

The Health Status of California's Hired Farm Workers

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Don Villarejo, PhD
California Institute for Rural Studies, Inc.

Introduction: Defining Key Terms

A "farm worker" is a person who performs tasks on a farm for the purpose of producing an agricultural commodity for sale. Therefore, by definition, it is inclusive of farmers, unpaid family members and hired workers. Because the term "farm worker" is so broad, it is not listed in the Census Bureau's roster of recognized occupations.

For the purposes of this paper, we focus exclusively on "hired farm workers," which is a Census-recognized occupational category. It is important to note that the term does not explicitly refer to the nature of the employer doing the hiring, although it is widely assumed in the literature that it is a farmer. Direct observational research does show that a majority of California's hired farm workers are directly employed by farm operators. Farm operators are business entities which place capital at risk with the intention of producing an agricultural commodity for sale. They may be sole proprietorships, partnerships, corporations, or, less often, another form of business entity, such as a business trust. In the literature one often finds the terms "farmer" or "grower" in reference to employers who are farm operators.

However, as agricultural businesses have increasingly become larger and more complex, workers are being hired to perform farm work by employers that are not farm operators. As described further below, in 1990-91 nearly one-third of California's hired crop farm workers report that they work for a farm labor contractor. Most farm labor contractors are businesses that supply workers to perform specific tasks on farms in which they have no ownership interest. Wineries, citrus packing houses, vegetable packer/shippers and even employment agencies are today also found to be hiring people to work on farms. In each of these cases, the employer typically does not operate a farm.

These distinctions are significant for characterizing the population of interest. In fact, until very recently intervention for the purpose of promoting farm safety has been exclusively targeted to farm operators. Prior to the early 1980s, our understanding of hired farm workers relied either on administrative data submitted by farm operators, or on interviews with persons who they directly employed. As a consequence, a large share of hired farm workers were missed, especially those working for packer/shippers or for farm labor contractors. In addition, administrative data, such as employment or earnings reported by employers, were not informative about the demographics of this population, such as age distribution, gender, educational attainment, immigration status or migrancy.

California's Hired Farm Work Force

Although our knowledge is far from complete, recent research enables us to characterize the hired farm work force of California to an extent that simply was not possible ten years ago. Survey research conducted by the National Agricultural Workers Survey (NAWS) of the U.S. Department of Labor, based on 1,844 interviews of hired farm workers in California conducted between October 1, 1989 and October 1, 1991, shows that the characteristics of this population are distinctive in comparison with nearly every other occupational group in the state. Hired farm workers are mostly young immigrant males with limited formal education. Half live in poverty, but nevertheless rarely utilize government benefits. Most do not own any assets, vehicles included, except for their personal belongings. Salient features of the population are described in this table:

Characteristics of California's Hired Farm Workers

Source: U.S. Department of Labor, California Findings from the National Agricultural Workers Survey, Research Report No. 3, Office of the Assistant Secretary for Policy, Office of Program Economics, 54 pp., 1993.

Demographics

Age	32 years (median)
Gender	74% male
Place of birth	92% foreign-born (82% from Mexico)
Education	6 years (median)
Accompanied by family	60%
Spanish as primary language	88%
English-language fluency	11% speak, 14% read
Literacy skills	26% totally illiterate; additional 39% functionally illiterate

Employment

Weeks of work per year	33 in farm work, 2 in non-farm work
Work for farm labor contractor	31%
Payment scheme	69% hourly basis, 22% piece rate, 9% mixed
Average hourly wage	\$5.41 per hour (\$4.45 per hour if FLC is employer)
Immigration status	9% unauthorized, 10% citizen, 73% LPR/TR
Migrancy status	30% shuttle; 10% follow-the-crop

Economic status

Median family income	\$10 K - \$12.5 K
Poverty rate (U.S. Census definition)	48% (poverty rate increases with family size)
Social service utilization	13% (primarily food stamps)
Assets	45% own no assets of any kind

Recently, the NAWS published a summary report based on national cross-section interviews conducted in 1995. As compared with the profile presented in Table 1, the new data demonstrates that today's national hired farm work force is younger, more predominately male, less likely to be documented, less educated and more likely to have had no previous farm work experience in the U.S. than the earlier surveys. Some 37% of the national hired farm work force is now undocumented.

Of considerable concern in the context of this paper is that the newer immigrants are less experienced: fully one in five current hired farm workers is working in U.S. agriculture for the very first time. Lacking experience, some may be prone to take risks that are unwise or unhealthful.

Another aspect of the new immigrants that is not easily summarized in Table 1 is that the population of more diverse than was the case a generation earlier. While most hired farm workers originate from the historically traditional western Mexican sending states, such as Michoacan and Jalisco, increasing numbers are coming from areas that sent very few migrants in the past. These include the southern-most states of Oaxaca and Chiapas, as well as Guerrero and Zacatecas. A large share of the new migrants are indigenous people, many of whom prefer to speak their own indigenous dialect. Survey research led by Runsten and Zabin enumerated about 50,000 Mixtecs working in California agriculture. Other tribes represented include Zapotec and Triqui. A survey conducted in nineteen farm labor encampments in northern San Diego County found that 43% of the combined population were indigenous peoples, representing fourteen indigenous dialects.

