

Working Group on  
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**SURVEY OF RESEARCH ON THE IMPACTS  
OF PESTICIDES ON AGRICULTURAL WORKERS  
AND THE RURAL ENVIRONMENT**

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**DISCUSSION  
SURVEY OF RESEARCH ON  
THE IMPACTS OF PESTICIDES**

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## **I. INCIDENCE OF PESTICIDE POISONING IN CALIFORNIA**

The number of illnesses which are caused by pesticides in California is not known. Although the state has the nation's best system for reporting pesticide poisonings, it counts only those illnesses which occur on-the-job and are treated by a doctor.

Many, if not most, persons with pesticide illnesses do not seek medical attention. The non-specific symptoms of pesticide illness can be confused with the flu, or non-pesticide dermatitis. Many of these illnesses are not serious enough to require medical attention.

Even when a serious illness occurs, it may not be treated. Those who are most affected by pesticides, the state's 600,000 agricultural workers, do not have equal access to health care. Most of California's rural counties have too few primary care physicians.<sup>1</sup> Only one-third of the state's agricultural workers receive health insurance as a benefit of their employment.<sup>2</sup> Many rural counties have closed their county hospitals, and provide few, if any, health care benefits to the poor. Although the cost of treating occupational illnesses are supposed to be borne by Workers' Compensation Insurance, many workers are unaware of this fact. Some workers fear employer discrimination or retaliation if they seek these benefits.

It is difficult to document the long-term effects of pesticide exposure. Outcomes such as cancer, birth defects, reproductive failure, or neurologic damage are not expressed until many months or even years after exposure. The multiple etiologies of these conditions makes it extremely difficult to unambiguously attribute an adverse effect to pesticides. This is especially difficult because of the lack of solid information about pesticide exposures.

### **Data from Poison Control Centers**

California officials estimate that 13,000 people seek medical treatment for pesticide poisoning each year.<sup>3</sup> This estimate is based on the requests for information received by the state's poison control centers. The majority of these requests pertain to poisonings of children under five years of age, who are exposed to pesticides in the home and garden environment.

### **Doctors' Reports of Pesticide Illness**

Despite its flaws, California's unique pesticide illness reporting system provides the most detailed information on pesticide poisoning available anywhere in the United States. Each year, California doctors file more than 2,000 reports of pesticide illness. These reports are collected by the California Department of Food and Agriculture (CDFA), which publishes an annual account of pesticide illness. CDFA classifies about half the physician reports as being bona fide occupational illnesses caused by pesticides (see Table 1).

The CDFA pesticide illness report provides details on the occupation of the injured worker, the chemical involved, whether there was lost work time, and the type of injury.

**TABLE 1**  
**California Doctors' Reports of Illness Due to Pesticides**  
**1980 - 1986**

Year	Number of Doctors' Reports of Pesticide Illness	Number Classified as Occupational Illness Due to Pesticides	Percent of Doctors' Reports Classified as Occupational Pesticide Illness
1980	2,427	1,414	58.3%
1981	2,698	1,093	40.5
1982	2,522	1,334	52.9
1983	2,537	1,270	50.1
1984	2,461	1,156	47.0
1985	2,449	1,516	61.9
1986	2,099	1,065	50.7
7-Year Average	2,456	1,264	
7-Year Total	17,193	8,848	51.5%

Source:<sup>4</sup>

#### **GEOGRAPHIC LOCATION**

The statistics show that the state's top agricultural counties, Kern, Monterey, Tulare, and Fresno, account for the largest number of agriculturally related pesticide poisonings. In 1986, CDFA ceased tabulating illness reports by County.

#### **OCCUPATION OF INJURED WORKERS**

Only 40% of pesticide illness reports involve workers whose occupation principally deals with the application, mixing, handling, or manufacture of pesticides (see Figure 1). The remaining poisoning victims include workers employed in occupations where exposure might not be expected. The most common type of this sort of poisoning is the exposure of farmworkers to chemical residues in fields, nurseries, or greenhouses.

#### **ILLNESS TYPES**

Some 43% of the reported illnesses are systemic, that is, the body in general is affected; illnesses involving the skin account for 31% of the poisonings and eye injuries 23%. Many of the cases of skin rashes involve mass outbreaks among grape vineyard field crews in the southern San Joaquin Valley.

#### **PESTICIDES INVOLVED**

The organophosphate insecticides account for only 25% of confirmed reports of worker illness.<sup>5</sup> One would expect organophosphates to be responsible for a greater share of the illnesses, because the sole laboratory test in common use can confirm only organophosphate induced illnesses. If other laboratory tests become widely used, the relative importance of organophosphates might be even smaller.

