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A Supplemental Report of Texas ST-Elevation Myocardial Infarction (STEMI) and Heart Attack System of Care, 2018 - Hospital Arrival Method and Comorbidities by Sex, Age, and Race

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Contents

BACKGROUND AND PURPOSE

This is a supplemental report to *Texas ST-Elevation Myocardial Infarction (STEMI) and Heart Attack System of Care Report,* 2018.

During the 83rd Regular Texas Legislative Session, funds were appropriated to advance heart attack and stroke reduction efforts throughout Texas. To inform such efforts, the Texas Department of State Health Services (DSHS) has launched a Heart Attack and Stroke Data Collection Initiative. Through this initiative, hospitals are recruited to voluntarily share their data that focuses on pre-hospital and hospital data elements. This report includes de-identified, aggregate data for hospitals that have agreed to share Acute Coronary Treatment and Intervention Outcomes Network (ACTION) Registry data with DSHS. No hospital level data will be distributed, nor will any hospital name be identified in the report.

The objectives of the data collection are to gain an understanding of the prevalence of heart attack in Texas, to evaluate pre-hospital components of the systems of care, and assess treatment of heart attack patients. This supplemental report was requested by DSHS' Heart Disease and Stroke Program in order to 1) make comparisons in hospital arrival methods for heart attack, and 2) identify the prevalence of comorbid conditions among heart attack patients, stratified by sex, age, and race/ethnicity.

All data are intended to inform stakeholders about opportunities for collaboration and system enhancement. The findings in this report will be used to further assess policies and practices regarding delivery of care across the state and to identify areas of opportunity for quality improvement.

ARRIVAL MODE

Table 1. Comparison of Hospital Arrival Mode (EMS vs. Private Vehicle) Among Heart Attack Cases, by Sex, Age Group, and Race/Ethnicity, 2017

	Age Group	Race	EMS		Private Vehicle	
			n=1,213	40.3%	n=1,800	59.7%
FEMALE	18-49	Black	36	43.4	47	56.6
		Hispanic	15	16.3	77	83.7
		White	64	37.9	105	62.1
		Other	4	25.0	12	75.0
	50-64	Black	64	39.0	100	61.0
		Hispanic	72	26.7	198	73.3
		White	213	38.4	342	61.6
		Other	7	21.2	26	78.8
	65+	Black	94	56.0	74	44.0
		Hispanic	142	33.2	286	66.8
		White	480	49.0	499	51.0
		Other	22	39.3	34	60.7
			n=2,077	36.3%	n=3,643	63.7%
MALE	18-49	Black	52	38.2	84	61.8
		Hispanic	66	26.5	183	73.5
		White	117	29.6	278	70.4
		Other	13	27.1	35	72.9
	50-64	Black	128	43.2	168	56.8
		Hispanic	183	28.3	464	71.7
		White	503	36.8	865	63.2
		Other	38	43.7	49	56.3
	65+	Black	92	47.9	100	52.1
		Hispanic	222	36.9	380	63.1
		White	631	39.4	972	60.6
		Other	32	33.0	65	67.0
	Overall Total		n=3,290	37.7%	5,443	62.3%

In 2017, more heart attack cases arrived to the hospital via private vehicle than EMS, both overall (62 in 100 cases vs. 38 in 100 cases, respectively) as well as for males and females. The same trend was consistent across race groups and age groups. However, transport via EMS tended to be highest among those age 65 years and older than among the younger age groups.

EMS transport was lowest among Hispanic females aged 18-49 years (16 in 100), followed by "Other" females aged 50-64 years (21 in 100). EMS transport was highest for Black females aged 65 and older (56 in 100), followed by White females aged 65 and older (49 in 100) and by Black males aged 65 and older (48 in 100).

OVERWEIGHT/OBESE

Table 2. Prevalence of Overweight/Obese Among Eligible Heart Attack Cases, By Year, 2008-2017

Year	Eligible Cases	Overweight/Obese		Reporting Hospitals
	N=53,543	n=41,502	%	N
2008	111	86	77.5	1
2009	793	600	75.6	6
2010	2,951	2,195	74.4	23
2011	4,855	3,674	75.7	27
2012	6,008	4,591	76.4	35
2013	6,533	5,037	77.1	36
2014	7,391	5,771	78.1	42
2015	7,909	6,175	78.1	46
2016	8,796	6,904	78.5	48
2017	8,196	6,469	78.9	48

The prevalence of overweight/obese at the time of heart attack has remained relatively stable from 2008 (77 in 100) through 2017 (79 in 100).

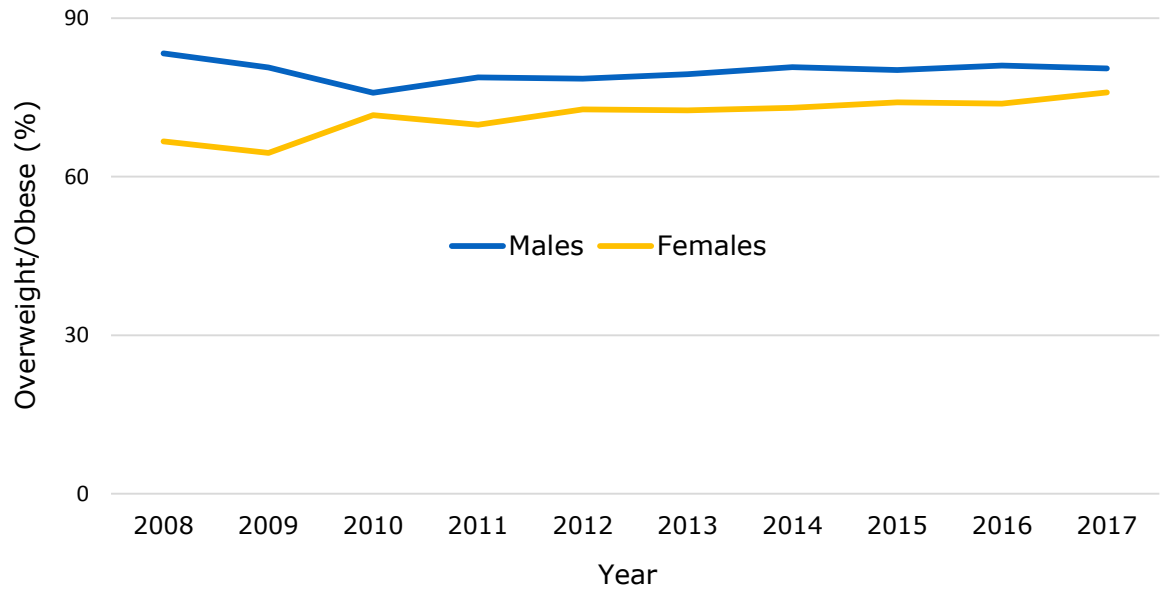

Figure 1. Trend in Prevalence of Overweight/Obese Among Eligible Heart Attack Cases, By Sex, 2008-2017

Overweight/obese is more common among male than female heart attack cases, although this gap has narrowed over time. From 2008 to 2010, the prevalence of

overweight/obese among males declined from 83 in 100 to 76 in 100 cases. Since 2010, the rate among males has increased slowly, reaching 81 in 100 cases in 2017. Among females, the prevalence has increased, from a low of 67 in 100 cases in 2008 to 76 in 100 in 2017.