Beyond the Mexican migrants, small but increasing numbers of migrants from Central America can also be found working in the fields of California: *Salvadoreños*, *Guatemaltecos*, and *Hondurianos* now work alongside *mestizos* and *indios*. This diversity presents unusual challenges to employers and host communities. Service providers and educators are faced with assisting people who have completely unfamiliar cultural patterns and who, while Mexican, may not speak any Spanish at all.

The new indigenous migrants are less well-educated than the *mestizos*, averaging just two years of formal education. Their average family income is also substantially lower, duration of employment smaller, and the jobs they are able to obtain are typically the least desirable farm jobs. As if that complexity is not enough of a challenge, in some cases there is even evidence of racism expressed by *mestizo* Mexicans against their indigenous countrymen. Of course, the anti-immigrant sentiment that now appears to dominate California political life most often dwarfs these instances of anti-indigenous racism.

Health Policy Issue: More than 90% of California hired farm workers are foreign-born, and most are from Mexico. Is health care now a bi-national issue requiring collaborative action with Mexican health care providers?

Trends in Labor-Intensive Agricultural Production

Estimates of the number and distribution of hired farm workers in California are difficult to make. The most reliable published estimates place the total at about 700,000 individuals. That is, about 700,000 persons perform tasks on farms as hired workers in the course of each year. Annual average hired worker employment, which takes account of the fact that only a portion of this labor force is able to find work in any given week, was reported to be 340,500 in 1995.

Approximately half of annual average hired worker employment in the state's agriculture is located in the San Joaquin Valley, the nation's most important farming region. The remaining half is distributed throughout the state's other regions: 16% in the South Coast, 14% in the Central Coast, 9% in the Desert region, 7% in the Sacramento Valley and 3% in the North Coast.

While California agricultural land is shrinking, the acreage devoted to labor-intensive production is rapidly expanding. As a consequence, as well as because of higher yields for many crops, the production of fruits, vegetables, and ornamental horticultural products (flowers, shrubs, other nursery products) is at record high levels. As shown in Figure 1, in the past twenty-five years the annual tonnage of California's vegetable production has doubled, fruit output has increased by two-fifths, and ornamental crop output has more than doubled. California today has more acres planted to trees and vines, and more land planted to vegetables, than ever before in its entire history.

Associated with this intensification of the state's farming is the growth of farm income and of net cash return from the sale of agricultural commodities. For example, in 1996 California farm operators received more than \$24.5 billion from commodity sales, up by 10% over the prior year. The state's farm sales are increasing at a faster rate than either the state or federal economy. And the greatest growth in net cash return is in those sectors producing labor-intensive crops.

Corresponding to increases in production are changes in labor demand. Taking account of improvements in the productivity of labor, such as mechanization of various tasks and the introduction of field packing of many important fresh vegetables, overall demand for seasonal labor in California agriculture increased by about 21% in the period 1976-89. Thus, our state's farm industry needs more workers than it did twenty years ago.

While increased production is the main factor leading to increased demand for seasonal labor in California agriculture, changes in farm structure are also contributing to the need for more hired farm workers. Family farms are being replaced by large-scale agricultural businesses, and farmer and unpaid family labor is increasingly being supplemented by hiring workers directly or through labor contractors (see Figure 2).

These factors lead to the inescapable conclusion that California's booming agricultural industry has never been more dependent on foreign-born hired workers than it is today. And as far into the future as anyone can project, few U.S.-born workers will be willing to do this work. Indeed, a generation ago, statewide survey research indicated that about half of California farm workers were foreign-born. Today, more than 92% were born outside the U.S. The hired farm labor force of California will be replicated on foreign soil.

Health Implications of the Findings

A central tenet of public health practice is that socio-economic status is the single most important factor affecting health status. The fact that half of all hired farm workers in California live in poverty implies that adverse health outcomes will be more prevalent in this population than in the general population.

The sharp cutbacks in support for government benefit programs for low-income people (welfare reform), and the similar restrictions imposed on immigrants for eligibility to receive these benefits (welfare and immigration reform) has likely adversely impacted farm worker health. Nowhere is that impact clearer than in the reductions in food stamps and in pre-natal services. For example, eligibility for food stamps for non-citizen immigrants is now limited to children and the elderly.

At the same time, since more than 90% of California farm workers are of Latino/Hispanic heritage, the dominant cultural practices that favor positive health outcomes tend to benefit the hired farm worker population. For example, the prevalence of smoking is far lower among Latinos/Hispanics than among other ethnic groups. Correspondingly, the incidence of cancer, heart disease and respiratory disease is quite a bit lower in this population. But some other health outcomes, such as diabetes and homicide, compare less favorably to those of other groups. Latino/Hispanic death rates for selected outcomes, expressed as a percentage in comparison with non-Latino/Hispanic whites, are:

- all cancers, 69% (men) and 61% (women);
- heart disease, 65% (men) and 81% (women);
- respiratory disease, 78% (men) and 109% (women);
- diabetes, 186% (men) and 238% (women);
- homicide, 360% (men) and 200% (women).

Thus, some important adverse health outcomes are less likely to be problematic among hired farm workers than are certain other outcomes.

Hayes-Bautista, and Gondleman and Palerm have studied birth outcomes among successive generations of Mexican immigrant women. Both groups find that unhealthful birth outcomes and low birth weight babies are less prevalent among recent immigrant women than among non-Latino U.S.-born California residents, more prevalent among their U.S.-born daughters, and even more prevalent among their second-generation

grand-daughters. It has been suggested that substance abuse (alcohol, tobacco and drugs) becomes more prevalent among the children and grand-children of immigrants contributing to these outcomes.

