

# Protecting Michigan At-Risk Populations From the Health Risks of Hot Weather

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## Abstract

- In 2010 the Michigan Department of Community Health (MDCH) received funds under the Climate Ready States and Cities Initiative.
- The Michigan Climate and Health Adaptation Plan was developed and includes a focus on extreme heat and populations at increased risk of health effects from the heat.
- High risk populations include the elderly or very young, low-income, urban, those with chronic health conditions, and those lacking social or community supports.
- Heat vulnerability surveys of at-risk populations were developed and piloted from May – August 2011 by Ingham and Washtenaw County Health Departments.
- The surveys collected information on each population's knowledge of heat risk and protective factors, barriers to protective behavior, and other characteristics (such as mobility, chronic health conditions, and medications).

## Introduction

Approximately 400 people die each year from exposure to heat nationally. Climate change is also affecting Michigan. The climate is warming and weather events are becoming more extreme. Michigan's urban areas are experiencing a higher number of days with extreme high temperatures creating conditions conducive to heat illness and death. Heat, combined with increased ozone and air particulates, further exacerbates chronic health conditions such as asthma and cardiac disease. During heat waves, there are many more deaths due to chronic health conditions precipitated by the additional stress of heat.

### In Michigan:

- About 5 deaths per year are directly attributable to heat.
- About 250 people per year are hospitalized with heat-related diagnoses. Over 65% are male, and over 40% are 65 years of age or older.
- The number of asthma hospitalizations has steadily increased from about 64,655 in 2001 to 102,005 in 2009; some of the increase may be associated with climate change.

## Project Background

- Objective: to understand characteristics of groups at high risk of heat health effects.
- Two Michigan local health departments have developed surveys as a model for other communities.
- Information collected includes:
  - Demographics and household characteristics
  - Health status and heat risk factors
  - Risk perception/understanding of how heat affects health
  - Heat protective strategies and barriers

## Survey Methods

### Washtenaw County Survey

- Led, publicized and conducted by Washtenaw County Public Health Department
  - Target: 1,000 adults who are low income, minority, elderly, non-English-speaking, homeless, and/or rural
- Used on-line and paper surveys distributed to clients in person, at service sites and at organized events:
  - Libraries, clinics, farmers' markets, homeless centers, food pantries, soup kitchens, senior centers
- 7 pages, 36 multiple-choice questions; anonymous
- Survey translated into Spanish, French, Traditional Chinese, Arabic

### City of Lansing Survey

- Led by Ingham County Health Department; publicized and conducted by 6 community-based organizations\*
  - Target: 1,000 adults who are low income, minority, elderly and/or refugee
- Paper surveys distributed to clients in person, by mail and at organized events:
  - Farmers' markets, food pantries, soup kitchens, senior social events, canvassing
- 4 pages, 20 multiple-choice questions; anonymous
- Survey translated into Spanish, Arabic, Somali

## Results

Figure 1. Resources for Coping with Heat Events among Washtenaw County Residents, by Income, Summer 2011

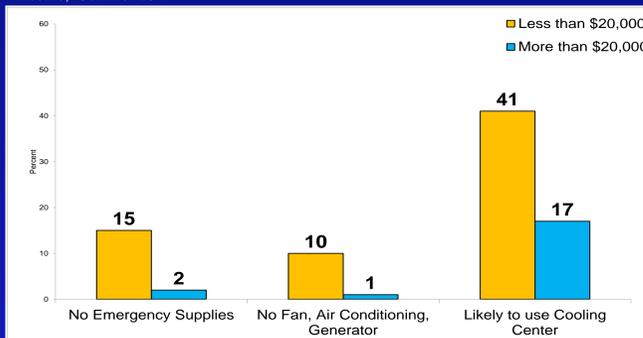


Figure 2. Likely Mode of Transportation to a Cooling Center among Washtenaw County Residents, by Income, Summer 2011

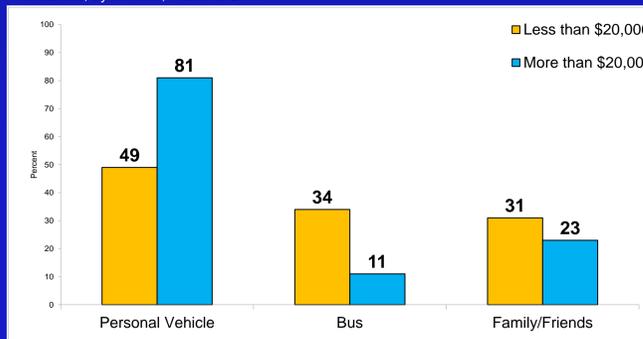


Figure 3. Health Conditions Associated with Heat Illness Reported by Washtenaw County Residents, by Income, Summer 2011

