

# Trends in LDL Cholesterol Levels Among Medicare Advantage Beneficiaries: 2015–2024

Katherine Jefferson, MS  
 Russ Michael, MS  
 Andrea DeVries, PhD  
 Jonathan Kuhn, PhD  
 Gosia Sylwestrzak, MA  
 Rebecca Cobb, MS



## Background

- Guideline adherence to low-density lipoprotein cholesterol (LDL-C) levels is crucial to cardiovascular management.
- Prior research has shown improvements in LDL-C control in the US from increased statin use and available treatments.
- Recent data on population LDL-C trends remain limited, particularly within Medicare Advantage (MA) populations that have unique care coordination and quality incentive structures.

## Objective

- This study evaluated population-level trends in LDL-C levels and achievement of guideline-recommended targets for general population (low-intermediate risk) among Medicare Advantage beneficiaries from 2015 to 2024.
- The analysis also evaluated differences in these trends by demographic subgroups, addressing gaps in recent evidence within MA populations.

## Population and Methods



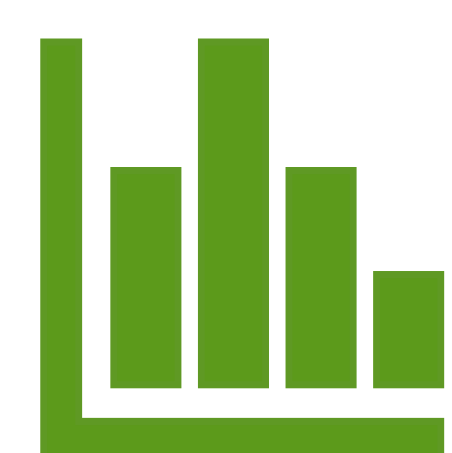
### Population

- MA beneficiaries aged 65–89 enrolled in a Humana MA plan with ≥1 LDL-C laboratory result
- N = 4,009,233 members



### Data

- Humana Healthcare Research Database
- LDL-C laboratory data (2015–2024)
- N = 14,073,129 observations



### Methods

- Population-level changes in LDL-C using linear regression with a calendar-year time trend
- Risk-adjusted for member-level age, sex, race, geographic region, dual eligibility status, and number of annual LDL-C laboratory tests



### Outcomes

- Annual mean LDL-C levels
- Proportion of members with annual mean LDL-C level meeting guideline-recommended targets (<100 mg/dL)



- Models were estimated using generalized estimating equations (GEE) to account for correlation from repeated LDL-C measurements within members



- Analyses were conducted separately by sex, age group (65–74, 75–84, ≥85 years), race (White, Black, Other), and dual eligibility

## Results

### Key Findings

- Across the MA population, mean LDL-C levels declined while proportion with mean LDL-C levels meeting guideline-recommended targets increased, both at modest but meaningful rates, suggesting gradual improvement in lipid management over the past decade.
- Trends in LDL-C levels improved over time across demographic subgroups, including sex, race, dual eligibility status, and age groups, indicating broad improvements in lipid management within the MA population.

