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Response to the AIDS Epidemic

A Survey of Homosexual and Bisexual Men in Los Angeles County

David E. Kanouse, Sandra H. Berry,
E. Michael Gorman, Elizabeth M. Yano, Sally Carson

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A Survey of Homosexual and Bisexual Men in Los Angeles County

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Prepared for the
AIDS Program Office,
Los Angeles County Department of Health Services

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PREFACE

This report documents the results of a survey for the Los Angeles County Department of Health Services, AIDS Program Office, conducted by RAND between October 1989 and January 1990. The purposes of the survey were to provide information on the occurrence among gay and bisexual men in Los Angeles County of risk behaviors epidemiologically linked to human immunodeficiency virus (HIV) transmission, to ascertain levels of knowledge about HIV transmission, and to measure attitudes and beliefs about prevention and education measures and personal decisions regarding HIV antibody testing. The survey was conducted by telephone on a random sample of 300 self-identified gay and bisexual male residents of Los Angeles County. Results may be helpful in guiding programmatic efforts to reduce the incidence of HIV infection among gay and bisexual men in Los Angeles County and in planning for health care and social service needs.

This survey was conducted concurrently with an AIDS-related survey of the Los Angeles County adult population. Results from that companion survey are reported in:

> David E. Kanouse, Sandra H. Berry, E. Michael Gorman, Elizabeth M. Yano, Sally Carson, and Allan Abrahamse, *AIDS-Related Knowledge, Attitudes, Beliefs, and Behaviors in Los Angeles County*, RAND, R-4054-LACH, 1991.

SUMMARY AND OVERVIEW

AIDS IN LOS ANGELES COUNTY

Los Angeles County has the second highest cumulative incidence of AIDS in the nation. As of December 31, 1990, 11,097 cases had been reported and confirmed across the county as a whole, representing over one-third of all cases in the State of California and a 29 percent increase from last year. The cumulative case fatality rate is 69 percent (7,623 deaths).[1]

As in other major metropolitan areas, such as San Francisco and New York, the vast majority of cases have occurred among young homosexual and bisexual men (9,652 or 88 percent of adult cases), a proportion of whom have dual risks because they also use intravenous drugs (793 or 7 percent). Despite very real concerns about the spread of human immunodeficiency virus (HIV) infection among women, children, and the heterosexual community, the disease burden of AIDS is still very clearly dominated by men, particularly men who have engaged in or are currently engaging in sexual relations with other men.[2]

About 71 percent of the homosexual/bisexual male cases have been men aged 30 to 49, 17 percent those in their twenties, and 12 percent those 50 years old or older.[3] Further, the disproportionate burden of AIDS among blacks relative to their representation in the U.S. population also holds among gay/bisexual men in Los Angeles County. In contrast, Hispanics are underrepresented in the county's gay and bisexual male caseload relative to the general population. Two-thirds of the homosexual/bisexual cases (6,469 or 67 percent) are white non-Hispanic, whereas 14 percent (1,365) are black, 17 percent (1,639) Hispanic, and fewer than 2 percent (179) are Asian or Native American or of other racial/ethnic origins. In contrast, the 1990 racial/ethnic

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[1]Los Angeles County AIDS Epidemiology Program, Surveillance Unit, *AIDS Monthly Surveillance Report*, December 31, 1990.

[2]Incidence trends across the State of California suggest that an increasing proportion of new cases of AIDS is among intravenous drug users (IVDUs) and heterosexual partners of IVDUs and others at risk of HIV infection. Given the importance of exploring parallel behavioral and attitudinal information in the general public, a companion report has been prepared surveying the attitudes of a random sample of men and women in the Los Angeles County area (Kanouse et al., 1991).

[3]Data were provided by the Los Angeles County AIDS Epidemiology Program, Surveillance Unit.

distribution for male residents of Los Angeles County aged 18 to 54 was approximately 40 percent white non-Hispanic, 10 percent black, 37 percent Hispanic, and 13 percent Asian, Native American, or of other racial/ethnic origins.[4]

Given the overwhelming majority of cases in Los Angeles County that have been homosexual or bisexual, it is very likely that most of the newly diagnosed AIDS cases and many of the projected and actual HIV-infected people in the county will continue to be men from this risk group. Since it is risk behavior, not sexual identity per se, that places an individual at risk of HIV infection, it is critical to focus on the behaviors that are prevalent among gay/bisexual men in Los Angeles County to design an appropriately targeted and effective education and prevention program for these men.

AIDS and the spectrum of HIV disease have been a major public health issue for Los Angeles County. In this report, we aim to provide detailed information about the AIDS-related knowledge, attitudes, beliefs, and behaviors of a random sample of men who have reported having sex with other men. We hope this information will prove useful to the Los Angeles County Department of Health Services, AIDS Program Office, as it attempts to understand the current environment in which gay/bisexual men are operating, to design and develop optimally targeted and effective education/prevention programs for these men, and to plan for the best use of available resources for health care and support services delivery.

RELATED SURVEYS OF GAY/BISEXUAL MEN

Over the last six years, epidemiological studies of gay and bisexual men have been undertaken in San Francisco, Los Angeles, New York, Boston, Chicago, Pittsburgh, and Baltimore.[5] These studies have generally followed men who were recruited specifically so that changes in their health status could be followed for a long time, typically several years. These longitudinal cohort and natural history studies have provided important information on behavioral aspects of the HIV epidemic among gay and bisexual men. Yet, with one or two exceptions, these studies have relied on volunteer samples and have not provided broad cross-sectional data on populations of gay/bisexual men. To remedy

[4]These estimates are based on an adjusted age-specific gender, race, and ethnicity distribution derived from 1990 projections for Los Angeles County prepared by the Department of Regional Planning.

[5]See, for example, Detels et al. (1987); Martin (1987); Mayer et al. (1986); McCusker et al. (1988a, 1988b); McKusick et al. (1985a, 1985b); Moss et al. (1987); Polk et al. (1987); Winkelstein et al. (1987).

this situation, random digit dial (RDD) telephone surveys of gay and bisexual men have been undertaken in several cities, most notably San Francisco (Communication Technologies, 1984, 1985, 1986a, 1987, 1990), but also in Los Angeles (Communication Technologies, 1986b; Freeman et al., 1989) and Minneapolis (Isensee et al., 1990).[6]

PURPOSES OF THE CURRENT SURVEY

Self-identified gay and bisexual men constitute the largest proportion of AIDS cases to date in Los Angeles County and, almost certainly, the largest proportion of those infected with the virus. Along with intravenous drug users, they are also the largest population at risk of being infected.

Despite the volume of AIDS cases that have been diagnosed here, basic information is still lacking about the activities and the perspectives of gay/bisexual men that would enable public health officials effectively to counter the spread of HIV infection in Los Angeles County. Little is known about the prevalence of high-risk behavior among men who have sex with other men. Even less understood are the relationship dynamics and the AIDS-related beliefs and attitudes that may be found among gay/bisexual men in Los Angeles County. Which gay/bisexual men are at the greatest risk of HIV infection? To what extent have many already placed themselves at increased risk, and what reasons do they give for their beliefs and subsequent behavior? How much do they know and what else needs to be emphasized? What AIDS-related beliefs and attitudes serve as barriers to behavior change? How much behavior needs to be changed?

One obstacle to gathering this needed information may have been the county's general proximity to the highly studied and much publicized City of San Francisco. Public health officials and researchers alike may believe that data from San Francisco may be directly applied to Los Angeles. Unfortunately, this assumption is not based on any empirical data, and there are no a priori reasons that knowledge, attitudes, beliefs, or behaviors here should be like those in San Francisco.

[6]Communication Technologies, Inc., the contractor for the San Francisco series of surveys of gay/bisexual men, conducted an RDD survey among gay/bisexual men in Los Angeles in February 1986. Respondents were sampled from the Hollywood, West Hollywood, and Silverlake areas of Los Angeles County, a more concentrated area than covered by the current survey. Larry L. Bye, President of Communication Technologies, Inc., provided the RAND study team with the means to conduct follow-up with respondents from the 1986 survey who had agreed to be recontacted in the future for another survey. We piloted a "resurvey" among a sample of these men and found the recontact information insufficient given the time that had elapsed since the previous survey. We therefore concentrated our efforts on assembling the current random sample.

Men who have sexual relations with other men in Los Angeles County may differ from those in San Francisco in various ways that combine to create a different social and behavioral milieu for the gay communities in the two urban areas.

The current survey provides information on the knowledge, attitudes, beliefs, and behaviors of a random sample of gay and bisexual men in Los Angeles County. Responses to the survey help to identify the current and future needs of this population, while forming a baseline against which future responses to the epidemic may be measured.

The survey addressed a wide range of issues related to HIV infection and AIDS. We asked questions about the following topics:

- **Risk Behaviors.** The survey inquired in some detail about respondents' recent sexual practices, including use of condoms; the survey also inquired about their use of intravenous and nonintravenous drugs.
- **Knowledge About AIDS and HIV Transmission.** The survey assessed basic knowledge and beliefs about AIDS and HIV transmission. Responses to these questions may reveal knowledge gaps that need to be addressed in prevention efforts.
- **Risk Perceptions.** Respondents were asked to rate the riskiness of various behaviors that can lead to transmission of HIV.
- **Self-Reported Behavior Change.** Respondents were asked about social or sexual behavior changes they may have made in response to the AIDS epidemic.
- **HIV Antibody Testing.** The survey asked whether respondents had been tested for antibodies to the AIDS virus, and if so, where, when, and with what results. Respondents who had not been tested were asked about the reasons for not having done so.
- **Impact of the Epidemic.** The survey was designed to provide some indication of the impact of the HIV epidemic on gay and bisexual men. Indicators of such impact include: numbers of persons the respondents know who have been diagnosed with AIDS, the number of behavioral changes made because of the epidemic (e.g., from reducing numbers of sexual partners to spending more time with friends), social support, and mental health status.

MAJOR FINDINGS AND CONCLUSIONS

The survey yielded a rich body of data on gay and bisexual men in Los Angeles County and their response to the HIV epidemic. The following findings stand out as especially important.

1. **High-Risk Sexual Behavior.** Although high-risk behavior has clearly declined from previous levels, there is room for further change. Seven out of eight survey respondents reported having made some change in behavior in response to the AIDS epidemic. For some, the change has been drastic—about one in ten report having become celibate, for example. About four out of five have reduced the number of their sexual partners, more than half now use condoms more often, and more than a third have stopped having anal intercourse. The incidence of high-risk sexual behavior seems generally lower now than in 1986 and is probably much lower than it was in 1981, at the start of the epidemic.

Yet some of the changes gay and bisexual men have made may still leave them at substantial risk of acquiring or transmitting HIV infection. Many men continue to have anal intercourse without condoms, apparently relying on withdrawal before ejaculation to prevent transmission. Similarly, most of our survey respondents reported engaging in unprotected oral-genital sex, and many did so frequently. These behaviors, regarded as posing less risk than anal intercourse without a condom, may still be quite risky. Moreover, gay and bisexual men in Los Angeles who are involved in a primary relationship, whether sexually exclusive or not, have unprotected anal intercourse more frequently do than similar men in San Francisco.

Notwithstanding recent concern that a new cohort of younger men (e.g., those in their twenties) may be frequently engaging in high-risk sexual behavior, we find no evidence of that in Los Angeles. If our data pinpoint a particular age group in which high-risk behavior is concentrated, it is in the group aged 30 to 44 rather than those younger or older. We did not interview men under the age of 18, so our results provide no information on risk behavior below that age. Among adult men, the results suggest that outreach programs should not be restricted to the youngest adult age group but are needed by men as old as 44 years or more.

Finally, our survey results confirm what most people already know: Los Angeles County has a large gay and bisexual male population. Our screening survey was specifically targeted to 24 zip codes where many AIDS cases marked the existence of sizable concentrations of gay men. Within those high-concentration areas, 12 percent of the men we screened between the ages of 18 and 75 acknowledged having had sex with other men in the past ten years and completed our anonymous survey. We do not have good information on the probable

concentration of gay men in other areas of the county, but the proportion who identify themselves within the geographic areas studied as having had sex with other men suggests that the total population may be quite large.

2. **Drug-Related Risk Behavior.** This type of behavior is probably even more difficult than sexual behavior to capture accurately in a telephone interview; our data surely underrepresent those at greatest risk. Most of our sample respondents had histories of recreational drug use, and 22 percent admitted to having used drugs within the last four weeks. Seven percent acknowledged having taken drugs by injection, but only 1 percent said they had done so recently. The data suggest that gay and bisexual men have substantially reduced their use of recreational drugs from levels of a few years ago, and use of injection drugs now appears to be uncommon in the types of men captured in our survey. Still, gay and bisexual men currently use both alcohol and drugs with much greater frequency than most Los Angeles County residents, judging by the results of a parallel survey of the general population that we conducted at the same time.

Use of drugs or alcohol before or during sexual activity could potentially increase the risk of HIV transmission by increasing the frequency of high-risk sex or decreasing participants' propensity to take precautions. For that reason, we inquired into the frequency with which alcohol or drugs are used in conjunction with sex. We found that many gay and bisexual men do use these substances in conjunction with sex regularly; we found no evidence, however, that those who do so are more likely than other men to engage in high-risk practices or to dispense with the protection of condoms.

3. **Knowledge.** The principal modes of transmission of HIV are now nearly universally known, and gay and bisexual men display no informational advantage over most county residents on this subject. However, they are much more knowledgeable than most residents about the low transmissibility of the virus through casual contact. Men who know other people with AIDS are especially well informed on this score. The least well-informed segment of the gay and bisexual population is the nonwhite segment (although nonwhites are as well informed as whites about the dangers associated with high-risk activities).

Gay and bisexual men cite different sources for their information about AIDS from those named by members of the general population. They place a greater reliance on print media than on broadcast media, and they are more likely than most residents to name friends and relatives and AIDS hotlines and community groups as important sources of information. In planning dissemination strategies for reaching this

population, these differences in information channels need to be taken into account.

4. **Perceived Risk.** Our survey questions elicited from many respondents, including many who engage in high-risk sexual activities, the expressed belief that they and their partners were not at risk of getting AIDS. This was clearly not a matter of being misinformed about the major risk behaviors but rather seemed to involve a perception that the controlled or reduced risks that they are taking will be sufficient to keep them out of harm's way. One controlled risk strategy involves engaging in behavior that is of lower, but still uncertain, risk relative to the well-established list of high-risk activities (e.g., receptive anal intercourse without a condom but with ejaculation) that most gay men now try to avoid. Another strategy is to stick with one partner. Many men who have adopted this latter strategy apparently regard it as unnecessary to take the further step of eliminating their high-risk sexual activities with that partner. Epidemiologists cannot presently provide reliable figures on the relative risks gay men run with these strategies, so they are equally unable to provide reassurance or to refute wishful thinking.

5. **HIV Testing.** Two-thirds of the gay and bisexual men we interviewed had been tested once or more for HIV antibodies. This represents a major increase in the proportion tested since 1986, when only 16 percent of a similar sample drawn from Los Angeles County said that they had been tested (Communication Technologies, Inc., 1986b). The most common testing site was a private physician's office (44 percent) rather than an alternative test site (33 percent). Among those who had not yet been tested, the most commonly endorsed reason (40 percent of those not yet tested) was that the respondent saw no need for it because there was almost no chance he was infected. But a third of those not yet tested said they were afraid they might not be able to handle a positive test result.

About two-thirds of the gay and bisexual men in our sample had voluntarily sought testing for HIV infection. Anonymous testing has been widely available for some time, and earlier controversy about the value of testing has subsided. There now appears to be a consensus in both the public health community and the gay community that all gay men should have themselves tested; 85 percent of our respondents thought gay and bisexual men in Los Angeles should be encouraged to take the test. Possibly as a result of earlier controversy, the public health approach to HIV testing has been to make testing and counseling widely available without launching a high-profile public health campaign aimed at persuading gay or bisexual men to be tested. If such a high-profile campaign were mounted, many of those who are

still untested might seek testing. Our results suggest that there would be strong community support for such an approach.

More than 16 percent of our respondents who had been tested were seropositive, roughly half the rate reported in a similar survey conducted in San Francisco at about the same time. Our study does not offer a good basis for estimating a countywide seropositivity rate for the entire male gay/bisexual population, but in view of the concentration of our sample in areas with high AIDS incidence, the countywide rate may be lower than that observed in our sample.

6. **Social Impact of the Epidemic.** Eighty-six percent of our respondents personally knew someone, living or dead, who had AIDS. Among those who knew at least one such person, the median number known was seven. Clearly, the epidemic has reached into the lives of most gay and bisexual men in our sample, even though most remain uninfected.

Indeed, the experience of loss on such a scale raises the possibility of mental health consequences (posttraumatic stress, depression, etc.) for large numbers of men affected by the epidemic. Compared with heterosexual males, gay and bisexual men score significantly lower on a five-item index of mental health status. To what extent this is a consequence of the epidemic or reflects other factors unrelated to AIDS (e.g., stigma and fear of discrimination) that impinge on the lives of gay and bisexual men in Los Angeles cannot be ascertained with our data.

7. **Health Insurance Coverage and Health Care Use.** Twenty percent of the respondents in our sample had no health insurance, and many others were vulnerable to loss of coverage, as described below. Because of the generally high levels of education and socioeconomic status in this sample, it is possible that lack of health insurance coverage may be still more common among gay men of lower socioeconomic status.

Among the 80 percent who had health insurance, fee-for-service coverage was most common; only 2 percent of all respondents said they relied on MediCal for most of their care. The future insurance protection of many gay and bisexual men who develop HIV-related health problems is somewhat precarious, however, should they lose their employment early in the course of their illness. Nine percent of our respondents were self-employed, and another 26 percent worked in firms with fewer than 20 employees and are therefore probably not covered by the provisions of the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) that mandate postemployment continuation of (relatively) affordable health insurance.

Of 12 respondents with AIDS or HIV-related symptoms, only one was not insured. Although our group of symptomatic HIV-infected respondents was very small, our findings regarding insurance coverage for this group are quite different from those of an earlier study that recruited AIDS patients through AIDS Project Los Angeles (APLA), suggesting the importance of looking more closely into recruitment and selection effects and how they may affect results in studies of AIDS financing and care.

Our survey provides data on utilization of health services by HIV-infected asymptomatic men as well as those who have developed symptoms. Not surprisingly, utilization of health services, especially hospital services, is much more intensive among those who are symptomatic; however, 60 percent of those who are asymptomatic report one or more physician visits for HIV-related causes during the preceding 12 months, and about a third are receiving zidovudine (azidothymidine, better known as AZT). Use of experimental antiviral drug therapies appears to be extremely rare, but use of alternative therapies (homeopathy, spiritual healing, naturopathy, etc.) is quite common for those who are symptomatic.

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I. INTRODUCTION

We undertook this survey to measure AIDS-related knowledge, attitudes, beliefs, and behaviors of adult gay and bisexual men in Los Angeles County. We conducted 300 interviews by telephone using random digit dial sampling procedures and a computer-assisted interview system. Interviews took about 35 minutes to complete and were conducted in English and Spanish. Interviewing was carried out from October to December 1989.

Although conducting a household telephone survey necessarily excludes some parts of the population from the sample, telephone coverage is generally high among Los Angeles households; about 94 percent of households are believed to have telephones. The lower cost of telephone interviews compared to personal interviews allows for a much larger sample size for the same expenditure of resources. For those reasons, we elected to conduct telephone interviews.

The remainder of this report is organized as follows: Section II documents the sampling approach and methods used to conduct the survey; Sec. III presents study findings regarding knowledge, attitudes, beliefs, and behaviors of the gay/bisexual men in the sample. Section IV discusses key findings and their policy implications. A technical appendix provides additional details on the results of selected multivariate analyses.