There is also evidence of a tendency of a deterioration of diet among Mexican immigrant hired farm workers as a consequence of their employment-determined lifestyle. Ikeda studied the food habits of hired farm worker families in Tulare County. She found convincing evidence of this effect and concluded, "The longer Mexican immigrants live in the U.S., the worse their diet becomes."

Stress and mental health problems are likely to be among the less well-recognized health issues faced by hired farm workers. Low socio-economic status is known to be an important factor contributing to adverse mental health outcomes.

The prevalence of unaccompanied males in the hired farm work force contributes to loneliness, depression, and a greater tendency to certain forms of substance abuse, most notably alcohol abuse. Again, large concentrations of young, active but lonely men who have a weekly paycheck during the season is also a factor in the widespread prevalence of prostitution in certain communities, contributing to adverse health outcomes such as STDs, including AIDS. Gambling is also known to be prevalent in the all-male subcultures that flourish in various Central Valley communities.

In one Central Valley community (Parlier), when a Latino/Hispanic majority finally won control of city government, the first act of the new officials was to close all of the city's *cantinas* where unhealthy practices were known to flourish. Other communities, for example, Huron, are widely known to be centers for these risk behaviors.

The increased ethnic and linguistic diversity of California's hired farm worker population presents special difficulties to providers of health services. Not only will providers encounter indigenous dialects that may prove extremely difficult to interpret, Western medical practices may be regarded with some suspicion or simply rejected.

Bade has studied the attitudes of immigrant Mixtec women in Madera toward health care. She finds conflicts between providers relying exclusively on Western medical practices and the numerous women who preferred traditional, non-Western treatment regimes. Madera is now home to an estimated 5,000 Mixtec immigrants but lacks any Mixteco-speaking health care providers.

Limited access to transportation, as reflected in the fact that a majority of California's hired farm workers do not own a vehicle, presents serious obstacles to accessing health care services. Efforts of state agencies to screen hired farm workers population for communicable diseases, such as the initiatives in the Central Valley taken by the Tuberculosis Control Branch of the California Department of Health Services, have been severely hampered by the limited transportation resources of this population.

The surprisingly low incidence of vehicle ownership among hired farm workers has contributed to a remarkable “mini-industry” in the Central Valley: *los raiteros*. Many hired farm workers now travel to and from work in panel vans driven by *mayordomos* or their assistants. Frequently, not only are workers charged exorbitant fees, typically \$3 to \$5 per day, but many find that paying for a ride in the van is a de facto condition of employment, even though it is a violation of U.S. labor law. During 1995-96, twenty-nine hired farm workers were killed in multi-fatality vehicle accidents involving *raitero*-driven vans or pick-up trucks in the two-county area of Fresno and Madera Counties. Tragic accidents involving *raiteros* have become so frequent in the Central Valley that the California Highway patrol now routinely provides assistance to government officials who are seeking to enforce labor and employment-related safety laws in the valley.

Health Policy Issue: Culturally appropriate outreach and ambulatory services may be necessary to bring health education and basic screening services to hired farm workers and their family members. Should *promotores* and legal service providers be linked with public health nurses to accomplish this?

The General Health Status of Hired Farm Workers and their Families

The literature contains remarkably few reports of findings of the general health status of California's hired farm workers or of their families. Most reports are either essentially anecdotal, such as summaries of case reports from migrant health clinics, summaries of intake forms from local health fairs, or are single-community case studies.

There are no reports in the literature of a statewide survey of the health status of farm workers in California. One study reports on the health status of a large number of Tulare County hired farm workers and their family members (Mines and Kearney, 1982), but relies exclusively on self-reported information.

However, there are two reports in the literature of single-community case studies of towns that are populated mostly by hired farm workers and their families in which both self-reported information and objective physical examinations were obtained. The largest of these is the McFarland Child Health Screening Survey (1989) in which an effort was made by the California Department of Health Services to screen every child in the community between the ages of 1 and 12. This effort was prompted by an unusually high incidence of cancer among children in the community (eight-fold higher than expected incidence). The second study was a pilot cross-sectional survey of the entire adult population of Parlier (1992).

In the McFarland case study, some 1,697 children were screened, representing an estimated 90% of the eligible population. While no additional cases of childhood cancer were found, the results of the physical examinations were extremely disturbing: some 71% of the children required a medical referral to treat one or more adverse health outcomes. The greatest number of referrals was for vision care (40%), dental care (37%) and anemia (24%). Some 15% of children under the age of four were referred because of incomplete immunizations or inadequate immunization information. It was found that half of the children over the age of 5 had never seen a dentist. And half of the children were lacking a timely physical examination, including 8% of all children who had never had a physical examination.

In McFarland, health insurance coverage was lacking for 46% of all families and for 64% of monolingual Spanish-speaking families. Only 32% of families had private health insurance, and 22% had Medicaid. In a multivariate analysis of the findings of the McFarland data, Smith et al (1996) reported that specific unmet health services were linked with particular aspects of demand:

- Lack of dental care with low income, no health insurance, and lack of transportation and child care;
- Lack of physical exams with older age, perception of child's having poor health, Medicaid coverage, and lack of transportation;
- Lack of prenatal care in the first trimester with low income, larger households, lack of transportation, and low levels of education;

- Referral to a doctor for medical care with age of child and lack of transportation;
- No usual source of care was associated with older age, Medicaid or lack of health insurance, low income, and monolingual Spanish speakers.

