by 10 meters and defines the perimeter. One shrub plot is located at the center of each forest plot and measures 3 by 3 meters. Five grass plots, each measuring 1 by 1 meter, are selected based on a W-shaped profile.

The 138 common land plots were selected differently than the forest plots. A 10 by 10 meter plot was chosen from a list of common land grazing areas named by respondents in each neighborhood in the household agriculture and consumption survey. Three 1 by 1 meter plots were then chosen along the Northwest-Southeast diagonal within each 10 by 10 meter plot for counting and classifying grass species. Plant identification in both types of plots was carried out with the help of flora manuals and weed identification methods developed by Dr. Dharma Dangol of the Department of Environmental Sciences at the Institute of Agriculture and Animal Science (Dangol 1994). From each plot, flora teams counted the number of different tree, shrub, and grass species (biodiversity), the height and diameter of the largest and smallest specimens of each tree and shrub species, and used the Braun Blanquet scale to estimate the proportion of the plot covered by each species (ground cover). Other measures included: depth of humus (in cm), soil texture, evidence of erosion, pest and animal damage (e.g., trampling), and if the plot was under forest management. The flora teams were trained in trail blazing, or course navigation, techniques to enable them to follow paths through difficult terrain such as forest to facilitate the location of sampled flora sites.

Flora counts were conducted at the same time of year for the 1996 (Time 1), 2000 (Time 2), and 2006 (Time 3) measures (January-March) because species may present themselves differently during different seasons. Biodiversity was measured by recording the number and type of each species at each time.

All forest and common land plots were located and identified on the Nepalese Government's Topographic Survey Maps of Chitwan (scaled 1:25000). The flora data collection teams used traditional mapping and survey techniques to record the directions to and location of all plots. In 1996, the teams also placed locator tags at each forest plot, which helped in the successful relocation of all forest plots in the year 2000, and the 2006. The environment data are available through ICPSR at icpsr.umich.edu.

Community Forestry (CF) and Community Forestry User's Group Survey. In 2008, data on location, area, and perimeter of each 21 community forestry areas in Western Chitwan was collected using a high resolution Trimble ProXRT © GPS to better understand the forest management systems as well as human effects, such as grazing and firewood and fodder collection on flora species diversity.

In addition, a Community Forest User's Group Survey was conducted in 2009 in all 21 community forests. Using a community history calendar, this survey collected information on the establishment history, conservation programs, income, expenditure, resource use patterns, benefit sharing and challenges of conserving the community forest from the date of establishment to 2009. These data are available through ICPSR at icpsr.umich.edu.

Labour Outmigration, Agricultural Productivity and Food Security Study

Household Agriculture and Migration Survey. Using the Chitwan Valley Family Study (CVFS) existing surveys and national surveys (Demographic Health Survey and Nepal Living Standard Survey), we designed a 43-minute Household Agriculture and Migration Survey. This survey includes information on household agricultural practices, including crop production and farm technology use, wealth, assets, income, consumption, food security and information about each household member currently away from home, and remittances received by the household. In addition, an Agriculture and Remittance Calendar was designed to collect retrospective data on farming/non-farming status, crop production, land under cultivation, farm technology use, migration and remittances from 2006 through July 2015 matching with the agricultural production data collection in 2006. This draft survey was rigorously pre-tested in 50 households before data collection was launched. The first wave of the survey was administered to 2,255 households residing within 151 CVFS sample neighborhoods July 15, 2015 through December 20, 2015. Data collection for the first wave is complete with a response rate of 98.2%. Data from additional waves of the Household Agriculture and Migration Survey will be available after data collection is complete.

Women's Time Use Survey. A 16-minute Women's Participation in Farming Survey was designed and administered to women from farm households to collect information on changes in their time and involvement in agriculture and other activities. We used survey instruments from the International Food Policy Research Institute's modules for the Women's Empowerment in Agriculture Index and Nepal Living Standard Survey (NLSS) as a basis for our Women's Participation in Farming Survey. Our instrument was intensively pre-tested to 50 women before finalizing survey content. This instrument was designed in calendar format to assess the number of hours worked in various household (farming and non-farming) activities in the past 24 hours and the number of days worked in each activity in the past month. The first wave of the survey was administered to 2,421 women in August 2015. Data collection for the first wave is complete with a response rate of 98.5%. Data from additional waves of the Women's Participation in Farming Survey will be available after data collection is complete.

These data are available through the UK Data Service at ukdataservice.ac.uk and will be available through ICPSR soon.

