



Work-Related Health Disparities in Michigan

A joint report of

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The risk of work-related injury and illness has differed among worker groups in the United States, and, in many instances, minority workers have borne a disproportionate share of that risk. Health disparities, including those resulting from work exposures, exist across racial and ethnic populations. Understanding the differential impacts of working conditions on health by racial and ethnic groups is critical for developing policies and programs to address health disparities. The elimination of health disparities is a major goal of healthcare agencies and researchers and is one of four overarching goals for the Department of Health and Human Services Healthy People 2020 objectives.¹ This document presents data on work-related health disparities in Michigan and makes recommendations for actions to address these findings.

Work-related health disparities arise both from overrepresentation of racial and ethnic minority workers in the most hazardous industries and from the incomplete penetration of occupational health and safety interventions to certain worker populations due to barriers created by social, cultural, and economic issues including language, literacy, and marginal economic status. The history of labor in the U.S. abounds with stories of death and disease among minority and immigrant workers. For example, in 1911, 146 mostly female immigrant textile workers died at the Triangle shirtwaist factory fire in New York City;² and, in the 1930s over 1,500 African American workers digging a water tunnel in Gauley Bridge West Virginia died of acute silicosis from inhaling high concentrations of silica dust.³ Studies have identified the increased burden of lung cancer among African American, compared to whites, who worked in coke oven facilities in the steel industry,⁴ chromate and bichromate production,⁵ rubber production,⁶ and foundries.⁷ African American hospital workers have been found to be at increased risk for all injuries,⁸ and African American textile workers have been found to be at increased risk of byssinosis compared to whites.⁹ Hispanic and African American workers have been found to be at increased risk for all injuries and illnesses compared to whites.¹⁰ A high percentage of the migrant agricultural work force is Hispanic; workers in the agricultural industry are at risk of pesticides poisonings¹¹ and acute injuries such as heat stroke.¹² The work-related traumatic injury death rate for Hispanics has exceeded the rate for non-Hispanics in almost all of the past 20 years.¹³

Work-related health disparities have been identified by high profile events and research studies; however there is no nationwide surveillance system that is tracking work-related health disparities. The official national system that tracks occupational injuries and illnesses (the annual *Survey of Occupational Illnesses and Injuries* conducted by the Bureau of Labor Statistics) does not collect information about race and ethnicity. Likewise, state-based workers compensation systems do not collect data on race from individuals filing claims for work-related injuries and illnesses. State-based and other occupational health surveillance systems that use hospital, emergency department, death certificates and other medical record data have information on race and ethnicity, and are thus necessary for tracking the differential impacts of working conditions on the health of various population groups.

This report highlights the data on health disparities in work-related injuries and illnesses in Michigan. It includes current data on employment demographics in Michigan's workforce and current occupational injury and illnesses data where work-related disparities are indicated. It

concludes with recommendations to address the problem of work-related health disparities in Michigan.

(1) Employment demographics in Michigan: Michigan’s three largest income-producing industries are manufacturing, agriculture, and tourism. For most of the twentieth century, Michigan dominated the automobile manufacturing industry. The manufacturing of cars required a complex of supporting industries for parts manufacturing and movement of raw goods, parts and the finished product. African Americans were recruited from the south to Michigan to fill the large pool of available jobs in these related industries in the first half of the twentieth century. Although auto workers were well paid, and in fact at Ford African Americans were paid the same as whites contrary to pay scales in the rest of the auto industry, African Americans were recruited into and stayed the longest in the most hazardous jobs, such as those in the foundries, because their other employment options were much more limited than whites.¹⁴ As employment discrimination lessened, minorities found work in other manufacturing industries and, in many cases low-paying, service occupations such as health care. Agriculture in Michigan, the second largest industry in the state, has historically been very diverse in its crop production with labor-intensive crops such as fruits and vegetables, which rely on a migrant workforce. Migrant agricultural workers are a highly vulnerable workforce with less protective health and safety and wage standards than non-agricultural workers.^{15, 16}

The Michigan workforce in 2009 was estimated to be 4,277,758 million, in the following race categories: 84.2% white, 10.5% African American, 3.7% Asian, 1% Native American, and 0.6% other. The workforce included 2.7% of Hispanic origin (Hispanics are included in each of the race categories).¹⁷ Individuals of different race and Hispanic origin are more likely to work in certain occupational groups. Table 1 shows, for each racial or ethnic group in Michigan, the five most common occupations where individuals in that race/ethnicity category were employed in 2009.

