DYING BEFORE THEIR TIME III

19-YEAR (1999-2017) COMPARATIVE ANALYSIS
OF EXCESS MORTALITY IN DETROIT (PSA 1-A)

JULY 2020

COMMISSIONED BY
DETROIT AREA AGENCY ON AGING

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WELCOME MESSAGE

Greetings,

The Detroit Area Agency on Aging (DAAA) is excited to share an update on our award-winning research project, **Dying Before Their Time**, commissioned by our agency, and the analysis prepared by researchers at Wayne State University School of Medicine. Dying Before Their Time III is a cumulative 19-year (1999-2017) analysis of the health status of older adults in Detroit (PSA 1-A Service Area) compared to older adults in the rest of the State of Michigan, known as Not PSA 1-A. The **Dying Before Their Time (DBTT) study** is critical to understanding the vulnerability of this older adult population especially in the context of the COVID-19 Pandemic, which is now superimposed on this population currently living with a Chronic Disease Epidemic.

The Detroit Area Agency on Aging is grateful for the partnership with the Wayne State University School of Medicine. The incredible work and leadership of *Herbert C. Smitherman Jr., MD, MPH, FACP; Lee Kallenbach, PhD; and Anil N. F. Aranha, PhD* are valued by our agency and we believe their research and recommendations provide the solutions needed to help DAAA decrease excess mortality, morbidity and the disproportionate burden of chronic illnesses on older adults in our region.

This study documents something startling is happening to our older neighbors. In the DAAA service area, older adults die at twice the rate of those living elsewhere in Michigan. Multiple chronic illnesses, excessive hospitalizations and poor access to healthcare are among the reasons for this upward trend in excess death rates for seniors in our region. However, these are just symptoms of the major underlying cause of excess deaths of older adults in our region, which are Social Determinants of Health (SDOH).

Social Determinants of Health (SDOH), namely social factors such as appropriate nutrition, housing, access to appropriate healthcare and social services, water supply, income, education, mental health services, jobs, environmental justice issues, overall neighborhood conditions, etc. influence 60-70% of the health and wellbeing of an individual and their surrounding community. **Any solutions must address SDOH**. Major findings include PSA 1-A death rate for ages 50 to 59 is 122% higher in comparison to those aged 50-59 in the rest of the State of Michigan and is 48% higher for ages 60-74.

Therefore the Dying Before Their Time (DBTT) study is a call to action for our region. The Detroit Area Agency on Aging and Wayne State University School of Medicine are pleased to present the DBTT III report. This report/study details the health challenges of older adults in PSA 1-A (Detroit) from 1999-2017. It also presents initial recommendations toward reversing historic social, economic and health public policies and therefore centuries of racialized poverty. Unless there is a sustained effort to make meaningful policy changes and address SDOH, we will continue to see the mortality trend line of this study persist over many decades to come. Our hope is that this study is a step toward changing this trajectory.

Sincerely,

Ronald S. Taylor, MBA, MA
CEO & Executive Director
Detroit Area Agency on Aging

Herbert C. Smitherman Jr., MD, MPH, FACP
Dying Before Their Time #3 - Research Lead
Wayne State University School of Medicine

DYING BEFORE THEIR TIME III

THE SENIOR Solution

EXECUTIVE SUMMARY

This is a study of the Health Status of older adults in the **PSA 1-A** Service Area comprising the nine cities of: 1) Detroit, 2) Grosse Pointe, 3) Grosse Pointe Farms, 4) Grosse Pointe Park, 5) Grosse Pointe Shores, 6) Grosse Pointe Woods, 7) Hamtramck, 8) Harper Woods, and 9) Highland Park, which has been compared to the rest of the State of Michigan, known as **Not PSA 1-A**. For the purpose of this study, these geographic areas are hereafter referred to as **PSA 1-A** and **Not PSA 1-A**. The study was named ***Dying Before Their Time*** (DBTT). Over the last 19 years, three comparison assessments of PSA 1-A versus the Not PSA 1-A have been performed. The three assessments completed with the time periods stated in parentheses are: DBTT-1 (1999-2001), DBTT-2 (2001-2009), and DBTT-3 (2009-2017). These three DBTT studies have been consolidated for a total 19-year (1999-2017) evaluation period of the older adult population. The report is critical in understanding the vulnerability of this population especially in the context of the COVID-19 Pandemic now superimposed on a population living with a Chronic Disease epidemic.

SUMMARY OF DBTT STUDY

The elderly population in Detroit had significant decreases in population between the years 1970 and 2000 and this decline was accelerating. There was a 23% higher loss of the older Detroit adult population age 60 years and above, between the years 1990 to 2000 alone, compared to the older adult population in the rest of the State of Michigan. Understanding the reasons for this decline in the older population of Detroit was the purpose of the original DBTT study. The subsequent DBTT studies were to monitor the trends in the data over time. The DBTT studies were completed by researchers at Wayne State University School of Medicine and funded by the Detroit Area Agency on Aging (DAAA).

MAJOR FINDINGS

Mortality

- PSA 1-A death rate for ages 50 to 59 is 122% higher in comparison to those age 50-59 in the rest of the State of Michigan and is 48% higher for ages 60 to 74.
- The high death rate (excess mortality) accounts for additional deaths of approximately 1,600 older adults in PSA 1-A per year compared to rest of the State of Michigan (Not PSA 1-A) and is the reason for over 33% of the total loss of the PSA 1-A older population between1990 and 2000.

Morbidity after age 60

- Chronic illness plays a major role in the health status of Detroit (PSA 1-A) older adults.
- The majority (89%) of older adults in PSA 1-A have at least one chronic illness.
- Over one-third (39%) have three or more chronic illnesses such as hypertension, arthritis, heart disease, stroke and diabetes.

Hospital Use

- PSA 1-A older adults hospital rate is 37% higher than those in Not PSA 1-A.
- PSA 1-A hospital rates after age 75 are 15% higher than those in Not PSA 1-A.
- Much of the excess deaths are due to conditions that can be controlled by improved access to basic primary care, medical care and support services.

EXECUTIVE SUMMARY *(continued)*

Access to Care – Medically Underserved Areas

- Poor access to Primary Care Physicians and preventative health care plays a key role in the health status of older adults.
- 54.5% of PSA 1-A older adults live in federally designated Medically Underserved Areas (MUAs) compared to 16.5% of older adults in rest of the State of Michigan (Not PSA 1-A).
- The number of older adults living in PSA 1-A represent over one-fourth (25.4%) of the State of Michigan older adults residing in Medically Underserved Areas.

RESULTS OF THE THREE CONSOLIDATED DBTT STUDIES

- This is the 3rd report (DBTT-3) in a series of studies over the past 19 years evaluating the health status of older adults in Detroit (PSA 1-A) compared to the rest of the State of Michigan (Not PSA 1-A).
- The DBTT-3 (2009-2017) analysis was completed on March 6th, 2020 and reported out July 10th, 2020, evaluating the continuing Mortality Trend among the older residents of PSA 1-A.
- DBTT-3 (2009-2017) facilitates expansion of the prior two analysis – DBTT-1 (1999-2001) and DBTT-2 (2001-2009) – with a concurrent consolidation of the 3 studies, for a total 19-year (1999-2017) evaluation period.
- The first two studies (1999-2009): 1st Study, DBTT-1 (1999-2001) and 2nd Study, DBTT-2 (2001-2009) both confirmed that PSA 1-A exhibited Excess Mortality when compared to the rest of the State of Michigan (Not PSA 1-A).
- This 3rd Study DBTT-3 (2009-2017), completed March 6th, 2020 confirmed that the Excess Mortality trend seen in both DBTT-1 and DBTT-2, continues to currently persist. Therefore, for the entire 19-year (1999-2017) study period, the proportion of excess mortality experienced by the PSA 1-A older adult population has both persisted and remained elevated in comparison to the rest of the State of Michigan.
- Over the 19-year (1999-2017) period of study, the proportion of Excess Mortality of Detroit (PSA 1-A) compared to the rest of the State of Michigan (Not PSA 1-A) by Age Group is:
  - 45-54 years - Reduced from a proportion of 2.6 to 2.0 times higher Excess Mortality.
  - 55-64 years - Remained constant at 1.9 times higher Excess Mortality.
  - 65-74 years - Increased slightly from 1.4 to 1.5 times higher Excess Mortality.

AMBULATORY CARE SENSITIVE CONDITIONS

- Ambulatory Care Sensitive Conditions (ACSCs) are defined as those conditions for which Hospitalization could be prevented by interventions in Primary Care, and make up 60% of all Detroit Hospitalizations.
- ACSCs occur 2.7 times more often in Detroit than the rest of the State of Michigan.
- Among the 10 major ACSCs, 5 ACSCs including - Heart Disease, Kidney Disease, Diabetes and Stroke - occurred more often in Detroit compared to rest of the State of Michigan.
- Detroit endures 27% higher ACSCs-related Mortality than the rest of Michigan.
- ACSCs Hospitalizations: 1) are potentially preventable, 2) may indicate reduced quantity and access to Ambulatory Care, and 3) which are a result of a lack of appropriate access to primary care, may lead to premature mortality.