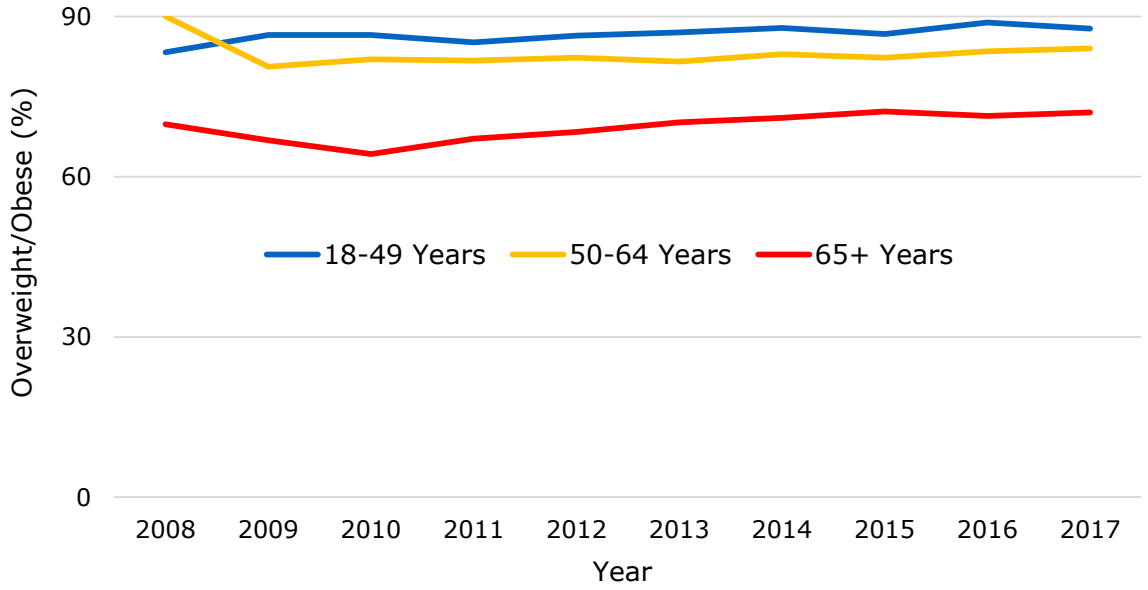

Figure 2. Trend in Prevalence of Overweight/Obese Among Eligible Heart Attack Cases, By Age Group, 2008-2017

The prevalence of overweight/obese has remained fairly stable over time for all age groups. In 2017, the prevalence of overweight/obese was lowest among those 65 years and older (72 in 100), and was similar for those 18-49 (88 in 100) and 50-64 years of age (84 in 100). This same trend has been seen over time with the exception of 2008, when the prevalence of overweight/obese was higher among those ages 50-64 years (90 in 100) than among those ages 18-49 years (83 in 100).

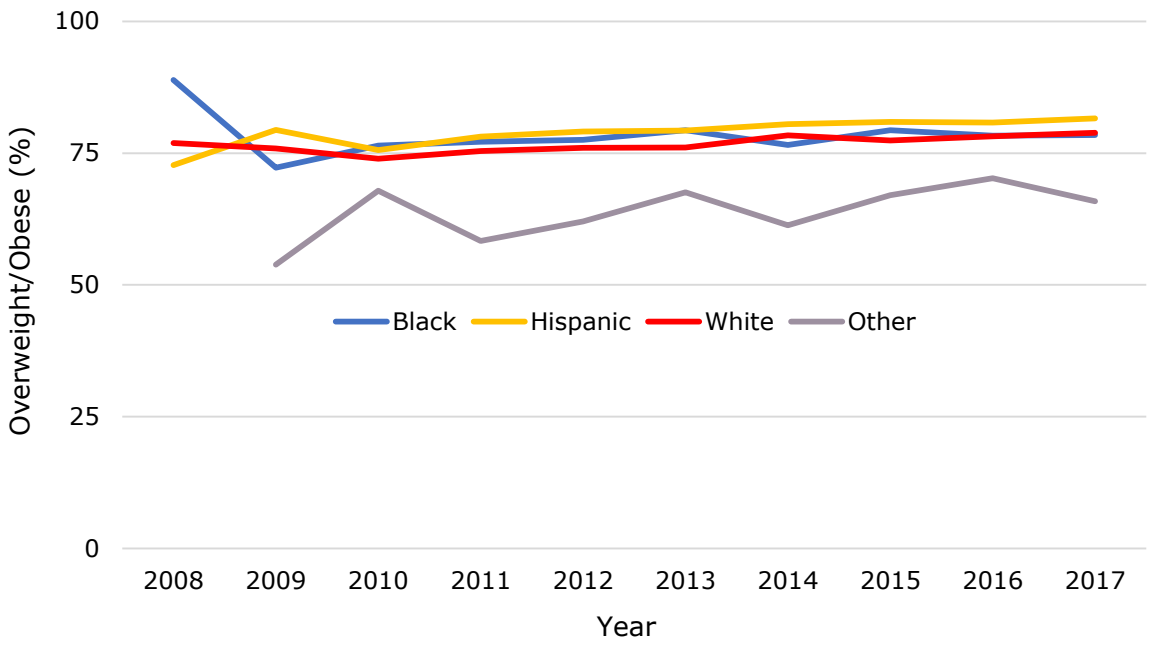

Figure 3. Trend in Prevalence of Overweight/Obese Among Eligible Heart Attack Cases, By Race, 2008-2017

Despite annual fluctuations, the prevalence of overweight/obese is consistently lower among those who reported "Other" race than for White, Black, or Hispanic groups across all years. From 2008 to 2017, the prevalence of overweight/obesity has been fairly stable among Whites (77 in 100 cases to 79 in 100 cases, respectively). Over the same time, the rate has increased among Hispanics (73 in 100 to 82 in 100). Among Blacks, after an initial high in 2008 (89 in 100), the rate fell to 72 in 100 cases in 2009 and has climbed since, to 79 in 100 in 2017.