Figure 1. Annual Trends in Mean LDL-C (mg/dL), 2015–2024

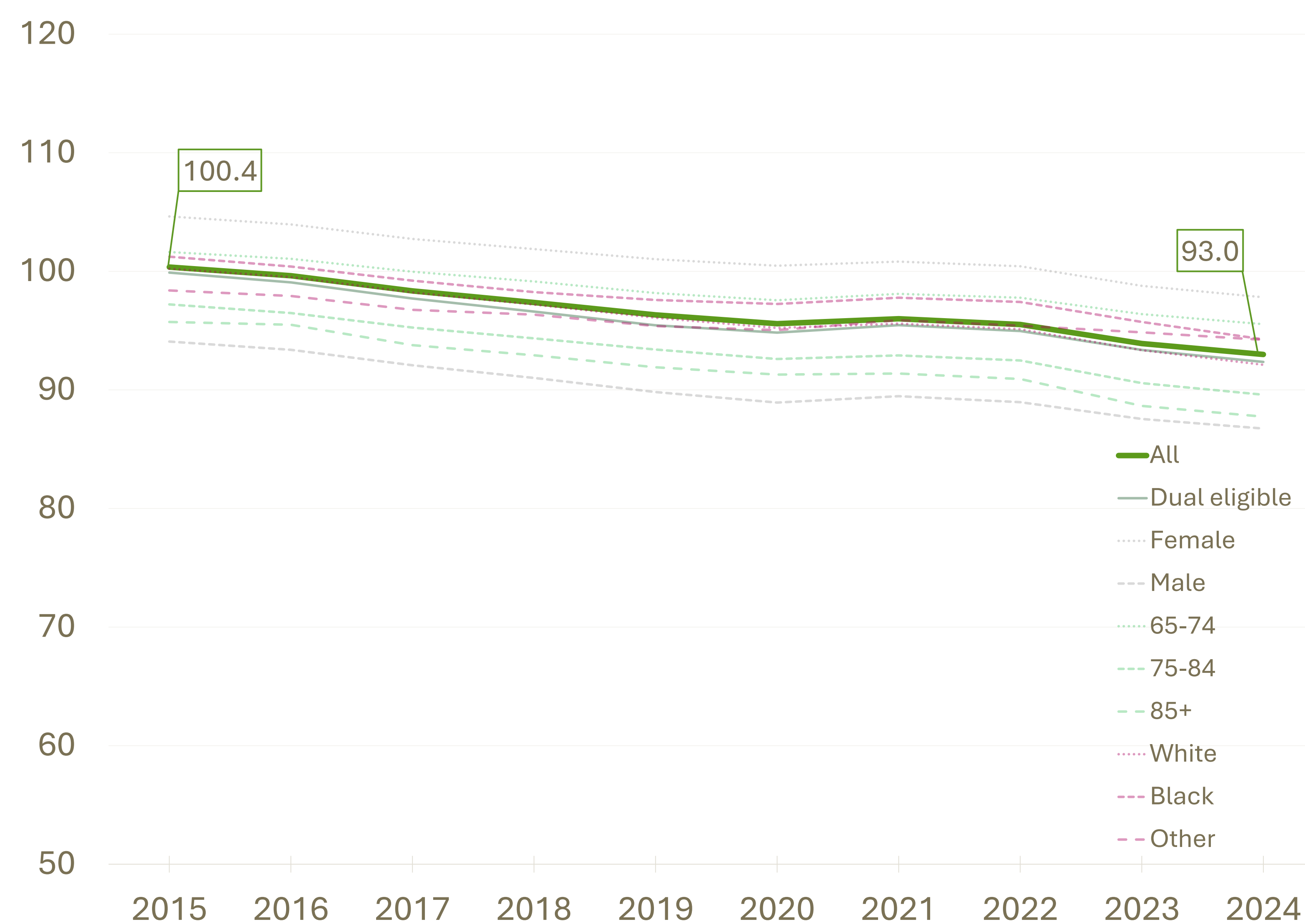


Table 1. Adjusted Results, LDL-C Levels

	Overall Mean LDL-C (mg/dL), 2015–2024	Adjusted Annual Change in LDL-C (mg/dL per Year)	Adjusted Relative Change in LDL-C Over 10 Years (%)
All	95.1	-0.62	-6.2%
Dual eligible	94.3	-0.67	-6.7%
Female	99.9	-0.60	-5.7%
Male	88.7	-0.66	-7.0%
65–74	97.4	-0.54	-5.3%
75–84	91.8	-0.76	-7.8%
85+	89.8	-0.75	-7.8%
White	94.6	-0.68	-6.8%
Black	96.3	-0.61	-6.0%
Other	95.1	-0.30	-3.0%

All adjusted annual change estimates are statistically significant at p < 0.001. Relative change over 10 years is calculated as the 10-year adjusted annual change relative to the 2015 mean LDL-C level.

Figure 2. Annual Trends in Proportion of Members Meeting LDL-C Guideline Targets (%), 2015–2024