HEALTH SHORTAGE AREAS DESIGNATION

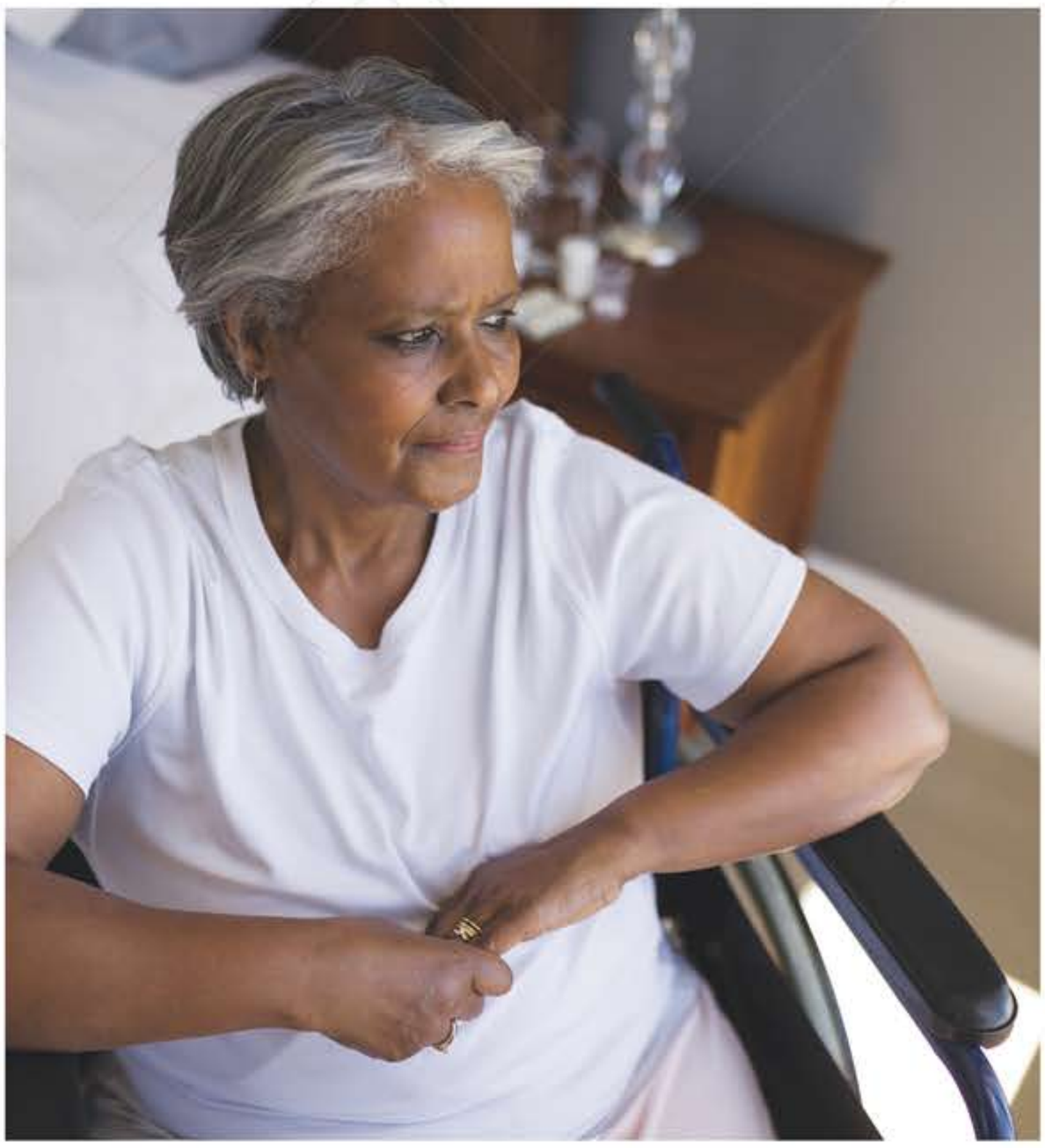
- Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs) are regions that have been identified by a health shortage area designation due to the fact that these areas are experiencing a shortage of health care professionals or lack access to primary care services.
- Almost the entire population (94.3%) of PSA 1-A lives in areas designated as HPSAs, with over two-thirds of the population (68.9%) living in areas designated as MUAs. Comparatively, for the Not PSA 1-A, a much smaller proportion live in HPSAs (53%) and in MUAs (32.1%).

CONCLUSIONS FOR THE 19-YEAR (1999-2017) STUDY PERIOD

- PSA 1-A loss of 23% older adult population can be attributed to: 1) poorer health status, 2) out migration, and 3) having a smaller replacement cohort given the excess mortality of 122% in adults between the ages of 50-59 years.
- 33% (or 16,044) of the 43,681 older adult population loss in PSA 1-A can be attributed to a higher mortality rate. This baseline excess mortality rate seen in PSA 1-A is prior to superimposing a COVID-19 pandemic on this very vulnerable and already fragile older adult population.
- The majority (89%) of older adults in PSA 1-A have at least one chronic illness.
- Over one-third (39%) have three or more chronic illnesses such as hypertension, arthritis, heart disease, stroke and diabetes.
- PSA 1-A older adults hospital rate is 37% higher than those in Not PSA 1-A.
- Premature death is a statewide urban issue in older adults.
- This 3rd Study DBTT-3 (2009-2017), completed March 6th, 2020 confirmed that the Excess Mortality trend seen in both DBTT-1 and DBTT-2, continues to currently persist. Therefore, for the entire 19-year (1999-2017) study period, the proportion of excess mortality experienced by the PSA 1-A population has stayed elevated.
- Ambulatory Care Sensitive Conditions (ACSCs) occur 2.7 times more often in Detroit than the rest of the State of Michigan.
- Regarding access to care: PSA 1-A older adults disproportionately live in federally designated Medically Underserved Areas (MUAs) and Health Professional Shortage Areas (HPSAs) compared to older adults in the rest of the State of Michigan (Not PSA 1-A). This trend of older adults in PSA 1-A disproportionately living in MUAs and HPSA has increased over time.
- The overall conclusion from all of these trends is illustrative of a much more fragile older adult population in PSA 1-A than in the rest of the State of Michigan (Not PSA 1-A).

INTRODUCTION

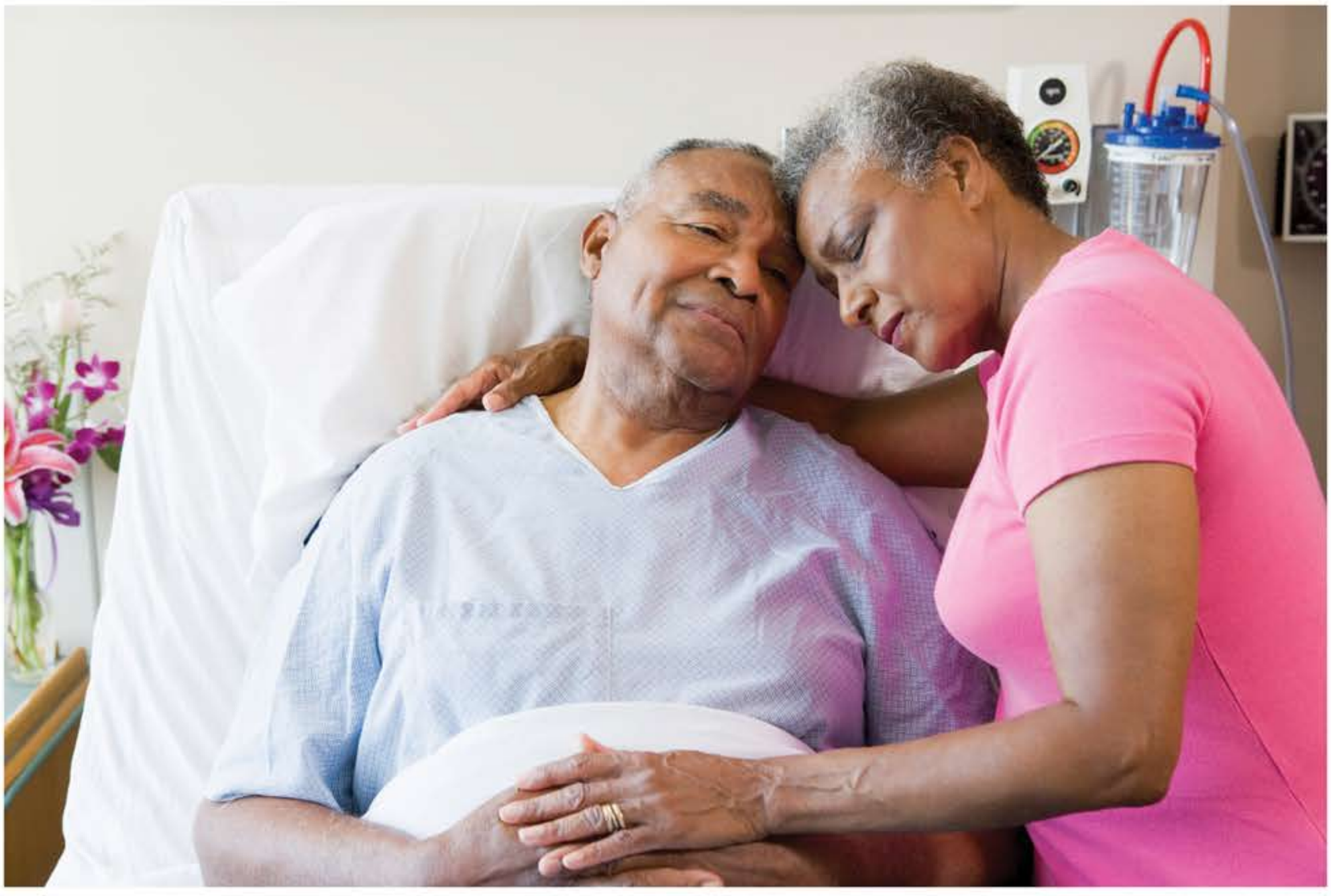
The catalyst for the initial study – Dying Before Their Time – funded by the Detroit Area Agency on Aging (DAAA) and completed in 2002 by a team of researchers from Wayne State University School of Medicine, was to determine the factor(s) responsible for the rapid population decline in Detroit seniors. Michigan health scientists, nonprofit organizations, and public policy experts understood that the elderly population in Detroit had decreased between the years 1970 and 2000 and that this decline was accelerating. This was emphasized by a 23% higher loss of the older Detroit adult population ages 60 years and above, between the years 1990 to 2000 alone, compared to the rest of Michigan.1 The immediate question confronting the State of Michigan, as well as the academic and public health community was, why?



The prevailing theory at the time was out-migration (seniors simply leaving Detroit for the suburbs consistent with other demographic age groups). However, there was insufficient evidence and analysis to support this theory. And those with experience caring for older adults in the Detroit community - a population largely on fixed incomes - believing they suddenly in mass started leaving Detroit for the more expensive suburbs, did not seem plausible. So an analysis of the data was needed. In light of the deteriorating health and social service resources and infrastructure for older adults in Detroit, this presented another reason for an urgent evaluation of the factors associated with the decline of this population. The analysis also necessitated a determination of whether health status of the aging population of Detroit was related to their decline in population.

The urgency of the situation also stemmed from the fact that tax dollars allocated for health and social services for seniors in the city of Detroit were at stake. Political conversations at the State and local levels were occurring with regards to changing the need-based formula for senior resource allocation to a population-based formula, which would have resulted in a further loss of essential resources and funding for Detroit seniors given the prevailing theory of population out-migration from Detroit. Also, with cities and non-profit organizations clamoring for the limited available State resources for the elderly, political decisions regarding reallocation of funds from Detroit were being actively discussed.