Table 1: Five most common occupations for Hispanics, African Americans, Asians and Whites, the percent employed in those occupations.*

<p>Hispanic Cooks (7.1%) Cashiers (3%) Laborers (2.9%) Drivers (2.8%) Retail sales workers (2.7%)</p>	<p>African Americans Nursing aids (4.8%) Cashiers (3.6%) Assemblers and fabricators (3.2%) Child care workers (2.5%) Home care aids (2.4%)</p>
<p>Asian Physicians (7.2%) Mechanical engineers (5.7%) Computer software engineers (5.7%) Nurses (5.5%) “Personal appearance” workers (4.9%)</p>	<p>White Drivers (2.7%) Secretaries (2.6%) Supervisors/Managers of retail sales workers (2.5%) Nurses (2.3%) Managers, all other (2.1%)</p>

* Rankings of most common occupations are from the 2009 *Current Population Survey*, U.S. Bureau of Census.¹⁷ Occupations are the occupational categories used by the Bureau of Census.¹⁸ Percents in the table are the percent of all employed members of that race/ethnicity group who work in that particular occupation.

Another way to look at the uneven distribution of work by race/ethnicity is to compare the percentage of the workforce in industries at high risk of injury that are white to the percentage that are nonwhite. Data from the Bureau of Labor Statistics' (BLS) annual survey of occupational illnesses and injuries and the U.S. Bureau of Census's *Current Population Survey* can be used to identify high risk industries for occupational injuries and illnesses that are disproportionately non-white. Of the 50 industries ranked highest in occupational injuries and illnesses nationally from national BLS data,¹⁹ 15 had more than 15% non-white employees in Michigan. (Table 2).

Table 2: Industry sector employment with highest morbidity rates nationally* where non-white workforce in Michigan exceeded 15% in 2009

Industry	Employed in 2009**			
	All Races	White	Non-White	% Non-white
Vocational rehabilitation services	2,446	990	1,456	59.5%
Dairy product manufacturing	4,723	2,607	2,116	44.8%
Nursing care facilities	52,859	33,825	19,034	36.0%
Alcoholic beverages, merchant wholesalers	4,202	2,699	1,503	35.8%
Pottery, ceramics, and related products manufacturing	929	607	322	34.7%
Residential care facilities, without nursing	37,074	24,632	12,442	33.6%
Sugar and confectionery products	1,741	1,224	517	29.7%
Motor vehicles and motor vehicle equipment manufacturing	235,670	172,863	62,807	26.7%
Warehousing and storage	4,920	3,763	1,157	23.5%
Independent artists, performing arts, spectator sports, and related industries	19,144	14,796	4,348	22.7%
Hospitals	259,499	202,975	56,524	21.8%
Traveler accommodation	30,288	23,745	6,543	21.6%
Grocery stores	70,469	56,206	14,263	20.2%
Miscellaneous fabricated metal products manufacturing	7,937	6,475	1,462	18.4%
Couriers and messengers	13,484	11,415	2,069	15.3%

* See the Appendix for the list of 50 industries with the highest national illness/injury rates.

** Employment data: 2009 *Current Population Survey*, U.S. Bureau of Census

(2) Data on health disparities in occupational illnesses and injuries in Michigan.

Michigan has been conducting work-related public health surveillance activities since 1987. Race and ethnicity data are collected in most of the data sets used for surveillance, primarily from reviewing the race/ethnicity recorded in medical records and self identification from interviews of individuals reported with these conditions.

Silicosis: Silicosis is a chronic and disabling disease with scarring of the lung which is caused by inhalation of silica dust. In addition individuals with silicosis are at increased risk of developing lung cancer. Industries with historically high levels of exposure to silica include foundries, mining, and ceramics and glass manufacturing. Michigan has been tracking silicosis since 1987. Of the 1,079 persons confirmed with silicosis in Michigan between 1987 and 2009, 41% were African-American. Overall for the state, the incidence rate of silicosis among African-American workers was 8.7 per 100,000 versus 1.5 per 100,000 for white workers (an almost six-fold greater incidence). This reflects previous hiring practices and job assignments in foundries. In a study of a grey iron foundry producing automobile engines, even African-Americans who had the same job titles as white workers still had higher silica exposure.²⁰

Work-related asthma: Work-related asthma can be caused or aggravated by exposure to allergens in the workplace. Michigan has been tracking work-related asthma since 1988. Between 1988 and 2009, 2,920 individuals have been confirmed in Michigan with work-related asthma, including 539 (19%) who were African-American. The annual incidence rate of work-related asthma for African Americans of 5.3/100,000 was 2.1 times greater than that of whites (2.5/100,000).

