COLUMBIA DATA ANALYTICS

Real-world Effectiveness of Anti-obesity Pharmacotherapy in Medicare: Integrated 100% Fee-For-Service Claims and EMR Analysis of BMI Reduction and Cardiovascular Outcomes

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Background

Clinical Trials Underrepresent Medicare Patients

- Pivotal anti-obesity RCTs (STEP, SURMOUNT) enrolled younger, healthier populations.
- Adults ≥65 years and those with multimorbidity systematically underrepresented, yet have greatest burden of obesity-related cardiovascular (CV) disease
- Effectiveness in routine Medicare practice remains unquantified

EMR-linked Claims Unavailable for Medicare

- Commercial EMR-linked claims datasets exclude Medicare Fee-for-Service (FFS)
- Clinical effectiveness endpoints (BMI change, blood pressure, lipids, HbA1c) cannot be measured in the population most affected by obesity, leaving a critical evidence gap for payers and policymakers.

Real-world Adherence Drives Effectiveness

- Persistence with GLP-1 receptor agonists is far lower in routine care than in trials.
- Adherence-stratified comparisons are needed to translate trial-observed efficacy into real-world value and to inform reimbursement and benefit-design decisions.

This study addresses all three gaps using MELD™ — a Medicare-Enhanced Lab & Demographics dataset linking 100% CMS FFS claims to EMR vital signs and laboratory results

Data Source — MELD™

Medicare-Enhanced Lab and Demographics (MELD™) links 100% CMS Medicare Fee-for-Service (FFS) claims to lab results and EMR

Clinical Fields: Serial BMI, vitals, LDL/HDL, triglycerides, HbA1c, eGFR, LVEF, ICD-10-coded outcomes

MELD™ dataset

America's Most Complete Elder Health Data Set

60M+ **Total MELD unique patients**	**45M+** **Patients with clinical activity**	**2B+** **Distinct patient notes**
1B+ **Total visits**	**241K+** **Healthcare practitioners**	**24 mo** **Follow-up (this study)**

5-Year Period Q1 2020 – Q4 2024 | Ozempic (n=38,743) vs nonpharmacologic comparator (n=1,145,157), 24-month follow-up

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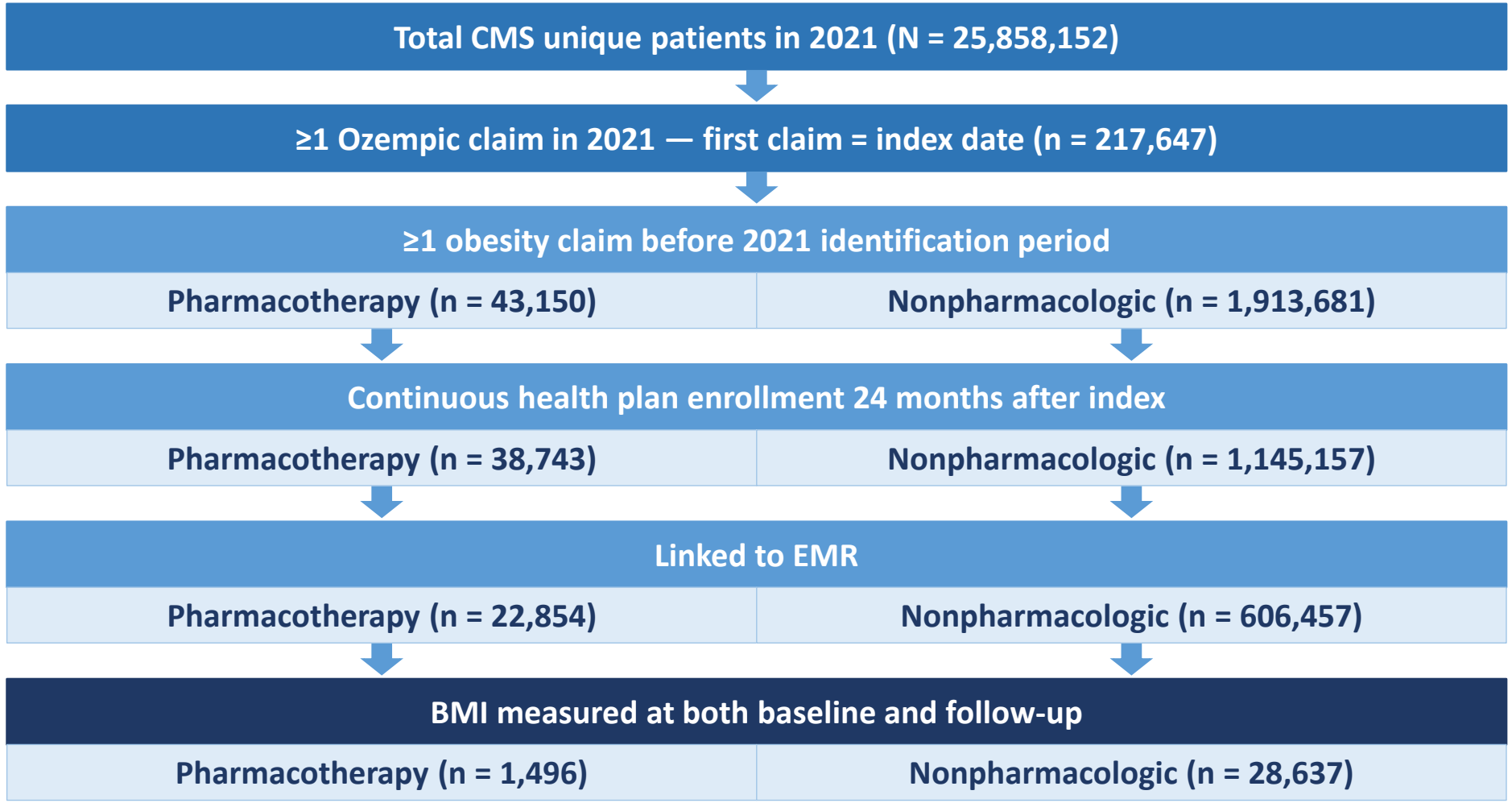
Study Attrition – Ozempic Pathway