II. METHODS USED TO CONDUCT THE SURVEY

SAMPLE SELECTION

To select a probability sample of gay and bisexual men living in households (i.e., excluding persons in institutions such as dormitories, jails, and hospitals, and other persons not living in households), we first identified the 24 zip code areas of Los Angeles County that accounted for the largest numbers of reported AIDS cases among gay men. (For the geographic areas corresponding to these zip codes, see Fig. 1.) We then selected a random sample of telephone numbers that were within these zip codes.

We began with lists of all area code and five-digit telephone prefixes assigned to Los Angeles County households in the 24 zip codes selected. Prefixes with two or fewer working numbers out of the possible 100 numbers were excluded from selection. Using this list, two-digit numbers were randomly selected and attached to the area code and prefix combinations in proportion to the number of listed telephones known to be in service in each prefix.[1] The randomly generated numbers included listed and unlisted numbers as well as numbers that were not working and numbers assigned to businesses or other nonhouseholds. The resulting list of numbers was randomly ordered and called by interviewers to determine the status of each number and to conduct an interview with an individual in each eligible household.

INTERVIEW PROCEDURES

When an interviewer contacted someone by telephone, he or she first verified that the number was a household in Los Angeles County and then asked for a count of the number of adult males living in the household who were between the ages of 18 and 75. If there was more than one, the interviewer asked to speak to the adult male who had had the most recent birthday. Since birth dates are approximately randomly distributed, this provided a simple way of selecting randomly within the household.

Once an adult male respondent had been contacted, the interviewer explained the purpose of the study and asked, as an eligibility screening question, whether the respondent had had sex with another male

[1]The area codes included in this sample were 213 and 818.

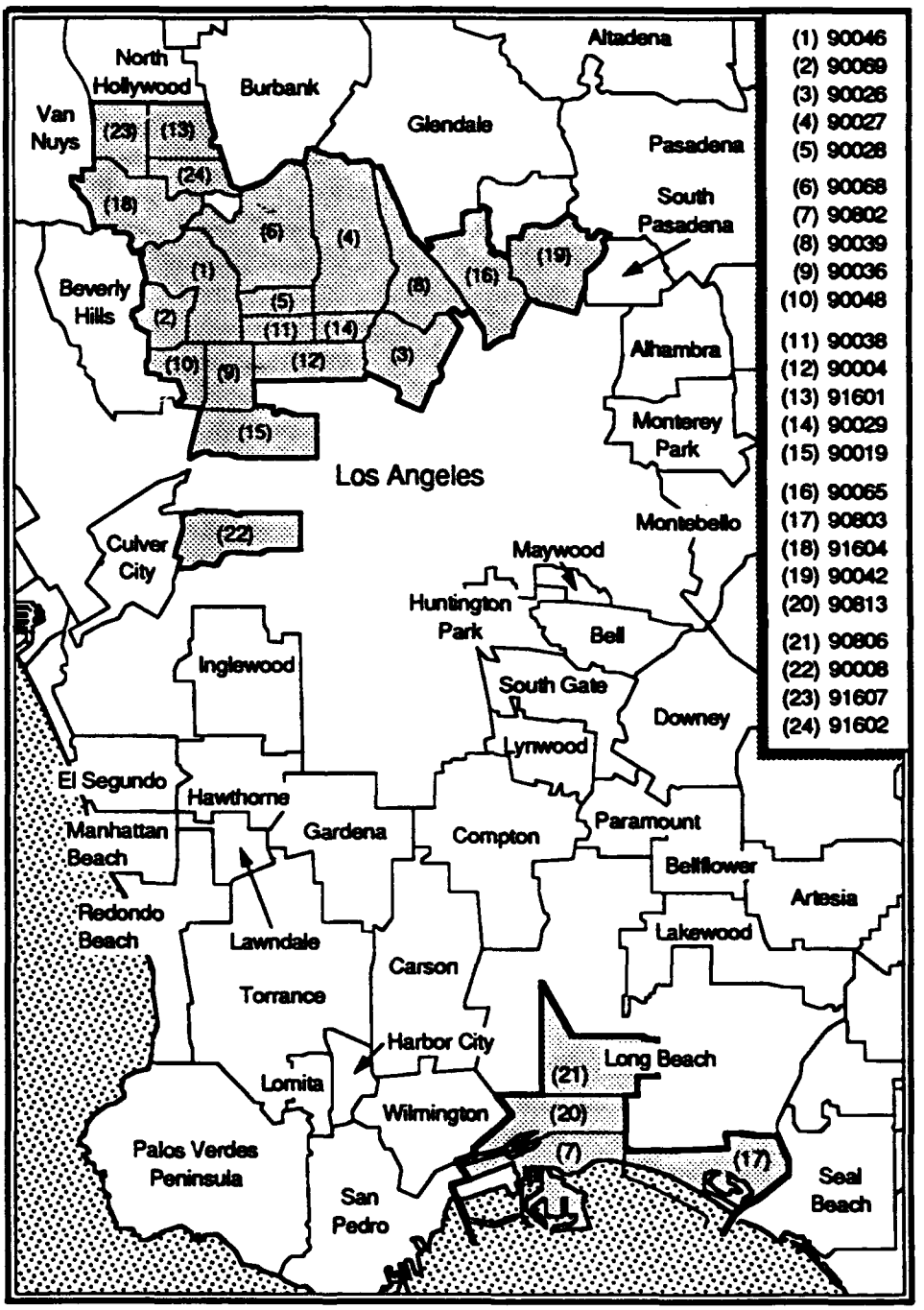

Fig. 1—Areas of the county covered by the survey

within the past ten years. If the response was affirmative, we completed the interview.

Interviews were attempted seven days a week during the hours of 9 AM to 9 PM on weekdays, 10 AM to 6 PM on Saturdays, and noon to 8 PM on Sundays. Assignment of telephone numbers to interviewers was controlled by computer, so that each number was attempted during the day, in the evening, and on weekends. Over 38,000 calls were made to complete the survey, up to a maximum of 15 calls per case.[2]

The interview was available in English and Spanish; both versions were programmed into the computer-assisted telephone interviewing system, and interviewers could use the version respondents found most comfortable to answer. Whenever possible, we assigned bilingual interviewers to attempt interviews in areas where Spanish-speaking respondents were most likely to be found. However, when an English-speaking interviewer encountered a Spanish-speaking person and could not communicate with him or her, the case was assigned for callbacks by Spanish-speaking interviewers. Seven interviews were carried out in Spanish.

INTERVIEW COMPLETION RATE

Identifying a random sample of gay and bisexual men within a general population by random digit dialing is an extremely difficult and expensive undertaking. For this survey, we attempted to reach a total of 9,268 randomly selected telephone numbers, making a total of over 38,000 dialings. As shown in Table 1, only 3 percent of these numbers yielded completed interviews with eligible gay and bisexual respondents.

The process of identifying an eligible gay or bisexual respondent involved several stages designed to identify eligible households, identify eligible respondents within these households, and complete interviews with those respondents. We attempted to reach each number not knowing whether it was working and, if it was working, whether it was a household. In most cases nonworking numbers are identified through recorded announcements and businesses and institutions are identified by someone who answers on the first or second call. However, it may take many calls to determine the status of a number that rings but is not answered. We often found that it was a pay phone, a car phone, a computer line, or another form of ineligible number. In about 2

[2]Multiple callbacks may be especially important to reduce bias in surveys on the prevalence of risky sexual behavior, since the evidence suggests that those who are difficult to reach by telephone are more likely to engage in such behavior (Capell and Schiller, 1989).

Table 1

DISPOSITION OF CASES IN RANDOM DIGIT DIAL SAMPLE

Disposition	No. of Cases	Percent of Cases
Ineligible Numbers		
Confirmed not working	1,842	19.9
No answer 15+ rings	240	2.6
Business	1,254	13.5
Not private residence	25	0.3
No eligible respondent	296	3.2
No males in household	1,367	14.7
Other ineligible[a]	35	0.4
Total	5,059	54.6
Presumed Eligible Household Number—Not Screened		
Household refused to screen	204	2.2
Language problem	136	1.5
In progress at end of study	723	7.8
Other eligible not screened[b]	119	1.3
Total	1,182	12.8
Screened Eligible Household Numbers		
No gay or bisexual males	2,075	22.4
Selected male respondent refused interview	126	1.4
Language problem	60	0.6
Unavailable or ill	36	0.4
In progress at end of study	444	4.8
Eligible completed interview	276	3.0
Partial complete	10	0.1
Total[c]	3,027	32.7
Total no. attempted	9,268	100.0

[a]Includes cases outside Los Angeles County, car phones, pay phones, computer lines, and telephones in institutions, vacant residences, etc.

[b]Includes nonbusiness answering machines, lines for the disabled, and temporarily out-of-service residential numbers.

[c]Differs from the total number of individual respondents within eligible households who were screened for eligibility as gay or bisexual men (n = 2,361). Of the latter group, 286 (12 percent) acknowledged having had sex with other men and completed all or part of the survey.

percent of the cases the number remained unanswered after 15 attempts. Since in our experience very few of these numbers turn out to be residences, we group these numbers with the ineligibles for the purposes of this survey.

If the number was answered and the caller confirmed that it was a residential number, we determined whether it was an eligible household and whether there was an eligible respondent in the household. In this survey, we needed a household in Los Angeles County with a male household member between the ages of 18 and 75. Households were declared ineligible if they were outside Los Angeles County or if no one in the household met these criteria. Some apparent households refused to provide any information or could not answer our questions because of language or other problems. These cases were "retired" as presumed eligibles that we were unable to screen. If the household contained one or more eligible males, we attempted to continue the interview directly with the male selected for the interview, screening for eligibility for the full interview by asking if the selected respondent had had sex with another male within the past ten years. Screening was not always possible, however; the selected respondent might not have been home and needed to be recontacted, might have refused to participate, or may have had language problems that precluded screening.

Table 1 shows the final status of each number we attempted for this survey. We classified 5,059 numbers as ineligible either because they were not working, they were not residences, there was no eligible male respondent in the household, or they could not be reached after 15 calls. Another 1,182 numbers appeared to be household numbers, but we were not able to identify an eligible male respondent in the household or to rule out the possibility that there was one. Accordingly, these numbers are presumed to be eligible for the purposes of calculating response rates. For the remaining 3,027 numbers, we confirmed that an eligible male respondent was present in the household and we attempted to interview him. In 2,075 cases he answered the question on sex with other males negatively and the interview ended. In 666 cases he could not be interviewed because he refused or because of language or other contact problems. In 286 cases he was identified as eligible and began the longer interview and in 276 cases this interview was completed. In ten cases the respondent had to stop before the end of the interview and he could not be recontacted to complete it.

It it difficult to define response rate in this type of multistage screening survey. We calculated it as the number of completes divided by the total number attempted minus the ineligible number. Completes include all interviews where the eligible male respondent answered all questions that applied to him. Therefore, respondents who were asked the eligibility question and who said they were not gay or bisexual and respondents who said they were and completed the longer interview are counted as completes. Ineligible numbers were defined as confirmed nonworking numbers, businesses and other

nonhouseholds, households with no eligible respondents, and numbers that could not be reached after a minimum of 15 calls. By this definition, the response rate for this survey is 56 percent.

Although statewide surveys on AIDS-related issues have generally achieved higher response rates (Capell and Schiller, 1989), the screening response rate in the current study compares favorably with rates for similar surveys in the Los Angeles area. For example, a survey about AIDS-related risk behaviors conducted with Los Angeles County men in 1988 obtained a 45 percent response rate (Freeman et al., 1989). And a countywide telephone survey conducted by RAND in 1988 that elicited public opinion about quality of life in Los Angeles obtained a 54 percent response rate (Berry, 1988).

In general, telephone survey completion rates in Los Angeles tend to be somewhat lower than the national average. According to a national sampling firm, Los Angeles is the third least cooperative area of the country for interviewing (after Miami and Ft. Lauderdale) and has 61 percent of its residential numbers unlisted—the second highest rate in the nation and twice the national average. We asked respondents whether we had reached them on a listed or unlisted number. Because only 36 percent reported being reached on an unlisted number, we assume that our response rate w lower among persons with unlisted telephones.

As we evaluate the potential for bias from selective participation, the response rate to the screening question gives us only part of the story. Another important source of selection bias is respondents who answer the screening question negatively even though their behavior actually makes them eligible. Unfortunately, there is no reliable way to estimate how many respondents may have screened themselves out of our survey sample. Twelve percent of all the adult males we screened acknowledged having had sex with another male within the past ten years. Since the true prevalence of this behavior in the geographic areas sampled is not known, we cannot say how much underreporting may have occurred. Certainly, the percentage reporting this stigmatized behavior in our survey is slightly to considerably higher than that reported in other recent surveys, all of which share the underreporting problem.[3]

[3]For example, Freeman et al. (1989) interviewed 1,610 men between the ages of 18 and 60 in Los Angeles County, overweighting 18 census tracts with high AIDS prevalence rates by a ratio of 14 to 1. Nearly 11 percent (172) of their respondents reported having sex with other men. Capell and Schiller (1989) found that 4.5 percent of Californian adult males in a stratum of "high-risk" zip codes reported having sex with other men. Risk was defined broadly, however, to include high-risk heterosexual activity. The investigators estimate that if their objective had simply been to screen for gay and bisexual men by focusing on gay census tracts in cities like San Francisco, the prevalence might have been about 10 percent.

COMBINED ANALYSIS SAMPLE

In addition to the 276 men sampled from zip codes with substantial AIDS caseloads, we identified 24 eligible men as part of a general population screening survey carried out in Los Angeles County at the same time. This survey was conducted with 1,305 adult residents of the county who were sampled using random digit dial procedures.[4] In the survey interview, which concerned knowledge, attitudes, beliefs, and behavior related to AIDS, we asked male respondents the same question that we used to screen for eligibility in this survey of gay and bisexual men. Males who reported having had sex with another male in the last ten years were then asked the same questions about sexual behavior as were eligible men in the gay and bisexual sample.

We augmented the sample of 276 gay and bisexual men recruited from our selected zip codes by including these 24 additional respondents, yielding a combined analysis sample of 300 respondents. This provided a somewhat larger and geographically more diverse sample for analysis.

This sample contains a broad cross-section of gay and bisexual men. Neither this combined sample nor its constituent parts should be regarded as representative of all gay and bisexual men in Los Angeles County, however. By design, the sample overrepresents men who reside in communities with high concentrations of gay and bisexual men.[5] The probability-based sampling approach employed within those communities should yield a sample that, absent selection bias, is likely to be representative of the gay and bisexual male population in the sampled communities, although not necessarily of gay and bisexual men in the county as a whole. Men who live in the communities with the highest cumulative number of AIDS cases may be more identified with the gay community and its institutions, may know more people with AIDS, and may differ (for these or other reasons) from other gay and bisexual men in their attitudes and behavior as well as in their familiarity with AIDS-related facts and issues.

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[4]These procedures are described in detail in Kanouse et al. (1991). The 24 additional eligible respondents, all of whom acknowledged having had sex with another male during the past ten years, included 21 men (out of 942 who completed interviews) from a countywide RDD sample, two men (out of 80 who completed interviews) from a sample in heavily Hispanic zip codes, and one man (out of 283 who completed interviews) from a sample in zip codes with a high concentration of blacks. Of the 21 men from the countywide RDD sample, six (or 29 percent) resided in one of the 24 zip codes from which the other 276 gay and bisexual men in our study were drawn.

[5]The reason for this overrepresentation is largely practical, and not that we consider the men who live in concentrated gay communities more important to study than other gay and bisexual men. The cost per completed interview of screening for eligible respondents is substantially lower when respondents are drawn from areas where eligible men are concentrated.

Selective participation undoubtedly operates to make the sample less than fully representative within these communities as well. Besides the selective participation effects that occur in nearly all surveys, additional selection effects may occur that are specific to the mode of administration (telephone interview), topics covered (sexual behavior, HIV infection), and the population surveyed (gay and bisexual men). For example, men who are openly gay or bisexual may be more likely than "closeted" homosexual men to acknowledge, in response to a screening question, that they have engaged in sexual behavior that would make them eligible for the study (Martin and Dean, 1990). The individual's private sexual identity may also be important. Those who have had sex with other men but consider themselves heterosexual rather than gay or bisexual may be less likely to identify themselves as eligible in response to the screening question; such men may constitute a substantial proportion of all men who could be classified as bisexual on the basis of their behavior (Kanouse et al., 1989).

For another example, men highly concerned about HIV infection and AIDS may be more inclined to participate than those less concerned. Men with advanced HIV disease who are too sick to be interviewed are probably underrepresented. Unfortunately, relatively little is known about the magnitude (or even the direction) of some of these selection effects, so it is difficult to know how results obtained for this sample might differ from those that would be obtained if the entire population had been surveyed.

Even if one were able to obtain a representative sample that is free of selection bias, that is no guarantee that respondents will be both willing and able to provide accurate information on their sexual and other risk behaviors. Surveys addressing human sexual behavior face formidable difficulties in collecting highly sensitive information.[6] Clearly, these problems and limitations need to be kept in mind in interpreting study results.

DESCRIPTION OF THE SURVEY SAMPLE

Table 2 describes the demographic characteristics of the sample. As the table shows, more than half the respondents are between the ages of 25 and 44, and relatively few are over 65 or under 25. More than three-quarters of the sample are white, although other major racial/ethnic groups in Los Angeles County are also represented. A majority of the respondents are college graduates, about a third have

[6]For discussions of some of these difficulties, see Catania et al. (1990a, 1990b); Green and Wiener (1980); and Miller et al. (1990).

some college, and only about 15 percent have only a high school education or less. Nearly all of the respondents are employed; over half have personal incomes in the $20,000–$50,000 range; about one-quarter have personal incomes of over $50,000. Only one respondent in 20 had arrived in Los Angeles within the year preceding the survey. About a third of respondents have been here for less than five years, and another third have lived in Los Angeles for 20 years or more.

The demographic profile of this sample of gay and bisexual men is similar to that for the 1986 Los Angeles County study, except that our sample contains more ethnic minorities (22 percent nonwhite compared with about 12 percent), and especially more Hispanics (13 percent compared with 5 percent). Our sample also has a larger proportion of respondents with a high school education or less (16 percent compared with 11 percent). The greater diversity in ethnicity and education achieved in the present study may be in part a result of the broader geographical area covered (24 zip codes compared with 40 census tracts in the 1986 study), as well as augmentation of the present sample with eligible respondents from the countywide survey.

Table 2

PERCENTAGE DISTRIBUTION OF RESPONDENTS' DEMOGRAPHIC CHARACTERISTICS

Characteristic	Distribution	Characteristic	Distribution
Age		Employment	
18–24	8	Employed full or part-time	88
25–34	40	Unemployed, laid off	3
35–44	30	Retired, disabled	7
45–64	19	Other not working	2
65 and older	3		
Race/ethnicity		Personal income	
White	78	Less than $10,000	5
Black	5	$10,000–$19,999	16
Hispanic	13	$20,000–$34,999	29
Asian	2	$35,000–$49,999	26
Mixed/other	2	$50,000–$99,999	19
		$100,000 or more	5
Years lived in Los Angeles		Education	
Less than 1 year	5	No high school diploma	2
1–4 years	24	High school diploma	14
5–9 years	13	Some college	33
10–14 years	13	College graduate	31
15–19 years	14	Some graduate training	20
20 years or more	31		

Nearly 24 percent of the sample said that they had been married, with 6 percent reporting that they were currently married to a woman and 4 percent that they were currently married to another man; 32 percent indicated that they were in a primary relationship.[7] Including those men who were married, 21 percent of the sample indicated that they had had sex with a female during the past year.

