7-2008

GIS for Measuring Product Performance and Strategic Planning: Mapping Condom Coverage, Quality of Coverage and Access to Condoms in Hot-Zone in Nepal

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Publication Details

This conference paper was originally published as Pant, P. D., Shrestha, M. and Oyloe, P., GIS for Measuring Product Performance and Strategic Planning: Mapping Condom Coverage, Quality of Coverage and Access to Condoms in Hot-Zone in Nepal, Partnerships, Proof and Practice - International Nonprofit and Social Marketing Conference 2008, University of Wollongong, 15-16 July 2008.

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The research findings are the proof to improve condom provision in practice through public-donor-private partnership.

Introduction

In Nepal the first cases of AIDS were reported in Nepal in 1988. Surveillance data are not widely available in Nepal, though by April 2008, the Government of Nepal officially reported more than 1,700 cases of AIDS and over 11,000 cases of HIV infection (NCASC, 2008). In recent years, the HIV/AIDS epidemic in Nepal has gained greater significance and Nepal has progressed from a "low HIV prevalence" country to one with a so-called concentrated HIV epidemic in certain sub-groups of the population (e.g. sex workers and injecting drug users) (NCASC, 2005). The Government of Nepal's Integrated Bio-Behavioral Surveillance study (New-ERA *et al*., 2005) has estimated the percent of most-at-risk population(s)) who are HIV infected. The study showed that HIV prevalence is two percent among female sex workers, 15.6 percent among injecting drug users, 3.6 percent among men who have sex with men and 12.4 percent in other categories that include spouses of most at risk population infected with HIV.

Data collected from female sex workers regarding reported condom use with the last client have shown that condom use varies across regions of the country. Seventy-four percent of female sex workers in Kathmandu, 53 percent in 22 Teari highway districts, and 64 percent in Pokhara reported the use of a condom with their most recent client (New-ERA *et al*., 2004). No verifiable information on correct condom use among the population at risk of HIV in Nepal is available.

Responding to this, national HIV/AIDS prevention efforts have focused on increasing correct and consistent usage of condoms among female sex workers and other high-risk groups. From a programmatic perspective, focus in social marketing and private sector marketing and distribution activities have shifted away from targeting risk groups to targeting geographic areas where risk-groups are known to operate. To support these efforts, HIV risk zone mapping is an innovative research project designed to measure condom coverage, quality of coverage and access to condom-selling outlets. Certain key terms were used in this mapping study: a hot spot was a specific location or area where sex negotiation or sexual activities takes place; a hot-zone was a geographic area where a cluster of hot spots are located; a condom-selling outlet was a retail outlet that sells condoms. This study was carried out in 15 districts of Nepal and focused on geographic areas where high-risk commercial heterosexual activity was known to take place, as women working in these areas are the largest group infected with HIV.

The study objectively measured program performance indicators such as coverage, quality of coverage and access to product delivery points using both conventional survey techniques and the geographical information system (GIS). Thus, results were used to guide marketing programs and other strategies targeted at fighting HIV transmission.

Objectives

The aim of this study is to evaluate the condom product 'performance' in the 'market' – that is, to monitor the coverage, quality of coverage and access to condoms among women working in hot-zones.The specific objectives are to measure:

- Product availability (condom coverage) in or around hot-zones;
- Quality of condom coverage at condom-selling outlets, where quality of coverage is measured by proportion of geographic areas in which product/service provision meet minimum standards. The minimum standard is set at 80 percent - that is, if 80 percent of shops sell condoms at the recommend price, have promotional material in a visible location, did not run out of condom stock last month, have condoms in a visible location, and operated during night time, then the outlet is considered to have minimum quality standards; and
- Access of condom-selling outlets from hot spots - that is, proportion of hotspots that have a condom-selling outlet within a geographically defined area (situated within the 100 meter catchments).

Definitions of Indicators

This study requires clear thinking about the geographic unit of analysis because it is central to the definition of the key indicators and thus to the preparation of the survey. The geographic unit is guided by the programmer, based on the marketing objective. In this study the geographic unit is defined as a "hot zone". A hot-zone is the cluster of hot spots, that is, buffer area covering a minimum distance of 100m also known as a catchment area. A hot spot is a place where sex negotiation or sexual activity takes place, for example, dance restaurant, cabin restaurants, Hotel, Pubs, lodge, dohori restaurant, massage parlors, and streets. Coverage measures the presence of at least one condom selling outlet per five hot spots in a hot zone. Quality of coverage measures the hot zones with a condom delivery system that conforms to minimum quality standards. Access is defined as the proportion of hot-spots that have a condom delivery point within its catchment area (a radius of 100m).

Methodology

This mapping study measures and tracks the indicators (discussed above) on an annual basis to assess product availability, service delivery and accessibility in a geographically defined area known as hot-zone. After measuring these indicators in the information collection stage, researchers used a GPS device to collect coordinates of geographic locations of interest (e.g. hot spots, condom-selling outlets) to feed measurements into a GIS map of Nepal. GIS software was used to create hot-zones and measure access to condoms through creating a standard buffer using a pre-defined standard area. The quality of coverage, however, was examined by the information collected through administrating a pre-structured audit to retail outlets. The lot-quality assurance survey (LQAS) (Joseph *et al.*, 2001) technique was employed to sample the study area and 'hot zones' were the unit of analysis. Therefore, the study was based on area sampling.

