



*Consensus Meeting on HIV/AIDS  
Incidence and Prevalence in California*



Gray Davis, Governor  
State of California

Grantland Johnson, Secretary  
Health and Human Services Agency

Diana M. Bontà, R.N., Dr.P.H., Director  
Department of Health Services



December 2001

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Prepared by:

Matthew Facer, M.S.  
Assunta Ritieni, M.P.H.  
Jennifer Marino, R.N.  
Paola Grasso, B.S.  
Social Light Consulting Group

Office of AIDS  
HIV/AIDS Epidemiology Branch  
<http://www.dhs.ca.gov/AIDS>

Juan Ruiz, M.D., Dr.P.H.  
Acting Chief  
HIV/AIDS Epidemiology Branch

Kevin Reilly, D.V.M., M.P.V.M.  
Deputy Director  
Prevention Services

Michael Montgomery, Chief  
Office of AIDS

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### **Moderators**

Dr. Willi McFarland, San Francisco Department of Public Health  
Dr. George Rutherford, University of California, San Francisco

### **Summary Presenters**

Ms. Linda Frank, Alameda County Health Care Services Agency  
Dr. Michele Ginsberg, San Diego County Health and Human Services Agency

### **Representatives of Local Health Departments**

Dr. Arthur Chen, Alameda County Health Care Services Agency  
Dr. George Flores, San Diego County Health and Human Services Agency

### **Guest Speakers**

Dr. Marvin Belzer, Children's Hospital, Los Angeles  
Dr. Ricky Bluthenthal, RAND Corporation  
Dr. Joseph Catania, University of California, San Francisco, CAPS  
Dr. Joan Chow, California Department of Health Services  
Mr. Richard Clark, University of California, San Francisco, CAPS  
Ms. Kristen Clements, San Francisco Department of Public Health  
Dr. Neil Flynn, University of California, Davis  
Dr. Toni Frederick, Los Angeles County Department of Health Services  
Mr. Tim Kellogg, San Francisco Department of Public Health  
Dr. Alex Kral, University of California, San Francisco  
Dr. Douglas Longshore, RAND Corporation  
Dr. Javier Lopez-Zetina, Associate Professor at the California State University, Long Beach  
Dr. Yvonne Maldonado, Stanford University School of Medicine  
Dr. Fred Molitor, University of California, Davis  
Dr. Steve Morin, University of California, San Francisco  
Dr. Dennis Osmond, University of California, San Francisco  
Dr. Kimberly Page-Shafer, University of California, San Francisco, CAPS  
Dr. Fen Rhodes, California State University, Long Beach  
Dr. Juan Ruiz, California Department of Health Services, Office of AIDS  
Dr. Sandy Schwarcz, San Francisco Department of Public Health  
Dr. Paul Simon, Los Angeles County Department of Health Services  
Dr. Stephen Spector, University of California, San Diego  
Dr. Richard Sun, California Department of Health Services, Office of AIDS

### **Additional Assistance and Documentation**

Mr. Jesse Canchola  
Dr. Joseph Catania

Ms. Andrea Kim  
Ms. Vanessa Miguelino

Ms. Charlotte Kent  
Dr. Lance Pollack

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# CONSENSUS MEETINGS ON HIV/AIDS INCIDENCE AND PREVALENCE IN CALIFORNIA

## I. EXECUTIVE SUMMARY

The consensus meetings brought together experts from universities, local health departments, private research entities, and the California Department of Health Services to discuss the prevalence and incidence of HIV in California. They addressed several at-risk populations: men who have sex with men (MSM), injection drug users (IDUs), non-IDU heterosexuals, incarcerated persons, the homeless or marginally housed, youths, and transgendered individuals. All of these subgroups were subjected to the same stepwise process in discussing measures of HIV infection. First, the size of the subgroup population in California was approximated. Second, the percentage of those in each subgroup currently infected with HIV (HIV prevalence) was estimated. This percentage included both living AIDS cases as well as those infected with HIV but without an AIDS diagnosis (regardless of whether they know of their HIV infection). Third, the percentage of those in each subgroup that becomes newly infected with HIV each year (HIV incidence) was estimated.

During the aforementioned steps, researchers and experts presented the results of past studies from their local regions, and after all presentations concerning a subgroup were completed, the group discussed the combined results and attempted to reach a consensus for the number of HIV infections for that subgroup in California. Each of the three estimation steps (population size, HIV prevalence, HIV incidence) yielded a range of values deemed plausible by the meeting participants based on their experience in conducting HIV/AIDS related research in California as well as their personal observations in their local region. Multiplying the range endpoints of the subgroup population size from the first step by those of the respective HIV prevalence (from the second step) and incidence (from the third step) provided a range of values for the numbers of people within each subgroup currently infected with HIV (prevalent cases) and newly infected with HIV each year (incident cases).

The California prevalence and incidence estimates, stratified by at-risk populations, are summarized in **Table 1** below. These estimates encompass all of California with the exception of the homeless or marginally housed population, for which estimates were only available for the San Francisco region. The population size estimates that were agreed upon by the members of the consensus meetings are also presented. Table 1 shows the population groups in descending order of the number of prevalent cases. Note that men who have sex with men and who also inject drugs (MSM-IDU) were not addressed as an individual population by the consensus meeting group, but rather as a subgroup of both MSM and IDUs. In order to illustrate the statewide estimate in the following table, however, MSM-IDU has been listed as its own group because it was not clear whether to include it with MSM or with IDUs. These MSM-IDU cases are only included in the MSM-IDU subcategory, not with the MSM or IDUs to avoid counting them twice.

The summary estimates of the total number of prevalent and incident HIV cases among at-risk population groups for California were found by adding the estimates for each at-risk group. The overall estimates as well as those for the individual at risk groups are presented in Table 1. The plausible range of values for the total number of prevalent cases in California was 67,137 to 208,905, with the group consensus range 107,837 to 124,305. The consensus meetings did not generate an estimate of the incident cases for several of the population groups, and therefore the estimate of the total number of incident cases in California was more in question. The plausible range of incident cases in California was 4,081 to 18,118 cases, with the group consensus range 6,788 to 8,988. For MSM (excluding IDUs), the estimated range of prevalent cases was 72,000 - 144,000 (the consensus was 80,000-90,000) and incident cases was 3,200-15,000 (with consensus 4,000-6,000). For IDUs (excluding MSM), the estimated range of prevalent cases was 7,200-12,500 and for incident cases was 855-1,200; the consensus point estimates of these two measures were 9,900 and 1,050, respectively. For MSM-IDU, prevalent cases were 5,000-20,000, with the consensus approximately 8,000. Incident cases were estimated to be between 188 and 1,080, with the consensus 500. For non-IDU heterosexual females, prevalent cases were estimated to be 4,410-6,300, while for non-IDU heterosexual males the estimated range of prevalent cases was 1,995-2,850. The category of incarcerated persons was divided into two sub-categories: individuals in prison and individuals in jail. For persons in prisons, prevalent cases were estimated at 2,610, while for persons in jails the estimated range of prevalent cases was 1,510-2,270. Prevalent cases were estimated to be 2,700 among the homeless or marginally housed in San Francisco, but no statewide estimate could be reached due to a lack of studies presented at the meetings. For youth, the prevalent cases were estimated to be 850-2,000. For transgendered individuals, prevalent cases were 555-1,850. Incident estimates were not available for MSM-IDU, non-IDU heterosexuals, the homeless or marginally housed, youth, and transgendered individuals. An HIV-reporting system will make it easier to reach a consensus on statewide HIV prevalence and incidence estimates in the future.

**Table 1**

Estimates for At-Risk Populations in California: Population Size, HIV Prevalence and Prevalent Cases, and HIV Incidence and Incident Cases

<b>Population</b>	<b>Population Size</b>	<b>HIV Prevalence</b>	<b>Prevalent Cases</b>	<b>HIV Incidence</b>	<b>Incident Cases</b>
<b>Men who have sex with men (MSM), excluding those who inject drugs</b>	450,000–720,000 consensus: 720,000	10–20%	45,000–160,000 consensus: 80,000–90,000	0.5–2%	1,800–14,400 consensus: 4,000–6,000
<b>Injection drug users (IDUs), excluding MSM</b>	180,000–250,000 consensus: 220,000	4–5%	7,200–12,500 consensus: 9,900	0.5%	855–1,200 consensus: 1,050
<b>MSM and IDU</b>	50,000–80,000 consensus: 80,000	10–25%	5,000–20,000 consensus: 8,000	0.5–1.5%	188–1,080 consensus: 500
<b>Non-IDU Heterosexuals</b>					
Female, 20-44	6,300,000*	0.07–0.1%	4,410–6,300	N/A	150
Male, 20-44	5,700,000	0.035–0.05%	1,995–2,850	N/A	300
<b>Incarcerated persons</b>					
Female	21,200	0.8–1.7%	170–360	0.3%	63
Male	217,500	0.9–1.4%	1,957–3,045	0.3%	645
<b>Homeless/Marginally housed (San Francisco)</b>	30,000	9%	2,700**	N/A	N/A
<b>Youth (Ages 0-19)</b>					
<b>Heterosexual Exposure</b>					
Female, 13-19	700,000	.05%	60–350	N/A	N/A
Male, 13-19	N/A	.017%	20–115	N/A	N/A
<b>MSM Exposure</b>					
Male, 13-19	21,000–58,000	2%	420–1,160	0.25–0.5%	50–250
<b>Perinatal Exposure</b>					
Overall	N/A	N/A	300	N/A	30
<b>IDU Exposure</b>					
All genders, 13-19	10,000	0.5–1.5%	50–75	N/A	N/A
<b>Total Cases, Youth</b>	N/A	N/A	850–2,000	N/A	N/A
<b>Transgendered</b>					
Male to Female	1,500–5,000	35%	525–1,750	N/A	N/A
Female to Male	1,500–5,000	2%	30–100	N/A	N/A
<b>Estimates of Prevalent and Incident Cases of HIV for All Risk Groups, California</b>	<b>Total Prevalent Cases:</b>			<b>Total Incident Cases:</b>	
	Plausible range: 67,137–208,905 Consensus range: 107,837–124,305			Plausible range: 4,081–18,118 Consensus range: 6,788–8,988	

\* Does not subtract the number of lesbians in California (the group could not estimate the size of this population)

\*\* Not included for overall State prevalent cases estimate, as most would already be counted in another risk group

## II. INTRODUCTION

HIV prevalence and incidence estimates are necessary to identify populations at greatest risk of HIV infection, develop prevention strategies, and prepare budgets for future services to HIV-infected individuals. This is particularly true for California, where HIV infection is currently not a reportable condition and only AIDS cases are systematically recorded. Therefore, in May and June 2000, researchers from throughout California attended consensus meetings to discuss the prevalence and incidence of HIV in California. They gathered to estimate the size of specific at-risk populations in the State and the prevalence and incidence of HIV within each of them. HIV prevalence is defined as the proportion of cases to the population at risk, and prevalent cases refers to the total number of people living with HIV (including those diagnosed with AIDS) within that population at risk. Incidence is defined as the rate of new cases of HIV infection per year. Incident cases are the number of new cases of HIV infection in California in a particular year. Fifty-nine participants attended the meeting in Emeryville on May 15-16, 2000, and 54 participants attended the meeting in San Diego on June 12-13, 2000. Recent research on HIV prevalence and incidence in specific populations was presented. The populations discussed at the meetings were: men who have sex with men (MSM), injection drug users (IDUs), youth, incarcerated persons, non-IDU heterosexuals, transgendered individuals, and the homeless or marginally housed.