References

- Axinn, William G. 1992. "Rural Income-Generating Programs and Fertility Limitation: Evidence from a Microdemographic Study in Nepal." *Rural Sociology* 57(3):396-413.
- Axinn, William G., Jennifer S. Barber, and Dirgha Ghimire. 1997. "The Neighborhood History Calendar: A Data Collection Method Designed for Dynamic Multilevel Modeling." *Sociological Methodology* 27:355-392.
- Axinn, William G., Tom Fricke, and Arland Thornton. 1991. "The Microdemographic Community Study Approach: Improving Survey Data by Integrating the Ethnographic Method." *Sociological Methods and Research* 20:187-217.
- Axinn, William G., Dirgha J. Ghimire, and Nathalie E. Williams. 2012. "Collecting Survey Data during Armed Conflict." *Journal of Official Statistics* 28(2):153-171.
- Axinn, William G., Lisa D. Pearce, and Dirgha Ghimire. 1999. "Innovations in Life History Calendar Applications." *Social Science Research* 28:243-264.
- Belli, Robert F. 1998. "The Structure of Autobiographical Memory and the Event History Calendar: Potential Improvements in the Quality of Retrospective Reports in Surveys." *Memory* 6:383-406.
- Chayovan, Napaporn and John Knodel. 1985. "Improving the Collection of Village-Level Data: An Experience from Thailand." Pp. 225-233 in *Collection and Analysis of Community Data*, edited by J. B. Casterline. Voorburg, Netherlands: International Statistical Institute.
- Coombs, Lolagene C. 1974. "How Many Children Do Couples Really Want?" *Family Planning Perspectives* 10:303-308.
- Coombs, Lolagene C. 1979. "Reproductive Goals and Achieved Fertility: A Fifteen-Year Perspective." *Demography* 16(4):523-534.
- Dangol, Dharma R. 1994. *Weed Flora of Nepal - An Illustrated Manual*. Institute of Agriculture and Animal Science, Rampur, Chitwan, Nepal.
- Ghimire, Dirgha J. and William G. Axinn. 2010. "Community Context, Land Use, and First Birth." *Rural Sociology* 75(3):478-513.
- Ghimire, Dirgha J., Stephanie Chardoul, Ronald Kessler, William G. Axinn, and Bishnu Adhikari. 2013. "Modifying and Validating the Composite International Diagnostic Interview (CIDI) for Use in Nepal." *International Journal for Methods in Psychiatric Research* 22(1):71-81.
- Ghimire, Dirgha J. and Lynette F. Hoelter. 2007. "Land Use and First Birth Timing in an Agricultural Setting." *Population and Environment* 28(6):289-320.
- Inglehart, Ronald F. 2003. *Culture and Social Change: Findings from the Value Surveys*. Leiden: Brill Academic Publishers.
- Schwartz, S. H. 2007. "Value Orientations: Measurement, Antecedents and Consequences Across Nations." Pp. 169-204 in *Measuring Attitudes Cross-Nationally: Lessons from the European Social Survey*. Edited by R. Jowell, C. Roberts, R. Fitzgerald, and G. Eva. London: Sage.
- Shivakoti, Ganesh P., William G. Axinn, Prem Bhandari, and Netra B. Chhetri. 1999. "The Impact of Community Context on Land Use in an Agricultural Society." *Population and Environment* 20:191-213.

Yabiku, Scott T. 2004. "Marriage Timing in Nepal: Organizational Effects and Individual Mechanisms." *Social Forces* 83(2):559-586.

CVFS Publications

(spe.psc.isr.umich.edu/pubs/cvfs.html)

- Allendorf, Keera. 2017. "Conflict and Compatibility? Developmental Idealism and Gendered Differences in Marital Choice." *Journal of Marriage and Family* 79(2):337-55.
- Allendorf, Keera and Arland Thornton. 2015. "Caste and Choice: The Influence of Developmental Idealism on Marriage Behavior." *American Journal of Sociology* 121(1):243-287.
- Allendorf, Keera and Dirgha J. Ghimire. 2013. "Determinants of Marital Quality in an Arranged Marriage Society." *Social Science Research* 42(1):59-70.
- An, Li, Alex Zvoleff, Jianguo Liu, and William G. Axinn. 2014. "Agent-Based Modeling in Coupled Human and Natural Systems (CHANS): Lessons from a Comparative Analysis." *Annals of the Association of American Geographers* 104(4):723-745.
- Axinn, William G. 2015. "Demographic Change: The Case of Chitwan Valley in Nepal." *International Journal of Sociology* 45(1):1-3.
- Axinn, William G. and Jennifer S. Barber. 2001. "Mass Education and Fertility Transition." *American Sociological Review* 66(4):481-505.
- Axinn, William G. and Jennifer S. Barber. 2003. "Linking People and Land Use: A Sociological Perspective." In *People and the Environment*, edited by J. Fox, R.R. Rindfuss, S. Walsh, and V. Mishra. Boston: Kluwer Academic Publishers.
- Axinn, William G., Jennifer S. Barber, and Ann E. Biddlecom. 2010. "Social Organization and the Transition from Direct to Indirect Consumption." *Social Science Research* 39:357-368.
- Axinn, William G., Jennifer S. Barber, and Dirgha J. Ghimire. 1997. "The Neighborhood History Calendar: A Data Collection Method Designed for Dynamic Multilevel Modeling." *Sociological Methodology* 27:355-392.
- Axinn, William G., Heather H. Gatny, and James Wagner. 2015. "Maximizing Data Quality Using Mode Switching in Mixed-Device Survey Design: Nonresponse Bias and Models of Demographic Behavior." *Methods, Data, Analyses* 9(2):163-184.
- Axinn, William G. and Dirgha J. Ghimire. 2011. "Social Organization, Population and Land Use." *American Journal of Sociology* 117(1):209-258.
- Axinn, William G., Dirgha J. Ghimire, and Jennifer S. Barber. 2008. "The Influence of Ideational Dimensions of Social Change on Family Formation in Nepal." In *International Family Change: Ideational Perspectives*, edited by R. Jayakody, A. Thornton, and W. G. Axinn. Mahwah, NJ: Lawrence Erlbaum Associates.
- Axinn, William G., Dirgha J. Ghimire, and Nathalie E. Williams. 2012. "Collecting Survey Data during Armed Conflict." *Journal of Official Statistics* 28(2):153-171.
- Axinn, William G., Dirgha J. Ghimire, Nathalie E. Williams, and Kate M. Scott. 2013. "Gender, Traumatic Events and Mental Health Disorders in a Rural Asian Setting." *Journal of Health and Social Behavior* 54(4):444-461.
- Axinn, William G., Dirgha J. Ghimire, Nathalie E. Williams, and Kate M. Scott. 2015. "Associations between the Social Organization of Communities and Psychiatric Disorders in Rural Asia." *Social Psychiatry and Psychiatric Epidemiology* 50(10):1537-1545.