Figure 1

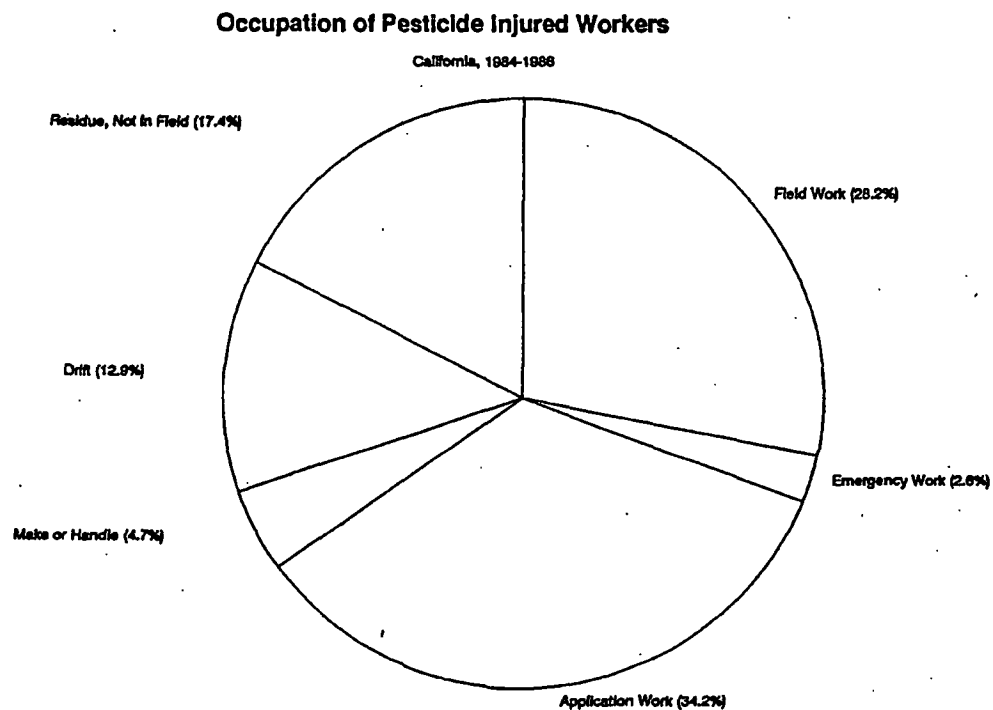
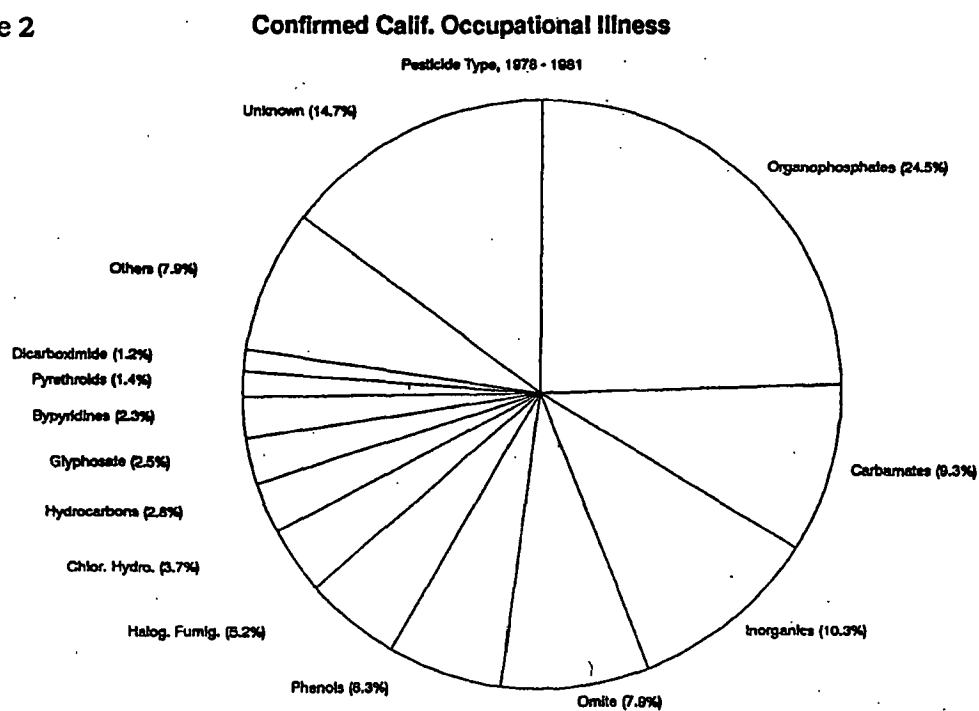


Figure 2



Other categories of pesticides which are important causes of illness are inorganic chemicals such as sulfur and copper containing compounds, organic sulfites, phenols, halogenated fumigants, chlorinated hydrocarbons, glyphosate, bipyridines, and synthetic pyrethroids (Figure 2).

#### **METHODOLOGICAL CONCERNS REGARDING ILLNESS DATA.**

There are several concerns about the accuracy and the adequacy of the CDFA tabulations of physician reports. Only acute illnesses which are job-related must be reported. Occupational illnesses are reported only if they are treated by a physician who then makes the proper diagnosis and files the appropriate report. Physicians may be reporting fewer illnesses because the agency which enforced the physician reporting requirement has been dissolved. There are also problems with the methods used by CDFA to classify and tabulate the physician reports.

*Elimination of enforcement of physician reporting requirements.:* California law requires physicians to report on-the-job pesticide illnesses to the County Agricultural Commissioner.\* The goal of this law is to provide enforcement officials with timely information which can prevent recurrent outbreaks. Physicians who violate the reporting requirement are subject to a \$250 fine. Formerly, this law was vigorously enforced by the Pesticide Unit of the Calif. Occupational Health and Safety Administration (Cal OSHA), which prosecuted several physicians for failing to file illness reports. This prosecution ended with the demise of that unit. This may have resulted in fewer physician reports being filed.

*Classification of Reports.:* CDFA reviews each physician report of illness, along with information collected in subsequent investigation by County agricultural officials. This information is used to assign a confidence rating to each illness report. The illness is rated on a scale which ranges from a "definite" relationship to pesticide exposure, to "probable", "possible", or "unlikely" relationship to exposure.

About half of all physician reports are excluded from the illness statistics because they were either about non-occupational illnesses, or because there was "inadequate data" regarding exposure.

In 1986, CDFA excluded 464 (22%) of the doctors' reports of illness from the statistics because there was insufficient information about the case. Two-thirds of these cases (318) involved workers who suffered dermatitis in grape vineyards. The CDFA indicates that in prior years, these reports would have been classified as pesticide induced illnesses, but that a tougher standard was adopted. Such physician reports of pesticide induced dermatitis are no longer classified as pesticide illness, "unless evidence identified a specific vineyard as the location of the onset of dermatitis." This change in definition sharply reduced the number of pesticide illness reports CDFA confirmed in 1986.

In a 1985 study, a physician from the California Department of Health Services examined physician reports of applicator illness. This study found that CDFA reviewers had misclassified several reports as "unlikely", when they were actually pesticide induced illnesses.<sup>6</sup> Of the 12 illnesses among the pesticide applicators studied, only 7 were reported.

