STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

STEVEN E. CHESTER
DIRECTOR

February 13, 2007

Dear Interested Party:

In 2005, many residents expressed concerns about air pollution in the Hamtramck area due to various sources, including Michigan Waste Services (MWS). Coupled with that, there is a perception by the public that there may be high rates of cancer, asthma, and possibly other illnesses in the community. At that time, the Michigan Department of Community Health (MDCH) had agreed to evaluate the available health statistics in the area. That includes asthma, birth defects, and cancer. The MDCH estimated that the assessment would be completed in approximately two months. The assessment took longer than estimated. The Michigan Department of Environmental Quality (MDEQ) made a commitment to make the results available. Please note that the report is also available on the AQD Internet Home Page at http://www.michigan.gov/deq under the Air Toxics section.

Attached is the requested MDCH report on health statistics for Hamtramck, Michigan. This type of health statistics evaluation cannot be used to determine associations between disease occurrences and risk factors such as diet, smoking, or environmental exposures. It can provide comparisons to other population areas (the City of Detroit, Wayne County, and statewide, in this case). It can also be useful to epidemiologists, who could do further evaluations about the potential causes of differences in incidence rates. MDCH routinely provides this type of information to citizens who believe, by their observations, that they may have an unusually elevated incidence of cancer or other diseases.

The health statistics described in the attached report indicate that over the period 1985-2002 the Hamtramck area had elevated rates of cancer of the lung and liver, and for all cancers combined, compared to the State of Michigan. However, compared to the rates in Wayne County, only cancer of the liver was elevated. The 2000-2002 asthma hospitalization rates for the Hamtramck area was significantly greater than for the State, but was significantly lower than the City of Detroit. Over the period 1985-2005, the number of low birth weight live births per total live births was elevated in the Hamtramck area, in comparison to the State of Michigan as a whole.

The report mentions a number of known risk factors for these health effects (for example, smoking, diet, and alcohol consumption). These risk factors were not accounted for in this type of study, so it cannot be determined if they could explain the differences found. The report was developed by Dr. Robert Wahl, MDCH, and any questions about his analysis should be directed to him at 517-335-9151; or e-mail at: wahlr@michigan.gov. Further general information about this type of health statistics evaluation is available under "Cancer" at the MDCH website: http://www.michigan.gov/mdch/0,1607,7-132-2945_5105-13050--,00.html

If you have any questions, please contact me at 517-373-7080.

Sincerely,

Mary A. Charley, Senior Engineering Specialist
Thermal Process Unit
Air Quality Division

Enclosures
cc/enc: Mr. Norm Aardema, MWS
Dr. Robert L. Wahl, MDCH
Ms. Lynn Fiedler, MDEQ
Ms. Teresa Seidel, MDEQ
Mr. Robert Sills, MDEQ

STATE OF MICHIGAN
DEPARTMENT OF COMMUNITY HEALTH
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

JANET OLSZEWSKI
DIRECTOR

January 26, 2007

Robert Sills
Michigan Department of Environmental Quality
Air Quality Division
Constitution Hall, 3rd Floor
525 W. Allegan Street
PO Box 30260
Lansing, Michigan 48909

Dear Mr. Sills:

The requested statistical analysis of cancer, low birth weight, and asthma-related hospitalization in Hamtramck is enclosed. This is an update of an analysis dated September 14, 1999 and includes specific health outcomes found to be potentially elevated in that analysis. The Division for Vital Records and Health Statistics (DVR&HS), Michigan Department of Community Health (MDCH), compiled incidence (cancer cases) data for cancers of the lung, cancers of the liver, non-Hodgkin's lymphomas, Hodgkin's disease, and all cancers combined for the entire state of Michigan and combined ZIP Codes 48211 and 48212, which entailed the City of Hamtramck. DVR&HS used the Michigan Resident Cancer Incidence File (MRCIF) to compile incidence data. The MRCIF was started in 1985 and all hospitals and laboratories are required by law to report cancer cases to DVR&HS. In addition, the State of Michigan has reciprocal agreements with eighteen states that permit exchange of information on Michigan residents who are diagnosed and/or treated for cancer in other states.