- Axinn, William G., Elyse A. Jennings, and Mick P. Couper. 2015. "Response of Sensitive Behaviors to Frequent Measurement." *Social Science Research* 49:1-15.
- Axinn, William G. and Lisa D. Pearce. 2006. *Mixed Method Data Collection Strategies*. Cambridge University Press.
- Axinn, William G., Lisa D. Pearce, and Dirgha J. Ghimire. 1999. "Innovations in Life History Calendar Applications." *Social Science Research* 28(3):243-264.
- Axinn, William G. and Ganesh P. Shivakoti. 1997. "Demographic Issues and the Use of Natural Resources." In *People, Participation, and Sustainable Development: Understanding the Dynamics of Natural Resource Systems*, edited by Shivakoti et al. Bloomington, Indiana and Rampur, Chitwan: Winrock International.
- Axinn, William G., and Scott Yabiku. 2001. "Social Change, the Social Organization of Families, and Fertility Limitation." *American Journal of Sociology* 106(5):1219-1261.
- Barber, Jennifer S. 2004. "Community Social Context and Individualistic Attitudes toward Marriage." *Social Psychology Quarterly* 67(3):236-256.
- Barber, Jennifer S. and William G. Axinn. 2004. "New Ideas and Fertility Limitation: The Role of Mass Media." *Journal of Marriage and Family* 66:1180-1200.
- Barber, Jennifer S., Ann E. Biddlecom, and William G. Axinn. 2003. "Neighborhood Social Change and Perception of Environmental Degradation." *Population and Environment* 25(2):77-108.
- Barber, Jennifer S., Susan A. Murphy, William G. Axinn and Jerry Maples. 2000. "Discrete-Time Multilevel Hazard Analysis" *Sociological Methodology* 30:201-235.
- Barber, Jennifer S., Susan A. Murphy and Natalya Verbitsky. 2004. "Adjusting for Time-Varying Confounding in Survival Analysis." *Sociological Methodology* 34:163-192.
- Barber, Jennifer S., Lisa D. Pearce, Indra Chaudhury, and Susan Gurung. 2002. "Voluntary Associations and Fertility Limitation." *Social Forces* 80(4):1369-1401.
- Barber, Jennifer S., Ganesh P. Shivakoti, William G. Axinn, and Kishor Gajurel. 1997. "Sampling Strategies for Rural Settings: A Detailed Example from Chitwan Valley Family Study, Nepal." *Nepal Population Journal* 6(5):193-203.
- Beutel, Ann M. and William G. Axinn. 2002. "Gender, Social Change, and Educational Attainment." *Economic Development and Cultural Change* 51(1):109-134.
- Bhandari, Prem. 2004. "Relative Deprivation and Migration in an Agricultural Setting of Nepal." *Population and Environment* 25(5):475-499.
- Bhandari, Prem B. 2013. "Rural Livelihood Change? Household Capital, Community Resources and Livelihood Transition." *Rural Studies* 32:126-136.
- Bhandari, Prem B. and Dirgha J. Ghimire. 2013. "Rural Agricultural Change and Fertility Transition in Nepal." *Rural Sociology* 78(2):229-252.
- Bhandari, Prem B. and Dirgha J. Ghimire. 2016. "Rural Agricultural Change and Individual Out-migration." *Rural Sociology* 81(4): 572-600.
- Bhandari, Prem B. and Indra Chaudhary. 2016. "A Calendar Method of Collecting Remittance Use Data in a Remittance Dependent Setting of Nepal." *Migration and Development* Online Only <http://www.tandfonline.com/doi/full/10.1080/21632324.2015.1129689>