Against this backdrop, the Detroit Area Agency on Aging (DAAA) commissioned a team of Wayne State University School of Medicine Public Health Scientists to assess the root cause of the problem. Since that period of time (1999-2001), WSUSOM has done several studies DBTT-1 (1999-2001), DBTT-2 (2001-2009), and DBTT-3 (2009-2017) to continually document the trends and better understand the older adult population decline in Detroit.1-3 The first study, Dying Before Their Time, noted that Detroit (PSA 1-A) had excess mortality among the older population above 50 years of age compared to the remainder of the State of Michigan (Not PSA 1-A) for the period 1999 to 2001. A follow-up study, corroborated with the prior results and showed that although there were substantial advancements in medical care during the time period, the excess mortality persisted at a similar level even during the subsequent decade, 2001 to 2009. This third comparative study on mortality among older residents of Detroit (PSA 1-A) and the rest of the State of Michigan (Not PSA 1-A), facilitates expansion of the two prior research efforts namely, the analyses for the periods of 1999 to 2001 and 2001 to 2009, and also provides a concurrent consolidation of the 3 studies, for an overall 19-year evaluation period, 1999 to 2017. The entire 19-year (1999-2017) study period, shows a trend line that the proportion of excess mortality experienced by the PSA 1-A population has remained elevated and largely remains unchanged.1-3



This study of Health Status of older adults in the PSA 1-A and Not PSA 1-A focuses on the following measures and indicators of health: 1) Mortality Rate of the Population, 2) Years of Potential Life Lost (YPLL), 3) Proportion of Hospitalizations for Ambulatory Care Sensitive Conditions (ACSCs), and 4) Proportion of Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs), and 5) Nursing Home Quality Measures and Ratings.

METHODS

All the study data were obtained from sites having unrestricted access to the public. Thus, since universally accepted Standard Research Policies were followed for this research, no further approval from an Institutional Review Board was necessary.

DATA SOURCES

The data for the 19-year period, from 1999 to 2017, on residents of the City of Detroit (PSA 1-A) and the State of Michigan (Not PSA 1-A) including: 1) the Demographic distribution of the Population, 2) the Mortality Rate of the Population, 3) the Years of Potential Life Lost (YPLL), an indicator of premature mortality, defined as the total number of years not-lived by an individual who died before age of 75 years, the life expectancy in the United States and 4) the number of Hospitalizations for Ambulatory Care Sensitive Conditions (ACSCs), defined as those conditions for which hospitalization could be prevented by interventions in primary care; were obtained from the Michigan Department of Health and Human Services.4 The Health Resources & Services Administration (HRSA) website provided the data related to Health Professional Shortage Areas (HPSAs), defined as areas experiencing a shortage of health care professionals, and Medically Underserved Areas (MUAs), defined as areas with a lack of access to primary care services.5 Data on the Availability and the Quality of Nursing Homes facilities was obtained from the Centers for Medicare & Medicaid Services (CMS).6 Finally, the comparison of health data of larger cities in the United States was obtained from the Big Cities Health Inventory website.7

All data and information for the DBTT-3 analyses were obtained in the form of aggregated counts by time and geography from publicly available sources (Table 1). No individual level records were obtained or used. While the core data for the excess mortality calculations covers the time period 1999-2017, some of the supporting data was only obtained for the current or most recent period of time (HRSA, CMS).

Table 1: Data Sources for DBTT-3 Analyses

Data Type	Source	Timeframe	Geography
Excess Mortality			
Population	MDHHS	2000-2017	City
Mortality	MDHHS	1999-2017	City
Supporting Data			
YPLL: Years of Potential Life Lost	MDHHS	1999-2017	City
ACSCs Hospitalizations	MDHHS	2001-2017	Detroit, MI
Medical Shortage Designation Areas (MUA/HPSA)	HRSA	2019	Census tract
Nursing Home Availability & Quality	CMS	2019	City
Comparison of Detroit to other Major Cities	BCHI	2014-2015	City

KEY:
MDHHS: Michigan Department of Health & Human Services
HRSA: Health Resources & Services Administration
CMS: Centers for Medicare & Medicaid Services
ACSCs: Ambulatory Care Sensitive Conditions
MUA: Medically Underserved Area
HPSA: Health Professional Shortage Area
BCHI: Big Cities Health Inventory

POPULATION

All population data were averaged for the same time periods and age groups to serve as the denominator for age-specific mortality rate calculations. Following convention for mortality statistical reporting, mortality rates are expressed as observed deaths per 100,000 population. Aggregated mortality and population data were obtained from the MDHHS for each of the study 3-year time periods.

GEOGRAPHIC AREAS

Mortality rates and corresponding measures were calculated for both the PSA 1-A service area and the remainder of the State of Michigan (Not PSA 1-A). The cities comprising PSA 1-A include: 1) Detroit, 2) Grosse Pointe*, 3) Grosse Pointe Farms*, 4) Grosse Pointe Park, 5) Grosse Pointe Shores*, 6) Grosse Pointe Woods, 7) Hamtramck, 8) Harper Woods, and 9) Highland Park. All cities identified by * have a Population of less than 10,000 and therefore, not included in MDHHS population and mortality statistical reporting.

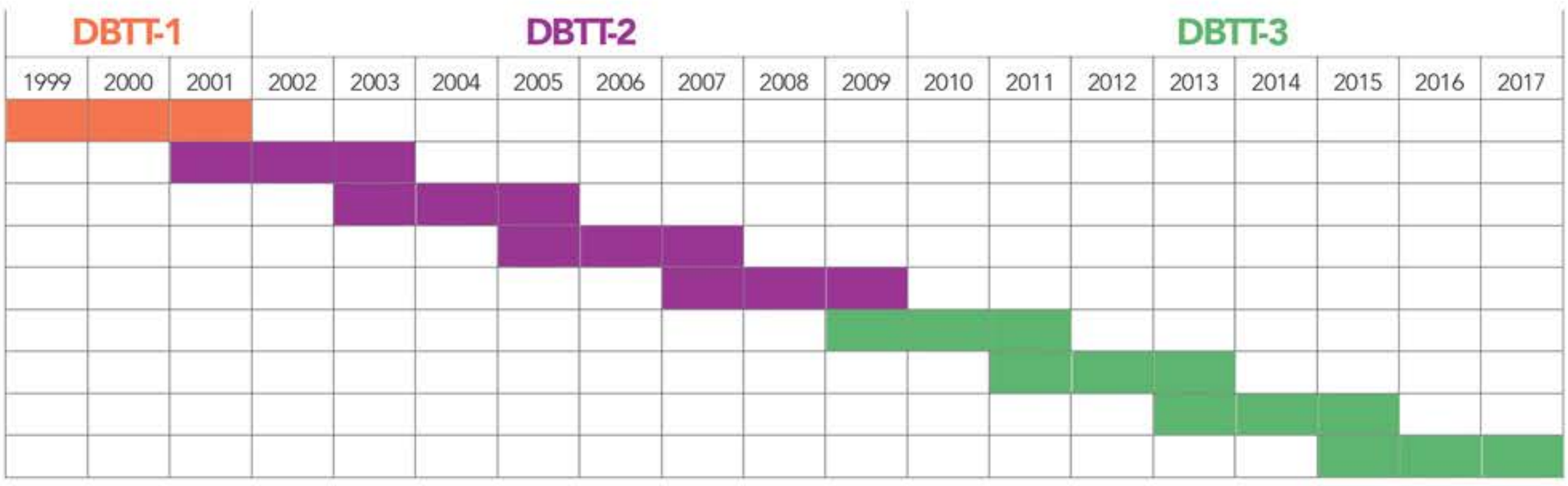
MEASURES AND INDICATORS OF HEALTH

For the purpose of this study, the measures and indicators of health that were computed are described below:

Mortality

The Mortality Rate per 100,000 population was calculated and summarized for three age groups; 45-54 years, 55-64 years and 65-74 years, for an overall summarization of all-cause mortality for the ages of 45-74 years. All mortality rate computations, across the age groups, were averages of 3-year intervals periods with each consecutive 3-year period having a prior 1-year overlap, to control for extreme values, thus resulting in nine 3-year interval periods for a total of 19 years, from 1999 to 2017 (Figure 1).

Figure 1: Timeframes for Dying Before Their Time (DBTT) Studies.



Mortality rates calculated for 3-year periods, with each overlapping the prior time period by one year

METHODS *(continued)*

The DBTT-3 analysis methodology used to review mortality rates and to characterize excess mortality is similar to that employed for both the DBTT-1 and DBTT-2 analyses. The mortality was analyzed based on aggregated 3-year average counts and rate calculations for nine 3-year overlapping sequential time periods. The first such period, 1999-2001 was the focus of the original DBTT-1 analysis. The next four periods: 2001-2003, 2003-2005, 2005-2007, and 2007-2009 were the focus of the DBTT-2 analysis. The last four periods: 2009-2011, 2011-2013, 2013-2015, and 2015-2017 is the focus of the current DBTT-3 analysis, resulting in 9 sequential 3-year, 1-year overlapping periods from 1999-2017 (Figure 1).

Excess Mortality

Excess mortality is expressed in the form of 3 different measures including the rate ratio, the rate difference, and the number of excess deaths. The rate ratio provides an estimate of how many times more events occur (e.g. twice as much), the rate difference provides an estimate of the difference in rates (e.g. 100 deaths per 100,000), and the number of excess deaths is a calculation of the number of additional deaths that occurred in PSA 1-A above what would have been expected in PSA 1-A if the population of PSA 1-A experienced mortality similar to the rate in Not PSA 1-A (e.g., 200 deaths).

Table 2: Computation of Excess Mortality Measures

Excess Mortality Proportion	**Excess Mortality Number**	**Excess Mortality Difference**
PSA 1-A Mortality *divided by* Not PSA 1-A Mortality	# of Excess Deaths minus (Excess Mortality Rate x PSA 1-A)	PSA 1-A Mortality *minus* Not PSA 1-A Mortality

The Excess Mortality Proportion of PSA 1-A was calculated by dividing the mortality of PSA 1-A by Not PSA 1-A, the Excess Mortality Difference was obtained by subtracting the mortality for Not PSA 1-A from PSA 1-A, and the Excess Mortality Number was determined by applying the excess mortality rate to the PSA 1-A population (Table 2).

Years of Potential Life Lost

The Years of Potential Life Lost (YPLL), a measure of premature mortality, was determined for individuals that did not live up to the age of 75 years by calculating the difference in years between the age of mortality and the life expectancy of 75 years. YPLL is a measure that tracks closely with overall mortality, but weights deaths that occur at a younger age than those that occur at older ages. The YPLL information was obtained from the MDHHS.

Ambulatory Care Sensitive Conditions

Ambulatory Care Sensitive Conditions (ACSCs) Hospitalizations are potentially preventable and may indicate reduced access to and a lower quality of ambulatory care. ACSCs hospitalizations may also lead to premature mortality due to complications or more severe disease. ACSCs conditions were reviewed overall and by cause, comparing the City of Detroit and the State of Michigan. However, public accessible data was unavailable at a geographic level to identify PSA 1-A and Not PSA 1-A. The ACSCs information was obtained from the MDHHS.