Sampling

Research conducted on hot-zones in the past has shown that of the 75 districts in the country, 22 districts in Terai, three districts in Kathmandu valley and other selected hilly districts in the Prithivi highway in Nepal are known to have areas where female sex workers engage in commercial sex (FHI and CREHPA, 2002; 2003). Among these, 15 districts were covered in this mapping study which were divided into four broad segments/areas: (1) Kathmandu valley, (2) Dhading-Nabalparasi-Chitwan and Makawanpur district (Dhading here after); (3) Rupandehi-Kailali Districts (Rupendehi here after) and (4) Kaski districts (Kaski here after) (see map 1). The four areas were segmented on the basis of program implementation and monitoring convenience basis. However, the study sample is based on equal probability sampling methods in each area, minimizing sampling bias.

First, researchers collected GIS coordinates and basic location data of all hot spots in these 15 districts. These coordinates were fed into a GIS map of Nepal showing the locations of the hot spots on the map. Researchers then grouped hot spots near to each other into clusters, which were demarcated by a defined boundary and were named as hot-zones. Geographic areas of hot-zone are not equal in size as they are determined by the unique clustering of hot spots in that particular geographic area. Researchers used this list of hot zones as a sampling frame, applying the LQAS sampling methodology (Joseph *et al.*, 2001) to select 19 hot zones in each of the four study areas. In each of the sampled hot-zones, researchers used the GPS device and a pre-structured audit study tool to collect data from all of the condom-selling outlets in the sampled hot-zones. Again, these newly collected data were inputted into a GIS map to show the relationship between hot-zones, hot spots, and condom-selling outlets.

Results

Figure 1 showed the distribution of the number of hot spots and hot-zones by study area. The figure shows that there were 860 hot spots recorded in Kathmandu valley, followed by 846 in Dhading, 498 in Kaski and 377 in Rupandehi Similarly, using the hotspot information, 112 hot-zones were created in Kathmandu valley, 118 in Dhading; 104 in Rupandehi and 65 in Kaski.

The number and size of hot-zones in a district is dependent on the proximity of the hot-spots to each other. For example, if hot spots in a area cluster together in one specific geographic area, the district will have fewer numbers of hot-zones. In another scenario, if the hot spots are scattered over a broad geographic area (e.g. along a major transport route) the area will end up with more hot-zones. Additionally, it should be noted that hot-zone boundaries were not standard in size, as spatial information such the proximity of hot spots to roads, rivers and other features available in the base GIS map were used in defining hot zones. For example, Map 2 showed the distribution of the hot-spots in Kathmandu valley and Map 3 showed the hot-zones created using the distribution of the hot spots and other available information in the GIS base map of Kathmandu Valley. Once the hot-zone is created, they remain static for approximately four to five years without significant change.

Coverage

Figure 2 showed the condom coverage statistics by study area. The analysis revealed that overall, condom coverage was relatively high in all four study areas, with an average of 79 percent of hot-zones having at-least one condom-selling outlet per five hot spots. Although this overall picture was encouraging, when the same information was fed into the map, it did

not show a very encouraging scenario. For example, in Kathmandu, the analysis showed that 80 percent of the hot-zones met the coverage standard within this particular study area. However, the situation of hot-zone number 14 (shown in Map 4) revealed that while the hot-zone is considered covered, the concentration of condom-selling outlets in one of corner of the hot-zone may result in a barrier to condom purchase for women working in the hot spots. The brand specific analysis suggested donor-supported brands performed higher in coverage than non-supported brands. Furthermore, higher-priced commercial brands had a strong presence in high-risk areas, which was an unexpected result as one would not expect demand for higher-priced products in hot-zones.

Quality of coverage

The analysis of the quality of coverage data (table not shown here) showed quality of coverage was generally better in Kathmandu Valley than in other study areas. The analysis also revealed that less than 25 percent of the outlets reported to have experienced lack of stock in the last month. The product visibility and promotional materials indicator were found to be very poor in all study areas. The condom stock at visible location was also poor, with donor-subsidized condoms having the highest range at 40-80 percent.

Access

Unlike in the case of coverage, the access indicator is measured by creating a standard catchment area of 100 meter radius around each hot-spot and determining the percentage of hot spots with a condom-selling outlet within that catchment areas. Researchers believed this was a better measure of condom market performance and does not leave any room for intended bias. Figure 3 showed the distribution of access indicator by study area. Except in Kathmandu Valley, the situation of access to condoms in the hot-zones as compared to condom coverage (Figure 2) was very poor (Kathmandu valley 68 percent and outside Kathmandu: 12 percent to 22 percent).