Low income or lack of health insurance affected every unmet need indicating access-to-care problems, except for the referral of the child to a doctor. Medicaid families had the lowest incomes and the sickest children, which may indicate that families obtained Medicaid coverage only when their children became ill.

Smith et al conclude that economic demand for health care services in McFarland, based on ability to pay, is insufficient to support the number of private-sector physicians needed in the community. Based on existing models of physician to patient ratios, the community needs at least four full-time-equivalent physicians, but only has sufficient discretionary income to support one. Not surprisingly, the town has just one private sector physician. Although the town does have a publicly-supported migrant clinic, just one in six families has ever sought care at the clinic.

Their findings also suggest that underutilization of health care services is associated with lower levels of education. Thus, their morbidity rate could be lowered if access to care were facilitated through culturally appropriate health education and outreach.

In contrast, the Parlier Health Survey sought to survey a cross-section of the adult population of the city of Parlier, a small city of 10,000 residents located twenty miles southeast of Fresno. Absence of health insurance, dental care and vision care was found to be prevalent, as in the case of McFarland. The self-reported health status of the adult hired farm workers was found to be quite good, in contrast to the findings among the children of McFarland. Most reported that they were in excellent condition, which was supported by the results of their physical examinations. Few had specific complaints concerning their health status, although there were a number of cases of obesity and hypertension. About 10% had complaints of hay fever or allergies. About 20% had persistent back or musculoskeletal pain but did not regard it as sufficiently serious to cause them to miss work. Some 17% said they were exposed to pesticides at work. About 90% said that they had no physical impairment of any kind. In most respects, the Parlier Health Survey results mirror the findings of the Hispanic Health and Nutrition Survey (HHANES).

As in the case of the McFarland case study, most adults in Parlier (61%) lack any form of health insurance. Just 14% report having Medicaid and the remaining 25% have some form of private health insurance. Relatively few adults sought health care services at the Parlier migrant clinic, fewer than one in six. Parlier has just one private physician and one OD, but is relatively close to Fresno, a major metropolitan area with a county-supported hospital. Nevertheless, 5% had never been to a health professional in their entire life.

Mines and Kearney (1982) studied hired farm worker families in Tulare County using ethnographic survey methods. Their findings suggest a somewhat different profile of the health status of farm workers than is reported for the Parlier Health Survey or the McFarland Child Health Screening Survey. First, the most prevalent health problem reported was of headaches and nervousness. This was followed in frequency by dental problems, skin irritations, respiratory problems and musculoskeletal problems.

Similar to the findings in McFarland and Parlier regarding lack of dental and vision care, some 42% of the Tulare County sample had never been to a dentist, and 60% had never been to an eye doctor. Doctor visits are about one-third lower among Tulare County hired farm workers than for the nation as a whole. Of women who had completed pregnancies since 1970, 18% had no prenatal exam and over half did not have a prenatal exam during the first trimester. Some 46% of these women thought that such an exam was unnecessary, but one-third said it would cost too much.

Cultural practices among Mexican immigrants in many cases lead to very different ways of attending to health outcomes as compared to “normal” practices in the U.S. For example, Mexican women do not normally seek the services of a physician during the early months of pregnancy, instead relying on the services of a *partera* (mid-wife). Similarly, the application of salves and ointments, or the use of herbal remedies, recommended by a *curandera/o* (traditional healer), is often the preferred first step in attending to a health complaint.

For this reason outreach programs involving community-based lay health advisors have proven to be among the most effective means of educating and delivering certain types of health care services to hired farm workers. Bringing health care information and screening services to the worker and his/her family in a culturally appropriate manner may prove to be far more effective than relying on them to find and then go to a service provider.

Communicable Disease

There have been two episodes of unexpected communicable disease outbreaks in rural or agricultural areas of California in recent years. In both of these hired farm workers appear to have been disproportionately represented. The most widely reported was the measles outbreak in 1989-90. Despite the lack of occupational data in the case reports, a high prevalence among hired farm worker families caused the California Farm Bureau Federation to encourage their members to strongly urge their hired workers to obtain proper vaccinations. In a feature story on the epidemic in the Farm Bureau newspaper *Ag Alert*, the lead paragraph described three adult Glenn County farm workers seeking treatment for persistent high fever, dizziness and blotchy skin, and who were discovered to be sick with measles.

The episode was just one of hundreds occurring in rural or agricultural centers of the state. In all, some 3,000 cases were reported, including 327 in Fresno County. There were 33 child deaths from the disease. By contrast, in 1981 there were only 321 cases of

measles in all of California and no child died of measles for the entire period 1982 through 1987.

In an editorial titled “The Unnecessary Epidemic,” the *Fresno Bee* commented that the entire episode could have been prevented by adequate immunization. According to the editorial, in Fresno County some 30% of all children and 50% of minority children had not been immunized by age 2.