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Baseline Characteristics

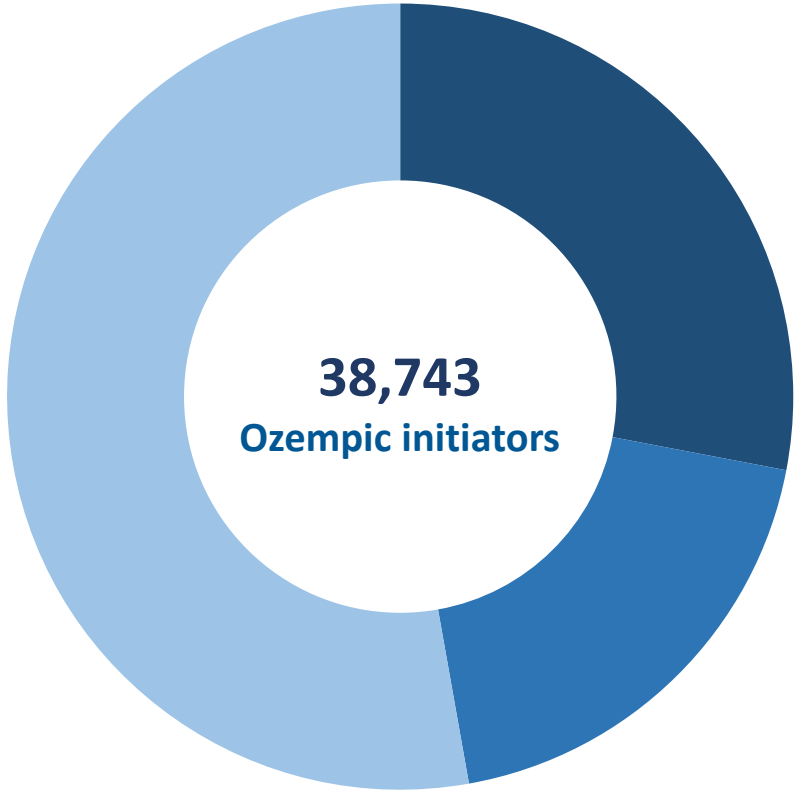
Characteristic	Ozempic Cohort (n=38,743)	Nonpharmacologic Cohort (n=1,145,157)	Std. diff.	p-value
Demographics				
Age, years, mean, SD	65.5 (10.93)	69.13 (11.73)	0.31	<0.0001
Age <75, n, %	32,106 (82.9%)	790,484 (69.0%)	0.30	<0.0001
Age ≥75, n, %	6,623 (17.1%)	354,673 (31.0%)	0.30	<0.0001
Female, n, %	21,842 (56.4%)	660,135 (57.6%)	0.03	<0.0001
Race / Ethnicity, n, %				
White	30,405 (78.5%)	929,789 (81.2%)	0.07	<0.0001
Black	4,649 (12.0%)	132,287 (11.6%)	0.01	0.01
Other	3,675 (9.5%)	83,081 (7.3%)	0.09	<0.0001
Clinical, n, %				
Elixhauser Index score ≥2	25,638 (66.2%)	686,985 (60.0%)	0.13	<0.0001

OZEMPIC-treated cohort was younger and had higher Elixhauser index burden

Adherence Distribution – OZEMPIC Cohort

Persistence with Semaglutide Among Medicare FFS Initiators (n = 38,743)

Adherence defined as PDC ≥80% over the persistence window. Categories are mutually exclusive.