Program Implications

Using the 4 P's of marketing, results of this study have been used to identify areas for improvement and other implications of this research. To improve the product performance, the program should initiate efforts to increase condom coverage to 95 percent or more, which is a measurement that would demonstrate saturation of these hot-zones with condom-selling outlets. Similarly, place/distribution should be addressed by emphasizing increased product distribution in hot-zones that have poor coverage; by opening new outlets and motivating outlet owners to sell condoms during night times or lengthen opening hours; and ensuring consistent condom availability in outlets that reported being out-of stock last month. The promotion aspect should be addressed by stimulating outlets to ensure promotional materials are visible in and around outlets and initiating behavior change communications/inter-personal communications (BCC/IPC) to generate demand for condoms in these areas. Lastly, the price aspect needs to be addressed by focusing on outlets not selling condoms at the recommended price to motivate them to sell in recommended price.

This study demonstrated the value of directly linking research activities to specific condom marketing and distribution program activities. In particular, the study can provide proof as to whether or not condom marketing and distribution activities are reaching those who will benefit most from them.

References

FHI and CREHPA, 2002. A Situation Assessment of Sex Workers and Intravenous Drug Users in Kathmandu Valley. Unpublished draft report. FHI/Nepal, Kathmandu .

FHI and CREHPA, 2003. Estimations of Sex Workers and Potential Client Sub-Population in Select Major Towns in Terai and Along the East-West Highway Districts: A Rapid Assessment and Update. Draft Report. FHI/Nepal, Kathmandu .

Joseph J. Valadez, William Weiss, Corey Leburg and Robb Davis, 2001. A Participant's Manual for Baseline Surveys and Regular Monitoring Using LQAS for Assessing Field Programs in Community Health in Developing Countries, NGO Networks for Health, Washington

NCASC, 2003. National Estimates of Adult HIV Infections in Nepal, NCASC, Kathmandu..

NCASC, 2008. Cumulative HIV and AIDS Situation of Nepal, Reported cases in Ministry of Health, Kathmandu.

New Era /SACTS / USAID/FHI 2004, 2005. Integrated Bio-behavioral Survey (IBBS) among Female Sex Workers and Behavioral Surveillance Survey (BSS) .among Clients in Kathmandu Valley – 2004, FHI/Nepal, Kathmandu

New Era /SACTS / USAID/FHI, 2005. Integrated Bio-Behavioral Survey (IBBS) Among Male Injecting Drug Users (IDUs) in the Kathmandu Valley, FHI/Nepal, Kathmandu

New Era /SACTS / USAID/FHI, 2005. Integrated Bio-Behavioral Survey (IBBS) Among Male Injecting Drug Users (IDUs) In Pokhara, FHI/Nepal, Kathmandu.

New Era /SACTS / USAID/FHI, 2005. Integrated Bio-Behavioral Survey (IBBS) Among Male Injecting Drug Users (IDUs) in Western To Far Western Terai, FHI/Nepal, Kathmandu.

New Era /SACTS / USAID/FHI, 2005. Integrated Bio-behavioral Survey (IBBS) among MSM Population in Kathmandu Valley, FHI/Nepal, Kathmandu 2005

Map 1: HIV "Hot Zones" in 26 "High Risk Districts"