Although the State is in the process of developing regulations for an HIV reporting system using a non-name code, HIV infection is not yet reportable in California. Systematic surveillance of HIV infection therefore is not yet possible. As HIV prevalence and incidence information is necessary for developing HIV prevention strategies and allocating funds for prevention and services to those infected with HIV, an estimate of these rates in California is especially important. During the first decade of the AIDS epidemic, HIV was monitored by the mandatory reporting of AIDS cases. However, AIDS surveillance can no longer effectively assess HIV incidence because the time between HIV infection and AIDS diagnosis has increased due to advances in HIV drug therapies. An alternative would be to bring together the results of HIV research projects conducted over the years among at-risk groups in California and use these to help estimate HIV incidence and prevalence. This was the focus of the May and June 2000 consensus meetings.

## III. METHODS

One or more of the following methods were used to reach consensus on population sizes of at-risk groups in California and the prevalence and incidence of HIV in each population:

- Modified Delphi techniques (using expert estimation and judgement);
- Epidemiological convergence (finding consistency in multiple research studies);
- Components modeling (adding numerators and denominators to yield upper and lower bounds);
- Identifying and modifying plausible estimates from studies in similar populations;
- Bayesian estimation (comparing estimates gathered during multiple different studies of the same population to provide one primary estimate);
- Mathematical modeling (applying parameter estimates to populations); and
- Identifying rigorous epidemiological studies.

## IV. ESTIMATES

### 1. HIV PREVALENCE AND INCIDENCE IN CALIFORNIA

California has 14% - 15% of the total reported AIDS cases in the United States.<sup>1,2</sup> In 1997, HIV prevalence in California was estimated at 0.3-0.4%, meaning that 94,300-130,500 Californians were HIV infected.<sup>1</sup> According to the CDC, nationwide HIV incidence was approximately 40,000 cases throughout the 1990's. In 1995, the California HIV Prevention Plan used this number to yield a statewide HIV incidence of 8,000. This estimate was considered high, and a better estimate was thought to be between 4,000 and 5,000 new HIV cases per year in California.

### 2. MEN WHO HAVE SEX WITH MEN (MSM)

Estimates of the statewide population size of men who have sex with men (MSM), as well as estimates of HIV prevalence and incidence within this group that has accounted for over two-thirds of California's cumulative AIDS cases, are presented in this section. Results from studies among MSM previously conducted in several areas of California are shown in **Table 2.1**.

**Tables 2.2** and **2.3** reflect Delphi estimates of the consensus group. The group voted on the estimates, and these tallies are shown in the **Figure 2.1**. Mathematical modeling was then used to help estimate MSM-IDU population size and HIV prevalence and incidence among MSM. These results are presented in **Tables 2.4 –2.7**.

### Estimates from recent studies

#### Population Size

- In California, an estimated 7.5% of men have sex with men, and there are an estimated 867,954 MSM. This figure is based on combining results from multiple localized general social surveys (which estimate the percentage of men who have ever had sex with men) with population size estimates for the local regions. This estimate includes MSM who are also injection drug users. (Dr. Catania, Dr. Pollack, Mr. Canchola)

#### Prevalence and Incidence

- The Urban Men's Health Study used a random-digit dialed phone sample of MSM in four major metropolitan areas (New York, Chicago, Los Angeles, San Francisco). Telephone interviews with 2,800 respondents yielded self-reports of HIV serostatus, and 300 were tested for HIV antibodies. In San Francisco, HIV prevalence among MSM was found to be 22% and incidence 1.2%. In Los Angeles, prevalence was estimated at 22% while incidence was found to be 1.1%. (Dr. Catania, Dr. Osmond)
- According to information gathered from San Francisco General Hospital and STD clinics in San Francisco, HIV incidence appears to roughly have been just above 2% overall for MSM in 1999. An estimated 42,000 (36,100-45,700) MSM live in San Francisco. Among MSM, HIV prevalence is approximately 25% (10,500; 7,500 with AIDS) with an incidence of 1-2% (315-

630 new infections per year), though recent data suggest that incidence increased among MSM, making 2% likely more accurate for 1999-2000. (Mr. Kellogg)

- The California Department of Health Services, Office of AIDS (OA), conducted a multisite HIV seroprevalence study of MSM aged 17 to 25 in the Counties of Riverside, Sonoma, and Sacramento and the City of Long Beach in 1994 using target sampling. HIV seroprevalence was 6.8% in Sacramento (n=424), 9.9% in Sonoma (n=161), 11.3% in Long Beach (n=231), and 20% in Riverside (n=20). As younger MSM would be expected to have a lower HIV prevalence than older MSM due to having less time of cumulative exposure to HIV on average, HIV prevalence is likely higher among the entire MSM populations in these regions. (Dr. Ruiz)
- In 1995 the Centers for Disease Control and Prevention (CDC), Division of HIV/AIDS Prevention, released a report entitled “Simple Methods for Estimating HIV Prevalence”. Using this methodology, the OA calculated that between 63,600 and 88,000 California MSM were living with HIV (including living AIDS cases) as of January 1, 1996.<sup>7</sup>

### **Men Who Have Sex with Men and Who Are Injection Drug Users (MSM-IDUs)**

- In Long Beach, a study was conducted on MSM-IDUs (n=148). The most common drugs used among those sampled were crack, methamphetamine and heroin. Of the 28% of MSM who had injected in the last 30 days, 61% had shared a needle with another user, 44% had used other shared injection equipment, and 24% had used a back-loaded syringe. Of the 84% who reported ever testing for HIV serostatus, 32% reported themselves to be seropositive. Lab tests showed that 45% of the individuals who reported ever being tested were seropositive, as compared to 43% of the entire study group. Thirty-five of the HIV-negative MSM-IDU were followed for seroconversion. As not all of them were followed for the same period of time, the amount of follow-up time for each individual was added resulting in a total of 21.2 person years of follow-up. Over this time, no seroconversions were observed. (Dr. Rhodes)
- Using the methods from the CDC report, “Simple Methods for Estimating HIV Prevalence”, the OA calculated that between 7,300 and 10,000 MSM-IDU in California were living with HIV (including living AIDS cases) as of January 1, 1996.<sup>7</sup>

**Table 2.1**

Estimates of MSM and MSM-IDU Population Size, HIV Prevalence, and HIV Incidence, in Specific Regions of California Observed from Studies

Area	Population Size	HIV Prevalence	HIV Incidence	Source
<b>MSM</b>				
Los Angeles	100,000	22%	1.1%	Urban Men’s Health Study (Dr. Catania, Dr. Osmond)
		12-15%		Overall 18-25 years old
		4%	0.5%	Dr. Longshore
Long Beach		11.3%		Young MSM, State report <sup>6</sup>  Venue-based survey of 836 young MSM, ages 17-25.
Sacramento County		6.8%		
Sonoma County		9.9%		
Riverside County		20%		
San Francisco	50,000	22%	1.2%	Urban Men’s Health Study (Dr. Catania, Dr. Osmond)
		12-15%		Overall 18-25 years old
	37,000 current MSM 50,000 ever MSM	25%	1-2%	Sentinel Surveillance
<b>MSM-IDU</b>				
Long Beach		43.2%	0	Dr. Rhodes

## Delphi Estimates

**Table 2.2**

Delphi Estimates of MSM Population Size, HIV Prevalence, and HIV Incidence, San Francisco

Area	Population Size		HIV Prevalence		HIV Incidence		Source
San Francisco	42,000		10,500	25%	315-630	1%	Mr. Kellogg
	48,430	15.7%*	14,770	30.5%			1997 San Francisco Consensus Meeting
	43,100	14%*	13,140	30.5%	340	1-2%	2000 San Francisco Epidemiological Update Meeting

\* Percentage of male population residing in San Francisco

**Table 2.3**

Delphi Estimates of MSM Population Size, HIV Prevalence, and HIV Incidence, California

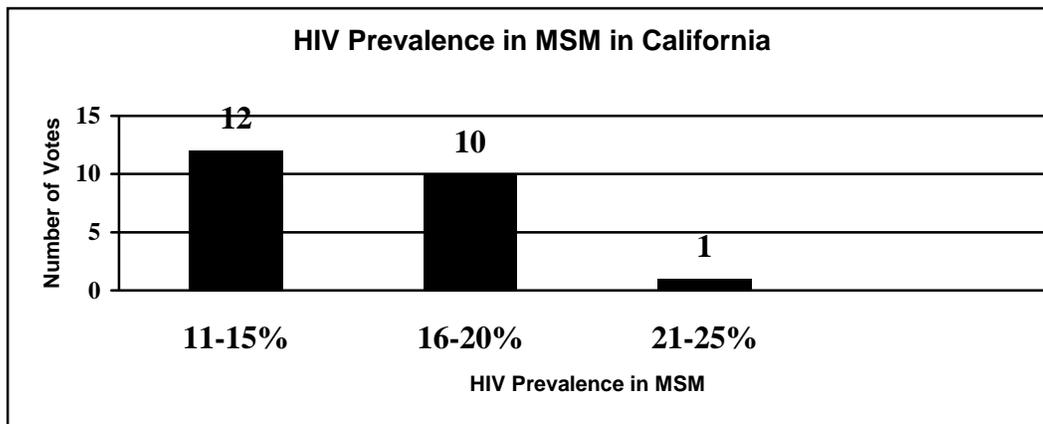
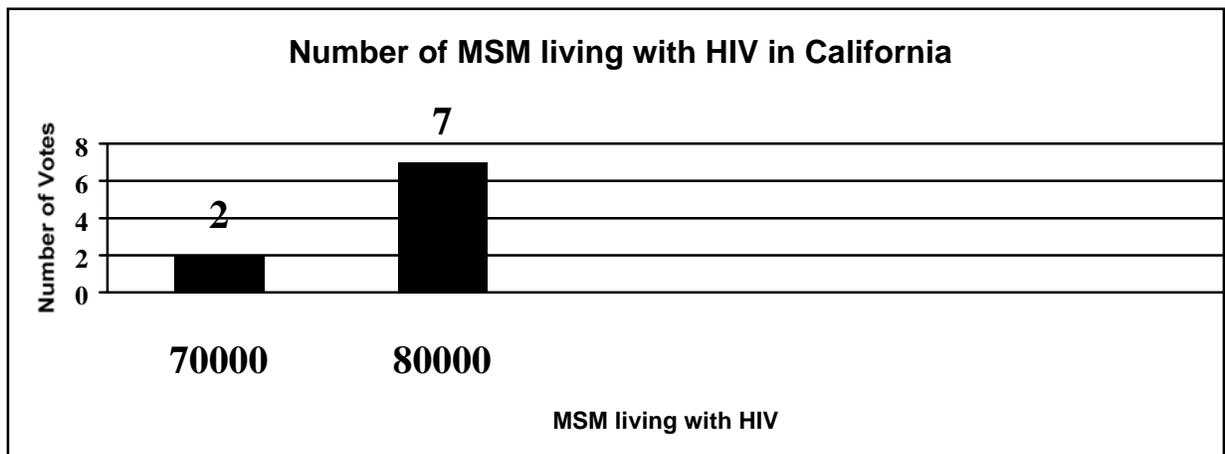
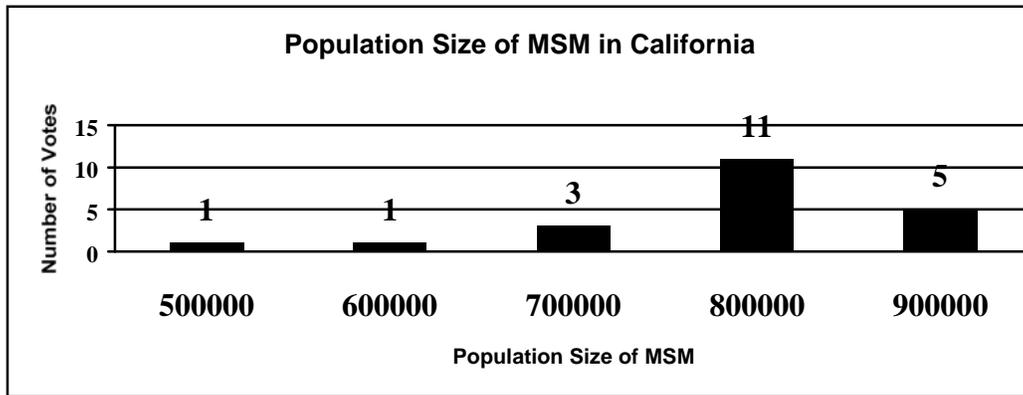
Population Size		HIV Prevalence		HIV Incidence		Source
325,000	2.5-3.0%*	78,000	24%	3,700	1.5%	Dr. McFarland
1,000,000	12%* Urban areas	159,000	16%	6,307	0.75%	Ms. Kent
867,954	7.5%* Varies over regions					Dr. Catania (from general social surveys)
		<b>MSM with HIV</b> 63,600-88,000				California Department of Health Services, 1996 <sup>7</sup>
		<b>MSM-IDU with HIV</b> 7,300-10,000				
322,300	2.5-3.0%*	77,800	24%	2,170	0.9%	Holmberg <sup>5</sup>
			8%		2%	Dr. Longshore
			20%		1.8% rising	Dr. Morin