#### **AREAS FOR FURTHER STUDY.**

CDFA publishes some detailed data, but does not summarize the physician reports in ways which would be most useful to clinicians. For example, while CDFA reports the number of illnesses caused by each specific pesticide, there is no summary of the number of illnesses caused by each chemical category, e.g., the proportion of illness caused by organophosphates or carbamates. The CDFA report tabulates illnesses as if each were caused by a single pesticide, yet a substantial number of reported illnesses involve exposure to mixtures of two or more pesticides.

\* In most counties, the authority to accept these reports has been delegated to the County Health Officer.

CDFA could also do additional analyses which would be useful to public policy makers. The physician report data base includes both the date of illness and the date of the Agricultural Commissioner's illness investigation. CDFA could quantify the lag between illness and investigation, or whether this lag correlates with there being too little information to confirm the physician's report. The CDFA data also includes the crop in which the worker was exposed, but this information is not published.

It would be possible for an independent researcher to tabulate information from the CDFA data base and perform these analyses. It may not be possible to evaluate the CDFA's system of rating physician reports, because these reports and the illness investigation reports are considered confidential medical records.

### **Other Occupational Illness and Injury Reports**

There are three other statistical series which report on the safety of California work places. These include employer reports of disabling occupational injuries, doctor reports of occupational diseases, and a survey of employers.

The number of reports of occupational injuries in the agricultural work place has increased markedly in the last decade. As a result, agriculture has become the state's second most dangerous industry, with a higher rate of injury than mining or manufacturing.

Pesticide poisonings represent only a part of the total number of injuries and illnesses reported in California agriculture, less than 5% of the total. This may be due to the more frequent occurrence of other injuries, or the relative underreporting of pesticide illnesses.

#### **EMPLOYER REPORTS OF DISABLING OCCUPATIONAL INJURY**

State law requires California employers to report occupational injuries. Reports of injuries which are "disabling," that is, they cause the employee to miss at least one day of work, are tabulated by the state Department of Industrial Relations. The number of reports of disabling injuries in agriculture has steadily increased over the last decade. Agricultural employers reported 19,394 disabling injuries in 1986.<sup>7</sup>

The employer reports include an average of some 50 fatal accidents in California agriculture each year.

These reports on disabling injuries in agriculture can be characterized by type of agricultural business, by the sex and the age of the worker, by accident type, and by the nature of injury and by the county where the injury occurred (Table 2).

Most disabling injuries (86.3%) involve men. Only 1.1% of reported disabling injuries involve persons 17 years old or younger. This is down from the 1950's and 60's, when young people suffered 3% to 4% of the reported agricultural injuries. Disabling injuries and illnesses in agriculture occur most frequently at fruit and nut farms (20.0%), vegetable and melon farms (12.2%), and at crop service businesses, which include chemical application firms (10.2%). Disabling injuries and illnesses in agriculture occur most frequently to workers in Fresno (10.6%), Monterey (8.5%), Kern (8.2%), Tulare (7.7%), Ventura (5.1%) and Riverside (5.0%) Counties. Strains and sprains are the most frequent disabling injury (35.8%), followed by cuts and punctures (16.1%), fractures (9.6%), contusions and crushing injuries (7.1%) and occupational illnesses (6.9%).

**TABLE 2**  
**Employer Reports of Disabling Work Injuries**  
**and Illnesses in California Agriculture**

Annual Average Number of Disabling  
Injuries for 3-Year Periods 1972-86

1972-74	12,842
1975-77	14,148
1978-80	16,767
1981-83	18,493
1984-86	20,041

Source:<sup>8</sup>

Causes of occupational injuries and illness in agriculture are no longer reported by the state. The most recent reports are for 1970 through 1976.<sup>9</sup> These show that motor vehicles were the cause in 10.7% of the injuries, hand tools in 11.7%, containers in 8.6%, machines in 8.2%. Chemicals and other injurious substances were involved in only 6.0% of the reported disabling illnesses and injuries.

**EMPLOYER OCCUPATIONAL ILLNESS AND INJURY SURVEY**

Each year, a sample of California employers is surveyed by the state's Division of Labor Statistics. The Division obtains the number of on-the-job injuries recorded in the employers' records, and uses employment figures to estimate incidence rates of injuries and illnesses for each of the state's major industries.

**TABLE 3**  
**California Agriculture**  
**Occupational Injuries and Illnesses Survey**

Year	Incidence (per 100 workers) All Cases	Number of Cases (000's)		
		Lost Workday Cases	All Cases	Lost Workday Cases
1974	12.1	5.2	32.1	13.9
1975	11.3	4.6	31.7	13.0
1976	12.1	5.1	25.7	10.8
1977	12.4	5.5	24.4	11.1
1978	12.5	5.6	29.6	13.2
1979	12.2	5.6	n.a.	n.a.
1980	11.9	5.6	33.9	15.8
1981	12.3	5.7	32.9	15.8
1982	12.5	5.9	35.6	16.8
1983	12.8	n.a.	n.a.	n.a.
1984	13.0	n.a.	n.a.	n.a.
1985	12.7	6.2	36.0	17.4

Agricultural employers have been surveyed since 1974. The estimate of the total number of cases of occupational injury and illness in the state's agricultural industry has been increasing. The estimate of the rate of injuries and illnesses has also been increasing, which is contrary to the trend in other industries in the state, which have decreasing rates. The 1985 rate of 12.7 injuries and illness per 100 agricultural workers exceeds the average rate of 9.5 per hundred workers in California work places.<sup>10</sup> Only the state's construction industry has a higher rate of injury.

The survey data for agriculture are found in Table 3.

#### **DOCTOR REPORTS OF OCCUPATIONAL DISEASE**

The state also tabulates occupational diseases reported via the Doctor's First Report of Occupational Injury or Illness. These reports are filed with the Workers' Compensation Insurance carriers. Work related diseases associated with chemicals, plant and animal products, foods, infectious agents, and environmental conditions such as heat, cold or noise, are tabulated in this series. Work related injuries, such as trauma, falls, and other accidents, are not tabulated in these reports.

