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Original Paper

Delaware's 1999-2017 Leading Causes of Death Information Illustrates Its Obesity and Obesity-Related Life-Limiting Disease Burdens

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Abstract

Using commercially available but powerful big data analytics, this non-clinical obesity and underlying causes of death observational study, analyzed the very large US Centers for Disease Control and Prevention's (CDC) State of Obesity records, the CDC WONDER data, and the US census records. Compared to the 1999-to-2017 US obesity rate increase of 29.8%, an uncontrolled increase in Delaware's obesity rate (81.7%) was observed.

During the same time period, CDC WONDER death certificate archives disclosed that there was a 60.53% surge in crude Delawarean mortality rate when obesity was listed as a single underlying cause of death. When any mention of obesity was documented on the death certificate, Delaware's 1999-2017 crude mortality rate advanced by 75.69% and its age-adjusted rate rose by 53.18%. Likewise, except for one year, Delaware's African American/Black population experienced higher crude mortality rate averages but however, between the years of 1997 and 2017, its Caucasian/White inhabitants had an enormous 87.34% death rate increase. With additional available CDC mortality data, Delaware males saw substantially larger age-adjusted death rate increases (79.87%) than their female counterparts (28.92%).

Diabetes, circulatory system diseases, and neoplasms (cancer), are three common obesity comorbidities. For these three conditions, Delaware's 1999-2017 mortality rate figures mimic the

falling national patterns of mortality rate averages, when each disease is listed as the single underlying cause of death, including observations where there are disproportionate numbers of cases that affect the African American/Black race.

Keywords

Delaware, obesity-related mortality rate, diabetes, diseases of the circulatory system, neoplasms

1. Introduction

Delaware is the second smallest US state with the fewest counties, New Castle, Kent, and Sussex, and it has a relatively minor gender gap, with 52% females and 48% males (Census Bureau, 2015). Last year, the US Census Bureau estimated Delaware to have 967,171 people of which 69.5% were Caucasian/White (C/W) and at 23.0%, its majority minority race is African American/Black (AA/B) (Census Bureau, 2015). On the other hand, the census projected US population was 325,333,856 (Census Bureau, 2015) with a virtually even gender gap of 49.6% male and 50.4% female, but comprised of 76% C/W and 16% AA/B (Dadax, 2019).

Recent reports indicate a decline in the average US life-expectancy (Mokdad et al., 2018; Olshansky et al., 2005; Tuljapurkar, Li, & Boe, 2000) and epidemiological studies hint that life-limiting diseases impose enormous social and cost-burden pressures (Mair & May, 2014; Mensah & Brown, 2007; Yabroff, Lund, Kepka, & Mariotto, 2011; Yang et al., 2018) on US households and on typical working Delawareans (Gill & Mainous, 1998; Gill, Mainous, & Nsereko, 2000; Glickman, Dimagno, & Emanuel, 2019). Many of the life-limiting and life-threating illnesses are secondary chronic comorbidities that arise from complications due to obesity (Case & Deaton, 2017; National Center for Health Statistics, 2017; Weir et al., 2016; Xu, Murphy, Kochanek, Bastian, & Arias, 2018) and together with obesity, these conditions have (now) reached a critical public health crisis point (Hales, Carroll, Fryar, & Ogden, 2017; Hales, Fryar, Carroll, Freedman, & Ogden, 2018; National Center for Health Statistics, 2016). Diabetes, circulatory system diseases, and malignant neoplastic diseases, are three directly linked obesity pathologies (Gill et al., 2000; Mair & May, 2014; Mensah & Brown, 2007; Mokdad et al., 2018; Yabroff et al., 2011; Yang et al., 2018) that contribute to quality of life issues and life-expectancies (Case & Deaton, 2017; National Center for Health Statistics, 2017; Weir et al., 2016; Xu et al., 2018).

The 2017 reported prevalence of Delaware's adult obesity was 31.8% (Census Bureau, 2015; Ramsey et al., 2008). In its three counties, the analogous rates were 29.3%, 38.5%, and 32.6%, for New Castle, Kent and Sussex (Christopher et al., 2017; Hales et al., 2017; Ramsey et al., 2008). Delaware's Caucasian/White (C/W) and African American/Black (AA/B) population had 2017 obesity-rates of 29.7% and 37.4% and in addition, 18.4% of Delaware's men and 27.2% of its women were obese (Christopher et al., 2017; Hales et al., 2017). The corresponding 2017 US obesity-rate was much higher (39.6%) (Christopher et al., 2017; Hales et al., 2017; Zhao, Tao, Wang, & Xia, 2019) with 46.8% of the AA/B race and 37.9% of the C/W race being obese, and so were 41.1% of the US females and 37.9%

of its males (Christopher et al., 2017; Hales et al., 2017). Contrarily, the 1999 Delaware adult obesity-rate was far lower (17.5%) (Ramsey et al., 2008) than the corresponding US adult rate (30.5%) (Christopher et al., 2017).