44.5% — **2-Year Adherent**
n = 17,255 of 38,743

11.0% — **1-Year Adherent (only)**
n = 4,275 of 38,743

44.4% — **Non-Adherent**
n = 21,488 of 38,743

~28% of initiators sustained PDC ≥80% across 24 months

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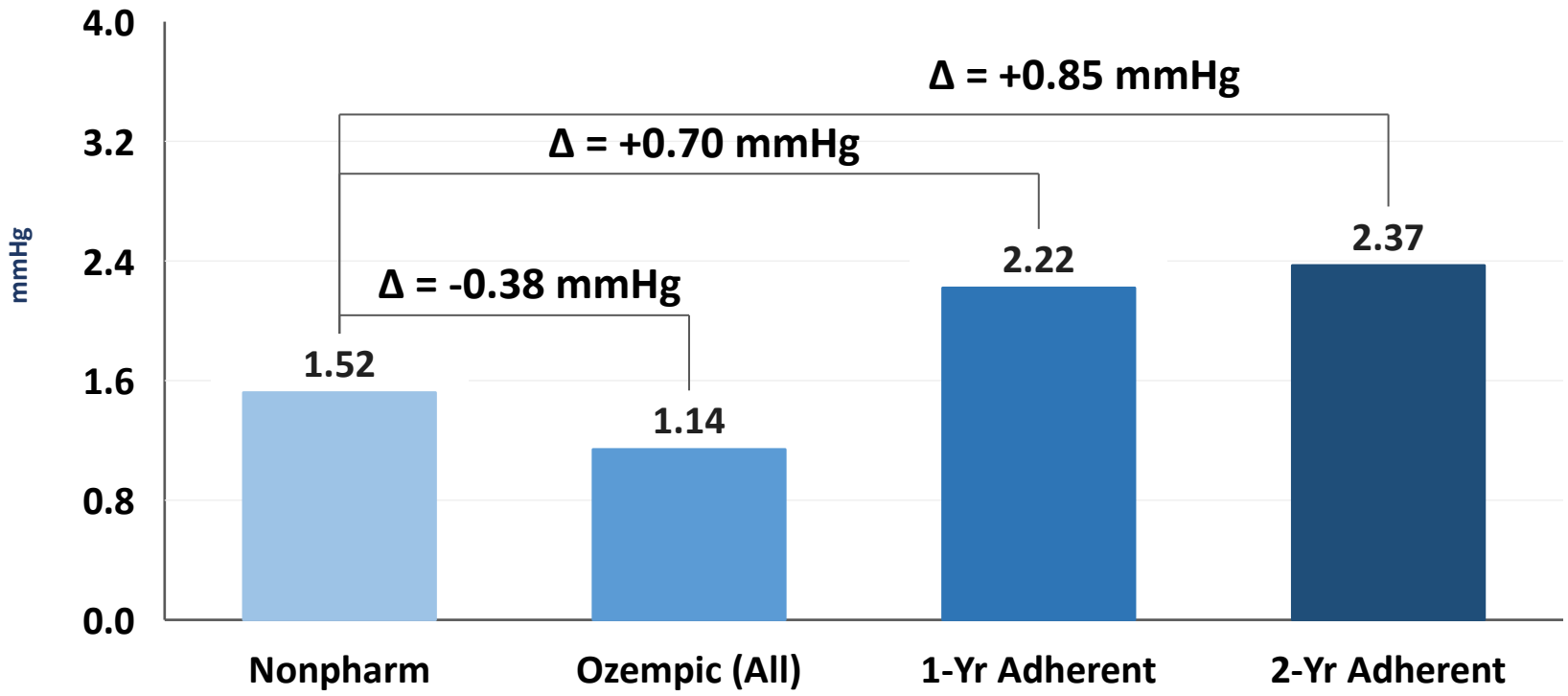
Outcome — Systolic Blood Pressure

Mean Reduction in Systolic Blood Pressure at 24 Months (mmHg)



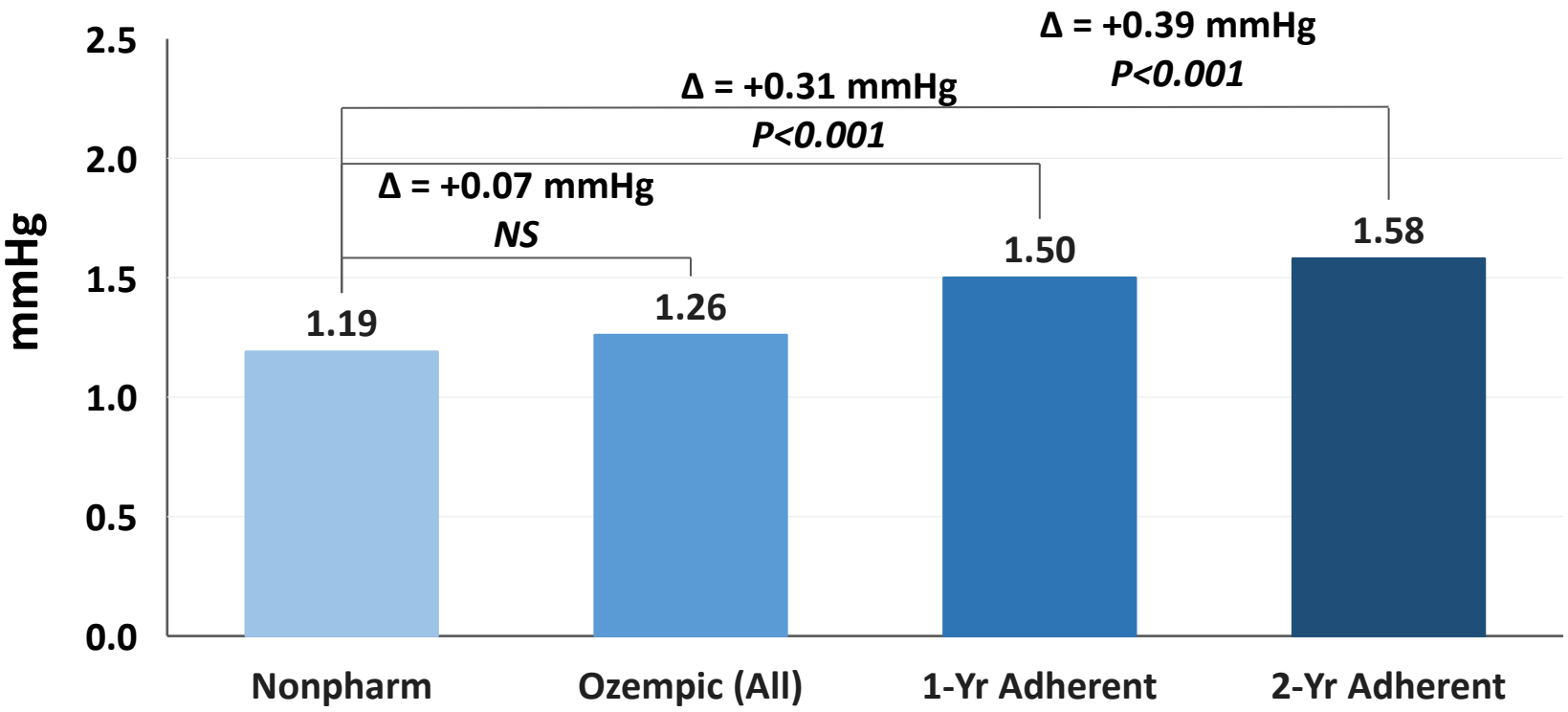
Key Takeaway

- 2-year adherent Ozempic users achieved a 2.37 mmHg mean SBP reduction
- 56% greater than nonpharmacologic management

Adjusted for age, sex, race, Elixhauser score.

