

Cost-Effectiveness of GLP-1 Receptor Agonists vs SGLT2 Inhibitors for Cardiovascular Protection Among U.S. Adults with Diabetes

Policy & Clinical Implications | MEPS 2022 Real-World Evidence

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Background

- Cardiovascular disease (CVD) is a leading cause of morbidity and mortality among diabetic patients.^[3]
- Diabetes considerably increases the risk of cardiovascular complications, **two times more for diabetic patients compared to nondiabetic patients.**^[3]
- Diabetes continues to increase as a **global prevalence**, to the extent that it is expected to reach **700 million by 2045**, so more tailored strategies might help in managing cardiovascular health in the diabetic population, and they are needed urgently.^[4]
- **GLP-1 receptor agonists (RAs) and SGLT2 inhibitors demonstrate cardiovascular benefits.**^[1,2]
- Despite therapeutic advances, **high drug costs** raise payer and policy concerns.
- **Real-world comparative cost-effectiveness** evidence remains limited.
- Policy decisions require value-based evidence beyond clinical trials.

Objectives & Perspectives

- **Primary Objective:** Evaluate the cost-effectiveness of GLP-1 RAs compared to SGLT2 inhibitors for cardiovascular protection among U.S. adults with diabetes.
- **Secondary Objective:** Assess healthcare expenditure differences and generate tailored policy recommendations for any marginalized groups.
- **Primary Perspective:** U.S. healthcare system perspective
- **Secondary Analysis:** Societal perspective

Methods

- Treatment Group:** GLP-1 RA users
- Control Group:** SGLT2 inhibitor users
- Data Merging:** MEPS 2022 (Full Year Consolidated + Prescribed Medicines)
- Diabetes Patients (USA)**
- Cardiovascular Events Measured:** Heart disease, stroke, and heart attack (MACE)
- Cost Measured:** Total Medical expenditure
- Key Metric:** ICER (Incremental Cost-Effectiveness Ratio)
- Methodology:** Propensity Score Matching, Cost-Effectiveness Analysis
- Sensitivity Analysis:** Bootstrap resampling (1,000 reps)

Key Results

Clinical Outcomes

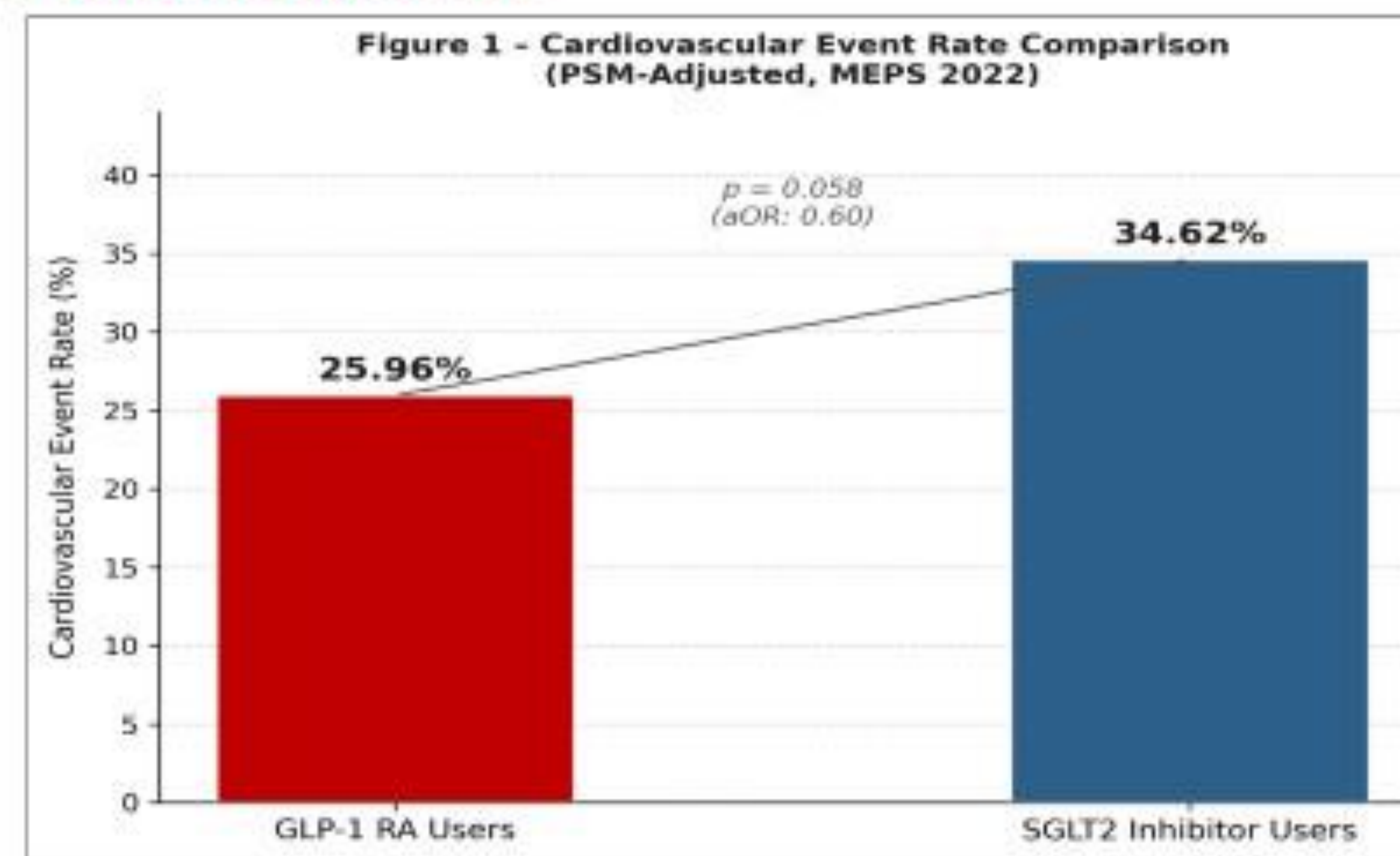


Figure 1 - Cardiovascular Event Rate Comparison

GLP-1 RA users showed a trend toward lower cardiovascular event rates compared with SGLT2 inhibitor users (25.96% vs. 34.62%), with adjusted odds 40% lower ($p = 0.058$).