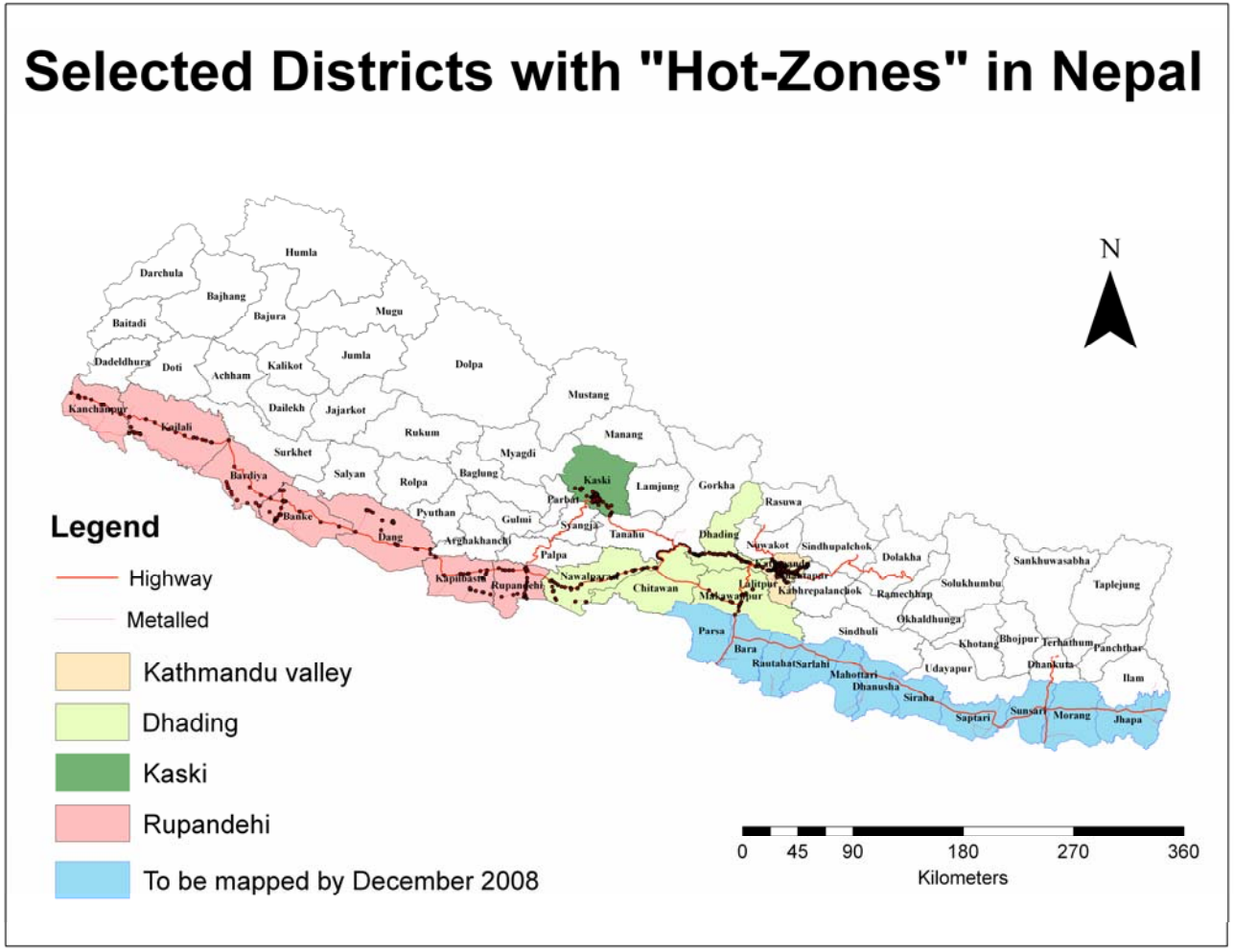
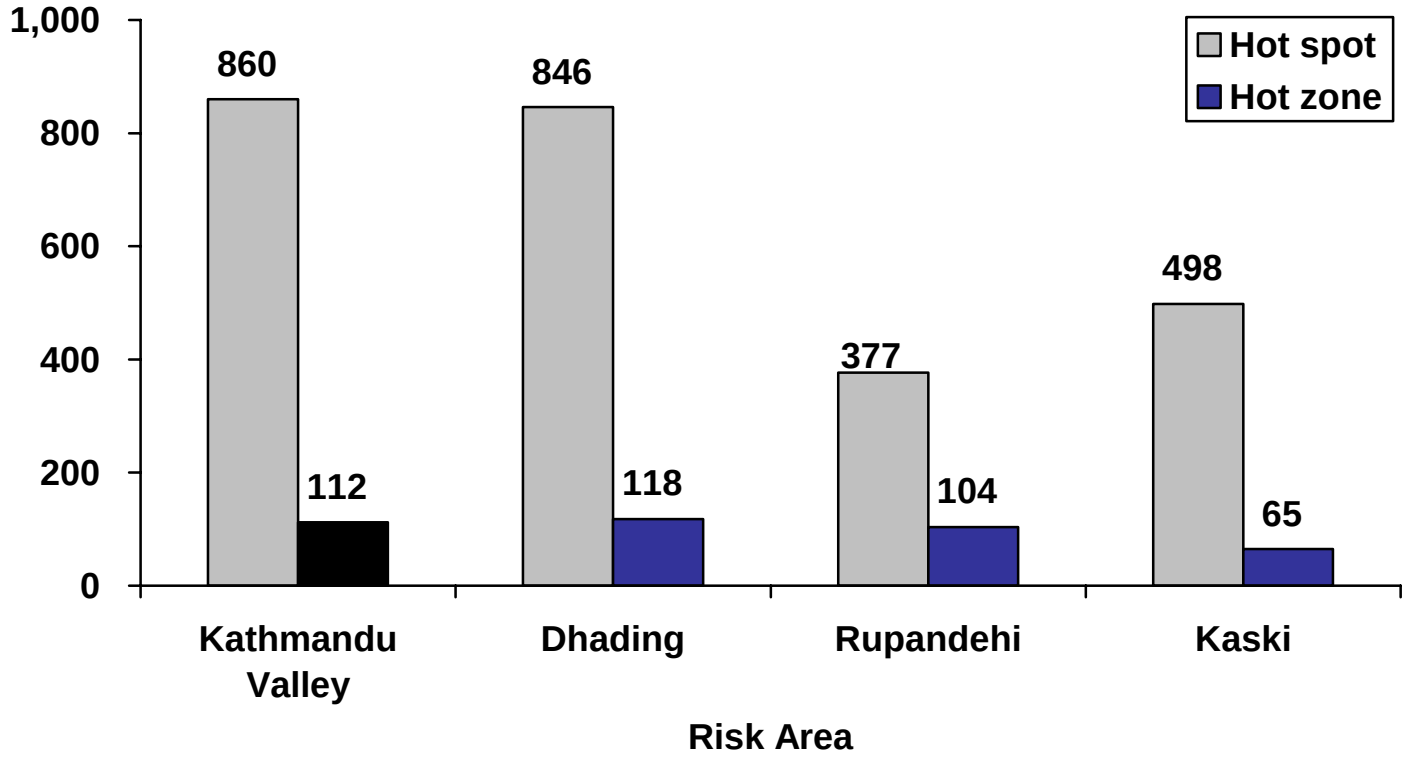