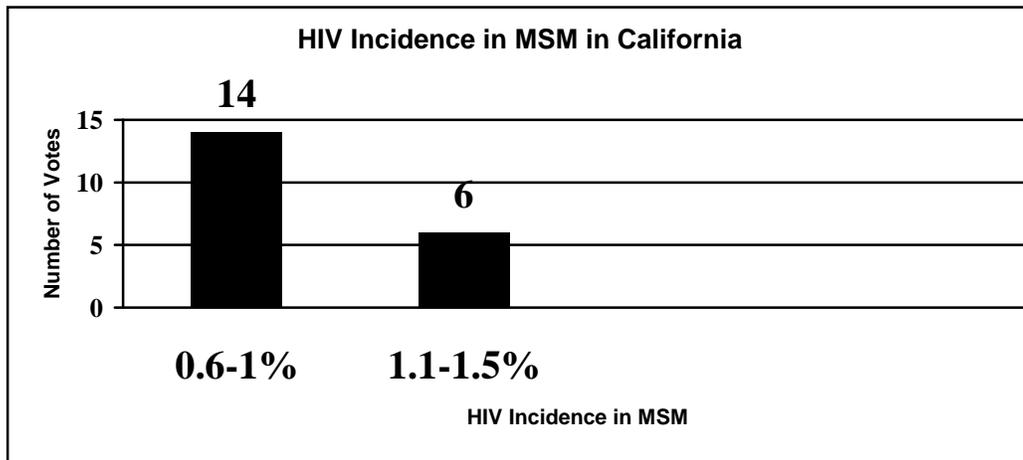
\* Percentage of male population residing in California or region therein

## Voting Tallies

**Figure 2.1**

Voting Tallies for MSM Population Size, HIV Prevalence, and HIV Incidence in California





## Estimates from Mathematical Modeling

### Population Size – MSM-IDU

- Based on the Los Angeles County sexual behavior survey, an estimated 10% of MSM there are also IDU, and 28% of male IDU are also MSM (MSM-IDU).
- If 35% of California’s MSM-IDU were in Los Angeles County, then assuming that 10% of the State’s MSM are also IDUs, there would be 50,000-80,000 MSM-IDU in California and 17,500-28,000 in Los Angeles County. As the consensus for the population of MSM in California was 800,000, the consensus for MSM-IDU would be 80,000. Ranges of estimates are shown in **Table 2.4**.

**Table 2.4**

MSM-IDU Population Size Estimates Based on Percentage of IDUs among MSM Population

Assumption relating percentage of MSM and IDUs	Low*	Medium*	High*
Assuming 10% of MSM are IDUs, then using MSM estimates	50,000	80,000	100,000
Assuming 28% of IDUs are MSM, then using IDU estimates	70,000	84,000	91,000

\*Low, medium, and high values of the population size of MSM and IDUs (see Table 1)

- Further modeling was done based on the proportion of California’s AIDS cases coming from the exposure categories MSM and MSM-IDU. These proportions were calculated for cumulative AIDS cases (through December 31, 1999) as well as cases diagnosed during 1996-1999. The proportions were then multiplied by the previously estimated total number of HIV prevalent cases in California, with 90,000 used as a minimum value and 130,000 as a maximum to yield estimates of prevalent cases of HIV. These estimates are presented in **Table 2.5** (using cumulative cases) and **Table 2.6** (using 1996-1999 cases). (Mr. Facer)

**Table 2.5**

Estimated Ranges of HIV Prevalent Cases among MSM in California Based on the Number of Cumulative AIDS Cases in California

<b>Population</b>	<b>Minimum</b>	<b>Maximum</b>
Non-IDU MSM	59,610	86,100
MSM-IDU	7,580	10,950
MSM	67,160	97,050

**Table 2.6**

Estimated Ranges of HIV Prevalent Cases among MSM in California Based on the Number of AIDS Cases in California Diagnosed Between 1996-1999

<b>Population</b>	<b>Minimum</b>	<b>Maximum</b>
Non-IDU MSM	57,020	82,360
MSM-IDU	6,540	9,450
MSM	63,560	91,810

**Table 2.7**

Estimated Statewide Ranges of Incident and Prevalent HIV cases among MSM

<b>Population Size</b>	<b>Prevalence</b>		<b>Population at Risk = Population size * Prevalence</b>	<b>Incident Cases = Population at risk * Incidence</b>		
				<b>Incidence = 0.6%</b>	<b>Incidence = 1.05%</b>	<b>Incidence = 2%</b>
500,000	55,000	11%	445,000	2,670	4,670	8,900
	90,000	18%	410,000	2,460	4,310	8,200
	125,000	25%	375,000	<b>2,250</b>	3,940	7,500
800,000	88,000	11%	712,000	4,270	7,480	14,240
	144,000	18%	656,000	3,940	6,890	13,120
	200,000	25%	600,000	3,600	6,300	12,000
900,000	99,000	11%	801,000	4,810	8,410	<b>16,020</b>
	162,000	18%	738,000	4,430	7,750	14,760
	225,000	25%	675,000	4,050	7,090	13,500

### 3. INJECTION DRUG USERS (IDU)

#### Estimates from recent studies

##### Prevalence and Incidence

- The nationwide HIV prevalence among IDU is estimated to be 5.5%. In Los Angeles County, HIV prevalence was estimated at 5.5% and HIV incidence at 1.7%. (Dr. Lopez-Zetina)
- In a street-based urban health study conducted by UC San Francisco, IDUs in eight Bay Area communities were sampled from 1986 to 2000. HIV prevalence and incidence varied over area and time. (Dr. Kral) These results along with results presented by Dr. Flynn from studies in Sacramento are presented in **Table 3.1**.

**Table 3.1**

Estimates of HIV Prevalence and Incidence among IDU in areas of California: Results of Studies by Drs. Kral and Flynn

Area	HIV Prevalence	HIV Incidence	Years of peak Prevalence	Peak Prevalence	Source
San Francisco	10%	1.23%	1994-1995	16%	Dr. Kral
Richmond	15–20%	0.53%	1992-1993	26–27%	
West Oakland	6-7%	0.53%			
Sacramento	2%		1989	6%	Dr. Flynn

- The San Francisco 2000 Epidemiological Update estimated the heterosexual IDU population size in San Francisco to be 5,700 with a 12% HIV prevalence, and the population size of MSM-IDU to be 14,200 with a 35% HIV prevalence.
- Seroprevalence data from Los Angeles County demonstrate that IDUs in treatment have a lower HIV prevalence (less than 3%, recently below 2%) than IDUs in non-treatment settings (between 3-10%, recently between 3-7%). (Dr. Longshore)
- According to findings of a study presented by Dr. Lopes-Zetina, in Los Angeles County most young IDUs and IDUs who recently started injecting drugs were methamphetamine users. Methamphetamine use was found to be associated with greater injection risk behaviors and a higher HIV prevalence. In the rest of the country, greater injection risk behaviors and a higher HIV prevalence among IDUs is associated with using speedball (combination of heroin and cocaine), not methamphetamine use. (Dr. Lopez-Zetina)

- In a cross-sectional sampling of arrestees in Los Angeles City and County jails over the past thirteen years, needle sharing and sexual risk behaviors have decreased. (Dr. Longshore)
- In Sacramento, although syringe sharing among IDUs has declined from approximately 55% to 38% (based on sentinel surveillance), sexual risk behaviors are increasing. Methamphetamine users in this population are less likely to use condoms than other drug users. (Dr. Flynn)
- Members of the consensus group emphasized the need for further study and research among young drug users, particularly in areas of high HIV prevalence and incidence, as well as in non-urban areas. They further expressed the importance of studying sexual risk behaviors.
- The California Department of Health Services, Office of AIDS, conducted a survey among out-of-treatment IDUs at four participating sites. HIV seroprevalence in these sites is presented in **Table 3.2**.

**Table 3.2**

Estimates of HIV Prevalence among IDUs in Selected Areas of California

Area	HIV Prevalence		Sample Size	Source
East Palo Alto	46	31.9%	144	Out of treatment IDU from street sites and other venues. State report. <sup>3</sup>
Sacramento County	25	6.6%	426	
Fresno County	33	5.9%	497	
San Diego County	7	1.5%	469	
Overall	111	7.2%	1,536	

- Estimates from local California regions for the population size of IDUs and MSM-IDUs, along with respective HIV prevalence estimates, are shown in **Table 3.3** and **Table 3.4**.