Delaware represents just 0.297% of the US inhabitants (Census Bureau, 2015). Hence this astronomical (81.7%) 1999-2017 linear obesity-rate trend unquestionably implies that the obesity epidemic has health, social, and financial consequences in the State of Delaware and on the well-being of the nation (Bomberg et al., 2017; Dobbs et al., 2014; Kim & Basu, 2016). In fact, the Delaware Health and Social Services, Division of Public Health, 2011-2017 Behavioral Risk Factor Survey (BRFS) reports that 85,400 Delawarean's (11.3% of the adult population) have diabetes, and 34.9% have hypertension (Christopher et al., 2017). Furthermore, even though Delaware is a fraction of the total US populace, the National Cancer Institute's Age-Adjusted Incidence Rates by Cancer Site (2011-2015) listed its rate of 493.5 that was 11.8% higher than the USA rate of 441.2 (Ward et al., 2019).

Big data solutions in the US healthcare arena have clinical value and are transforming managed and personalized patient care (Beam & Kohane, 2018; Murdoch & Detsky, 2013; Schneeweiss, 2014). The US Centers for Disease Control and Prevention's (CDC) Wide-ranging Online Data for Epidemiologic Research (WONDER) database (Centers for Disease Control and Prevention, 2016b) is an extensive public information resource for researchers. Together with the US Census data (Census Bureau, 2015), the CDC WONDER's (Centers for Disease Control and Prevention, 2016b) enormous leading causes of death data sets (Park et al., 2018) can be mined by age, gender, geography, and year, for systematic incidence analysis of mortality and life-expectancy due to the burden of obesity (Center for Disease Control and Prevention, 2016; D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza, 2018; D'Souza, Bautista, & Wentzien, 2018; D'Souza et al., 2019; D'Souza et al., 2017; D'Souza et al., 2015; D'Souza, Walls, Rojas, Everett, & Wentzien, 2015; D'Souza, Wentzien, Bautista, & Gross, 2017; Grover et al., 2015; Johnson et al., 2014; National Center for Health Statistics, 2016, 2017; Neff & D'Souza, 2019; Park et al., 2018; Schneeweiss, 2014; Voss, Pavela, & Stanford, 2018). The CDC WONDER database includes certifying cause of death categories (Centers for Disease Control and Prevention, 2016b; Park et al., 2018) using the Tenth Revision of the International Classification of Diseases (ICD-10) coding (Gonzalez & Chiodo, 2015; WHO, 2010). ICD-10 coding reporting errors (D'Souza, 2018; McGivern, Shulman, Carney, Shapiro, & Bundock, 2017; Pritt, Hardin, Richmond, & Shapiro, 2005) are well known, but together with research on the increased US waist size (Bentham et al., 2017; Hales et al., 2018) has generated valuable awareness on the negative impacts (D'Souza, Li, Gannon, & Wentzien, 2019; Jia & Lubetkin, 2005; Johnson et al., 2014; Leonard et al., 2015; Masters et al., 2013; Singh, Kochanek, & MacDorman, 1996; Tomlinson, Erskine, Morse, Winwood, & Onambélé-Pearson, 2016; Tomlinson, Erskine, Winwood, Morse, & Onambélé, 2014) of the nation's waistline on human health (Centers for Disease Control and Prevention, 2016b; D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza, 2018; D'Souza et al., 2018; D'Souza et al., 2015; D'Souza et al., 2015; D'Souza et al., 2019; D'Souza et al., 2017; Flegal, 2006; Flegal, Graubard, Williamson, & Gail, 2007; Guh et al., 2009;

Kopelman, 2007; Malnick & Knobler, 2006; Martí, 2016; O'Malley et al., 2005; O'Neill & O'Driscoll, 2015; Pi-Sunyer, 2009; Rudisill, Charlton, Booth, & Gulliford, 2016; Rzechonek et al., 2018; Siegel, Miller, & Jemal, 2019).

Incorporating data mining techniques on US census, health, mortality surveys (Census Bureau, 2015; Centers for Disease Control and Prevention, 2016a, 2016b; Centers for Disease Control and Prevention & National Center for Health Statistics, 2017; National Center for Health Statistics, 2016, 2017; Park et al., 2018) and spatial analysis visualization methods (Kanazawa & Kanazawa, 2018; Morra, 2018), prior work (clearly) demonstrated reasonable associations for the premature obesity-related impacts on mortality and morbidity in the general US population (D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza et al., 2015; D'Souza et al., 2019; Guh et al., 2009; Neff & D'Souza, 2019; Siegel et al., 2019; Voss et al., 2018) and in the occupants of Delaware (D'Souza et al., 2015; D'Souza et al., 2015; D'Souza et al., 2017; Neff & D'Souza, 2019).

The delineated 1999-2017 national obesity-related mortality data not only displayed appreciable ascending rates, but exposed increased racial disparities that has principally affected the nations AA/B race as their age-adjusted mortality rates were significantly ($p < 0.05$) higher than the US national average for documented deaths due to obesity, diabetes, diseases of the circulatory system, and neoplasms (D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza et al., 2019). Additionally, when analyzed in detail, for diabetes, the younger decennial age-groups 15-24, 25-34, 35-44, and 45-54 had positive upward trending percentages of 42.2%, 25.65%, 20.24%, and 16.8% respectively. Under the other listed disease conditions and as would be expected for deaths due to malignant neoplasms and the diseases of the circulatory system, the upper-middle age and older Americans had crude mortality rates that were higher than the national average (D'Souza, Li, Gannon, & Wentzien, 2019).