DIABETES HISTORY

Table 3. Prevalence of Diagnosed Diabetes Among Eligible Heart Attack Cases, 2008-2017

Year	Eligible Cases	Diabetes		Reporting Hospitals
	N=57,084	n=22,975	%	N
2008	111	35	31.5	1
2009	812	273	33.6	6
2010	3,340	1218	36.4	23
2011	5,245	1938	36.9	27
2012	6,440	2494	38.7	35
2013	6,931	2757	39.8	36
2014	7,784	3233	41.5	42
2015	8,328	3442	41.3	46
2016	9,298	3890	41.8	48
2017	8,795	3695	42.0	48

The prevalence of diagnosed diabetes (i.e., a pre-existing condition at time of heart attack) among eligible heart attack cases has increased 33%, from 32 in 100 cases in 2008 to 42 in 100 cases in 2017.

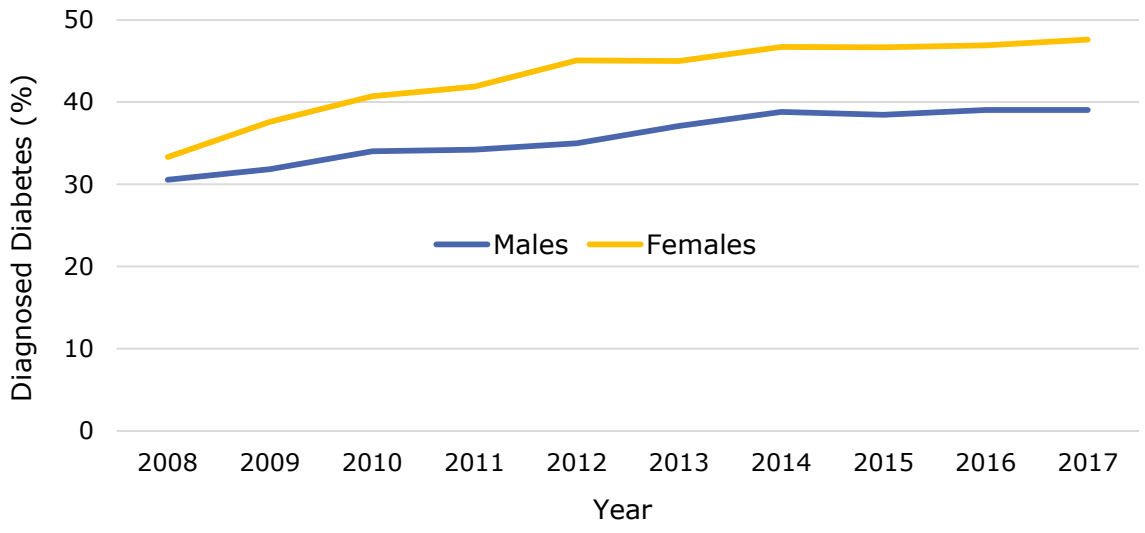

Figure 4. Trend in Prevalence of Diagnosed Diabetes Among Eligible Heart Attack Cases, By Sex, 2008-2017

The prevalence of diagnosed diabetes among heart attack cases is higher for females than males. While the prevalence was fairly similar in 2008 (31 in 100 males and 33 in 100 females), the annual increase has been slower among males than females, with a 2017 prevalence of 39 in 100 males and 48 in 100 females.

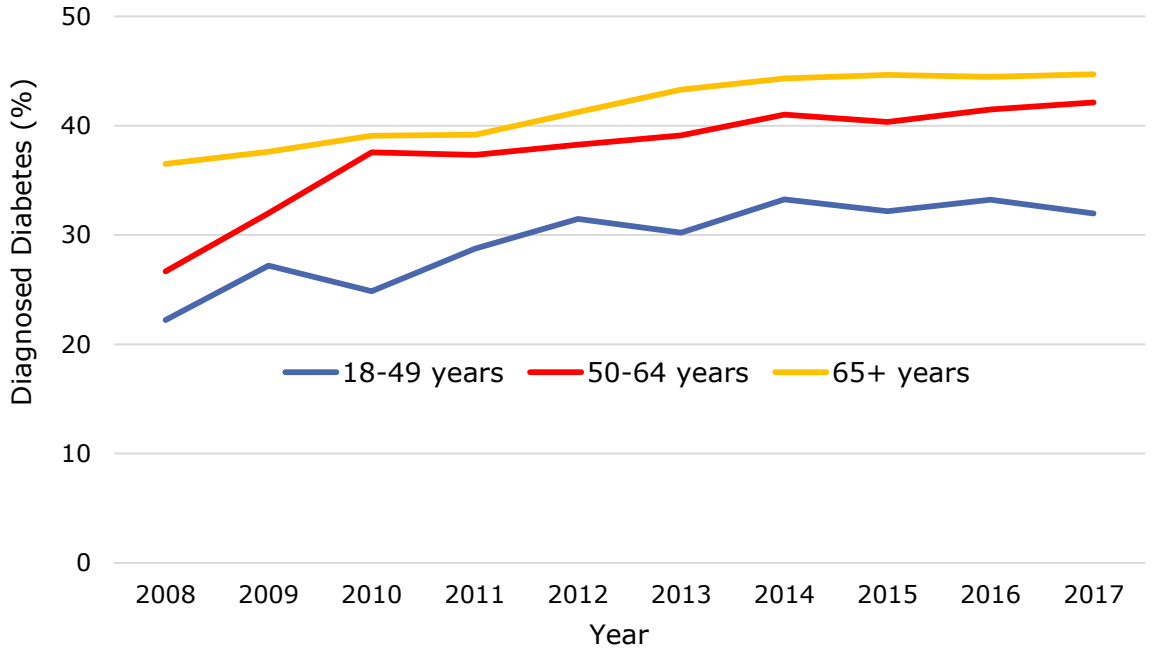

Figure 5. Trend in Prevalence of Diagnosed Diabetes Among Eligible Heart Attack Cases, By Age Group, 2008-2017

Diagnosed diabetes is more common among heart attack cases ages 65 years or older, followed closely by those ages 50-64 years, and is least common among those ages 18-49 years. The prevalence has increased for all age groups between 2008-2017: by 48% among cases ages 18-49 years, from 22 in 100 to 32 in 100; by 56% among cases ages 50-64 years, from 27 in 100 to 42 in 100; and by 21% among cases 65 and older, from 37 in 100 to 45 in 100.

