WORKING PAPERS

EAST-WEST CENTER

The Timing of Union Formation and Sexual Onset: Asian Evidence from Young Adult Reproductive Health Surveys

Peter Xenos, Sulistinah Achmad, Harvey Lin, Ping-Keung Luis, Chai Podhisita, Corazon Raymundo, and Shyam Thapa

Peter Xenos is a Senior Fellow with the East-West Center's Research Program, Population and Health Studies. In response to increasing concern about adolescent risk-taking behavior in Asia, the East-West Center is coordinating a project to analyze and compare results from youth surveys in Hong Kong, Indonesia, Nepal, the Philippines, Taiwan, and Thailand. Initiated in 1998, the Asian Young Adult Reproductive Risk project is supported by the United States Agency for International Development. **Sulistinah Achmad** is with Lembaga Demografi, University of Indonesia. **Harvey Lin** is with the Bureau for Health Promotion, Department of Health, Taiwan. **Ping-Keung Luis** is with the Hong Kong Polytechnic University, Hong Kong. **Chai Podhisita** is with the Institute for Population and Social Research, Mahidol University, Thailand. **Corazon Raymundo** is with the Population Institute, University of the Philippines. **Shyam Thapa** is with Family Health International, Kathmandu, Nepal.

For more than 30 years, the East-West Center has been a world leader in research and education on population issues in the Asia-Pacific region. More recently, the Center has expanded its activities to examine important health issues facing Asia and the Pacific. The Center conducts basic and applied research, offers professional education and training, and facilitates the exchange of information between policymakers and scholars on critical issues facing the region.

AYARR
Asian Young Adult Reproductive Risk Project

The Timing of Union Formation and Sexual Onset:
Asian Evidence from Young Adult Reproductive Health Surveys

Peter Xenos, Sulistinah Achmad, Harvey Lin,
Ping-Keung Luis, Chai Podhisita, Corazon
Raymundo, and Shyam Thapa

Introduction and Overview

This paper is concerned with patterns of union formation[1] and sexual onset and the sequencing of these two events among youth in the societies of Asia, viewed against the comparative evidence on these same phenomena elsewhere in the world. The authors have designed and implemented large-scale young adult reproductive health (YARH) surveys in six Asian societies,[2] allowing us to address the striking absence of Asian data on sexual behavior and related issues in any of the recent global compilations of such indicators.[3] An understanding of these patterns is necessary, in Asia no less than elsewhere, for policy formulation concerning adolescents and particularly the unmarried among them.

A comparative endeavor like this faces all the formidable problems of cross-national comparative analysis, but also some additional issues that arise because we want to bring Asia into the mix of observations. There are important differences among the various survey sources for Asia and elsewhere that must be considered. Moreover, the available data provide rather uneven coverage of Asia. On the positive side, our surveys provide representation of male as well as female youth, and our questionnaires cover the issues relevant to youth in some depth. In this introduction we discuss issues relating to cross-national comparisons of YARH data. Then we turn to Asian YARH survey results to highlight some important patterns and differences. Even with the limitations just outlined, we find notable variations between Asia and other regions of the world, among Asian societies, and between male and female youth within them.

Large-scale, household-based surveys are but one approach among many to assessing young adult behaviors and their patterns of union and sexual experience. Our household survey results are

---

[1] Throughout this paper we use the terms *union* or *union formation* rather than *marriage*. A union for the present purpose is an arrangement between a male and a female for purposes of partnership and intimacy, self-labeled by the partners and having an existence that is socially recognized. A marriage (or, *formal marriage*) is a union having either religious or state certification. Single-sex unions of course exist but are not handled well by current survey procedures.

[2] The six surveys have been brought together for cross-national, comparative analysis in the AYARR (Asian Young Adult Reproductive Risk) Project. The project is described in a project web site (http://pisun2.ewc.hawaii.edu/ayarr/), which also provides documentation on our surveys as well as project reports.

[3] A partial list of reports of this kind includes Alan Guttmacher Institute (1995), Population Reference Bureau (1992a, 1992b), and, from the World Bank, Cherlin and Riley (1986) and Senderowitz (1995). Research organizations have also been keen to establish the depth of their interest. From the International Population Center, U.S. Bureau of the Census there is McDevitt (1996), and like contributions have come from the International Center for Research on Women (International Center for Research on Women 1996; Yinger et al. 1992), the Population Information Program (Population Information Program 1985), the United Nations Population Division (United Nations 1989), the Population Council (Mensch, Bruce, and Greene 1998), and Pathfinder International (1999).

intended to complement studies conducted in our societies and elsewhere which have focused on high-risk sub-populations, or which explore particular aspects in considerable depth among respondents or informants who are not randomly selected to represent a larger population.[4] Among the acknowledged contributions of large-scale household-based surveys is estimation of national parameters suitable for comparisons among population sub-groups within a country and across countries. That is our goal in this paper.

The six Asian surveys considered in this paper meet a relatively stringent set of criteria.[5] They are all at national scale, or nearly so, represent the entire youth cohort within the geographic area covered, and use scientific sampling procedures to achieve representativeness. A further criterion for the present purpose is that they cover many of the most important topics relating to YARH, and in particular that they provide direct measures of sexual behavior. These six surveys are the following, listed in the chronological order in which they were carried out:

❑ The Adolescent Sexuality Survey of Hong Kong, 1986 (ASS): carried out by the Hong Kong Family Planning Association

❑ The Young Adult Fertility and Sexuality Survey, Philippines 1994 (YAFS-II): carried out by the Population Institute, University of the Philippines

❑ The Family and Youth Survey, Thailand, 1994 (FAYS): carried out by the Institute for Population and Social Research, Mahidol University.

❑ The Taiwan Young People Survey, 1994 (TYPS): carried out by the Taiwan Provincial Institute of Family Planning (now the Bureau for Health Promotion, Department of Health)

❑ The Baseline Survey of Young Adult Reproductive Welfare in Indonesia, 1998 (RRS): carried out by the Lembaga Demografi, University of Indonesia

❑ The Nepal Adolescent and Young Adult Survey, 2000 (NAYA): carried out by Family Health International and the Valley Research Group (VaRG).

In each instance the core criteria are well met, though certain relatively minor concessions should be noted. All are at national scale, with the following exceptions: the Philippines YAFS-II has a design that omitted the Southernmost, predominantly Muslim provinces; Thailand's FAYS had the same limitation; Nepal's NAYA does not represent the northern high-mountain tier of districts, but does nevertheless represent about 85 percent of all youth nationally. A more significant departure is the RRS survey in Indonesia which covers only four provinces, and excludes the Jakarta metropolitan area, but this survey does encompass nevertheless a very high percentage of the national youth population.

---

[4] On this we note the recommendations of the joint FHI/UNAIDS workshop on *Meeting the Behavioural Data Collection Needs of National HIV/AIDS and STD Programmes* (Pisani 1998), favoring a combination of household-based population-wide surveys such as ours, repeated "rigorous" behavioral surveillance surveys in a limited number of important sub-populations, and qualitative approaches to obtain a more contextualized understanding of risk behaviors.

[5] An inventory of household-based survey data collection in Asia yields a list of 46 separate surveys (Xenos et al. 2001). Many are at a small scale in terms of geographic coverage or sample size or both, some utilize opportunistic sampling methods, and some aim to measure behavior in very specialized population sub-groups. From this larger set of surveys we focus here on those designed and carried out by teams led by one or more of the present authors. These are suitable for estimating national behavioral parameters among youth because they meet the criteria outlined in this paragraph.

All these surveys provide representation of the entire youth cohort within the geographic area covered. The age range encompassing youth is not rigidly defined, though most surveys cover the age range 15–24.[6] Full cohort coverage means, in particular, that both sexes are included as well as all marital statuses, and more generally that no identifiable sub-groups of the youth population are excluded in the sampling design. And, all of them use scientific sampling procedures involving random selection at each stage of sampling to achieve representativeness. Purposive inclusion of households or respondents at one or more sampling stages immediately released a survey from consideration. The last criterion is topical content, on which more below. It is considered essential, however, that there be direct questioning on the respondent's own sexual behavior.

These Asian YARH surveys are independent, in design and other aspects including questionnaire content, and therefore are not strictly and straightforwardly comparable with one another in the way that the DHS's aim to be. Moreover, there are some important differences between the Asian YARH surveys and the DHS's. Some differences involve questionnaire content, including question inclusion, phrasing and sequencing. In the Asian YARH surveys there are generally more questions and follow-ups aimed at measuring sexual knowledge, attitudes and behaviors. And, these are imbedded in a thicker matrix of information on social institutions and contexts for behavior (such as peer relations including dating, and school and family background and experiences). Unavoidably, some of this contextual information is unique to a particular social setting and cannot be compared directly across countries, or may be common to several settings but asked about differently in each.