Fatal occupational injuries: Work-related fatal injuries in Michigan have ranged from 100 to 150 deaths per year since 2001. In many of those years, Hispanics have had an elevated rate of fatal acute traumatic injuries, similar to what is seen nationally. For example, in 2008 there were 7 (5.8%) deaths of Hispanic workers among the 121 workers fatally injured in Michigan. Hispanics comprise only 2.7% of the Michigan workforce.

A Hispanic worker dies in a collapsed trench

A 29-year old male Hispanic landscape laborer died when the nine-foot deep trench he was working in collapsed and covered him with soil. He and the 12 other laborers employed by the landscaping company spoke very little English. They had not received any safety training. MIOSHA cited the company for four “serious” violations including lack of procedures for preventing trench collapse.

African –American with work-related asthma from exposure to methyl diisocyanate (MDI)

An African- American man in his 40s with no prior medical problems developed asthma after working a short while on a high-volume production operation spraying MDI-based foam (the most common cause of work – related asthma) insulation at a factory. He worked for a temporary services agency and was assigned to a facility that made hot tubes. He developed wheezing, cough, chest tightness and shortness of breath associated with work about a month after beginning work. He sought care and was prescribed a bronchodilator. His doctor gave him a medical restriction and he was removed from the job. Subsequently, he has not been able to find work in a setting that has no chemical exposures. His symptoms have improved but he continues to use his inhaler.

Using the United States Census Bureau population estimates for race and ethnicity in Michigan, this is a rate of 2.3/100,000 for 16-65 year-old Hispanics as compared to a rate of 1.61/100,000 for 16-65 year-old whites and 1.6/100,000 for 16-65 year-old African-Americans. Because this disparity is found nationwide, Federal OSHA is collecting additional information during all investigations that includes the primary language and country of origin of the decedent. OSHA has also formed the Hispanic Worker Task Force that

includes hazard awareness and workplace rights.

Lead: Lead can cause acute and chronic adverse effects in multiple organ systems including the neurologic, kidney, gastrointestinal and hematopoietic, ranging from subclinical changes in neuropsychological function to chronic renal disease. Work-related lead exposure and lead poisoning are tracked from laboratory reports of blood lead tests. About 15,000 Michigan adults have their blood lead tested each year. Although, the overall proportion of workers tested that are non-white is similar to the overall demographic profile in Michigan, among workers with the highest blood lead levels ($\geq 60 \mu\text{g/dL}$), African-Americans were over-represented at 22% (data from 1997-2009). A description of elevated lead levels in a small foundry with a Hispanic workforce is described in the sidebar.

***Hispanic workers lead poisoned
in a Michigan brass facility***

A worker had a blood lead test of $71 \mu\text{g/dl}$ (normal is less than $5 \mu\text{g/dl}$). The test had been ordered by his primary care physician. A Michigan OSHA inspection was initiated at his workplace, a small non-ferrous foundry that had never provided blood lead testing for its employees. The Michigan OSHA inspection found multiple violations of the work place lead standard. Among the seven employees, five were Hispanic and spoke Spanish only. The other workers at the facility had their blood lead levels tested after the inspection; four of the other six workers also had very high blood lead levels (above $50 \mu\text{g/dl}$).