The Proportion of Hospitalizations for ACSCs was calculated on the basis of the total number of hospitalizations. For the purpose of analysis, the ratio and numerical difference between the hospitalization rate of the City of Detroit and State of Michigan were also calculated.

Additionally, the most recent information on the 10 major causes of death with ACSCs in the State of Michigan, comparing the City of Detroit (2018), the State of Michigan (2018), and the United States (2017) were also obtained from MDHHS and evaluated.

Health Shortage Areas Designation

The health shortage areas designation provided are of two types - Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs). The designations of health shortage areas are based on Federal standards and are provided by the Health Resources and Services Administration (HRSA) and the State Primary Care Offices who work together to determine when such a shortage qualifies for a HPSAs designation. However, the MUAs designations are based on the Index of Medical Underservice (IMU). IMU is calculated on the basis of the following four factors: the population to provider ratio, the percent of the population below the federal poverty level, the percent of the population over the age of 65 years, and the infant mortality rate. Geographic boundary files for primary care HPSAs and for MUAs were obtained from HRSA and reviewed for the State of Michigan and coded into PSA 1-A or Not PSA 1-A. The proportion of the total population of Detroit (PSA 1-A) and the rest of the State of Michigan (Not PSA 1-A) living in HPSAs or MUAs were calculated, as a measure of lower access to health care services, and the differences were recorded.

Nursing Homes Quality Measures and Ratings

The Nursing Home Quality Measures and Ratings were examined to determine differences in the quality and ratings between the nursing homes of Detroit (PSA 1-A) and the rest of the State of Michigan (Not PSA 1-A). These data provided by the Centers for Medicare & Medicaid Services permit comparison of the quality of care at every Medicare and Medicaid certified nursing home in the United States, totaling over 15,000 nationwide. The data of 443 certified nursing homes in the State of Michigan were evaluated. Nursing homes were coded as either PSA 1-A or Not PSA 1-A. Availability was estimated based on licensed beds and quality was estimated based on the overall Nursing Home Compare star rating (e.g. 1 to 5).

Comparison of Detroit to Other Large Cities in United States

Two key indicators of mortality, heart disease mortality and life expectancy, from the Big City Health Inventory (BCHI) for 30 of the largest cities in the United States were reviewed. The most recent comparison data available for the Detroit city, for each of the measures; heart disease mortality (2015) and life expectancy (2014), were obtained.

RESULTS

This 19-year study, for the period 1999 to 2017, shows that during the period being evaluated, the overall population of those below the age of 75 years in the PSA 1-A decreased by 29.3%, however there was an inverse trend in the Not PSA 1-A, resulting in a 2.1% increase in the population.

POPULATION

The overall population of PSA 1-A decreased 29% between the year 2000 and 2016 from 972,136 to 687,468 (Figure 2a and Table 3a). However, the change in population by age group varied greatly. The largest decrease (-37.7%) was in the population of 0-44 years age group and the largest increase (25.0%) was in the population of 55-64 years age group.

Figure 2a: PSA 1-A Population by Age Group (2000-2016)

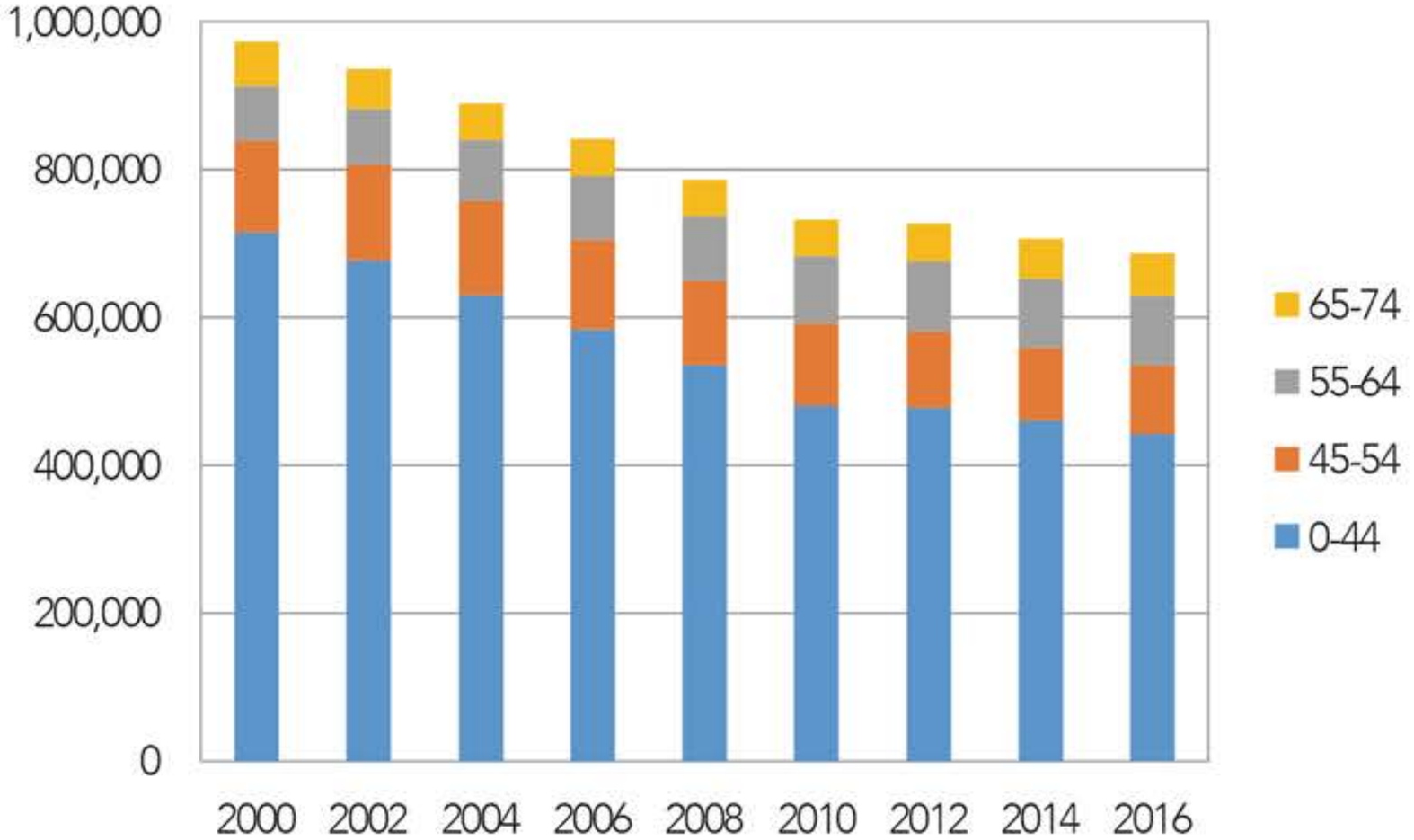


Table 3a: PSA 1-A Population Change by Age Group (2000-2016)

Age Group	Population		Change	
	2000	2016	Number	Percent
0-44	712,813	444,296	-268,517	-37.7%
45-54	127,653	92,040	-35,613	-27.9%
55-64	73,874	92,369	18,495	25.0%
65-74	57,796	58,763	967	1.7%
<75	972,136	687,468	-284,668	-29.3%

The overall population of Not PSA 1-A increased 2.1% between the year 2000 and 2016 from 8,396,701 to 8,576,151 (Figure 2b and Table 3b). However, the change in population by age group varied vastly. The largest decrease (-11.0%) was in the population of 0-44 years age group and the largest increase (63.8%) was in the population of 55-64 years age group.

Figure 2b: Not PSA 1-A Population by Age Group (2000-2016)

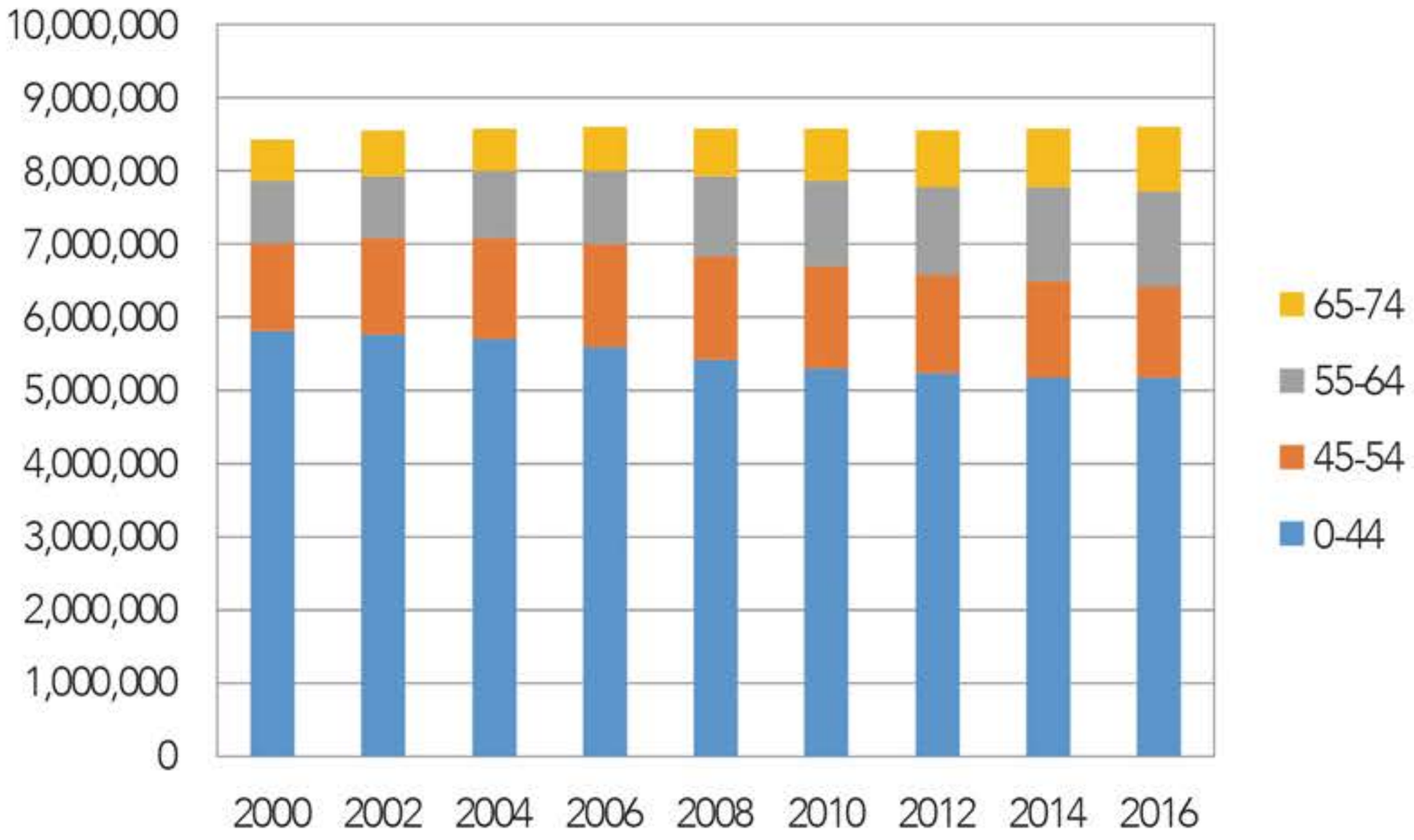


Table 3b: Not PSA 1-A Population Change by Age Group (2000-2016)