The 3,388 reports of occupational disease in California agriculture in 1982 accounted for 9.5% of the reports, although agriculture is said to account for only 4.0% of the state's employment.<sup>11</sup>

Agricultural chemicals were the causal agent in 34.6% of the reported occupational disease in agriculture. Poison oak was the causal agent in 21.4% of the reports. Other important agents were other plants (7.1%), other chemicals (9.6%), and food products (7.1%).

#### **Surveys of Agricultural Workers**

Surveys of farmworkers suggest that there are many more pesticide illnesses than are reported by physicians.

A survey of Tulare County farmworkers in 1969 found that they suffered symptoms possibly related to pesticide poisoning at a much higher rate than did their non-farmworking neighbors.<sup>12</sup> Farm workers sought medical care for these symptoms at 125 times the rate of reported pesticide illness, suggesting that even when medical care was sought, physicians did not diagnose pesticide illness.

A 1973 survey of 1,416 Monterey and Stanislaus County farmworkers found that they suffer disability due to illnesses apparently related to pesticide exposure at more than 250 times the rate reported by doctors' reports.<sup>13</sup> Few workers, less than 8 percent, knew that Workers' Compensation Insurance paid for treatment of occupational illness. Those who did not know about Workers' Compensation were also the least likely to seek treatment for the symptoms of pesticide poisoning.

These two surveys prompted state health officials to estimate that only a small fraction, perhaps only 1 or 2 percent, of the illnesses of field workers caused by exposure to pesticide residues was being reported.<sup>14</sup> The state subsequently enacted legislation requiring physicians to report pesticide illnesses to local authorities, or risk a \$250 fine.

Despite this legislation, more recent evidence indicates that most poisonings still are not reported. Another study of Tulare County workers was conducted in 1981. Of the 472 workers surveyed, 90.7% responded that they or a family member had a health complaint which they attributed to agricultural chemicals.<sup>15</sup> In only 79 (18%) of these cases did the individual seek medical treatment. Workers



Compensation paid for this treatment in only 13 cases (16.9% of those treated). The survey found other types of occupational injury were less prevalent. Only 34.4% of the households surveyed included a worker who had suffered an on-the-job injury.

A much smaller survey conducted in 1987 indicates that the findings of the earlier surveys are still valid.<sup>16</sup> There were 105 farm worker respondents in the survey, which was conducted in California, Louisiana, Ohio and British Columbia. One-third of the respondents were from California, and 14% were employed mixing loading, or applying pesticides. Forty-five respondents (43%) reported that they had been poisoned by pesticides, and 26 said they had been poisoned more than once. Only 17 respondents ever went to a doctor for treatment, and of these, only 8 received workers' compensation.

Surveys of farm workers have been done in other areas of the United States. Among these is a recent survey conducted in Washington state.<sup>17</sup> Of the 460 farm workers surveyed, 278 (60%) said that they had been exposed to pesticides, either to drift, residues, or in applying chemicals.

Of the 199 workers who said they were exposed to pesticide drift, half reported that they felt ill effects as a result. Of those who felt ill, 12% missed work because of the illness, and only 8% sought medical treatment. 217 workers reported that they had worked in an area treated with pesticides within 2 days of the application. 42% of these workers said that they felt ill as a result.

Of the 104 workers who mixed or applied chemicals, 38% reported ill effects. Of those who felt ill, only 15% missed work because of the illness, and only 15% sought medical treatment.\*

All five of these studies suggest that pesticide illness is common in the agricultural work place, but that most illnesses are not brought to the attention of a physician.

#### **CRITICISMS OF SURVEY METHODOLOGIES.**

Surveys of field workers suggest the prevalence of pesticide induced illness, but they cannot confirm it. Surveys report the subjective impressions of workers, the respondents' symptoms. Studies which ask workers if they have suffered from any of the symptoms listed in a questionnaire have been criticized for introducing bias, as they suggest a response. Many survey questionnaires have listed just those symptoms caused by organophosphate pesticides, and not the symptoms of illness induced by other pesticides, or symptoms not associated with pesticide exposure.

Survey studies do not confirm illnesses with the objective observations of medical personnel, or laboratory tests, nor do they quantify exposure with residue studies or even identify the pesticides involved. Thus other causes of the symptoms reported by survey respondents cannot be excluded. The method used in the 1969 study of the California health department contrasted symptoms reported by a control group to those reported by farmworkers. This allowed for the finding that the non-specific symptoms of pesticide illness occurred at a much higher rate among agricultural workers. Even this methodology cannot rule out the possibility that symptoms were due to some other attribute of the farm work place.

Another problem of survey studies is the difficulty in sampling workers at random in order to find respondents who are actually representative of the farm work force.

\*This study, conducted by Evergreen Legal Services, documents the lack of training, protective gear, and washing facilities for farm workers in Washington state. It also includes a good review of surveys conducted in other states.

## **EXHIBIT 10**

### **Social History Background Records**

- Douglas B. Gwynn, *California's Rural Poor: Trends, Correlates, and Policies*, California Institute for Rural Studies, Feb. 1989.

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**CALIFORNIA'S RURAL POOR:  
TRENDS, CORRELATES, AND POLICIES**

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**DISCUSSION**

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## EXECUTIVE SUMMARY

### Trends in the 1980s

The trends examined in the following are derived from Current Population Tapes of the Census Bureau. The data comes from annual survey samples which are heavily weighted toward the metropolitan statistical areas (MSAs) and toward larger populated states like California.

A. Regardless of the definition used to measure poverty, it has increased in the U.S. during the 1980s. Moreover, in California, the incidence of poverty has increased dramatically. Using official definitions, in 1981, 2.8 million persons, or 11.7 percent of the state's population, were in poverty. In 1986, the population in poverty reached 3.9 million persons or 14.9 percent. In 1987, there were 3.7 million persons or 13.8 percent of the population in poverty.