The age-adjusted incidence rate for cancers of the lung in ZIP Codes 48211 and 48212 from 1985 through 2002 was significantly greater than the corresponding rate for the state of Michigan but was approximately equal to the corresponding rate for Wayne County (Table 1). In addition, the age-adjusted incidence rates for individual years 1985, 1989 through 1992, 1994, and 1999 were significantly greater than corresponding rates for the state; however, only individual-year rates for 1990 and 1999 were significantly greater than the corresponding rates for Wayne County (Table 1). DVR&HS was unable to calculate age-adjusted incidence rates for cancers of the liver, non-Hodgkin's lymphomas, and Hodgkin's disease for individual years from 1985 through 2002 in ZIP Codes 48211 and 48212 (Tables 2, 3, and 4). Age-adjusted incidence rates based on fewer than 20 cases were considered statistically unreliable and were not calculated. However, the age-adjusted incidence rates for all years combined from 1985 through 2002 for cancers of the liver, non-Hodgkin's lymphomas, and Hodgkin's disease were calculated. The incidence rate from 1985 through 2002 for cancers of the liver was significantly greater than the corresponding rates for the state of Michigan and Wayne County (Table 2), and the incidence rates for non-

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Hodgkin's lymphomas and Hodgkin's disease were approximately equal to the corresponding state and Wayne County rates (Tables 3 and 4). The age-adjusted incidence rates in ZIP Codes 48211 and 48212 for all cancers combined for all years combined from 1985 through 2002 and for individual years 1985, 1989, 1990, 1993, and 1994 were significantly greater than the corresponding rates for the state of Michigan (Table 5). However, only individual years 1989 and 1994 were significantly greater than the corresponding rates for Wayne County (Table 5).

Due to the problems with small case numbers, standardized incidence ratios (SIRs) were calculated for cancer cases by dividing the observed numbers of cancer cases by the corresponding expected numbers of cancer cases. The expected numbers of cancer cases were based on age, race, and sex-specific incidence for the state of Michigan applied to age, race, and sex-specific ZIP Code population estimates. SIRs were calculated for the four cancer categories of interest and for all cancers combined for ZIP Codes 48211 and 48212. If the SIR was greater than one, then the observed number of cases for a specific cancer category in Hamtramck was higher than that expected. Similarly, if the SIR was less than one, then the observed number of cases was lower than expected. Additionally, SIRs that were statistically significantly elevated for less than six individual years within an 18-year period or were significantly elevated for less than three successive years were probably elevated due to chance occurrence.

The SIR for cancers of the lung in ZIP Codes 48211 and 48212 from 1985 through 2002 was significantly greater than one (Table 1). In addition, SIRs for individual years 1985, 1989 through 1992, 1994, 1999, and 2000 were significantly greater than one (Table 1). The SIR for liver cancers from 1985 through 2002 in ZIP Codes 48211 and 48212 was significantly greater than one, and the SIRs for individual years 1988, 1990, 1993 through 1995, 2000, and 2001 were significantly greater than one (Table 2). The SIRs for non-Hodgkin's lymphomas for all years combined and for each individual year from 1985 through 2002 were all approximately equal to one (Table 3). The SIRs for Hodgkin's disease for all years combined and for each individual year from 1985 through 2002 were all approximately equal to one or not statistically significant except for individual year 2000 (Table 4). The SIR for all cancers combined was approximately equivalent to one from 1985 through 2002 (Table 5). In addition, the SIRs for individual years from 1985 through 2002 were all approximately equivalent to one except years 1985, 1989, 1990, 1993, and 1994 (Table 5). Individual-year SIRs were statistically significantly greater than one for more than two consecutive years for cancers of the lung (1989 through 1992; Table 1) and cancers of the liver (1993 through 1995; Table 2). Additionally, SIRs were elevated for more than six individual years from 1985 through 2002 for cancers of the lung (Table 1) and liver (Table 2).