A second episode of communicable disease that appears to be more prevalent among hired farm workers than in the general population is the resurgence of tuberculosis. Clinic-based sampling of hired farm workers suggest an incidence of positive skin tests approaching 25%, more than twenty-five times higher than in the general population. Of course, given the relatively low utilization of migrant clinics - the McFarland and Parlier case studies indicate that fewer than one in six farm workers has ever visited a migrant clinic - the indicated 25% incidence rate can not be considered to be statistically valid. Nevertheless, the incidence of active cases of the disease, as opposed to a positive skin test, was a nationwide low of 22,000 cases in 1985 and rose steadily since to about 27,000 cases in 1992. There are no reliable figures for the incidence of active cases of tuberculosis among California’s hired farm workers.

A cross-sectional survey of North Carolina hired farm workers in five counties found the incidence rate of positive skin tests to be 37% among Hispanics, and the incidence rate of active cases to be 0.47%. This study also found that the incidence of positive skin test was proportional to the duration of hired farm work by the subject: the longer the worker had been doing farm work, the greater the incidence rate of positive skin test. That the incidence of the disease was found to be proportional to exposure is compelling evidence of the association of the occupation “hired farm worker” with exposure to the tuberculosis bacterium.

Very recently, a dramatic increase in the incidence of AIDS has begun to appear among residents of a number of Mexican sending villages. The available evidence suggests that heterosexual transmission is the most prevalent form of transmission, most often through intercourse between infected returning migrant male workers and their village-resident partners. It is not known how prevalent the disease is among the hired farm work force of California. However, it is not unusual in California for a small number of prostitutes to service a large number of men at an isolated farm labor camp, usually in an RV or the back of a covered pick-up truck. The possibilities for transmission of STDs in this circumstance are unacceptably large.

Community and migrant clinics

Some decades ago, when migrant clinic programs were initiated and supported by government agencies, there were few physicians in California’s willing and able to treat low-income Spanish-speaking Mexican migrants. Today, millions of dollars are spent annually to support migrant clinic programs although Hispanic/Latino health care providers are no longer a novelty in the state.

A reasonable question to pose is whether these programs are meeting the present needs of the population they were intended to serve. In this context it is worth noting that the United Farm Workers of America, AFL-CIO, closed their own clinics because they felt that there were now sufficient other resources available in the private and public sectors within California to serve a mostly Mexican immigrant labor force.

This question is very difficult to answer. We do know that both the McFarland and Parlier studies show that relatively few hired farm workers utilize the clinics in these two communities: an estimated one in six has ever visited the local clinic. While there is no credible evidence that the clinics are not doing a responsible job, in general there is a feeling expressed by several key informants that hired farm workers are no longer a high priority at many of these facilities. This is congruent with the findings of the surveys mentioned previously. In Parlier, workers complained about long waits in the clinic, lack of respectful attention to patients, lack of sufficient evening hours and of high fees charged to first-time visitors.

It is certain that financial problems face health care service providers which seek to serve low-income populations. Moreover, their federal support has significantly diminished, as measured in constant dollars, over the past decade. For this reason many clinics now actively seek to serve Medical patients, believing that they can count on the income they provide as well as furnish low-cost services.

Public funds provided to clinics usually require that the Board of Directors must include a sizable number of patient constituents. However, few clinics have any current hired farm workers on their Board of Directors, or serving in advisory capacities. Most staff tend to handle routine matters in English, most Board documents are provided only in English, and only rarely do mono-lingual Spanish-speaking patients receive full information about the running of the clinic. In large part, this tendency to exclude patients from decision-making is de facto, not de jure and is a reflection of the professionalization of the clinic staff.

Health Policy Issue: Since there is little reliable cross-sectional health status information available, is an objective health status assessment the first and necessary step in identifying useful interventions?

Occupational Health Issues Among California's Hired Farm Workers

Agriculture is America's most dangerous industry, according to occupational mortality reports compiled by the National Safety Council. The incidence of occupational fatalities for U.S. agriculture was determined by the NSC to be 35 per 100,000 workers in 1993, exceeding the rates for construction and mining. This rate refers to all types of farm workers: farms, unpaid family members and hired farm workers. No specific figures are available for hired farm workers. Data from other sources confirm this high rate of occupational fatalities: between 660 and 1,100 deaths per year occur in U.S. agriculture as a direct result of occupational hazards.

Within California, more specific figures are available. In 1994 there were 47 deaths of hired farm workers in California resulting from on-the-job injuries. Their occupational mortality rate was 17 per 100,000 workers in 1994, more than three times greater than for nearly all private sector industries. Only construction had a higher occupational mortality rate. Fully half of all occupational fatalities among hired farm workers in the state during the ten-year period 1981-90 were a result of accidents involving vehicles: tractors or various types of farm machines.

Non-fatal injuries also occur at a much higher rate among hired farm workers in California than for all private sector industries except construction. In 1994 there were 34,214 cases of occupational injury among California's hired farm workers that resulted in a paid workers compensation insurance claim. This corresponds to an incidence rate of approximately 10,000 per 100,000 workers. In other words, one in every ten hired farm workers suffered an on-the-job injury that was resulted in a paid workers compensation insurance claim. About half of these injuries were sufficiently serious that the employee was disabled, in most cases only temporarily.