These relationship characteristics differ from those of the 1986 survey sample, in which 51 percent of respondents reported that they were currently in a relationship with a man and only 3 percent reported a current relationship with a woman. There are several possible reasons for the lower proportion of men in primary relationships in 1989, including differences in the composition of the sample in the two surveys, attrition from deaths of primary partners during the three-year interval, and changes in willingness to commit to a primary partnership. Data from this survey do not allow us to evaluate the relative importance of these reasons.

[7]Eight percent of respondents indicated they had been in a primary relationship with another man for ten or more years; 2 percent said they had been in such a relationship for 20 or more years.

III. RESULTS

SEXUAL RISK BEHAVIOR

Background

The clustering of early AIDS cases among young homosexual men (CDC, 1982) established AIDS as a sexually transmitted disease and also established the need to determine as precisely as possible the types of sexual behavior that place individuals at increased risk of infection. Since then, natural history studies in Los Angeles, Baltimore, Pittsburgh, Chicago, and San Francisco/Berkeley and other epidemiologic surveys in major metropolitan areas (such as New York City and Boston) have established the role of unprotected receptive anal intercourse as a key risk behavior in the transmission of the AIDS virus, followed by lower but not insubstantial risk associated with insertive anal intercourse and receptive oral sex.[1]

The potential for infection with HIV is also related to the number of sexual partners an individual has, each additional partner increasing the probability of encountering someone who has already been infected with the AIDS virus (Kaplan, 1990) or with other sexually transmitted agents that may then serve to enhance HIV transmission by providing portals of entry through sores or lesions. Various other risk behaviors have been explored and either abandoned as unimportant (e.g., inhalant nitrite use) or found to be substantially intercorrelated with the riskiest sexual behaviors, making assessment of their independent risk contribution difficult (National Research Council, 1989). Now that the major behavioral risk factors for HIV transmission have been identified, tracking the extent to which gay and bisexual men continue to engage in risky practices provides a way to gauge the future course of the AIDS epidemic and our progress in containing it.

In this section, we aim to characterize the sexual behaviors and patterns of relationships that occur in Los Angeles County among men who have had sex with other men. Although several studies have measured sexual behavior among gay/bisexual men in other major metropolitan areas, we have remarkably little information about the prevalence of risk behavior in Los Angeles, despite the enormous

[1]Winkelstein et al. (1987); Chmiel et al. (1987); Kingsley et al. (1987); Polk et al. (1987); Goedert et al. (1984); Darrow et al. (1987); Moss et al. (1987); Mayer et al. (1986); Institute of Medicine (1988).

disease burden under the county's jurisdiction. Some of this information could prove useful in designing more effective programs and media campaigns and targeting groups that engage in the riskier practices.

Previous Studies of Risk Behavior Among Gay and Bisexual Men

Studies conducted early in the AIDS epidemic described the prevalence of risk behaviors among homosexual men who had AIDS. Such studies reported surprisingly large numbers of sexual partners. Marmor and colleagues (1982), for example, reported an average of ten or more partners in a typical month among AIDS patients; Jaffe et al. (1983) found an average of 61 different partners in the year before symptom onset.

More recent studies have found substantial changes in the number of reported sexual partners and a reduction in unprotected anal intercourse. In San Francisco, extensive community-based education/prevention programs contributed to reductions of as much as 60 percent in reported high-risk sexual practices (Winkelstein et al., 1987), a 60 percent decline in the use of sex clubs and bath houses (McKusick et al., 1985b), and a heavily publicized leveling of HIV seroconversion in the city's gay/bisexual community (Winkelstein et al., 1988). Martin (1987) reported substantial declines in the median numbers of sexual partners among a sample of homosexual men in New York City from the time just before they became aware of AIDS (typically in 1981) to 1984–1985. For example, the median number of partners seen in "domestic" locations (private homes) dropped from five to three, or 40 percent; the declines totaled 78 percent (from 36 to eight partners) across extradomestic locations.[2] At the same time, the fleeting nature of behavioral changes was dramatically apparent at the Sixth International Conference on AIDS, where study after study reported relapses in risk behavior following earlier advances reported in previous cohorts of gay and bisexual men (Stall et al., 1990; Pollack et al., 1990; St. Lawrence et al., 1990; Adib et al., 1990).

Few studies provide prevalence estimates of specific practices or information on number of sexual partners in a manner that permits comparative analysis. Most behavioral studies focus on the factors associated with engaging in different high-risk behaviors or on the results (e.g., HIV seropositivity) of doing so (Siegel et al., 1989b; Winkelstein et al., 1987; Martin et al., 1989), rather than explicitly

[2]Medians were reported only for those making use of a location for sexual purposes at least once during a one-year time period. The medians are therefore higher than they would be if inactive respondents were included.

characterizing patterns of behavior. Studies that do provide data on the prevalence of behavior in a well-defined community vary markedly in the questions asked, the recall period used, and methods used to derive prevalence estimates. Where possible, we have provided comparative information to facilitate placing results for Los Angeles County in context with surveys of gay/bisexual men in other major metropolitan areas.

Previous Studies of Sexual Behavior in Los Angeles County

In 1986, Communication Technologies, Inc., conducted a random digit dial (RDD) survey for the Los Angeles County Department of Health Services that was comparable to surveys conducted by the same research organization for San Francisco. Although this survey sampled from a smaller geographic area than the current study, it was demographically similar in that respondents were highly educated, relatively long-term residents of the county (36 percent had resided in Los Angeles for 15 or more years), and affluent, with nearly two-thirds making $25,000 per year or more.

The sexual behavior findings from the earlier study are summarized briefly below (Communication Technologies, 1986b):

- "Unsafe" anal and oral sex occurred among about one-third of the gay male sexual encounters.[3]
- "Safe" oral sex was reported as more frequent than "unsafe" oral sex.
- "Unsafe" anal sex was reported as more frequent than "safe" anal sex.
- On average, 10.2 sexual encounters per month were reported within primary relationships.
- Half the respondents reported being either monogamous or not sexually active.
- Seventeen percent reported "unsafe" sex outside a primary relationship (in the past four weeks).
- Nonmonogamous men reported an average of 1.8 partners in a four-week period and about 5.0 sexual encounters.

[3]In the Communication Technologies report, "safe" sex referred to no exchange of bodily fluids.

How We Measured Sexual Behavior

Consistent with our belief in the importance of examining sexual behavior in context, we asked respondents detailed questions about specific sexual practices within the context of different types of relationships. First, we asked each man about the presence of a marital or other primary partner and inquired about the gender of that partner. For those men who said they were involved in a primary relationship, we then asked whether they (or their partners) had sex outside the relationship. Additionally, we asked these men a global question about the degree to which they judged their relationship to be sexually exclusive on each side (neither of us has sex with other people, only he/she has sex with other people, only I have sex with other people, we both have sex with other people). Subsequent questions inquired about specific sexual practices engaged in with the primary partner (if there was one), the principal outside partner (if there was one), or all partners. Thus, men not in a primary relationship were asked a set of questions that was identical to the set used for men who were married or in other primary relationships,[4] except that the questions referred to "all of your partners" instead of "your primary partner." This approach allowed us to develop comparable behavioral estimates across a variety of relationships.

Four-week recall periods were used for all sexual behavior items. All respondents, regardless of reported partner status, were asked about the number of sexual partners they had had in the previous four weeks and whether this included any prostitutes or hustlers. These encounters, when they were reported, were added to other sexual behavior estimates. Respondents were also asked to classify their sexual relations in the past 12 months (men only, men more than women, women more than men, or women only).

We selected a four-week recall period to provide a reasonable chance that respondents could accurately recall their behavior during the reporting period. Other studies have used four weeks, two months, six months, one year, and lifetime recall periods, or have begun with one- or two-month recall periods and generated estimates of behavior for longer periods of time by assuming that the behavior reported during recent short periods occurs at a constant rate over much longer time intervals. This assumption may not be correct. Individual patterns of sexual behavior may not be stable over time even in the absence of the type of secular change that much of the literature suggests has been occurring among gay and bisexual men.[5]

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[4]Those in which no outside partners were reported.

[5]As previously described, substantial reductions as well as relapses in the practice of risky sexual behavior have been reported.

For the most part, prevalence estimates provided in this report rely on the four-week recall period as a cross-sectional view of behavior in Los Angeles County. Behavior is averaged across respondents to give as representative a view as possible of the total frequency of various types of sexual activity during a well-defined time period. For the individual respondent, however, the four-week period of reported activity may sometimes be atypical. This does not bias the cross-sectional view of behavior in the aggregate, because the atypically active periods captured for some respondents will tend to be balanced by the atypically inactive periods captured for other respondents.

Instability of individual patterns does pose problems, however, when we try to estimate the proportion of individuals who behave in a particular way over longer periods of time, because some of these individuals may (for want of opportunity, perhaps) not behave that way during a given four-week period. To reduce the tendency toward underestimation associated with the use of a four-week recall period, we added a six-month follow-up question for some of the riskiest behaviors (unprotected anal intercourse with or without ejaculation and oral sex without a condom and with ejaculation).

We estimated the prevalence of several different sexual practices:

- Anal intercourse with a condom;
- Anal intercourse without a condom with ejaculation;
- Anal intercourse without a condom without ejaculation;
- Oral sex with a condom;
- Oral sex without a condom with ejaculation;
- Oral sex without a condom without ejaculation;
- Vaginal sex without a condom;
- Use of alcohol or drugs before or during sex.

In reporting on the prevalence of each sexual behavior, we present the mean number of acts over the previous four weeks for all respondents, regardless of whether they report having had a sexual partner. This provides a measure of the level of behavior in the entire sample, rather than among only those who report being sexually active in the past month. Because the mean is reduced by the inactivity of some respondents, it understates, often by a large amount, the activity of those who engage in the behavior at all. For this reason, we also provide information on the percentages of men engaging in each behavior.

Because we asked respondents to report on their specific sexual practices during the previous four weeks, our definition of "sexually active" is based on the same reporting period. As noted, however, sexual behavior for some people may tend to be episodic, with a four-week period of inactivity followed by periods of greater activity.

PARTNER RELATIONSHIPS

Six percent of the sample reported being currently married to women, and 4 percent said they were married to men (Fig. 2). Fourteen percent had previously been married (were now divorced, separated, or widowed), whereas over three-quarters reported never having been married. Of those not married, 98 (36 percent) reported being currently involved in a primary relationship (i.e., with someone whom they are intimately involved with and feel particularly close to); 18 of these primary relationships were with women. Whether the partner was a man or woman made no difference in the duration of the primary relationship (male partner, 5.1 average years compared with female partner, 4.9 average years). The remainder were not in any kind of primary relationship (64 percent of unmarried men or 57 percent of the total sample).

Among men who reported being in a primary relationship, over a quarter reported that both partners had sex outside the relationship. Nearly 40 percent of the primary relationships were not exclusive. The remaining 60 percent reported both partners as being monogamous (Fig. 3).

Regardless of the relationships described, we asked all 261 respondents who reported having been sexually active in the past 12 months to tell us the number of sexual partners they had had in the previous four weeks (Table 3).[6] Nearly one-quarter (22 percent) had not had any partners in that period. Over half (55 percent) reported only one sexual partner. Roughly another quarter (23 percent) reported two or more partners. Among those men reporting one or more partners, only 2 percent reported partners who were prostitutes or hustlers.[7]

All respondents were asked to describe the patterns of their sexual preference over the past 12 months; 292 respondents did so.[8] Three-quarters had sexual relationships exclusively with men, whereas 11 percent had exclusively female sexual encounters. The remaining 13 percent had sexual encounters with both men and women, in varying proportions (Fig. 4).

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[6]Among those sexually active in the past year (excludes 13 percent of the sample).

[7]These encounters represented a total of nine sex encounters for four men in four weeks.

[8]Three respondents did not know how to categorize their sexual relations over the past year, and another five refused to answer the question.

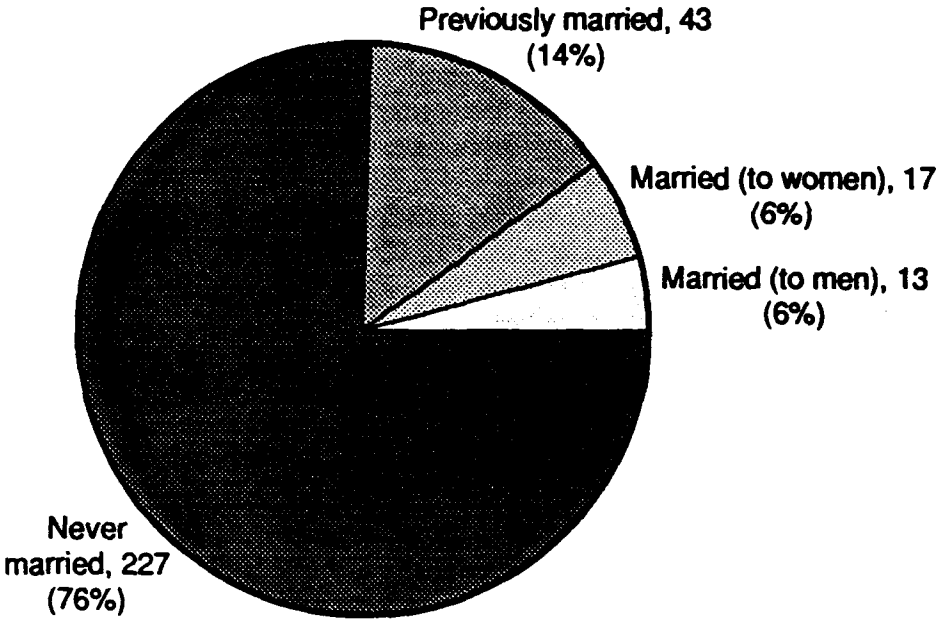

Fig. 2—Marital status of gay and bisexual men in Los Angeles County (n = 300)

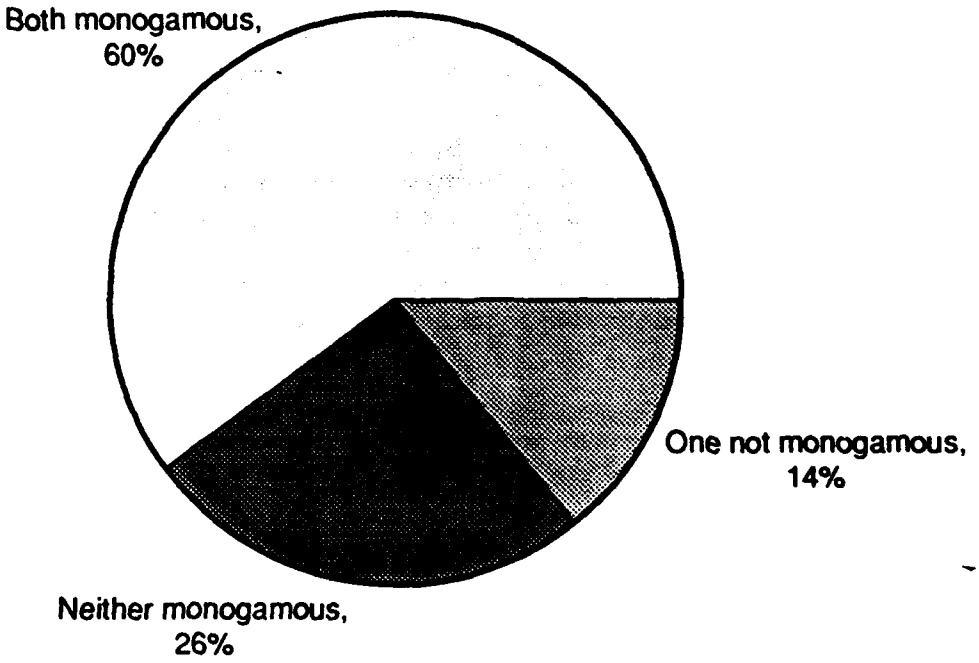

Fig. 3—Degree of exclusivity in primary relationships (n = 98)

Table 3

PERCENTAGE DISTRIBUTION OF RESPONDENTS' SEXUAL PARTNERS DURING THE PAST FOUR WEEKS AMONG THOSE SEXUALLY ACTIVE IN THE PAST YEAR

No. of Partners	Distribution
None	22.2
One	54.8
Two	14.6
Three or more	8.4

NOTE: Asked of 261 respondents; excludes 13 percent of sample.

Patterns of Sexual Behavior in Los Angeles County

We examined both the percentage of men engaging in each sexual behavior and the mean frequency with which they practiced it. Eighteen percent of the sample had engaged in unprotected anal intercourse in the previous four weeks, whereas over half (52 percent) had unprotected oral-genital sex (Fig. 5).[9] The remaining 11 percent reported vaginal intercourse without a condom.

Nearly a quarter engaged in "protected" anal intercourse, i.e., intercourse using condoms, with about one in ten men using condoms during oral-genital sex. No data on vaginal intercourse with condoms were collected.

These sexual behaviors are not exclusive; the same men can practice both protected and unprotected behaviors during a given four-week period. We therefore examined the mean frequency of these practices in the context of different relationships to determine under what circumstances men place themselves at increased risk of HIV infection. We examined the following relationships by gender of the partner: (1) married, (2) in other exclusive primary relationship, (3) in other nonexclusive primary relationship, and (4) neither married nor in another primary relationship.

Most unprotected practices, whether anal or oral, occur in the context of established primary relationships (Tables 4 and 5). In part, this is because men who are in some type of primary relationship, whether exclusive or not, are more sexually active.[10]

[9]The base for these percentages is all respondents who reported being sexually active in the past year, including those who had not had a sexual partner in the past four weeks.

[10]Men who are in a primary relationship have an available sexual partner, which increases the number of potential encounters they may have compared with men who are not in such a relationship. The higher frequency of behaviors among men in primary relationships may also derive in part from the manner in which we defined a "primary" partner as "someone with whom you are intimately involved and feel particularly close to." For some respondents, this may have meant "someone you have sex with regularly."