Age Group	Population		Change	
	2000	2016	Number	Percent
0-44	5,768,770	5,136,256	-632,514	-11.0%
45-54	1,250,084	1,256,298	6,214	0.5%
55-64	793,845	1,299,929	506,084	63.8%
65-74	584,002	883,668	299,666	51.3%
<75	8,396,701	8,576,151	179,450	2.1%

RESULTS *(continued)*

MORTALITY

The 19-year (1999 to 2017) evaluation shows that the excess mortality trend and the reduced life expectancy, observed previously, among the Detroit (PSA 1-A) when compared to the rest of the State of Michigan (Not PSA 1-A), continues to currently persist (Table 4). In fact, the proportion of excess mortality experienced by the Detroit (PSA 1-A) population has stayed elevated throughout the 19-year period of the study (Figure 3).

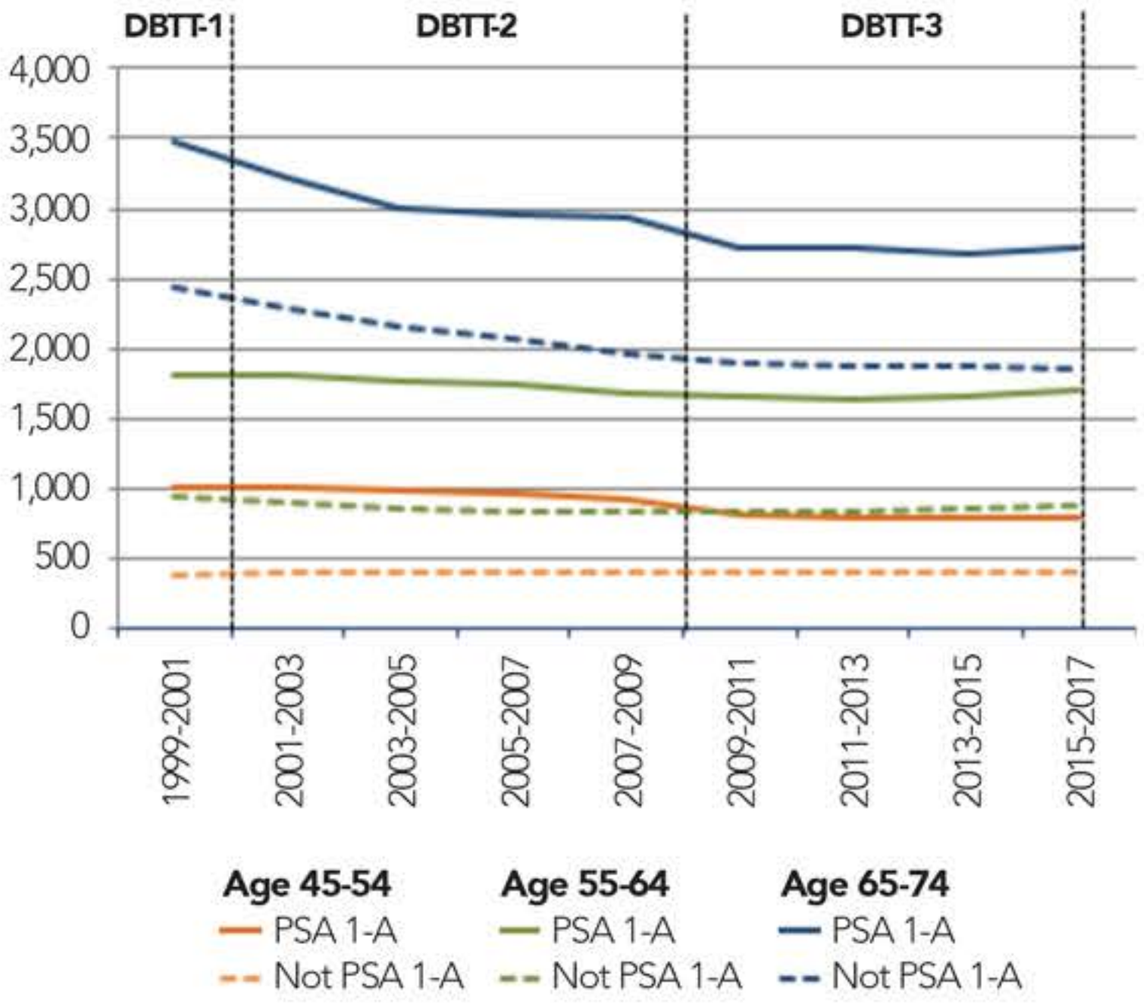
Table 4: Comparison of the Excess Mortality Rates by Age Group of PSA 1-A and Not PSA 1-A for the 19-year period (1999-2017)

Study			3-Year Average Population		3-Year Average # of Deaths		Mortality Rate (per 100,000)		Ratio Comparisons		Excess Deaths PSA 1-A (per year)	
	Years	Age	PSA 1-A	Not 1-A	PSA 1-A	Not 1-A	PSA 1-A	Not 1-A	Ratio	Difference	Number	Percent
DBTT 1	1999-2001	45-54	127,653	1,250,084	1,283	4,782	1,005.1	382.5	2.6	622.5	795	61.9%
		55-64	73,874	793,845	1,339	7,445	1,812.5	937.8	1.9	847.7	646	48.3%
		65-74	57,796	584,002	2,012	14,173	3,481.2	2,426.9	1.4	1,054.4	609	30.3%
DBTT 2	2001-2003	45-54	128,067	1,316,305	1,284	5,173	1,002.6	393.0	2.6	609.6	781	60.8%
		55-64	76,803	858,859	1,391	7,658	1,811.1	891.6	2.0	919.5	706	50.8%
		65-74	54,451	579,486	1,750	13,309	3,213.9	2,296.7	1.4	917.2	499	28.5%
	2003-2005	45-54	126,083	1,361,170	1,235	5,363	979.5	394.0	2.5	585.5	738	59.8%
		55-64	82,260	942,170	1,454	8,100	1,767.6	859.7	2.1	907.9	747	51.4%
		65-74	50,881	582,977	1,525	12,624	2,997.2	2,165.4	1.4	831.8	423	27.8%
	2005-2007	45-54	121,641	1,395,336	1,182	5,583	971.7	400.1	2.4	571.6	695	58.8%
		55-64	86,983	1,020,744	1,510	8,639	1,736.0	846.3	2.1	889.6	774	51.2%
		65-74	48,521	597,977	1,436	12,322	2,959.5	2,060.6	1.4	898.9	436	30.4%
	2007-2009	45-54	115,347	1,407,396	1,066	5,705	924.2	405.4	2.3	518.8	598	56.1%
		55-64	89,600	1,090,090	1,515	9,109	1,690.8	835.6	2.0	855.2	766	50.6%
		65-74	47,752	638,803	1,400	12,529	2,931.8	1,961.3	1.5	970.5	463	33.1%
DBTT 3	2009-2011	45-54	109,141	1,393,236	894	5,737	819.1	411.8	2.0	407.4	445	49.7%
		55-64	92,254	168,528	1,524	9,757	1,652.0	835.0	2.0	817.0	754	49.5%
		65-74	48,127	680,478	1,313	12,914	2,728.2	1,897.8	1.4	830.4	400	30.4%
	2011-2013	45-54	102,914	1,349,894	810	5,510	787.1	408.2	1.9	378.9	390	48.1%
		55-64	94,637	1,231,106	1,553	10,285	1,641.0	835.4	2.0	805.6	762	49.1%
		65-74	50,944	742,081	1,387	13,867	2,722.6	1,868.7	1.5	853.9	435	31.4%
	2013-2015	45-54	96,525	1,301,373	757	5,257	784.3	404.0	1.9	380.3	367	48.5%
		55-64	94,568	1,271,311	1,561	10,865	1,650.7	854.6	1.9	796.0	753	48.2%
		65-74	55,074	816,549	1,475	15,242	2,678.2	1,866.6	1.4	811.6	447	30.3%
	2015-2017	45-54	92,040	1,256,298	736	5,082	799.7	404.5	2.0	395.1	364	49.4%
		55-64	92,369	1,299,929	1,577	11,391	1,707.3	876.3	1.9	831.0	768	48.7%
		65-74	58,763	883,668	1,599	16,371	2,721.1	1,852.6	1.5	868.5	510	31.9%

Data Source: Michigan Department of Health & Human Services (MDHSS), Division for Vital Records and Health Statistics

Prepared by: Wayne State University School of Medicine for the Detroit Area Agency on Aging (December 2019)

Figure 3: Comparison of the Mortality Rates by Age Group of PSA 1-A and Not PSA 1-A for the 19-year period, 1999 to 2017.

