

# Early occupational pesticide exposure in a migrant farmworker population

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## OBJECTIVE

To elucidate the lower “tail” of the age distribution -- the youngest ages of employment in agriculture -- among participants in health screenings conducted by a regional migrant health center at three tomato farms in East Tennessee during the 2011 growing season.



Photo by Nichole Manz

## METHODS

A clinical encounter form that is routinely administered to tomato workers attending voluntary health screenings was expanded to include pesticide questions, eliciting age and location at which individuals “first worked in fields where pesticides were used” (Figure 1, top). In addition, participants who had children were asked about the age and location at which each of their children “first earned money working in agriculture” (Figure 1, bottom). The history was obtained by trained bilingual patient service representatives of Rural Medical Services, Inc. who are accustomed to gathering patient data in the health center setting.

FIGURE 1. PESTICIDE QUESTIONNAIRE

At five health screening events in July and August 2011, 131 tomato workers (78 males, 53 females) participated. Only one of these workers, a warehouse employee, reported never having been exposed to pesticides.



Patient intake at voluntary health screenings on tomato farms in July and August 2011. Photo by Karin Hoffman

A 2 x 2 contingency table (two-tailed chi-square with Yates correction) was used to test for statistically significant differences in the age at which individuals began work.

## ABSTRACT

**INTRODUCTION.** The enhanced susceptibility of children and adolescents to the adverse effects of pesticides is a priority of regulatory agencies, whose primary concern is typically the development of risk-based regulations to protect consumers and the general population. An important subpopulation occupationally exposed to pesticides at an early age is the children of migrant and seasonal farmworkers (MSFWs). Because this group is difficult to access, information is sparse on their age distributions and specific chemical exposures. EPA pesticide regulations do not adequately address these younger workers.



**METHODS.** The regular summer health screenings performed on tomato farms in East Tennessee by Rural Medical Services, Inc., a Community and Migrant Health Center, afforded an opportunity for students and faculty in health professions to engage in community-based research to query MSFWs on issues of childhood and adolescent pesticide exposure.

**TABLE 1. Demographics of the Study Group (N=131)**

|                   |   |
|-------------------|---|
| Age               | 33.9 years (s.d. 10.7)<br>Range: 15-73 years  |
| How long in U.S.? | 11.2 years (s.d. 9.5)<br>Range: 1 wk - 53 years   |
| Gender            | Male 59.5% (78)<br>Female 40.5% (53)  |
| Country of Origin | Mexico 78.6% (103)<br>U.S. 9.9% (13)<br>Guatemala 5.9% (9)<br>El Salvador 3.1% (4)<br>Honduras 0.8% (1)<br>Nicaragua 0.8% (1) |

**RESULTS.** 131 adults participated, with 19 providing information about 33 of their children. MSFWs who began working in agriculture in Mexico or Central America did so at younger ages, with 58.8% under age 18 compared to 38.1% of those who started in the U.S. (p=0.038). Whether

first employed in the U.S. or in Mexico/Central America, the proportion of survey participants who were under 12 years old when they began working around pesticide-treated crops was 13.1%. Children under 12 years old continue to join the workforce in tomato fields in the southeastern U.S.