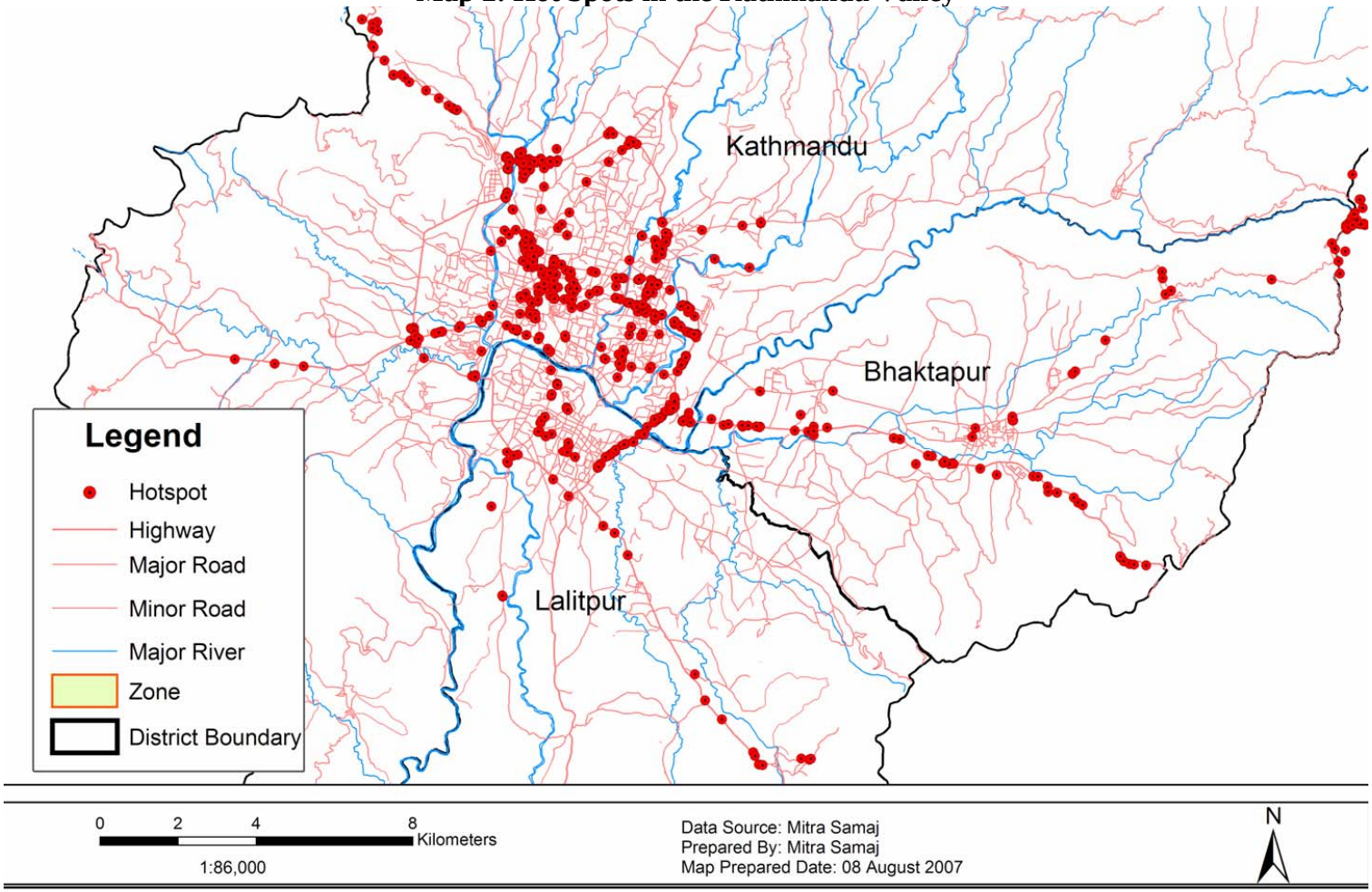