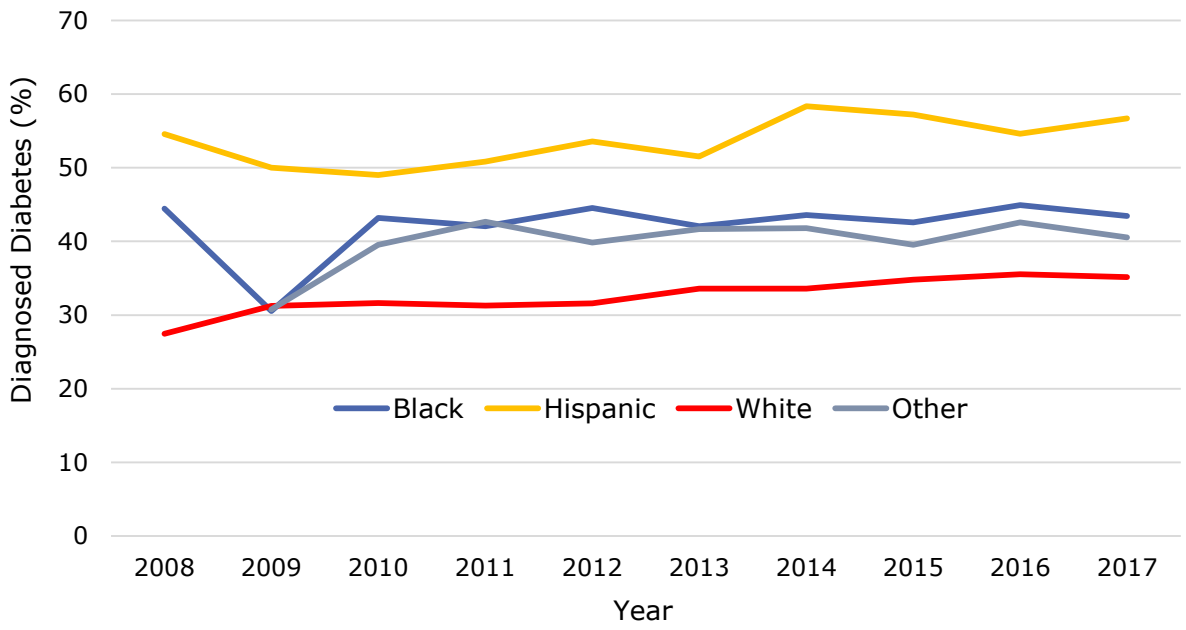

Figure 6. Trend in Prevalence of Diagnosed Diabetes Among Eligible Heart Attack Cases, By Race, 2008-2017

The prevalence of diagnosed diabetes differs by race group, being highest among Hispanics, followed by Black and "Other", and lowest among Whites. Over time, the rate for Hispanics has remained fairly stable, from 55 in 100 in 2008 to 57 in 100 in 2017 (a 4% increase). For Whites, the rate has climbed from 27 in 100 in 2008 to 35 in 100 in 2017 (a 30% increase). For Blacks, the rate has remained steady, from 44 in 100 in 2008 to 43 in 100 in 2017 (a 2% decrease), with the exception of a marked drop in 2009. Among "Other" races, the prevalence has climbed from 31 in 100 in 2009 to 41 in 100 in 2017, a 32% increase.

HYPERTENSION HISTORY

Table 4. Prevalence of Hypertension Among Eligible Heart Attack Cases, By Year, 2008-2017

Year	Eligible Cases	Hypertension		Reporting Hospitals
	N=57,100	n=44,468	%	N
2008	111	88	79.3	1
2009	812	605	74.5	6
2010	3,341	2,565	76.7	23
2011	5,246	4,036	76.9	27
2012	6,442	4,999	77.5	35
2013	6,931	5,305	76.5	36
2014	7,785	6,013	77.2	42
2015	8,327	6,507	78.1	46
2016	9,304	7,376	79.3	48
2017	8,801	6,974	79.2	48

The prevalence of hypertension as a pre-existing condition among heart attack cases has fluctuated somewhat year to year, yet was no different in 2008 than in 2017 (79 in 100 cases).

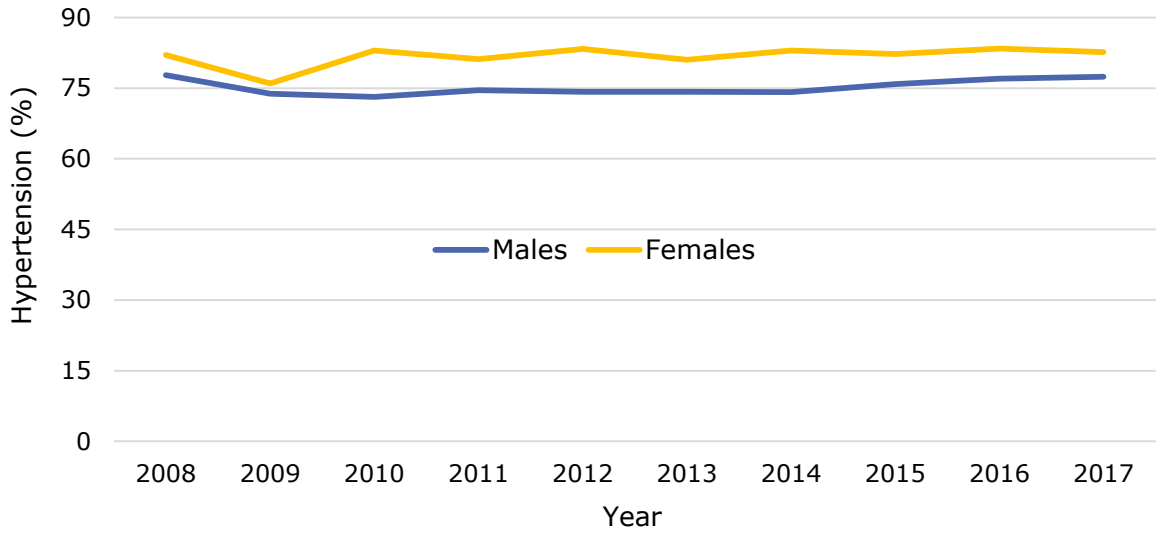

Figure 7. Trend in Prevalence of Hypertension Among Eligible Heart Attack Cases, By Sex, 2008-2017

Hypertension is slightly less common among male than female heart attack cases, and the prevalence has remained stable over time for both sexes. The prevalence

among females was 82 in 100 cases in 2008, and 83 in 100 cases in 2017. The prevalence among males was 78 in 100 cases in 2008, and 77 in 100 cases in 2017.