Cost Outcomes

Real-world MEPS-based short-term horizon (12 months)

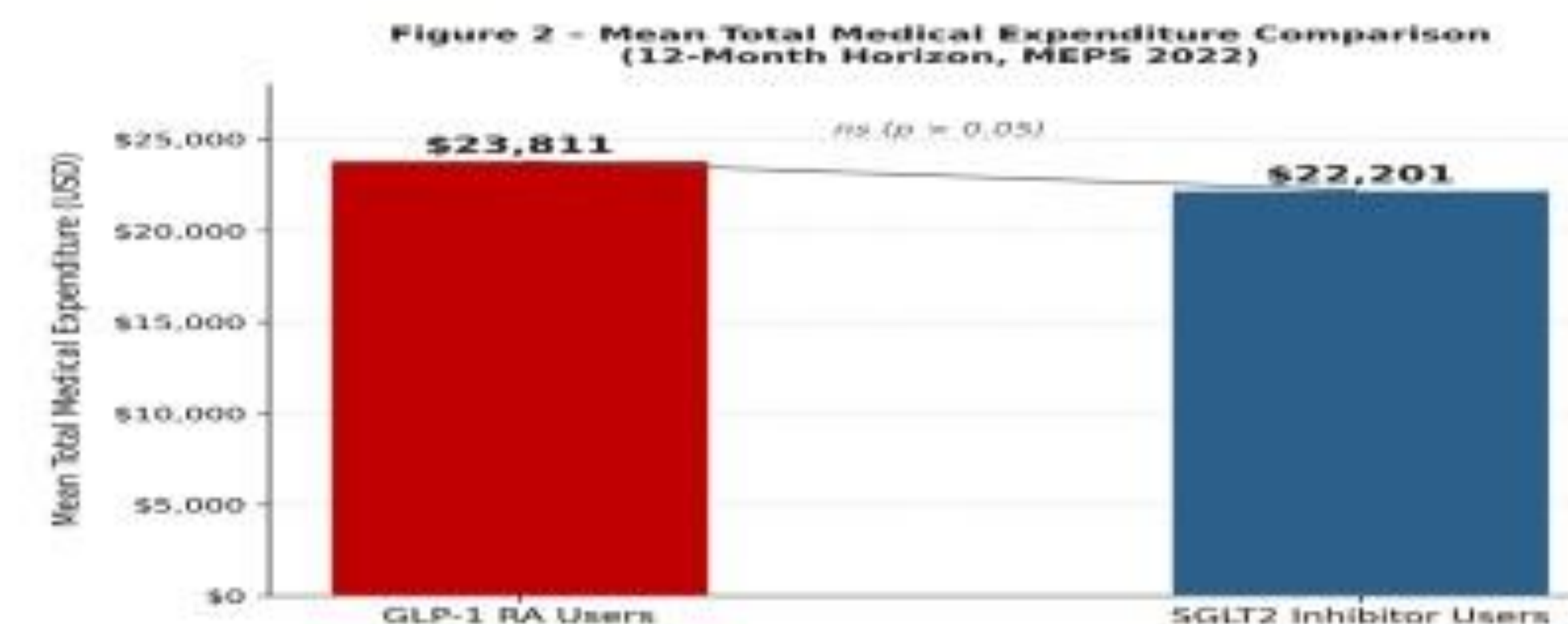


Figure 2 - Mean Total Medical Expenditure Comparison.

Mean total annual medical expenditure was higher among GLP-1 RA users (\$23,811) compared to SGLT2 users (\$22,201), though the difference was not statistically significant.

Incremental Cost-Effectiveness Ratio (ICER):
\$27,624 per cardiovascular event prevented
 (12-month real-world MEPS horizon)



- ICER suggests potential cost-effectiveness.
- Real-world MEPS-based ICER; short-term horizon (12 months).
- Age & BMI increase CV risk
- **Ethnic expenditure disparities observed.**

Clinical & Policy Implications

- Formulary prioritization of GLP-1 RAs, as Health insurers should consider GLP-1 RAs as preferred treatments, especially in patients with diabetes at risk of cardiovascular events. This would lead to better health outcomes with a relatively modest increase in costs.^[5]
- Public funding and subsidies should be directed towards expanding funding for GLP-1 RA treatments in the population with a high risk of cardiovascular diseases. Benefit in older & higher BMI patients.
- negotiating pricing agreements through outcomes-based contracts to decrease the financial risks.
- Equity adjustments through addressing lower expenditures among Hispanic and Asian patients, as a potential disparity in care access or quality.

Limitation

- The observational design of the study limits causal inference.
- MEPS data lack detailed clinical data, particularly information on HbA1c levels.
- There is uncertainty in long-term outcomes beyond trial duration.
- GLP-1 is presented in a dynamic market that results in evolving drug prices.

Conclusions

MEPS-based analysis indicates GLP-1 RAs are a cost-effective strategy for cardiovascular protection among adults with diabetes (targeted adoption), though further research is needed to refine these findings by including more years, sub-analyses, and other covariates.

Future Directions

- Explore for natural experiments.
- Expand multi-year longitudinal analysis.
- Address racial & income disparities.

References

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