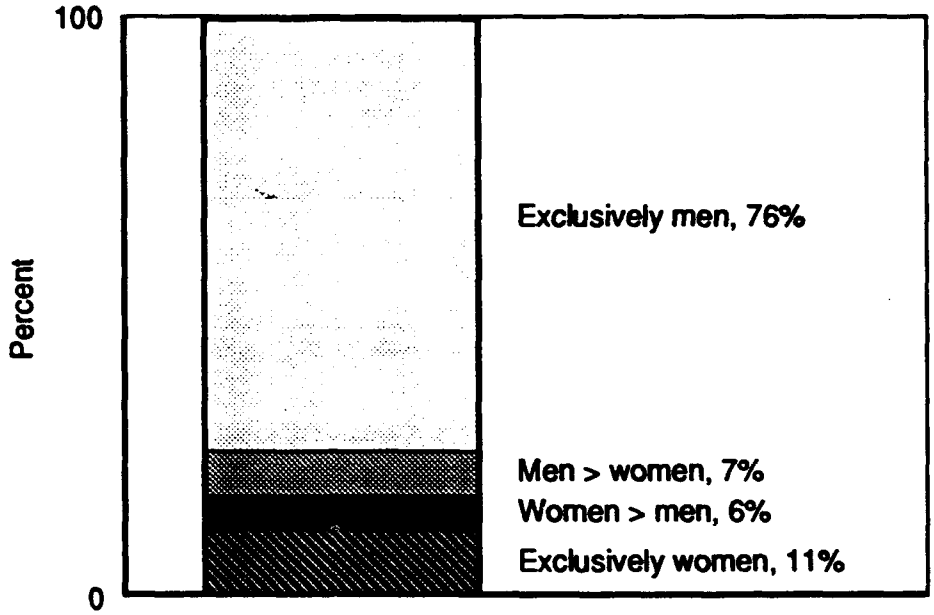

Fig. 4—Gender of sexual partners among those sexually active in the past year (n = 292)

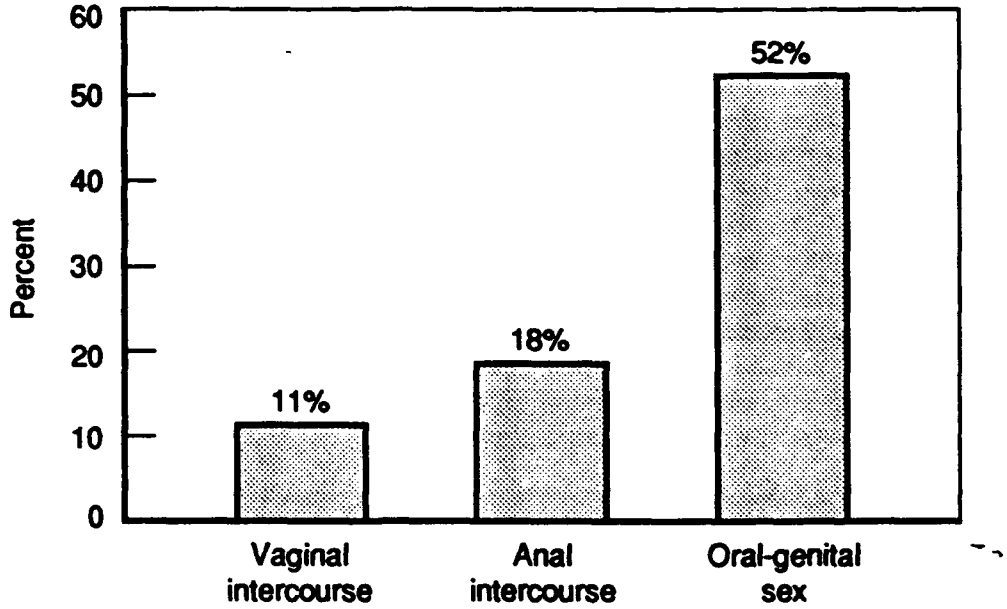

Fig. 5—Percentage of respondents engaging in unprotected sexual behaviors among those sexually active in the past year

Table 4

MEAN FREQUENCY OF ANAL INTERCOURSE IN THE PAST FOUR WEEKS AMONG THOSE SEXUALLY ACTIVE IN THE PAST YEAR

Type of Relationship	No. of Respondents	With Condom	Without Condom: With Ejaculation	Without Condom: Without Ejaculation
With Men				
Married	13	3.15	1.46	1.69
In other primary relationship				
Exclusive	49	2.35	1.84	0.40
Not exclusive	28	2.18	2.93	0.39
Neither married nor in primary relationship	134	0.43	0.06	0.04
With Women				
Married	17	0.41	0.24	0.35
In other primary relationship				
Exclusive	7	0.00	0.00	0.00
Not exclusive	10	0.70	0.20	0.50

Table 5

MEAN FREQUENCY OF ORAL-GENITAL SEX IN THE PAST FOUR WEEKS AMONG THOSE SEXUALLY ACTIVE IN THE PAST YEAR

Type of Relationship	No. of Respondents	With Condom	Without Condom: With Ejaculation	Without Condom: Without Ejaculation
With Men				
Married	13	2.15	4.62	6.77
In other primary relationship				
Exclusive	50	0.74	2.14	4.04
Not exclusive	28	0.46	1.43	3.48
Neither married nor in primary relationship	134	0.43	0.17	1.11
With Women				
Married	17	0.00	0.88	1.47
In other primary relationship				
Exclusive	7	0.00	2.86	2.29
Not exclusive	10	0.70	1.20	2.00

For the most part, men report using condoms more frequently than not for anal intercourse, with the possible exception of men in nonexclusive primary relationships. Comparison of mean frequencies with those reported for San Francisco (Communication Technologies, 1990) suggests that more unprotected anal intercourse occurs among men in Los Angeles.[11]

The results show a much higher frequency of unprotected oral-genital sex across all types of primary relationships (Table 5). Although the level of risk associated with this behavior is undoubtedly not as great as the risk posed by unprotected anal intercourse, it is by no means considered a "safe" behavior judging by current evidence. Yet most of the men in this Los Angeles County sample are engaging in this risky behavior, suggesting high rates of exposure among men who have sex with other men to the (still unquantified) risk of HIV transmission through oral-genital contact.

Although only a small subgroup of men had sexual relations with women, a similar pattern exists for primary relationships with women as for those with men. More anal intercourse is performed using condoms than not.[12] The reverse is true of oral-genital sex. It is not clear, however, to what extent this represents a risk to the women involved, since the history of their male partners' sexual activities with men was not obtained from this small group. Married men and men in primary relationships with women, exclusive or not, reported an average of over four acts of unprotected vaginal intercourse in the previous four weeks (Table 6).

Table 6

MEAN FREQUENCY OF VAGINAL SEX IN THE PAST FOUR WEEKS AMONG THOSE SEXUALLY ACTIVE IN THE PAST YEAR

Type of Relationship	No. of Respondents	Mean Frequency (Without Condom)
Married to a woman	17	4.35
In other primary relationship		
Exclusive	7	4.43
Not exclusive	10	4.10

[11]The mean frequency of unprotected anal intercourse is 1.8 and 2.9 in exclusive and nonexclusive relationships, respectively, in Los Angeles, compared with 1.0 acts for all primary relationships in San Francisco.

[12]Although few men in the sample were currently married to women (n = 17), their mean frequency of anal intercourse with and without condoms was similar to that of men who were neither married nor in other primary relationships.

We also measured the mean frequency with which men reported drinking alcohol or using drugs in conjunction with sexual activity. Men who reported being married to other men had the highest frequency (almost four times per month), followed by men in nonexclusive primary relationships (over two times per month). Most men reported at least one occasion per month in which alcohol or drugs were used before or during sex (Table 7).

Variables Associated with Practicing Risky Sex

We used multiple logistic regression to examine the variables related to engaging in any unprotected anal or oral sex, with or without ejaculation.[13] We included age, education, personal income, race, marital status,[14] being in a primary relationship with a man, HIV serological

Table 7

MEAN FREQUENCY OF ALCOHOL OR DRUG USE BEFORE OR DURING SEX IN THE PAST FOUR WEEKS AMONG THOSE SEXUALLY ACTIVE IN THE PAST YEAR

Type of Relationship	No. of Respondents	Mean Frequency
	With Men	
Married	13	3.92
In other primary relationship		
Exclusive	50	1.24
Not exclusive	28	2.18
Neither married nor in primary relationship	134	1.08
	With Women	
Married	17	1.24
In other primary relationship		
Exclusive	7	1.86
Not exclusive	10	1.30

[13]To capture information from all respondents who had recently engaged in these high-risk behaviors, we included individuals who said that they had engaged in one of these behaviors in the past six months, even if they had not done so in the past four weeks (n = 61 for unprotected anal sex and n = 131 for unprotected oral sex). Data from a total of 221 respondents were included in the regressions.

[14]Specifically, we examined the relationship between being married to a woman and engaging in unprotected anal or oral sex.

status,[15] number of years in Los Angeles, the number of people known by the respondents to have AIDS,[16] and knowledge of casual and non-casual modes of HIV transmission (Table A.1).

Sociodemographic and Other Predictors of Unprotected Sex

We examined the extent to which age, education, income, race, and tenure in Los Angeles predicted the occurrence of unprotected anal or oral sex among gay/bisexual men in Los Angeles County.

In terms of age, we hoped to provide insights into whether Los Angeles possesses a young cohort of men who are engaging in unprotected anal intercourse at a significantly higher rate than men in other age groups. If anything, we found the reverse to be true. We categorized age into three groups: younger than 30 years old, 30 to 44 years old, and 45 years old or older. In contrast to men ages 30 to 44, men younger than 30 and those 45 or older were generally less likely to engage in unprotected anal intercourse, although this relationship was not statistically significant ($p = 0.08$ for both groups). The effects of age were estimated after controlling for other demographic variables and for relationship status. Thus, the tendency of men age 30 to 44 to engage in unprotected anal intercourse was not merely a reflection of their greater likelihood of being in an exclusive primary relationship. Age did not discriminate among those who engaged in unprotected oral sex.

Respondents with lower personal incomes were more likely to engage in both unprotected anal and unprotected oral sex. Neither education nor race/ethnicity was related to these risk behaviors when other factors were controlled. The greater propensity for those with lower incomes to engage in these potentially risky activities suggests possible differences by income in attitudes toward sexual risk-taking (e.g., greater fatalism).[17] Such attitudes were not measured in the survey,

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[15]HIV serological status was studied across three categories: positive for HIV antibodies, negative for HIV antibodies or HIV status unknown (by virtue of having been tested and not receiving results or from not having been tested).

[16]The distribution for the number of people known who had AIDS was highly skewed; a few respondents knew from 100 to as many as 700 people with AIDS. We truncated the highest value at 50 people with AIDS and then employed a square root transformation on the values before entering this variable in the regression.

[17]A similar negative effect of income has been found for smoking. People with lower incomes are more likely to be smokers, but among people who do smoke, cigarette consumption is somewhat higher on average among those with higher incomes (Lewit and Coate, 1982; Wasserman et al., 1991). Both these effects occur independently of education, which itself has a negative relationship to smoking.

however, so it is difficult with these data to pinpoint the explanation. The differences in risk behavior by income do suggest a greater need for primary prevention among gay men with lower incomes. Years in Los Angeles did not predict the likelihood of engaging in unprotected anal or oral sex.

Effects of Type of Relationship on Risky Practices

We contrasted men who were married to women and men in exclusive male primary relationships against all other types of relationships.[18] We found that men who reported being in exclusive primary relationships were significantly more likely to engage in unprotected anal intercourse and unprotected oral sex than men in any other type of relationship. Inasmuch as the "risk" of these behaviors is essentially nil if both partners test seronegative and remain sexually exclusive, this finding is not surprising.

AIDS-Related Predictors of Unprotected Sexual Behavior

We explored the relationship of AIDS-related knowledge (of both casual and noncasual modes of transmission), knowing people with AIDS, and the number of changes made in response to the epidemic to the occurrence of unprotected sex. None of these indicators significantly predicted who engaged in unprotected anal or oral sex.

Knowing one's HIV serostatus (positive or negative) was also not significantly related to the occurrence of unprotected anal or oral sex, although having been tested negative was marginally related to having unprotected anal intercourse after controlling for other demographic and relationship characteristics ($p = 0.085$).

Frequency of Condom Use

In addition to measuring the frequency of various specific acts with and without the protection of condoms, we asked all sexually active respondents how often they use condoms. Table 8 summarizes the responses. Just under a third of all respondents said that they use condoms all the time, and a little more than a quarter said they never use them. The remaining respondents use them some of the time.

To learn about respondents' condom use, we assigned successive integer values ranging from 1 to 6 to the response alternatives ("none

[18]Includes nonexclusive primary relationships, men married to other men (where exclusivity was not determined and therefore could not be explicitly controlled for), and men not in any kind of primary relationship.

Table 8

PERCENTAGE DISTRIBUTION OF RESPONDENTS' FREQUENCY OF CONDOM USE

Frequency	Percentage
All of the time	31
Most of the time	17
A good bit of the time	5
Some of the time	9
A little of the time	11
None of the time	28

NOTE: Asked of 285 sexually active respondents, excluding 14 who said that they do not have sex and one who said he does not know how often he uses a condom.

of the time,". . . "all of the time") to create a numerical index measuring frequency of condom use. We then used ordinary least squares (OLS) multiple regression analysis to examine the relationship between frequency of use as measured on this scale and a set of predictor variables, such as age, education, and knowledge about AIDS (see Table A.2).

Variables significantly associated with *more* frequent condom use include:

- Being under 30 years of age;
- Being 45 years of age or older; and
- The number of people the respondent personally knows who have AIDS.

Variables significantly associated with *less* frequent condom use include:

- Being in a sexually exclusive relationship; and
- Being married to a female.

The relationship of age to frequency of condom use is complex. Those least likely to use condoms are men between 30 and 44 years of age; this is the AIDS cohort that has borne the brunt of the epidemic in terms of loss.[19] Both older men and younger men are significantly

[19]Many of these men came of age after the "Stonewall riots" of June 1969, which are considered a psychological and cultural watershed for the gay community (Gorman, 1986, 1991). Accustomed to sexual behavior patterns that are now known to pose a risk of

more likely to report using condoms. That younger men are more likely to do so is somewhat surprising, in view of reports that younger men in other cities display higher levels of risky sexual behavior (Ekstrand and Coates, 1990; Hays et al., 1990; Kelly et al., 1990; Valdiserri et al., 1988).

Not surprisingly, respondents' perceptions of being vulnerable to HIV infection also appear to be an important predictor of condom use. Men who have personal experience with AIDS through people they know are more likely to take precautions to protect themselves and their partners, possibly because they have a greater sense of personal vulnerability. Those with little personal experience of AIDS, and those who consider themselves to be in "safe" relationships, are less likely to use condoms, possibly because they lack a strong sense of vulnerability.

Several other variables that one might expect would be related to frequency of condom use did not have significant independent predictive value in the model, including education, knowledge about AIDS, and HIV serological status. The absence of a relationship between knowledge of the major modes of transmission and frequency of condom use may reflect the fact that there is not much variation in knowledge. When virtually everyone knows how AIDS is transmitted and how it can be avoided, knowledge of these basic facts cannot be the major determinant of risk-taking and risk-prevention.

USE OF ALCOHOL AND DRUGS

Although the primary focus of the risk behavior section of our survey was on sexual behavior, we inquired about the use of alcohol and drugs, for two reasons. First, the use of intravenous drugs poses a significant risk of HIV transmission, independent of any risk associated with sexual behavior. About 16 percent of reported AIDS cases among gay or bisexual men in Los Angeles County also involve a history of intravenous drug use, so that the historical incidence of intravenous drug use in this population is not trivial. Second, there is evidence that the use of alcohol or drugs in conjunction with sexual activity is associated with unsafe sex (Leigh, 1990; Minkoff et al., 1989; Siegel et al., 1989b; Stall et al., 1986; Valdiserri et al., 1988). If such an association were also found among gay and bisexual men in Los Angeles County, that could be useful information for designing primary prevention programs for this population.

HIV transmission, some may have responded to the devastation of the epidemic by becoming fatalistic about those risks.

Estimating the prevalence of illegal drug use based solely on results of a telephone survey would be foolhardy, in our view. All of the caveats stated above regarding the reporting of sexual behavior also apply to drug use. In addition, it is likely that many of those most actively engaged in drug use are difficult or impossible to reach by telephone (homeless people or people who are marginally housed, for example).

Obtaining detailed and accurate information on drug use can be quite difficult in any survey, but especially in a telephone survey. Extensive drug use can cause cognitive impairment that affects both comprehension and memory. Patterns of drug use are quite heterogeneous, and obtaining detailed information on drug-taking behavior and prevention practices bearing on HIV transmission risks may require lengthy questioning, which is less feasible on the phone than in a personal interview.

In this survey, we did not seek detailed information about specific drug-taking practices, partly for the reasons sketched above and partly because drug use has not played as central a role in the epidemiology of HIV transmission in Los Angeles County as it has in some other urban areas, particularly on the East Coast.

Use of Alcohol

Our goal in measuring the prevalence of alcohol and drug use in this population was quite limited. We sought broad indicators of the extent of use without seeking to probe patterns of use in sufficient detail to estimate, for example, what proportion of the population may have drinking-related problems. Nor did we seek to estimate total consumption, but instead chose to focus on frequency of use, for which we judged that reporting may be more accurate. Data from our county-wide survey provide a benchmark for comparing frequency of use with that of the Los Angeles County population.[20]

Gay and bisexual men are more likely to report using alcohol than the general population; only 2 percent have never drunk alcohol (compared with 13 percent of the general adult population) and only 25 percent report that they have not used alcohol in the past four weeks (compared with 37 percent of the general population). Most use alcohol with only moderate frequency, however. The proportion reporting frequent use (daily or almost daily) is 11 percent (see Table 9), compared with 6 percent in the general population.

[20]Because finer-grained comparisons are not necessary for our purposes, we have not controlled for age, gender, or socioeconomic factors that may account for some of the difference between gay and bisexual men and the population as a whole.

Table 9

PERCENTAGE DISTRIBUTION OF RESPONDENTS' ALCOHOL USE IN THE PAST FOUR WEEKS

Frequency	Percentage
Every day	5.0
Almost every day	6.0
3 to 4 days a week	10.0
1 to 2 days a week	25.7
Less than once a week	28.0
Not at all	25.3

NOTE: Asked of 293 respondents who said that they had drunk alcohol.

Of greater concern from the standpoint of the epidemiology of HIV transmission is the extent to which alcohol is used in conjunction with sexual activity, a pattern of use that may increase the likelihood of engaging in high-risk behaviors. All respondents who reported ever having used alcohol were asked to think of the times they had sex in the past 12 months and to indicate how often they drank alcohol before or during sex. Their responses are summarized in Table 10. About 15 percent of all respondents reported that they had drunk alcohol before or during sex at least "a good bit of the time," and another 41 percent acknowledged that this had occurred at least a little bit of the time.

These results suggest that alcohol use occurs in conjunction with sex often enough that it could affect the behavior of a large proportion of gay and bisexual men, assuming that it does indeed increase the likelihood of engaging in risky sexual behaviors. We will examine the evidence on this latter point below.

Nonmedical Use of Drugs

We also asked all respondents whether they had ever used drugs like marijuana, cocaine, amyl nitrate ("poppers"), amphetamines, tranquilizers, LSD, PCP, or heroin "for a recreational, nonmedical purpose." Seventy-four percent said that they had, a much higher proportion than the 31 percent reporting such use in Los Angeles County's general population. Those who reported a history of use were asked whether they had used any of these drugs in the last four weeks. Twenty-two

Table 10

PERCENTAGE DISTRIBUTION OF RESPONDENTS' ALCOHOL USE BEFORE OR DURING SEX IN THE PAST YEAR

Frequency	Percentage
All of the time	4.0
Most of the time	6.7
A good bit of the time	4.7
Some of the time	18.5
A little bit of the time	22.1
None of the time[a]	31.2
Have not had sex[b]	12.8

NOTE: Asked of 298 respondents; excludes two respondents who were asked an earlier version of the question.

[a]Includes seven respondents who have never drunk alcohol.

[b]Includes 14 respondents who volunteered that they had not had sex in the past year and 24 additional respondents who provided that information later in the interview.

percent of the sample[21] reported such use, as shown in Table 11; the comparable figure in Los Angeles County's general population was 6 percent. Marijuana was by far the most popular nonmedical drug, used by 19 percent of the sample; no other drug was used by more than 4 percent. Although 3 percent acknowledged recent use of cocaine, none of our respondents reported having used heroin or other opiates during the four-week period.

The survey also inquired about respondents' use of intravenous (IV) drugs or drugs taken by skin popping. Seven percent of the sample reported ever having taken drugs by injection, substantially fewer than the 12 percent who acknowledged a history of such use in the 1986 survey. Only three respondents (1 percent of the sample) reported having injected drugs within the past year.[22]

We used multiple logistic regression modeling techniques to examine the relationship between recent drug use and various demographic or

[21]Included in the base are respondents who have never used drugs (n = 78) as well as other nonusers in the past four weeks (n = 154) and recent users (n = 67) for a total of 299 respondents (there was one refusal).