**Table 3.3**

Estimates of IDU Population Size, HIV Prevalence, and HIV Incidence in Specific Regions of California

Area	Population Size	HIV Prevalence		HIV Incidence		Source
Los Angeles County	166,000	8,630	5.2%		0.6 %	Collaborative Injection Drug Users Study II (Dr. Lopez-Zetina)
	4,000-14,000	160-560	4%		0.5%	Dr. Longshore
Los Angeles and Long Beach			4-5%			
San Jose	15,000			195	1.3%	1994-1995 Cohort study; 1995-97 Convenience sample
Overall	3.6%					Percent of women that ever injected drugs in a population-based survey of low-income, young women. (Dr. Molitor, Dr. Ruiz)
San Joaquin County	2.6%					
San Francisco	8.0%					
Alameda County	3.5%					
San Mateo County	2.0%					
San Mateo County		130	21.5%			

**Table 3.4**

Estimates of IDU Population Size, HIV Prevalence, and HIV Incidence in San Francisco

Population Size		HIV Prevalence		HIV Incidence		Source
17,100						SF Department of Public Health <sup>4</sup>
13,000	2%	1,560	12%	120	1%	1997 SF Consensus Meeting
14,200	4.6%	1,980	35%			2000 Epidemiological Update Heterosexual IDU
5,700	1.8%	1,710	12%			2000 Epidemiological Update MSM-IDU
18,000	2.4%	3,600	20%	225	1.25%	Cross-sectional street samples. Urban Health Study. (Dr. Kral)
			9%			Dr. Moss
			6-7%			IDUs under 30 years old. UFO Study. (Dr. Page-Shafer)
			8%		0 % 1.6% 0% 1.5%	Non-MSM IDU: In treatment Hospital Anonymous STD Clinic  (Mr. Kellogg)

- In a Long Beach study, a sample of drug users included 148 MSM, 479 heterosexuals, and 219 female sex workers. The drugs used included crack, methamphetamine, and heroin. Approximately 1.4% of female sex workers and 2.5% of heterosexuals were HIV seropositive. Of the subsample of the seropositive individuals that were followed (60.5 person-years for female sex workers and 154.2 person-years for heterosexuals), there were no seroconversions. **Table 3.5** shows injection drug behavior among female sex workers and heterosexual males who have indicated injecting drugs in the past 30 days. **Table 3.6** demonstrates seropositivity among female sex workers and heterosexuals who reported ever having been tested for HIV. (Dr. Rhodes)

**Table 3.5**

Needle Use Behaviors among IDU Female Sex Workers and IDU Heterosexuals, Long Beach

<b>Injection Drug Risk Behavior</b>	<b>IDU Female Sex Workers (N=50)</b>	<b>IDU Heterosexuals (N=105)</b>
Used a 'dirty' needle	61%	49%
Used other 'dirty' injection equipment	62%	49%
Used a 'backloaded' syringe	29%	16%

**Table 3.6**

HIV Seroprevalence among IDU Female Sex Workers and IDU Heterosexuals ever Reporting HIV Testing, Long Beach

<b>Reporting Method</b>	<b>Female Sex Workers (N=182)</b>	<b>Heterosexuals (N=369)</b>
Self Reported HIV positive	0.6%	0.3%
Lab Test HIV positive	0.6%	2.2%

**Dephi Estimates**

- Delphi Estimates of California's IDU population size, HIV prevalence, and HIV incidence are shown in **Table 3.7**, and the voting tallies for various point estimates of these measures are shown in **Figure 3.1**. The consensus point estimate for population size was 300,000, with about 200,000 of these male (inclusive of the State's MSM-IDU population). Assuming the previous consensus of 50,000-80,000 MSM-IDU in California, there are then an estimated 100,000 female IDU and 120,000-150,000 male IDU who are not MSM in the State. Note that this would also imply that 25-40% of all male IDUs are also MSM (this roughly agrees with the estimate of 28% supplied by Los Angeles County).

**Table 3.7**

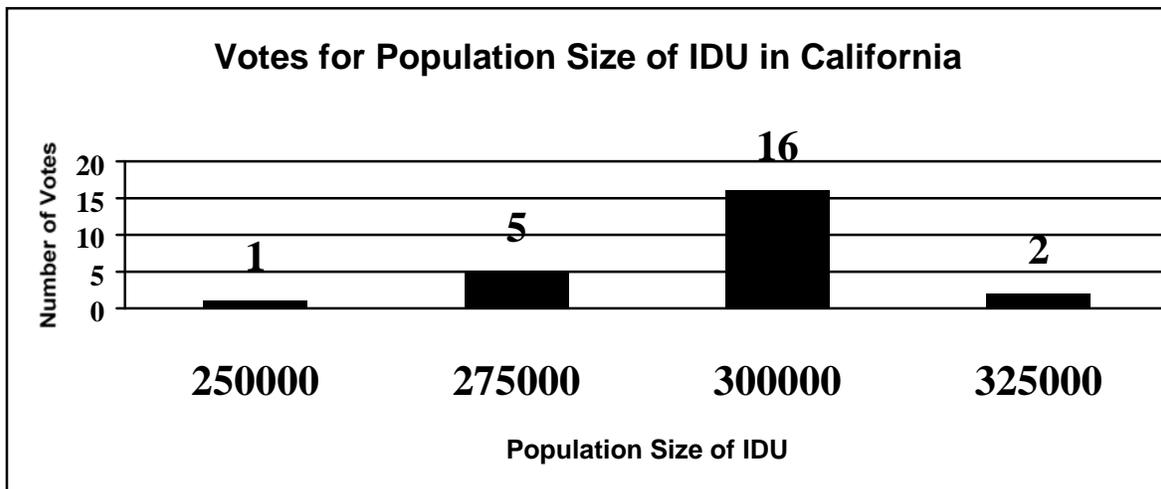
Delphi Estimates of IDU Population Size, HIV Prevalence, and HIV Incidence in California

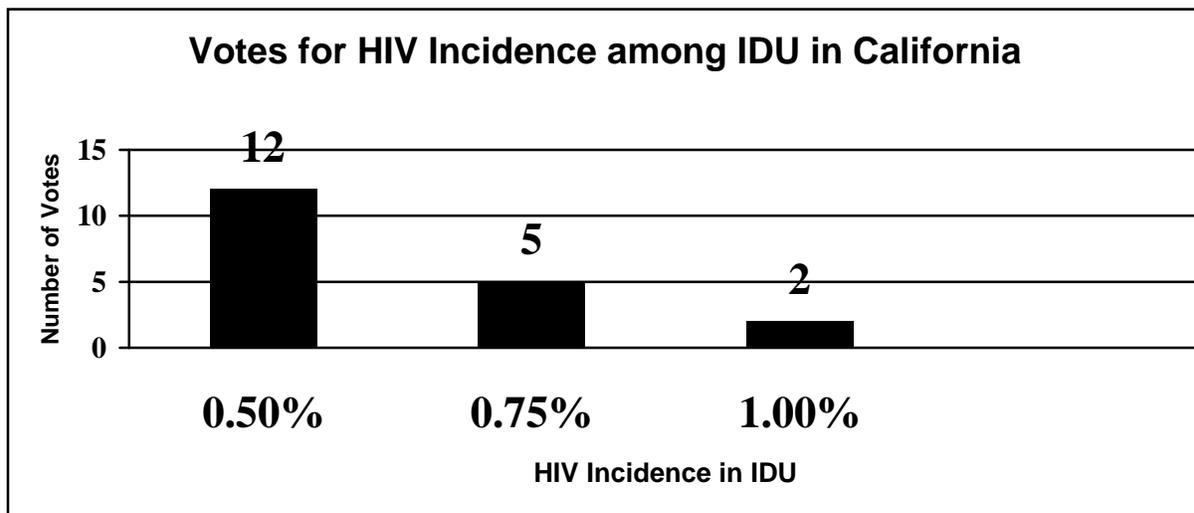
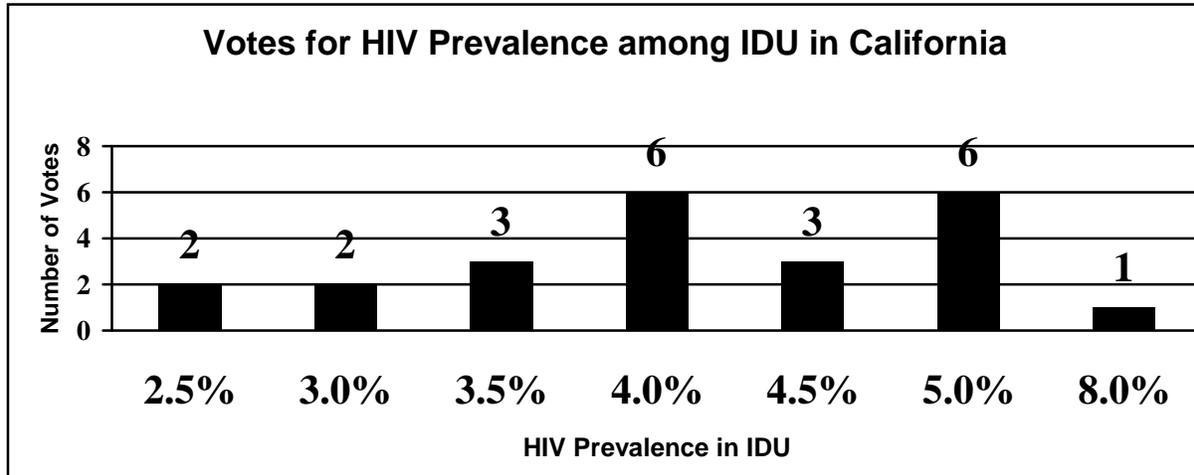
Population Size (Ever Injected)		HIV Prevalence		HIV Incidence		Source
250,000	1%	12,500	5%	1,300	0.5%	Dr. McFarland
173,700	1%	5,950	4%	290	0.5%	Charlotte Kent
340,000	1%	17,000	5%	1620	0.5%	Dr. Flynn, Dr. Kral
	1-2%		5-10%		0.5-1%	Mr. Kellogg
257,000	1%	12,180	4.7%	1230	0.5%	Holmberg <sup>5</sup>
280,000-320,000			8%		2%	Douglas Longshore
			8%		0.7% (decreasing)	Dr. Morin
<b>Current IDU</b>						
57,231	0.33%					Charlotte Kent

**Voting Tallies**

**Figure 3.1**

Voting Tallies for IDU Population Size, HIV Prevalence, and HIV Incidence in California





## Mathematical Modeling

### Population Size

- If IDUs represent 1-2% of California's population between the ages of 20 and 54 (17.4 million), then the denominator is 174,000 - 348,000 IDU. Assuming a 2:1 ratio of men to women among IDUs, there are an estimated 116,000-232,000 male IDUs and 58,000-116,000 female IDUs. The midpoints yield 261,000 IDUs, which includes 174,000 men and 87,000 women. The estimates for male IDUs would include the approximate 28% that are also MSM.

### Prevalence and Incidence

- If there are 174,000 male and 87,000 female IDU in California, and 4-8% are HIV positive (from the overall study and Delphi estimates), then the number of HIV positive IDU would be 6,960-13,920 men and 3,480-6,960 women. This results in an estimated range of 10,440-20,880 HIV positive IDU in California.

- Estimating the number of HIV prevalent cases among IDUs from the proportion of IDUs among AIDS cases in California multiplied by a plausible range of total HIV cases in California (90,000-130,000, based on previous calculations) yields further gender-specific information. Using the proportion of IDUs among cumulative male and female AIDS cases in California yields 11,061-15,977 IDUs living with HIV statewide, with 7,875-11,375 of these male and 3,186-4,602 female. If AIDS cases diagnosed during 1996-1999 are used for the proportion, the total number of prevalent HIV cases among California IDUs would be 11,808-17,056, which includes 8,469-12,233 males and 3,339-4,823 females. The estimates for male IDUs here exclude MSM-IDUs. (Mr. Facer)
- Using population size estimates of 174,000 male IDUs and 87,000 female IDUs combined with the above ranges of prevalent HIV cases, HIV prevalence among California's IDU population is 4.5-7% for men, 4-5.5% for women, and 4-6.5% overall.
- While assuming previous estimates of at-risk population size and HIV prevalence, **Table 3.8** was used when calculating HIV incident cases among IDUs in California. The estimated range of incident HIV cases within this population is shown in bold. These would include MSM-IDU.