The elevation in lung cancer incidence rates and SIRs may be due to chance occurrence or may be associated with the presence of certain risk factors that are more prevalent in zip codes 48211 and 48212 as compared with Wayne County and the state of Michigan. These potential risk factors include smoking, exposure to second hand smoke, and certain occupational exposures. For example, zip codes with higher smoking rates as compared with Wayne County or the state of Michigan may experience higher lung cancer rates. Similarly, certain zip codes may contain a

greater percentage of residents exposed to chemicals in the work-place that have been associated with increased risk for the development of lung cancer. The role of diet, nutrition, and residential environmental exposures in lung cancer is currently unclear, and these potential risk factors require further scientific study. Additionally, the MDCH analysis was limited because data from all histological types of lung cancer were combined for analysis, and risk factors vary by histological type. However, analysis of lung cancer cases by histological type is difficult due to the small number of lung cancer cases for each type.

High variability is commonly found in analyses of liver cancer due to the small numbers of cases. Consequently, elevations in the number of liver cancer cases, as with lung cancer cases, can be random occurrences rather than due to certain causes. Liver cancer, according to scientific studies, may be associated with alcohol consumption; exposure to aflatoxins from food (e.g., peanuts, corn, and cassava) and, to a much lesser extent, workplaces; exposure to extremely high levels of vinyl chloride in the workplace; oral contraceptive use; and smoking. No other environmental exposures have been associated with liver cancer. In addition, as with lung cancer, the MDCH analysis was limited because data from all histological types of liver cancer were combined for analysis, and risk factors vary significantly by histological type. However, analysis of liver cancer cases by histological type is impractical due to the extremely small number of cases for each histological type.

DVR&HS compiled the number of live births and low weight live births (defined as birth weights less than 2500 grams) and calculated 'low weight live birth' to 'live birth' ratios (low weight ratios) for each year from 1985 through 2005 for residents of the City of Hamtramck and the State of Michigan (Table 6). The source of the data was the Resident Live Birth Files maintained by DVR&HS. The low weight ratio was a rough estimate of the percentage of live births that had a low birth weight and was not adjusted by race, gender, or maternal age. The low weight ratios for the City of Hamtramck were statistically significantly higher than the low weight ratios for the State of Michigan in 1987, 1991, 1992, 2002, and 2004. No increasing trends in low weight ratios from 1985 through 2005 in the City of Hamtramck were present (Table 6). A mother's medical problems, including high blood pressure, certain infections, and heart, kidney or lung problems and substance abuse during pregnancy including cigarette smoking and alcohol use are risk factors for low weight live births. It is unclear whether other environmental exposures can increase the risk for low weight births; however, research in this area is being conducted.

The rate of asthma hospitalization for children (1-14 years) in Hamtramck, 2000-2002, was significantly higher than the comparable rate for the State of Michigan as a whole. In addition, the rate of asthma hospitalization for children (1-14 years) in Hamtramck, 2000-2002, was significantly lower than the comparable rate for the City of Detroit as a whole (see attached report). Many known factors can increase a child's risk of severe asthma exacerbation that results in hospitalization. These factors include exposure to a child's asthma triggers, which are different for each child and can include certain foods, pollens, air pollutants, animal allergens, work-related exposures, weather conditions, and non-asthma medications, house dust mites,

cockroaches, molds, tobacco smoke, other smoke, strong odors and sprays, colds and infections, exercise, and emotions. A family's access to appropriate health care is also an important factor when considering these asthma data. However, according to researchers and public health practitioners, the relative importance of each factor is unclear and more investigation is ongoing. Please see attached "Asthma Hospitalizations for Children (1-14 Years) in the State of Michigan, the City of Detroit, and Hamtramck, 2000-2002" for a description of the asthma-related hospitalization analysis.