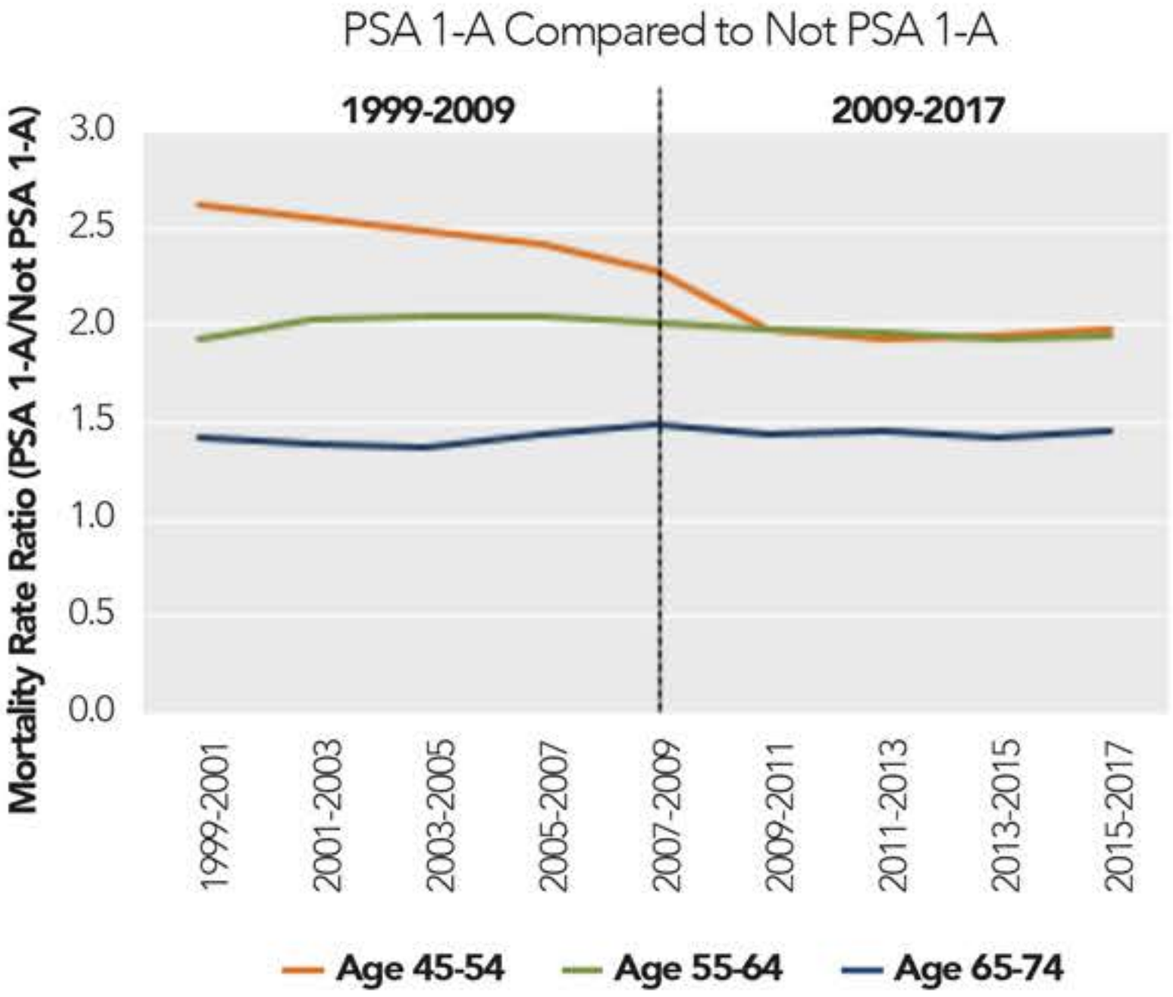


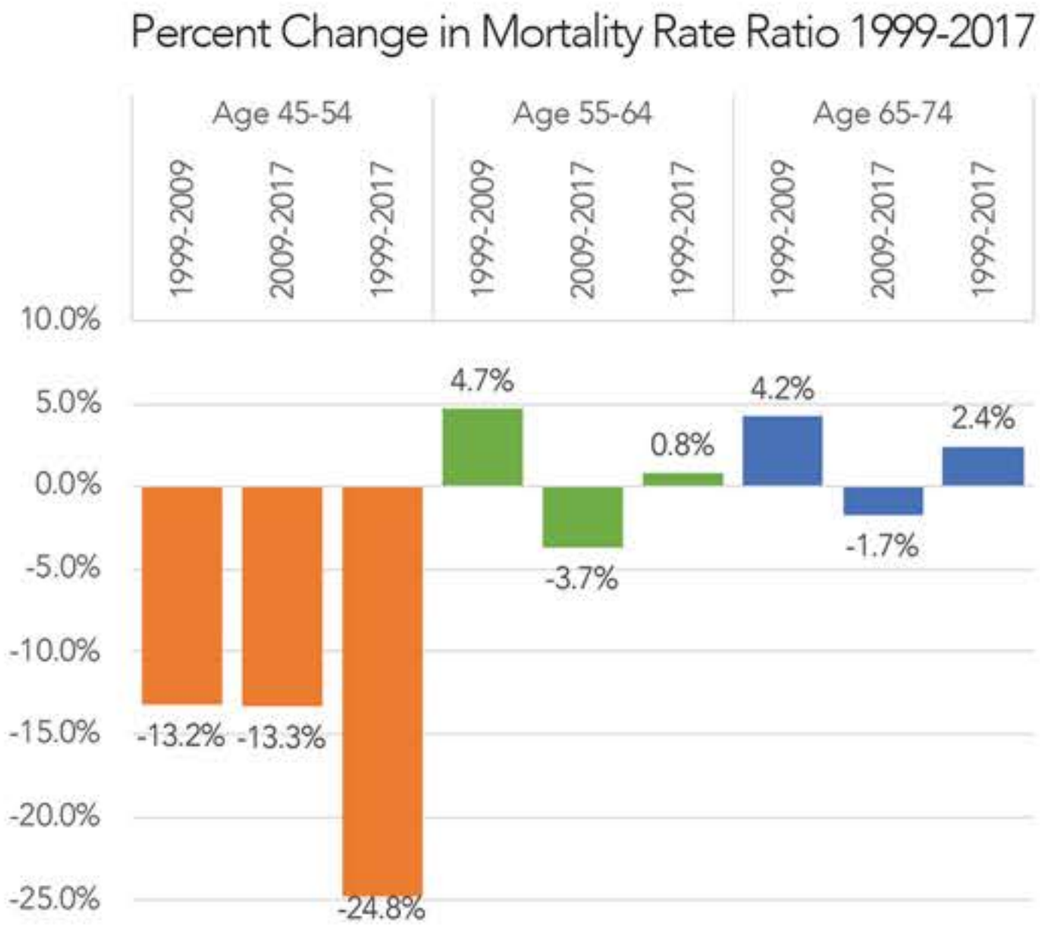
Overall, mortality rates tended to decline over the 19-year study period This was true for 5 of the 6 study groups (The Not PSA 1-A 45-54 group showed a slight increase) A similar trend was true for the United States during this time period (Health US Chart Book, 2016, Table 21)

Nevertheless, over the 19-year (1999-2017) study period, the proportion of excess mortality of Detroit (PSA 1-A) has abated somewhat, which by Age Group is: 1) for the 45 to 54 years group, a reduction in proportion from 2.6 to 2.0 times (higher) excess mortality, 2) for the 55 to 64 years group, a relatively constant proportion of 1.9 times (higher) excess mortality, and 3) for the 65 to 74 years group, a slight increase in the proportion from 1.4 to 1.5 times (higher) excess mortality (Figure 4).

RESULTS *(continued)*

Figure 4: Comparison of the Mortality Rate Ratios by Age Group of PSA 1-A and Not PSA 1-A for the 19-year period, 1999 to 2017.





Mortality rate ratios showed excess mortality in PSA 1-A over the 19-year study period from 1.43 to 2.63 The rate ratio in the 45-54 age group improved (decreased) almost 25% from 1999 to 2017 The rate ratios in the 55-64 and 65-75 age groups, wrsened then improved, with little change overall.

AMBULATORY CARE SENSITIVE CONDITIONS

The Ambulatory Care Sensitive Conditions (ACSCs) are those conditions for which hospitalization could be prevented by interventions in primary care. In the case of the City of Detroit (PSA 1-A), ACSCs related hospitalizations make up 60% of all the hospitalizations of older adults. These Hospitalizations for ACSCs also occur 2.7 times more often for older adults in Detroit (PSA 1-A) than the Hospitalizations in the rest of the State of Michigan (Not PSA 1-A). It is important to note that hospitalizations for 5 out of the 10 major ACSCs conditions including - Heart Disease, Kidney Disease, Diabetes and Stroke - occurred more often in the Detroit (PSA 1-A) population (Table 5). This aspect led to a 27% higher mortality rate effect on the population of Detroit (PSA 1-A) when compared to the rest of State of Michigan (Not PSA 1-A). From a health care standpoint, this situation is quite disheartening, more so, since all the ACSCs hospitalizations taking place are: 1) potentially preventable, 2) generally indicative of a reduced quantity and access to ambulatory care, and 3) a result of lack of appropriate access to primary care, a major factor in premature mortality.

Table 5: The Major Causes of Death with Ambulatory Care Sensitive Conditions in the City of Detroit, State of Michigan and United States.

Cause of Death	Number of Deaths			Age-Adjusted Mortality Rate			Ratio	
(Listed by Michigan Rank)	Detroit	MI	U.S.	Detroit	MI	U.S.	Detroit/MI	MI/US
All Causes of Death	7,112	98,985	2,813,503	996.2	783.1	731.9	1.27	1.07
1. Heart Disease*	2,173	25,345	647,457	299.8	194.9	165	1.54	1.18
2. Cancer	1,252	21,025	599,108	168.9	161.1	152.5	1.05	1.06
3. Chronic Lower Respiratory Diseases*	228	5,783	160,201	31	44.2	40.9	0.7	1.08
4. Unintentional Injuries	558	5,564	169,936	83.4	52.1	49.4	1.6	1.05
5. Stroke*	328	5,180	146,383	45.6	39.9	37.6	1.14	1.06
6. Alzheimer's Disease	110	4,474	121,404	15.5	34.3	31	0.45	1.11
7. Diabetes Mellitus*	199	2,824	83,564	27.4	21.9	21.5	1.25	1.02
8. Kidney Disease*	161	1,943	50,633	22.8	15	13	1.52	1.15
9. Pneumonia/Influenza*	149	1,871	55,672	21	14.5	14.3	1.45	1.01
10. Intentional Self-Harm (Suicide)	57	1,547	47,173	9.1	15	14	0.61	1.07

*Ambulatory Care Sensitive Conditions

Note: Overall Mortality is 27% higher in Detroit compared to the State of Michigan.