[22]The drugs injected by these respondents were amphetamines (n = 2), cocaine (n = 1), and opiates (n = 1).

Table 11

PATTERNS OF RECENT DRUG USE AMONG DRUG USERS IN THE PAST FOUR WEEKS

Drugs Used Once or More	Percentage Using[a]	Percentage Using in Total Sample	Frequency of Use	
			Mean	S.D.
Any drug	100	22	—	—
Marijuana or hashish	85	19	11.2	18.0
Crack	3	< 1	1.0	0.0
Other forms of cocaine	8	3	4.0	5.0
Amyl or butyl nitrates (poppers, rush, or snaps)	18	4	2.8	1.6
Stimulants or uppers (amphetamines, speed, or crystal)	15	3	3.6	5.3
Hallucinogens (MDA, LSD [acid], PCP, mescaline, ecstasy, or mushrooms)	4	1	1.0	0.0
Tranquilizers, sedatives, pain killers, "downers"	13	3	3.1	2.0
Opiates (heroin or morphine)	0	0	0.0	0.0

[a]Sixty-seven respondents, or 22 percent of the sample, reported using one or more drugs for a recreational, nonmedical purpose in the past four weeks.

other background variables that might be associated with drug use. Age was the only variable with significant predictive value; respondents aged 45 or over were less likely to report having used drugs in the past four weeks (see Table A.3).

Taken at face value, these results suggest that in Los Angeles County there has been a substantial reduction in gay and bisexual men's use of injection drugs, a form of drug-taking that can lead to transmission of HIV through the sharing of contaminated injection equipment. Lack of comparable measures in the 1986 survey makes it difficult to estimate the extent to which gay and bisexual men may have reduced their nonmedical use of drugs taken by means other than injection, although we do not doubt that a reduction has occurred. Still, data from our countywide general population survey indicate that gay and bisexual men remain much more likely than others in the general population to use drugs nonmedically, by a factor of three or more. Thus, a substantial further reduction in drug use would be required to eliminate whatever extra risk may be attributable to the more intensive use of drugs by gay and bisexual men compared with use in the general population.

Table 12

PERCENTAGE DISTRIBUTION OF RESPONDENTS' DRUG USE BEFORE OR DURING SEX IN THE PAST YEAR

Frequency	Percentage
All of the time	1.7
Most of the time	2.3
A good bit of the time	2.3
Some of the time	7.4
A little bit of the time	15.8
None of the time[a]	57.7
Have not had sex[b]	12.8

NOTE: Asked of 298 respondents; excludes two respondents who were asked an earlier version of the question.

[a]Includes 78 respondents who have never used drugs nonmedically.

[b]Includes 14 respondents who volunteered that they had not had sex in the past year and 24 additional respondents who provided that information later in the interview.

Table 12 displays data on the reported frequency with which respondents combined sex with use of nonmedical drugs (other than alcohol) during the previous 12 months. The data, which are analogous to those shown in Table 10 for alcohol, show that use of drugs other than alcohol before or during sex is less common, but even so, 6 percent of respondents acknowledge such use "a good bit of the time" or more, and about three in ten reported such use at least occasionally during the preceding 12 months.

Use of Alcohol and Drugs and Risky Sexual Behavior

We undertook further analyses to assess whether the use of alcohol or drugs in connection with sexual activity increases the likelihood of engaging in risky sexual behavior. To test for this, we examined the predictive value of the measures described above in multivariate models of selected risk behaviors, to determine whether they were able to explain variation in the risk behavior not accounted for by other variables. We also examined the predictive value of sex-related alcohol/drug use reported for the most recent four weeks.

We found that the use of alcohol and drugs in connection with sex was generally unrelated to risk-taking behavior; what slight relationships there were tended to disappear when other variables were controlled for in our multivariate models. Thus, the data provide little

support for the notion that use of drugs and alcohol before or during sex increases risk-taking with respect to HIV transmission.

Of course, our negative findings do not rule out such an effect. Both drug use and risky sexual behavior are reported somewhat less frequently in our study than in some previous studies in which a relationship has been found. Moreover, it is possible that taking drugs or alcohol before sex increases the likelihood of engaging in risky sexual practices only in certain circumstances, e.g., with nonsteady partners. Such an effect would be not necessarily be apparent in our data.

KNOWLEDGE AND CONCERN ABOUT AIDS

Because AIDS and HIV infection are of particular concern to gay and bisexual men, and because gay and bisexual men have been subjected to intensive educational efforts (including many launched by groups within the gay community), we would expect them to be much more knowledgeable than the general public about modes of transmission for HIV infection. That is indeed the case. As Table 13 shows, knowledge of the major modes of transmission—through sexual intercourse without a condom, the sharing of unclean needles, and perinatal transmission—was close to universal in this sample, as indeed it was in the general Los Angeles County population surveyed at the same time (Kanouse et al., 1991).

Not surprisingly, gay and bisexual men are also quite knowledgeable about the relatively low risk posed by certain other modes of transmission, and in this respect they are much better informed than the general public. For example, only 11 percent (compared with 39 percent of the general population) rated the probability of getting infected through a mosquito bite as "very" or "somewhat" likely, and only 6 percent (compared with 32 percent of the general population) gave "very" or "somewhat" likely ratings for the chance of being infected by someone who has AIDS and is coughing or sneezing. Similarly, only 13 percent regarded donating blood as a "very" or "somewhat" likely source of infection, compared with 29 percent of the general public.

To compare knowledge about AIDS in different populations, and to examine how knowledge about AIDS is related to other variables, it is desirable to have a measure of knowledge that is not based on answers to any particular question, but instead summarizes responses to several different items. We constructed two such measures from the 12 items listed in Table 12: (1) an eight-item measure of knowledge about casual transmission that summarizes respondents' knowledge about the

Table 13

PERCENTAGE DISTRIBUTION OF RESPONDENTS' KNOWLEDGE ABOUT HIV TRANSMISSION

Mode of Transmission	Very Likely	Somewhat Likely	Somewhat Unlikely	Not at All Likely
From sharing uncleaned needles for drug use with someone who has the AIDS virus	97	1	0	1
Any person with the AIDS virus can pass it on to someone else through sexual intercourse without a condom	91	8	1	1
A pregnant woman who has the AIDS virus can pass it on to her baby	91	8	0	1
A person can be infected with the AIDS virus and not have symptoms of AIDS	72	20	5	3
From getting a blood transfusion	37	24	22	17
From donating blood	7	6	7	80
From eating in a restaurant whose cook has the AIDS virus	4	6	18	71
From being bitten by a mosquito	3	8	15	74
From using public toilets	3	4	7	86
From being around someone with AIDS who is coughing or sneezing	1	5	13	82
From attending school with a child who has the AIDS virus	2	3	7	89
From living near a home or hospital for AIDS patients	3	2	5	91

ways in which HIV infection is *not* efficiently transmitted;[23] and (2) a three-item measure of knowledge about noncasual (efficient) modes of transmission—sharing contaminated needles, having sexual intercourse

[23]Also included among the eight items was one measuring the respondent's awareness that a person can be infected with the AIDS virus and not have symptoms of AIDS.

without a condom, and transmission from mother to fetus.[24] For each measure, responses were coded to insure that a high knowledge score corresponded with a high level of knowledge. For ease in interpretation, the summary knowledge score was then scaled to fall between 0 and 100 points. Multiple regression was then employed to identify the demographic and other background variables associated with AIDS-related knowledge.

The mean scale scores for gay and bisexual men are 96.8 for knowledge of noncasual modes of transmission and 84.7 for knowledge of transmissibility through casual contact. Corresponding means for the countywide adult population are 96.5 and 64.7, respectively.[25]

We found few variables that were strongly related to knowledge of the most important noncasual modes of transmission, possibly because knowledge levels are uniformly high in all segments of the population. We did find that those who had been tested for HIV antibodies were significantly more knowledgeable than those who had not (see Table A.4).[26] This relationship could occur for a variety of reasons, including the possibility that those who are tested and counseled are thereby exposed to accurate information about HIV transmission; it is also possible that those who have acquired the most information about critical modes of transmission are more likely to seek testing.

Our model predicting knowledge of casual modes of transmission was somewhat more successful in explaining the variation in scores.[27] Only two variables were strongly predictive in the model, however (see Table A.5):

- Being white; and
- The number of people the respondent personally knows who have AIDS.

Those having personal contact with individuals diagnosed with AIDS have stronger incentives to learn about casual transmission and are presumably also more likely to receive such information—from the individuals themselves or from their caretakers and friends.

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[24]A fourth item, on blood transfusion, a distinctly noncasual mode of transmission, was not included in this summary measure, because knowledgeable respondents could reasonably rate the likelihood of getting the AIDS virus through transfusion as anywhere from "very likely" to "not at all likely," depending on their point of reference.

[25]Estimated by calculating the means of weighted observations for the entire countywide survey sample (including subsamples from heavily black and Hispanic areas). Means calculated by weighting the countywide RDD sample are virtually identical (96.2 and 64.5, respectively).

[26]We found a statistically significant relationship only for being tested as HIV *negative*, but the estimated coefficient was similar in size and direction for testing *positive*, so we interpret this as an effect of being tested that is not dependent on the test results.

[27]R^2 was 0.191 compared with 0.065.

Our finding that misinformation about casual transmission among gay and bisexual men tends to be concentrated among nonwhite respondents (whose average score on our 100-point index is a full ten points lower) has clear implications for where informational interventions might best be targeted.

Concern About AIDS

As we would expect, concern about AIDS runs very high in this population. We asked all 300 respondents to rate their concern on a ten-point scale ranging from 1 = not concerned at all, to 10 = extremely concerned. Nearly half the respondents chose the maximum possible value of 10; the distribution is shown in Table 14.

The mean rating of 8.4 obtained for this sample exceeded the mean rating of 7.5 obtained for the county's general population. Thus, although most county residents view AIDS as a matter of great concern, this is especially true of gay and bisexual men.

Perceived Effectiveness of Various Prevention Measures

Respondents were asked to rate the effectiveness of four methods that can be used to avoid getting AIDS though sexual activity: condoms, spermicidal agents alone, spermicidal agent with a diaphragm, and monogamous sex between two HIV negative individuals (Table 15).

Not surprisingly, respondents rated mutual monogamy between uninfected partners as the most effective prevention strategy, with 81 percent endorsing it as very effective. Since this strategy will by definition always be successful if followed by both partners, the responses of those who see it as only somewhat or not at all effective may indicate some doubt as to people's ability to carry out the strategy.

Table 14

PERCENTAGE DISTRIBUTION OF RESPONDENTS' RATING OF CONCERN ABOUT AIDS

Rating	Percentage
10	46
8–9	31
6–7	11
4–5	7
1–3	4

Table 15

PERCENTAGE DISTRIBUTION OF RESPONDENTS' PERCEPTIONS OF DIFFERENT PREVENTION ACTIVITIES' EFFECTIVENESS

Prevention Activity	Very Effective	Somewhat Effective	Not at All Effective	Don't Know
Two people who do not have the AIDS virus having sex only with each other	80	12	6	1
Using a condom	59	39	1	1
Using a diaphragm with spermicidal cream or jelly	10	57	25	7
Using a spermicidal jelly, foam or cream that contains non-oxynol-9 (that is, a spermicide alone without a condom or diaphragm)	5	56	36	3

NOTE: Asked of 300 respondents; percentages are of 299 respondents who answered.

Nearly three in five respondents rated use of a condom as very effective. Thus, the gay and bisexual men interviewed in this survey rated condoms as more effective in preventing AIDS than did members of the general public, only 42 percent of whom rated it as "very effective" (Kanouse et al., 1991). The reasons for this difference are not clear, but it may be worth noting that certain other barrier methods (e.g., diaphragm) are not options for homosexual male activity.

Respondents were also presented with a series of statements about the effectiveness of various strategies for preventing infection and asked to indicate their agreement or disagreement with these statements. The results, displayed in Table 16, suggest that a significant minority of gay and bisexual men are skeptical about the effectiveness of virtually all of the strategies represented in the statements. The most effective strategy is seen as mutual masturbation, with 90 percent agreeing that those who practice only this behavior will not become infected. In contrast, only 72 percent of respondents consider proper use of a latex condom during intercourse to be effective in preventing infection. Most respondents disagreed that unprotected anal intercourse poses little risk even for partners with concordant serological status. And 92 percent strongly or somewhat disagreed that there is little risk in having unprotected anal sex with young men in their teens and twenties, a strategy that some gay and bisexual men may have adopted (Hays et al., 1990).

Table 16

PERCENTAGE DISTRIBUTION OF RESPONDENTS' BELIEFS ABOUT VARIOUS PREVENTION STRATEGIES

Statement	Strongly Agree	Somewhat Agree	Are Neutral	Somewhat Disagree	Strongly Disagree
If the only sexual behavior you practice is mutual masturbation, you will not get AIDS infection	79	11	4	3	3
If you always use a latex condom and use it properly, you will not get HIV infection from sexual intercourse	26	46	5	14	8
In a situation where an uninfected insertive partner is having unprotected anal sex with an infected receptive partner, the inserter is not very much at risk	7	15	3	14	61
There is very little risk in having unprotected anal sex if *both* partners have tested *positive*	12	9	8	11	60
There is very little risk in having unprotected *anal* sex if *both* partners have tested *negative*	24	21	6	19	30
There is very little risk in having unprotected anal sex with young men in their teens and 20's, even if you don't know their antibody status	2	3	3	8	84
I can just have safe sex with all my male partners and still feel sexually satisfied	52	19	10	9	11

NOTE: Asked of 300 respondents; from two to 13 respondents did not know how much they agreed with a particular statement and have been excluded in calculating percentages.

Respondents were asked whether they agreed that they could have safe sex with all their partners and still feel satisfied. Seventy-one percent agreed strongly or somewhat with this statement and 20 percent disagreed. A significant minority of gay and bisexual men seem to doubt that safe sex and sexual satisfaction are mutually attainable.

Sources of Information about AIDS

Our results indicate that gay and bisexual men are quite well informed about the relative risks of various modes of HIV transmission and about methods for reducing those risks. We did not explore several other pertinent areas of knowledge—for example, knowledge of available treatments, community services, or legal and pragmatic issues concerning AIDS. However, the effects of many current or future public programs and policies could depend on the information that gay and bisexual men have about the epidemic and on how they acquire new information (and can be reached through information campaigns). Accordingly, we asked all respondents to report on their sources of information about AIDS, naming up to three sources and indicating the one source that they regard as most trustworthy.

The results are displayed in Table 17, which also shows, for comparison purposes, analogous responses from our general population survey. The sources named by gay and bisexual men differ markedly from those named by the general population. Unlike the general public, gay and bisexual men place greater reliance on print media (magazines and newspapers, informational brochures) than on the broadcast media. They are also much more likely than the general public to name medical sources, friends and relatives, and AIDS hotlines or community groups.

This last finding supports the notion that the gay and bisexual "community" performs a critical communication function with respect to the HIV epidemic; word of mouth is an important method by which information about AIDS disseminates within this community. One reason for this may be the existence of substantial numbers of knowledgeable lay "experts," who can be consulted by other members of the community.

Taken altogether, our findings suggest that information dissemination campaigns aimed at gay and bisexual men should be channeled somewhat differently from those aimed at the general public.

Table 17

PERCENTAGE DISTRIBUTION OF RESPONDENTS' KNOWLEDGE OF INFORMATION SOURCES ABOUT AIDS

Source	Any Mention[a]	Single Most Trustworthy Source of Information
Magazines/newspapers	66 (59)[b]	1 (7)
TV/radio	57 (73)	7 (19)
Brochure/pamphlet from local/state/federal agency	28 (25)	15 (16)
Friends or relatives	28 (15)	1 (1)
Doctor/clinic/emergency room/ hospital/medical or professional journals/Red Cross bood bank	28 (17)	45 (48)
AIDS hotline or community group	22 (3)	19 (4)

NOTE: Percentages for gay and bisexual men are based on answers from 282 respondents, excluding 18 who refused to answer or who obtained their information from a source that could not be placed in these categories.

[a]Sums to more than 100 percent because more than one mention was allowed.

[b]Percentages for the general population (weighted estimates from a sample of 1,305 respondents) are shown in parentheses.

PERCEIVED RISK OF ACQUIRING HIV INFECTION

All respondents were asked to rate, to the best of their knowledge, various sex practices with respect to the risk of getting AIDS, on a scale from 1 ("not at all risky") to 10 ("very risky"). Those who inquired about HIV infection status of the partners were told to assume it is unknown; either partner may be infected.

These ratings measure knowledge only indirectly; the magnitude of the actual risks is not known with precision, but there is enough epidemiological evidence to establish the relative risk of various sexual practices. The ratings that respondents provided as a group (see Table 18) are generally consistent with the available information. For example, respondents correctly perceive unprotected anal intercourse as very risky. Having unprotected sex with many different partners is also seen as very risky.

For anal and oral intercourse, respondents rated the riskiness of the behavior both with and without ejaculation. In each case, the behavior was rated as less risky if ejaculation did not occur. Some gay and bisexual men who hold these beliefs about relative risk may be tempted

to use withdrawal before ejaculation as a risk-reduction or prevention strategy. Epidemiological evidence on the effectiveness of withholding ejaculation as a strategy for preventing HIV transmission is still being gathered and evaluated; such behavior may eventually be shown to pose a higher level of risk than was once believed.

Reasons for Not Using Condoms

As noted above, of 285 respondents who reported having been sexually active, only 31 percent said that they use condoms all the time. We asked those who reported less than faithful use to indicate the applicability of a list of possible reasons for nonuse, drawn from among those suggested by previous research (e.g., Siegel and Gibson, 1988). The results are displayed in Table 19.

By far the most common reason given for not using condoms is that the respondent believes he and his partners are not at risk for AIDS.

Table 18

PERCEIVED RISK OF SELECTED SEXUAL BEHAVIORS

Behaviors[a]	Mean[b]	S.D.	Percentage Reporting Behavior as Very Risky[c]
Having anal intercourse without a condom			
With ejaculation	9.8	1.0	89
Without ejaculation	8.8	1.9	56
Having sex without a condom with many different partners	9.7	1.0	89
Having sex without a condom with a prostitute, either male or female	9.7	0.9	85
Having vaginal intercourse without a condom	8.3	2.3	53
Having oral sex without a condom			
With ejaculation	8.0	2.5	48
Without ejaculation	6.1	2.9	22
Drinking alcohol or using drugs before or during sex	5.8	3.1	16

[a]Number of respondents per item varies from 285 to 300.
[b]Rated on a scale from 1 (not at all risky) to 10 (very risky).
[c]Very risky = 10, the maximum scale value.

Table 19

PERCENTAGE DISTRIBUTION OF RESPONDENTS' REASONS FOR NOT USING CONDOMS

Reason	Definitely True	Mostly True	Equally True or False	Mostly False	Definitely False
My partner(s) and I are not at risk for AIDS	34	20	7	12	28
Sex is usually less enjoyable with a condom	19	25	11	16	29
When I'm high on alcohol or drugs, I don't think about it	5	10	6	15	65
Not comfortable talking to my partner about them	5	9	5	16	66
Condoms break or leak	5	6	8	26	56
Condoms are not easily available when I need one	4	6	5	19	68
It's embarrassing to buy condoms	4	4	3	17	73
Do not know how to use a condom properly	1	3	4	14	78
Condoms are too expensive	3	3	1	15	79

NOTE: Asked of 197 respondents who reported using condoms less than "all of the time."

Slightly more than half of those who did not always use condoms gave this reason as "definitely" or "mostly" true. (This was also the most common reason given by the general public, 77 percent of whom endorsed one of these alternatives.)