Our recent observational findings (D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza et al., 2018; D'Souza et al., 2017; D'Souza et al., 2015; D'Souza et al., 2015; Grover et al., 2015; Neff & D'Souza, 2019; Voss et al., 2018) on evaluating national CDC WONDER data (Centers for Disease Control and Prevention, 2016b; Centers for Disease Control and Prevention & National Center for Health Statistics, 2017; Park et al., 2018), plainly prove that there is an earlier risk of dying due to obesity and related comorbidity conditions. Hence, it is imperative that this project carefully investigate the risk of premature death that is associated with obesity in Delaware.

2. Methods

The data for this study was obtained from CDC WONDER (Centers for Disease Control and Prevention, 2016b; Centers for Disease Control and Prevention & National Center for Health Statistics, 2017; Park et al., 2018). The CDC collects and compiles the data from the death certificates reported from all 50 states and the District of Columbia and it calculates age-adjusted mortality rates and confidence interval limits to permit comparisons between demographic groups over time. The data was downloaded into a M.S. Excel dataset utilizing the query menu-driven access tools and line graphs

generated using the Statistical Analysis System (SAS) software. The following ICD-10 codes were used: Obesity E66, Diabetes mellitus E10-E14, Diseases of the circulatory system I00-I99, and Neoplasms C00-D48.

The age-adjusted mortality rates were determined using year 2000 population distributions as the reference population (Anderson & Arias, 2003; Anderson & Rosenberg, 1998). The effect of a change in mortality rates due to a change in the age distribution of a population is minimized using the age-adjusted rates thereby permitting a more affective analysis of mortality rates over time (Anderson & Arias, 2003; Anderson & Rosenberg, 1998). Age-adjusted rates cannot be calculated when the data are grouped by age group, decennial mortality are based on crude rates that are utilized when the death count is less than 20 (National Center for Health Statistics, 2017). Age-adjusted mortality rates for diabetes, diseases of the circulatory system, and neoplasms, between 1999 and 2017 were obtained and analyzed.

Confidence interval limits for the age-adjusted mortality rates were calculated and used in the line graphs to observe any statistically significant differences between demographic groups. Although all available records from the death certificates were used to construct the age-adjusted mortality rates, confidence interval limits were calculated because of the error that might occur from inaccurate or inconsistent reporting on the death certificates. Line graphs displaying the 95% confidence intervals for the age-adjusted mortality rates of diabetes, diseases of the circulatory system, and neoplasms, between 1997 and 2017 were constructed by gender and race groups. Changes in the mortality rates were then calculated and added to the line graphs. The datasets were downloaded into MS-Excel, and the SAS program was used for graph creation. For the race categories, to highlight the confidence intervals (CI), confidence bands are used to show the confidence limits.

3. Results and Discussion

From 1999 to 2017, Figure 1 shows that there was a 60.53% increase in Delaware's crude mortality rate (number of deaths per year, per 100,000 individuals) where the physician listed obesity as the single (specific) underlying cause of death. Figure 2 presents both the 1999-2017 crude mortality increase (75.69%) and the age-adjusted (mathematically adjusted to allow for more comparable comparisons between differing age groups) death rate increase (53.18%) when *any* certified mention of obesity was on the death record. The crude rate is higher due to the absence of possible age-specific distortions.

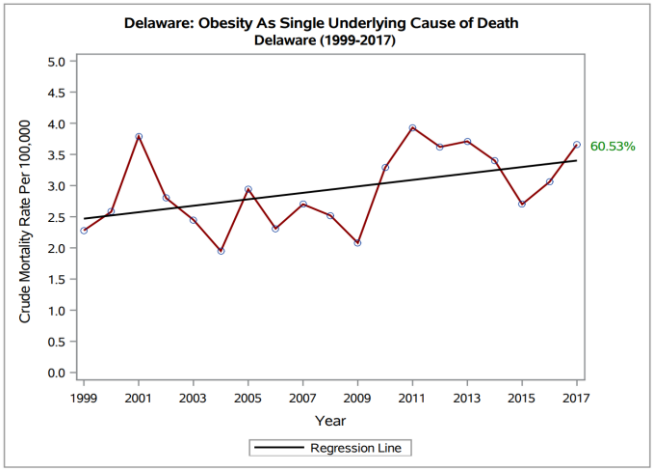

Figure 1. 1999-2017 Crude Mortality Rates in Delaware Where Obesity was Listed as the Single Underlying Cause of Death