Outcome – Diastolic Blood Pressure

Mean Reduction in Diastolic Blood Pressure (DBP) at 24 Months (mmHg)



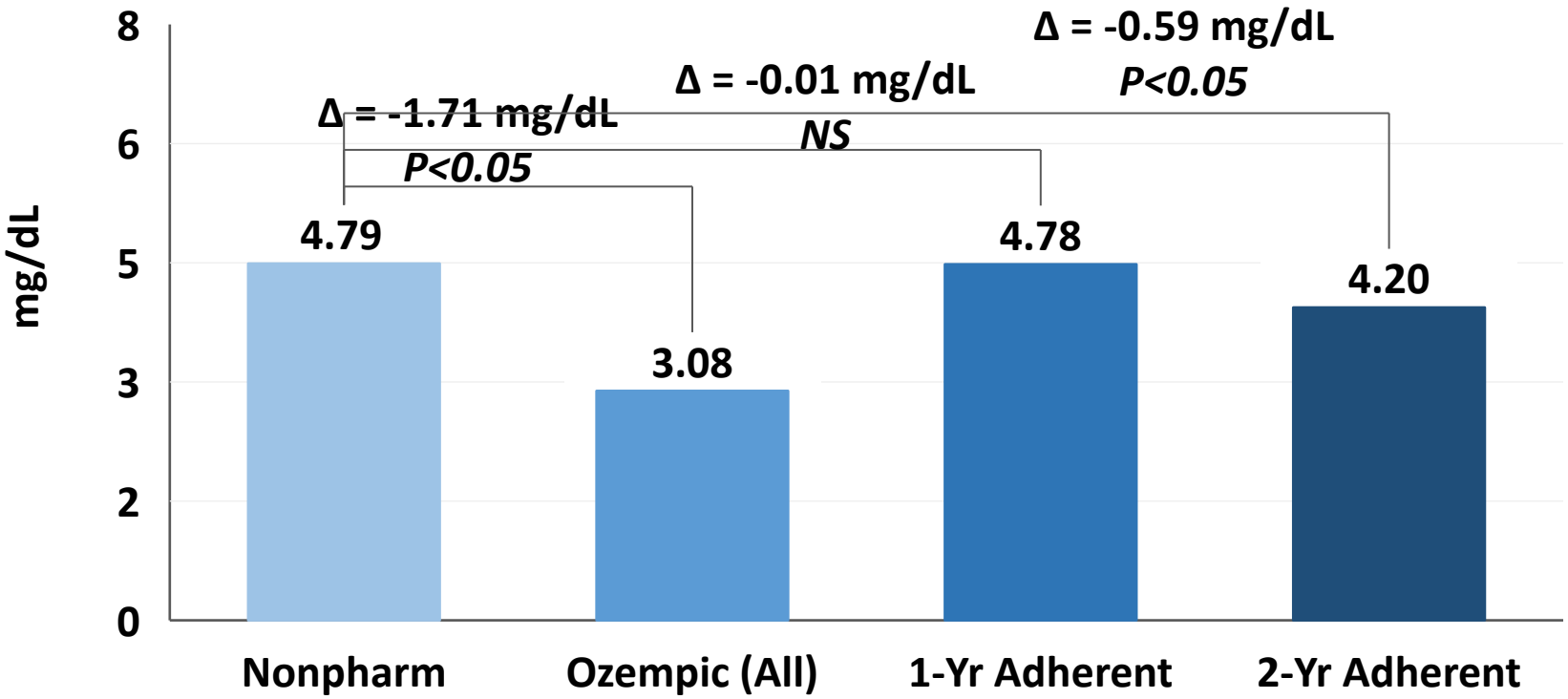
Adjusted for age, sex, race, Elixhauser index score

Key Takeaway

- 2-year adherent users reduced DBP by 1.58 mmHg
- 33% greater than nonpharmacologic comparators (1.19 mmHg)

Outcome – LDL Cholesterol

Mean Reduction in LDL Cholesterol at 24 Months (mg/dL)