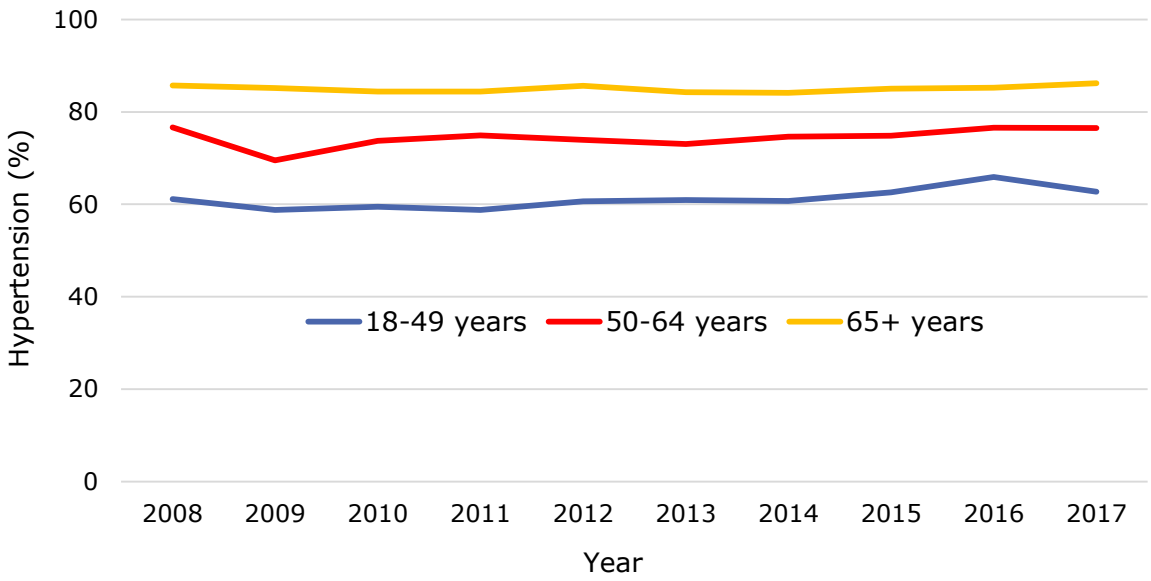

Figure 8. Trend in Prevalence of Hypertension Among Eligible Heart Attack Cases, By Age Group, 2008-2017

The prevalence of hypertension differs by age group. Hypertension is most common among heart attack cases ages 65 and older, followed by those ages 50-64 years, and is least common among those ages 18-49 years. Over time, the prevalence of hypertension has remained fairly stable for all age groups. Among those ages 65 and older, the rate has changed from 85 in 100 in 2008 to 86 in 100 in 2017 (a 1% increase), and among those ages 18-49 years, from 61 in 100 to 63 in 100 (a 3% increase). Despite some annual fluctuations, the prevalence of hypertension among those ages 50-64 years was the same in 2017 as in 2008 (77 in 100 cases).

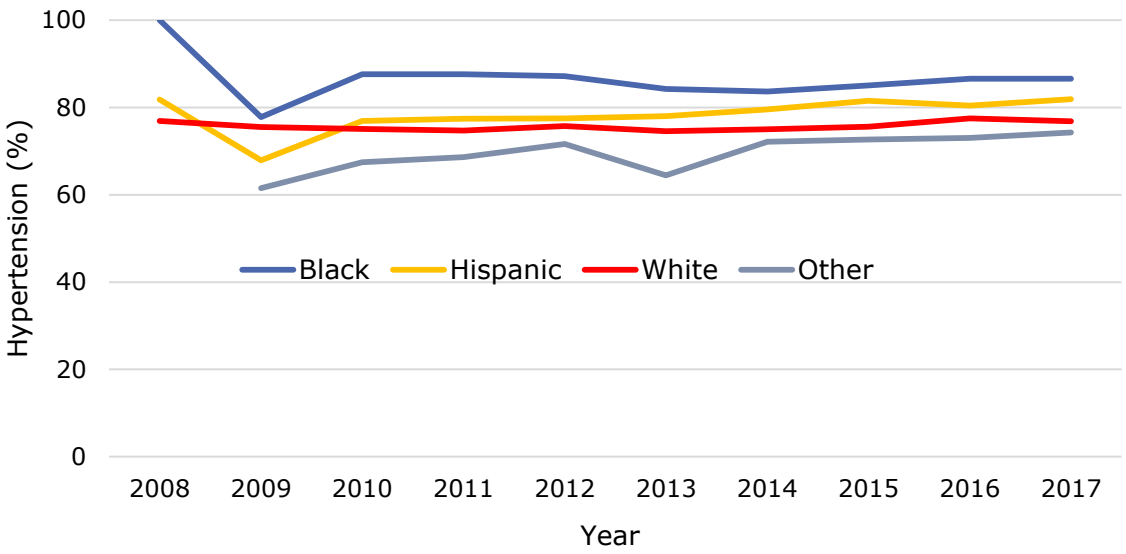

Figure 9. Trend in Prevalence of Hypertension Among Eligible Heart Attack Cases, By Race, 2008-2017

The prevalence of hypertension is highest among Blacks and lowest among "Other" races. Rates among Blacks and Hispanics dropped from 2008 to 2009, and have climbed slowly since, from 77 in 100 (2009) to 87 in 100 (2017) among Black cases and from 68 in 100 (2009) to 82 in 100 (2017) among Hispanic cases. Among "Other" races, the rate has climbed from 62 in 100 (2009) to 74 in 100 (2017). Among Whites, the rate has remained stable over time, from 77 in 100 in 2008 to 74 in 100 in 2017.