Pesticides: Exposure to pesticides can cause a variety of acute health effects depending on the type of pesticide and the type and duration of exposure, ranging from skin irritation to profound neurological effects. Health care providers and institutions are required to report patients with occupational pesticide poisoning. However, reporting of cases is incomplete because of the barriers to identifying and reporting cases, including difficulties in access to medical care for poor and disenfranchised workers, fears of workers, especially among the most vulnerable like migrant farm workers, about losing their job if the work-relatedness of their symptoms becomes known, and difficulties in making a diagnosis of pesticide poisoning even when medical care is obtained. Michigan's surveillance system for work-related acute pesticide illness has confirmed that 862 individuals have become ill from pesticides since 2001. These reports have been received from the poison control center and hospitals in the state. Several notable pesticide exposure events affecting groups of Hispanic agricultural workers have been reported. The first was when an organophosphate insecticide drifted onto workers picking blueberries from a farm across the road. There were about 40 migrant Hispanic in the field; 12 were reported with pesticide-related illness; others were believed to have become ill but declined medical care. The Michigan Department of Agriculture (MDA) investigated the incident and found a number of violations of pesticide safety requirements. Another problem was identified by three workers in a fruit packing plant who became ill from exposure to the disinfectant used to clean the fruit. The Michigan Migrant Legal Assistance Project, the Michigan Occupational Safety and Health Administration (MIOSHA), and MDA were involved in the investigation.

(3) Discussion and recommendations

Work-related health disparities by race and ethnicity exist in some work sectors in Michigan. This is because of the disproportionate representation of minority workers in less desirable, and often more hazardous, jobs, discrimination at work putting minority populations in situations that expose them to more risk factors, and less structured safety protections for workers in some industry sectors such as agriculture. It is important to recognize that occupational health

disparities, like other health disparities, are rooted in basic social structures, and that they reflect broader socio-economic inequalities in Michigan and the United States.²¹ Occupational health disparities, like other health disparities, are unacceptable and correctable.

Most notable of Michigan's occupational health disparities is the preponderance of African Americans among those with silicosis, as well as the overall numbers of cases of silicosis from exposure to silica in Michigan's foundries. The occupational health surveillance center at Michigan State University has worked with MIOSHA to target these foundries for interventions to protect current workers from exposure to hazardous levels of silica dust. Another notable finding in Michigan and elsewhere – Hispanics among work-related fatal injuries – has resulted in the development of an Immigrant Workers/Limited English Speakers Workers investigation guide by MIOSHA. Nationally, the NIOSH Fatality Assessment and Control Evaluation (FACE)²² program is targeting work-related fatalities among Hispanics for on-site investigations, and results are being made available to the OSHA Hispanic Workers Task Force.

These data do not fully describe occupational health disparities in Michigan because of some significant limitations in available data. First, although race/ethnicity information is part of the State's reporting requirement, it is often not provided in work-related injury/illness case reports. Second, race and ethnicity are not collected by the nationwide system maintained by the BLS or by Michigan's workers compensation system, which otherwise are important sources of information about work-related illnesses and injuries. For these reasons, a fully comprehensive view of occupational health disparities is not currently available. Mandatory reporting of race and ethnicity in all data sets would greatly improve our understanding of the disparate impacts of work hazards on the health of Michigan's workers and assist in developing intervention strategies to address disparities identified. Improving race/ethnicity data collection in data systems used for occupational health surveillance is consistent with Recommendation 1 in the 2010 *Michigan Health Equity Roadmap* report from the Michigan Department of Community Health: "Improve race/ethnicity data collection/data systems/data accessibility: Assure that race, ethnicity and preferred language data are collected for all participants in health and social services programs."²³

In addition to the recommendation to collect race and ethnicity in data sets relevant to occupational health surveillance, other recommendations to address findings in this report include:

- Collaboration with the MDCH Health Disparities Reduction and Minority Health Section to develop strategies to promote occupational "health equity", as part of MDCH's commitment to addressing the overall social determinants of health that are at the root of health disparities.
- Inclusion of the consideration of occupational health disparity as a cause of disparities in the incidence of cancer and other chronic conditions. For example, how much of the disparity in lung cancer mortality is secondary to the overrepresentation of African-Americans in jobs in foundries and coke ovens at high risk for lung cancer.
- Inclusion of occupation and industry in the state-wide Behavioral Risk Factor Surveillance System (BRFSS) to expand information available on race/ethnicity, disease and work, and oversample for minority populations in the BRFSS survey.

- Training of health care providers in the recognition of occupational disease and reporting requirements, especially in clinics with medically underserved populations such as community health centers and migrant health clinics. This training should include a mechanism to increase compliance by migrant health clinics and community health centers with the State's occupational disease reporting law.
- Training in occupational safety and health targeted at high school students, especially those in vocational schools.
- Interaction with community groups that have outreach to African American, Hispanic and immigrant populations to promote awareness of workplace safety and health issues.
- Translation of occupational health and safety informational materials into languages of common immigrant worker groups.

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