**Table 3.8**  
Estimating Range of Incident Cases among IDUs in California

Population Size	Prevalence		Population at Risk = Population size * Prevalence	Incident Cases = Population at risk * Incidence		
				Incidence = 0.5%	Incidence = 0.75%	Incidence = 1%
250,000	6,250	2.5%	243,750	1,220	1,830	2,440
	10,000	4.0%	240,000	1,200	1,800	2,400
	19,200	8.0%	220,800	<b>1,100</b>	1,660	2,210
300,000	7,500	2.5%	292,500	1,460	2,190	2,930
	12,000	4.0%	288,000	1,440	2,160	2,880
	24,000	8.0%	276,000	1,380	2,070	2,760
325,000	8,130	2.5%	316,880	1,580	2,380	<b>3,170</b>
	13,000	4.0%	312,000	1,560	2,340	3,120
	26,000	8.0%	299,000	1,500	2,240	2,990

## 4. HETEROSEXUALS

### Estimates from recent studies

#### Population Size

**Table 4.1**

Estimates of Heterosexual Population Size Based on Preliminary 2000 Census Data and Estimates of MSM and IDU Populations Sizes

Heterosexuals	Census-based Number in California – MSM and IDU estimates
Women, 20-44 years old	$6,383,867 - (87,000) = 6,296,867^*$
Men, 20-44 years old	$6,711,824 - (800,000 + 174,000) = 5,737,824$

\*Estimate for women is inflated as the number of lesbian females was not subtracted (nor estimated at the meeting)

#### Prevalence and Incidence

- In the ecological, spatial analysis of AIDS/tuberculosis/sexually transmitted diseases (STDs), co-morbidity of these diseases was found to be concentrated in the urban areas of San Francisco, Alameda, Yolo/Sacramento, Los Angeles, and San Diego. Concentrated co-morbidity was also found in central and southern California. At the county level, co-morbidity was highest among African American males and second highest among Latinas. (Dr. Chow)
- The Community Health Outreach Project used mobile vans to collect data for three years (N=5,324) from the Counties of Alameda, Marin, Los Angeles, Sacramento, and San Diego. The overall HIV seroprevalence was 0.6% among those willing to be tested and share results. Of the 34 seropositives, 3 had other STDs, with an odds ratio of 1.16 (0.28-4.0). (Dr. Chow)
- Between 1995 and 1997, HIV incidence among heterosexuals was 0.04%, among repeat testers at San Francisco anonymous and confidential testing sites using self-report data. Using the detuned ELISA, no recent HIV infections were found among anonymous testers from 1996 to 1998. At San Francisco General Hospital, HIV incidence was 0.3% using a record-based method. Among STD testers from 1989 to 1998, incidence was stable at about 0.4% per annum, and prevalence ranged from 2 to 4%. (Mr. Kellogg)
- According to a survey of young women living in low-income neighborhoods in Alameda, Contra Costa, San Joaquin, San Francisco, and San Mateo Counties, HIV prevalence was 0.3% (N=2,545 women). This number is five times greater than the estimated 0.06% HIV prevalence in Californian women, three times greater than the estimated 0.1% in childbearing women, and thirty times greater than the estimated 0.01% in female civilian U.S. military applicants. HIV prevalence among low-income women was the same as that among female US Job Corp applicants (0.3%). It was also similar to the HIV prevalence found in low-income neighborhoods in San Francisco (0.4%). (Dr. Ruiz)

## Delphi Estimates

- Delphi estimates of HIV prevalence in California’s heterosexual population (excluding IDU) are shown in **Table 4.2**. The consensus was 0.07-0.1% among female heterosexuals, and about half as much (0.035-0.05%) among males.

**Table 4.2**  
Delphi Estimates of HIV Prevalence among Heterosexuals in California

Gender	HIV Prevalence	Source
Women	0.3%	Population-based survey of young low-income women between the ages of 18-29 in Northern California. (Dr. Molitor, Dr. Ruiz)
Women	0.07%	Survey of Childbearing Women, 1995 <sup>10</sup>
Women	0.4%	AMEN Studies
Men + Women	5,200-7,200	California Department of Health Services, 1996 <sup>7</sup>

## Mathematical Modeling

### Prevalence

- The consensus group gathered the HIV prevalence rates from the studies presented and determined a range of HIV prevalence for women by risk group. The overall HIV prevalence for women was rounded to 0.1%. The group then applied this prevalence to the population size of women in California 20-44 years of age (6.23 million), and established 6,230 prevalent cases as a lower bound for an estimated range of HIV prevalent cases in this group. The range of injection drug infections (2,040-4,080) was subtracted from this range, yielding 2,150-4,190 cases as an initial estimated range of HIV infections through sexual behavior. The group agreed that the range of plausible values for the number of women 20-44 years of age living with HIV who were infected through sexual contact is roughly the same as that for those infected via IDU, namely 2,000-4,000. Assuming the number of women over 44 living with HIV who were infected through sexual contact to be about 1,000-1,500, the total number of women at least 20 years old living in California who were infected with HIV heterosexually would be in the range of 3,000-5,500.
- It was agreed that the estimate of men heterosexually infected with HIV could be no more than half the number of women. Under this assumption, at most 2,750 men living with HIV in California were infected via heterosexual contact, with the plausible range established at 1,500-2,750. Based on AIDS surveillance data, the cumulative number of male living AIDS cases in California who were heterosexually infected with HIV is 772 (1,414 - 642 deaths). Assuming the ratio of AIDS cases to HIV, non-AIDS cases to be 1:2 (based on improved treatment and the natural time frame between HIV infection and AIDS diagnosis), these estimates roughly agree, as  $772 + 2(772) = 2,316$ .

## 5. INCARCERATED PERSONS

### Estimates from recent studies

#### Population size

- The size of California's incarcerated population is presented in **Table 5.1** based on data provided by the California Department of Corrections.<sup>12,13</sup>

**Table 5.1**

Estimates for Incarcerated Population Size in California, 1999

<b>Incarcerated Persons</b>	<b>County Jails</b>	<b>Federal and State Prisons</b>
Women	9,779	11,638
Men	65,789	151,429
Total	75,568	163,067

#### Prevalence and Incidence

- In a multisite study of California reception centers for inmates conducted in 1994, the highest HIV seroprevalence with respect to age group was 25-29 years among male inmates, and 35-39 years among female inmates. This switched in the follow-up study conducted in 1999, when the highest prevalence among male inmates was in the 35-39 age group, and among female inmates in the 25-29 age group. With respect to race/ethnicity, the highest HIV prevalence in male inmates was among African Americans: 3.8% in 1994, and 2.3% in 1999. In females, the highest HIV prevalence in 1994 was among Latinas (4.7%), and in 1999 among African Americans (2.8%). The overall data are presented in **Table 5.2**. (Dr. Ruiz)

**Table 5.2**

State Data from 13 Reception Centers for Correctional Systems, 1994 and 1999

<b>Incarcerated Persons</b>	<b>HIV Prevalence</b>	
	<b>1994</b>	<b>1999</b>
Women (N=656)	3.2% (20)	1.7% (12)
Men (N=4,452)	2.4% (100)	1.4% (68)

- Local estimates of HIV prevalence and incidence and a second statewide estimate of HIV prevalence with California's incarcerated population are shown in **Table 5.3**

**Table 5.3**

Estimates of HIV Prevalence and Incidence among Incarcerated People in California

Area	Prevalence	Incidence	Source
Orange County	1.5% (Women)		Testing on admission to the women's jail (N=12,531 tests)
Los Angeles County	3% (Women) 3% (Men)		Serial cross-section of arrestees in jail, 1991-1995 Carpenter et al <sup>19</sup>
Los Angeles County	0.125%		Incarcerated juveniles, 1990 Morris et al <sup>20</sup>
San Francisco	2.0% (Women) 2.1% (Men)	0.59% (Women) 0.64% (Men)	San Francisco Department of Public Health (Ms. Kim)
California	0.9% (Overall) (=1,328)  0.8% (Women) (=80)  0.9% (Men) (=1,248)		Bureau of Justice survey – self-reported HIV status California state prisons <sup>18</sup>

- A case control study of African American males using clinics in Los Angeles County found that 60% of HIV+ cases (n = 305) and 50% of neighborhood controls (n = 305) had ever been incarcerated, and that after controlling for risk behaviors while not incarcerated, there was no association between risk behaviors during incarceration and HIV.<sup>21</sup> Other findings of interest from this study were that among those with a history of incarceration, risk behaviors were less common while incarcerated than while not incarcerated, and increased time in jail or prison was associated with decreased HIV risk. How these results may apply to those without a history of incarceration is unknown.
- A study of IDU from 1994-96 indicated that 96% had a history of detention. Retrospective analysis indicated that HIV, Hepatitis B and STD prevalence were associated with unprotected sex, injection drug use, tattooing, type of offense and duration of imprisonment. Of incarcerated AIDS cases, 67% reported injection drug use.<sup>22</sup>
- Incarcerated people have different HIV risk behaviors. Illegal behaviors resulting in imprisonment may be continued in the correctional settings. Correctional administrations

cannot provide condoms for survival and recreational sex, or clean syringes for illicit substance use. Studying this population is challenging, as there are few incentives and many disincentives to participate. This population must be studied to characterize the risk of imprisonment, and to measure the impact on communities with which prisoners interact during the free part of their lives. Certain vulnerable populations might be more readily assessed with prison or jail intake studies than in their 'real-world' context. For example, most commercial sex workers have been arrested at least once.

## **Delphi Estimates**

- Based on this information, the group felt that a plausible range for HIV prevalence among California's incarcerated population was 0.9-1.4% among males and 0.8-1.7% among females. Combining this with the incarcerated population size, the range of prevalent cases among male and female inmates would be 1,957-3,045 and 170-360, respectively.
- The only incidence estimates provided were by San Francisco, at roughly 0.6% among both males and females. This estimate was deemed too high to use for the whole state. As the prevalence among San Francisco's incarcerated population was seen to be roughly double that for the whole State, a crude estimate for the statewide incidence was 0.3%. Combining this with the incarcerated population size (minus prevalent cases), the estimated number of incident cases among male and female inmates would be 645 and 63, respectively.

## **6. HOMELESS AND MARGINALLY HOUSED**

### **Estimates of Homeless Population Size and HIV Prevalence**

- There is no denominator data available for a state-level estimate of homeless people in California. Nationally, Burt and Aron used the 1996 National Survey of Homeless Assistance Providers and Clients to estimate that 2.3 million adults and children (0.9%) would be homeless for some period during a year.<sup>14</sup> Link et al. found, by survey, that the five-year prevalence of homelessness was 3.6%.<sup>15</sup>
- In San Francisco, there are an estimated 30,000 people homeless and marginally housed, with 9% prevalence overall and 40% in at least one HIV risk group (Mr. Clark). This local prevalence is thought to overestimate the actual statewide prevalence. However, there are no estimates of the statewide prevalence for comparison.
- A study conducted in San Francisco sampled occupants of single-room occupancy hotels, food line visitors, and homeless shelter visitors. Of 2,508 subjects, 78% were male and 60% were non-white, with a median age of 42. Overall HIV seroprevalence was 9%, ranging from 6% among food line visitors to 11% among hotel tenants. HIV seroprevalence was 29% among MSM-IDU, 18% among non-IDU MSM, 8% and among non-MSM IDU. (Mr. Clark)

## 7. YOUTH

### Estimates from recent studies

#### Population Size by Risk Category

- Census data were not used to estimate the population size of at-risk youth to avoid including the substantial percentage of young people who engage in no risk behaviors. The estimated percentages of youth (aged 13-19) that engage in specific risk behaviors, both in local areas and statewide, are presented in **Table 7.1** from a national study published in 1999.