Given the large number of gay and bisexual men who consider themselves not to be at risk of HIV infection, it is important to ask how accurate these perceptions are. If most of those stating this reason for not using condoms are in sexually exclusive relationships or have been celibate for a long time, their perceptions may be fairly accurate. On the other hand, some of them may be engaging in risky behavior while denying the risk. To evaluate these possibilities, we examined the relationship between perceptions of being at risk or not at risk for AIDS and the respondent's relationship status and behavior. As Table 20 shows, men who were married (whether to women or men) or who reported being in an exclusive relationship with a primary partner were

more likely to see themselves as not being at risk of AIDS. However, substantial numbers of men in nonexclusive relationships also saw themselves as not being at risk of AIDS.

The next most common reason for not using condoms was that sex is usually less enjoyable with a condom. Attempts to address this reason, endorsed by 44 percent of our respondents, have included efforts to "eroticize" the condom to make its use more enjoyable. Judging from our respondents' ratings, however, the pleasure factor remains an important barrier to greater use in this population.

As many as 20 percent of respondents failed to endorse any of the other reasons for not using condoms. For the most part, gay and bisexual men did not report cost, availability, or embarrassment to be significant barriers to condom use. However, 14 percent gave as a reason that they were not comfortable talking with their partners about using a condom. We did not inquire about the reasons for this discomfort, but issues of trust may arise in a relationship when one partner suggests condom use that the other partner would prefer to think is unnecessary. Because this barrier may tend to prevent any use of condoms and not just use on particular occasions, it may be especially important for some men. Denial of risk is also a possibility in some cases.

Table 20

PERCEPTIONS OF NOT BEING AT RISK BY RELATIONSHIP STATUS AMONG RESPONDENTS NOT USING CONDOMS

Type of Relationship	No. of Respondents	Percentage Who Consider Self and Partner Not at Risk[a]
Married to female	17	71
Married to male	12	75
Exclusive relationship with primary partner	45	75
Open relationship with primary partner	30	53
All others	91	41
All respondents	195	54

[a]Percentage of respondents who rate the statement "My partners and I are not at risk of AIDS" as "definitely" or "mostly" true. This statement was rated only by sexually active respondents who use condoms less than "all the time." The differences among the percentages shown in this table are statistically significant, chi square = 25.84, d.f. = 4, $p < 0.001$.

Self-Reported Behavior Change

In view of the important role of risk behaviors in transmitting HIV infection, changing these behaviors is a major objective for most education/prevention programs. There is evidence that gay and bisexual men have changed their behavior considerably in response to the epidemic; this change is especially well documented in San Francisco, but has also been observed elsewhere.[28] The extent of behavior change appears to vary geographically, however, and may be greater in cities with a high incidence of AIDS. Moreover, even in such cities, the changes that have occurred may be difficult to sustain (Edgar et al., 1989; Stall et al., 1990).

Global reports of having changed one's behavior over long periods of time must be interpreted with caution, since vagueness in what would be considered behavior change and the lengthy time periods involved leave ample opportunity for reports to be influenced by recall errors and response biases. Even so, such reports may provide a general indication of the types of change that may have occurred and the types of people who believe they have made these changes. In this survey, we asked respondents whether they had made any changes in their social life or sexual behavior because of AIDS. Those who said that they had were then asked a series of questions about specific changes they had made. For each change, we asked whether the reason for change was because of AIDS, for some other reason, or because of both AIDS and some other reason.

Table 21 summarizes the results. Seven of every eight respondents reported having made some change. The most common specific type of change was reducing the number of sexual partners, followed closely by becoming more selective in choosing possible sexual partners and specific forms of selectivity, such as reducing the number of casual partners. About half the respondents who reported making changes in the type or number of sexual partners attributed these changes entirely to AIDS, and nearly all said that AIDS was at least partly responsible. Changes in specific practices (more frequent use of condoms and less frequent anal intercourse) were also commonly reported. The most radical change was becoming celibate, reported by 11 percent of survey respondents, most of whom credited the epidemic in whole or in part for prompting this change.

To shed further light on the extent of AIDS-related behavior change, and to examine the characteristics of those who had changed-

[28]See, for example, Becker and Joseph (1988); Hughes et al. (1990); Joseph et al. (1987); Judson et al. (1989); Martin (1987); McKusick et al. (1985a); Siegel et al. (1988); Stall et al. (1988).

Table 21

PERCENTAGE DISTRIBUTION OF RESPONDENTS' REASONS FOR BEHAVIOR CHANGE[a]

Reported Change	Percentage Reporting This Change	Because of AIDS	AIDS and Some Other Reason	Some Other Reason
Any change	87	87	—	—
Became celibate	11	70	21	9
Reduced number of sexual partners[b]	79	49	46	5
Became more selective in choosing possible sexual partners	70	49	45	6
Reduced number of casual sexual partners[c]	57	58	35	7
Started using condoms more often	58	87	12	2
Stopped having anal intercourse[c]	36	68	19	14
Stopped having sex with prostitutes or hustlers[c]	19	64	22	14
Became closer to friends and sexual partners[c]	54	40	46	14
Lowered alcohol or drug use	45	15	30	55

NOTE: Asked of 300 respondents.
[a]Among those reporting making each change (sums to 100 percent).
[b]Numerator includes those who became celibate.
[c]Numerator does not include those who became celibate, some of whom may also have made this change.

most and least, we constructed a simple summary measure in .cating the number of different changes respondents had made that they attributed (in whole or in part) to the AIDS epidemic. Scores on this measure could range from 0 to 9; the actual range of observed scores was from 0 to 8, with a mean of 3.6. We used multiple regression to examine the characteristics of respondents who had changed most (Table A.6).

Variables significantly associated with having made *more* AIDS-related changes in behavior include:

- Having a high personal income;
- Having tested HIV negative; and
- The number of people the respondent personally knows who have AIDS.

Variables significantly associated with having made *fewer* AIDS-related changes in behavior include:

- Being married to a female; and
- Being in a sexually exclusive relationship.

Personal income bears a strong relationship to the number of changes made, although education and race/ethnicity (other variables that are related to socioeconomic status) do not. This result parallels our findings regarding the current likelihood of engaging in unprotected anal or oral sex, and suggests income-related differences in willingness to take sexual risks or in other attitudes. We consider this type of explanation more likely than one involving income-related resource constraints, inasmuch as most of the changes listed in Table 21 do not require pecuniary resources.

The effect of being tested or testing negative for HIV antibodies has more than one possible interpretation. The most likely explanation, perhaps, is that being tested for HIV is one of the steps many gay and bisexual men take in response to the epidemic, and is therefore closely related to other changes in lifestyle made around the same time. It is also possible that changes in behavior often precede or help to motivate test-seeking, and test-seeking may sometimes precede and help to motivate behavior change. Men who have already reduced or eliminated their high-risk behaviors may feel more inclined to be tested, and men whose test results show them to be well may wish to stay that way. The cross-sectional data reported here do not permit us to distinguish these possibilities, which are not mutually exclusive.

We have previously discussed the interpretation of relationships between specific behavior change variables and the number of persons diagnosed with AIDS whom the respondent knows and the type of relationship in which he is involved.

HIV ANTIBODY TESTING

Testing for HIV antibodies in all high-risk populations has been recommended by the U.S. Public Health Service, many community-based organizations, and many primary care providers who treat HIV-related conditions. The rationale for testing has been that early identification of infection can lead to early intervention with appropriate treatments, such as AZT, aerosolized pentamidine, and other drugs (Coates et al., 1988; Francis et al., 1989; Francis and Chin, 1987; Rahme and Maki, 1989; Siegel et al., 1989a). Early identification of seropositive asymptomatic individuals also facilitates counseling about

risk reduction (Centers for Disease Control, 1986). Knowledge of HIV antibody status and associated counseling seem to have at least a modest effect on behavior, thereby reducing risk of transmission (Fox et al., 1987; McCusker et al., 1988b; Schechter et al., 1988; VanGriensven et al., 1988).

Of the 300 self-identified gay and bisexual men in the survey, 200, or 67 percent, had taken the HIV antibody test. Of those men who had taken the test, 191 knew the results and were willing to state them to the interviewer. Of these, 33 (17 percent of those tested and 11 percent of the entire sample) indicated that they were seropositive.

These results point to a large increase from 1986 to 1989 in the proportion of gay and bisexual men who have been tested. Only 16 percent of respondents to the 1986 survey had taken the antibody test—and of those, 25 percent were seropositive.

The 67 percent of our sample of Los Angeles men who had been tested compares with 74 percent of men in a San Francisco survey conducted between October and December 1989 (Communication Technologies, 1990). In San Francisco, 35 percent of those tested (26 percent of the sample) were HIV antibody positive.

We asked men who had not previously been tested or who had tested negative what they thought the results would be if they took the test now. Of 257 respondents, 5 percent (14) said they were at least somewhat likely to be positive[29] and 84 percent (224) thought they would very likely test negative.

Comparison of the results from our Los Angeles survey with those of the similar survey conducted in San Francisco at about the same time suggests that the prevalence of HIV infection among gay and bisexual men in Los Angeles is substantially lower than in San Francisco. These results are consistent with the views of epidemiologists regarding the state of the HIV epidemic in these counties.[30]

Eighty-four respondents to our survey had taken the HIV antibody test only once, whereas 39 men, or nearly 20 percent of those tested, had taken the test four or more times. Over half of those who had ever been tested—103 men—had taken the test at least once in 1989; some of these had been tested earlier as well.

The most common site for testing was a physician's office, reported by 44 percent of respondents, followed by alternative test sites (33 percent), and hospitals or research centers (10 percent). Gay and bisexual men in Los Angeles rely much more on private physicians for their

[29]One percent said they were "very likely" or "certain" to test positive.

[30]Of course, establishing the true prevalence in either city would require obtaining a direct measure of HIV antibody status from a sample that is more broadly representative than is provided by either of these surveys.

testing than do their counterparts in San Francisco, where only 16 percent used private physicians (Communication Technologies, 1990). In San Francisco, more testing is done at hospitals or research centers (23 percent compared with 10 percent).

Of those respondents who had not been tested or who had tested negative (n = 266), 34 percent said that it was at least very likely that they would take the test in the next six months; an additional 31 percent said it was at least somewhat likely they would take the test in the next six months.

Although only 67 percent of the sample had themselves been tested, 85 percent thought that gay and bisexual men in Los Angeles County should be encouraged to take the AIDS antibody test; 11 percent thought they should not be encouraged, and 4 percent were unsure. Attitudes toward antibody testing among gay and bisexual men in Los Angeles are similar to those of gay and bisexual men in San Francisco, where 75 percent of respondents thought that gay and bisexual men in their city should be encouraged to take the test, 8 percent thought they should not be encouraged, and 14 percent said that it depended on the situation.[31]

In general, these results indicate that a substantial proportion of the gay and bisexual population in Los Angeles has recently been tested for HIV antibody or plans to seek testing in the near future.

Characteristics of Those Tested

Men who have been tested for HIV antibodies differ very little in most respects from those who have not been tested. As Table 22 shows, similar percentages of men have been tested in each of several demographic categories. Those with a high school education or less are somewhat less likely than more educated men to have been tested, but the difference is not statistically significant. Somewhat surprisingly, the survey results did not reveal any ethnic differences in test-taking behavior.[32] Approximately equal percentages of white, black, and Hispanic respondents had been tested. The survey sample included only 14 Asian, Native American, or other respondents, of whom more than half had been tested.

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[31]The San Francisco survey, unlike our Los Angeles survey, offered respondents the response alternative, "it depends on the situation." Taking this difference into account, we judge that attitudes into the two cities are probably quite similar.

[32]Peterson et al. (1990), in a random household survey of 1,781 single young adults in "high-risk" neighborhoods of San Francisco, found that among heterosexuals, blacks were significantly less likely than whites or Hispanics to have been tested.

Table 22

NUMBER AND PERCENTAGE OF MEN TESTED FOR HIV ANTIBODIES, BY DEMOGRAPHIC CATEGORY

Category	No. Tested	Percentage in Category
Race/ethnicity		
White	157	67
Hispanic	25	66
Black	10	75
Asian/other	8	57
Education		
≤High school	29	60
>High school	171	67
Income		
<$20,000	38	62
≥$20,000	160	70

Two variables emerged in a logistic regression model as important predictors of being tested for HIV antibody (see Table A.7):

- Knowledge about noncasual modes of HIV transmission (as measured by a three-item summary score); and
- The number of people the respondent personally knows who have AIDS.

Knowledge about noncasual modes of HIV transmission could either precede or follow testing; our cross-sectional data provide no basis for determining whether the relationship between these two variables is causal, or if so, in which direction. The same is true of the other significant predictor variable, the number of people the respondent knows who have been diagnosed with AIDS.[33] But in this case it is plausible that knowing such people personally would tend to motivate a person to be tested, even in the absence of any concern about having been infected through contact with them.

Previous research points to a variety of reasons why gay and bisexual men seek HIV antibody testing, or seek to know their results when tested. These reasons include: to confirm a perceived negative (or positive) status; to enable them to obtain appropriate health care if

[33]Those who have been tested know an average of 22 such people, compared with nine for those not tested.

positive; to slow down disease progression; to clarify the cause of current symptoms; to help them cope better with the fear of AIDS; to know if they are a danger to someone else; and to become motivated to change their own sexual behavior or lifestyle (Communication Technologies, 1990; Lyter et al., 1987; Siegel et al., 1989a).

Reasons why men choose not to be tested (or choose not to learn their test results) include: belief that they are not at risk of HIV infection; belief that the test result is not predictive of AIDS; doubt about their ability to cope with a positive test result; belief that there is no effective medical treatment; concern about confidentiality; desire to avoid having to make undesired changes in lifestyle; and practical concerns, such as test site location or cost (Lyter et al., 1987; Siegel et al., 1989a).

In our survey, we chose to focus on the men who had not yet been tested (n = 100), presenting them with a set of statements describing reasons people give for not being tested, and asking our respondents to indicate the extent to which each statement was true for them. Table 23 displays the results. The most common reason for not taking the test is belief that there is no need for it because the respondent would test negative. Concern about the emotional consequences of a positive test result ranks second, followed by a belief that the test has no treatment implications.

Men who have not been tested because they consider themselves not to be at risk are an especially interesting group. Some of these men may in fact be at very low risk; others may simply be engaging in denial. To assess these possibilities, we examined the association between responses to the "no need for it" item and respondents' partner relationship status. There was no significant association with being in a sexually exclusive relationship or with marital status. Nor were men who said that they did not need to be tested notably less likely to report engaging in risk behaviors during the previous four weeks.[34] Thus, whatever reasons these men may have had for considering themselves not to be at risk of infection, they are not apparent from their answers to various items in this survey.

Altogether, 31 percent of the respondents who had not yet taken the test did not rate any of the reasons given as more true than false. Some of these respondents may have had other reasons for not having been tested that did not correspond to any of the response alternatives offered them. Others may simply have had no reason for not having been tested.

[34]Because this item was addressed only to respondents who had not been tested, the sample size for testing relationships with other variables is small. Our negative findings should be interpreted with that in mind. We do not have the statistical power to detect weak relationships.

Table 23

PERCENTAGE DISTRIBUTION OF RESPONDENTS' REASONS FOR NOT TAKING THE HIV ANTIBODY TEST

Reason	Definitely True	Mostly True	Equally True or False	Mostly False	Definitely False
There's no need for it since there's almost no chance I'm infected	17	23	17	22	22
I'm afraid I might not be able to handle a positive test result	8	25	19	29	20
There's no effective treatment if you're positive	8	22	14	21	35
There is no cure for AIDS	8	22	8	27	36
I'm afraid others will find out the results	3	14	8	39	36
I don't know where to go to be tested	2	9	0	17	72
The places to get tested are too far away	3	6	5	17	69
It's too hard to get an appointment for a test	3	3	2	23	69
My (wife/husband/lover) doesn't want me to be tested	2	2	2	22	73

NOTE: Asked of 100 respondents who reported that they had not been tested for HIV antibodies.

From a policy perspective, some of the most important findings concern reasons that respondents did *not* give for failure to be tested. Only 17 percent cited confidentiality concerns—fear that others would find out the results.[35] Even fewer cited such practical barriers as not knowing where to go to be tested or inconvenience of location or scheduling an appointment as reasons for not having been tested. These results suggest that for most gay and bisexual men, access is not a problem, so that efforts to reduce such barriers would have little effect on their use of testing services.

[35]This response alternative was broadly worded, so that a positive endorsement need not refer to concern about others finding out through violations of confidentiality. Some respondents may have been concerned about others finding out through their own disclosure, or through secondary disclosures by those whom they chose to tell. Thus, the percentage who were specifically concerned about confidentiality was 17 percent at most.

HIV Antibody Test Results

Of the 200 gay and bisexual men who indicated that they had been tested, 16.5 percent said they had tested positive; 79 percent said they had tested negative; 3 percent did not get or did not know their test results; and 1.5 percent refused to say what they were (see Table 24 for the demographic characteristics of those reporting test results).

To examine possible effects of being tested on mental health status, we incorporated into the survey a Mental Health Index (MHI) derived from a five-item mental health screening test. The five-item scale, called the MHI-5, was first published as a separate mental health scale in 1986 (Jette et al., 1986), and has since received wide use in other surveys, including the Medical Outcomes Study, a study of variations in physicians' practice styles and patients' outcomes in competing systems of care (Tarlov et al., 1989). The MHI-5, which correlates well with the summary score from the full 38-item MHI, represents four mental health dimensions: depression, anxiety, loss of emotional and behavioral control, and psychological well-being (Stewart et al., 1989).

Men who had tested positive for HIV antibodies tended to have somewhat lower scores on the MHI (mean of 69.3 compared with

Table 24

RESULTS OF HIV ANTIBODY TESTING, BY DEMOGRAPHIC CHARACTERISTICS

Category	No. Tested	Percentage Testing HIV Positive
All respondents reporting their test results[a]	191	17
Race/ethnicity		
White	150	19
Hispanic	25	12
Black	8	25
Asian/other	8	0
Education		
≤High school	28	25
>High school	163	16
Income		
<$20,000	35	20
≥$20,000	154	17

[a]Excludes six respondents who did not get or did not know their test results and three who refused to say what they were.

74.5)[36] and to know more people who had been diagnosed with AIDS (a mean of 50 compared with 17 for those who were HIV antibody negative).[37] There were no significant differences by race and ethnicity, education, or income. Behaviorally, those men who knew they were positive reported that they had not engaged in high-risk sexual practices (anal, vaginal, or oral intercourse without condom and with ejaculation) during the previous four weeks. Six of the seropositive men (18 percent) reported having had anal intercourse without a condom but also without ejaculation during that same time period, however. This suggests that substantial numbers of seropositive gay men are relying on withdrawal to prevent HIV transmission. The effectiveness of this technique for that purpose has not been evaluated to our knowledge; those who rely on it are taking a risk of unknown magnitude.

Equally notable was the self-reported incidence of these same behaviors by seronegative men over the same period, indicating perhaps relapse or at the very least, room for improvement in this crucial area of behavior if these men are to remain uninfected.[38]

SOCIAL IMPACT OF THE EPIDEMIC

The HIV epidemic has undeniably been most devastating to those who have become infected, grown ill, or died. Yet it has profoundly touched the lives of many others, often with devastating effects. Most gay and bisexual men in Los Angeles County have now been affected in one way or another, as our survey results show.