CURRENT SMOKING

Table 5. Prevalence of Current Smoking Among Eligible Heart Attack Cases, By Year, 2008-2017

Year	Eligible Cases	Current Smoker		Reporting Hospitals
	N=57,104	n= 17429	%	N
2008	111	44	39.6	1
2009	812	321	39.5	6
2010	3,338	1,106	33.1	23
2011	5,245	1,714	32.7	27
2012	6,447	2,067	32.1	35
2013	6,933	2,096	30.2	36
2014	7,786	2,283	29.3	42
2015	8,329	2,447	29.4	46
2016	9,304	2,801	30.1	48
2017	8,799	2,550	29.0	48

The prevalence of current smoking among eligible heart attack cases has decreased by 28%, from 40 in 100 cases in 2008 to 29 in 100 cases in 2017.

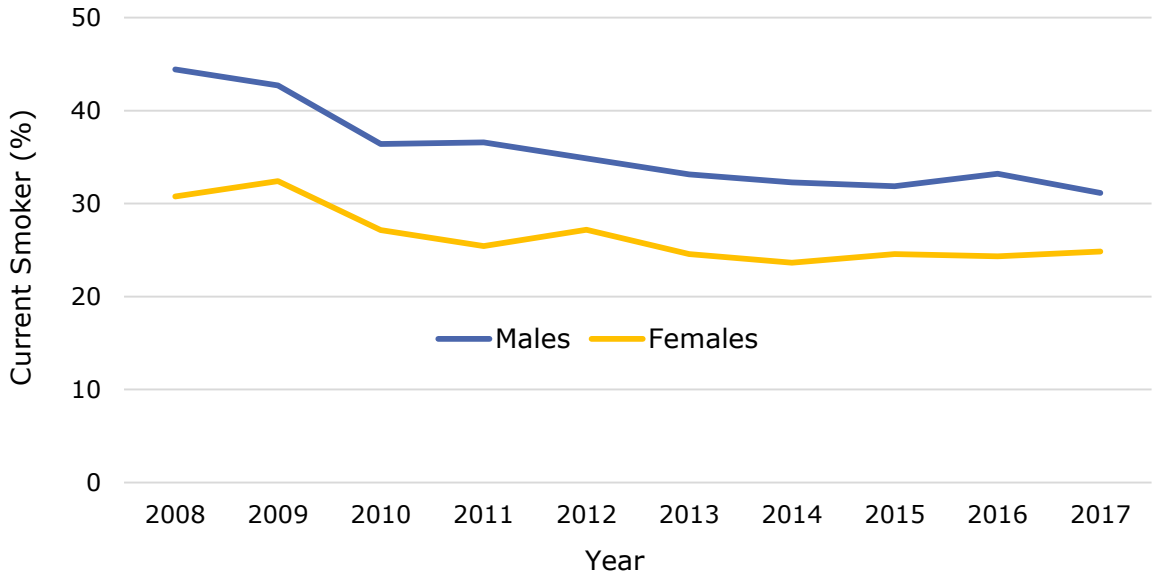

Figure 10. Trend in Prevalence of Current Smoking among Eligible Heart Attack Cases, by Sex, 2008-2017

The prevalence of current smoking is higher among males than females, and has been declining for both sexes over time. Smoking prevalence has decreased from

44 in 100 cases in 2008 to 31 in 100 cases in 2017 for males (a 30% decrease) and from 31 in 100 cases in 2008 to 25 in 100 cases in 2017 for females (a 19% decrease).

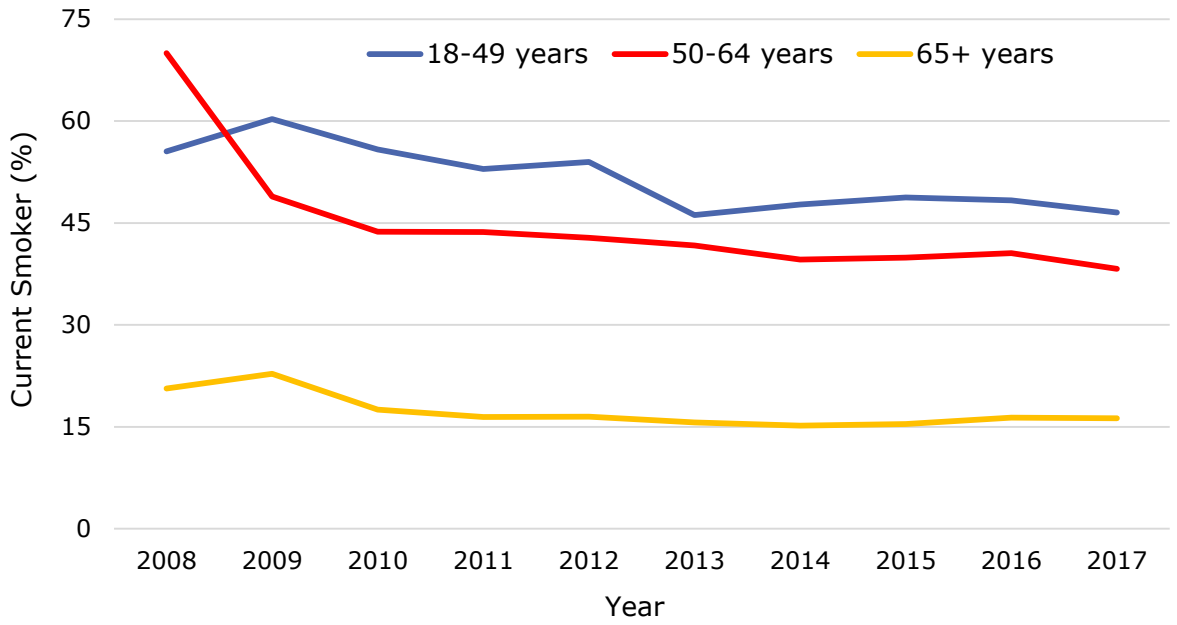

Figure 11. Trend in Prevalence of Current Smoking Among Eligible Heart Attack Cases, by Age Group, 2008-2017

The prevalence of current smoking is much lower among heart attack cases ages 65 years and older than among the younger age groups. For all age groups, the prevalence of current smoking declined between 2008 and 2017, with the greatest decline seen among those ages 50-64 years (down 46%, from 70 in 100 cases to 38 in 100 cases). For those ages 18-49 years, the rate decreased 16% (from 56 in 100 cases to 47 in 100 cases), and decreased 24% among those ages 65 and older (from 21 in 100 cases to 16 in 100 cases).