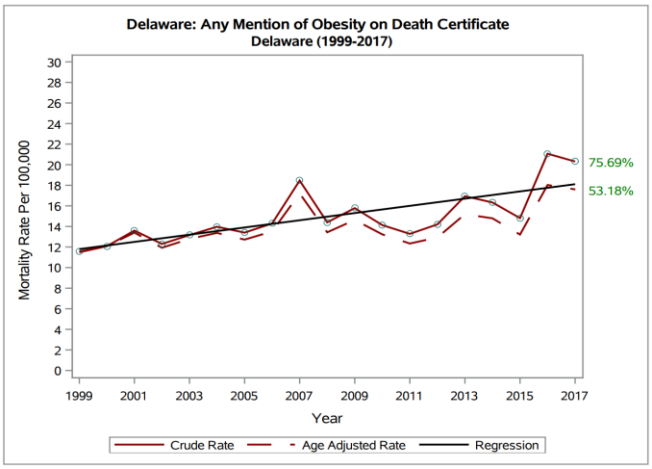

Figure 2. 1999-2017 Crude and Age-adjusted Mortality Rates in Delaware Where There was any Mention of Obesity on the Death Certificate

In spite of the 2017 prevalence of adult obesity data showing that only 18.4% of Delaware men were obese compared to 27.2% of its women (Christopher et al., 2017; Hales et al., 2017), the Figure 3 male and female age-adjusted mortality rates exhibits a fluctuating pattern with a serious hike in 1999-2017 death rates for males (79.87%), where obesity was present in the deceased but not necessarily listed as the underlying cause of death. This jump in age-adjusted moratlity for Delawarean males can be rationalized due to the harmful implications of visceral fat (Centers for Disease Control and Prevention, 2016b; D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza, 2018; D'Souza et al., 2018, 2019; D'Souza et al., 2015; D'Souza et al., 2015; D'Souza et al., 2017; Flegal, 2006; Flegal et al., 2007; Guh et al., 2009; Kopelman, 2007; Malnick & Knobler, 2006; Martí, 2016; O'Malley et al., 2005; O'Neill & O'Driscoll, 2015; Pi-Sunyer, 2009; Rudisill et al., 2016; Rzechonek et al., 2018; Siegel et al., 2019).

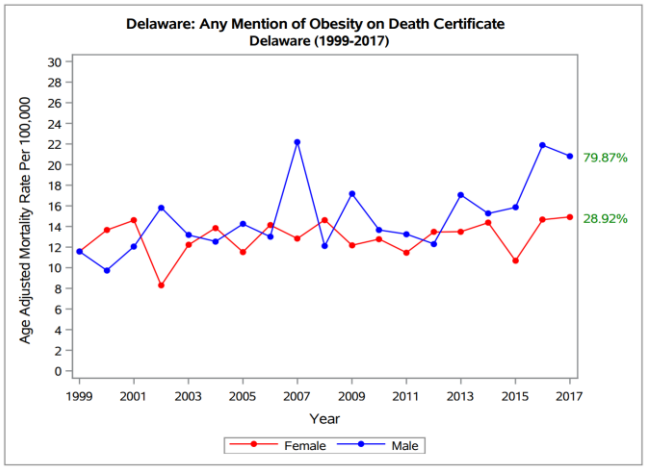

Figure 3. 1999-2017 Male and Female Age-adjusted Mortality Rates in Delaware Where There was any Mention of Obesity on the Death Certificate

In Delaware and in the US, the AA/B race has more advanced rates of obesity than their C/W counterparts (Christopher et al., 2017; Hales et al., 2017). Their 2017 Delaware adult obesity rates were 37.4% and 29.7% respectively (Christopher et al., 2017; Hales et al., 2017). This growing unchecked racial obesity imbalance appears in all of Delaware's 1999-2017 death certificate records where except for one year, the crude AA/B mortality rates with any mention of obesity on the death certificate was always considerably higher than the comparable C/W mortality rates. Crude rates were used in Figure 4 due to the year 1999 having unreliable data to account for age-adjustment. Nonetheless for the C/W race, Figure 4 marks the risk of dying with a sobering statistic (87.34%) when obesity is mentioned on the death record (between 1997 and 2017).

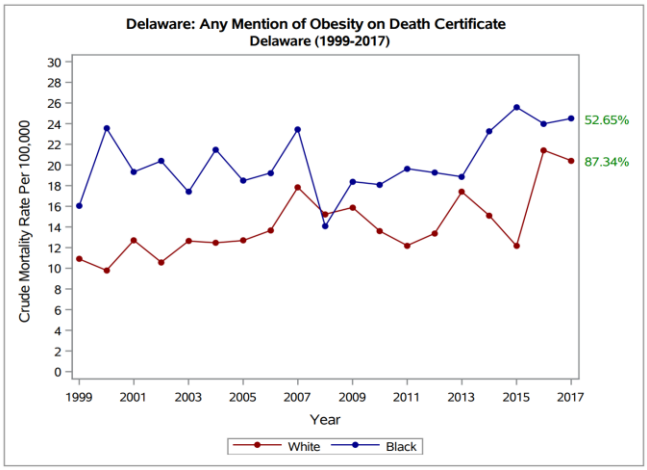

Figure 4. 1999-2017 Black and White Crude Mortality Rates in Delaware Where There was any Mention of Obesity on the Death Certificate