B. The percentage of families in poverty has also grown. In 1987, there were 616,000 families in poverty in California, representing an approximate increase of 100,000 poor families since 1981, i.e. an approximate increase of 16,000 poor families per year. In 1987, 9.6 percent of all families lived in poverty. The rate of poverty was also substantially higher in rural areas (12.2%) than in urban areas (9.5%) in 1987.

C. Hispanics had the highest poverty ratio in any given year between 1981 and 1987. The poverty growth rate of whites has followed the trend shown by the general population in poverty. The incidence of poverty appears to be extremely high for Hispanics and Asians in rural areas, but the statistics may be unreliable at this time.

D. There has been a consistently higher incidence of female-headed families in poverty. But the poverty rate for both single parent female- and male-headed families in rural areas is exceedingly high, i.e. over 40 percent are poor.

E. Since 1981, the percentage of persons in poverty has increased for each age group measured except for persons 65 and over, for which it has remained about the same. In the past six years, the percentage of children under 16 in poverty in California has increased from 18.9 percent in 1981 to 23.2 percent in 1987. In absolute numbers, this represents an additional 437,000 children in poverty since 1981; in other words, an average of nearly 73,000 children have been added to poverty each year since 1981.

F. The number and percent of the labor force in poverty in California has increased at a steady rate since 1981, going from 7.1 percent of the labor force in 1981 to 9.0 percent in 1987. In absolute numbers, they have increased from 871,000 to about 1.3 million. These numbers are equivalent to 31.3 percent of the total number of persons in poverty in 1981 and 34.7 percent in 1987. The poverty rates are exceptionally high for unemployed workers seeking employment and for "discouraged" workers.

G. While sub-employment and unemployment constitute a direct and increasingly serious threat to family earnings, there are indirect effects as well. As sub- and unemployment rates have risen, so have the number of discouraged workers who are poor. Faced with one employment rejection after another and the accompanying erosion of self-confidence, their efforts to secure employment may have become frustrated.

Table 3

## Changes in Poverty Composition by Race and Ethnicity Between the Rural and Urban Sectors in California (1981-1987)

	1981	1983	1985	1986	1987
California					
Percent of Whites in poverty*	10.3	13.8	12.5	13.7	13.0
Percent of Blacks in poverty**	19.5	25.4	26.2	21.6	18.7
Percent of Hispanics in poverty†	21.9	27.9	25.7	28.2	25.2
Percent of Asians and others in poverty	19.1	14.7	19.5	17.2	17.3
SMSAs - Urban					
Percent of Whites in poverty	10.0	13.0	11.9	13.3	12.8
Percent of Blacks in poverty	19.4	25.6	26.6	21.9	18.8
Percent of Hispanics in poverty	22.2	28.0	25.4	27.8	25.0
Percent of Asians and others in poverty	19.8	13.9	18.4	17.3	16.7
Non-SMSAs - Rural					
Percent of Whites in poverty	13.7	21.1	19.3	23.2	17.6
Percent of Blacks in poverty	(21.8)††	(16.2)	(14.3)	(0.0)	(0.0)
Percent of Hispanics in poverty	20.3	27.2	32.4	(50.6)	(45.6)
Percent of Asians and others in poverty	(4.8)	(43.3)	(48.6)	(0.0)	(55.3)

\*Including White Hispanics.

\*\*Including Black Hispanics.

†Hispanics is not mutual exclusive to the other three ethnic categories while the other three are mutually exclusive.

††( ) indicates unreliable data due to a small sample size.

§Data compiled from Current Population Survey File.

Data prepared by California Center for Applied Research, 1988

period between 1981 and 1987, but it increased 44.9 percent in California. The poverty ratio of whites increased from 10.3 percent in 1981 to 13.0 percent in 1987 in California compared with the nationwide increase of 10.7 percent to only 11.6 percent during these same years. In California urban areas, white poverty increased from 10.0 percent in 1981 to 12.8 percent in 1987; in rural areas, where the majority of the poor are white, it increased from 13.7 percent to 17.6 percent, indicating the relative lack of opportunities for those in the rural sector of California's economy. This decline of opportunities is linked to the depression of the timber industry as well as the depression in certain industries that had previously expanded in these areas in the 1970s (Brown and Deavers, 1987).

**Hispanic Poverty.** As shown in Figure 4, the growth of Hispanic poverty in California has been dramatic. There are several reasons for this increase. First there is the absolute magnitude of the growth rate. In 1981 there were approximately 900,000 Hispanics in poverty in California. In 1987 this number had grown to an estimated 1,576,000, representing a 77.9 percent increase in absolute numbers of poor Hispanics in only six years. Because of the growth rate of the Hispanic population and its high incidence of poverty, the percent of poor Hispanics has risen to surpass blacks in poverty in California, and now numerically equals poverty among non-Hispanic whites, despite the much higher base population of non-Hispanic whites (Department of Economic Opportunity, 1986).

As shown in Table 3, Hispanics had the highest poverty ratio in any given year between 1981 and 1987. In 1981, 21.9 percent of Hispanics were in poverty in California while the poverty ratio of whites (including white Hispanic) was 10.3 percent. Since 1983, the poverty ratio of Hispanics was consistently over 25 percent, demonstrating that substantial increases in Hispanic poverty have occurred in this decade. In 1981, 30.9 percent of the total number of persons in poverty in California were Hispanic, while only 17.0 percent of the total population were Hispanics. Because of migration and a high birth rate, the percentage of Hispanics in the total population increased to 23.0 percent in 1987. However, the percentage of Hispanics in poverty increased even more dramatically to 42.1 percent of the total number of persons in poverty in California in 1987. This indicates that Hispanics had the greatest percentage increase in poverty among the ethnic minority groups measured in the CPS survey.