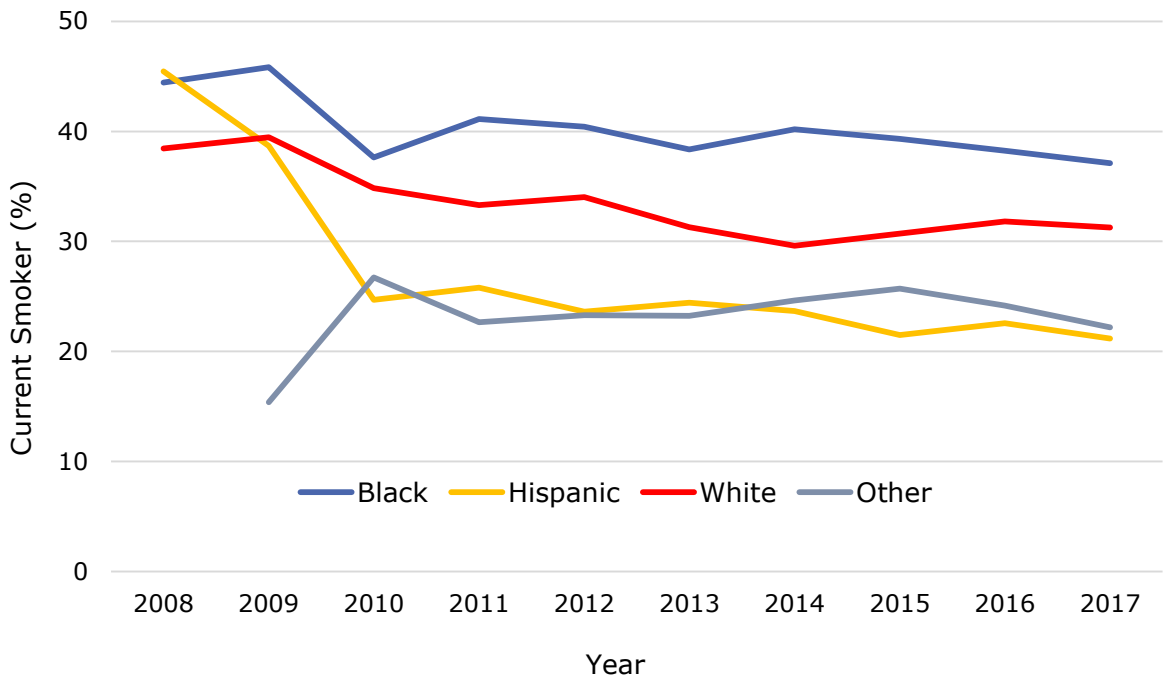

Figure 12. Trend in Prevalence of Current Smoking among Eligible Heart Attack Cases, By Race, 2008-2017

Current smoking is highest among Black heart attack cases, followed by Whites, then Hispanic and "Other". Over time, the prevalence of current smoking has decreased by 53% among Hispanic cases, from 45 in 100 in 2008 to 21 in 100 in 2017. Over the same time, the rate among Blacks has dropped from 44 in 100 to 37 in 100, a 16% decrease. Among Whites, the rate dropped from 38 in 100 to 31 in 100, an 18% decrease. Among "Other", the rate climbed from 15 in 100 in 2009 to 22 in 100 in 2017 (a 47% increase).

DYSLIPIDEMIA HISTORY

Dyslipidemia is defined as having total cholesterol >200 mg/dL, a low density lipoprotein (LDL) ≥130 mg/dL, or a high density lipoprotein (HDL) <40 mg/dL.

Table 6. Prevalence of Dyslipidemia Among Eligible Heart Attack Cases, By Year, 2008-2017

Year	Eligible Cases	Dyslipidemia		Reporting Hospitals
	N=54,071	n=32,981	%	N
2008	111	91	82.0%	1
2009	796	539	67.7%	6
2010	2,977	1829	61.4%	22
2011	4,898	3181	64.9%	26
2012	6,065	3795	62.6%	34
2013	6,603	3893	59.0%	34
2014	7,509	4481	59.7%	41
2015	8,002	4773	59.6%	44
2016	8,874	5421	61.1%	46
2017	8,236	4978	60.4%	46

The prevalence of dyslipidemia as a pre-existing condition fell from 82 in 100 cases in 2008 to 68 in 100 cases in 2009. Since 2009, the rate has remained fairly stable, affecting 60 in 100 cases in 2017.

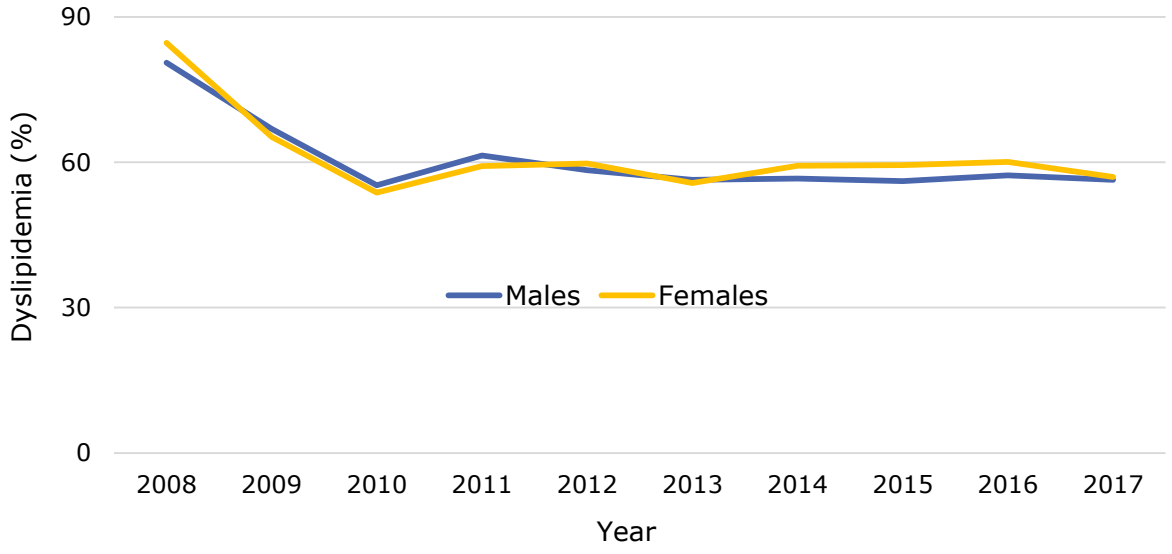

Figure 13. Trend in Prevalence of Dyslipidemia Among Eligible Heart Attack Cases, By Sex, 2008-2017

The prevalence of dyslipidemia does not vary significantly by sex. For both males and females, the rate has dropped over time, from approximately 82 in 100 cases in 2008 to 57 in 100 cases in 2017, a 30% decrease.