Prior national age-adjusted investigations determined that for males and the AA/B population, the mortality rates where obesity was listed as a contributory death factor, was unmistakely higher than the analogous general population national averages (Christopher et al., 2017; Hales et al., 2017). Yet, it should be pointed out that the US obesity prevalence (Bentham et al., 2017; Hales et al., 2018) is touching all segments of its population (D'Souza, Li, Gannon, & Wentzien, 2019; Jia & Lubetkin, 2005; Johnson et al., 2014; Leonard et al., 2015; Masters et al., 2013; Singh et al., 1996; Tomlinson et al., 2016, 2014) and a number of negative health affects are directly attributable to obesity (Centers for Disease Control and Prevention, 2016b; D'Souza, Li, Gannon, & Wentzien, 2019; D'Souza, 2018; D'Souza et al., 2018, 2019; D'Souza et al., 2015; D'Souza et al., 2015; D'Souza et al., 2017; Flegal, 2006; Flegal et al., 2007; Guh et al., 2009; Kopelman, 2007; Malnick & Knobler, 2006; Mart ́ı 2016; O'Malley et al., 2005; O'Neill & O'Driscoll, 2015; Pi-Sunyer, 2009; Rudisill et al., 2016; Rzechonek et al., 2018; Siegel et al., 2019). Moreover, the 35-44 age-group (nationwide) realized the highest 1999-2016 crude death rate increase (174.93%) (D'Souza et al., 2019).

The age-specific death rates where there was any mention obesity for the decennial age-groups studied, are shown in Figure 5. In line with the national trend, Figure 5 pinpoints that Delaware's highest 2001-2017 mortality rate (91.94%) is also occurring in the younger 35-44 adult age-group range. A negative (-17.60%) mortality rate was observed for the 45-54 age-group while the upper middle-age (55-64) and older (64-74) age-groups had much higher mortality rates at 77.41% and 79.51% respectively.

For the secondary obesity conditions and cormorbidities, the declining Figure 6 pattern of Delaware's 1997-2017 age-adjusted mortality rate changes conform to the national patterns where ciculatory system diseases show up to be the number one cause of death. Additionally, Delaware's distinguishing single underlying cause of death averages for diabetes and the diseases of the circulatory system, almost coincide with the national trending line but are slighlty higher than the national averages for deaths associated with neoplasms (Figure 6). For the dominant Delaware races, C/W and AA/B, Figures 7-9 exhibit disproportionate 1999-2017 age-adjusted mortality rates due to diabetes, diseases of the circulatory system, and neoplasms. For the AA/B and C/W Delawareans, ninety-five percent confidence intervals (95% CI) are provided for the 1999 and 2017 age-adjusted mortality rates associated with the three obesity-related diseases (Table 1). Likewise to assist in interpreting Figures 7-9, confidence limits are added to offer visual measures of the probability and magnitude of the observed AA/B and C/W disparities.

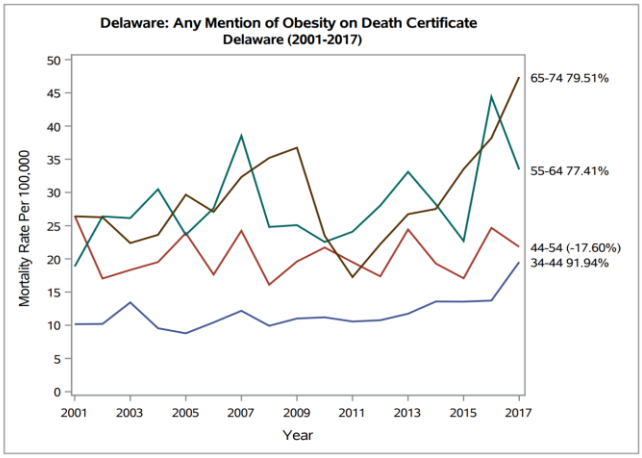

Figure 5. 2001-2017 Decennial Age-specific Mortality Rates in Delaware Where There was any Mention of Obesity on the Death Certificate

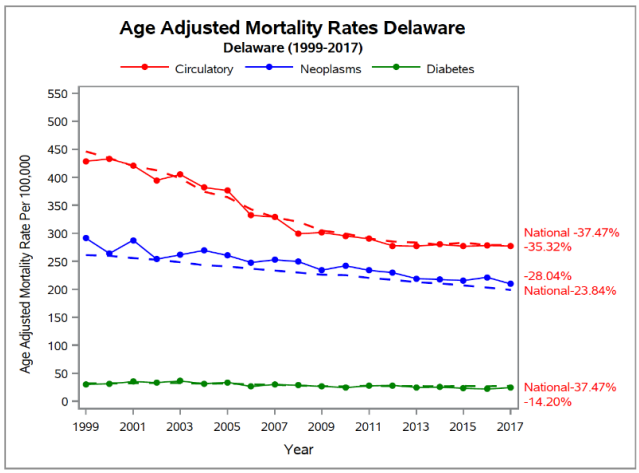

Figure 6. National Average Comparison of Delaware's 1999-2017 Age-adjusted Mortality Rates Due to Diabetes, Diseases of the Circulatory System, and Neoplasms