Figure 1: Distribution of hot spots and hot-zones by study area

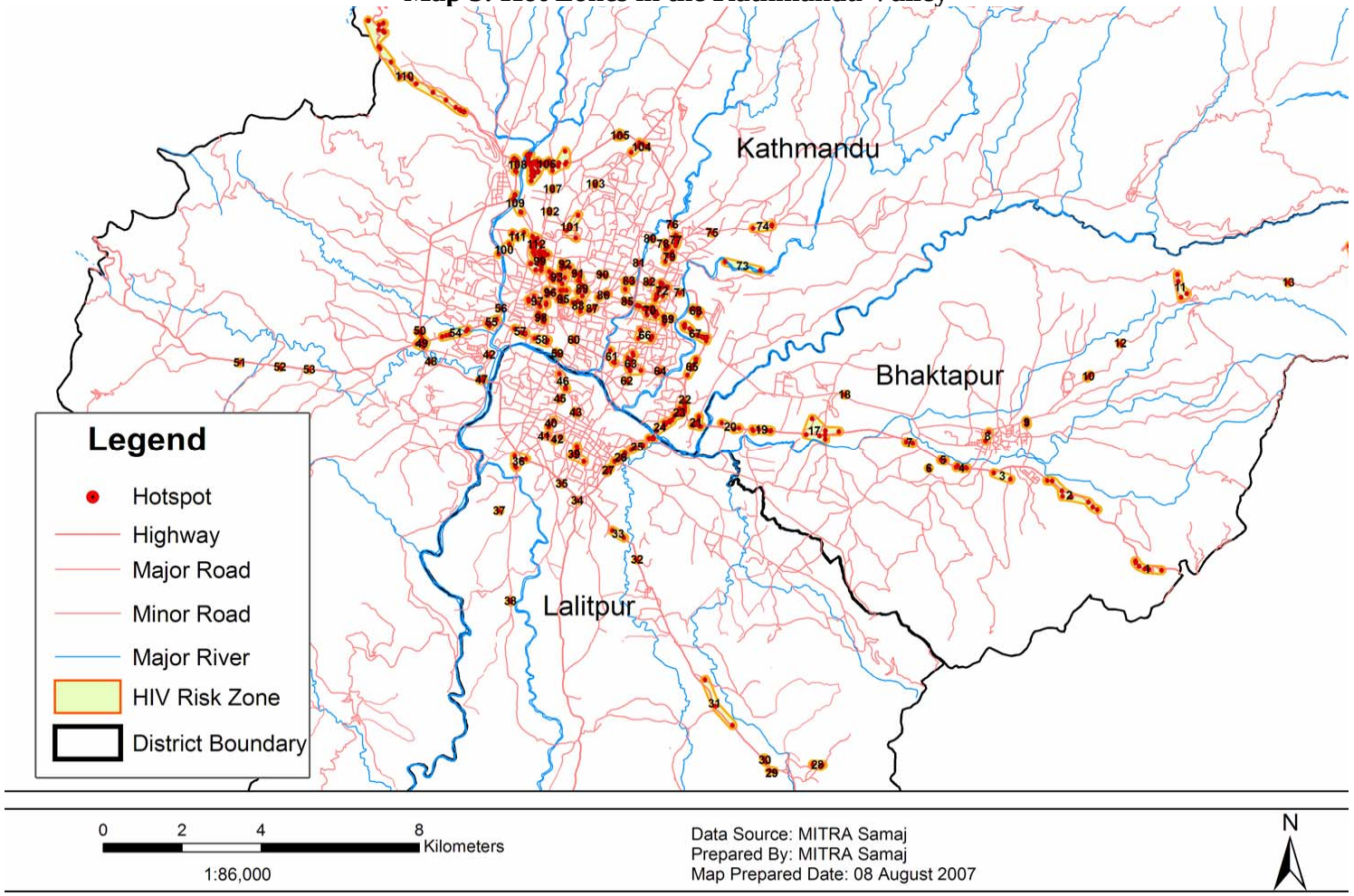


Note: The percent shown in this figure are derived from the tables suggested in the LQAS method and are not the straight forward calculation. For detail see Joseph *et al*., 2001.