The increase in percentage of Hispanics in poverty in rural areas has been especially striking as seen in Figure 5. In 1981 the percentage of Hispanics in rural areas living in poverty, 20.3 percent, was actually less than the percentage of urban Hispanics in poverty, 22.2 percent. However, the poverty rate for Hispanics in rural areas increased to 32.4 percent by 1985, while the poverty rate in urban areas increased to 25.4 percent during the same years. Although reliable estimates based on the CPS survey after 1986 were not available due to a smaller sample size for rural areas, other available information suggests a significant increase in the poverty ratio for Hispanics in rural areas since 1986.

#### **Changes in Poverty Composition by Sex and Race/Ethnicity**

In addition to Hispanics, female-headed families are a group especially associated with poverty in California. As shown in Figure 6, there has been a consistently much higher ratio of female as opposed to male-headed families in poverty. This is due to at least three factors. Females suffer from discrimination in terms of job availability and wage rates, are less likely to have certain skills that are linked to higher paying jobs, and are more likely to have dependent children. Table 4 and Figure 7 show female-headed families in poverty by race/ethnicity. Approximately 15

**Figure 4: California Hispanics in Poverty**  
(1981 to 1987)

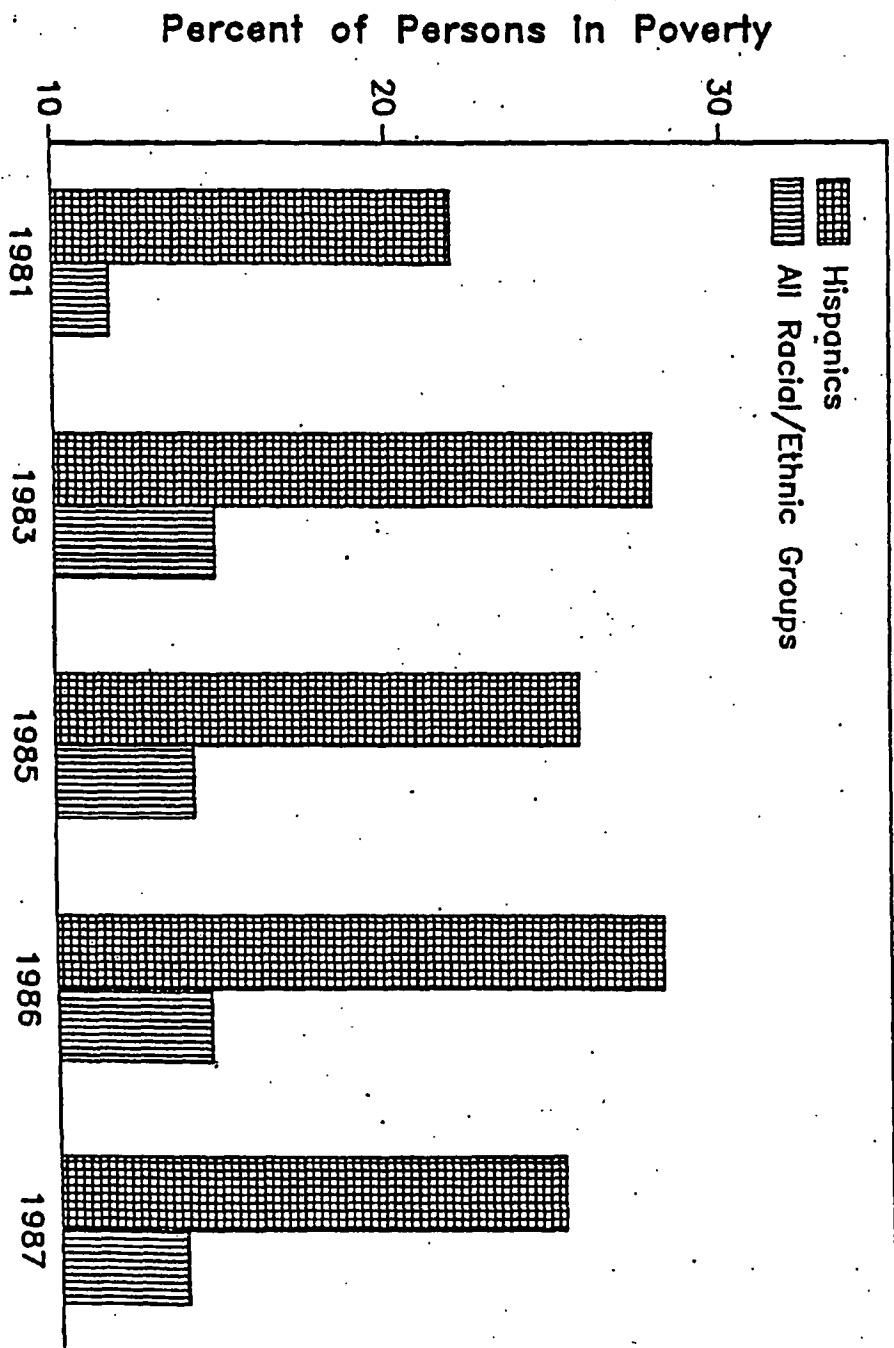
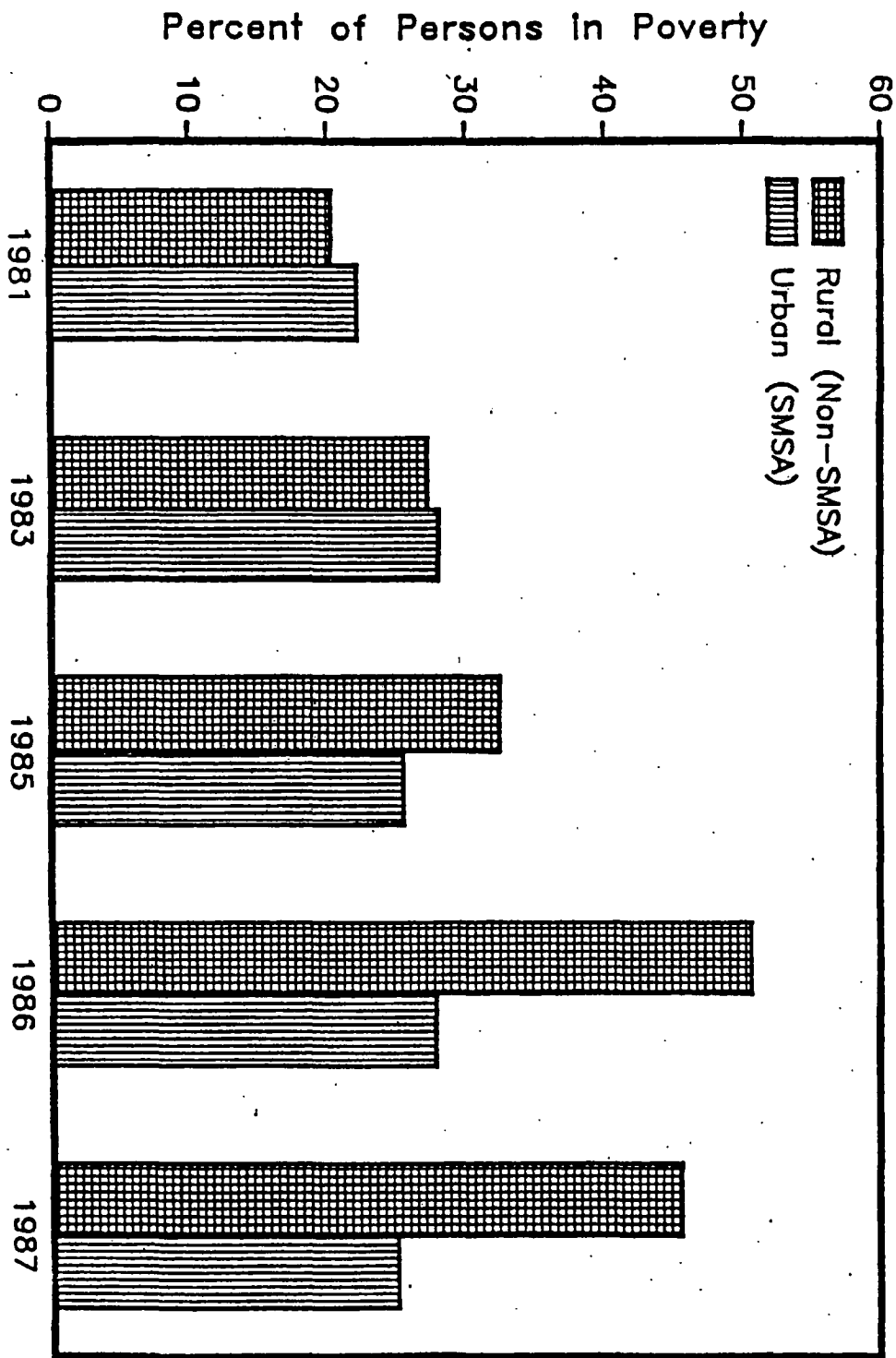