We asked all respondents how many people they have known personally, either living or dead, who came down with AIDS. Eighty-six percent of respondents personally know at least one such person, 18 percent more than responded affirmatively to a different version of this

[36]The difference between means is not statistically significant in a univariate test ($t = -1.63$, $p = 0.10$. In a multivariate model described more fully below, the estimated effect of testing positive on MHI when other factors are controlled for is −4.9 points, ±5.8 points (two standard errors). Thus, the data do not permit us to reject the hypothesis that the true effect of testing positive for HIV is zero.

[37]Though large, this difference between means is not statistically significant at conventional levels. When values are transformed to reduce the skewness of the distribution, statistically significant differences are found, however.

[38]Nine percent of 158 men testing HIV antibody negative reported having had anal intercourse without a condom but with ejaculation during the preceding four weeks (compared with 12 percent of 99 men not tested and none of 33 men testing positive). Twelve percent of those testing negative (compared with 11 percent of those not tested and none of those testing positive) had vaginal intercourse without a condom during the preceding four weeks.

question in 1986.[39] Among those who know at least one, the median number known is seven, and 22 percent of the entire sample personally know 20 or more. Table 25 shows the relationship of the closest individual known to the respondent.

The number of persons known with AIDS was strongly related to respondents' serological status. Among HIV positive men, 79 percent knew six or more people with AIDS. Among those who had tested HIV negative, 46 percent knew six or more with AIDS. Among those who did not know their status, the corresponding figure was 33 percent.[40] The number of AIDS-diagnosed people known was also related to the respondent's age. Among men under the age of 30, 20 percent knew no one with AIDS and only 29 percent knew six or more. In contrast, among men over the age of 30, only 11 percent knew no one with AIDS and 53 percent knew six or more.[41]

Clearly, the HIV epidemic has had a substantial, if uneven, impact upon gay and bisexual men through its visible effects on their lovers,

Table 25

RESPONDENTS' RELATIONSHIP TO PEOPLE PERSONALLY KNOWN WITH AIDS

Relationship[a]	Percentage of All Respondents
Partner or lover	7.7
Brother or sister	0.7
Other relative	0.7
Friend	59.0
Neighbor	1.0
Coworker	4.3
Patient or client	1.3
Acquaintance	9.3
Declined to answer	2.3
Do not know anyone with AIDS	13.3

[a]Closest relationship if more than one.

[39]Results of the two surveys are not strictly comparable, because the 1986 survey asked respondents whether they know someone with AIDS with whom they speak at *least once a week*. The present survey did not impose a particular definition as to what it means to know someone "personally," or what it means to "come down with AIDS." Some respondents may have counted individuals who were sick with HIV disease but not diagnosed with AIDS.

[40]Chi square = 21.27, d.f. = 2, $p < 0.001$.

[41]Chi square = 14.53, d.f. = 1, $p < 0.001$. This finding is as one might expect. Men under the age of 30 are more likely to know men of their own age, who are arguably less likely to be infected, and certainly less likely to have developed symptoms that would lead to a diagnosis.

friends, and acquaintances. And as detailed in a previous section, gay and bisexual men have made considerable changes in their lives as a result of the HIV epidemic.

One goal of our survey was to assess whether the HIV epidemic may have had a measurable adverse impact on the mental health and sense of well-being of gay and bisexual men in Los Angeles County. The mean MHI score among gay/bisexual men was 75.0 (out of a possible 100); this compares with a score of 79 among heterosexual males in Los Angeles County who were surveyed at the same time. Gay or bisexual men who had *not* taken the HIV antibody test had a mean MHI score of 76.9 compared with a score of 74.1 for those who had taken the test; this difference was not statistically significant. Gay or bisexual men who had taken the HIV antibody test and knew they were seropositive had an MHI score of 69.3. Other studies have found the average MHI score for the general population to be 78.0, and 77.6 for patients with no chronic health conditions. Comparable scores for patient populations with chronic health problems are 73.3 for patients with congestive heart disease, 77.7 for diabetes patients, 73.2 for patients with chronic lung problems, and 70.3 for patients with gastrointestinal disorders (Stewart et al., 1989)

Gay and bisexual males score significantly lower on MHI than heterosexual males even when other factors, such as demographic characteristics, are controlled for. To estimate the size of this effect, we used a general linear model regression procedure on a combined sample of 679 men interviewed in this survey or the parallel county-wide survey, for whom complete data were available on selected predictor variables.[42] The estimated negative effect associated with being gay or bisexual was a loss of about three points on the MHI-5 index—comparable to the effects of having a chronic health condition. Because we have no comparable data on a similar population before the AIDS epidemic began, we are unable to say how much these lower MHI scores are a consequence of the epidemic as opposed to other factors that may tend to adversely affect the mental health of gay and bisexual men, such as being a member of a stigmatized group. It is certainly plausible, however, that coping with a calamitous epidemic such as AIDS would have mental health consequences similar in magnitude to the effects of dealing with a serious chronic health condition.

Given the relatively small number of respondents who had tested positive for HIV antibody, we were not able to precisely estimate the effect on MHI of testing positive. The effect could be substantially

[42]Age, income, employment status, race/ethnicity, HIV test status, whether involved in a primary relationship, and number of people known personally who have had AIDS.

larger than the difference associated with being gay or bisexual, or it could be essentially nil.

Although our data do not elucidate the reasons for differences in mental health status between gay and bisexual men and heterosexual men, they do suggest that gay and bisexual men in Los Angeles County may have a somewhat higher need at this time for mental health services and possibly for certain social services.

HEALTH INSURANCE COVERAGE AND USE OF HEALTH CARE SERVICES

We determined the extent of health insurance coverage and patterns of health care service use by gay/bisexual men in Los Angeles County. As noted, 67 percent of our respondents had been tested for HIV antibodies; of these, 97 percent knew the results. Twelve respondents had been diagnosed with AIDS or had HIV-related symptoms. Of 33 HIV positive respondents, 23 (70 percent) had one or more health care visits in the previous six months (median = six), five had been hospitalized, 14 were on AZT, and 11 were receiving therapies for treatment/prevention of opportunistic infections. None were on experimental therapies. Of 300 respondents, 72 percent described their current health as excellent or very good, 21 percent as good, 7 percent as fair or poor. Eighty percent had current health insurance coverage—44 percent through their employer, 24 percent through self-pay. Only 70 percent of asymptomatic HIV positive respondents had current insurance compared with 92 percent of diagnosed respondents. Of the 300 respondents, 27 (9 percent) were self-employed; of these, 63 percent had health insurance. Another 68 respondents (23 percent) worked in firms with fewer than 20 employees; these firms are not covered by the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA).[43]

Most symptomatic men in this population-based sample who used HIV-related health care services were covered by insurance, but lack of coverage was common among asymptomatic HIV positive individuals and other gay/bisexual men in Los Angeles County. Most men are self-employed or work for small firms excepted from COBRA's mandatory postemployment continuation of (relatively) affordable health insurance.

[43]Some employees of firms not covered may still have some COBRA protection if they have worked for a firm with 20 or more employees in the past 18 months.

CURRENT HEALTH, HEALTH INSURANCE, AND THE USE OF HEALTH CARE AND SOCIAL SERVICES

Current Health

To provide a snapshot of how gay/bisexual men in selected areas of the county regard their current health, we asked respondents whether they would say that their health is excellent, very good, good, fair, or poor. Measures of this type have generally been found to be reliable and valid measures of a person's overall health.[44]

Respondents' descriptions of their health varied sharply depending on their serological status (Table 26). Among those who had not been tested for HIV, or who had been tested and found seronegative, about three-quarters described their health as "excellent" or "very good," and 4 percent or fewer described it as "fair" or "poor." Among those who had tested seropositive, in contrast, only 36 percent described their current health as "excellent" or "good," and 33 percent described it as "fair" or "poor." Among the dozen respondents who had been

Table 26

PERCENTAGE DISTRIBUTION OF RESPONDENTS' CURRENT HEALTH SELF-EVALUATIONS

Respondent Group	No. Responding	Excellent Health	Very Good Health	Good Health	Fair Health	Poor Health
All respondents	300[a]	42	32	21	5	1
Untested	99	45	30	22	2	0
Tested	200[b]	41	30	20	7	2
Seronegative	158	48	30	17	4	1
Seropositive	33[c]	9	27	30	24	9
Asymptomatic[d]	20	15	30	30	20	5
ARC or AIDS	12	0	25	33	25	17

[a]Includes one respondent who did not indicate whether he had been tested.
[b]Includes four respondents who did not get test results and five who declined to reveal results in interview.
[c]Includes one respondent who declined to answer question about diagnosis.
[d]"Asymptomatic" refers to patients who are seropositive but have not been diagnosed by a health professional as having ARC or AIDS.

[44]Self-evaluations of health tend to be quite stable over time and to correlate with clinical indicators of health and measures of functional status that are concurrently measured (Davies and Ware, 1981; Ware et al., 1978). They also have independent value as predictors of physiologic health in chronic disease (Kaplan, 1987) and of mortality in elderly populations (Idler et al., 1990; Mossey and Shapiro, 1982; Kaplan and Camacho, 1971). Their usefulness as indicators and predictors in HIV-infected populations has yet to be determined.

diagnosed with HIV-related symptoms (ARC or AIDS), descriptions were more negative; only 25 percent described their health as "very good" (none as "excellent") and 42 percent described it as "fair" or "poor."

Clearly, these results indicate that gay/bisexual men who have tested positive for HIV are likely to perceive their health as compromised, whether or not they have been diagnosed as having ARC or AIDS. Given the serious long-term implications of a positive test result for HIV, these perceptions are understandable. But the survey results also indicate that this effect is limited to men who have tested positive. As a group, gay/bisexual men who have not been tested report few problems with their health. On the contrary, their perceptions of their health are as positive as those of men who have tested seronegative. Both groups describe their health more favorably than does the general population of Los Angeles County.[45]

Health Insurance

The HIV/AIDS epidemic has prompted two related concerns: first, how to provide for the complex health care needs of people with HIV infection; second, how to finance needed services for these patients. Many patients with HIV-related problems require a broad spectrum of clinical services. The estimated average lifetime cost of treating an AIDS patient ranges from $61,800 to $94,000.[46] Yet many persons with AIDS are receiving Medicaid benefits or are uninsured and are thus dependent on public sector financing. With or without insurance, HIV-infected patients may have difficulty obtaining access to the care they need. Many physicians are reluctant to treat AIDS patients, and health insurance may not cover needed services, such as long-term care (Makadon et al., 1990; Rowe and Ryan, 1987).

To assess the current and future needs of HIV-infected people, it is helpful to know something about their current health insurance and patterns of health care service use. Yet most of what we know on this subject comes from studies of small numbers of patients recruited through particular institutions, whose unique features may make the data less representative than we would like. For that reason, results from a survey like this are especially valuable for the broader view they

[45]Only 58 percent of respondents in our concurrent survey of the general population described their health as "excellent" or "very good," and 11 percent as "fair" or "poor."

[46]This range is from estimates in studies published since the beginning of 1987 (Andrulis et al., 1987; Hay et al., 1988; Hellinger, 1988, 1990; Kaplowitz et al., 1988; Kizer et al., 1987; Pascal, 1987; Scitovsky, 1988; Scitovsky and Rice, 1987; Seage et al., 1987).

give. Below we present our findings on health insurance coverage of gay/bisexual men, including those who are seropositive and those who have been diagnosed with HIV-related illness; in the next subsections, we describe their use of health care and social services.

Respondents were asked, "Are you now covered by health insurance that you or someone else pays for? Please include MediCal, Medicare, or VA coverage." As Table 27 shows, 80 percent of the respondents in our survey had insurance coverage. Fee-for-service coverage was most common, followed by prepaid insurance; only 2 percent of respondents said they relied on MediCal for most of their care. Type of insurance did not vary much between those who had been tested and those who had not. Seropositive respondents were somewhat more likely than seronegative respondents to have fee-for-service coverage. Of the 12 symptomatic patients in this survey—those who had been diagnosed with ARC or AIDS—only one was uninsured.

Among privately insured respondents, 60 percent reported that their insurance was through their employer; 33 percent paid for their own insurance (see Table 28). Other sources, such as family members or partners or their employers, were infrequent in this sample. Self-paid insurance was somewhat more important and employer-paid insurance less important among respondents who were seropositive compared with other respondents.

The 20 percent of our sample without health insurance compares with the 21.6 percent of California's nonelderly population who were without insurance in 1985,[47] including 26.7 percent of nonelderly adults in the Los Angeles-Long Beach metropolitan area (Brown et al., 1987). The gay/bisexual men captured in our sample have some characteristics that would make them more likely to be insured but other characteristics that would make them less likely to be insured than other adults in the Los Angeles area. Their high average levels of education and income work in favor of their having health insurance coverage. The proportion of Hispanic gay men is low relative to the proportion of the adult population that is Hispanic; this also works in favor of gay men having health insurance coverage, since Hispanic adults are much more likely to be without insurance than non-Hispanic whites, blacks, or other ethnic groups.

On the other hand, several factors make it less likely that gay/bisexual men will have health insurance. Unlike many low-income women, men with low incomes do not qualify for Medicaid (MediCal) coverage under Aid to Families with Dependent Children. Most are

[47]The comparable figure for the United States as a whole is 17.6 percent of the nonelderly population.

Table 27

PERCENTAGE DISTRIBUTION OF RESPONDENTS' HEALTH INSURANCE COVERAGE

Respondent Group	No. of Respondents	Fee-for-Service Plan	Prepaid Plan	MediCal	Other[a]	No Insurance
All respondents	295[b]	45	31	2	2	20
Untested	96	44	32	0	2	22
Tested	198[c]	46	30	3	2	19
Seronegative	158	43	34	3	2	19
Seropositive	31	58	12	3	3	23
Asymptomatic	19	58	5	0	5	32
ARC or AIDS	12	58	25	8	0	8

[a]Includes Veterans Administration, other military care, and care provided by a county clinic or hospital for which the respondent does not pay.

[b]Excludes one respondent who did not know whether he was insured, two respondents who said they were insured but did not know the type of plan, and two respondents who declined to reveal their insurance status. Includes one respondent who declined to reveal whether he had been tested.

[c]Includes four respondents who did not get their test results, one who did not know his test results, and three who declined to reveal their test results in the interview.

Table 28

PERCENTAGE DISTRIBUTION OF RESPONDENTS' INSURANCE PAYORS

Respondent Group	No. of Respondents	Employer	Self	Family	Partner	Other[a]
Privately insured[b]	221	60	33	3	1	2
Untested	73	62	27	5	1	4
Tested	148[c]	59	36	2	1	1
Seronegative	118	64	32	2	2	1
Seropositive	22	41	55	0	0	5
Asymptomatic	12	33	58	0	0	8
ARC or AIDS	10	50	50	0	0	0

[a]Includes family member's or partner's employer or other individual, company, or organization.

[b]Excludes 12 respondents whose care was paid by MediCal, the Veterans Administration, other military sources, or a county clinic or hospital for which they did not pay. Also excludes three respondents who did not know whether they were insured or the type of insurance, one respondent who did not know who paid, and two respondents who declined to discuss the type of insurance.

[c]Includes four respondents who did not get their test results, one who did not know his test results, and three who refused to reveal their test results.

unmarried, which limits their opportunity to receive coverage through a family member. Many are young adults (under 30 years of age), the age group least likely to have health insurance coverage. And although we did not obtain information about industry, it is likely that many gay men work in personal services or retail industries where lack of insurance is common (Brown et al., 1987). Discrimination by insurers would tend to further reduce the opportunities for coverage, though it would be difficult to determine how much discrimination actually occurs or how many men are effectively prevented from obtaining health insurance because of it.

Whatever the reasons for their lack of health insurance coverage, the 20 percent of gay/bisexual men in our sample who lack health insurance coverage represent a sizable number of men who are at risk of having reduced access to necessary medical care and impaired health status as a result of their lack of insurance coverage. Moreover, providing for the health care needs of the uninsured poses a financial burden on Los Angeles County government and on local providers.

To provide a more complete picture of health insurance coverage for gay/bisexual men in Los Angeles County, it is necessary to consider employment status as well. People who are self-employed or who work in small firms of fewer than 20 employees are not covered by the provisions of COBRA that mandate postemployment continuation of affordable health insurance. For such people, loss of employment could also mean immediate loss of health insurance.[48] As Table 29 shows, 86 percent of the respondents were working either full-time (76 percent) or part-time (10 percent) at the time of the survey. Of these, about 41 percent—35 percent of the sample—were either self-employed or working in firms of fewer than 20 employees not covered by COBRA's protection.

Patterns of insurance coverage and employment in this population-based sample are very different from those found in a sample of 36 Los Angeles AIDS patients recruited through advertisements in the AIDS Project Los Angeles (APLA) newsletter (Pascal et al., 1990). In that study, 42 percent of respondents reported that their predominant insurance coverage in the first year of diagnosis was MediCal, and 58 percent reported that they were unemployed at the time of their AIDS diagnosis. In contrast, only one of our 12 symptomatic respondents named MediCal as the predominant source of coverage.

Several differences between that sample and this one may account for the divergent findings. Our telephone survey sample almost

[48]Those who have worked in the past 18 months for a larger firm could still be covered.

Table 29

PERCENTAGE DISTRIBUTION OF RESPONDENTS' EMPLOYMENT STATUS

Respondent Group	No. of Respondents	Working Full/Part-Time			Not Working[c]	Other[d]
		Self-Employed	Small Firm[a]	Large Firm[b]		
All respondents	299	9	26	51	10	4
Untested	99	7	26	52	9	6
Tested	200	10	26	50	10	4
Seronegative	158	12	27	50	8	3
Seropositive	33	3	21	48	24	3
Asymptomatic	20	5	25	50	15	5
ARC or AIDS	12	0	8	50	42	0

[a]Fewer than 20 employees.
[b]Twenty or more employees.
[c]Unemployed, laid off, looking for work, retired, disabled, or no longer working.
[d]In school, with a job but not at work because of illness, vacation, or strike, none of the above, or don't know.

certainly underrepresents men who are severely ill, whereas the Pascal study was limited to men who had been diagnosed with AIDS. In addition, recruitment of men affiliated with APLA may have led to an underrepresentation in the Pascal study of men whose personal or employment-related financial resources provided relatively little incentive to seek APLA's services. In interpreting the findings of either study it is well to keep these selection effects in mind.

Use of Health Care Services

Respondents were asked whether there was one person or place they usually went to when they were sick or wanted advice about their health; 78 percent identified such a source. Of these, two-thirds described this place as a private physician's office, 18 percent as a health maintenance organization (HMO), and 9 percent as a county or neighborhood clinic or hospital outpatient department.

Respondents who had tested seropositive for HIV were then asked about their ARC- or AIDS-related use of health care services. Table 30 summarizes the results. More than half the respondents in both groups reported at least some HIV-related visits during the preceding six months. Ten of 12 diagnosed ARC or AIDS patients had seen a health professional, with an average frequency of about once a week.

Table 30

PERCENTAGE DISTRIBUTION OF RESPONDENTS' HEALTH CARE SERVICES

Item	Asymptomatic Seropositive (n = 20)	ARC or AIDS (n = 12)
HIV-related visit in previous six months	60	83
Hospitalized in previous six months	5	33
Receiving AZT treatment	35	58
Receiving experimental antiviral treatment	0	0
Receiving drugs to treat or prevent opportunistic infections	10	67
Receiving vitamin therapy or on special diet	10	25
Receiving acupuncture	0	17
Receiving other therapies (spiritual or psychic healing, homeopathy, naturopathy, etc.)	5	50
Mean number of HIV-related visits in six months, among those with visits	4.1	27.9
Mean number of hospitalizations among those hospitalized	1.0	1.5

For the respondents we refer to as "asymptomatic," meaning not yet diagnosed with ARC or AIDS, visits averaged once every six weeks for those who had any.