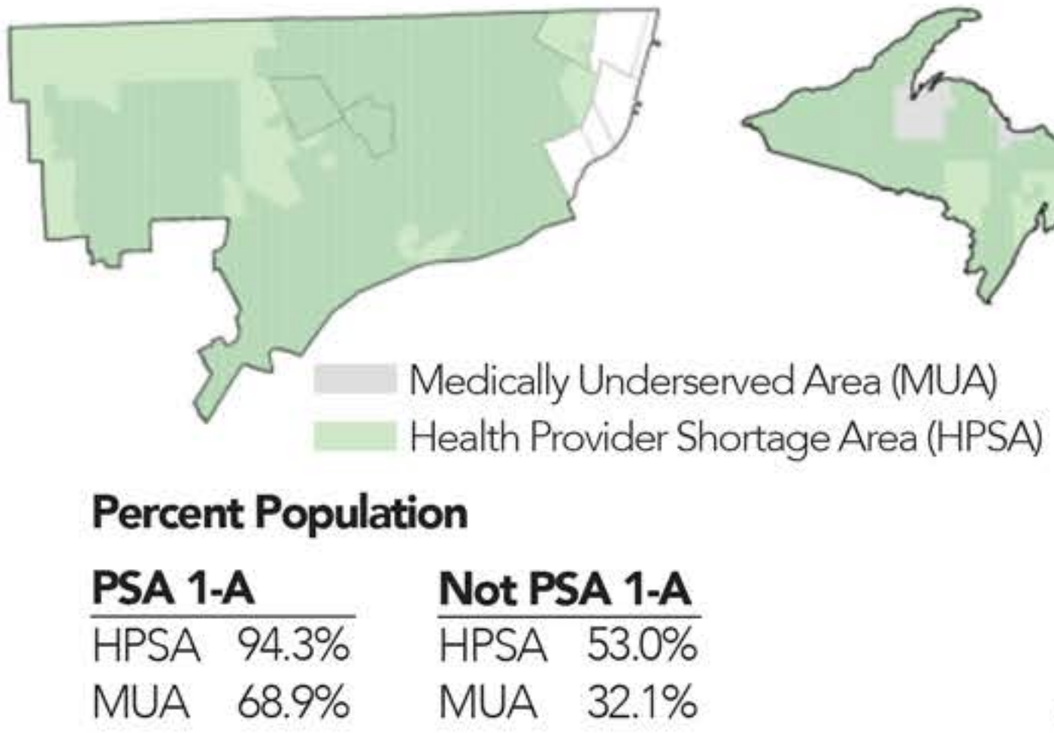
- ✓ 6 of the 10 major causes of mortality in Michigan are for Ambulatory Care Sensitive Conditions (ACSCs).
- ✓ The mortality rate for 5 of the 6 ACSCs conditions was higher in Detroit than in the State of Michigan (highlighted in yellow)

RESULTS *(continued)*

HEALTH SHORTAGE AREAS DESIGNATION

Health Professional Shortage Areas (HPSAs) and Medically Underserved Areas (MUAs) are regions that have been identified by a health shortage area designation due to the fact that these areas are experiencing a shortage of health care professionals or lack access to primary care services. As observed in Figure 5, almost the entire population (94.3%) of Detroit (PSA 1-A) lives in areas designated as HPSAs, with over two-thirds of the population (68.9%) living in areas designated as MUAs. Comparatively, for the rest of the State of Michigan (Not PSA 1-A), a much smaller proportion live in HPSAs (53%) and in MUAs (32.1%).

Figure 5: Comparison of Health Professional Shortage Areas and Medically Underserved Areas of the PSA 1-A and Not PSA 1-A.



Percent Population

PSA 1-A		Not PSA 1-A	
HPSA	94.3%	HPSA	53.0%
MUA	68.9%	MUA	32.1%

Percent Population

HPSA

94.3% of the PSA 1-A population resides in a HPSA. (1.8 times the percent not in PSA 1-A: 53.0%)

MUA

68.9% of the PSA 1-A population resides in a MUA. (2.2 times the percent not in PSA 1-A: 32.1%)

Source: Health Resources & Services Administration (HRSA) https://data.hrsa.gov/data/download *(Accessed Feb. 1, 2020)*

NURSING HOMES QUALITY MEASURES AND RATINGS

An evaluation of the Nursing Home Quality Measures and Ratings indicate that although the nursing homes of Detroit (PSA 1-A) have more number of beds than the rest of the State of Michigan (Not PSA 1-A), the nursing homes as well as the beds provided in Detroit (PSA 1-A) are generally of a lower quality and rating.

COMPARISON OF DETROIT TO OTHER LARGE CITIES IN UNITED STATES

Comparison of health data of the city of Detroit with other large cities in the United States shows that Detroit performs the lowest (ranking 17th among 17 cities) in life expectancy at birth and does not fare much better (ranking 16th among 17 cities) in the case of heart disease mortality rate, as well.

COMPARISON BETWEEN THE PSA 1-A RESULTS OF THE THREE STUDIES

Finally, a summary comparison of the PSA 1-A results of the three Studies - DBTT-1, DBTT-2 and DBTT-3 is presented in Table 6. As is evident, the excess mortality in the 45-54 years age group, even though quite large, shows a gradual reducing trend over the 19-year study period (1999-2017). However, that is not the case in the other age groups. The multiple chronic illnesses resulting in the increasing proportion of hospitalizations for Ambulatory Care Sensitive Conditions as well as an increasing proportion of the Detroit (PSA 1-A) population living in Medically Underserved Areas during the entire period of study, are noteworthy.

Table 6: Comparison between the PSA 1-A Results of the Three Studies - DBTT-1, DBTT-2 and DBTT-3.

Study Years	DBTT-1 1999-2001			DBTT-2 2007-2009			DBTT-3 2015-2017		
Age Group	45-54	55-64	65-74	45-54	55-64	65-74	45-54	55-64	65-74
Excess Death By Age Group	61.9%	48.3%	30.3%	56.1%	50.6%	33.1%	49.4%	48.7%	31.9%
Ambulatory Care Sensitive Hospitalization*	25.0%			26.1%			29.6%		
% of PSA 1-A Population Living in Medically Underserved Areas	54.5% more than half			64.6% nearly two-thirds			68.9% more than two-thirds		

*Older Adults had Multiple Chronic Illnesses, Excessive Hospitalizations and Poor Access to Healthcare

CONCLUSIONS

Over the 19-year study period (1999-2017), in comparison to the rest of the State of Michigan (Not PSA 1-A):

1. The proportion of excess mortality observed among the PSA 1-A Older Adult population has persisted over time and continues to be much (twice) higher overall, thus substantially impacting the population life expectancy.
2. Hospitalizations, for many health conditions, such as Heart Disease, Kidney Disease, Diabetes and Stroke; otherwise treatable by Ambulatory Care, continues to occur at a much higher rate in the PSA 1-A population.
3. There is a significant need for Primary Care (healthcare) and Social Service resources in the PSA 1-A.
4. The population of PSA 1-A continues to be medically underserved with a substantially higher proportion of Health Professional Shortage Areas and/or Medically Underserved Areas.
5. The quality of the nursing homes or long-term care facilities of PSA 1-A needs to be enhanced, to provide an improved quality of long-term care for the aging population.

RECOMMENDATIONS

IMPLICATIONS OF STUDY FINDINGS AND FUTURE COURSE OF ACTION FOR DAAA

The results of this study have short-term and long-term actionable implications. In the short-term, given the fact that the declining health status and the excess mortality trend has persisted among the older adult population for a significant period of time - over two decades and possibly more than half a century - are the result of deep-rooted negative social and economic policies, and significant inequities in resource distribution. Addressing this excess mortality curve will require a much more sustained approach in health and social policy. However, in the immediate future, a focus of DAAA on the following services and advocacy may enable improvement of health status and also have a beneficial impact on the aging population of the PSA 1-A: 1) access and delivery of ambulatory and primary healthcare services, 2) quality of the health and human services provided, 3) training and availability of a highly skilled healthcare workforce or personnel, 4) access to quality hospital, nursing home and long-term care facilities, 5) improved health and human service resources, and 6) improved health and human service resource integration and collaboration.

More specifically as a start:

1. **Develop and implement programs, services and approaches to eliminate the continually widening gap in health and social disparities across the lifespan**: An epidemic of chronic disease and a continuous trend of increasing gaps in health and social disparities threatens the public's health. Fueling this epidemic are deteriorating social, economic and environmental conditions that are historically-based and contribute to the overall health challenges of individuals and their communities, driving unhealthy lifestyles and behaviors. Lifestyles that are a composite expression of the social, economic and cultural circumstances that condition and constrain behavior, not just simply the personal decisions that individuals might make in choosing one behavior over another. Older adults are defined as age 60 and above, however in the DBTT study, death rates for ages 50 to 59 was 122% higher in PSA-1A (Detroit) compared to those aged 50-59 in the rest of the State of Michigan and is 48% higher for ages 60 to 74. People are not making it to 60 years of age and those that do are more and more health compromised. In order to improve the health of older adults we must intervene earlier in a person's life. Health promotion, socioeconomic policy, social service support and disease prevention initiatives (not just treating illness) must begin early in the lifespan and are health and social imperatives to reduce premature deaths. From infancy and up, Social Determinants of Health (SDOH) such as socioeconomic status, employment status, educational attainment, food security, housing security, affordable and convenient transportation, affordable child care, and racism, will determine 60-70% of a person's health status and longevity and therefore must be addressed. Whether it is health education and health literacy initiatives in schools, collaborative community-wide education/jobs programs for younger adults, appropriate access to mental health services, affordable housing and child care initiatives for working families, expanded health insurance coverage or targeted health and social service programs for the most vulnerable seniors, people need ways and perhaps early support to improve their own independence and well-being long term; and healthy aging can no longer be limited to older adults ***but must include older adults.*** This may mean improved collaboration, coordination and creative structuring of existing programs and resources, or it may require new programs and resources or both. The next step should be to convene a group of experts within the public and private sectors (with the support of a planning grant) to develop a plan to address disparities across the lifespan.

2. **Provide more non-Medicaid funding for Home and Community Based Services and Programs**: Assistance from Area Agencies on Aging alone is not enough to serve the growing senior population. A broader array of options within the community need to be strengthened, including preventative health and socialization activities, adult day care, homemaker services and chore services. Continued efforts must be made to rebalance resources to support and expand home and community-based services so older adults can live safely in their own homes.

3. **Provide more funding and support for informal caregivers, kinship care and grandparents raising grandchildren**: More and more grandparents are raising their grandchildren on fixed incomes. Some of these children have chronic illnesses themselves, emotional trauma which may give rise to behavior problems and other challenges that older adults may not be equipped to handle. Also, with limited funding for informal caregivers and kinship care (a daughter caring for an older adult parent, a wife caring for an ill husband or vice versa, a grandparent caring for a grandchild, etc..) new and creative ways of providing community support for these families should be explored, including a detailed needs assessment.

RECOMMENDATIONS *(continued)*

4. **Incorporate the elements of social determinates of health in the allocation of federal & state resources**. Advocate for a new federal & state funding formula that is needs-based vs. population-based to re-direct more funding to communities that have greater health, social and economic needs.