There are some well-defined practical issues to consider when the subject is young adult reproductive and sexual behavior and when we wish to incorporate Asia into the comparisons. First, nearly all the comparative information on YARH cited in note 1 comes from a single, indispensable resource for such comparisons, the Demographic and Health Surveys (DHS's). Critically important information on a variety of topics is provided by this system of national surveys, but they offer only a fraction of the depth of information that is sorely needed on the topic of YARH. The essential fact is that the DHS's were not designed as YARH surveys. At their core lies the measurement of fertility and its immediately proximate determinants, which the DHS's excel in measuring. There is often some information provided *inter alia* on sexual behavior since this is one of the proximate determinants. But the DHS's are famously limited in the general background and contextual information they provide, and of youth-specific background information or social context there is essentially none.[7] Second, the DHS's often do not fully represent the youth cohort that is of interest. Males are often excluded, and single females are excluded in many instances. In Latin America and Africa the interviewing of single females is routine. In Africa the interviewing of males is also common. The Latin America DHS's have not generally included interviews with males, but the CDC surveys in that region have done so regularly. But, these two gaps in coverage of the total youth population, males and the single, are severe for Western Asia and for South, Southeast and East Asia. Nearly all DHS rounds in Asia have focused on ever-married females and have excluded males entirely. While the Western Asia surveys have been designed with very conservative Muslim populations in mind, which might explain the omissions, it is not apparent why interviewing of the single and of males has not been common in

---

[6] Nepal's NAYA covers the age range 14 through 22. The Hong Kong surveys extend up to 27 and to as young as 18 in order to mesh with companion in-school samples. In Indonesia the 15–24 main sample was supplemented by a smaller sample of "young teens" aged 10–14.

[7] For a tabular summary of the topical coverage of the Asian YARH and the DHS questionnaires, see Xenos (1997, 1999) and Xenos et al. (2001). In general, the DHS coverage is strongest in the areas of fertility, family planning and reproductive health, while the YARH survey coverage is strongest on the gamut of sexual knowledge, attitudes and behaviors, contexts and social institutions considered important to sexual issues, especially institutions relevant to youth, and other risk-taking besides risks related to sexual activity.

much of Asia, especially Southeast Asia.[8] A third problem with the DHS coverage of Asia stems from the advanced level of economic development that characterizes many Asian societies. Because of this there are no DHS rounds at all for East Asia, nor for Singapore or Malaysia, and the last Thailand DHS was conducted in 1987.[9]

It is helpful to distinguish three approaches to the measurement of young adult union and sexual behaviors in surveys. The *conventional demographic survey approach* focuses only on the "ever-married" or "currently married" female in a specified age range: sex, age and current marital status are obtained as essential screening information at the beginning of the interview. The evident problem with this approach is that reproductive and sexual issues and behavior are not, in fact, confined to the ever-married. Much can be lost due to this overreaching simplification.

In most of the DHS rounds an interesting device, which we call *the DHS approach*, is employed to deal with this issue. Marital status is ignored—simply not queried—until late in the interview. All questions, including those on reproductive and sexual issues, are asked of all respondents, well before they are ever asked to give their current marital statuses or anything about their martial histories. The rationale for this approach is that it is easier for a respondent to report sexual experiences, pregnancies and even births when these are not explicitly identified as "premarital."

In the *YARH survey approach,* marital status is recorded at the outset of the interview, along with other essential "facts" such as age and sex. This follows the routine of the conventional demographic survey. But, the subsequent questionnaire content and flow amount to an interrogation of the respondent's initial self-presentation (Goffman 1973). Those who at the outset claim to be "single" or never-married are along the way asked about their reproductive and sexual lives nevertheless. In effect, the respondent is allowed to make a presentation of self in response to the questions asked, and then the subsequent question sequences seek to interrogate that presentation.

It must be a commonplace by now that the traditional demographic survey or KAP approach to marital status and sexual behavior is hopelessly naïve. In our view, the DHS approach is another high-risk strategy because it can produce an interaction very unlike the natural one in most societies, wherein something akin to marital status normally would be offered up front as a self-defining piece of information. The YARH approach permits a natural flow of interaction, like the demographic survey approach, but then goes beyond that to question the information that is provided. Depending on the social setting and survey objectives, one can seek to probe either aggressively or cautiously.

Comparison of Asian YARH and Asian DHS surveys is complicated by these basic differences, unavoidably so when we seek to compare statistics reflecting union timing and sexual experience before versus during unions. The relative effectiveness of these approaches to questionnaire design is an urgent issue for investigation. It should be recognized that in the comparisons presented here data obtained by the DHS and YARH methods are integrated into a single set of statistics and treated as comparable though they are not precisely so. A separate report will examine some of the measurement issues involved.

---

[8] For further discussion on this, see Xenos (1997). Li and Newcomer (1996) raise this issue for surveys of the People's Republic of China. A DHS youth module is under discussion for inclusion by countries which elect to do so. This will be of greatest value only when single youth and both sexes are covered by the individual-level questionnaires.

[9] The most striking omission in East Asia is of course the People's Republic of China. South Asia is partially covered but with the important omission of India. For the purpose of this study the Indian National Family Health Survey (1992–3) is treated as akin to a DHS survey.

Asian Estimates for Union Formation and Sexual Experience

Table 1 presents indicators based on the six available Asian YARH surveys, along with other estimates where those are available. The indicators shown here are designed to complement the presentation of DHS-based YARH statistics in a recent report of the Alan Guttmacher Institute (AGI 1998). In that report a useful set of DHS-based statistics on adolescents and young adults in 53 countries is presented as a set of appendix tables.[10] But, one of the striking features of those appendix tables—for reasons that were reviewed previously—is the virtual absence of statistics on sexual behavior for Asian youth populations. The Asian YARH surveys allow us to fill in this critical missing information for some of the societies of Asia and thus, for the first time, compare Asia with other regions of the world. The discussion following is acknowledged to be preliminary and incomplete. Certainly a much more in-depth set of comparisons can be generated than is provided here. The remainder of this paper provides a limited but we think useful comparative overview of the Asian YARH results in light of global information.

The Patterns among Young Women

Dimensions of Difference

As a guiding framework for this discussion we can consider three dimensions along which young adult union and sexual onset indicators might be expected to vary systematically in a cross-section of countries at global scale. Most obviously, perhaps, we can expect differences reflecting (A) *social and cultural commonalities and differences*—similarities in the rules of behavior regarding marriage, sexual experience and related matters, the values underlying those rules, and the social institutions within which young people make their behavioral decisions. A reasonable *a priori* suggestion might be that cultural patterns are more similar within global regions (Latin America, Asia, etc.) than between them, and that the greatest behavioral similarities will be found between countries with similar cultural, linguistic and other traditions. Another source of behavioral differences surely must be (B) *levels of economic development*. It is a pervasive assumption of the modernization literature, for example, that social systems are shaped by economic processes, in such a fashion that development engenders convergence (Levy 1966, 1986; Moore 1979). Contemporary concern over the social impact of globalization is but a new expression of (or resistance to) the same basic idea.

A third source of global patterns is specific to the youth who are the focus of attention here. Elsewhere the first author has called attention to commonalities in the experience of Asian youth cohorts during the demographic transition (Xenos and Kabamalan 1998a, 1998b, 2000), distinguishing the demography of youth during the transition (rising then falling youth growth rates and shares of total population) and the essentially simultaneous social transformations. Taken together, this historically unique and essentially universal (C) *youth transition* constitutes another source of behavioral differences between youth in different countries. These social transformations among youth are synchronized with the demographic transition and therefore linked to economic development level. Still, we can examine whether social changes specific to youth have any independent effect on the

---

[10] The AGI tables cover 47 developing countries and six developed countries (Japan, the U.S., and four in Europe). Nine Asian countries are shown, but for none of them can sexual behavior information be reported because of the design of the Asian DHS rounds. In addition to the DHS's, the AGI tables report data from China's 1987 Fertility Survey, Japan's 1992 National Fertility Survey and various other sources for France, Germany, Great Britain, Poland and the United States. The report focuses on 18 countries selected for their varied percentages of women with a child by age 18. Of the focal countries four are in Asia: Bangladesh, India, Indonesia and the Philippines.

overall patterns of behavior once factors (A) and (B) have been considered. Youth demography might be expected to have an independent influence through the crowding and other effects it can have on behavior.

For the present purpose we examine a small number of behavioral indicators (initially pertaining to females) relating to YARH, those which are available across a large number of national youth populations globally (c.f. the AGI source cited earlier). These indicators relate to (a) the prevalence of early union; (b) the prevalence of early sexual onset; (c) the prevalence of pre-union sexual onset. We consider these indicators in relation to measures reflecting the three forces for difference and change that were just reviewed. We limit our observations to some important themes that locate Asian patterns within a comparative, global frame of reference. First we consider relationships of each YARH indicator with GNP per capita. Then we look at a multivariate analysis involving the other factors.

The Reduction of Females in Early Unions

The AGI report tabulates the DHS surveys for a conventional cross-sectional measure—the percentage of females aged 15–19 who were married or cohabiting (that is, in any form of union) at the time of the survey. Another measure, more easily interpreted and focused on the phenomenon of early marriage, is whether among females aged 20–24 a union had been entered into by age 18. It is well established that in most developing areas unions are forming at progressively older ages and that this is occurring for both females and males. Singh and Samara (1996) recently reviewed this evidence and comment on the upward trend, though they are struck primarily by the persistence of relatively early marriage among sub-groups in many countries.[11]

We now examine the evidence of early marriage, so defined, in the form of scatterplots of national estimates of early marriage among females. These estimates are available from all the DHS rounds and all the Asian YARH survey rounds. We are interested in regional variations and homogeneities, perhaps reflecting cultural and social similarity within regions, but we are also interested in the pattern of delay and changing levels that is associated with the process of economic transformation. Figure 1 is a scatterplot of GNP per capita against the national prevalence of early marriage. GNP has been transformed into common logs since this variable has a nearly straight-line relationship with early marriage prevalence.[12] World regions are distinguished, and the countries of Asia are identified.