Disabling on-the-job injuries among California's hired farm workers appear to have increased during the late 1970s and 1980s, leveled off in the early 1990s and may be decreasing at the present time. The increase in disabling injuries over the sixteen-year period 1976-91 is shown in Figure 3 where all reports in agriculture under workers compensation are summarized by type of employer. Over this time frame the reported total number of such injuries increased by a quite substantial 20%, primarily reflecting the shift to labor-intensive crop production noted in a previous section of this paper. Most notable, however, is that all of the net annual increase occurred among employees of agricultural service firms, and *two-thirds of the increase was among employees of farm labor contractors*. The annual number of disabling injuries among workers directly hired by farm operators did not change at all in this period.

It is significant that these reported agricultural injuries are quite serious, requiring an average of eight work days off-the-job to recover. The most frequent cause of disabling injuries in agriculture is over-exertion, followed next by cases involving "struck by or against" an object (machine, tree, vines, tool, etc.). Chemical agents, such as pesticides or fertilizers, are responsible for about 1.5% of all reported occupational injuries in agriculture, and about 2% of all disabling injuries. There is compelling evidence that the

incidence of reported injuries caused by chemical agents have declined substantially in agriculture in recent years.

The largest share of reported disabling injuries to hired farm workers in California are either sprains or strains (43%), with lacerations next in frequency (18%), followed by contusions (12%) and fractures (11%). Chemical poisonings are relatively infrequent (1%).

The back, chest or abdomen is the body part reported injured in about one-third of the cases, consistent with the finding that sprains or strains comprise the largest share of injuries. Upper extremities account for one-quarter of the injuries and lower extremities for one-fifth.

An important and difficult question is whether all injuries are properly reported to authorities and enumerated in the summary data we have reviewed. There is substantial anecdotal evidence that under-reporting does occur, and that the amount of under-reporting may be large. For example, in the Parlier Health Survey our interviewers found that 1.7% of the subjects had experienced a disabling occupational injury that was not treated or reported under workers compensation, including one case of a broken leg. In all such instances discovered in Parlier, the employer was a labor contractor who had provided a cash payment directly to the worker in lieu of medical treatment or indemnity payment under workers compensation. Based on the California-wide incidence rate of about 5% for disabling injuries in agriculture, the Parlier data suggests that under-reporting of disabling injuries may amount to 7% to 10% of the total. This figure should be used with caution because it is an estimate based on a small, statistically unreliable sample in just one community.

Anecdotal evidence suggests that under-reporting occurs because many hired farm workers fear retribution by an employer if they file an employment-related complaint to governmental or other authorities. In some instances, a worker may have personal obligations to his/her labor contractor. In other cases, the worker may be undocumented and fearful of possible deportation, or may be ignorant of the requirements of workers compensation under California law.

Figure 4 shows the trend in the number of paid claims for reported occupational injuries and illnesses among hired farm workers in California. It is not clear whether the fall-off in paid claims is primarily due to improvements in safety and health enforcement and training, or due to under-reporting as the proportion of undocumented workers in the hired farm labor force.

Employer-Provided Health Insurance

There is a paucity of information about health insurance coverage of hired farm workers. On a national basis, insurance industry estimates say that 40% lack health insurance, the highest for any occupation. However, careful review of this data shows

that the figure refers to coverage among regular, year-round employees. Industry sources do not provide data for those who are seasonally employed.

The NAWs findings indicate that 32% of California's hired farm workers have some form of health insurance through their employer. However, since some workers may confuse workers compensation insurance, which provides fully-paid medical care for health outcomes that are job-related, with health insurance for all types of conditions, it is thought that the figure may be unreliable.

Surveys of employers conducted by the Farm Employers Labor Service (FELS) indicates that about 60% of employers provide health insurance for their regular, year-round employees. The same survey indicates that only about 13% of these same employers provide health insurance for seasonal employees.

Most of the employer respondents to the FELS survey are farm operators, so the data probably does not reflect conditions among employees of farm labor contractors. As noted previously, slightly less than one-third of hired farm workers in California are employed by labor contractors. The most recent survey data among this category of hired farm workers did not find a single instance in which a labor contractor provided health insurance for their employees.

Taken together, the data on farm operators and farm labor contractors suggests that few seasonally-employed farm worker enjoy health insurance provided by the employer. As a consequence many simply do without health care, or apply for Medicaid coverage, go to migrant clinics, or turn to emergency services. Though the evidence is not very comprehensive, it appears that most hired farm workers do without regular health care services and only seek services when absolutely necessary.

Labor and Safety Law Enforcement

Labor and safety law enforcement has proven to be an effective tool to improve the health status of hired workers. In recent years, the Mine Safety Act revolutionized conditions in the nation's coal mines and led to a dramatic decrease in occupational fatalities and injuries. Today, coal mining is safer than agriculture, though the opposite was the case prior to enactment of the law.

California law is rather strict with respect to agriculture. For example, field sanitation standards were in place in the state long before they were adopted nation-wide. Similarly, the Agricultural Labor Relations Act provides protections for workers that are more generous than can be found in any other state. State minimum wage, workers compensation insurance, unemployment insurance coverage, and anti-discrimination laws provide universal protection to virtually every California farm worker.

At the same time, enforcement of labor and safety laws in the state is widely reported to be relatively weak. In large part this appears to be due to limited resources, a consequence of policy set at the highest level of state and federal government. For

example, none of the 300 Cal-OSHA compliance officers is assigned to agriculture. Just four U.S. Department of Labor (Wage and Hour Division) staff work in the Central Valley, and they must cover all industries, not just agriculture. The State Labor Commissioner (Division of Labor Standards Enforcement) has just five staff regularly assigned to agriculture, and only one Spanish-speaking law enforcement officer. Pesticide safety enforcement is conducted by County Agricultural Commissioners, officials who have been traditionally aligned with farm operators in promoting their county's farm industry.