**Table 7.1**

Estimates of Exposures among Youths in California and Regions Therein

Area	Population Size	Source
San Francisco	Sexually Active: 18.2% Ever injected: 1.8%	National Youth Risk Behavior Surveillance <sup>8</sup> N = 1,201
San Bernardino	Sexually Active: 28.8% Ever injected: 1.8%	National Youth Risk Behavior Surveillance <sup>8</sup> N = 1,654
California	Sexually Active: 18.2% Ever injected: 0.9%	National Youth Risk Behavior Surveillance <sup>8</sup> N = 15,349

- Perinatal exposure will be presented as a separate section as the estimation techniques employed are unique compared with other modes of exposure

#### Prevalence and Incidence

- Given partner patterns, the prevalence in this age group reflected: sexual transmission from prenatal and perinatal cases who have survived to the age of sexual maturity; commercial and survival sex work; immigrant populations from nations with higher prevalence; homeless youth; and the sexually assaulted.
- Based on national projections from AIDS cases, 77,000-220,000 youth (here, 0-24 years old) are HIV infected, of which 10% are in care. Nationally, adolescent HIV infection rates are increasing more rapidly in females than males. However, in California, particularly Los Angeles, 60-70% of new cases in adolescents and young adults are in MSM. Job Corps data from 1990-1996 show California seroprevalence of 0.11%, with higher rates in African Americans and older age groups.

- Area-specific estimates of HIV prevalence among at-risk youth (though few IDUs) are shown in **Table 7.2**, while the numbers of HIV seroconversions among military personnel are shown in **Table 7.3**.

**Table 7.2**

Estimated HIV Prevalence and Incidence among Youths for California and Regions Therein

Area	HIV Prevalence	Source
Los Angeles	9% (Overall) 14% (African Americans) 4% (Whites)	MSM aged 15-22; Young Men Study; (Mr. MacKellar)
San Francisco	6%	MSM aged 15-22; Young Men Study; (Mr. MacKellar)
San Diego	1.48%	Binational Border Study of Latino youth aged 17 and under, mostly MSM (Dr. Ruiz)
California	0.21% (Women) 0.14% (Men)	Job Corps, 1996 <sup>17</sup> Mostly high-risk heterosexual, 16-22 years old; some ever-IDU, but not current IDU.

**Table 7.3**

Military Seroconversions, National Data

Military Branch	HIV Prevalence (per 100,000 tests)	Source
Navy	16	1999 Medical discharge records (Mr. Grillo, Dr. Brodine)
Army	17	
Air Force	11	
Marine Corps	10	

- San Francisco Department of Public Health AIDS surveillance shows that 12% of men and 15% of women with AIDS were diagnosed between the ages of 20 and 29, suggesting late teenage infection. (Dr. Schwarcz)
- Further age-specific prevalence and incidence estimates at specific venues (and for some specific at risk categories) are presented in **Table 7.4**

**Table 7.4**

Estimates of HIV Prevalence and HIV Incidence in California and Regions Therein by Age Group and Venue of Testing

Age Range	Prevalence	Incidence	Source	
Under 25	2.2%	0.9%	STD clinics (all risk groups)	
21-25	2.6%		Anonymous test sites (all risk groups)	
18-24	3.3%		San Francisco General Hospital, 1993-1999	
25-29	11.4%			MSM
18-24	1.6%			MSM
25-29	3%			IDU (no MSM)
			IDU (no MSM)	

- Los Angeles County counseling and testing center data by risk category shows the highest prevalence among the 13-19 age group to occur among MSM, at 4%. Further testing information from Los Angeles County among MSM is shown in **Table 7.5**. (Dr. Belzer)

**Table 7.5**

HIV Prevalence by Race/Ethnicity in MSM aged 16-22, Los Angeles County 1996-98

Race/Ethnicity	HIV Prevalence
African-American	14%
Asian and Pacific Islander	13%
Latino	7%
White	4%

- In Los Angeles County over a 17-year period, there were 4 suspected and 1 verified case of HIV sexually transmitted in children under 13. Estimated new exposures were unchanged, and sum total prevalence would be expected to remain constant, so cumulative exposures would be expected to be at most 85.
- The UFO Project in San Francisco studied young IDUs through a street-recruited sample of 312 IDUs under age 30 (median age 22). Most participants were men, and they were predominantly White. Brief results are shown in **Table 7.6**. (Dr. Page-Shafer)

**Table 7.6**

HIV Prevalence in Young IDUs by Age, San Francisco

<b>Age</b>	<b>HIV Prevalence</b>
15-19	1.4%
20-24	5.7%
25-29	6.9%

## **Delphi Estimates**

### **Population Size by Risk Category**

- For simplicity, the group assumed that all of the 17, 18, and 19-year old women had ever had sex (which was known to be too high), and none of the girls 16 or under had ever had sex (known to be too low). In reality, each age would differ, and estimating this percentage for each age was considered beyond the scope of the meeting. Based on census strata and these assumptions, California has about 700,000 females 13-19 years old with a sexual history. This history was assumed to likely include a partner with a previous partner (increasing HIV risk).
- As the onset of sexual activity is known to be later among boys than girls, and as boys tend to partner with girls having little sexual experience themselves, estimating the number of heterosexually active, at-risk boys was not attempted.
- It was suggested that the 700,000 estimate for the number of sexually active 13-19 year old females, however, could be used to estimate the number of MSM in the same age range by multiplying this estimate by the prevalence of MSM behavior among males in the age range. The agreed upon range of plausible values was 3-5%, making the estimated number of MSM 13-19 years old 21,000-35,000. A survey-based estimate of the number of MSM between the ages of 13 and 17 is considerably higher at 58,104. (Dr. Catania, Dr. Pollack, Mr. Canchola)
- While estimating the percentage of sexually active females for each age between 13 and 19 was considered too problematic to attempt, estimation of the percentage of IDUs among all youths 13 to 19 years old, regardless of gender, was attempted. The estimation was done by using 1% as the estimate of IDUs among 19-year olds, and halving this percentage for each year younger. These results are presented in **Table 7.7**.

**Table 7.7**

## IDU Population Size in Youth Aged 13-19 in California

Age	Percent IDU (ever)	Number of IDU (ever)
13	0.016%	76
14	0.031%	152
15	0.0625%	313
16	0.125%	625
17	0.25%	1,250
18	0.5%	2,500
19	1%	5,000
<b>Total # of Injectors</b>		<b>9,916</b>

**Prevalence and Incidence**

- Using the denominator of 10,000, high and low risk categories with differential exposure rates are as follows. If 25% of injecting youth were at high risk, with HIV prevalence 1-1.5%, there would be 25-38 cases in this group. Similarly, if 75% of injecting youth were at lower risk with a prevalence of 0.5%, then 38 cases would belong in that group. Thus the consensus was 50-75 injection-related youth HIV cases in the State.
- In the 1995 Survey of Childbearing Women<sup>10</sup>, 0.05% of teenaged women tested seropositive for HIV antibody. Applying this prevalence, the group concluded that about 350 prevalent cases in heterosexual girls was an adequate upper bound for an estimate, and that taking the number of AIDS cases in this cohort - 57 through June 30, 2000<sup>11</sup> - provided a useful lower bound.
- The chlamydia rate among boys has been found to be roughly one-third that of girls the same age. Taking one-third of the range of the estimated HIV prevalent cases in girls estimates prevalence at 20-115 cases among boys. (Ms. Kent)
- The consensus for the HIV prevalence among MSM between 13 and 19 years old was in the 1.5-4% range. The results for HIV sexual exposure among youth are shown in **Table 7.8**.

**Table 7.8**

## Estimates of Sexually At-risk Youth (13-19) Population Size and HIV Prevalence, California

Population	Population Size (Sexually Active)	HIV Prevalent Cases	HIV Prevalence
Heterosexual Girls	700,000	60-350	Up to 0.05%
Heterosexual Boys		20-115	
MSM Boys	21,000-58,000	420-2,320	1.5-4%

- Children under 13 were assumed to lack parenteral, or injection, exposure. However, immigrant children may have been professionally injected or transfused without precautions in their home nations. Parenteral exposures include blood transfusions, organ and tissue transplantation, injection drug use, reuse of medical equipment, skin piercing and needle stick injuries.<sup>9</sup>
- Summing these components, HIV prevalence among Californians aged 13-19 (excluding perinatal exposure cases) is 550-1,700.

## Perinatal Exposure to HIV

### Estimates from recent studies

- Since 1988, the Los Angeles Pediatric Spectrum of HIV/AIDS Disease (PSD) Project has studied 581 HIV infected children in care in Los Angeles County. Of these 581 HIV infected children, 299 have AIDS and 282 do not. A racial/ethnic breakdown of these pediatric cases is shown in **Table 7.9**. (Dr. Frederick)

**Table 7.9**

Race/Ethnicity of HIV Infected Children Studied by the Pediatric Spectrum of Disease Project, Los Angeles County 1988-99

Race/Ethnicity	Percentage of Cases Observed
Latino	42%
African-American	34%
White	21%
Asian/Pacific Islander	3%

- Among people living with AIDS in San Francisco, the majority of pediatric AIDS occurs in African Americans, but the majority of adolescent AIDS occurs in Latinos. (Dr. Schwarcz)
- UC San Diego's Mother-Child-Adolescent HIV program demonstrates the impact of Pediatric Antiretroviral Clinical Trials Group studies and the subsequent availability of a prophylactic regimen on perinatal transmission. Most HIV-infected women in the 20-29 age group and a quarter of cases in 30-39 age group were infected before the age of 21. The median latency for AIDS development after HIV infection is roughly 11 years without antiretroviral therapy. The percentage of AIDS cases in the 30-39 age group has grown compared to that in the 13-19 and 20-29 age groups since 1993. This suggests that the percentage of cases due to perinatal transmission has decreased. Although perinatal transmission appears to have dropped, infection rates in adolescents and the youngest adults appear to be unchanged. (Dr. Spector)

- The Seroprevalence of Childbearing Women Surveys, Perinatal Prevention - MICE Project, and Pediatric Spectrum of Disease Project provides evidence that up to 88 HIV-infected children are born in California annually; if antiretroviral prophylaxis were maximized, this number could be reduced to less than 30. (Dr. Maldonado)

### **Delphi Estimates**

- Using data from the Survey of Childbearing Women<sup>10</sup>, the group estimated the number of prevalent and incident cases for the State. These data are presented in **Table 7.10**. The transmission rate was gradually decreased due to improving treatment options for pregnant women infected with HIV and increased HIV testing during pregnancy. This table suggests that perinatal HIV incident cases currently number about 30 and prevalent cases about 200.

**Table 7.10**

Estimated Number of Prevalent and Incident Cases of Perinatal HIV Infection in California  
Based on the Survey of Childbearing Women<sup>10</sup>

<b>Birth Year</b>	<b>Number Exposed*</b>	<b>Transmission Rate</b>	<b>Number Infected</b>	<b>Mortality Rate</b>	<b>Survivors (Prevalent Cases)</b>
1987	350	0.25%	88	0.9	9
1988	405		101	0.85	15
1989	364		91		14
1990	428		107	0.8	21
1991	487	0.15%	73		0.75
1992	402		60	15	
1993	321		48	0.7	34
1994	414	0.08%	33	0.65	11
1995	348		29	0.6	11
1996	377		30	0.55	14
1997	367		29	0.59	15
1998	365		29	0.45	16
1999	364		29	0.35	19
<b>Total Number of Prevalent Cases</b>					<b>209</b>

\*HIV seroprevalence among sampled childbearing women times the number of births that year

- It is unknown how many of these 209 prevalent HIV cases are living AIDS cases (known to be 215). Half was assumed, making the estimate of prevalent HIV perinatal infections 300.
- Participants stressed the need for household surveys, means to increase acceptability of counseling and testing, homeless studies and concerted monitoring of childbearing women.

## 8. TRANSGENDERED INDIVIDUALS

### Estimates from recent studies

#### Population Size

- Dr. Simon observed that the character and size of the transgender population display great variety across locations: San Francisco, Los Angeles and San Diego have different populations from each other and from the groups living in other settings in California. In Orange County, researchers have gained access to transgendered populations through community-based organizations. Also, those in treatment provide an access point with which to contact other members of this extensively networked community.
- Many rural areas have transgendered individuals living covertly within them. Also, some communities (such as Bakersfield and Fresno) host traveling shows featuring transgendered entertainers who may or may not be based out of these communities. Both of these facts make counting transgenders difficult.
- The ratio between male-to-female (MTF) and female-to-male (FTM) transgendered individuals had never been estimated in California, to the group's knowledge.