One-third of the ARC or AIDS respondents and 5 percent of the remaining seropositive respondents had been hospitalized in the preceding six months. The rate of hospitalization in the AIDS/ARC group was 2.5 per person per year, slightly higher than the rate of 2.0 per person per year for a sample of privately insured patients in Los Angeles County reported by Pascal et al. (1990).[49]

More than half of the AIDS/ARC respondents and 35 percent of the asymptomatic seropositive respondents reported that they were currently receiving AZT therapy. Since toxicity and intolerance of AZT are quite common, these percentages are very likely lower than the corresponding percentages of respondents who have ever taken AZT (not asked in the survey). Thus, the survey results suggest that use of AZT therapy is widespread among HIV-infected gay/bisexual men in Los Angeles County.

[49]It is also higher than the rate of 1.6 per person per year found by Andrulis and colleagues for 1985 and 1987 (Andrulis et al., 1987, 1989).

Use of aerosolized pentamidine, dihydroxypropoxymethylguanine (DHPG or ganciclovir), and antibiotics to treat or prevent opportunistic infection also appears to be common among the county's diagnosed AIDS and ARC patients, although not among those at earlier stages of disease progression. In contrast, the survey documents the infrequent to nonexistent use by HIV-infected gay/bisexual men of experimental or unapproved drugs such as ddI, AL-721, and Compound Q. This finding is consistent with the impressions of clinicians treating large numbers of AIDS patients in the county. Finally, large numbers of ARC or AIDS patients are supplementing traditional medical therapies with other types of therapy, such as spiritual or psychic healing, homeopathy and naturopathy, vitamin therapy or macrobiotic diets, acupuncture treatments, and so on. This finding is consistent with recent findings from a nonrandom survey of HIV-infected patients in Boston, in which 73 percent of 172 early responders reported using some form of unconventional therapy (Cohen et al., 1990).

Use of Social Services

All survey respondents, regardless of their testing and serological or diagnostic status, were asked about use of social services provided by an AIDS organization in Los Angeles County for people with AIDS and for their families, friends, or colleagues. They were asked both about their own personal use of such organizations and about that of their family or friends. Table 31 shows the extent of reported use by respondents in subgroups defined by testing and diagnostic status. Two-thirds of the patients with ARC or AIDS reported that they had personally used such services, compared with only 20 percent of the asymptomatic seropositives and still fewer of those who had tested seronegative or had not yet been tested. There were fewer differences between groups in the percentages of respondents who reported that their family or friends had used such services. The organization most commonly mentioned was AIDS Project Los Angeles, whose services had been used by three-quarters of the ARC/AIDS respondents, half the asymptomatic seropositive respondents, and about a quarter of the seronegative group. Shanti was mentioned next most often; no other organization was mentioned by more than a handful of respondents in any group.

Table 31

PERCENTAGE OF RESPONDENTS USING SOCIAL SERVICES, BY SEROLOGICAL AND CLINICAL STATUS

Item	Untested	Seronegative	Asymptomatic Seropositive	ARC or AIDS
Personal use of social services for persons with AIDS	6	16	20	67
Partner or family use of social services	30	40	55	51
Percentage using services of				
AIDS Project Los Angeles	13	23	50	75
Gay/Lesbian Services Center, LA	1	8	5	8
Shanti	6	6	15	17
Aid for AIDS	3	3	5	0
Minority AIDS Project	0	1	0	8

AIDS-RELATED ATTITUDES

To elicit the opinions of gay and bisexual men about selected AIDS policy issues, we asked respondents to indicate the extent of their agreement with statements about the seriousness of AIDS and about AIDS education in our schools. Public support, or the lack thereof, has implications for policymakers and legislators in Los Angeles County for programs supported by taxpayer dollars.

Responses to these questions are summarized in Table 32. Gay and bisexual men, like most members of the general public, regard AIDS as a serious problem and do not believe that the news media are exaggerating concern over AIDS. Indeed, 89 percent (compared with 78 percent of the general public) disagree with the statement that AIDS is not as big a problem as the news media make it out to be. Most gay and bisexual respondents (85 percent) feel that AIDS will be a bigger problem in ten years than it is now, about the same percentage as in the general public (83 percent).

Gay and bisexual men hold about the same attitudes regarding AIDS prevention education as do members of the general public. Support for providing such education in junior high and high school is universal; 85 percent (compared with 87 percent of the general public) also consider it important to teach AIDS prevention at the elementary school level.

Table 32

PERCENTAGE DISTRIBUTION OF RESPONDENTS' AIDS-RELATED OPINIONS

Statement	Strongly Agree	Somewhat Agree	Are Neutral	Somewhat Disagree	Strongly Disagree
AIDS is not as big a problem as the news media make it out to be	2	6	3	14	75
In ten years, AIDS will a bigger problem than it is now	69	16	6	5	3
It is important for students in *junior high school and high school* to be taught about AIDS prevention in school	99	1	0	0	0
It is important for students in *elementary school* to be taught about AIDS prevention in school	61	28	5	5	2

NOTE: These attitude items were added to the gay and bisexual survey at the end of November 1989, after the survey had been in the field for several weeks; the distribution shown is based on the responses of 155 men interviewed after that.

IV. CONCLUSIONS

We comment here on some of the key findings and discuss their implications for policy. We also discuss limitations of the study and how they might be addressed in future research.

The following are among our key findings:

- Nearly all gay and bisexual men in Los Angeles County over the age of 18 now know how HIV is transmitted; educational efforts in this area should be targeted at men entering adulthood and should seek to maintain the salience of this information for older men.
- Although there has been a major decrease in the occurrence of high-risk behavior in this population, there is still room for further change; effort should be directed at informing men about the potential riskiness of sexual practices that they may currently think are "safer sex".
- A third of the gay and bisexual men we interviewed had not yet been tested for HIV antibodies; this suggests that a substantial proportion of gay and bisexual men could benefit from outreach programs to encourage them to seek testing to receive early treatment.

KNOWLEDGE ABOUT TRANSMISSION

The first key finding can be stated quite strongly, despite the likely underrepresentation in this study of certain types of gay and bisexual men. We found that nearly all adult county residents, regardless of sexual orientation, know how HIV is transmitted. Gay and bisexual men are at least as aware as anyone else of the basic facts.

One implication of this finding is that educational interventions seeking to convey the basic facts of transmission are best aimed at those who have not yet been exposed to the message (mainly young people). Educational messages for adult gay and bisexual men should probably now be aimed at conveying important additional information, such as what is known (and not known) about the effectiveness of various prevention strategies that some gay and bisexual men have adopted. Of course, public health messages need not convey new information to have beneficial effects on behavior; they may serve the important purpose of reminding people about a risk of which they are already aware, as cigarette warning labels do.

At this point in the AIDS epidemic, knowledge of the basic facts of transmission is widespread, and considerable behavior change has occurred. It therefore makes sense to direct efforts at primary prevention to the subgroups of men at highest risk, assuming that they can be identified. Younger cohorts of gay men have been widely assumed to be among those most likely to engage in high-risk unprotected sexual acts, but our data do not support this assumption. Instead, they suggest that men in the age group 35 to 44 may be at highest risk. We note, however, that our sample included no one under 18 years of age and only two dozen respondents in the youngest age group of 18 to 24; thus, it would be unwise to draw conclusions about the behavior of very young gay men from this study.

INFORMING GAY MEN ABOUT THE POTENTIAL RISK OF SOME CURRENT PRACTICES

Seven out of eight of our survey respondents reported having made some change in their behavior as a result of the AIDS epidemic, and for many the changes were substantial. Yet many gay and bisexual men in our sample acknowledged behaviors that could put them at risk of acquiring (or transmitting) HIV infection. Oral-genital sex without condoms and anal intercourse without ejaculation (withdrawal) are two practices that are commonly relied on to reduce the risk of HIV transmission. Neither practice is risk-free, and both could eventually prove to be much more risky than many now suppose. Providing additional information about the potential risks and the uncertainty surrounding those risks might prompt some men to modify their behavior.

Although our questions about sexual behavior were quite detailed, we did not ask respondents about their partners' known or assumed serological status. Our data indicate, however, that much of the high-risk behavior reported by respondents occurs in the context of primary relationships that the respondent believes are sexually exclusive. If both partners are uninfected and the relationship is in fact sexually exclusive, such "high-risk" behavior poses no risk of HIV transmission. But many respondents also reported high-risk behavior in nonexclusive relationships, so the potential for continued spread of HIV in this population suggested by our data cannot be dismissed.

HIV ANTIBODY TESTING

One of our study's major contributions is in providing data on the proportion of gay and bisexual men in the county who have undergone HIV antibody testing. Selection biases affecting our sample probably result in a net overrepresentation of men who have sought testing compared with those who have not, so the results can plausibly be viewed as placing a bound on the proportion of the population who had not yet been tested at the time of the survey. Fully a third of our respondents had not yet been tested; of these, 30 percent gave as one reason that no effective treatment was available. These results suggest that disseminating information about available treatments and prophylactic measures might be an effective outreach strategy to encourage men who have not yet done so to seek testing.

IMPLICATIONS FOR FUTURE RESEARCH

The results of our study suggest a number of conclusions regarding survey research on this population. First, it is possible to obtain a high degree of cooperation from gay and bisexual men who are willing to acknowledge in response to a telephone screening question that they have sex with other men. That is, having acknowledged their eligibility for such a survey, few respondents balk at answering even very detailed questions about their sexual behavior, serological status, and other sensitive topics. Unfortunately, we have no satisfactory way of determining how many eligible men refuse the interview by denying eligibility, or how those who refuse differ from respondents. We also have no satisfactory way of validating the information that respondents provide, although that problem is not unique to surveys of this population but applies to most research on human sexual behavior.

Second, our results demonstrate that if substantial numbers of gay and bisexual men in Los Angeles County currently practice high-risk sexual activity with large numbers of partners, this type of survey is not an efficient way to find them. Such men either constitute a very small proportion of the gay/bisexual population, tend not to be captured on an RDD telephone survey, or both. This research was not directed at that segment of the population, but future research on high-risk behavior might well be. If so, there are probably better ways than telephone screening to recruit subjects for study.

Third, we have noted at various points in this report the difficulty of obtaining a representative sample of gay and bisexual men through a random digit dial telephone survey. Unfortunately, there is no other single approach that will necessarily be any better. Given the

methodological difficulties of studying this population scientifically, we believe it makes sense to try more than one approach and to compare the results wherever possible, especially when different approaches do not share the same shortcomings or biases.

The ability to compare results across studies and to assess the probable direction and magnitude of bias in results from particular studies can be enhanced in various ways. One obvious way is to use comparable measures whenever possible. A less obvious way, designed to facilitate comparison of alternative sampling approaches, is to gather data that allow assessment of which respondents recruited into one study might have been recruited by using a different method. Gay men recruited through community organizations, for example, might be asked whether they have visited an alternative test site in the past year, and vice versa. By comparing the characteristics of men who are potentially recruitable in various ways, we gain a better understanding of which segments of the population can be reached and which will be missed with different approaches. We are unlikely ever to have an ideal sampling frame to use in sampling the gay and bisexual male population, but there is room for considerable improvement in researchers' ability to assess the biases that result from the various methods that are available.

Fortunately, it is not always necessary to have externally validated data from representative samples to draw important conclusions. The results of this study provide an overall picture of how gay and bisexual men in Los Angeles County have responded to the AIDS epidemic, and suggest where the emphasis in future program efforts may most productively be placed. Future surveys can assess the effectiveness of these efforts and suggest new areas where the perceptions of those who are "at risk" may not be commensurate with the health risks they face.

Appendix

REGRESSION RESULTS

Table A.1

PREDICTORS OF ENGAGING IN ANY UNPROTECTED ANAL OR ORAL SEX: RESULTS OF LOGISTIC REGRESSION

	Unprotected Anal Sex		Unprotected Oral Sex	
Variables	Coefficient	S.E.	Coefficient	S.E.
Intercept	0.79	2.42	−0.80	2.19
Age < 30	−0.73	0.42	−0.12	0.37
Age ≥ 45	−0.94	0.53	−0.51	0.41
College graduate	−0.39	0.36	−0.30	0.32
Personal income ($1,000)	−0.018*	0.009	−0.019**	0.007
Nonwhite	0.40	0.41	0.01	0.39
Number of years in LA	0.007	0.015	0.004	0.013
Married to woman	0.23	0.73	0.58	0.64
Primary excl male	1.82***	0.43	1.70***	0.50
Number PWAs known (SQRT)	0.02	0.10	0.09	0.09
Knowledge/casual modes	−0.004	0.014	0.020	0.012
Knowledge/noncasual modes	−0.006	0.019	−0.002	0.017
HIV positive	0.86	0.59	−0.33	0.51
HIV negative	0.68	0.42	0.02	0.35
Sex with alcohol	−0.11	0.13	−0.12	0.11
Sex with drugs	−0.05	0.16	0.14	0.14
n = 221				

NOTE: Direction of scoring of the dependent variables was reversed so that the sign of the coefficient would indicate the direction of the relationship.

*Coefficient significantly different from 0 with $p < 0.05$.

**Coefficient significantly different from 0 with $p < 0.01$.

***Coefficient significantly different from 0 with $p < 0.001$.

Table A.2

PREDICTORS OF FREQUENCY OF CONDOM USE: RESULTS OF ORDINARY LEAST SQUARES REGRESSION

Variables	Coefficient	S.E.	t
Intercept	5.30	1.88	2.81**
Age < 30	−0.85	0.32	−2.66**
Age ≥ 45	−0.82	0.37	−2.22*
College graduate	0.48	0.28	1.71
Personal income	0.009	0.006	−1.45
Nonwhite	0.001	0.34	0.00
Number of years in LA	0.007	0.012	0.61
Married to woman	1.92	0.57	3.36***
Primary excl male	1.05	0.35	2.99**
Number PWAs known (SQRT)	0.20	0.075	−2.68**
Knowledge/casual modes	−0.015	0.011	1.33
Knowledge/noncasual modes	−0.025	0.015	−1.68
HIV positive	−0.235	0.46	−0.51
HIV negative	0.028	0.306	0.09
Sex with alcohol	−0.015	0.098	−0.16
Sex with drugs	−0.014	0.12	−0.11
Perceived condom effectiveness	0.104	0.26	0.39
R-square = 0.20			
n = 221			

*Coefficient significantly different from 0 with $p < 0.05$.
**Coefficient significantly different from 0 with $p < 0.01$.
***Coefficient significantly different from 0 with $p < 0.001$.

Table A.3

PREDICTORS OF DRUG USE IN THE PAST FOUR WEEKS: RESULTS OF LOGISTIC REGRESSION

Variables	Coefficient	S.E.
Intercept	−1.74	2.91
Age < 30	−0.10	0.39
Age ≥ 45	−1.97**	0.69
College graduate	−0.57	0.345
Personal income	−0.0081	0.0083
Nonwhite	−0.24	0.46
Number of years in LA	0.020	0.016
Married to woman	0.97	0.67
Primary excl male	−0.44	0.53
Number PWAs known (SQRT)	−0.087	0.096
Knowledge/casual modes	0.004	0.014
Knowledge/noncasual modes	0.017	0.026
HIV positive	0.0055	0.54
HIV negative	−0.26	0.39
n = 192		

NOTE: Direction of scoring of the dependent variables was reversed so that the sign of the coefficient would indicate the direction of the relationship.

*Coefficient significantly different from 0 with $p < 0.05$.

**Coefficient significantly different from 0 with $p < 0.01$.

***Coefficient significantly different from 0 with $p < 0.001$.

Table A.4

PREDICTORS OF KNOWLEDGE OF NONCASUAL TRANSMISSION: RESULTS OF ORDINARY LEAST SQUARES REGRESSION

Variables	Coefficient	S.E.	t
Intercept	95.84	1.85	51.77***
Age < 30	0.92	1.32	0.69
Age ≥ 45	−2.17	1.46	−1.49
College graduate	−2.17	1.46	−1.49
Personal income	−0.014	0.024	−0.59
Nonwhite	−1.54	1.31	−1.17
Number of years in LA	0.086	0.048	1.81
Married to woman	−3.30	2.31	−1.43
Primary excl male	−0.53	1.45	−0.37
Number PWAs known (SQRT)	−0.22	0.30	−0.73
HIV positive	2.99	1.89	1.58
HIV negative	3.38	1.18	2.86**
R-square = 0.19			
n = 254			

*Coefficient significantly different from 0 with $p < 0.05$.
**Coefficient significantly different from 0 with $p < 0.01$.
***Coefficient significantly different from 0 with $p < 0.001$.

Table A.5

PREDICTORS OF KNOWLEDGE OF CASUAL TRANSMISSION: RESULTS OF ORDINARY LEAST SQUARES REGRESSION

Variables	Coefficient	S.E.	t
Intercept	77.61	3.08	25.22***
Age < 30	0.42	2.20	0.19
Age ≥ 45	−2.15	2.43	−0.88
College graduate	−0.12	1.88	−0.06
Personal income	0.076	0.041	1.88
Nonwhite	−10.46	2.19	−4.77***
Number of years in LA	0.06	0.080	0.72
Married to woman	−4.35	3.91	−1.11
Primary excl male	4.83	2.46	1.96
Number PWAs known (SQRT)	1.31	0.48	2.72**
HIV positive	1.82	3.06	0.59
HIV negative	3.17	1.99	1.59
R-square = 0.066			
n = 278			

*Coefficient significantly different from 0 with $p < 0.05$.
**Coefficient significantly different from 0 with $p < 0.01$.
***Coefficient significantly different from 0 with $p < 0.001$.

Table A.6

PREDICTORS OF NUMBER OF AIDS-RELATED CHANGES MADE: RESULTS OF ORDINARY LEAST SQUARES REGRESSION

Variables	Coefficient	S.E.	t
Intercept	0.40	1.70	0.23
Age < 30	0.16	0.33	0.48
Age ≥ 45	−0.23	0.37	−0.62
College graduate	−0.43	0.29	−1.51
Personal income	0.018	0.0064	2.89**
Nonwhite	0.57	0.35	1.61
Number of years in LA	−0.00059	0.012	−0.05
Married to woman	−1.86	0.62	−3.01**
Primary excl male	−0.82	0.38	−2.17*
Number PWAs known (SQRT)	0.21	0.074	2.84**
HIV positive	0.33	0.47	0.72
HIV negative	0.69	0.31	2.23*
Knowledge/casual modes	0.0028	0.0098	0.29
Knowledge/noncasual modes	0.018	0.015	1.14

R-square = 0.17
n = 250

*Coefficient significantly different from 0 with $p < 0.05$.
**Coefficient significantly different from 0 with $p < 0.01$.
***Coefficient significantly different from 0 with $p < 0.001$.

Table A.7

PREDICTORS OF HAVING BEEN TESTED FOR HIV ANTIBODIES: RESULTS OF LOGISTIC REGRESSION

Variables	Coefficient	S.E.
Intercept	−5.82	1.89
Age < 30	0.28	0.37
Age ≥ 45	0.36	0.42
College graduate	0.09	0.32
Personal income	4.85	7.26
Nonwhite	0.17	0.39
Number of years in LA	−0.011	0.013
Married to woman	0.37	0.69
Primary excl male	0.22	0.42
Number PWAs known (SQRT)	0.35***	0.09
Knowledge/casual modes	0.009	0.009
Knowledge/noncasual modes	0.048*	0.016

NOTE: Direction of scoring of the dependent variables was reversed so that the sign of the coefficient would indicate the direction of the relationship.

*Coefficient significantly different from 0 with $p < 0.05$.

**Coefficient significantly different from 0 with $p < 0.01$.

***Coefficient significantly different from 0 with $p < 0.001$.

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