Marriage before age 18 for females still occurs in all societies, is of some consequence in many, and remains quite common in a few. Considering the 50 countries in our combined dataset, in eleven (22 percent of them) marriage at under age 18 is at 50 percent or greater. Four of these (Bangladesh, Indonesia, Nepal and India) are in Asia. In another eight countries early marriage is uncommon, at 18 percent or less. Four Asian societies (China, Hong Kong, Taiwan, Japan) are in this category and the Philippines is not far from that level.

---

[11] Also see United Nations (1989) and Xenos and Gultiano (1992) on Asia.

[12] In this and all subsequent descriptive presentation the data source is our combined file of DHS and other estimates taken from the AGI report, supplemented by Asian YARH survey estimates whenever we have them (Hong Kong 1986, Taiwan 1995, Nepal 2000). When an estimate is available from both the AGI source and our own surveys (Indonesia, Thailand, Philippines), we have used the latter which are always the more recent in any case. We have excluded the five non-Asian developing countries, keeping Japan.

Figure 1 shows clearly that early union exposure declines (unions form later) as economic development level rises—the considerable overall global diversity on union timing and the prevalence of early marriage therefore is related in part to levels of economic development. The overall regression of GNP per capita (logged) on the prevalence of early union among females has a slope of -16.11. That is, as per capita income rises by a multiple of ten (say, from $100 to $1000 per year) the prevalence of such early unions declines by about 16 percentage points. The regression line also implies that at extremely low incomes the prevalence of early unions starts out at around 83 percent. But, the overall fit of the data points is rather weak (the adjusted R-squared is 0.13); most of the observed variation in union timing is not explained by levels of economic development. In particular, China, the Philippines and Sri Lanka among the Asian societies have lower levels of early marriage than the overall relationship suggests.

The same relationship is found within each of several major world regions except for Latin America, the countries of which are tightly clustered in the center of the scatterplot. Readily apparent is the great internal diversity of the Africa and Middle East regions, as compared with the considerable internal homogeneity of Latin America. Africa is interesting here for its narrow band of (low) GNP levels but quite wide band of female marriage timing.[13] This brings us to the Asian societies, which are seen to be quite diverse on both GNP and early marriage, the latter ranging from the lowest measured level of early marriage (Japan) to one of the highest (Bangladesh). Nevertheless, Asia's disparate levels of early marriage fit the overall global pattern very well. For example, Bangladesh and Japan are at the extremes of the observations and Thailand is midway, but all three countries are predicted fairly well by the equation.

The Reduction of Females with Early Sexual Onset

Our behavioral indicator here (c.f. Figure 2) is the percentage of female youth ages 20–24 reporting that they experienced sexual intercourse by age 18. This is available for many of the DHS countries though notably not the Asian countries, for which data from the YARH surveys are used instead. This indicator generally declines with the GNP measure, but the pattern is rather less clear. This is in part because the African countries are again very diverse on age at first sexual experience, despite their narrow range of GNP per capita. All the countries with half or more females reporting sexual experience by age 18 are African, a notable point when we recall from Figure 1 that three of the countries having high percentages with early unions are Asian. In Bangladesh, India, Indonesia, Nepal and Pakistan very early unions may not involve immediate sexual relations.[14] Unfortunately, among these societies we only have sexual onset information for Indonesia and Nepal.

Four of the six available Asian societies form a distinct group in Figure 2. They are arrayed along the GNP dimension but have almost uniformly low levels of early sexual onset. Among the six available YARH surveys for Asia, only Indonesia and Nepal have relatively early sexual onset. We also note that the plot of female per cents sexually active by the somewhat older age of 20 shows much higher regional averages for Africa and Latin America, but only slightly higher levels for Asia. It is apparent that in much of Asia sexual onset occurs after age 20 for more than half of the female population.

[13] On the diversity of African marriage and sexual systems see Bledsoe (1990), Caldwell (1989), Gage-Brandon and Meekers (1993), and Van de Walle (1993).

[14] On Bangladesh, see Paige and Paige (1981), and also Haider (1997) and Nahar et al. (1999); on Indonesia, Hull and Hull (1987) and Jones (1990); on Nepal, Thapa (1996; 1997). India also shows relatively high levels of early union in Figure 1, but we do not yet have sexual onset information to compare with that.

The Asian data available to us describe a regime of late marriage compared with other world regions, though we must remember that most of South Asia is not represented here and we are really describing what the United Nations and World Bank would call an "East Asian" pattern. One implication which is of immediate relevance is that there is a rather long segment of the life course between sexual maturity and entrance to a union.[15] The demographic preconditions for a high level of pre-union sexual onset clearly are present throughout much of Asia.

Female Sexual Onset Before a Union

Unions at too young an age, generally associated with early sexual onset and childbearing within those unions, are an important reproductive health concern. But an even greater concern is sexual onset before any union has formed. It has been shown in a variety of settings that un-partnered motherhood is associated with health problems and poverty. Do the YARH surveys provide useful information about how common "pre-union" sexual experience is in the six Asian countries they describe? One broad indicator of this which we can look at is the comparison of the two prevalences—of early union and of early sexual onset. Though this provides only an indirect indication of pre-union sexual behavior, it has the advantage of being available for a large number of countries. We expect that these might be very nearly equal, and that they would be precisely equal if measurement were flawless, all sexual onset occurred in unions, and sexual onset occurred at the beginning of each union. Figure 3 is a scatterplot of the two prevalences. The diagonal line denotes equality. This arrangement of the data clearly indicates the excess of early sexual onset versus union onset by age 18 in many African countries and also (though at more moderate levels) in much of Latin America. The Near and Middle East disappears in this presentation because the DHS's there did not obtain the necessary information.

The Asian evidence we have in hand is all based on YARH surveys which included direct questions on sexual experience before union, asked of the single as well as the married. On this evidence pre-union sexual experience under the age of 18 among females is not very common in these Asian societies. The very low level for Thailand is notable because Thailand is widely known for its very high levels of sexual initiation before union among males (Ford and Kittisuksathin 1996; Nelson et al. 1996; Xenos, Pitaktaemsombati, and Sittitrai 1993). We document this pattern in the next section. Keep in mind, however, that we are focusing here on early sexual onset outside of a union by the age of 18. The overall prevalences of pre-union sexual experience are markedly higher.

Another view of these patterns is provided by Figures 4 and 5, showing the percentages of women reporting pre-marital or pre-union sexual experience by national levels of GNP per capita. Figures 4 and 5 describe pre-union experience by age 18 and 20, respectively. The Asian levels among females, as low as they are in relative terms, do suggest that there may be a rise in the level of pre-union sexual experience with higher national levels of economic development. This is clearest for the pre-union experience by age 20 shown in Figure 5.

Union and Sexual Onset among Men

Table 1 above follows the AGI report and the DHS's in focusing on females, but our YARH surveys provide much of the same information for young adult males. Table 2 presents the male information from our surveys. The DHS's do not generally provide information for males, but this is available for

---

[15] In a separate analysis we are using the event-history information in our surveys to show durations from menarche to union among males and females.

some countries. To advance our goal of systematic comparison, we have added to our compilation the DHS data for males that are presented in Singh et al. (2000). This gives us a limited set of indicators for ten countries outside of Asia to compare with our five Asian countries.[16] What is added to our understanding by examining data for males? A great deal, we think, more than can be addressed here. We will offer several summary points focusing on the prevalence of pre-union sexual experience, though bearing in mind the limited global coverage for males and the uneven coverage of societies within Asia.

An overall comparison of males and females is provided by juxtaposing Figures 5 and 6. These depict the levels of pre-union sexual experience for each of the sexes according to national levels of economic development. The suggestion in Figure 5 that levels rise slightly with economic development is suggested by Figure 6 for males as well. Variation across countries in the male levels is greater than the variation for females, the connection with level of development is certainly not strong. It is possible to conclude, however, that for any level of economic development the Asian levels of pre-marital sexual experience are lower than those for the other regions depicted. The South and East Asian societies described here are distinct on their levels of pre-union sexual onset, relative to the other regions for which we have data. We are challenged to more clearly interpret these relatively low levels. Are Asian levels low because they are Asian, or because these societies have other characteristics that inhibit pre-union sexual activity. We can tentatively rule out level of development as such a characteristic.

Some additional perspective is given by Figure 7 comparing female versus male sexual onset by age 20. There are societies where sexual onset is much earlier for females than males (i.e., there are higher levels of sexual onset by age 20). The distinct Asian example in hand is Indonesia where this occurs because females form unions much earlier than males do. There are several African societies in this Figure where the somewhat earlier sexual onset among females reflects pre-union sexual experience. There are also societies where male sexual onset seems to be earlier than female on average. There are a few Latin American examples of this kind, and in Asia there are, most prominently, Hong Kong and Thailand. Since in these instances this is not due to earlier male than female age at union, we infer that sexual onset before unions is involved.