#### Prevalence and Incidence

- Among a sample of 515 transgendered individuals in San Francisco, 35% of 392 MTF individuals and 2% of 123 FTM individuals were HIV seropositive. Among MTF individuals, African American race, injection drug use, and sex partners in excess of 200 were factors significantly associated with HIV seropositivity. Current sexual and injection risk behaviors were highly prevalent in this group. (Ms. Clements-Nolle)
- A sample of 244 MTF receiving HIV prevention services at 3 community agencies in Los Angeles County had 22% HIV seroprevalence. HIV infection was found to be disproportionate among African Americans (44%) and multiracial participants (37%) relative to White participants (16%). HIV serprevalence over demographic strata are shown in **Table 8.1**. Over 101.4 person-years of follow-up, seroincidence was 3.9% (4 seroconversions). It is difficult to estimate HIV measures for regions without a visible concentration of transgender individuals. (Dr. Simon)

**Table 8.1**

Estimate of HIV Prevalence over Demographic Strata, Los Angeles County

<b>Demographic Strata</b>	<b>HIV Prevalence</b>
<b>Age Group</b>	
18-29 years	14%
30-39 years	40%
Over 40 years	8%
<b>Race/Ethnicity</b>	
African-Americans	44%
Multi-Racial/Other	37%
Latinos	26%
Whites	16%
Asians/Pacific Islanders	4%
<b>History of Sex Work</b>	
History of Sex Work	26%
No history of Sex Work	18%

- Based on the study incidence and projections of the transgender population size from the estimated size of the MSM population, the number of new HIV infections in the Los Angeles County transgender population may be 320-600 per year. (Dr. Simon)

Delphi Estimates

**Population Size**

- Dr. Rutherford projected that the number of transgendered individuals in the state was roughly 1% the number of MSM, or 3,000-10,000. An estimate was provided for the ratio between male-to-female (MTF) and female-to-male (FTM) transgendered individuals (1:1). Although a majority of the group felt that this ratio was plausible, the group did not unanimously accept it. A clear consensus was not reached for this ratio.

**Prevalence and Incidence**

- Assuming that half of the State’s estimated 3,000-10,000 transgendered individuals are MTF with HIV prevalence 35%, and half FTM with prevalence of 2%, then the overall number of prevalent cases of HIV is  $(0.35 \times (0.5 \times 3,000)) + (0.02 \times (0.5 \times 3,000)) = 525 + 30 = 555$  to  $(0.35 \times (0.5 \times 10,000)) + (0.02 \times (0.5 \times 10,000)) = 1,750 + 100 = 1,850$  cases among transgendered individuals in California.

## V. CONCLUSION

MSM-IDU likely have the highest HIV prevalence and incidence, particularly if they use methamphetamine in addition to other drugs, but it is difficult to study them systematically.

Prevention services should be targeted to populations with an increased likelihood of becoming HIV infected.

Populations at risk in California may differ from the rest of the nation. For example, female sex workers have low HIV prevalence compared with the nationwide prevalence.

Although the consensus estimates are statewide, the actual figures differ by region. For example, studies show HIV prevalence in MSM is 31% in San Francisco and 17% in Los Angeles (way too high for general populations). Communities differ.

Information is obtained from individuals that choose to cooperate. For example, IDU accessing health services are a self-selected population. Caution must be taken in extrapolating to populations, such as all needle users.

Consensus meetings are useful because it gives the opportunity to share approaches for reaching populations and identifying populations at risk.

### **Men Who Have Sex with Men (MSM)**

There are an estimated 500,000-870,000 MSM in California (with 800,000 thought to be the best estimate). Of these, 80,000 were estimated to have ever injected drugs, based on the 800,000 MSM estimate. HIV prevalence overall is estimated to be 10-20%, and HIV incidence is estimated at 0.5-2.0% per year statewide. These estimates could not be narrowed because the influence of major urban 'hot spots' (San Francisco, Los Angeles and San Diego) may or may not reflect the general disease rates for the state. Among MSM who inject drugs, seroprevalence and incidence are expected to be higher.

### **Injection Drug Users (IDUs)**

The number of people in the state who have ever injected drugs is estimated to be 260,000 to 300,000, inclusive of MSM-IDUs. HIV prevalence varies by setting, and is 4-5% statewide, with higher-prevalence 'hot spots' in certain urban settings. Incidence is 0.5% a year, and may be higher in such 'hot spots'.

### **Heterosexuals**

Denominators for this population are represented by the census for the cohort, minus IDU and MSM, resulting in about 5.7 million men and 6.3 million women (though this includes lesbian females, whose population size was not estimated). Prevalence among non-IDU heterosexual women 25-44 years of age can be estimated from the Surveys of Childbearing Women as

0.7/1000 (which was extended to include 20-24 year olds as well). Among STD clinic populations, prevalence is higher, around 0.6% in both sexes, and co-morbidity is high.

### **Incarcerated**

All incarcerated people in California (65,789 males and 9,779 females in local jails<sup>12</sup> and 151,699 males and 11,368 females in state and federal prisons<sup>13</sup>) are assumed to be at risk for HIV infection. Studies have shown that HIV rates in California incarcerated populations are 0.9-1.4% in males, and 0.8-1.7% in females; HIV seroprevalence increased to 2-3% in jail samples. No incidence data is available for prisons, but in San Francisco jails, incidence is approximately 0.6% for both sexes, which provides a high-end estimate for the state as a whole.

### **Homeless and Marginally Housed**

No statewide estimate of homelessness is available, so denominators remain undefined. Prevalence in samples has been high, especially in homeless MSM-IDU. Although incidence is unknown, high prevalence in small studies indicate need for further study.

### **Youth**

Those born to seropositive mothers (an estimated 364 infants per year) were assumed to be at risk for perinatal infection, resulting in 300 current cases of HIV in children/youth attributable to perinatal exposure. The estimated birth cohort for California in 2000 was 556,000.<sup>10</sup> Incident cases were estimated as a stable 30 per year at current prophylaxis rates.

All those who had ever injected drugs or who had received medications parenterally without standard precautions were assumed to be at parenteral risk, approximated as 10,000 people aged 13-19 years; their differential risk resulted in a range of 0.5-1.5% seroprevalence, or 50-75 cases overall. Based on currently available information, incidence was not estimable at the statewide level.

Sexually active youth were assumed to be at risk regardless of partner's sex. Approximately 700,000 girls aged 13-19 years, and all young women aged 20 to 24 years (1.1 million) were thus assumed at risk. The estimated HIV prevalence was 0.05%, yielding 350 cases in 13-19 year-olds, and 550 cases in those 20-24 year-olds. Denominators for their male partners were not estimated, but the high-end estimate of HIV seroprevalence among heterosexually active non-IDU boys was 1/3 that in females, or .017%. Applying this 1/3 fraction with the assumption of roughly the same number of at-risk heterosexual boys as girls, a high-end estimate of HIV prevalent cases among heterosexual boys would be 115. Based on current information, incidence in heterosexually active non-IDU youth is not estimable.

Depending on the estimate used, 21,000–58,000 boys under 19 have had sex with boys or men, as have another 88,000 men aged 20-24. Seroprevalence was estimated as 1.5-4%. So applying a lower midrange prevalence value of 2% to the boys results in 420 – 1,160 prevalent cases among MSM 13-19. Lack of information did not allow estimating statewide incidence in young

men, but very high incidences in small studies raise concerns and indicate the need for further study.

### **Transgendered Individuals**

The estimated denominator is 3,000-10,000 transgendered individuals statewide, which may be an underestimate. Prevalence appears to be much higher in male-to-female (MTF) than female-to-male (FTM) transgendered persons, with targeted samples indicating prevalence as high as 35% in MTF and 2% in FTM. Current data are too scant for statewide estimation. Incidence is also inestimable. High prevalence raises concerns and indicates the need for further study.

## **VI. SPEAKER BIOGRAPHIES**

### **Ricky Bluthenthal, Ph.D.**

Dr. Bluthenthal is an Assistant Professor in the Department of Psychiatry and Human Behavior at Charles R. Drew University School of Medicine and Science, and an Associate Sociologist at RAND. He is also the Associate Director of the Prevention and Treatment Services Core of Center on HIV Identification Prevention and Treatment Services (CHIPTS) and Director of the Social and Behavioral Research Core of the Drew Center for AIDS Research, Education, and Services (Drew CARES). He received his Ph.D. in sociology from the University of California, Berkeley. His research interest includes innovative HIV prevention strategies for injection drug users, especially syringe exchange programs, access to drug treatment for illicit substance users, and the relationship between race, poverty and health outcomes.

### **Joseph Catania, Ph.D.**

Dr. Catania is an Associate Professor in the Department of Medicine and Center for AIDS Prevention Studies. He is the Principal Investigator for the Bay Area Urban Men's Study.

### **Arthur Chen, M.D.**

Arthur Chen was the Health Officer for Alameda County, California from 1996 to 2001. Since 1983 he has practiced clinical medicine as a family physician at Asian Health Services (a community health center) in Oakland, California. He has also served as their Medical Director and Special Programs Director. Prior to that he served as an emergency room physician/instructor and the Associate Medical Director of the Institute of Emergency Medicine at the Albert Einstein College of Medicine, Bronx, NY. He was also the Executive Director of the Chinatown Health Clinic in New York City. He completed his postgraduate training at the Residency Program in Social Medicine at the Montefiore Hospital and Medical Center of the Albert Einstein College of Medicine, Bronx, New York. He received his B.S. and medical degrees from the University of California at Davis. Since 1987 Dr. Chen has been on the clinical faculty of the Family and Community Medicine Department of the University of California School of Medicine in San Francisco.

### **Joan Chow, M.P.H., Dr.P.H.**

Dr. Chow is currently the Chief of the Epidemiology Unit in the STD Control Branch of the California Department of Health Services. She is affiliated with the UCSF Center for Reproductive Health Research and Policy. Special areas of research include chlamydia prevalence monitoring, pilot of electronic laboratory reporting of STDs, population based estimates of STDs and risk behaviors, and monitoring/evaluation of STD claims data in Family PACT. Prior to this position, Dr. Chow was a postdoctoral fellow and epidemiologist with the UCSF Chlamydia Research Laboratory working on studies of ectopic pregnancy and past chlamydial infection, clinical trials of amplified nucleic acid assays for chlamydia, and modeling chlamydia.

**Richard Clark, M.P.H.**

For six years, Richard Clark has been conducting Public Health research among the urban poor and other marginalized groups. He received his M.P.H. degree from the Johns Hopkins School of Public Health in 1998. He is the Director of the UCSF REACH Project, a prospective cohort study of HIV-infected homeless and marginally housed adults.

**Kristen Clements-Nolle, M.P.H.**

Ms. Clements-Nolle is an Epidemiologist at the San Francisco Department of Public Health, Epidemiology and Evaluation Section. She is a doctoral candidate in Epidemiology at the U.C. Berkeley School of Public Health. Ms Clements-Nolle is currently the Co-Investigator for the San Francisco Incarceration Study, The Transgender Community Health Project, and the AIDS Evaluation of Street Outreach Project.