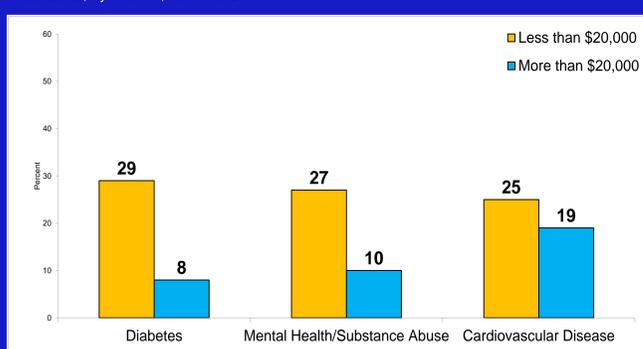


Figure 4. Resources for Coping with Heat Events among City of Lansing Residents, by Income, Summer 2011

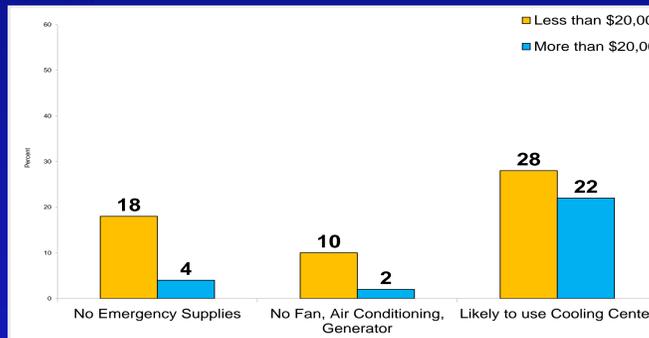


Figure 5. Likely Mode of Transportation to a Cooling Center among City of Lansing Residents, by Income, Summer 2011

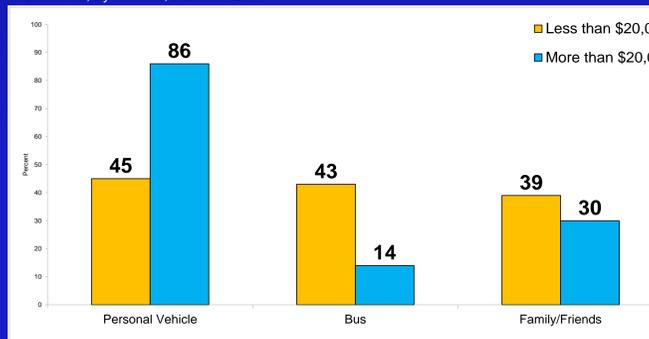
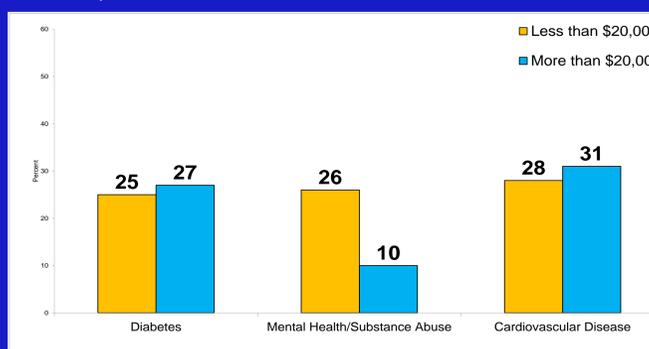


Figure 6. Health Conditions Associated with Heat Illness Reported by City of Lansing Residents, by Income, Summer 2011



## Population Demographics

### Washtenaw County

- 6<sup>th</sup> largest county in Michigan; 344,791 residents
- 82% in county reside in urban areas, 18% in rural
- 26% non-White: 13% Black, 8% Asian, 4% Latino
- 11% foreign-born; 14% non-English speakers
- 10% over age 65
- 15% below poverty level

### City of Lansing

- 5<sup>th</sup> largest city in Michigan; 114,297 residents
- 39% non-White: 25% Black, 4% Asian, 13% Latino
- 8% foreign-born; 12% non-English speakers
- 10% over age 65
- 25% below poverty level

## Discussion

Preliminary results from both communities indicate low income (<\$20K/yr) respondents:

- Have fewer resources, are more dependent on public transportation and public cooling centers
- Have higher chronic disease prevalence (especially mental health and substance abuse)
- Are consistent with other studies

Limitations of this analysis include:

- Respondents are 'convenience sample', not necessarily representative of entire community population
- Surveys are still ongoing; results do not yet include all targeted subgroups

Next steps:

- Conduct further analyses with complete survey data
- Evaluate relationships among income, race/ethnicity and heat health risk factors
- Disseminate results to community groups
- Determine best practices to address heat health risks



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Participating organizations in Ingham County include: Southside Lansing Community Development Association, Allen Neighborhood Center, Northwest Initiative, Southside Community Coalition, Lansing Latino Health Alliance, Greater Lansing African American Health Institute, Tri-County Office on Aging, Native American Outreach Program, Family Outreach Services, Public Health Nursing, and Emergency Preparedness

Participating organizations in Washtenaw County include: WCPHD Adult, Immunization and WIC Clinics, Hope Clinic, Ypsilanti UM Nurse Managed Care Centers, Arab American Cultural Center, Ypsilanti Ann Arbor Area District Library, City of Ann Arbor public schools/universities, local Head Start, Delonis Center, Shelter Association of Washtenaw County and Avalon Housing