Despite these weaknesses there has been some improvement over the past five years in the level of safety and labor law enforcement in California agriculture. The Targeted Industries Partnership Program (TIPP), initiated in late 1992 as a joint enforcement and employer education effort of the State Labor Commissioner (Division of Labor Standards Enforcement), U.S. Department of Labor (Wage and Hour Division), Cal-OSHA, and Department of Employment Development sought to focus on agriculture and the garment industry. Analysis of the TIPP program's records of citations and/or fines levied for the first two and one-half years (McCurdy, Villarejo and Stoecklin, 1996) demonstrated that the program was effective. Moreover, the analysis also showed which industries, regions and types of employers were most likely to have been non-compliant, which could be used to more precisely pin-point potential violators.

On the other hand, the number of TIPP inspections in agriculture has fallen off to very much lower levels in the past several years. It is not yet clear whether this is due to the lack of consistent leadership – three successive Labor Commissioner appointments in the past two years – or to a conscious decision to focus resources in other industries.

Health Policy Issue: Since so little resources are presently devoted to labor and safety law enforcement in agriculture, is the best way to address this problem the development of a vigorous policy advocacy group, or would it be better to seek to assist enforcement efforts with community-based collaborations?

Environmental Health Issues

Hired Farm Worker Housing

There is compelling evidence of a serious deterioration of the quality of housing available to hired farm workers in California. This change is a direct result of both the great increase in the supply of farm workers as well as new laws regarded as onerous by many employers.

Historically, farm operators offered housing, often subsidized by the employer, as an incentive to retain workers for subsequent seasons. As a result of the substantial surplus of agricultural labor now available, many farm operators concluded that this incentive was no longer important. Moreover, new laws enacted during the 1970s required farm operators to meet housing quality standards to which they objected or, at a minimum, believed to be too expensive to implement. In addition, if a farm operator provides housing on the farm, then workers compensation law applies twenty-four hours a day, potentially greatly increasing the cost of premiums to the employer in the event of a non-work time accident.

During the past twenty years the amount of farm operator supplied housing has been drastically diminished. Tens of thousands of units have been demolished, sold or abandoned. As a consequence, relatively few farm workers now reside in units of this type. Since California is a notoriously high-rent state, in many cases large groups of workers crowd into housing units intended for a single family. Informal encampments have also been established by workers in canyons and *arroyos* of some of our wealthiest coastal communities. And thousands of workers manage to find unofficial homes in unlikely places.

During 1992, CIRS and the UC Davis Department of Epidemiology and Community Medicine conducted a thorough survey of the community of Parlier, now known as the Parlier Health Survey. An unusual feature of the survey was that a major effort was made to find every single place where people were actually living, instead of limiting the survey to residents of officially-recognized dwelling units. Individuals were found living in tool sheds, garages, informal shacks constructed of plywood or sheet metal, abandoned automobiles and even underneath porches. Altogether, these "back houses" (so-called because they were generally located in back yards of regular residences) included 28% of the total number of residents of the community. Virtually all of this population is not enumerated by the Census, both because they lack a postal address, which is needed for the mail-return Census forms, and their landlords prefer that they remain invisible.

Generally, more persons and fewer rooms, corresponding to over-crowded conditions, characterize the back houses of Parlier. In some cases, a garden hose was the only source of water and a chamber pot was the only toilet. A normal rental was \$25 per person per week, paid in cash.

The most surprising finding of the Parlier Health Survey, insofar as housing conditions were concerned, was that about 60% of back house residents lived there year round. This was contrary to anecdotal information provided by local officials, who asserted that this type of housing was “temporary,” to accommodate seasonal migrants.

The total number of persons residing in this type of unofficial housing on a statewide basis is not accurately known, and the Parlier Health Survey itself was only a pilot for a larger household survey intended to cover several Central Valley towns. However, the large difference between the findings of the Census of Population and Housing in Parlier and the findings of the Parlier Health Survey at least partially explains the enormous discrepancy between the 1990 Census finding of 175,000 hired farm workers in California and the “best estimate” of ethnographers and economists of some 700,000. Obviously, not all of the difference can be attributed to workers living in “back houses.” Some of the difference is due to the fact that the Census is conducted in late March and early April whereas many migrant hired farm workers remain in Mexico until later in the season. Nevertheless, anecdotal evidence indicates that thousands of hired farm workers in each of dozens of communities reside in unofficial housing units. For example, near Bard in the Coachella Valley, hundreds, if not thousands, of workers camp out in the desert. Newspaper accounts of hired farm workers renting spaces for cash in vacant Bard parking lots shocked Southern California readers, further underscoring the gravity of the problem.

Stricter immigration enforcement designed to exclude undocumented workers by the Border Patrol has contributed to a climate of opinion among many Mexican migrants that it is simply too costly or risky to return to Mexico for family visits or holiday periods. As a consequence, immigration experts have concluded that Mexican migrants are now more likely to reside in California year-round. This factor increases the pressure on the housing supply.