In summary, the SIR and age-adjusted incidence rate analyses in ZIP Codes 48211 and 48212 showed elevated numbers and rates, respectively, of cancers of the lung and cancers of the liver as compared with the state of Michigan for all years combined and for greater than six individual years from 1985 through 2002 (Tables 1 and 2). In addition, the number of low weight live births was elevated as compared to the entire State of Michigan (Table 6). However, researchers have been unable to consistently associate the occurrence of lung cancer, liver cancer, or low weight live births with residential environmental exposures, other than smoking and exposure to secondhand smoke; further study is needed to determine potential risk factors. This analysis included three additional years, 2000 through 2002, of cancer analysis and seven additional years, 1998 through 2003, of birth weight analysis. This additional analysis found results similar to the preceding years for each outcome, with cancer of the lung, cancer of liver, and low weight ratio analyses showing greater rates than the state. Regarding asthma, the rate of hospitalization for children in Hamtramck, 2000-2002, was significantly higher than the comparable rate for the State of Michigan as a whole.

If you have any questions about this analysis, please call me at (517) 335-9151.

Sincerely,

Robert L. Wahl, DVM, MS
Division of Environmental and Occupational Epidemiology
Bureau of Epidemiology

Enclosures

cc: Dave Wade, MDCH
Glenn Copeland, MDCH
Sarah Lyon-Callo, MDCH
Anahid Kulwicki, Wayne Co. Hlth. Dept.

Table 1. Incidence of Invasive Lung Cancer
Residents of ZIP Codes 48211 and 48212

Year of Diagnosis	Number of Cases		Obs/Exp	Age-Adjusted Incidence Rate		
	Observed	Expected		ZIP Codes	Wayne Co.	State
1985	75	54.8	1.37 [2]	103.2 [7]	95.7	73.2
1986	61	57.4	1.06	83.0	92.3	73.5
1987	59	57.1	1.03	84.5	90.5	73.9
1988	58	56.1	1.03	85.5	93.9	75.0
1989	60	46.8	1.28 [1]	114.9 [6]	91.8	80.1
1990	71	46.4	1.53 [2]	121.1 [5,7]	94.9	78.8
1991	63	49.5	1.27 [1]	108.1 [6]	98.6	84.0
1992	61	48.2	1.27 [1]	110.4 [6]	90.9	80.7
1993	56	48.8	1.15	96.7	98.0	81.7
1994	64	47.6	1.34 [2]	113.1 [7]	94.5	79.3
1995	49	47.3	1.04	85.6	91.1	78.1
1996	50	46.4	1.08	86.7	85.6	76.8
1997	49	45.9	1.07	85.7	86.1	75.4
1998	52	46.5	1.12	88.8	88.2	76.2
1999	56	35.8	1.56 [2]	119.2 [5,7]	85.6	75.1
2000	46	35.4	1.30 [1]	97.3	84.6	74.3
2001	44	35.0	1.26	93.1	86.6	73.5
2002	37	33.4	1.11	77.9	84.9	69.9
1985-2002	1011	838.4	1.21 [2]	95.7 [7]	90.7	76.5

Date : April 25, 2005

Source : Michigan Resident Cancer Incidence File. Includes cases diagnosed in 1985-2002 and processed by the Michigan Department of Community Health, Vital Records and Health Data Development Section by November 16, 2004.

Expected numbers of cases are calculated by applying the age- and sex-specific incidence rates for Michigan residents to the age- and sex-specific ZIP code population estimates.

Age-adjusted rates are computed by the direct method, and are age-adjusted to the 2000 U.S. standard population. Rates are per 100,000 population in the specified group. ZIP code populations for 1986 were used for 1985 and 1986. ZIP code populations for 1990 were used for 1989 - 1992. Populations for 1994 were used for 1993-1998, and populations for 2000 were used for 1999-2002.