Figure 5: California Hispanics in Poverty by Rural/Urban Sectors  
(1981 to 1987)





percent of all families in the United States and California are female-headed. In the U.S., approximately one-third of female-headed families have been in poverty throughout the 1980s. In California, female-headed families have had slightly lower levels of poverty (30%) than in the nation overall during most of this time period. It is important to note that this poverty ratio for female-headed families is much higher than for any of the racial/ethnic categories, indicating the importance of marital status as a factor associated with poverty. Because of this high poverty ratio, female-headed families made up an extremely high percentage of the total number of families in poverty: 41.1 percent in 1981 and 47.1 percent in 1987.

Change in economic conditions can have a severe effect on female family heads. This is especially true when they are also ethnic/racial minorities which already suffer disproportionately from underemployment and unemployment. While the percent of white female-headed families increased from 20.8 percent in 1981 to 29.0 percent in poverty in 1987, conditions were even more severe for black and Hispanic female-headed families. In 1981, 27.8 percent of black female-headed families were in poverty, while in 1987, 32.0 percent were in poverty. For each year measured, poverty has been highest for Hispanic female-headed families. In 1981 it was 40.3 percent and in 1987 it was 41.1 percent. This percentage has fluctuated from about 41 percent to 48 percent yearly throughout the 1980's, indicating an extreme lack of stability in economic conditions for Hispanic families of this type, even when compared with female-headed families of other racial/ethnic groups.

The percent of female-headed families in poverty is higher in rural than in urban areas in California (see Figure 8). This percentage in rural areas was consistently higher than 40 percent after 1981, while in urban areas it varied between 27 percent and 30 percent. This trend is especially true for Hispanic female-headed families.