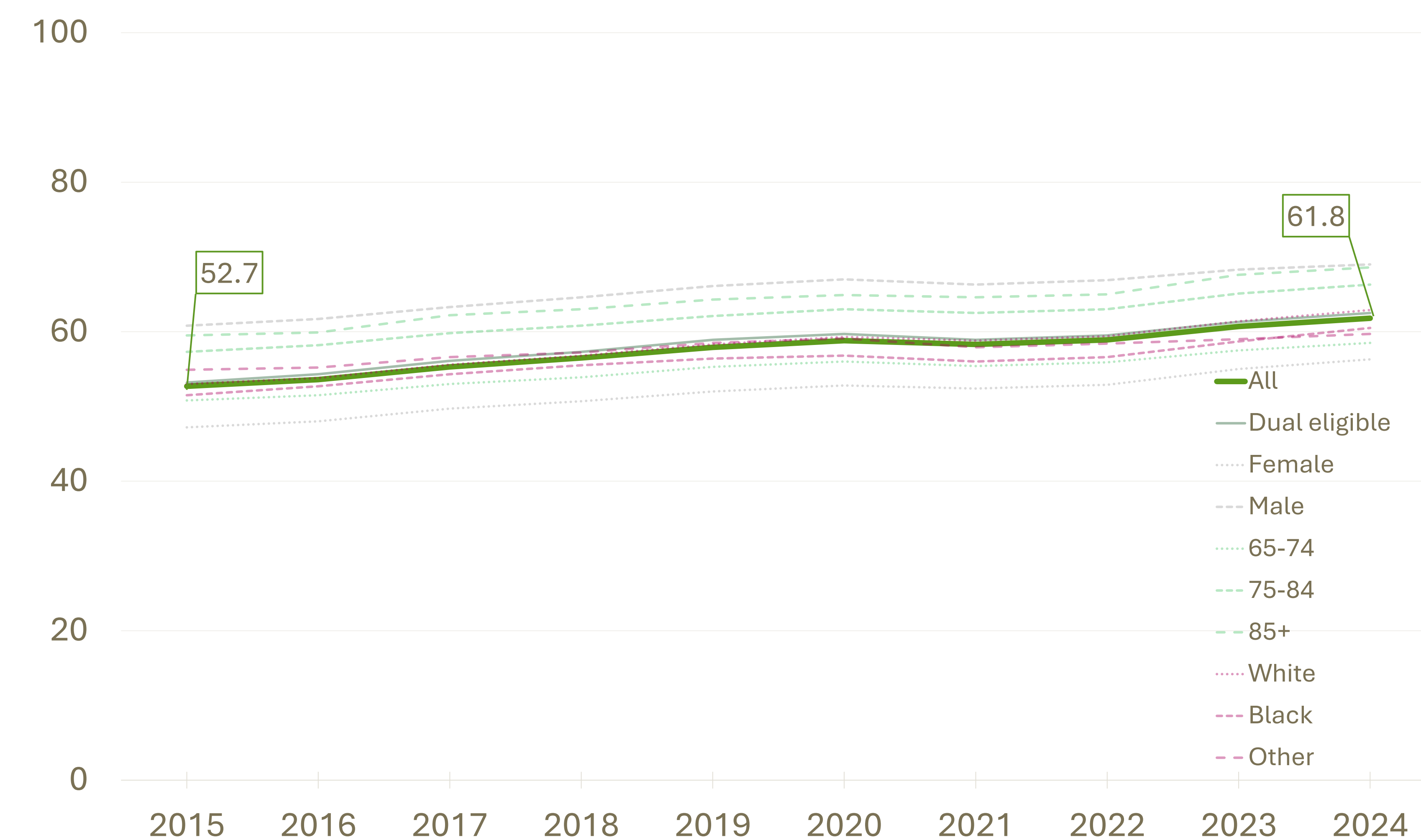


Table 2. Adjusted Results, Proportion with LDL-C <100 mg/dL

	Overall Mean Proportion with LDL-C <100 mg/dL (%), 2015–2024	Adjusted Annual Change in Proportion with LDL-C <100 mg/dL (Percentage Points per Year)	Adjusted Relative Change in Proportion with LDL-C <100 mg/dL Over 10 Years (%)
All	58.3	0.75	14.1%
Dual eligible	60.1	0.81	15.2%
Female	53.5	0.80	16.9%
Male	67.0	0.68	11.3%
65–74	56.2	0.68	13.4%
75–84	63.8	0.86	15.0%
85+	66.4	0.78	13.1%
White	59.9	0.80	15.1%
Black	57.9	0.77	15.0%
Other	58.8	0.35	6.4%

All adjusted annual change estimates are statistically significant at p < 0.001. Relative change over 10 years is calculated as the adjusted annual change projected over 10 years relative to the 2015 mean proportion achieving LDL-C <100 mg/dL.

## Results

- From 2015 to 2024, overall adjusted mean LDL-C levels declined 6.2%, from 100.4 mg/dL to 93.0 mg/dL.
- Adjusted mean LDL-C levels declined in each age group, sex, racial group, and dual eligibility category over time.
  - Age: LDL-C declined across all age groups (65–74: 5.3%; 75–84: 7.8%; ≥85: 7.8%).
  - Sex: LDL-C declined among both females (5.7%) and males (7.0%).
  - Race: LDL-C declines were observed across racial groups, including White (6.8%), Black (6.0%), and Other race (3.0%) groups.
  - Dual eligibility: Dual-eligible members experienced a 6.7% decline in adjusted mean LDL-C.

- The adjusted proportion of members meeting guideline-recommended LDL-C targets increased 14.1%, rising from 52.7% in 2015 to 61.8% in 2024.
- Guideline attainment increased across all demographic subgroups, with the largest adjusted relative increases among females (16.9%) and dual-eligible members (15.2%).
- All percentage changes reported are adjusted estimates calculated relative to the 2015 mean value (overall or by demographic subgroup).

## Why It Matters

- These findings indicate sustained, population-wide progress in LDL-C control among older MA beneficiaries over the past decade, contributing new longitudinal evidence on cardiovascular management within the MA population.

## References

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