[1] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .05$).

[2] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .01$).

[5] Age-adjusted ZIP code rate is significantly greater than county rate ($p < .05$).

[6] Age-adjusted ZIP code rate is significantly greater than state rate ($p < .05$).

[7] Age-adjusted ZIP code rate is significantly greater than state rate ($p < .01$).

Table 2. Incidence of Invasive Liver Cancer
Residents of ZIP Codes 48211 and 48212

Year of Diagnosis	Number of Cases		Obs/Exp	Age-Adjusted Incidence Rate		
	Observed	Expected		ZIP Codes	Wayne Co.	State
1985	1	2.2	0.45	*	3.4	3.1
1986	3	2.0	1.50	*	3.7	2.7
1987	1	2.2	0.45	*	4.2	3.0
1988	5	2.2	2.27 [1]	*	3.3	3.0
1989	1	1.8	0.56	*	3.7	3.1
1990	6	2.1	2.86 [2]	*	4.3	3.5
1991	2	2.2	0.91	*	4.9	3.8
1992	1	1.8	0.56	*	3.8	3.2
1993	5	2.2	2.27 [1]	*	4.1	3.6
1994	5	2.1	2.38 [1]	*	4.2	3.4
1995	6	2.2	2.73 [2]	*	4.4	3.6
1996	3	2.4	1.25	*	5.7	4.1
1997	4	2.3	1.74	*	5.5	3.9
1998	5	2.4	2.08	*	5.1	4.1
1999	3	2.1	1.43	*	6.2	4.4
2000	8	2.1	3.81 [2]	*	6.0	4.3
2001	8	2.0	4.00 [2]	*	5.8	4.1
2002	0	2.0	0.00	*	5.5	4.1
1985-2002	67	38.3	1.75 [2]	6.6 [5,6]	4.7	3.7

Date : April 25, 2005

Source : Michigan Resident Cancer Incidence File. Includes cases diagnosed in 1985-2002 and processed by the Michigan Department of Community Health, Vital Records and Health Data Development Section by November 16, 2004.

Expected numbers of cases are calculated by applying the age- and sex-specific incidence rates for Michigan residents to the age- and sex-specific ZIP code population estimates.

Age-adjusted rates are computed by the direct method, and are age-adjusted to the 2000 U.S. standard population. Rates are per 100,000 population in the specified group. ZIP code populations for 1986 were used for 1985 and 1986. ZIP code populations for 1990 were used for 1989 - 1992. Populations for 1994 were used for 1993-1998, and populations for 2000 were used for 1999-2002.

[1] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .05$).

[2] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .01$).

[5] Age-adjusted ZIP code rate is significantly greater than county rate ($p < .05$).

[6] Age-adjusted ZIP code rate is significantly greater than state rate ($p < .01$).

* Rate is considered statistically unreliable.

Table 3. Incidence of Non-Hodgkin Lymphomas
Residents of ZIP Codes 48211 and 48212

Year of Diagnosis	Number of Cases		Obs/Exp	Age-Adjusted Incidence Rate		
	Observed	Expected		ZIP Codes	Wayne Co.	State
1985	12	10.6	1.13	*	14.3	15.1
1986	9	10.2	0.88	*	13.8	14.6
1987	6	11.9	0.50	*	16.0	16.2
1988	6	12.4	0.48	*	16.6	17.2
1989	14	10.5	1.33	*	16.7	18.0
1990	8	10.8	0.74	*	17.6	18.4
1991	10	11.8	0.85	*	18.5	20.5
1992	11	10.9	1.01	*	16.3	18.7
1993	11	11.1	0.99	*	18.0	19.0
1994	14	11.6	1.21	*	18.7	19.9
1995	14	10.8	1.30	*	18.5	18.5
1996	10	11.6	0.86	*	17.6	19.6
1997	5	11.8	0.42	*	19.2	20.2
1998	8	11.1	0.72	*	16.9	18.8
1999	7	10.0	0.70	*	17.6	20.1
2000	5	10.2	0.49	*	19.3	20.3
2001	5	9.7	0.52	*	18.8	19.5
2002	5	9.4	0.53	*	18.2	19.0
1985-2002	160	196.4	0.81	15.1	17.4	18.6