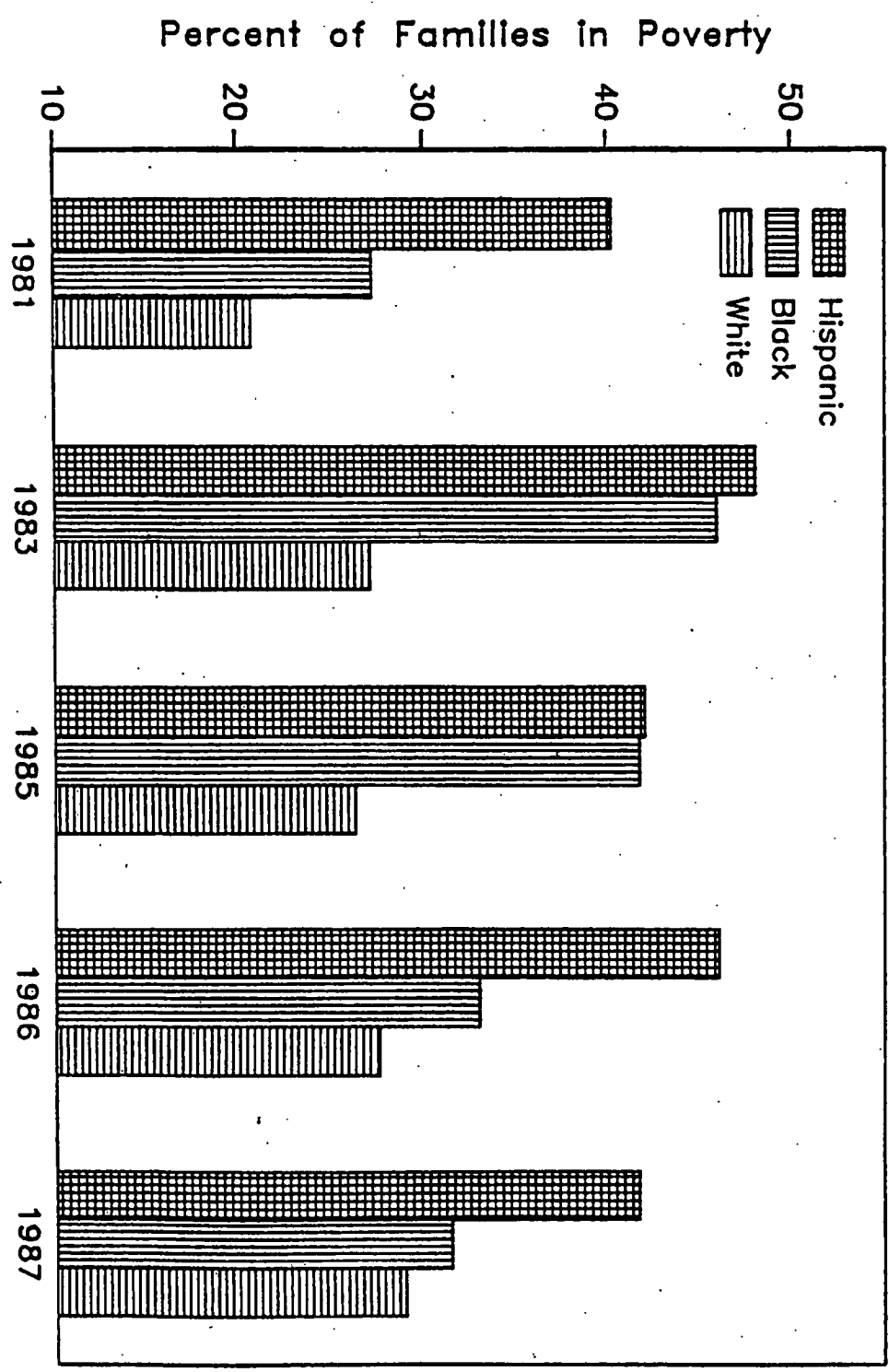
### **Changes in Poverty Composition by Age Group**

Since 1981, the percentage of persons in poverty has increased for each age group measured except for persons 65 and over, in which it has remained about the same (see Table 5). Children under sixteen has been the age group in poverty that has increased the fastest since 1981. Each of these two groups are discussed in more depth below.

**Children in Poverty.** In the past six years, the percentage of children under sixteen in poverty in California has increased from 18.9 percent in 1981 to 23.2 percent in 1987. In absolute numbers this represents an additional 437,000 children in poverty since 1981. Poverty in the age group of children less than six years old has increased the fastest within this category. In 1981, 20.3 percent of this group were in poverty, increasing to 26.1 percent in 1987. In absolute numbers, those in poverty under the age of six increased from 446,000 to 707,000 by 1987, representing a 58.5 percent increase in this brief period. While poverty for children under six increased in urban areas from 20.7 percent in 1981 to 26.0 percent in 1987, in rural areas the rate of poverty, while steadily increasing, averaged at least 33 percent during the 1980s.<sup>6</sup> A similar trend was reflected in children under age 16 (see Figure 9).

**The Elderly Poor.** Persons 65 years of age or older are the only group in poverty that has fared reasonably well over the past eight years. Nationally, the percent of persons in this group in poverty actually decreased about 3 percent during this time. This has been due principally to the indexing of social security to the cost of living. Thus, compared to other groups in poverty

**Figure 7: California Female Headed Families in Poverty by Race/Ethnicity**  
(1981 to 1987)



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Business and Finance—Economy—Poverty and Income

## Weighted Average Poverty Thresholds<sup>1</sup> for Families of Specified Size, 1960–2000

Calendar year	Individual	Families of 2 persons or more					
		2 persons <sup>2</sup>	3 persons	4 persons	5 persons	6 persons	7 persons
1960	\$1,490	\$1,924	\$2,359	\$3,022	\$3,560	\$4,002	\$4,921 <sup>3</sup>
1965	1,582	2,048	2,514	3,223	3,797	4,264	5,248 <sup>3</sup>
1970	1,954	2,525	3,099	3,968	4,680	5,260	6,468 <sup>3</sup>
1975	2,724	3,506	4,293	5,500	6,499	7,316	9,022 <sup>3</sup>
1980	4,190	5,363	6,565	8,414	9,966	11,269	12,761
1985	5,469	6,998	8,573	10,989	13,007	14,696	16,656
1990	6,652	8,509	10,419	13,359	15,792	17,839	20,241
1995	7,763	9,933	12,158	15,569	18,408	20,804	23,552
1996	7,995	10,223	12,516	16,036	18,952	21,389	24,268
1997	8,183	10,473	12,802	16,400	19,380	21,886	24,802
1998	8,316	10,634	13,003	16,660	19,680	22,228	25,257
1999	8,501	10,869	13,290	17,029	20,127	22,727	25,912
2000	8,959	11,531	13,470	17,761	21,419	24,636	28,347
2001	9,214	11,859	13,853	18,267	22,029	25,337	29,154

1. Annual income.

2. Householder under 65 years.

3. For years before 1980, data are for families with seven persons or more.

Source: U.S. Bureau of the Census. Web: [www.census.gov](http://www.census.gov).

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