- Biddlecom, Ann E., William G. Axinn, and Jennifer S. Barber. 2005. "Environmental Effects on Family Size Preferences and Subsequent Reproductive Behavior in Nepal." *Population and Environment* 26(3):583-621.
- Bohra-Mishra, Pratikshya and Douglas S. Massey. 2009. "Processes of Internal and International Migration from Chitwan, Nepal." *International Migration Review* 43(3):621-651.
- Bohra-Mishra, Pratikshya and Douglas S. Massey. 2011. "Environmental Degradation and Out-Migration: Evidence from Nepal." In *Migration, Environment and Climate Change*, edited by E. Piguet, A. Pécoud and P. de Guchteneire. Cambridge, UK: Cambridge University Press.
- Bohra-Mishra, Pratikshya and Douglas S. Massey. 2011. "Individual Decisions to Migrate During Civil Conflict." *Demography* 48(2):401-424.
- Bohra-Mishra, Pratikshya. 2013. "Labour Migration and Investments by Remaining Households in Rural Nepal." *Journal of Population Research* 30(2):171-192.
- Brauner-Otto, Sarah R. 2009. "Schools, Schooling, and Children's Support of Their Aging Parents." *Ageing & Society* 29(7):1015-39.
- Brauner-Otto, Sarah R. 2012. "Schools, Their Spatial Distribution and Characteristics, and Fertility Limitation." *Rural Sociology* 77(3):321-354.
- Brauner-Otto, Sarah R. 2013. "Attitudes about Children and Fertility Limitation Behavior." *Population Research and Policy Review* 32:1-24.
- Brauner-Otto, Sarah R. 2014. "Environmental Quality and Fertility: the Effects of Plant Density, Species Richness, and Plant Diversity on Fertility Limitation." *Population and Environment* 36(1):1-31.
- Brauner-Otto, Sarah R. 2015. "Health Services, Attitudes, and Fertility Limitation." *International Journal of Sociology* 45(1):24-43.
- Brauner-Otto, Sarah R., and William G. Axinn. 2010. "Parental Family Experiences, the Timing of First Sex, and Contraception." *Social Science Research* 39(6):875-893.
- Brauner-Otto, Sarah R., William G. Axinn, and Dirgha J. Ghimire. 2007. "The Spread of Health Services and Fertility Transition." *Demography* 44(4):747-770.
- Carter, Neil H., Bhim Gurung, Andrés Viña, Jhamak B. Karki, and Jianguo Liu. 2013. "Assessing spatiotemporal changes in tiger habitat across different land management regimes." *Ecosphere* 4(10):art124.
- Carter, Neil H., Shawn J. Riley, and Jianguo Liu. 2012. "Utility of a Psychological Framework for Carnivore Conservation." *Oryx* 46(4):525-535.
- Carter, Neil H., Shawn J. Riley, Ashton Shortridge, Binoj K. Shrestha, and Jianguo Liu. 2014. "Spatial Assessment of Attitudes toward Tigers in Nepal." *AMBIO* 43(2):125-137.
- Carter, Neil H., Binoj K. Shrestha, Jhamak B. Karki, Narendra Man Babu Pradhan, and Jianguo Liu. 2012. "Coexistence between Wildlife and Humans at Fine Spatial Scales." *Proceedings of the National Academy of Sciences* 109(38):15360-15365.
- Carter, Neil H., Andrés Viña, Vanessa Hull, William McConnell, William G. Axinn, Dirgha J. Ghimire, and Jianguo Liu. 2014. "Coupled Human and Natural Systems Approach to Wildlife Research and Conservation." *Ecology and Society* 19(3):43.