Date : April 25, 2005

Source : Michigan Resident Cancer Incidence File. Includes cases diagnosed in 1985-2002 and processed by the Michigan Department of Community Health, Vital Records and Health Data Development Section by November 16, 2004.

Expected numbers of cases are calculated by applying the age- and sex-specific incidence rates for Michigan residents to the age- and sex-specific ZIP code population estimates.

Age-adjusted rates are computed by the direct method, and are age-adjusted to the 2000 U.S. standard population. Rates are per 100,000 population in the specified group. ZIP code populations for 1986 were used for 1985 and 1986. ZIP code populations for 1990 were used for 1989 - 1992. Populations for 1994 were used for 1993-1998, and populations for 2000 were used for 1999-2002.

* Rate is considered statistically unreliable.

Table 4. Incidence of Hodgkin Lymphomas
Residents of ZIP Codes 48211 and 48212

Year of Diagnosis	Number of Cases		Obs/Exp	Age-Adjusted Incidence Rate		
	Observed	Expected		ZIP Codes	Wayne Co.	State
1985	0	1.9	0.00	*	2.5	2.9
1986	4	1.9	2.11	*	3.2	2.9
1987	0	2.1	0.00	*	2.9	3.1
1988	0	2.0	0.00	*	2.8	3.1
1989	0	1.8	0.00	*	2.6	3.2
1990	0	2.0	0.00	*	3.5	3.7
1991	1	2.0	0.50	*	3.2	3.5
1992	0	1.7	0.00	*	3.6	3.1
1993	1	1.8	0.56	*	3.0	3.2
1994	3	1.7	1.76	*	3.0	3.1
1995	1	1.8	0.56	*	3.3	3.3
1996	2	1.6	1.25	*	2.7	2.8
1997	0	1.8	0.00	*	2.6	3.2
1998	1	1.6	0.63	*	2.6	2.8
1999	4	1.8	2.22	*	3.4	3.3
2000	4	1.7	2.35 [1]	*	2.8	3.0
2001	1	1.6	0.63	*	3.3	2.8
2002	2	1.7	1.18	*	3.1	3.0
1985-2002	24	32.5	0.74	2.3	3.0	3.1

Date : April 25, 2005

Source : Michigan Resident Cancer Incidence File. Includes cases diagnosed in 1985-2002 and processed by the Michigan Department of Community Health, Vital Records and Health Data Development Section by November 16, 2004.

Expected numbers of cases are calculated by applying the age- and sex-specific incidence rates for Michigan residents to the age- and sex-specific ZIP code population estimates.

Age-adjusted rates are computed by the direct method, and are age-adjusted to the 2000 U.S. standard population. Rates are per 100,000 population in the specified group. ZIP code populations for 1986 were used for 1985 and 1986. ZIP code populations for 1990 were used for 1989 - 1992. Populations for 1994 were used for 1993-1998, and populations for 2000 were used for 1999-2002.

[1] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .05$).

* Rate is considered statistically unreliable.