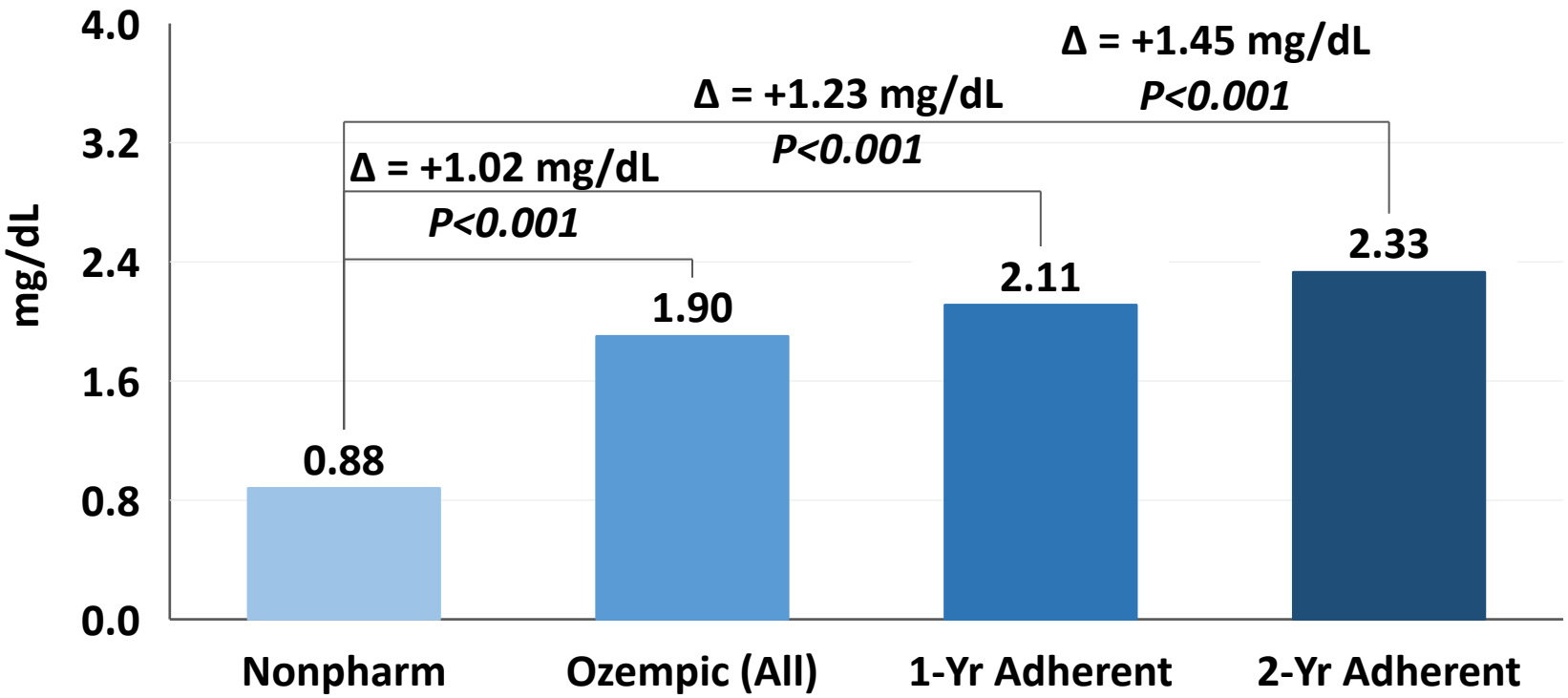
Adjusted for age, sex, race, Elixhauser index score.

Key Takeaway

- Adherent users matched the nonpharmacologic group on LDL reduction
- Differences are smaller than for BP/HbA1c, likely reflecting concurrent statin use across cohorts

Outcome – HDL Cholesterol

Mean Increase in HDL Cholesterol at 24 Months (mg/dL)