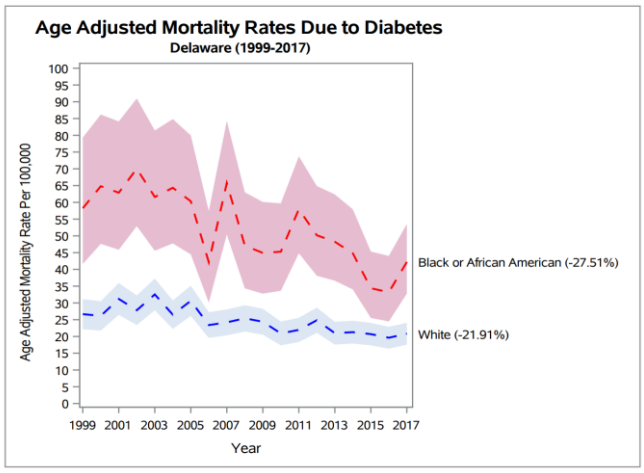

Figure 7. Delaware's 1999-2017 Diabetes Age-adjusted Mortality Rates

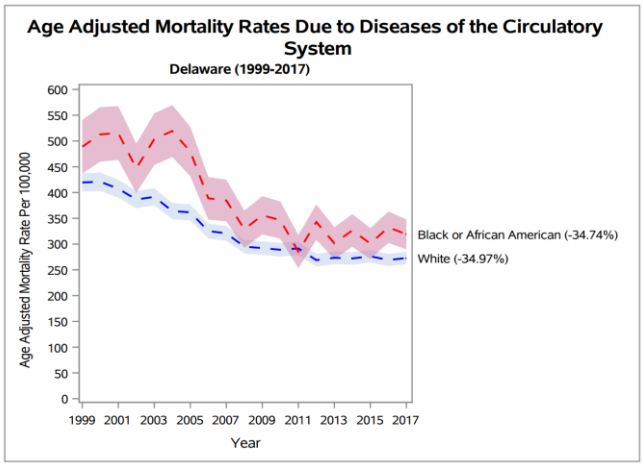

Figure 8. Delaware's 1999-2017 Age-adjusted Mortality Rates Due to Diseases of the Circulatory System

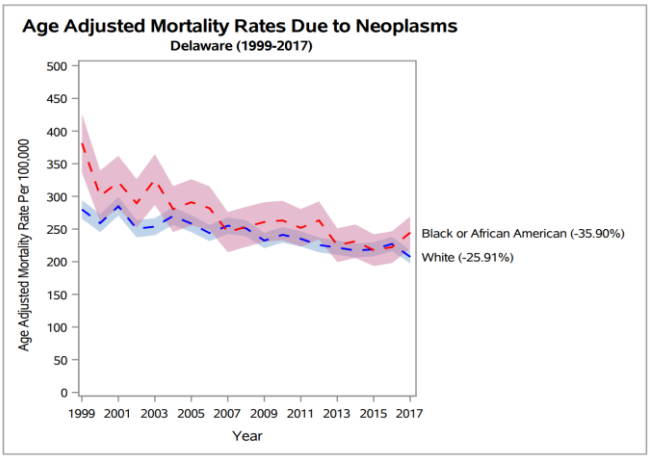

Figure 9. Delaware's 1999-2017 Age-adjusted Mortality Rates Due to Neoplasms

For the AA/B race, the 1999-2017 age-adjusted mortality rates due to diabetes trend lower but are at a level that is very inflated to what is observed for the C/W race and where there is a complete lack of overlap in the 95% CI's (Figure 7) from one year to the next. For the diseases of the circulatory system (Figure 8), the AA/B age-adjusted death rate is higher than C/W's detected rate and there is a very slight overlap in the 95% CI's, whereas in Figure 9 (age-adjusted neoplasm mortality rates), the two-race 95% CI's moderately overlay at several points, even though the AA/B rate is at a slightly expanded level when compared to the C/W rate.

The Figures 10-12 and Table 2 testify to the influences that diabetes, circulatory system diseases, and neoplasms have on Delawarean's 1999-2017 crude death rates for specific age groups. In addition (Figures 13-15) for the same time frame, and for each of the three Delaware counties (New Castle, Kent, and Sussex), population-based age- adjusted mortality rate frequency statistics are also tracked.

Complementary to what transpired in the national 1999-2017 crude mortality rate analysis (D'Souza, Li,

Gannon, & Wentzien, 2019; D'Souza et al., 2017) for the three diseases (single underlying cause of death in each case), the Delaware mortality rates exhibit a declining pattern for the ten-year population age-groups except in the case of diabetes, where for the 45-54 and 55-64 age-group intervals and between the two 1999 and 2017 time points, the mortality rates are found to be largely growing by 76.75% and 25.92% respectively.

When the age data and number of deaths per 100,000 (Figures 13-15) are analyzed by county (from 1997 to 2017), the age-adjusted single underlying cause of death rates due to the diseases of the circulatory system, and neoplasms, are largely dropping in New Castle, Kent and Sussex counties. For the condition of diabetes, the death rate has gently increased (2.88%) in New Castle County, but in great measure, decreased in Kent (-30.32%) and Sussex counties (-43.22%). The 1997-to-2017 rise in diabetes related age-adjusted mortality rates in New Castle County is a probable artifact of relating the two time points, as New Castle County was shown to have the lowest 2017 obesity and diabetes prevalence [21], [22].