Table 5. Incidence of Invasive Cancer
Residents of ZIP Codes 48211 and 48212

Year of Diagnosis	Number of Cases		Obs/Exp	Age-Adjusted Incidence Rate		
	Observed	Expected		ZIP Codes	Wayne Co.	State
1985	376	328.5	1.14 [2]	536.9 [7]	512.5	461.7
1986	311	336.1	0.93	445.2	506.4	460.8
1987	353	361.0	0.98	504.9	528.0	475.1
1988	343	350.7	0.98	486.5	514.6	475.5
1989	364	301.0	1.21 [2]	639.9 [5,7]	542.2	510.7
1990	342	311.1	1.10 [1]	592.5 [6]	564.9	525.2
1991	336	330.5	1.02	578.8	581.5	557.6
1992	332	330.8	1.00	573.8	583.5	555.6
1993	362	319.4	1.13 [2]	614.0 [7]	599.5	536.5
1994	366	303.8	1.20 [2]	649.9 [5,7]	563.2	512.1
1995	275	295.5	0.93	475.9	542.2	499.1
1996	280	294.0	0.95	493.9	526.7	497.5
1997	279	299.3	0.93	485.0	543.4	505.0
1998	291	301.8	0.96	511.3	537.1	509.7
1999	264	250.9	1.05	548.9	530.3	516.9
2000	249	247.8	1.00	513.7	545.4	511.8
2001	245	245.7	1.00	511.3	540.3	507.3
2002	199	239.0	0.83	410.0	552.2	494.3
1985-2002	5567	5446.9	1.02	523.1 [7]	545.0	506.4

Date : April 25, 2005

Source : Michigan Resident Cancer Incidence File. Includes cases diagnosed in 1985-2002 and processed by the Michigan Department of Community Health, Vital Records and Health Data Development Section by November 16, 2004.

Expected numbers of cases are calculated by applying the age- and sex-specific incidence rates for Michigan residents to the age- and sex-specific ZIP code population estimates.

Age-adjusted rates are computed by the direct method, and are age-adjusted to the 2000 U.S. standard population. Rates are per 100,000 population in the specified group. ZIP code populations for 1986 were used for 1985 and 1986. ZIP code populations for 1990 were used for 1989 - 1992. Populations for 1994 were used for 1993-1998, and populations for 2000 were used for 1999-2002.

[1] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .05$).

[2] Ratio of observed to expected cases is significantly higher than 1.00 ($p < .01$).

[5] Age-adjusted ZIP code rate is significantly greater than county rate ($p < .01$).

[6] Age-adjusted ZIP code rate is significantly greater than state rate ($p < .05$).

[7] Age-adjusted ZIP code rate is significantly greater than state rate ($p < .01$).

Table 6

Number of Live Births, Number of Low Weight Live Births, and Low Weight Ratios for the City of Hamtramck and the State of Michigan, 1985-2003

YEAR OF BIRTH	HAMTRAMCK			MICHIGAN		
	LOW WEIGHT LIVE BIRTHS[1]	LIVE BIRTHS	LOW WEIGHT RATIO[2]	LOW WEIGHT LIVE BIRTHS[1]	LIVE BIRTHS	LOW WEIGHT RATIO[2]
1985	26	292	89.0	9,403	138,052	68.1
1986	25	310	80.6	9,537	137,626	69.3
1987	34	329	103.3[3]	10,095	140,466	71.9
1988	16	313	51.1	10,237	139,635	73.3
1989	36	348	103.4	11,323	148,164	76.4
1990	27	335	80.6	11,608	153,080	75.8
1991	41	378	108.5[3]	11,706	149,478	78.3
1992	43	360	119.4[4]	10,829	143,827	75.3
1993	29	326	89.0	10,700	139,560	76.7
1994	36	336	107.1	10,765	137,844	78.1
1995	27	310	87.1	10,356	134,169	77.2
1996	28	286	97.9	10,228	133,231	76.8
1997	38	367	103.5	10,335	133,549	77.4
1998	25	386	64.8	10,468	133,649	78.3
1999	34	327	104.0	10,703	133,429	80.2
2000	43	416	103.4	10,706	136,048	78.7
2001	30	397	75.6	10,714	133,247	80.4
2002	41	361	113.6[3]	10,403	129,518	80.3
2003	39	407	95.8	10,778	130,850	82.4
2004	48	427	112.4[3]	10,867	129,710	83.8
2005	37	421	87.9	10,665	127,518	83.6

[1]Low Weight Live Births defined as birth weights less than 2,500 grams

[2]Low Weight Ratio is the low weight live births to live births ratio per 1,000 live births

[3]Low Weight Ratio for Hamtramck City is significantly greater than the State ($p < .05$).