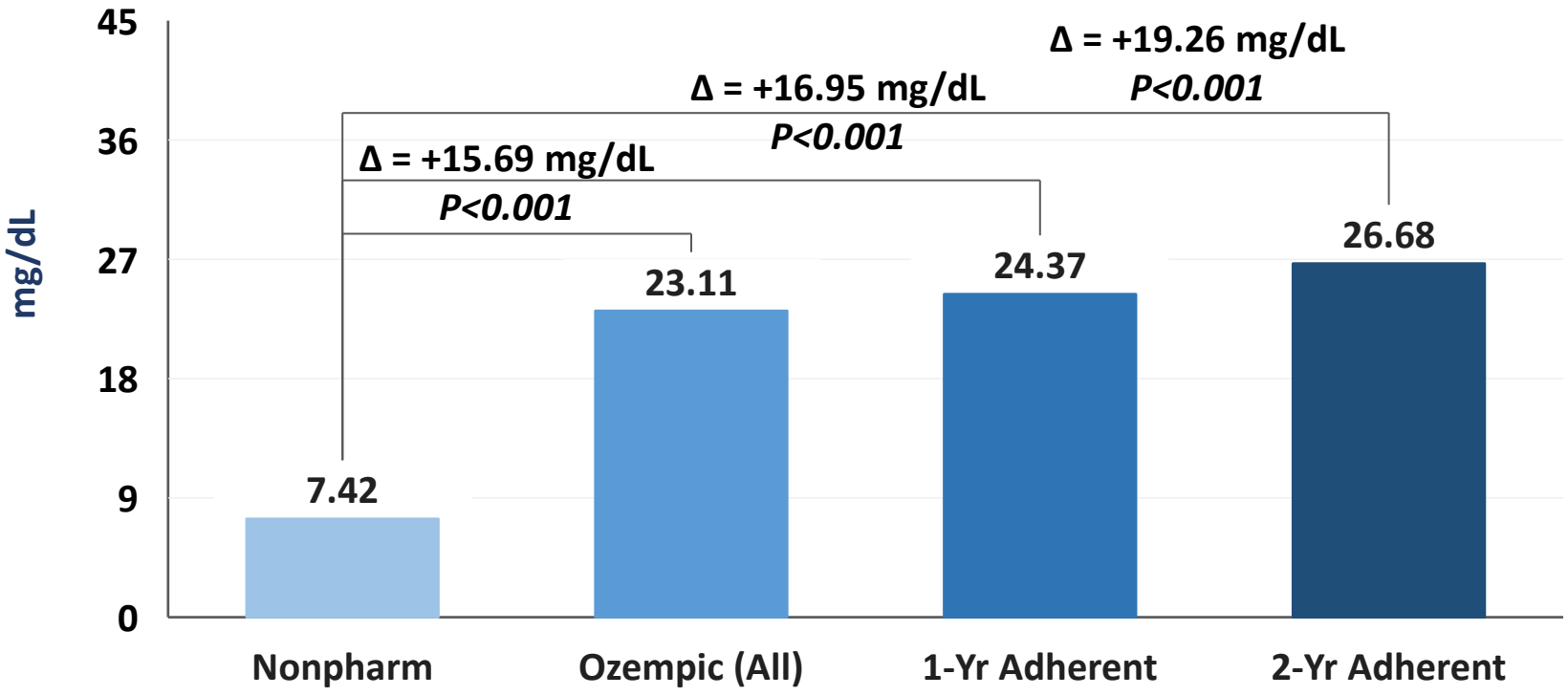
Key Takeaway

- 2-year adherent users raised HDL by 2.33 mg/dL
- 2.6× the increase observed with nonpharmacologic management.
- Improvements scale monotonically with adherence.

Source: MELD™ analytic file, 2021–2024. Adjusted for age, sex, race, Elixhauser score.

Outcome - Triglycerides

Mean Reduction in Triglycerides at 24 Months (mg/dL)



Key Takeaway

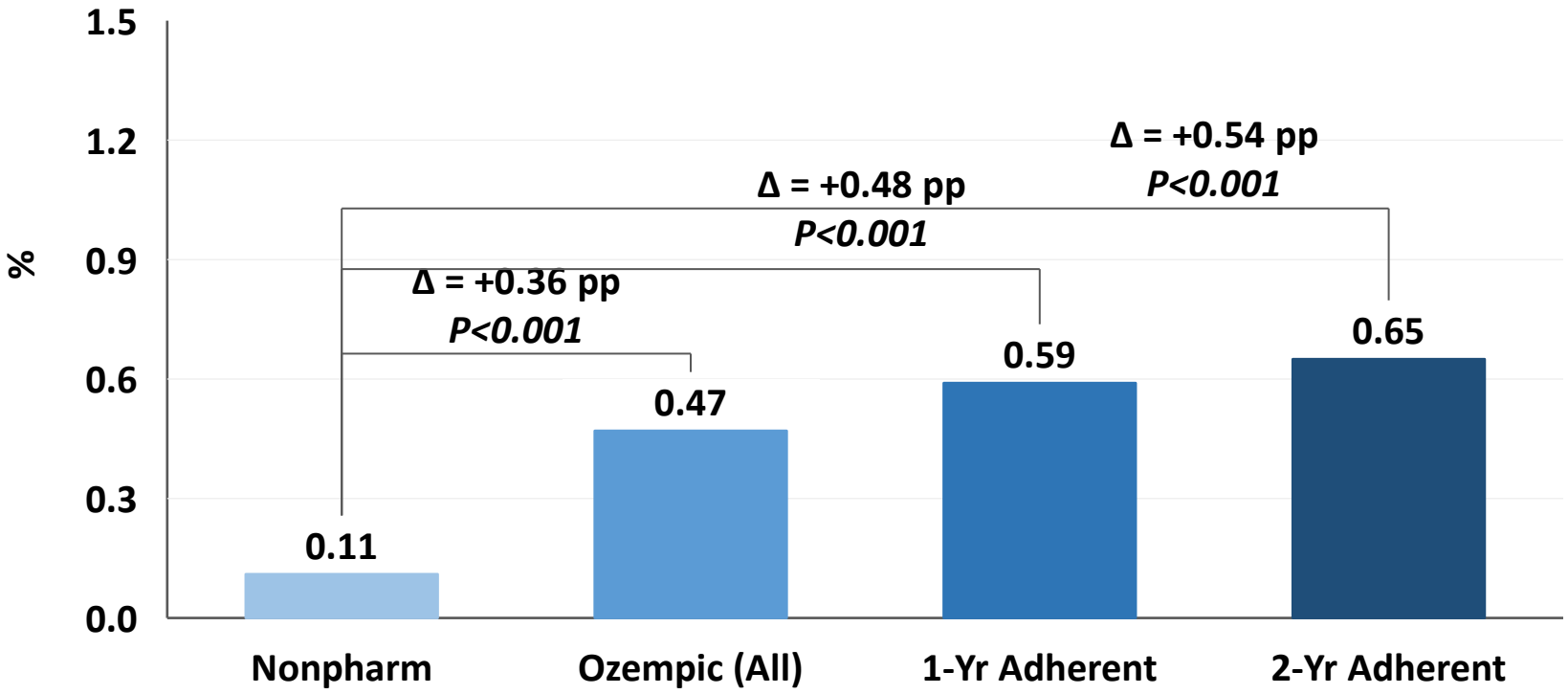
Largest absolute effect:

- 2-year adherent users reduced triglycerides by 26.68 mg/dL
- 3.6× the nonpharmacologic comparator.
- All Ozempic groups substantially outperformed comparator

Source: MELD™ analytic file, 2021–2024. Adjusted for age, sex, race, Elixhauser index score.