- Chen, Xiaodong, Andrés Viña, Ashton Shortridge, Li An, and Jianguo Liu. 2014. "Assessing the Effectiveness of Payments for Ecosystem Services: an Agent-Based Modeling Approach." *Ecology and Society* 19(1):7.
- Compernelle, Ellen (Nell). 2015. "Changing Attitudes toward Care of Aging Parents: The Influence of Education, International Travel, and Gender." *International Journal of Sociology* 45(1):64-83.
- Dangol, Dharma R. 1999. *PERL Flora Manual*. Rampur, Nepal: Population and Ecology Research Laboratory, Institute of Agriculture and Animal Science.
- Dangol, Dharma R. 2001. *A Bibliography of Literature on Flora, Ecology, Environment and Ethnobotany*. Rampur, Nepal: Population and Ecology Research Laboratory, Institute of Agriculture and Animal Science.
- Dangol, Dharma R. 2001. *Measures for Vegetation Description and Analysis*. Rampur, Nepal: Population and Environment Study Project, Population and Ecology Research Laboratory.
- Dangol, Dharma R. 2002. "Economic Uses of Forest Plant Resources in Western Chitwan, Nepal." *Banko Janakari* 12(2):56-64.
- Dangol, Dharma R. 2002. "Ethnobotanical Research and Education in Chitwan, Nepal." *Journal of the Institute of Agriculture and Animal Science* 23:1-7.
- Dangol, Dharma R. 2002. *Dictionary of Forest and Common Land Plants of Western Chitwan*. Rampur, Nepal: Population and Ecology Research Laboratory, Institute of Agriculture and Animal Science.
- Dangol, Dharma R. 2005. "Species Composition, Distribution, Life Forms and Folk Nomenclature of Forest and Common Land Plants of Western Chitwan, Nepal." *Journal of the Institute of Agriculture and Animal Science* 26:93-105.
- Dangol, Dharma R. 2007. "Human Impact on Plant Resources: Evidence from Western Chitwan, Nepal." *Nepal Travel Trade Reporter* 10(43):44-45.
- Dangol, Dharma R. 2008. "Fulbari VDC (Chitwan) A Potential Destination for Agrotourism Business." *Nepal Travel Trade Reporter* 10(49):44-49.
- Dangol, Dharma R. 2008. "Traditional Uses of Plants of Commonland Habitats in Western Chitwan, Nepal." *Journal of the Institute of Agriculture and Animal Science* 29:71-78.
- Dangol, Dharma R. 2009. "Reciprocal Relation between Population and the Environment: Innovation in Flora Data Collection." *Journal of the Institute of Agriculture and Animal Science* 30:143-149.
- Dangol, Dharma R., Prem Bhandari, Bishnu Adhikari, Indra Chaudhary and Susan Gurung. 2005. "Pashchim Chitwanko banaspati surbhekchen tatha vishleshan." (In Nepali.) *Hamro Sirjana* 2063:33-40.
- Dangol, Dharma R. and Keshav L. Maharjan. 2012. "Spatial and Temporal Dynamics of Flora in Forest, Grassland and Common Land Ecosystems of Western Chitwan, Nepal." *Journal of International Development and Cooperation* 18(4):77-92.
- Dangol, Dharma R. and Ganesh P. Shivakoti. 2001. "Plant Diversity of Western Chitwan: A Floristic Approach." *Journal of Natural History Museum* 20:129-148.

- Dangol, Dharma R. and Ganesh P. Shivakoti. 2001. "Species Composition and Dominance of Plant Communities in Western Chitwan, Nepal." *Nepal Journal of Science and Technology* 3:69-78.
- Dangol, Dharma R. and Y. M. Shrestha. 2001. "Weeds of West Chitwan Wheat Ecosystem." *Environment* April-September, 2001.
- Ghimire, Dirgha J. 2015. "Wives' and Husbands' Nonfamily Experiences and First-Birth Timing." *International Journal of Sociology* 45(1):4-23.
- Ghimire, Dirgha J. and William G. Axinn. 2006. "Family Change in Nepal: Evidence from Western Chitwan." *Contributions to Nepalese Studies* 33(2):177-201.
- Ghimire, Dirgha J. and William G. Axinn. 2010. "Community Context, Land Use and First Birth." *Rural Sociology* 75(3):478-513.
- Ghimire, Dirgha J. and William G. Axinn. 2013. "Marital Processes, Arranged Marriage, and Contraception to Limit Fertility." *Demography* 50:1663-1686.
- Ghimire, Dirgha J., William G. Axinn, and Emily Smith-Greenaway. 2015. "Impact of the Spread of Mass Education on Married Women's Experience with Domestic Violence." *Social Science Research* 54:319-331.
- Ghimire, Dirgha J. and Lynette F. Hoelter. 2007. "Land Use and First Birth Timing in an Agricultural Setting." *Population and Environment* 28(6):289-320.
- Ghimire, Dirgha J., William G. Axinn, Scott T. Yabiku, and Arland Thornton. 2006. "Social Change, Premarital Nonfamily Experience, and Spouse Choice in an Arranged Marriage Society." *American Journal of Sociology* 111(4):1181-1218.
- Ghimire, Dirgha J., Stephanie Chardoul, Ronald Kessler, William G. Axinn, and Bishnu Adhikari. 2013. "Modifying and Validating the Composite International Diagnostic Interview (CIDI) for Use in Nepal." *International Journal for Methods in Psychiatric Research* 22(1):71-81.
- Ghimire, Dirgha J. and Paul Mohai. 2005. "Environmentalism and Contraceptive Use: How People in Less Developed Settings Approach Environmental Issues." *Population and Environment* 27(1):29-61.
- Hawes, Armani, William G. Axinn, and Dirgha J. Ghimire. 2016. "Ethnicity and Mental Health." *Annals of Psychiatry and Mental Health* 4(4):1027.
- Hoelter, Lynette F., William G. Axinn, and Dirgha J. Ghimire. 2004. "Social Change, Premarital Non-Family Experiences, and Marital Dynamics." *Journal of Marriage and Family* 66:1131-1151.
- Jennings, Elyse A. Forthcoming. "Influences of Child Composition on Marital Dissolution: Evidence from South Asia." *Population Studies*.
- Jennings, Elyse A. 2014 "Marital Discord and Subsequent Dissolution: Perceptions of Nepalese Wives and Husbands." *Journal of Marriage and Family* 76(3):476-488.
- Jennings, Elyse A. 2016. "Predictors of Marital Dissolution During a Period of Rapid Social Change: Evidence From South Asia." *Demography* 53(5): 1351-1375.
- Jennings, Elyse A., William G. Axinn, and Dirgha J. Ghimire. 2012. "The Effect of Parents' Attitudes on Sons' Marriage Timing." *American Sociological Review* 77(6):923-945.