Table 1. Delaware's Age Adjusted Mortality Rates by Race

Year	Race	Disease	Rate	95% CI
1999	White	Diabetes	26.66	[22.18, 31.14]
	Black or African American		58.24	[41.61, 86.19]
	White	Neoplasms	279.96	[265.63, 294.30]
	Black or African American		381.44	[336.45, 426.42]
	White	Diseases of the Circulatory System	419.57	[401.72, 437.41]
	Black or African American		488.82	[436.90, 540.73]
2017	White	Diabetes	20.82	[17.57, 24.07]
	Black or African American		42.22	[32.79, 53.53]
	White	Neoplasms	207.43	[197.30, 217.55]
	Black or African American		244.52	[219.87, 269.17]
	White	Diseases of the Circulatory System	272.86	[261.21, 284.51]
	Black or African American		318.99	[289.78, 348.21]

Note. Data from CDC WONDER Database; CI = Confidence Interval

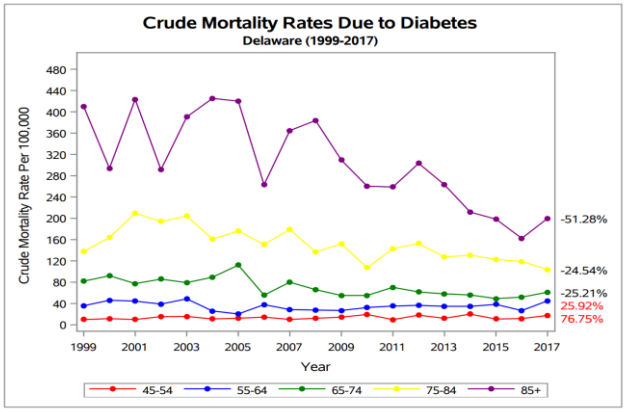

Figure 10. 1999-2017 Delaware's Crude Mortality Rates Due to Diabetes for the Age-groups, 45-54, 55-64, 65-74, 75-84, and 85+

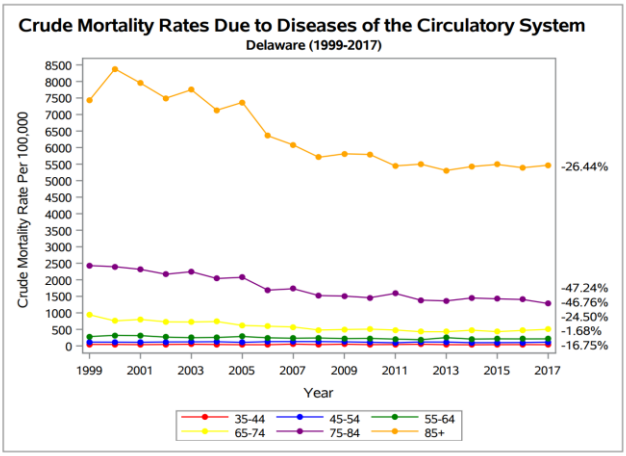

Figure 11. 1999-2017 Delaware's Crude Mortality Rates Due to Diabetes for the Age-groups, 35-44, 45-54, 55-64, 65-74, 75-84, and 85+

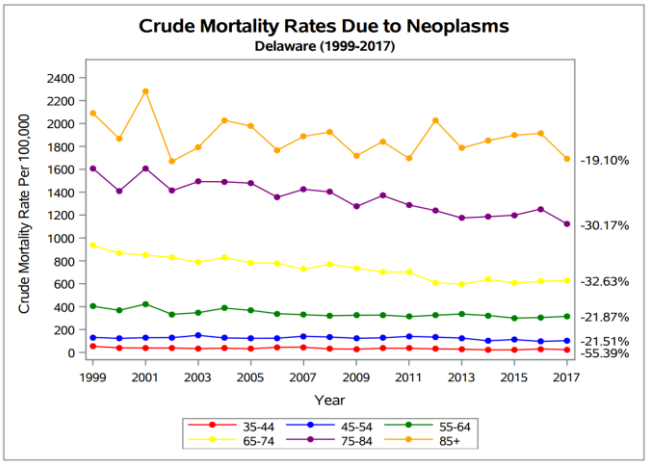

Figure 12. 1999-2017 Delaware's Crude Mortality Rates Due to Neoplasms for the Age-groups, 35-44, 45-54, 55-64, 75-84 and 85+

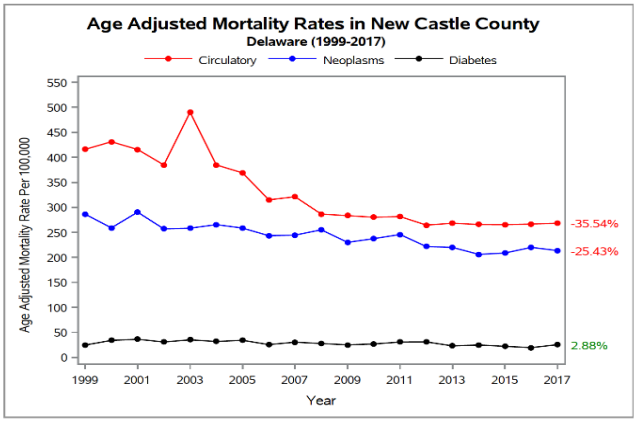

Figure 13. 1999-2017 Delaware's Crude Mortality Rates Due to Neoplasms for the Age-groups, 15-24, 25-34, 35-44, and 45-54