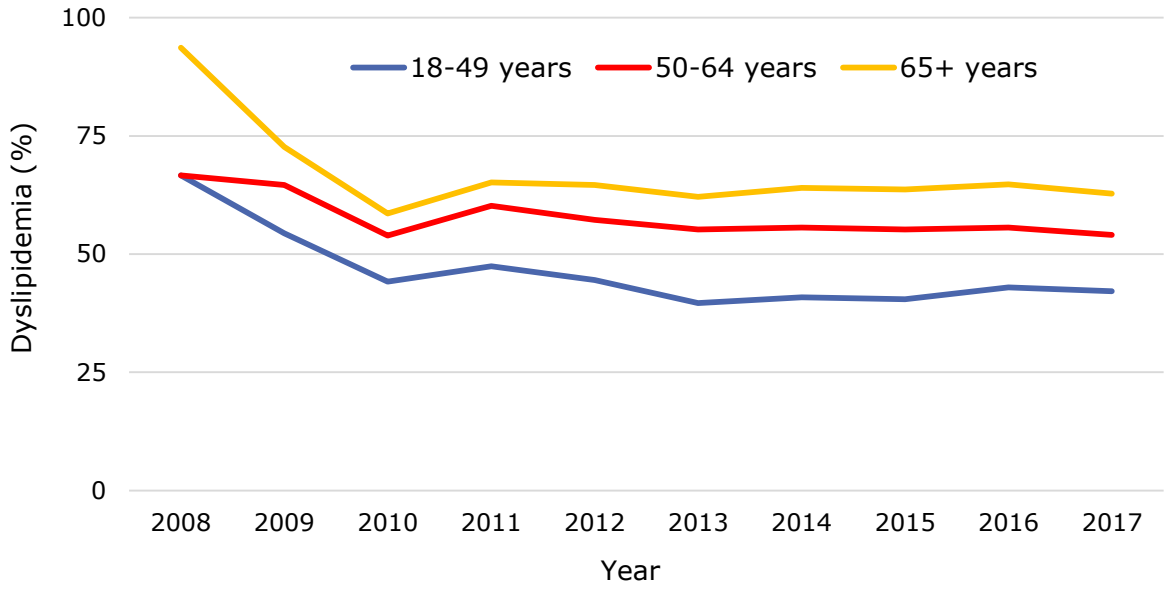

Figure 14. Trend in Prevalence of Dyslipidemia among Eligible Heart Attack Cases, By Age Group, 2008-2017

Dyslipidemia is most common among heart attack cases ages 65 years and older, followed by those ages 50-64 years, and is lowest among those ages 18-49 years. Rates have declined over time for all age groups. From 2008 to 2017, the prevalence among those ages 65 and older fell from 92 in 100 to 63 in 100, a 32% decrease. Over the same time, the rate among cases ages 50-64 years fell from 67 in 100 to 54 in 100, a 19% decrease. The rate for cases ages 18-49 years fell from 67 in 100 to 42 in 100, a 37% decrease.

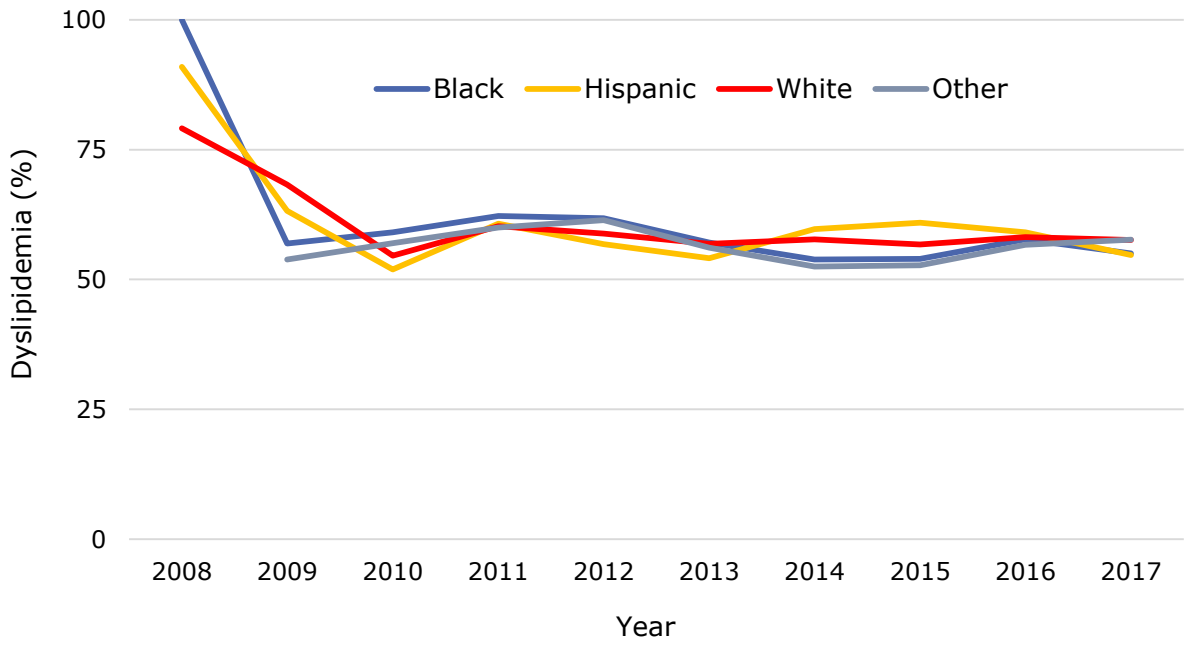

Figure 15. Trend in Prevalence of Dyslipidemia Among Eligible Heart Attack Cases, By Race, 2008-2017

In 2008, the prevalence of dyslipidemia was highest for Black heart attack cases (100 in 100), followed closely by Hispanics (91 in 100), and was lowest for Whites (79 in 100). Since then, the rates for all race groups have declined. Despite some annual fluctuations, there has been very little difference in the prevalence of dyslipidemia by race group since 2010, with a 2017 prevalence of approximately 56 per 100 cases.