- Jennings, Elyse A. and Jennifer S. Barber. 2013. "The Influence of Neighbors' Family Size Preference on Progression to High Parity Births in Rural Nepal." *Studies in Family Planning* 44(1):67-84.
- Jennings, Elyse A., and Rachael Pierotti. 2016. "The Influence of Wives' and Husbands' Fertility Preferences on Progression to a Third Birth in Nepal, 1997–2009." *Population Studies* 70(1):115-133.
- Ji, Yingchun. 2013. "Negotiating Marriage and Schooling: Nepalese Women's Transition to Adulthood." *ANNALS of the American Academy of Political and Social Science* 646:194-213.
- Link, Cynthia F. 2011. "Spousal Communication and Contraceptive Use in Rural Nepal: An Event History Analysis." *Studies in Family Planning* 42(2):83-92.
- Link, Cynthia F., William G. Axinn, and Dirgha J. Ghimire. 2012. "Household Energy Consumption: Community Context and the Fuelwood Transition." *Social Science Research* 41:598-611.
- Maples, Jerry J., Susan A. Murphy, and William G. Axinn. 2002. "Two-Level Proportional Hazards Models." *Biometrics* 58(4):754-763.
- Massey, Douglas S., William G. Axinn, and Dirgha J. Ghimire. 2010 "Environmental Change and Out-Migration: Evidence from Nepal." *Population and Environment* 32(2):109-136.
- Massey, Douglas S., Nathalie Williams, William G. Axinn, and Dirgha J. Ghimire. 2010. "Community Services and Out-Migration." *International Migration* 48(3):1-41.
- Matthews, Stephen A. 1997. "Methods to Incorporate Spatial and Temporal Effects in Research on Interrelationships between Population and Environment." In *People, Participation, and Sustainable Development: Understanding the Dynamics of Natural Resource Systems*, edited by Shivakoti et al. Bloomington, Indiana and Rampur, Chitwan: Winrock International.
- Matthews, Stephen A., Ganesh P. Shivakoti, and Netra Chhetri. 2000. "Population Forces and Environmental Change: Observations from Western Chitwan, Nepal." *Society and Natural Resources* 13:763-775.
- Pearce, Lisa D. 2002. "Integrating Survey and Ethnographic Methods for Systematic Anomalous Case Analysis." *Sociological Methodology* 32(1):103-132.
- Pearce, Lisa D., Sarah R. Brauner-Otto, and Yingchun Ji. 2015. "Explaining Religious Differentials in Family Size Preferences: Evidence from Nepal in 1996." *Population Studies* 65(1):23-37.
- Pienta, Amy Mehraban, Jennifer S. Barber, and William G. Axinn. 2001. "Social Change and Adult Children's Attitudes toward Support of Elderly Parents: Evidence from Nepal." *Hallym International Journal of Aging* 3(2):211-235.
- Piotrowski, Martin. 2013. "Mass Media and Rural Out-Migration in the Context of Social Change: Evidence from Nepal." *International Migration* 51(3):169-193.
- Piotrowski, Martin, Dirgha J. Ghimire, and Ronald Rindfuss. 2013. "Farming Systems and Rural Out-Migration in Nang Rong, Thailand, and Chitwan Valley, Nepal." *Rural Sociology* 78(1):75-108.
- Richter, Kerry and Netra Chhetri. 1997. "Issues and Strategies for Understanding Population and Ecology Inter-linkages in Western Chitwan." In *People, Participation, and Sustainable*