Figure 8 brings out the contrast in pre-union sexual experience between males and females in the six Asian societies. Male levels are to a substantial degree higher. We surmise, along with many other interpreters of such information, that there is a greater willingness among males to respond truthfully about personal and sensitive matters, such as sexuality, which may be guided by strong societal norms and sanctions aimed particularly at females.[17] An alternative interpretation invokes issues of masculinity and male ego, and suggests that young men may manufacture some of their reported experience. It seems much more likely to us that the male levels are more accurate than the female. Of course, there is ample room for both explanations to operate in unison. Clearly, though, these results suggest that society-specific social and cultural factors must be important in these gender differences. For example, why is there such a very great gender gap in responses among Thais?

Indonesians of both sexes report quite low levels of pre-union sexual experience by age 18. In the Philippines and Taiwan there are somewhat higher but still low reported levels for both sexes with the female level considerably lower, while Thailand and Hong Kong represent quite different patterns

---

[16] Singh et al. (2000) assembles data for 14 countries. Two are in Asia, based on our survey results for the Philippines and Thailand. In addition, we have excluded Great Britain and the United States.

[17] On male sexuality data see Singh et al. (2000). We should note in comparing males and females here that their responses need not be identical since each sex has a different age distribution of sexual partners.

for males and females. In Hong Kong the levels are higher and the female and male levels are not far apart. In Thailand the male level is very high while the female level is very low. The latter pattern is has been the subject of much discussion (e.g., Israbhakdi 1995).

Multivariate Analysis

Early in this paper we highlighted three sources of variation in union and sexual behavior: level of economic development, the stage of the youth transition, and cultural and social factors. The first is measured in our data by GNP per capita, expressed in its logged form. The second is measured by two youth transition indicators, the peak youth share, and the peak youth growth rate. The third is measured in our data only by regional membership as a proxy for the regional similarities in culture and social organization. We suggested that there might be an association with each. In this final section we consider multivariate analysis of the union and pre-union sexual experience behaviors, focusing on these questions: (1) Are world regions relatively homogenous on these two patterns? (2) Are there associations with level of development? (3) Are there independent effects of youth transition experience? In all this we want to know if there are differences between union behavior and pre-union sexual behavior. We cannot explore differences between males and females since only Asian data are available (but, see Singh et al. 2000).

Table 3 provides the overall results in the form of an analysis of variance for each of the two dependent variables. We focus on adjusted R-squared values since the overall N is only 50 providing only limited degrees of freedom for estimation. Also shown are F-statistics and associated levels of statistical significance. It is worth noting several points from these results. First, the economic development variable is significant for union timing, but not for the prevalence of sex before union. The latter has a statistically significant relationship with the regional classification, but not for level of economic development. This suggests the conclusion that union timing is shaped and transformed by economic processes, whereas pre-union sexual experience levels are associated more closely with cultural and social systems. Also, the youth transition indicators do add some explanatory power to the model involving economic development level, but not much. The R-squared value rises when the youth transition variables are added, but the adjusted R-squared (taking the loss of degrees of freedom into account) declines. Accordingly, the F-statistic and the overall all significance level also decline. This relative lack of importance of the youth transition variables in this global model probably reflects the fact that in many of the DHS survey countries the youth transition had not yet occurred by the time of the survey. This brings us to a concluding observation.

Concluding Comments

We have explained why there has been a very notable lack of Asian data in the worldwide survey evidence on young adult reproductive health. Responding to this, we have presented a body of survey-based statistics on the young adult segments of Asian national populations, based on previous compilations but supplemented by our own YARH survey data for six Asian societies. The basic results are provided Tables 1 and 2. Much of this paper has been given to a descriptive analysis of global patterns on certain key indicators relating to union experience and sexual experience and the relationship between the two. We have sought to view the new Asian evidence in the context of earlier comparative evidence for the rest of the developing world.

There are strong relationships of union timing and the timing of sexual onset with national levels of economic development, though we are able to show additional unexplained pattern in the data that reflects regional cultural factors and the particular youth transition experience of relevance to

youth. We also have seen evidence of sexual onset before union, and that the prevalence of this is not clearly tied to development levels. Overall we find that premarital experience is relatively high in much of Africa, which happens also to have relatively low levels of GNP per capita. We also find that the youth transition as defined here is a weak contributor to overall patterns. This is because it is so closely associated with development levels, but also because the youth transition has not yet occurred in much of the world.

We conclude by noting that our Asian young adult survey data have been collected in the midst of a remarkable transformation among Asian youth (the youth transition) as well as the demographic transformation of Asian society as a whole. Most of the DHS surveys available for other regions of the world were conducted well before the youth transition had reached its peak (or in some cases even begun) in those countries. This makes young adult data for Asia particularly interesting and important.

References

Alan Guttmacher Institute. 1995. *Hopes and Realities: Closing the Gap Between Women's Aspirations and Their Reproductive Experiences*. Washington, DC: Alan Guttmacher Institute.

Alan Guttmacher Institute. 1998. *Into a New World: Young Women's Sexual and Reproductive Lives*. New York: Alan Guttmacher Institute.

Bledsoe, Caroline. 1990. Transformations in Sub-Saharan African Marriage and Fertility. *Annals of the American Academy of Political and Social Science* 510: 115–125.

Caldwell, John, Patricia Caldwell, and Pat Quiggin. 1989. The Social Context of AIDS in sub-Saharan Africa. *Population and Development Review* 15(2): 185–234.

Ford, Nicholas and Sirinan Kittisuksathin. 1996. *Youth Sexuality: The Sexual Awareness, Lifestyles and Related-Health Service Needs of Youth, Single, and Factory Workers in Thailand*. IPSR Publication No. 204 Ed. Bangkok: Institute for Population and Social Research.

Gage-Brandon, Anastasia and Dominique Meekers. 1993. Sex, Contraception, and Childbearing Before Marriage in Sub-Saharan Africa. *International Family Planning Perspectives* 19(1): 14–18, 33.

Goffman, Erving. 1973. *The Presentation of Self in Everyday Life*. Woodstock: New York Overlook Press.

Haider, Syed, Jahangeer Shamsun, Nehar Saleh, Nahid Kamal, and Alan Gray. 1997. *Study of Adolescents: Dynamics of Perception, Attitude, Knowledge and Use of Reproductive Health Care*. Dhaka: Population Council.

Hull, Terence H. and Valerie J. Hull. 1987. Changing Marriage Behaviour in Java: The Role of Timing of Consummation. *Southeast Asian Journal of Social Science* 15(1): 104–119.

International Center for Research on Women. 1996. *Investing in the Future: ICRW's Program on Adolescence.* Washington, DC: International Center for Research on Women.

Israbhakdi, Pimolpan. 1995. *Determinants of Sexual Behavior that Influence the Risk of Pregnancy and Diseases among Rural Thai Young Adults*. (Unpublished)

Jones, Gavin W. 1990. Fertility Transitions among Malay Populations of Southeast Asia: Puzzles of Interpretation. *Population and Development Review* 16(3): 507–537.

Levy, Marion. 1996. *Modernization and the Structure of Societies: A Setting for International Affairs*. Princeton: Princeton University Press.

Levy, Marion J. 1986. Modernization Exhumed. *Journal of Developing Societies* 2: 3–11.

Li, Rose Maria and Susan F. Newcomer. 1996. The Exclusion of Never-Married Women from Chinese Fertility Surveys. *Studies in Family Planning* 27(3): 148–154.

McDevitt, Thomas M., Adlarka Arjun, Timothy B. Fowler, and Vera Harris-Bourne. 1996. *Trends in Adolescent Fertility and Contraceptive Use in the Developing World*. Washington, DC: U.S. Department of Commerce.

Mensch, Barbara S., Judith Bruce, and Margaret E. Greene. 1998. *The Uncharted Passage: Girls' Adolescence in the Developing World*. New York: The Population Council.

Moore, Wilbert E. 1979. *World Modernization: The Limits of Convergence*. New York: Elsevier.

Nahar, Quamrun, Selina Amin, Rafiqus Sultan, Hazera Nazrul, Meghla Islam, Thomas T. Kane, Barkat-e-Khuda, and Cristobal Tunon. 1999. *Strategies to Meet the Health Needs of Adolescents: A Review*. Special Publication No. 91. Dhaka: ICDDR,B, Centre for Health and Population Research.

Nelson, K. E. et al. 1996. Changes in Sexual Behavior and a Decline in HIV Infection among Young Men in Thailand. *New England Journal of Medicine* 335(Aug): 297–303.

Paige, Karen Ericksen and Jeffery M. Paige. 1981. *The Politics of Reproductive Ritual*. Berkeley: University of California Press.

Pathfinder International, Africa Regional Office. 1999. *Adolescent Reproductive Health in Africa: Paths into the Next Century*. Nairobi: Pathfinder International.

Pisani, Elizabeth, Tim Brown, Tobi Saidel, Thomas Rehle, and Michel Carael. 1998. *Meeting the Behavioural Data Collection Needs of National HIV/AIDS and STD Programmes. A Joint Impact/FHI/UNAIDS Workshop: Report and Conclusions*. Geneva: UNAIDS.