Outcome – HbA1c

Mean Reduction in HbA1c at 24 Months (pp)



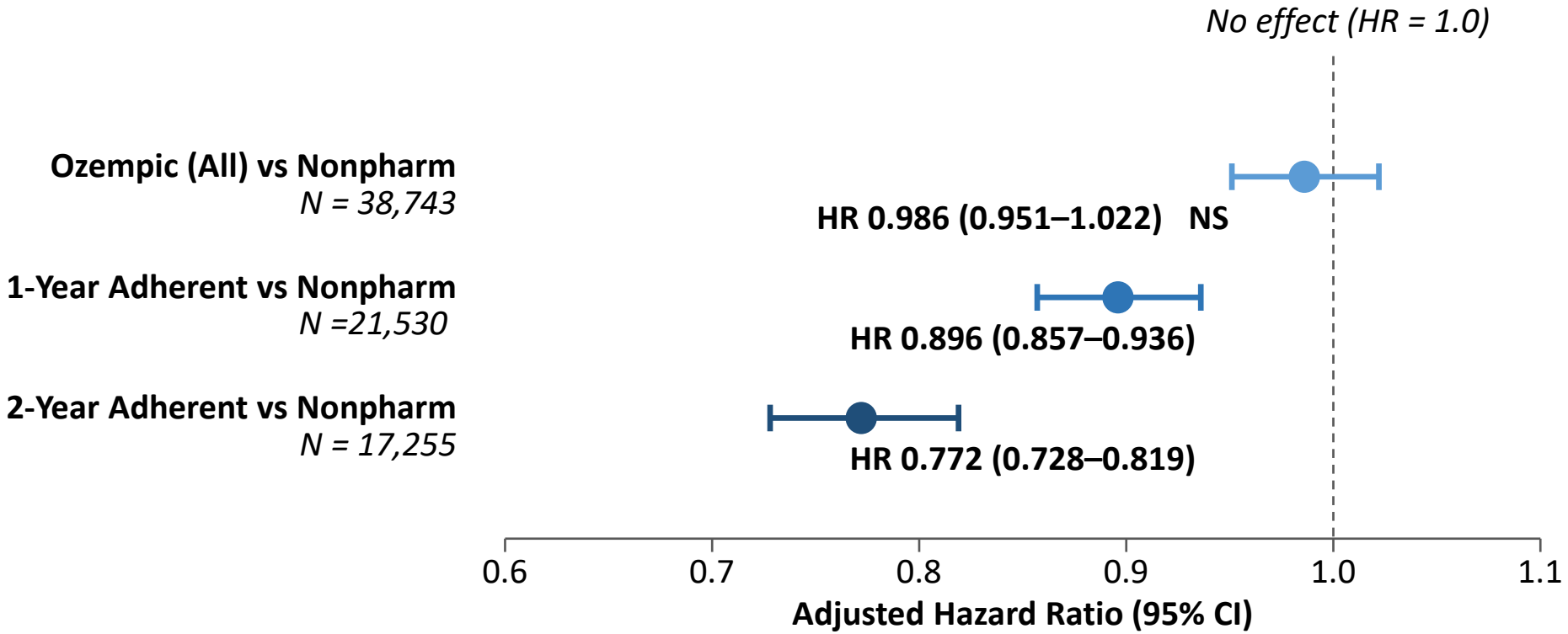
Key takeaway

- 2-year adherent users reduced HbA1c by 0.65 percentage points
- Nearly 6× the reduction in the nonpharmacologic group
- Clinically meaningful glycemic improvement

Source: MELD™ analytic file, 2021–2024. Adjusted for age, sex, race, Elixhauser index score.

Cardiovascular Outcomes - MACE

Adjusted Hazard Ratio of MACE (Cox proportional hazards model)

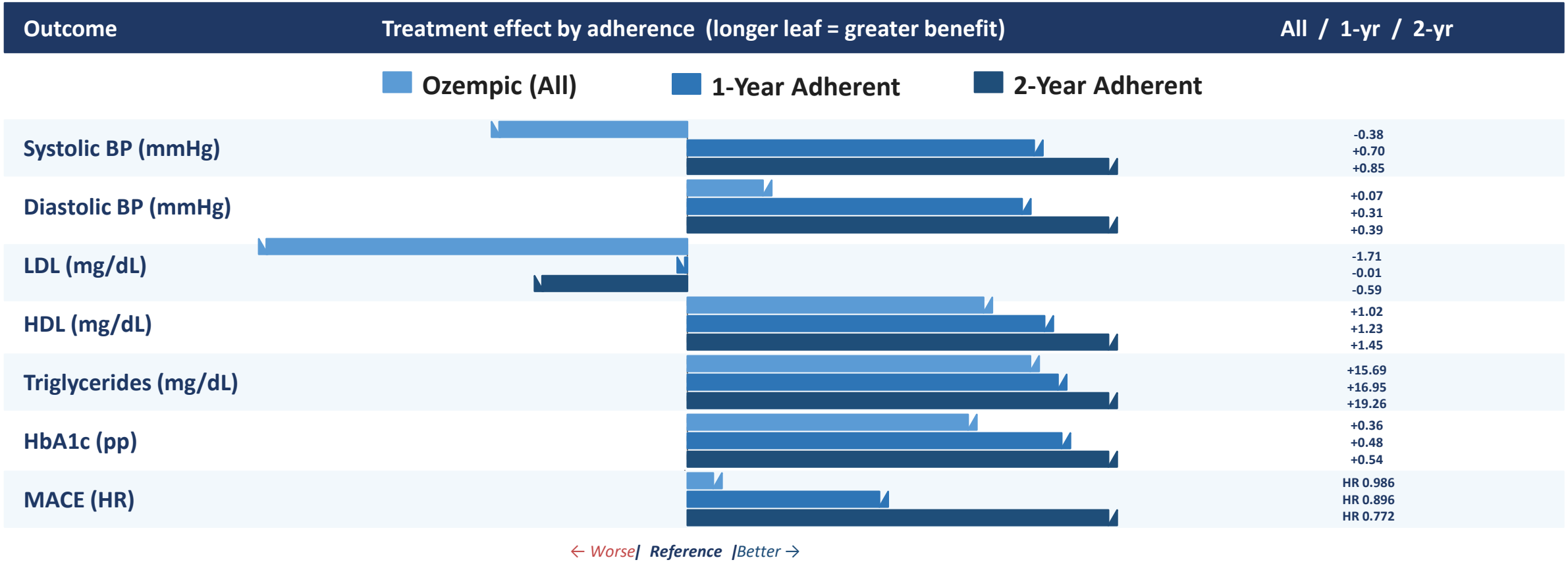


Dose-response with adherence: Overall Ozempic users had MACE risk similar to nonpharmacologic management, but 1-year and 2-year adherent users had 10.4% and 22.8% lower MACE risk, respectively.