**George Flores, M.D., M.P.H.**

Dr. Flores became the San Diego County Public Health Officer in December 1999, after serving in that capacity in Sonoma County for the prior decade. He directs the Office of Public Health, which includes the Office of AIDS Coordination, Community Epidemiology, Emergency Medical Services, Medical Quality Assurance, and other services, for the State's second largest local health jurisdiction. Dr. Flores is a former president of the California Conference of Local Health Officers, and founding member of the Latino Coalition for a Healthy California. He sits on the Board of Directors of the National Association of City and County Health Officials.

**Neil Flynn, M.D., M.P.H.**

Dr. Flynn is the Research Director of the Center for AIDS Research, Education & Services (CARES). Since 1993, he has been a Professor of Clinical Medicine in the Department of Internal Medicine at the University of California, Davis. Dr. Flynn received his M.P.H. degree from the University of California, Berkeley and his M.D. from Ohio State University. His research interests in AIDS include epidemiology and prevention of spread among injection drug users, and treatment of opportunistic infections and the provision of health care.

**Linda Frank, R.N.**

Linda Frank is a public health nurse and is the Chief of Disease Surveillance and Epidemiological Investigations Section for the Alameda County Health Services Agency. This includes the AIDS Surveillance Unit and communicable disease control. Ms. Frank is knowledgeable and experienced in HIV/AIDS epidemiology.

**Michele M. Ginsberg, M.D.**

Dr. Michele Ginsberg provides oversight for Immunization, Vital Records and Public Health Laboratory functions, in addition to the Division of Community Epidemiology for the County of San Diego Department of Health Services. Activities in the division include special projects particularly around AIDS and HIV, examining behaviors associated with risks and epidemiology in the community. Other areas include Childhood Lead Poisoning Prevention Program, investigation and surveillance of diseases reportable by law within the State of California. Dr. Ginsberg is on the faculty of the University of California, San Diego and Departments of Medicine and Family Medicine Epidemiology, and the Graduate School of Public Health, San Diego State University.

**Tim Kellogg, M.P.H.**

Mr. Kellogg is an Epidemiologist of the HIV Seroepidemiology and Surveillance Section of the San Francisco Department of Public Health. He monitors the AIDS and HIV epidemic in San Francisco. He identifies recent HIV infections using sentinel surveillance research and new testing methods.

**Alex Kral, Ph.D.**

Dr. Kral is an epidemiologist at the University of California, San Francisco. Since 1993, he has been conducting research on infectious diseases among illicit drug users.

**Douglas Longshore, Ph.D.**

Dr. Longshore conducted a six-year study of HIV transmission and risk behavior among injection drug users in Los Angeles. He has conducted numerous studies of risk behavior trends and correlates among drug users in Los Angeles and other cities.

**Javier Lopez-Zetina, Ph.D., M.A.**

Dr. Lopez-Zetina is an Associate Professor at the California State University, Long Beach. He earned his doctoral degree in Public Health at the University of Texas School of Public Health. He has extensive experience implementing HIV cross-sectional and longitudinal research protocols among injection drug users and other HIV behavioral groups.

**Yvonne Maldonado, M.D.**

Dr. Yvonne A. Maldonado received her M.D. at Stanford University and completed a pediatric residency and pediatric infectious diseases fellowship at the Johns Hopkins Hospital. For two years, she was an Epidemic Intelligence Service Officer at the Centers for Disease Control. In 1988, she joined the Department of Pediatrics at Stanford University School of Medicine, where she is an Associate Professor of Pediatrics. Since 1988 when she was Board certified in Pediatrics, she has been a member of the American Board of Pediatrics.

She has served as the Infectious Diseases expert for the Pediatrics Review and Education Program (PREP) Committee of the American Academy of Pediatrics, and for the National Vaccine Advisory Committee. Dr. Maldonado founded and directs the Stanford Infectious Diseases and Immunology Center, a diagnostic and treatment outpatient clinic for children with acquired or congenital immunodeficiencies. She was the Stanford Principal Investigator for the Northern California Pediatric AIDS Clinical Trials Group from 1988-1994. She is the Principal Investigator for the NIH-funded HIVNET HIV clinical trials in Zimbabwe. Dr. Maldonado conducted an oral polio vaccine immunogenicity study in the rural highlands of Chiapas, Mexico. She works on perinatal HIV prevention clinical trials, molecular mechanisms of neuroeversion of poliovirus vaccine, and ontogeny of T and B cell immune responses to measles vaccine in young infants.

**Willi McFarland, M.D., M.P.H., Ph.D.**

Dr. McFarland is the Director of HIV Seroepidemiology for the San Francisco Department of Public Health, AIDS Office and a researcher in the Department of Medicine at UCSF and the coordinator for Africa for the CAPS International Program. He has been a Principal Investigator for national and international HIV epidemiological studies. These include sentinel surveillance; prevention intervention trials; community-based surveys of HIV incidence, prevalence; and correlates of transmission in diverse populations.

**Fred Molitor, Ph.D.**

Dr. Molitor is a Research Scientist for the Center of Health Services Research in Primary Care at the University of California, Davis Medical Center. Dr. Molitor has worked as a Research Scientist for the California Department of Health Services Maternal and Child Health Branch and the Office of AIDS. Dr. Molitor received his Ph.D. from Florida State University in Communication Theory and Research.

**Steve Morin, Ph.D.**

Dr. Steve Morin is an Associate Professor of Medicine and Director of the AIDS Policy Research Center, UCSF AIDS Research Institute. For over ten years, Steve was a principal legislative assistant to Representative Nancy Pelosi. For five years, he was an associate staff to the House Appropriations Committee. From 1992 to 1997, he worked for Labor-HHS-Education Appropriations Subcommittee. He helped shape federal AIDS policy. Prior to 1987, he was an Assistant Professor of Medicine at UCSF. He was one of the original scientists to initiate behavioral research on HIV prevention, which led to Centers for AIDS Prevention Studies (CAPS). He hopes to develop ways for the UCSF AIDS research to help inform national AIDS policies. He is working on improving HIV counseling and testing programs, expanding access to HIV pharmaceuticals, and setting priorities for international HIV prevention research.

**Dennis Osmond, Ph.D.**

Dr. Osmond is an Associate Professor in the Department of Epidemiology and Biostatistics at the University of California, San Francisco. His current major research interests include: Kaposi's sarcoma-associated herpes virus and Kaposi's sarcoma; incidence of HIV infection in young MSM's health services; research on access of care and impact of managed care. Prior publications include: Transmission and natural history of HIV; Transmission of HBV and HCV.

**Kimberly Page-Shafer, M.P.H., Ph.D.**

Dr. Page-Shafer's research focuses on the epidemiology of HIV and hepatitis C virus (HCV) infections. She has studied less-well understood routes of infection such as oral acquisition of HIV and STDs. She is involved in epidemiologic studies in California and internationally identifying incident and prevalent HIV infection in various at-risk populations. These include young injection drug users (IDU), men who have sex with men (MSM) and young women from low-income areas in the five counties of the San Francisco Area. Dr. Page-Shafer is Principal Investigator of a NIH-funded case-control study of factors and co-factors affecting risk of oral acquisition of HIV infection. She is Co-Investigator on an NIDA-funded study of incident HCV infection and HBV vaccination among young injection drug users in San Francisco (P.I. Andrew Moss, Ph.D.). She collaborates with the San Francisco Department of Public Health on studies of HIV and HCV infection in at-risk communities.

**Paul Simon, M.D., M.P.H.**

Dr. Simon received his undergraduate degree from University of California, Los Angeles, M.D. from the University of Michigan, and M.P.H. from UCLA. He completed a residency in Pediatrics and two years of training as an EIS Officer with the Centers for the Disease Control and Prevention (CDC). He is board certified in Pediatrics and General Preventive Medicine. From 1992 to 1998, he was Medical Epidemiologist in the Division of HIV/AIDS Prevention, CDC, assigned to the HIV Epidemiology Program, Los Angeles County Department of Health Services (LADHS). He is currently Director of the Office of Health Assessment and Epidemiology, LADHS, and an Adjunct Assistant Professor in the Department of Epidemiology within the University of California, Los Angeles School of Public Health

**Fen Rhodes, Ph.D.**

Dr. Rhodes is Director of the Center for Behavioral Research and Services and Professor of Psychology at California State University, Long Beach. He holds a Ph.D. degree in psychology from Ohio State University and an M.S. degree in psychology from George Washington University. His B.S. degree is from the Georgia Institute of Technology. Dr. Rhodes has been actively involved in the development and evaluation of HIV risk interventions for drug users and other at-risk populations since 1985. He is currently principal investigator of two National Institute on Drug Abuse studies, one evaluating an HIV sexual risk intervention for out-of-treatment crack users, and the second evaluating risk-reduction interventions for drug-using men who have sex with men. He was a principal investigator of the CDC's Project RESPECT, which investigated the relative efficacy of different HIV counseling interventions in reducing HIV risks among patients in public sexually transmitted disease clinics, and was co-principal investigator of the Long Beach CDC AIDS Community Demonstration Project, with responsibility for formative research and street interviewing activities.

**Juan Ruiz, M.D., M.P.H., Dr.P.H.**

In 1981, Dr. Ruiz received his M.D. from the Universidad Autonoma de Guadalajara, Mexico in 1981. He received his M.P.H. in Maternal and Child Health in 1988 and his Dr.P.H. degree in Epidemiology in 1997 from the University of California at Berkeley. Dr. Ruiz has worked for the Department of Public Health in Alameda County, Santa Clara County and the City of Berkeley. He has worked for the California Department of Health Services since May 1992. He is the Acting Chief of the HIV/AIDS Epidemiology Branch in the Office of AIDS.

**George Rutherford, M.D.**

Dr. Rutherford is the Salvatore P. Lucia Professor of Prevention Medicine and Professor of Epidemiology, Preventive Medicine and Pediatrics in the School of Medicine at the University of California, San Francisco. He is Adjunct Professor of Epidemiology and Health Administration at the School of Public Health at the University of California, Berkeley. Educated at Stanford University and Duke University, Dr. Rutherford is board certified in pediatrics and in general preventive medicine and public health. Following training in epidemiology at the Centers for Disease Control's Epidemic Intelligence Service, he spent his professional career in public health practice on the epidemiology and control of communicable diseases. Dr. Rutherford has been the State Health Officer for the California Department of Health Services, the State Epidemiologist for the California Department of Health Services, the Director of the AIDS Office for the San Francisco Department of Health and the Director of the Division of Immunizations for the New York City Department of Health.

Dr. Rutherford is the Chief of the Division of Epidemiology and Preventive Medicine in the Department of Epidemiology and Biostatistics at UCSF. He is the director of the Joint UCSF-University of California, Berkeley Residency Program in Public Health and General Preventive Medicine. He is the Director of the Center for AIDS Prevention Studies' International Program and the Coordinating Editor of the Cochrane Collaborative Review Group on HIV Infection and AIDS.

**Sandy Schwarcz, M.D., M.P.H.**

Dr. Schwarcz is the Director of AIDS Surveillance for the San Francisco Department of Public Health. She monitors the HIV/AIDS epidemic in San Francisco.

**Dr. Richard Sun, M.D., M.P.H.**

Dr. Sun received an M.P.H. in Epidemiology from the University of California at Berkeley in 1986 and an M.D. from UC San Francisco in 1988. After an internship in Cleveland, he was an Epidemic Intelligence Service Officer at the Centers for Disease Control (CDC) in Atlanta. He has worked for the California Department of Health Services from 1991 to 2000, first as a CDC Preventive Medicine Resident assigned to the Infectious Disease Branch, then as a Public Health Medical Officer in the Chronic Disease Control Branch. He is the former Chief of the HIV/AIDS Epidemiology Branch in the Office of AIDS.

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