Population Information Program. 1985. *Population Reports*, Series M, No. 9 (December).

Population Reference Bureau. 1992. *Adolescent Sexual Activity and Childbearing in Latin America and the Caribbean: Risks and Consequences*. Washington, DC: Population Reference Bureau.

——. 1992. *Adolescent Women in Sub-Saharan Africa*. Washington, DC: Population Reference Bureau.

Senderowitz, J. 1995. *Adolescent health: Reassessing the passage to adulthood*. Washington, DC: World Bank.

Singh, Susheela and Renee Samara. 1996. Early Marriage among Women in Developing Countries. *International Family Planning Perspectives* 22(4): 148–157, 175.

Singh, Susheela, Dierdre Wulf, Renee Samara, and Yvette P. Cuca. 2000. Gender Differences in the Timing of First Intercourse: Data from 14 Countries. *International Family Planning Perspectives* 26(1): 21–28

Thapa, Shyam. 1996. Girl Child Marriage in Nepal: Its Prevalence and Correlates. *Contributions to Nepalese Studies* 23(2): 361–375.

——. 1997. Timing of Family Formation in Ethnic Mosaic Nepal: A District-Level Analysis. *Asia-Pacific Population Journal* 12(2): 75–87.

United Nations. 1989. *Adolescent Reproductive Behaviour: Evidence from Developing Countries*. New York: Department of International Economic and Social Affairs.

Van de Walle, Etienne. 1993. Recent Trends in Marriage Ages. Chapter 4 in Karen A. Foote, Kenneth H. Hill, and Linda G. Martin (Eds.). *Demographic Change in Sub-Saharan Africa.* Washington, DC: National Academy Press. pp 117–152.

Xenos, Peter. 1997. *Measuring the Sexual System and Union Formation Among Adolescents in Developing Countries*. Paper prepared for the Workshop on Adolescent Sexuality and Reproductive Health in Developing Countries, Washington, DC, March 24–25, 1997.

Xenos, Peter. 2001. *Surveying Adolescent Sexuality: The Asian Experience*. Paper prepared for the Young Adult Reproductive Health Measurement Meeting, Decatur, Georgia, September 28–30, 1999.

Xenos, Peter and Midea Kabamalan. 1998. The changing demographic and social profile of youth in Asia. *Asia-Pacific Population Research Reports*, No. 12. Honolulu: East-West Center.

Xenos, Peter and Midea Kabamalan. 1998. *The Social Demography of Asian Youth: A Reconstruction Over 1950–1990 and Projection to 2025*. The Report on the project Long-Term Transformations of Youth in Asia (Population Council Contract CI97.63A). Honolulu: Program on Population, East-West Center.

Xenos, Peter and Midea Kabamalan. 2000. *A Comparative History of Age and Social Structure Transitions among Asian Youth*. Paper prepared for the IUSSP/APN Seminar on Age Structural Transitions and Policy Implications. November 8–10, 2000, Phuket, Thailand.

Xenos, Peter and Soccoro Gultiano. 1992. Trends in Female and Male Age at Marriage and Celibacy in Asia. *Occasional Papers of the Program on Population*. No. 120. Honolulu: East-West Center.

Xenos, Peter, Phichit Pitaktaemsombati, and Werasit Sittitrai. 1993. Partner Patterns in the Sexual Behavior of Unmarried, Rural Thai Men. *Asian and Pacific Census Forum* 6(4): 104–117.

Yinger, Nancy, Alex de Sherbinen, Luis H. Ochoa, Leo Morris, and Jennifer Hirsch. 1992. *Adolescent Sexual Activity and Childbearing in Latin America and the Caribbean: Risks and Consequences*. Washington, DC: Population Reference Bureau.

Table 1. Indicators of Union Formation and Sexual Onset for Asian Female Youth

(Independent YARH Surveys are Shaded)

Indicator[1]			China 1992	Hong Kong 1986	Taiwan 1995	Indonesia 1994	Indonesia 1999	Philippines 1993	Philippines 1994	Thailand 1987	Thailand 1994	Bangladesh 1993-4	India[3] 1992-3	Nepal 2000	Pakistan 1990-1	Sri Lanka 1987
Sexual Activity and Marriage Among Adolescents																
% of persons 15-19 who are married or cohabiting			32	**3**	**2**	17	**20**	7	**8**	16	**19**	48	38	**37**	24	72
% of women 20-24 who began their marriage or union before age 18	All		5	**2**	**4**	31	**40**	14	**8**	20	**22**	73	51	**52**	32	14
	If had fewer than 7 years of schooling[1]		8	**7**	**10**	49	**74**	30	**20**	25	**24**	82	66	**69**	38	u
	If had 7 or more years of schooling[1]		2	**1**	**25**	10	**35**	10	**8**	8	**10**	40	21	**21**	7	u
% of women 20-24 sexually active by age 20	All		u	**24**	**17**	u	**54**	u	**28**	u	**39**	u	u	**66**	u	u
	Before marriage	Before 18	u	**10**	**4**	u	**1**	u	**5**	u	**2**	u	u	**1**	u	u
		18-19	u	**8**	**8**	u	**2**	u	**6**	u	**6**	u	u	**0**	u	u
	Within marriage	Before 18	u	**2**	**1**	u	**38**	u	**6**	u	**11**	u	u	**44**	u	u
		18-19	u	**4**	**3**	u	**12**	u	**11**	u	**19**	u	u	**21**	u	u

NOTES:

U = Unavailable

1 = See AGI (1998), notes to Appendix Tables 1-4

2 = From AGI (1998)

3 = National Family Health Survey, 1992-93

Sources: Extracted from Alan Guttmacher Institute (1998) [AGI (1998)], appendix tables 1-6, and supplemented by the AYARR surveys.
Unless otherwise indicated, AYARR source is an independent YARH survey for Hong Kong, Indonesia, Nepal, Philippines, Taiwan, or Thailand (see text for details) and AGI (1998) for other countries.

Table 2. Indicators of Union Formation and Sexual Onset for Asian Male Youth

(Independent YARH Surveys are Shaded)

Indicator[1]			China 1992	Hong Kong 1986	Taiwan 1995	Indonesia 1994	Indonesia 1999	Philippines 1993	Philippines 1994	Thailand 1987	Thailand 1994	Bangladesh 1993-4	India[3] 1992-3	Nepal 2000	Pakistan 1990-1	Sri Lanka 1987
Sexual Activity and Marriage Among Adolescents																
% of males 15-19 who are married or cohabiting			u	u	u	u	2	u	4	u	4	u	u	14	u	u
% of men 20-24 sexually active by age 20	All		u	49	24	u	7	u	33	u	57	u	u	43	u	u
	Before marriage	Before 18	u	15	10	u	1	u	13	u	31	u	u	10	u	u
		18-19	u	33	14	u	2	u	17	u	23	u	u	5	u	u
	Within marriage	Before 18	u	0	0	u	2	u	1	u	1	u	u	12	u	u
		18-19	u	1	0	u	2	u	2	u	2	u	u	16	u	u

NOTES:

U = Unavailable

1 = See AGI (1998), notes to Appendix Tables 1-4

2 = From AGI (1998)

3 = National Family Health Survey, 1992-93

Sources: Extracted from Alan Guttmacher Institute (1998) [AGI (1998)], appendix tables 1-6, and supplemented by the AYARR surveys.
Unless otherwise indicated, AYARR source is an independent YARH survey for Hong Kong, Indonesia, Nepal, Philippines, Taiwan, or Thailand (see text for details) and AGI (1998) for other countries.

Table 3. Analysis of Variance Summary for Models of Union Timing and Pre-union Sexual Behavior: DHS and YARH Survey Countries

Model	Region	Economic Development	Youth Transition	% in Union by Age 18			%Reporting Sex by Age 18 and Before Union		
				R squared	Adjusted R squared	F (significance)	R squared	Adjusted R squared	F (significance)
1	X	X	X	.420	.226	2.169 *	.552	.365	2.957 *
2			X	.169	.093	2.231	.337	.249	3.813 **
3	X		X	.324	.146	1.820	.493	.337	3.159 *
4	X			.165	.045	1.380	.381	.299	4.624 **
5		X	X	.375			.360	.223	15.809 **
6		X		.320	.290	10.802 ***	.074	.016	1.282
7	X	X		.334	.239	3.514 **	.381	.249	2.878 *

Notes:
Region in indexed by dummy variables for Asia, Latin America and the Near/Middle East; economic development is indexed by the log of GNP per capita; the youth transition is indexed by the peak youth share (percent of population aged 15–24) and the peak youth growth rate. Significance levels: .10 (*); .05 (**); is .01 (***).