[4]Low Weight Ratio for Hamtramck City is significantly greater than the State ($p < .01$).

SOURCE: 1985-2005 RESIDENT LIVE BIRTH FILES, DVR&HS/MDCH

Asthma Hospitalizations for Children (1-14 Years) in the State of Michigan, the City of Detroit, and Hamtramck, MI, 2000-2002

Hospitalization

Inpatient hospitalizations where asthma was the primary reason for the stay were selected from the Michigan Inpatient Database. (Primary discharge diagnosis coded to International Classification of Disease Version-9-CM codes 493.XX). These data represent the **number of inpatient hospitalizations** for asthma. This is not the same as the number of individual people hospitalized for asthma. A person can be hospitalized more than once for the same condition during the study period.

3-Year Average Hospitalization Rates: Composite asthma hospitalization rates are computed at community, city, and state level using the most recent years of data (2000-2002). Also presented is the 95% confidence interval around each rate to assess the precision of the rate. The confidence interval gives a range of values that is likely to include the true rate of asthma hospitalizations. It indicates how close the estimated rate is expected to be to the true rate. Confidence intervals can be used as a method to test whether a specific measure is statistically different between groups. For example, in comparing the City of Detroit's specific asthma hospitalization rate with that of the State of Michigan, they are considered statistically different if their confidence intervals do not overlap.

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Numbers and Rates[1,2] (per 10,000) of Hospitalization[3] Due to Asthma[4] for Children (1-14 Years) in the State of Michigan, the City of Detroit[5], and Hamtramck[6], MI, 2000-2002.

			95% Confidence Interval	
	Count	Rate	Lower Limit	Upper Limit
State of Michigan	15,018	25.2	24.8	25.6
City of Detroit	5,360	73.5	71.5	75.5
Hamtramck, MI	248	59.1	51.8	66.5

[1] Population data are taken from the Michigan 2000 population estimates.
[2] Rates are age adjusted to the 2000 US standard population by the direct standardization method. Hospitalization records with missing age are excluded.
[3] Source: Michigan Inpatient Database, Bureau of Epidemiology, MDCH.
[4] Asthma hospitalization defined as a primary discharge diagnosis of asthma, ICD-9-CM = 493.XX.
[5] Detroit is defined by the zip codes 48201, 48202, 48203, 48204, 48205, 48206, 48207, 48208, 48209, 48210, 48211, 48212, 48213, 48214, 48215, 48216, 48217, 48219, 48221, 48223, 48224, 48226, 48227, 48228, 48234, 48235, and 48238.
[6] Hamtramck, MI, is defined by the zip codes 48211 and 48212.

Interpretation:

- The average rate of asthma hospitalization among children (1-14 years) in Hamtramck, MI, 2000-2002, is 59.1 per 10,000 population.
- From 2000 to 2002 there were 248 hospitalizations due to asthma for children (1-14 years) in Hamtramck, MI.
- The rate of asthma hospitalization for children (1-14 years) in the City of Detroit, 2000-2002, is significantly **higher** than comparable rates for Hamtramck, MI, or the State of Michigan as a whole.
- The rate of asthma hospitalization for children (1-14 years) in Hamtramck, MI, 2000-2002, is significantly **higher** than the comparable rate for the State of Michigan as a whole.
- The rate of asthma hospitalization for children (1-14 years) in Hamtramck, MI, 2000-2002, is significantly **lower** than the comparable rate for the City of Detroit as a whole.

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