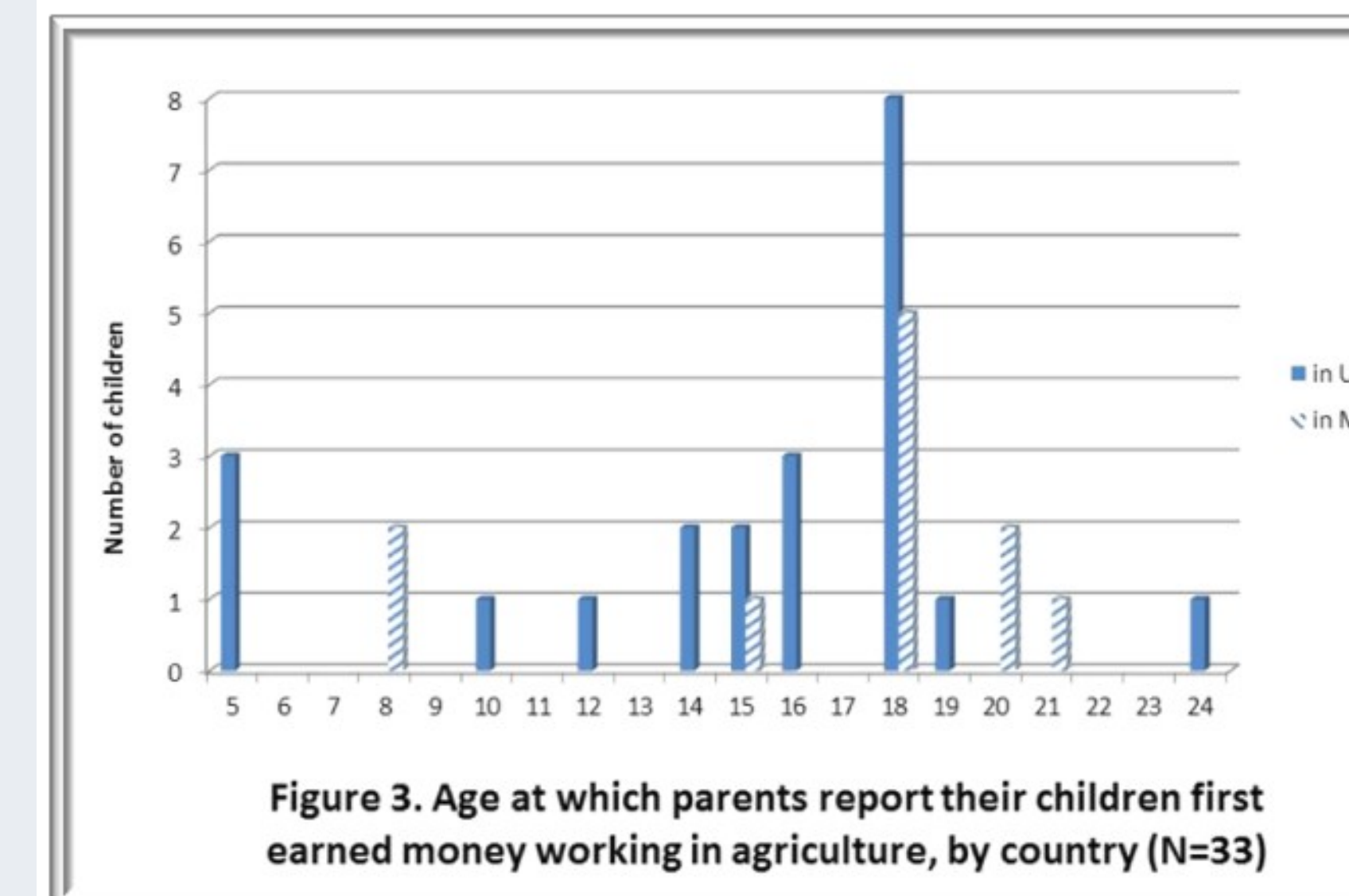
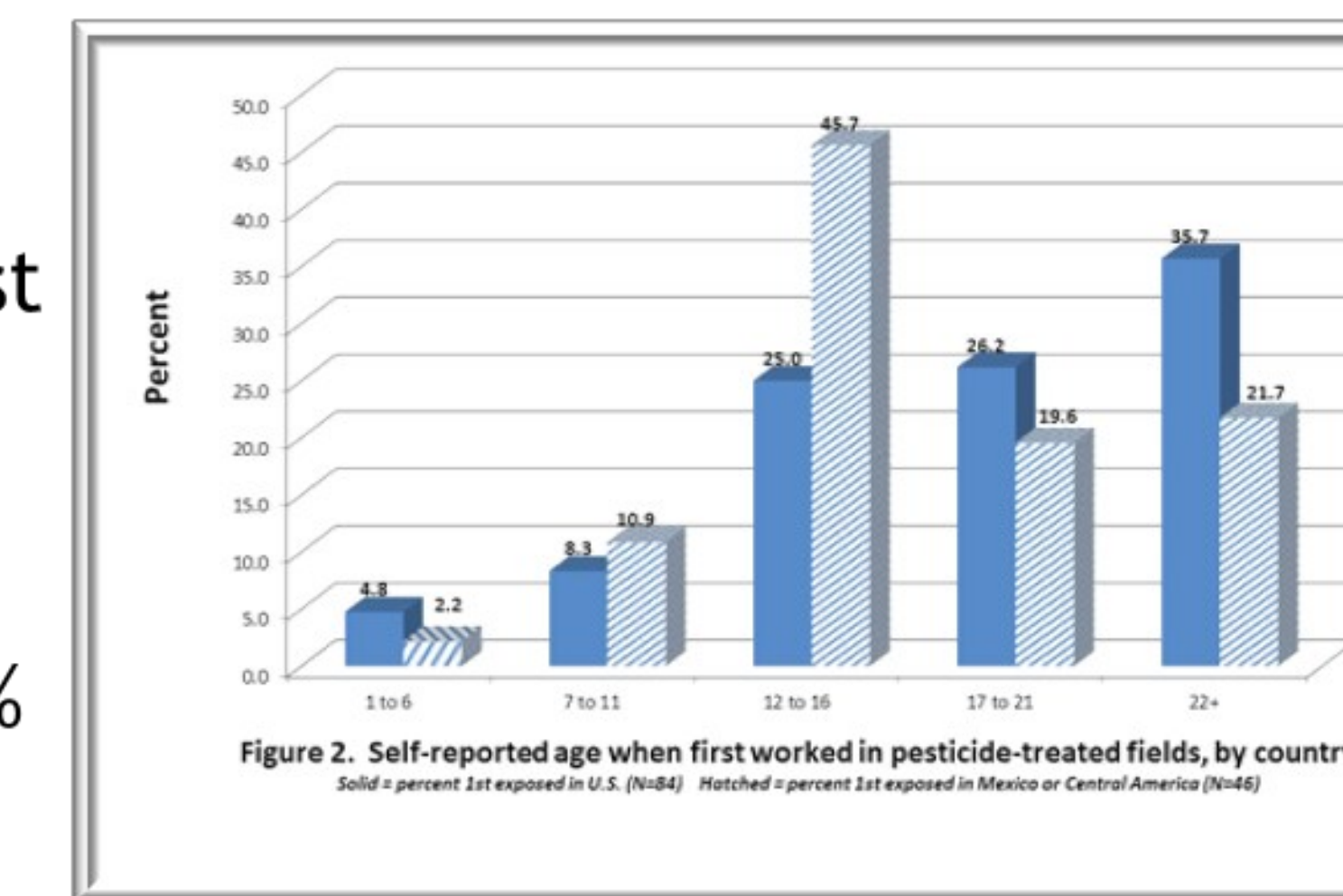
**CONCLUSIONS.** Children under 12 may be occupationally exposed to pesticides. The MSFW population is a largely untapped source of data on childhood and adolescent occupational exposure to pesticides.