Map 2: Hot Spots in the Kathmandu Valley



Map 3: Hot Zones in the Kathmandu Valley



Map 4: Condom Coverage in Kathmandu Valley

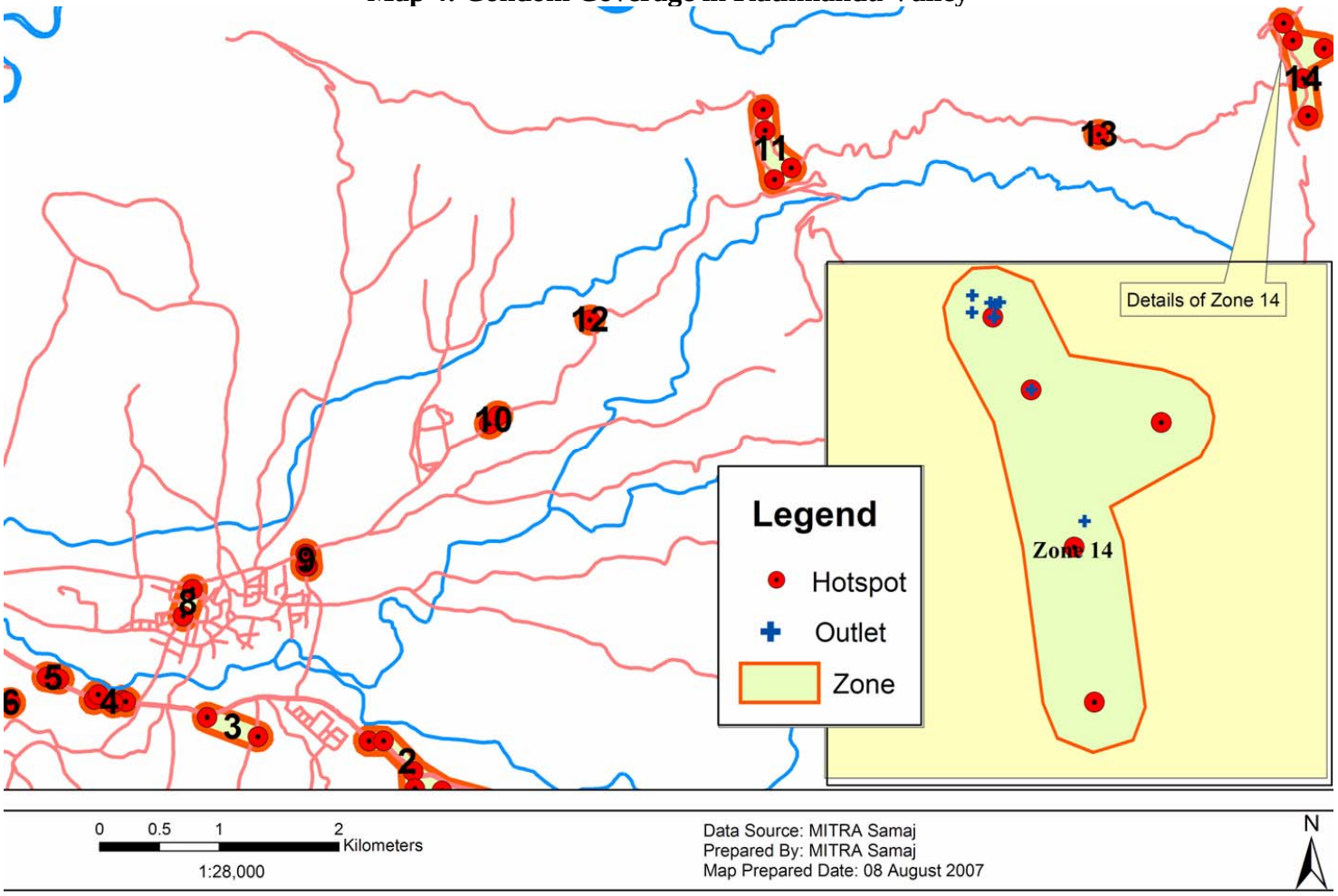
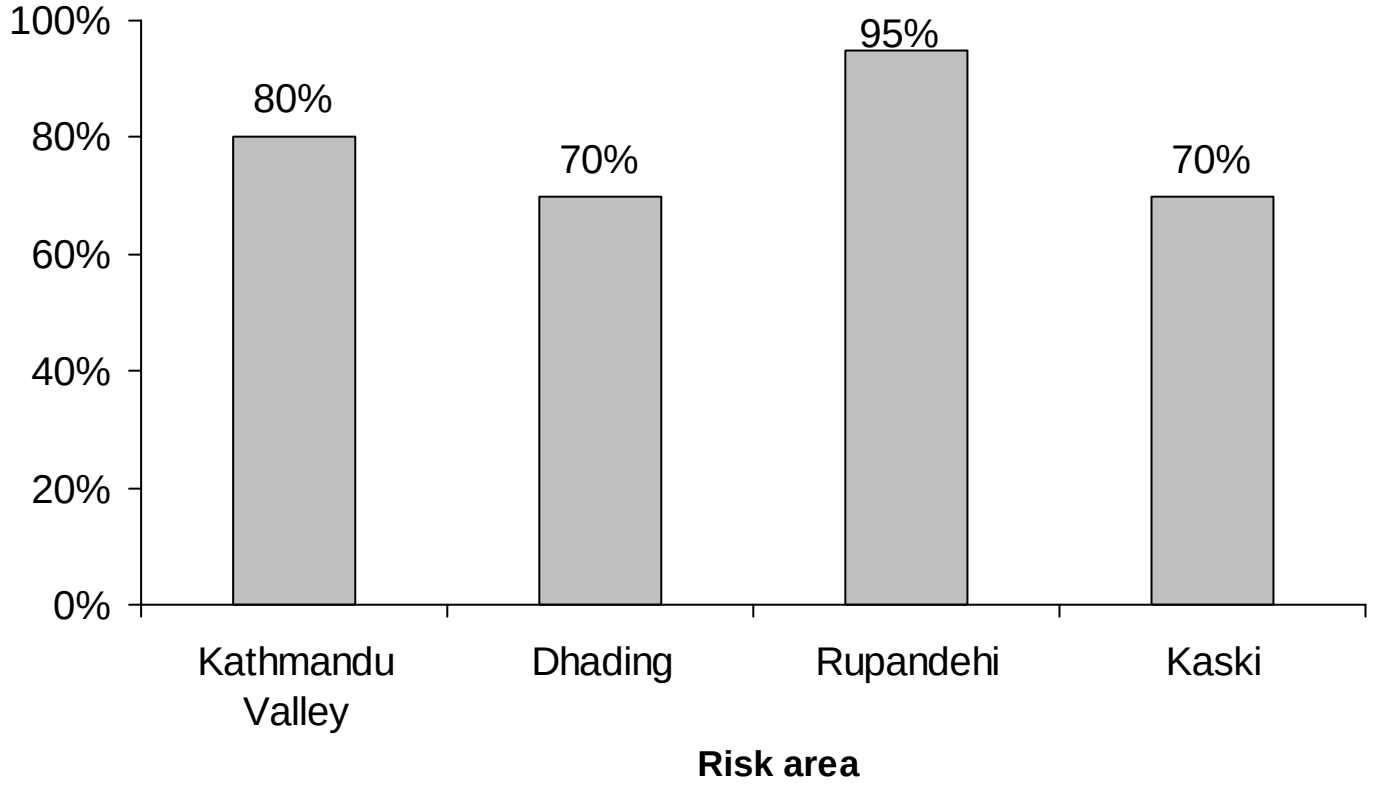
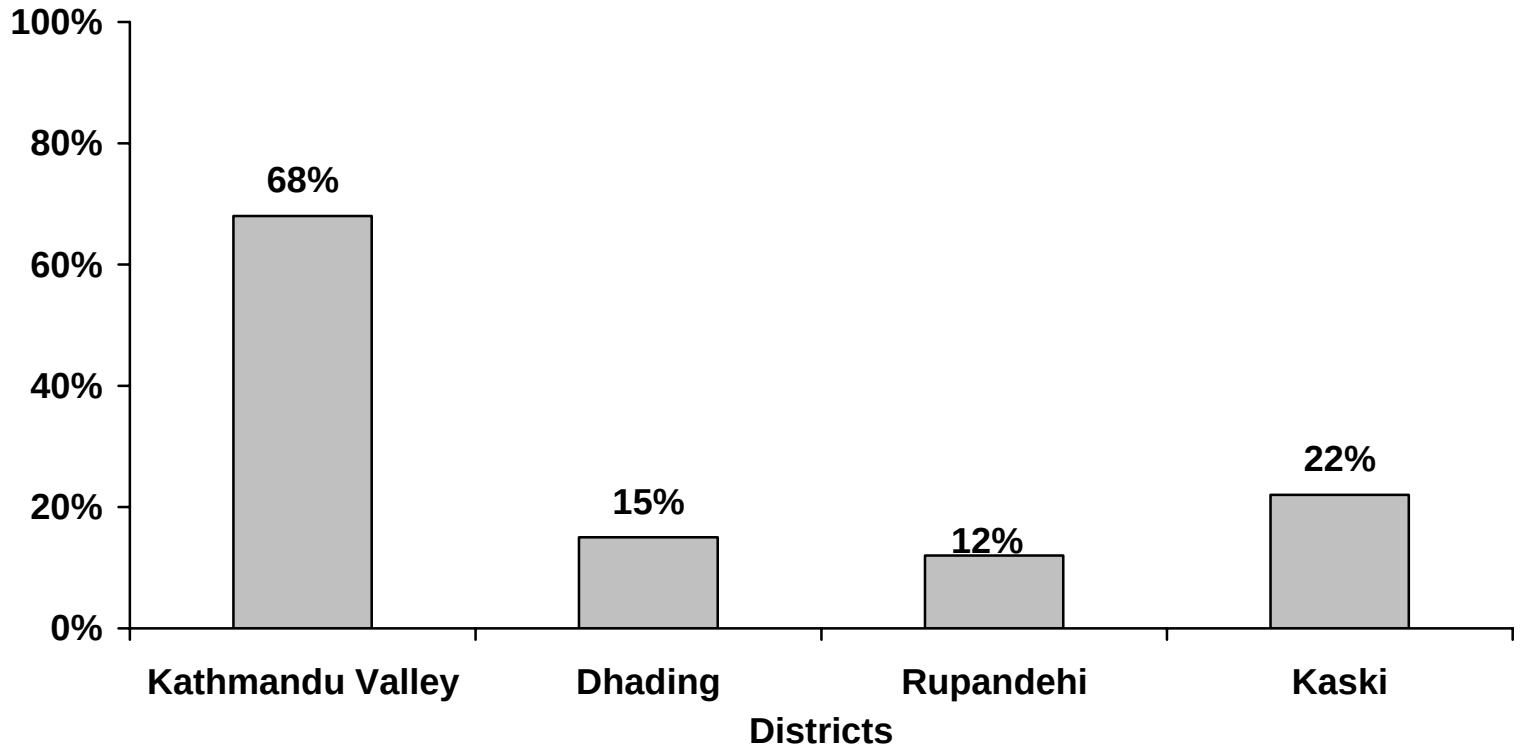


Figure 2: Condom coverage by Risk Area



Note: The percent shown in this figure are derived from the tables suggested in the LQAS method and are not the straight forward calculation. For detail see Joseph *et al*., 2001.

Figure 3: Access to Condom by Risk Area



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