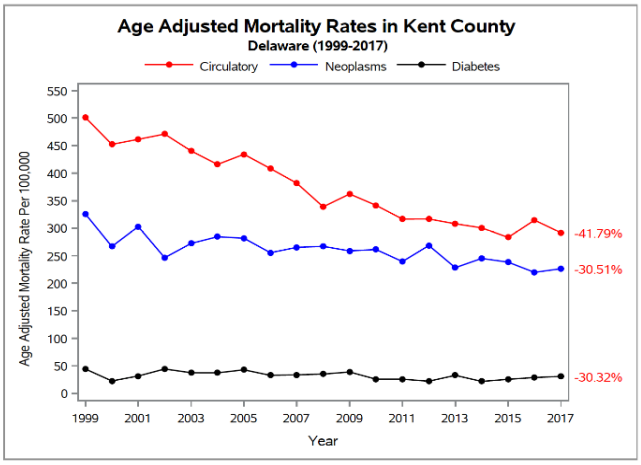

Figure 14. 1999-2017 Delaware's Crude Mortality Rates Due to Neoplasms for the Age-groups, 15-24, 25-34, 35-44, and 45-54

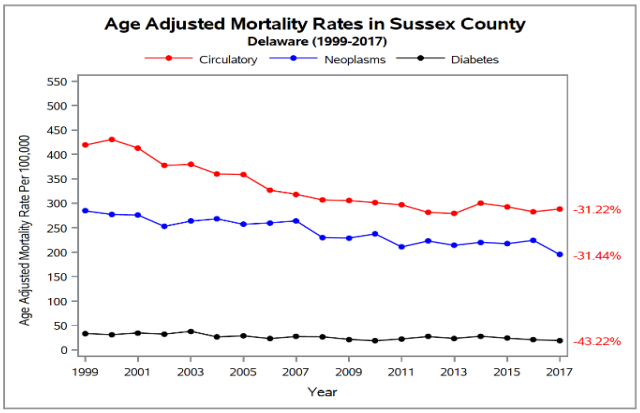

Figure 15. 1999-2017 Delaware's Crude Mortality Rates Due to Neoplasms for the Age-groups, 15-24, 25-34, 35-44, and 45-54

Table 2. Crude Mortality Rates by Decennial Age-groups

Year	Age Group	Disease	Rate	95% CI
1999	45-54	Diabetes	9.92	[4.76, 18.24]
	55-64		35.77	[23.15, 52.81]
	65-74		81.86	[59.93, 109.19]
	75-84		137.63	[101.12, 183.02]
	85+		410.20	[295.63, 554.47]
	35-44	Neoplasms	52.83	[40.94, 67.09]
	45-54		130.92	[108.58, 153.25]
	55-64		403.51	[356.42, 450.61]
	65-74		934.25	[854.33, 1014.16]
	75-84		1607.61	[1473.14, 1742.09]
	85+		2090.05	[1810.02, 2370.08]
	35-44	Diseases of the	45.73	[34.73, 59.12]
	45-54	Circulatory System	115.05	[94.11,135.98]
	55-64		283.32	[243.85, 322.78]
	65-74		943.14	[862.85, 1023.44]
	75-84		2430.45	[2265.10, 2595.80]
	85+		7432.3	[6904.30, 7960.44]
2017	45-54	Diabetes	17.53	[10.98, 26.53]
	55-64		45.04	[34.37, 57.97]
	65-74		61.22	[47.14, 78.17]
	75-84		103.86	[77.57, 136.21]
	85+		199.84	[142.10, 273.18]
	35-44	Neoplasms	23.57	[15.40, 34.53]
	45-54		102.76	[85.03, 120.50]
	55-64		315.25	[285.10, 345.40]
	65-74		629.38	[581.29, 677.47]
	75-84		1122.54	[1029.73, 1215.35]
	85+		1690.92	[1508.48, 1873.36]
	35-44	Diseases of the	38.07	[27.44, 51.46]
	45-54	Circulatory System	113.12	[94.51, 131.72]
	55-64		213.92	[189.09, 238.76]
	65-74		502.17	[459.21, 545.12]
	75-84		1282.33	[1183.14, 1381.53]
	85+		5467.31	[5139.25, 5795.36]

Note. Data from CDC WONDER Database; CI = Confidence Interval

4. Conclusions

The burden of obesity as a primary or secondary indicator as documented in the CDC's cause of death data, paints an alarming picture for all Delawareans. Furthermore, the mortality records indicate that the African American/Black population is disproportionately affected when obesity, diabetes, diseases of the circulatory system, or neoplasms, are listed as the single underlying cause of death.

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