- Development: Understanding the Dynamics of Natural Resource Systems*, edited by Shivakoti et al. Bloomington, Indiana and Rampur Chitwan: Winrock International.
- Shivakoti, Ganesh P., William G. Axinn, Prem Bhandari, and Netra B. Chhetri. 1999. "The Impact of Community Context on Land Use in an Agricultural Society." *Population and Environment* 20(3):191-213.
- Shrestha, Binoj Kumar and Dharma R. Dangol. 2006. "Change in Grassland Vegetation in the Northern Part of Royal Chitwan National Park, Nepal." *Scientific World* 4(4):78-83.
- Shrestha, Binoj Kumar, Dharma R. Dangol, and Krishnaji Ghimire. 2006. "Heterogeneity in Plant Population and Species Diversity in Barandabhar Corridor Forest, Chitwan." *Banko Janakari* 16(2):58-63.
- Shrestha, Binoj Kumar, Dirgha J. Ghimire, and Dharma R. Dangol 2009. "Lahare Banmara (Mikania micrantha) ko Atikraman; Badhdo Chunauti." (In Nepali.) *Paryabaran* 89:26-30.
- Shrestha, Sundar S. and Prem Bhandari. 2007. "Environmental Security and Labor Migration in Nepal." *Population and Environment* 29(1):25-38.
- Sullivan, Abigail, Abigail M. York, Li An, Scott T. Yabiku, and Sharon J. Hall. 2017. "How Does Perception at Multiple Levels Influence Collective Action in the Commons? The Case of Mikania Micrantha in Chitwan, Nepal." *Forest Policy and Economics* 80:1-10.
- Sullivan, Abigail, Abigail York, Dave White, Sharon Hall, and Scott Yabiku. 2017. De jure versus de facto institutions: trust, information, and collective efforts to manage the invasive mile-a-minute weed (Mikania micrantha). *International Journal of the Commons*.
- Thornton, Arland, Alexandra Achen, Jennifer S. Barber, Georgina Binstock, Wade M. Garrison, Dirgha J. Ghimire, Wang Guangzhou, Ronald Inglehart, Rukmalie Jayakody, Yang Jiang, Julie de Jong, Katherine King, Ron J. Lesthaeghe, Sohair Mehenna, Colter Mitchell, Mansoor Moaddel, Mary Beth Ofstedal, Norbert Schwarz, Yu Xie, Li-Shou Yang, Linda C. Young-DeMarco, and Kathryn Yount. 2010. "Creating Questions and Protocols for an International Study of Ideas about Development and Family Life." In *Survey Methods in Multinational, Multiregional and Multicultural Contexts*, edited by M. Braun, B. Edwards, J. Harkness, T. Johnson, L. Lyberg, P. Mohler, B.E. Pennell, and T.W. Smith. Hoboken, NJ: John Wiley and Sons.
- Thornton, Arland, Georgina Binstock, Mohammad Jalal Abbasi-Shabazi, Dirgha J. Ghimire, Arjan Gjonca, Attila Meleghe, Colter Mitchell, Mansoor Moaddel, Yu Xie, Li-Shou Yang, Linda C. Young-DeMarco, and Katharine Yount. 2012. "Knowledge and Beliefs about National Development and Development Hierarchies: The Viewpoints of Ordinary People in Thirteen Countries." *Social Science Research* 41:1053-1068.
- Thornton, Arland, Georgina Binstock, and Dirgha J. Ghimire. 2008. "International Dissemination of Ideas about Development and Family Change." In *International Family Change: Ideational Perspectives*, edited by R. Jayakody, A. Thornton, and W.G. Axinn. Mahwah, NJ: Lawrence Erlbaum Associates.
- Thornton, Arland, Georgina Binstock, Kathryn M. Yount, Mohammad Jalal Abbasi-Shavazi, Dirgha J. Ghimire, and Yu Xie. 2012. "International Fertility Change: New Data and Insights from the Developmental Idealism Framework." *Demography* 49(2): 677-698.

- Thornton, Arland, Dirgha J. Ghimire, and Colter Mitchell. 2012. "The Measurement and Prevalence of an Ideational Model of Family and Economic Development in Nepal." *Population Studies* 66(3):329-345.
- West, Brady T., Dirgha J. Ghimire, and William G. Axinn. 2015. "Evaluating a Modular Design Approach to Collecting Survey Data Using Text Messages." *Survey Research Methods* 9(2):111-123.
- Williams, Nathalie. 2009. "Education, Gender, and Migration in the Context of Social Change." *Social Science Research* 38(4):883-896.
- Williams, Nathalie E. 2013. "How Community Organizations Moderate the Effect of Armed Conflict on Migration in Nepal." *Population Studies* 67(3):353-369.
- Williams, Nathalie E. 2015. "Mixed and Complex Mixed Migration during Armed Conflict: Multidimensional Empirical Evidence from Nepal." *International Journal of Sociology* 45(1):44-63.
- Williams, Nathalie, Dirgha J. Ghimire, William G. Axinn, Elyse A. Jennings, and Meeta S. Pradhan. 2012. "A Micro-Level Event-Centered Approach to Investigating Armed Conflict and Population Responses." *Demography* 49(4):1521-1546.
- Williams, Nathalie, Arland Thornton, Dirgha J. Ghimire, and Linda Young-DiMarco. 2011. "Nepali Migrants to the Gulf Cooperation Council Countries: Values, Behaviors, and Plans." In *Migrant Labour in the Persian Gulf*, edited by M. Kamrava and Z. Babar. New York: Columbia University Press.
- Williams, Nathalie E., Arland Thornton, and Linda C. Young-DeMarco. 2014. "Migrant Values and Beliefs: How Are They Different and How Do They Change?" *Journal of Ethnic and Migration Studies* 40(5):796-813.
- Yabiku, Scott T. 2004. "Marriage Timing in Nepal: Organizational Effects and Individual Mechanisms." *Social Forces* 83(2):559-586.
- Yabiku, Scott T. 2005. "The Effect of Non-family Experiences on Age of Marriage in a Setting of Rapid Social Change." *Population Studies* 59(3):339-354.
- Yabiku, Scott T. 2006. "Land Use and Marriage Timing in Nepal." *Population and Environment* 27(5-6):445-461.
- Yabiku, Scott T. 2006. "Neighbors and Neighborhoods: Effects on Marriage Timing." *Population Research and Policy Review* 25(4):305-327.
- Yabiku, Scott T. and Sarah Schlabach. 2009. "Social Change and the Relationships between Education and Employment." *Population Research and Policy Review* 28(4):533-549.
- Yarger, Jennifer and Sarah R. Brauner-Otto. 2014. "Nonfamily Experience and Receipt of Personal Care in Nepal." *Ageing & Society* 34:106-128.
- Zvoleff, Alex, and Li An. 2014. "Analyzing Human-Landscape Interactions: Tools that Integrate." *Environmental Management* 53(1):94-111.
- Zvoleff, Alex, and Li An. 2014. "The Effect of Reciprocal Connections between Demographic Decision Making and Land Use on Decadal Dynamics of Population and Land-Use Change." *Ecology and Society* 19(2):31.