Reference: Nonpharmacologic comparator (HR = 1.00). Adjusted for age, sex, race, Elixhauser score.

Effect Summary – Forest Plot

Adherence-stratified treatment effect by outcome (vs nonpharmacologic reference)

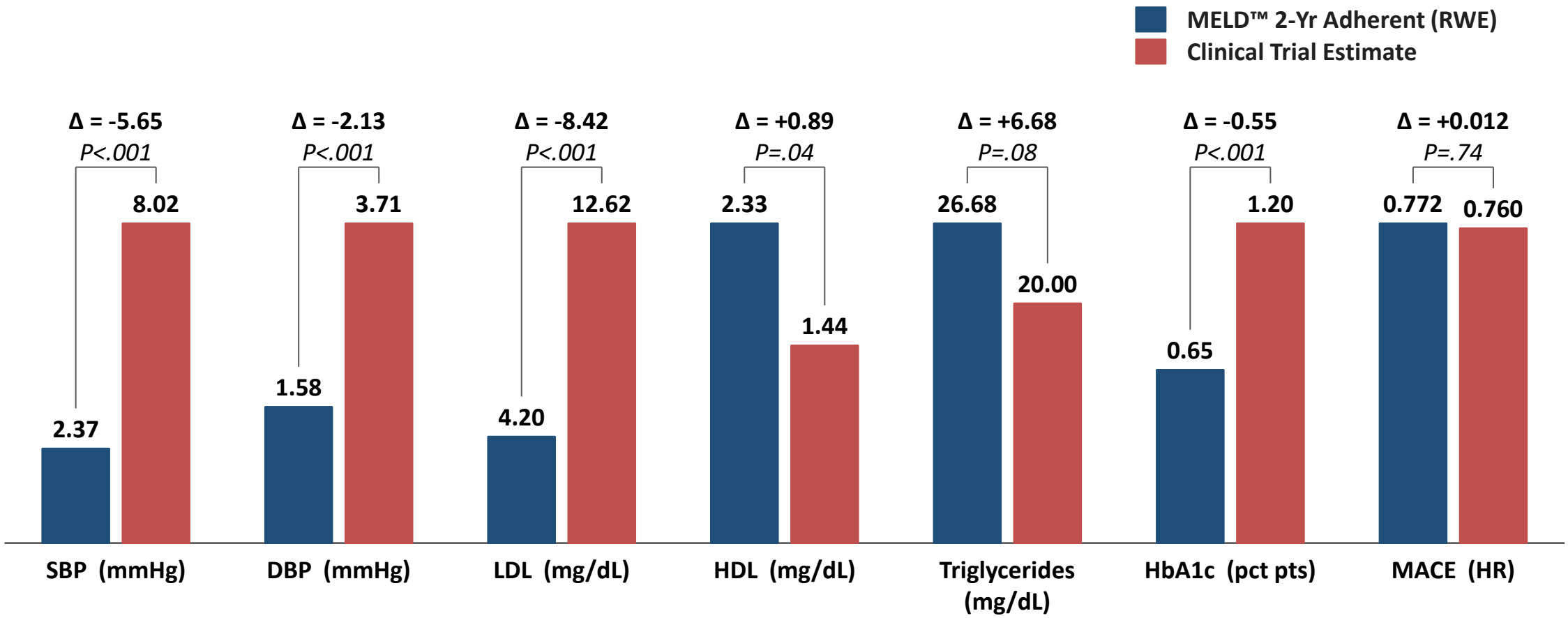


Source: MELD™ analytic file, 2021–2024. Per-row scale is relative to that row's largest effect; bars are not comparable across rows (different units).

Biomarker effect = Δ(Ozempic) − Δ(Nonpharm). MACE = adjusted HR; Stress test & LVEF = adjusted RR (1−HR/RR shown as benefit). Rightward leaf = clinical benefit.

Real-World 2-year Adherent vs Clinical Trial Estimates

Treatment Effect: Fully-adherent users (2-yr) vs pooled GLP-1 RCT estimates for semaglutide



Significance based on whether the RWE estimate falls within the trial 95% CI.

Conclusions

Clinically meaningful biomarker improvement

Ozempic-treated Medicare FFS beneficiaries achieved larger reductions in SBP, DBP, LDL, triglycerides, and HbA1c, and greater HDL increase, than nonpharmacologic comparators.

Adherence drives effectiveness

Improvements were substantially larger among 1-year and 2-year adherent patients, demonstrating a clear dose-response between persistence and clinical benefit.

Cardiovascular protection with sustained therapy

2-year adherent users had a 22.8% lower adjusted MACE hazard (HR 0.77), 48% lower risk of new abnormal stress tests (ARR 0.52), and 53% lower risk of LVEF worsening (ARR 0.47) vs nonpharmacologic management.

MELD™ enables Medicare-specific real-world evidence

100% CMS FFS claims linked to EMR fills a critical evidence gap, enabling clinical outcomes research in the population previously inaccessible to commercial EMR-linked datasets.

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