Figure 1

Percentage of Females 20-24 Who Were in a Union by Age 18
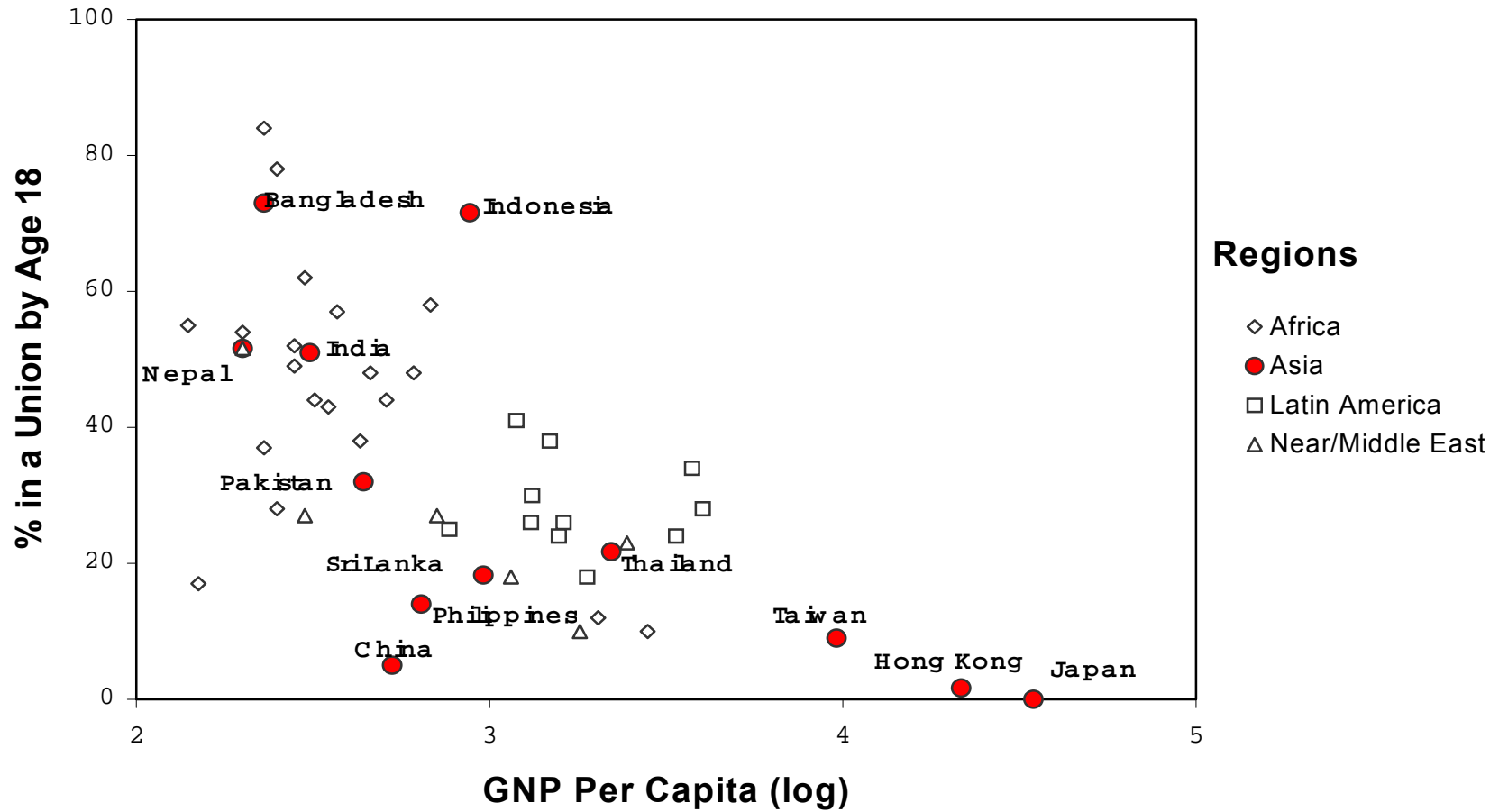By National GNP Per Capita

Figure 2

Percentage of Females 20-24 Who Had Sex by Age 18
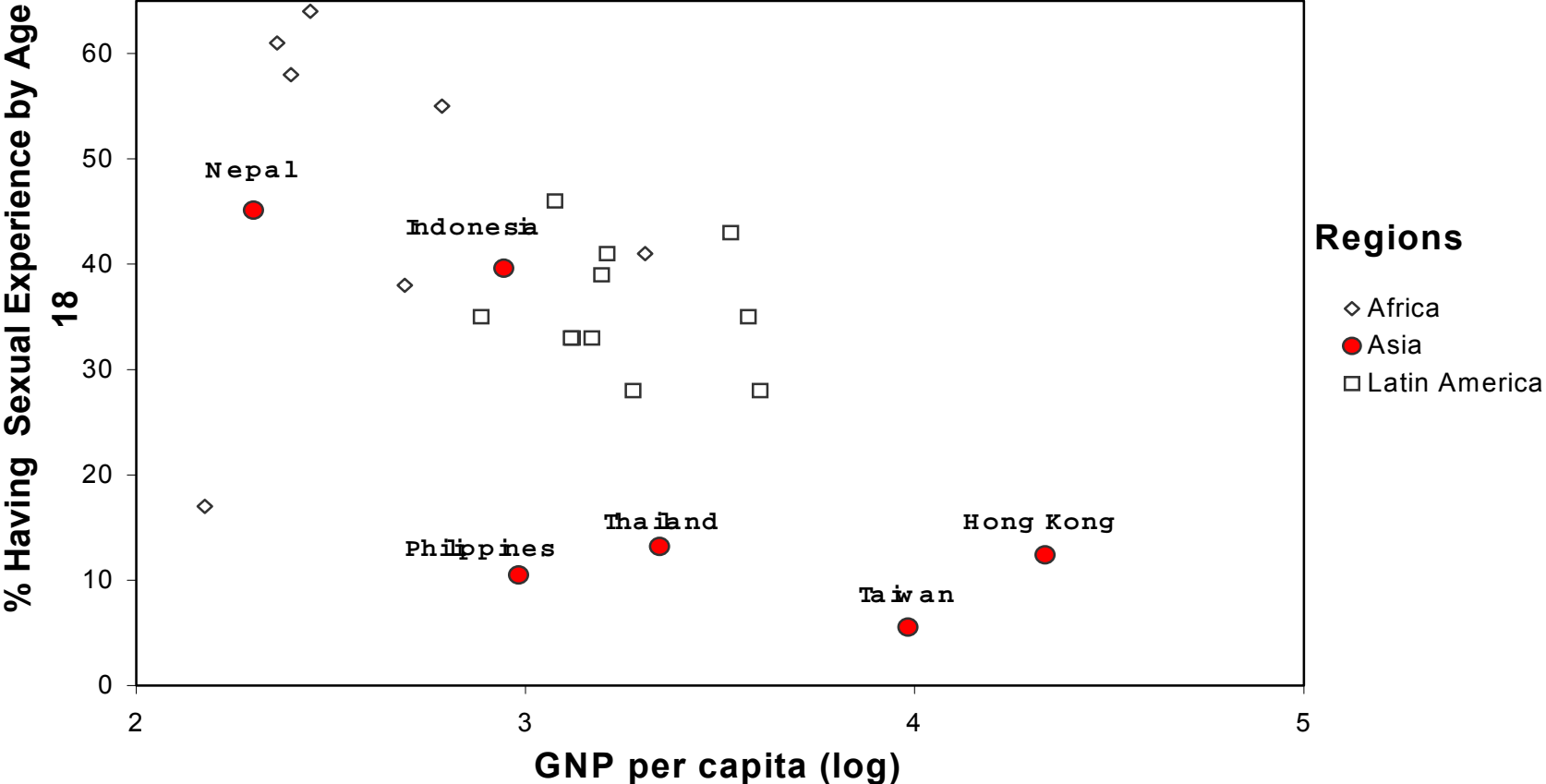By National GNP Per Capita