In this context, one of the difficult issues facing hired farm workers is that present-day housing policy tends to favor the nuclear family ideal. That is, public labor camps do not provide housing for groups of unaccompanied men, nor to large extended family households. The nuclear family model for low income housing also conflicts with the Mexican migrant norm of households that are based on an extended family and may also be bi-national, with wage earners on both sides of the border contributing to the support of all members.

Thus, housing initiatives intended to more accurately address the nature and composition of the immigrant labor force in agriculture are desperately needed. These must include appropriate housing for groups of unaccompanied male workers and for large, multi-generation extended families. Modest planning initiatives designed for groups of unaccompanied male workers have been undertaken by Prof. Patricia Harrison, of the UC Davis Environmental Horticulture Department, with the cooperation of various staff of the Cooperative Extension Service. However, no new units have been built even though detailed construction plans are now available.

Drinking Water Quality Issues

The decline in housing stock for hired farm workers may also be associated with a deterioration of the quality of drinking water. As fewer and fewer farm operators provide housing for their employees, the “back house” of Parlier are becoming the norm. Ironically, since these units are unofficial, they are not regularly inspected by health authorities.

In 1991, the U.S. Environmental Protection Agency found that 191 agricultural labor camps in California were in violation of the nation’s Safe Drinking Water Act. Water supplies are subject to federal drinking water standards if piped water is provided to at least 25 people or 15 service connections for at least 60 days per year.

“EPA’s discovery that a large number of migrant labor camps are providing potentially unhealthy water is appalling,” said Daniel W. McGovern, EPA’s Regional Administrator. The largest number of non-compliant camps were found in Fresno County (52), San Joaquin County (32) and Merced County (24). A surprising finding was that many workers live in these “migrant camps” on a year-round basis. According to EPA administrators, county officials stated that many camp owners close their camps rather than comply with the law, exacerbating the housing problem.

There is also evidence that state officials have reduced the number and frequency of testing of private drinking wells. Under state law, Cal-EPA is required to test wells for pesticide contaminants. In the most recent several years, these tests have involved both a reduced number of pesticide contaminants as well as fewer sites.

Nitrate contamination of groundwater wells in the vicinity of Central Valley dairies has become a minor scandal in the past year. With the relocation of dozens of large Southern California dairies to the Central Valley in recent years, the enormous volume of animal effluent has become a health concern, most notably due to nitrates leaching through the soil. There has been no systematic determination of the impact of this problem on the quality of drinking water in farm labor camps.

Health Policy Issues: Is ground water testing sufficiently straight-froward and relatively inexpensive that a private monitoring group could be set up to specifically target both official farm labor camps as well as unofficial ones?

Proposed Intervention Activities

1. Placement of 50 - 100 public health nurses with continuation education in occupational and preventive medicine. Said nurses should be assisted by a cadre of *promotores de salud* in each site. Their initial tasks would focus on specific priority areas, such as communicable disease, immunization, health care for undocumented workers, safety and labor law enforcement, and health education.
2. Since even a crude needs assessment using proper scientific protocols has never been implemented for this population, it can be argued that this is the essential first step of any intervention program. Without baseline data, it is not possible to properly prioritize interventions, nor is it possible to measure the effectiveness of those which are supported.
3. Evaluate intervention programs of various public and private agencies. Millions of dollars spent on intervention programs but rarely evaluated in a rigorous scientific manner. Form blue ribbon Commission comprised of health educator, epidemiologist and engineer to develop a quasi-experimental design along the lines of the Solomon Four Group Design.
4. Collaborate with Meyers/Miles/Fawcett to focus on back and musculo-skeletal injury prevention. This combination of public health specialists and agricultural engineers is unique and has already produced some significant improvements for the nursery crop industry
5. Driver education and transportation safety programs are desperately needed. Unauthorized immigrants are not eligible to obtain a California driver's license because of its widespread use for identification purposes. An effective program of driver education would probably save more lives than any other activity that one can propose.
6. Establish a private, watchdog group to monitor enforcement activities of public agencies which have responsibility for labor and safety in the fields. Oversight is needed for the activities of the U.S. Department of Labor (Wage and Hour Division), State Labor Commissioner (Division of Labor Standards Enforcement), Cal-OSHA, California Department of Pesticide Regulation and County Health Officers.
7. Develop a separately funded program of collaboration with appropriate agencies to strengthen safety and labor law enforcement. This should include the use of informants to provide "leads" to enforcement agencies, and follow-up activities to provide key data about labor law violators, such as business name, address, telephone number, site location, use of fictitious business names, dates, and contacts with workers.
8. Promote settlement of migrant workers, especially unaccompanied males, through the development of suitable housing. The major decrease of employer-provided housing has left many workers homeless, resulting in a dramatic increase in the number of people living in unhealthy or sub-standard units. In addition, present day housing programs for hired farm workers are based on the nuclear family model, neglecting the fact that most workers live in either extended family households or solo male households.

9. Establish a network of “settlement houses” along the lines of the Jane Addams Hull House (Chicago) or other suitable models. The intention would be to promote a variety of cultural, educational and community-building activities. A central feature of the model is promotion of the positive benefits of the inclusion of immigrant workers in our society.

10. Develop binational health education and outreach programs through collaboration with the Mexican government or NGOs. New cooperative arrangements between Mexico and California have been established by Juan Vicente Palerm (UC-MEXUS) and can serve as a model.

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