CVFS Dissertations and Honors Theses

- Bhandari, Prem. 2006. "Technology Use in Agriculture and Occupational Mobility of Farm Households in Nepal." Unpublished Ph.D. dissertation, Department of Agricultural Economics and Rural Sociology and The Population Research Institute, Pennsylvania State University, University Park, PA.
- Bohra-Mishra, Pratikshya. 2011. "Migration and Remittances During the Period of Civil Conflict in Nepal." Unpublished Ph.D. dissertation, Princeton University, Princeton, NJ.
- Brauner-Otto, Sarah R. 2007. "Health Services, Schools, Attitudes, and Contraceptive Use: Tests of a Theoretical Model Among Rural Nepalese." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Carter, Neil. 2013. "Coupled Human and Natural System Approach to Tiger Conservation in Chitwan National Park, Nepal, and Beyond." Unpublished Ph.D. dissertation, Michigan State University, East Lansing, MI.
- Dhital, Purandhar. 2004. "Household Human and Social Capital and School Enrollment in Chitwan, Nepal." Unpublished PhD dissertation, Pennsylvania State University, University Park, PA.
- Gajurel, Kishor P. 2001. "Organization of Agricultural Production and Human Fertility." Unpublished Ph.D. dissertation, Department of Agricultural Economics and Rural Sociology, Pennsylvania State University, University Park, PA.
- Ghimire, Dirgha J. 2003. "The Social Context of First Birth Timing in Nepal." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Ji, Yingchun. 2011. "Understanding How Economic and Ideational Factors Combine to Influence the Timing of Marriage." Unpublished Ph.D. dissertation, Department of Sociology, University of North Carolina, Chapel-Hill, NC.
- Jennings, Elyse A. 2013. "Marital Dissolution in South Asia: Empirical Tests of New Theoretical Frameworks." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Kozlowski, Austin. 2013. "Farm Technology and Market Participation in Nepal." B.A. Honors Thesis, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Link, Cynthia. 2010. "Husbands, Wives, and In-Laws: Family Dynamics and Childbearing Behavior in Nepal." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Mitchell, Colter M. 2009. "Three Essays on Worldviews, Autonomy and the Family in Nepal." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Pearce, Lisa D. 2000. "The Multidimensional Impact of Religion on Childbearing Preferences and Behavior in Nepal." Unpublished Ph.D. dissertation, Department of Sociology, Pennsylvania State University, University Park, PA.
- Smith, Emily McKendray. "Reconstructing Religion Amidst Social Change." Unpublished Ph.D. dissertation, Department of Sociology, University of North Carolina, Chapel-Hill, NC.

- Sutherland, E. 2006. "The Effects of Women's Status, Natural Resource Responsibility, and Family Planning Services on Contraceptive Behavior in a Rural Agrarian Setting in Nepal." Unpublished Ph.D. dissertation, Department of Public Health, University of North Carolina, Chapel Hill, NC.
- Williams, Nathalie. 2009. "Living with Conflict: The Effect of Community Organizations, Economic Assets, and Mass Media Consumption on Migration During Armed Conflict." Unpublished Ph.D. Dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Wong, Ka Yu. 2010. "Remittance Effects on the Relationship with Left-Behind Family in Chitwan, Nepal." Unpublished B.A. Honors Thesis, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Yabiku, Scott T. 2002. "Marriage Timing and Social Change in Nepal." Unpublished Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor, MI.
- Zvoleff, Alex I. 2013. "Understanding the Dynamics of Changing Land-use and Land-cover, Population, and Climate in the Chitwan Valley, Nepal." Unpublished Ph.D. dissertation, Department of Geography, San Diego State University / University of California Santa Barbara.