Figure 3

Relationship between Union Experience by 18 and Sexual Experience by 18 for Women Age 20-24
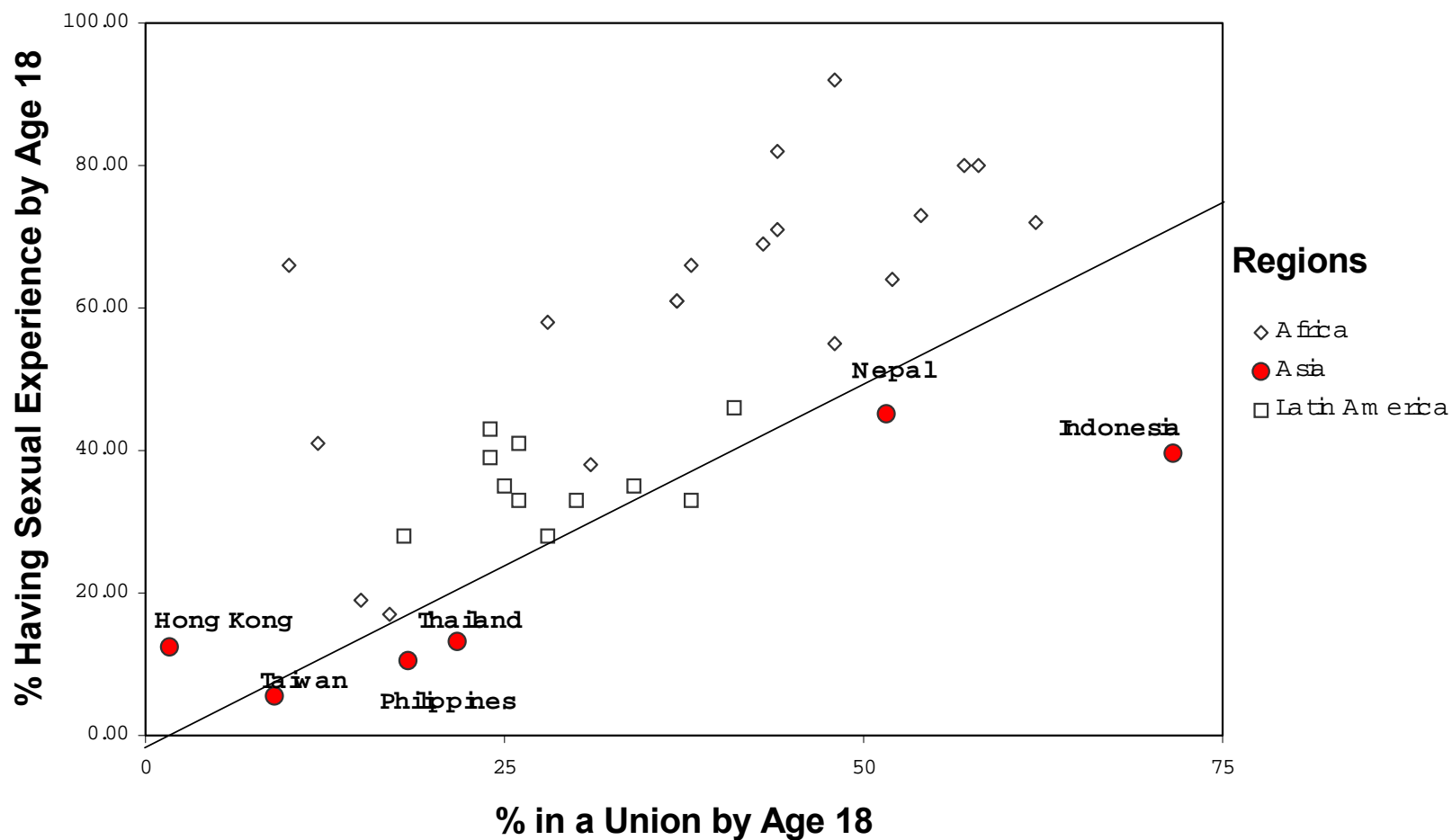
DHS and YARH Countries

Regions

◇ Africa
● Asia
□ Latin America

Figure 4

Percentage of Females 20-24 Who Had Premarital Sex by Age 18
By National GNP Per Capita
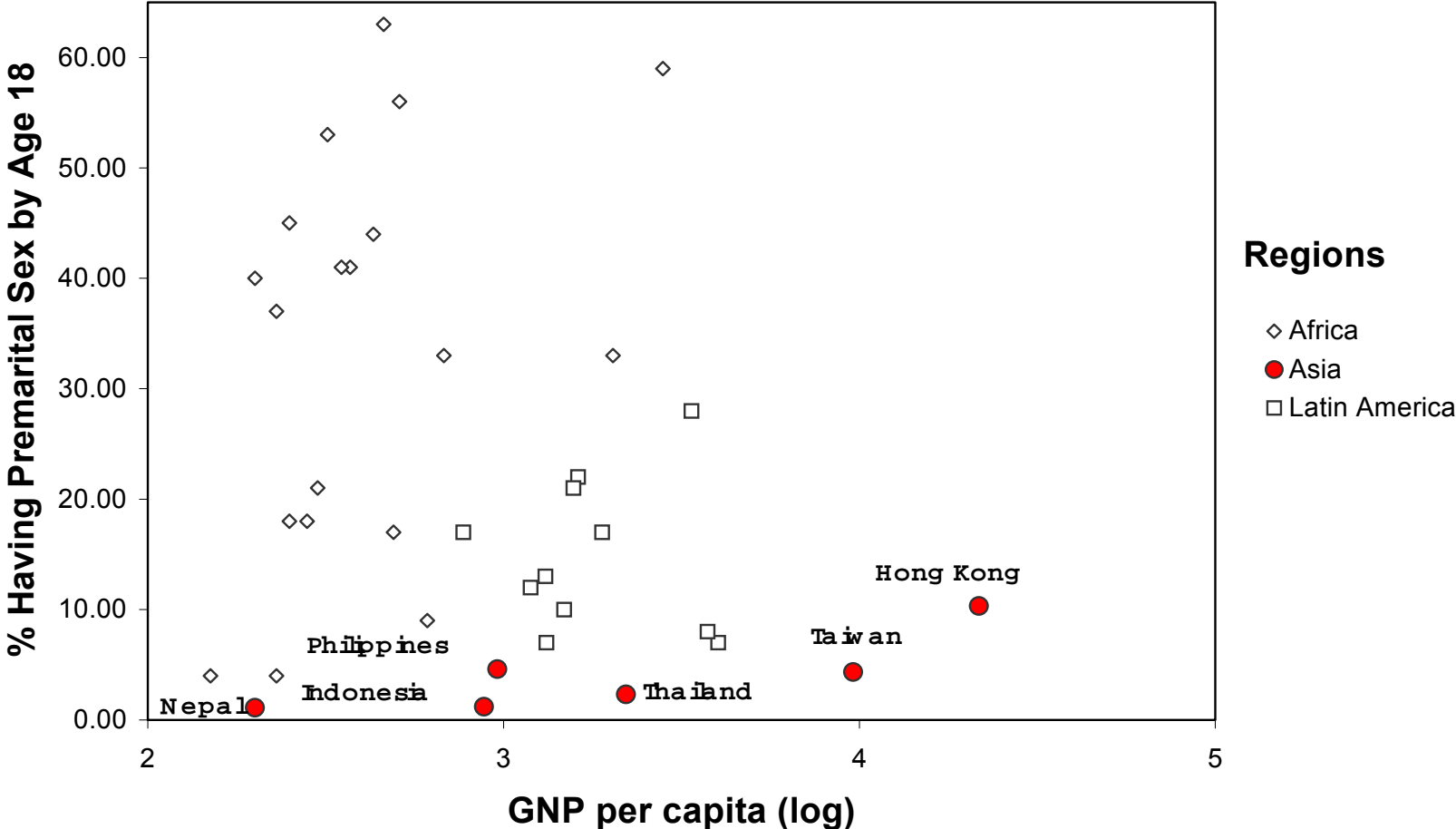
Figure 5

Percentage of Females 20-24 Who Had Premarital Sex by Age 20
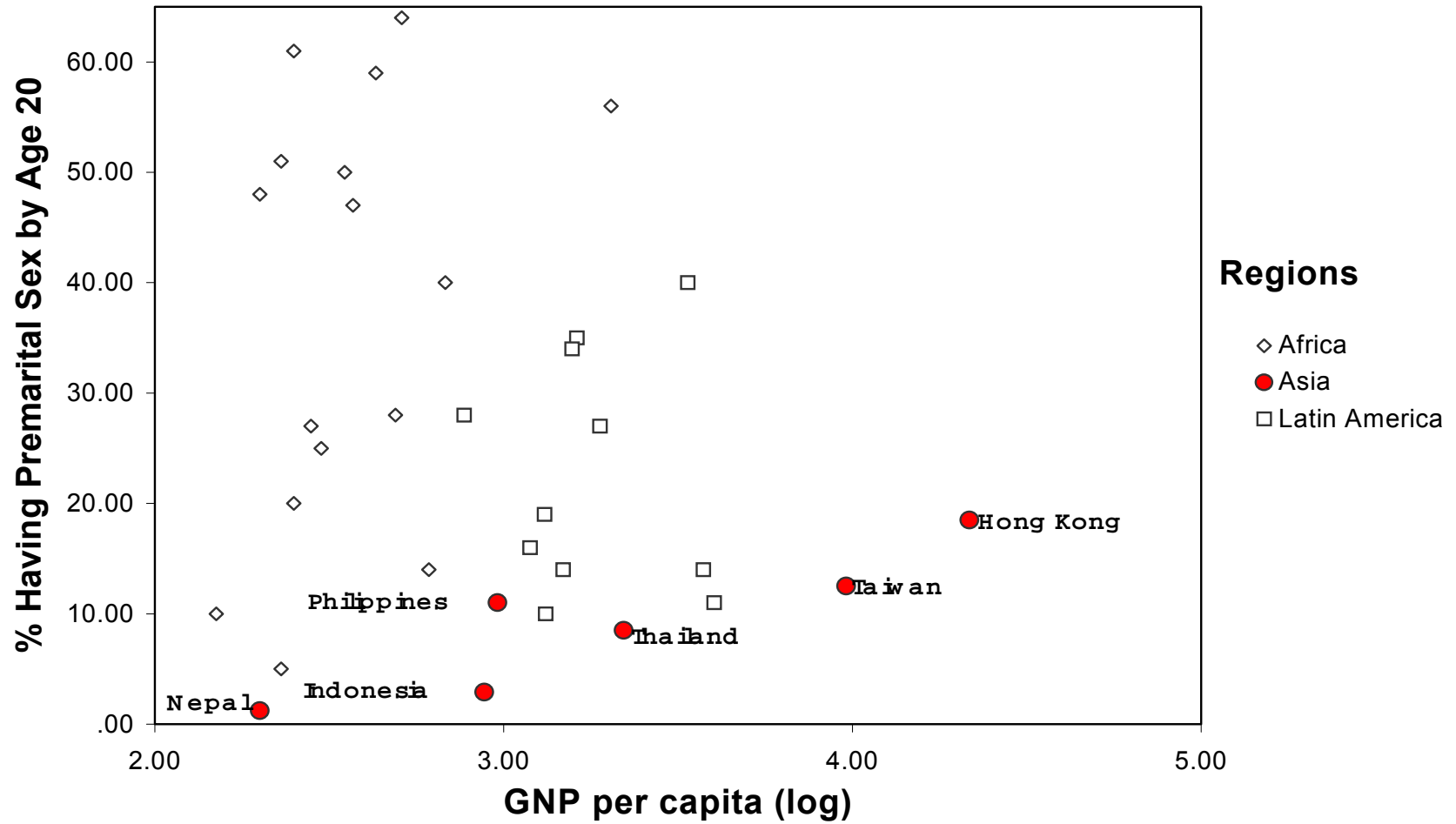### By National GNP Per Capita