For the long-term, changing the excess mortality trend line among the older population of the PSA 1-A will require changing what, when, and how we do things, and what we measure as success, to have any meaningful impact on improving the health of the population or decreasing the excess mortality curve. These health problems stem from what are now commonly referred to as Social Determinants of Health (SDOH), namely social factors such as appropriate nutrition, housing, access to appropriate healthcare and social services, water supply, income, education, mental health services, jobs, environmental justice issues, overall neighborhood conditions, etc. These factors are known to influence 60-70% of the health and wellbeing of an individual and their surrounding community. To change the excess mortality curve reported in the DBTT studies will require a more collaborative, coordinated, strategic and longitudinal approach by the entire health, social and human service provider community.[9-11] Solutions or recommendations that do not address the impact of the health, social, economic and environmental determinants of health on the health status of a population (responsible for 60-70% of an individual's overall health status), will not change the existing racial health disparities or health inequity gaps within the State of Michigan or the US.

A note about the impact of COVID-19 on this vulnerable Detroit City population. Significant numbers of white Americans and other ethnicities have died from the coronavirus, but the pace at which African-Americans are dying has transformed this public-health crisis into an object lesson in racial and class inequality.[12] Inequalities that are historically-based, systemic in nature, and founded in racial, social, health and economic inequities driven by US policy decisions. These policy decisions must be reengineered to change the metrics in the trend line of the results of this study.

In Michigan, African-Americans make up fourteen per cent of the state's population, but currently account for thirty-three per cent of its reported coronavirus infections and forty per cent of its deaths. Twenty-six per cent of the state's infections and twenty-five per cent of deaths are in Detroit, a city that is eighty percent African-American.[12,13] Since a large proportion of the Detroit older adult population, which is disproportionately African American, has poorer overall health status, with two or more chronic comorbidities and disproportionately higher poverty rates, the COVID-19 has taken a significant toll on this socioeconomically and health status-wise fragile population. Deaths from the COVID-19 outbreak across the US has exposed racial inequities that have always been there and will continue to be there, if change does not occur. Black America is currently facing a "Crisis within a Crisis within a Crisis"; a pandemic superimposed on a chronic disease epidemic, superimposed on a baseline of chronic and historically-based social, economic and racial injustice. What has been allowed to be normal in this country - that is policy-driven health, social and economic disparities and injustice - has been and is being treated, as if it is natural. These disparities are not natural and have been created and driven by historic US racial, social, health and economic policies.

Unless a sustained effort with the allocation of sufficient resources and infrastructure is made to improve the health and social conditions of this population - reversing centuries of racialized poverty - we will continue to see the same trend line of this study persist over many decades to come.

REFERENCE CHARTS

Figure 6: Detroit Area Agency on Aging: Planning & Service Area 1-A.

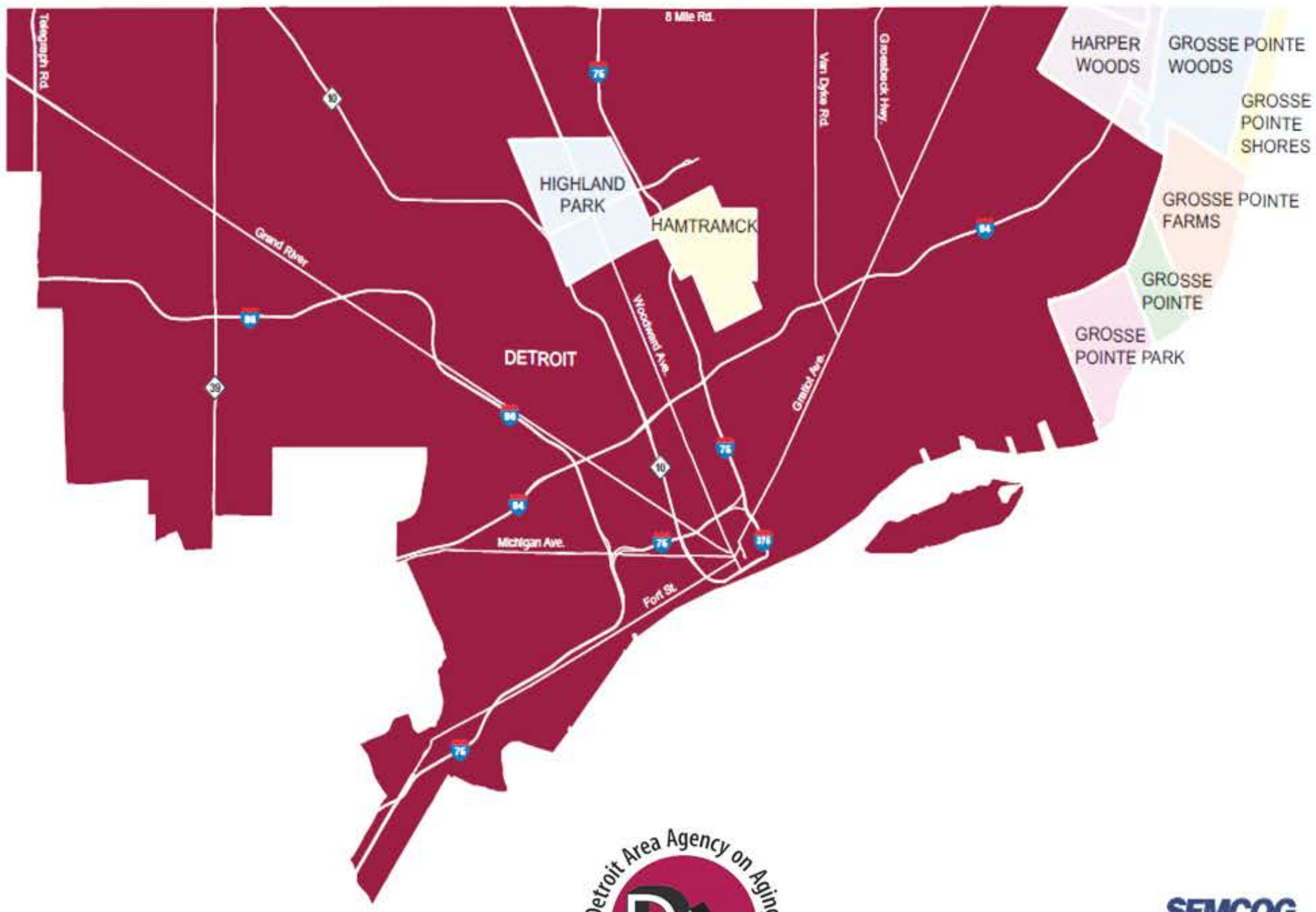


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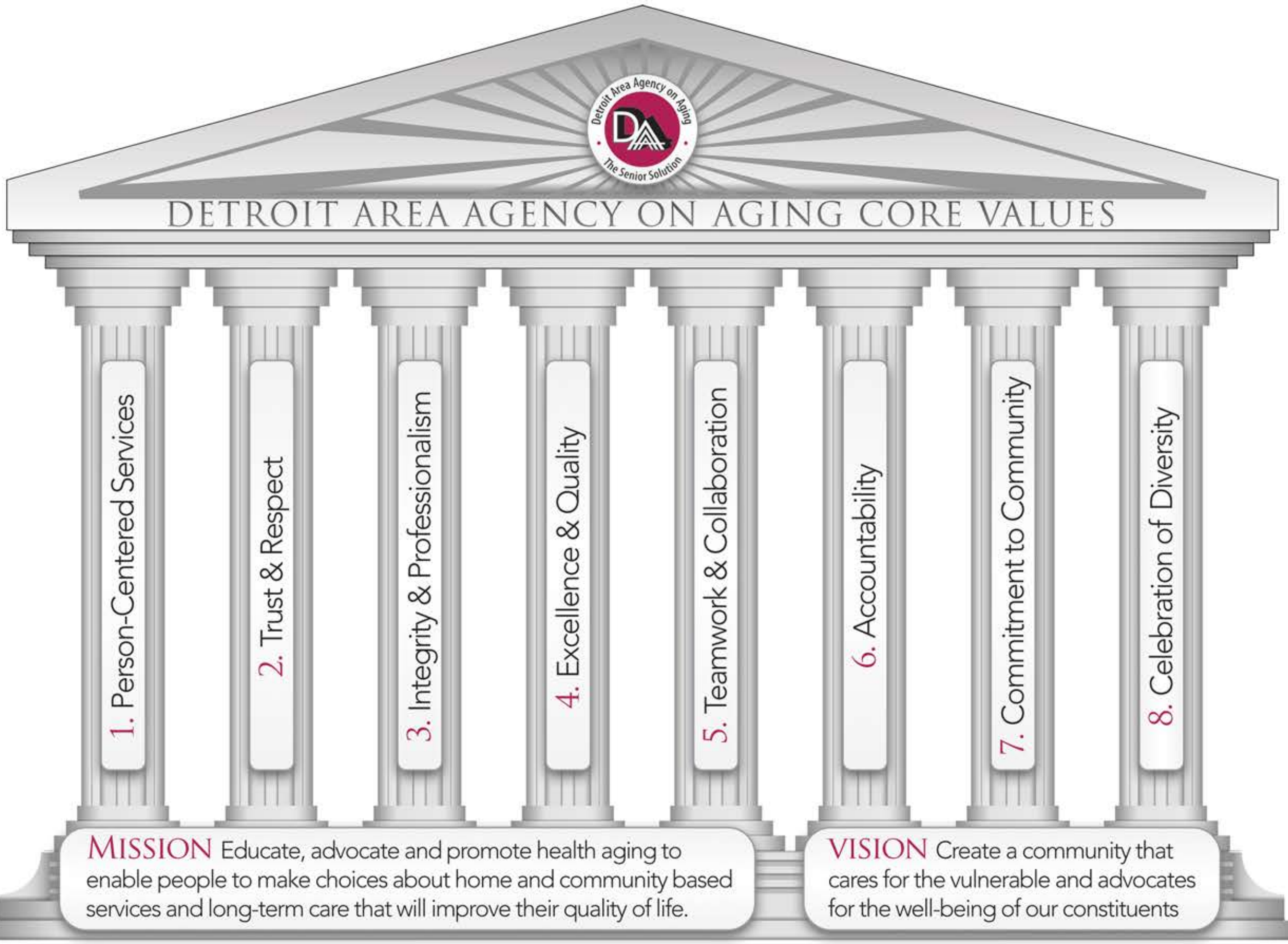
Figure 7: DAAA Core Values



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SOMETHING
STARTLING
IS HAPPENING
TO OUR OLDER
NEIGHBORS

DYING BEFORE THEIR TIME III

19-YEAR (1999-2017) COMPARATIVE ANALYSIS
OF EXCESS MORTALITY IN DETROIT (PSA 1-A)

PREPARED FOR

THE SENIOR Solution
Detroit Area Agency on Aging
The Senior Solution

PREPARED BY

WAYNE STATE
School of Medicine