Medical student assists RMS in health screenings. Photo by Alexis Andino

## RESULTS

Consistent with well-known cultural values, 58.8% of those who first worked in Mexico or Central America did so below age 17, compared to just 38.1% in the U.S. (Figure 2, p=0.038).



Interestingly, the percentages of individuals who started work below age 12 were identical (13.1% in Figure 2), regardless of country.

Nineteen of the 131 participants reported 33 children who had earned money working in agriculture. A majority of these children (18/33) were at least 18 years of age when they began working (Figure 3), according to their parents. Starting work below age 18 was more common in the U.S.. But this may be related to our study's sampling frame.

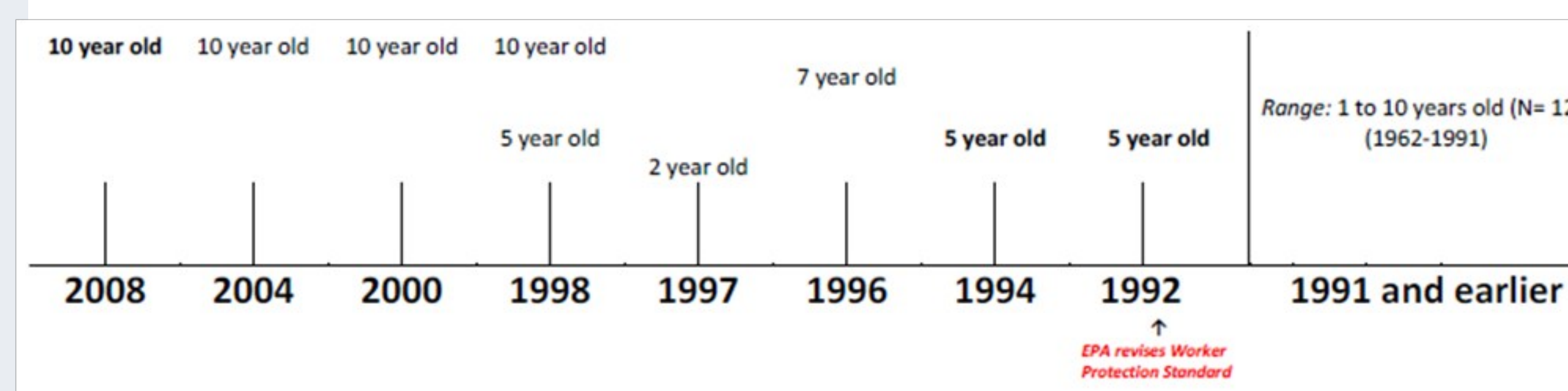


FIGURE 4. Year Children Under 12 First Earned Money Working in Agriculture\* or in Pesticide-Treated Fields† in the U.S. (N=21) \*Ages in bold type=parent reported for child † regular type = adult reported for self

In total, we obtained data on 21 individuals who began working when they were younger than age 12 (Figure 4). The youngest was a 16 year old tomato worker who self-reported being in pesticide-treated fields with his parents, in two southeastern states, when he was two years old. The most recent case was a ten year old who first worked in 2008, according to a parent. In the two decades since EPA made major revisions in its Worker Protection Standard, children under 12 years old have continued to join the agricultural industry to work in tomato crops in the southeastern U.S.

## CONCLUSIONS

- 13.1% of survey participants were under 12 years old when they started earning money or working around pesticide-treated crops.
- Children under 12 years old continue to join the workforce in tomato fields in the southeastern United States. We found nine cases since 1992, with the most recent in 2008.
- Regulatory agencies should not presume that children under 12 are not occupationally exposed to pesticides.

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## ACKNOWLEDGEMENTS

Special thanks to all past and present students of the Migrant Section of ETSU's interprofessional Rural Track class, RMS's patient intake staff, the Office of Rural & Community Health Partnerships, the Honors Program, Medical Student Affairs, Mikki Johnson-Maczka, Dr. Mike Stoots and Amy Reed. ETSU IRB Approvals: 09-231e (Florence) and c0511.14s (Silver).