Figure 6

Percentage of Males 20-24 Who Had Premarital Sex by Age 20
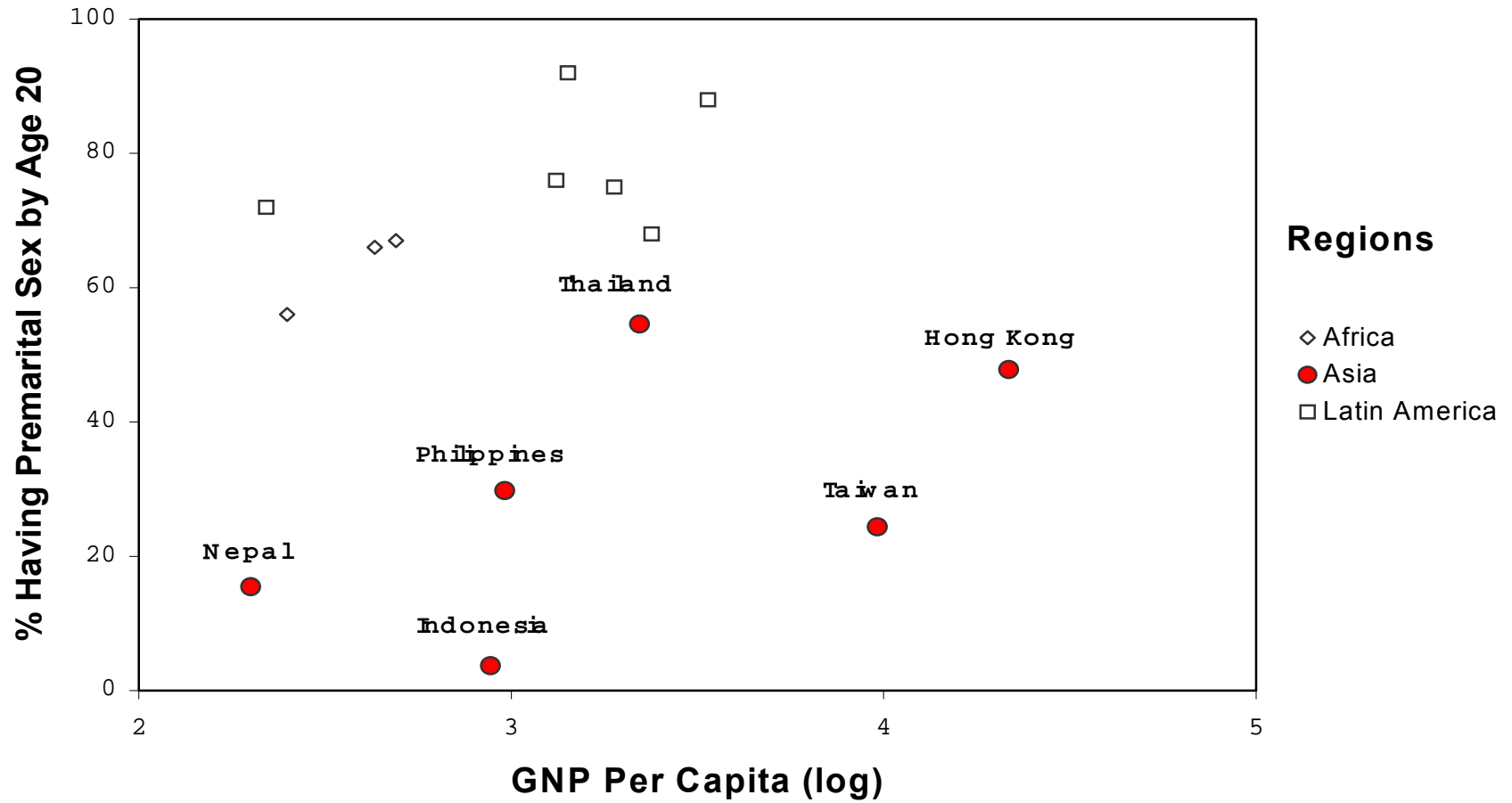By Naitonal GNP Per Capita

Figure 7

Percentage of Males Sexually Active by Age 20 by Percentage of Females Sexually Active by Age 20
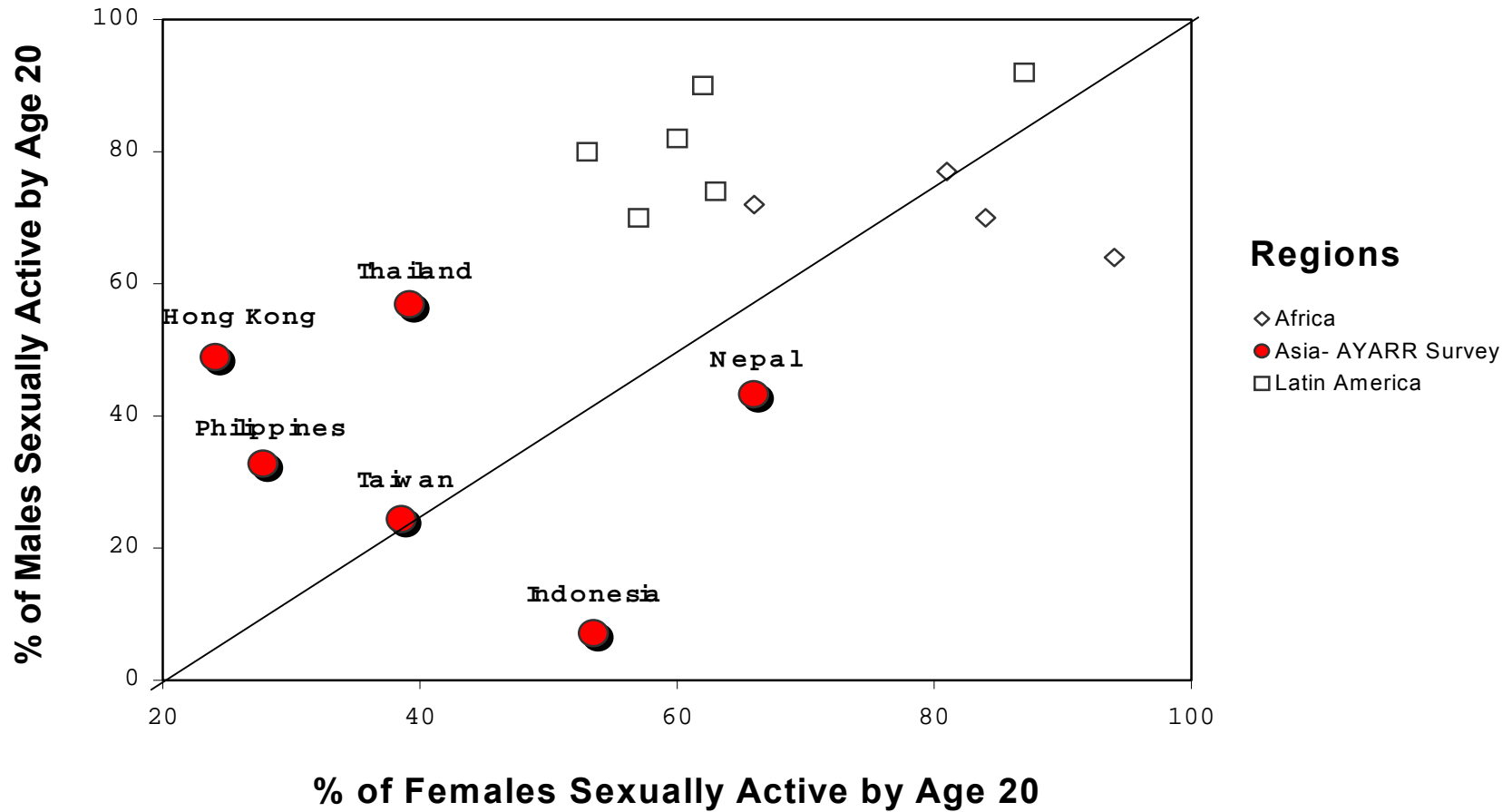
AYARR Survey

Figure 8

Percentage of Males by Percentage of Females with Premarital Sexual Experience by Age 18

AYARR Survey