

Treatment and Associated Outcomes of Type 2 Diabetes Mellitus Patients With a Cardiovascular Comorbidity and Comparison With Guideline Recommendations: A German Claims Data Analysis

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OBJECTIVES & METHODS

Type 2 diabetes mellitus (T2DM) is often accompanied by cardiovascular (CV) comorbidities. With this common disease pattern, treatment options and guidelines are well established. Rather little is known about the real-world implementation of these guidelines in daily practice in Germany. The observational study presented here aims to characterize the CV and anti-diabetic drug treatment of T2DM patients with an incident CV disease throughout Germany and to analyze adherence to respective clinical guidelines with respect to specific outcomes such as mortality, hospitalization rates, and associated costs. We used German claims data

(2015–2019) from the WIG2 benchmark database and selected (prevalent) T2DM patients with an (incident) CV comorbidity (ischemic stroke, myocardial infarction, heart failure, coronary artery disease). Adherence to T2DM^{1,2} and CV^{3–7} guidelines was defined as "completely adherent" or "non-adherent/untreated", as well as "partly adherent" for CV guidelines, based on prescriptions. Propensity score matching was performed to adjust for confounding. Time-to-event analyses based on a Kaplan-Meier methodology and log-rank tests were used to assess the association between guideline adherence and outcomes.

RESULTS

- 17,175 T2DM patients with an incident CV diagnosis were included in the study (Fig. 1).
- 41% of patients were treated according to CV guidelines (Fig. 2).
- Mortality was significantly higher if treated non-adherently to CV guidelines. Patients who died within 30 days after the index date were excluded to focus on effects of adherence to guideline recommendations on (long-term) drug treatment (Fig. 3).
- Hospitalization rates were significantly higher if treated according to CV guidelines, most likely due to more intensive monitoring (Fig. 4)

- Subpar adherence to CV guidelines was associated with higher average total costs to statutory health insurance of up to €1,679 per person-year, driven by inpatient costs (despite higher hospitalization rates) and outpatient costs (Fig. 5).
- T2DM guidelines were updated during the study period. As only few patients had already been treated according to these guidelines, corresponding results have solely informative purpose:
 - 5.4% of patients were treated according to T2DM guidelines (Fig. 6).*

Fig. 1: STUDY POPULATION

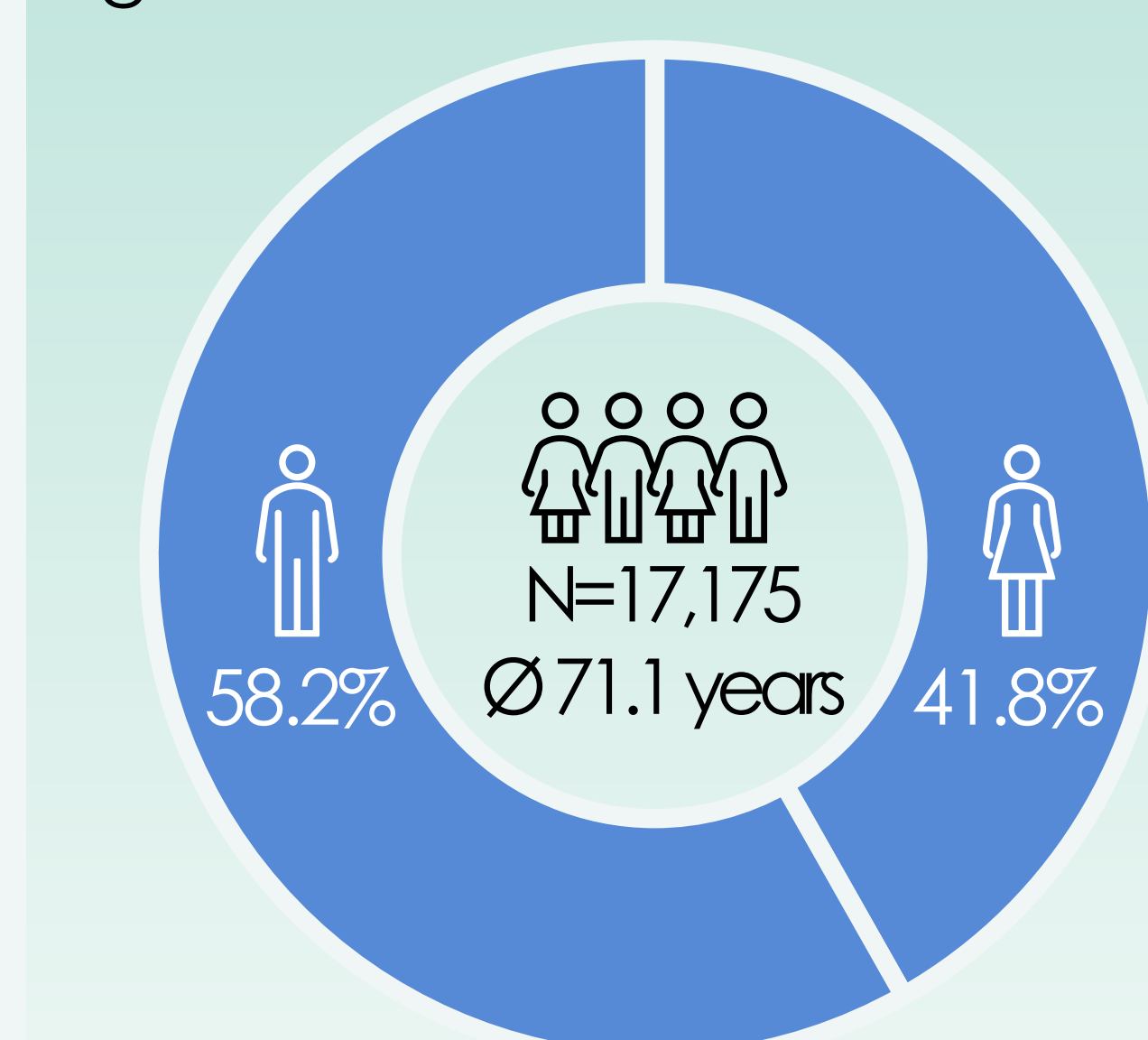


Fig. 2: GUIDELINE ADHERENCE – CV

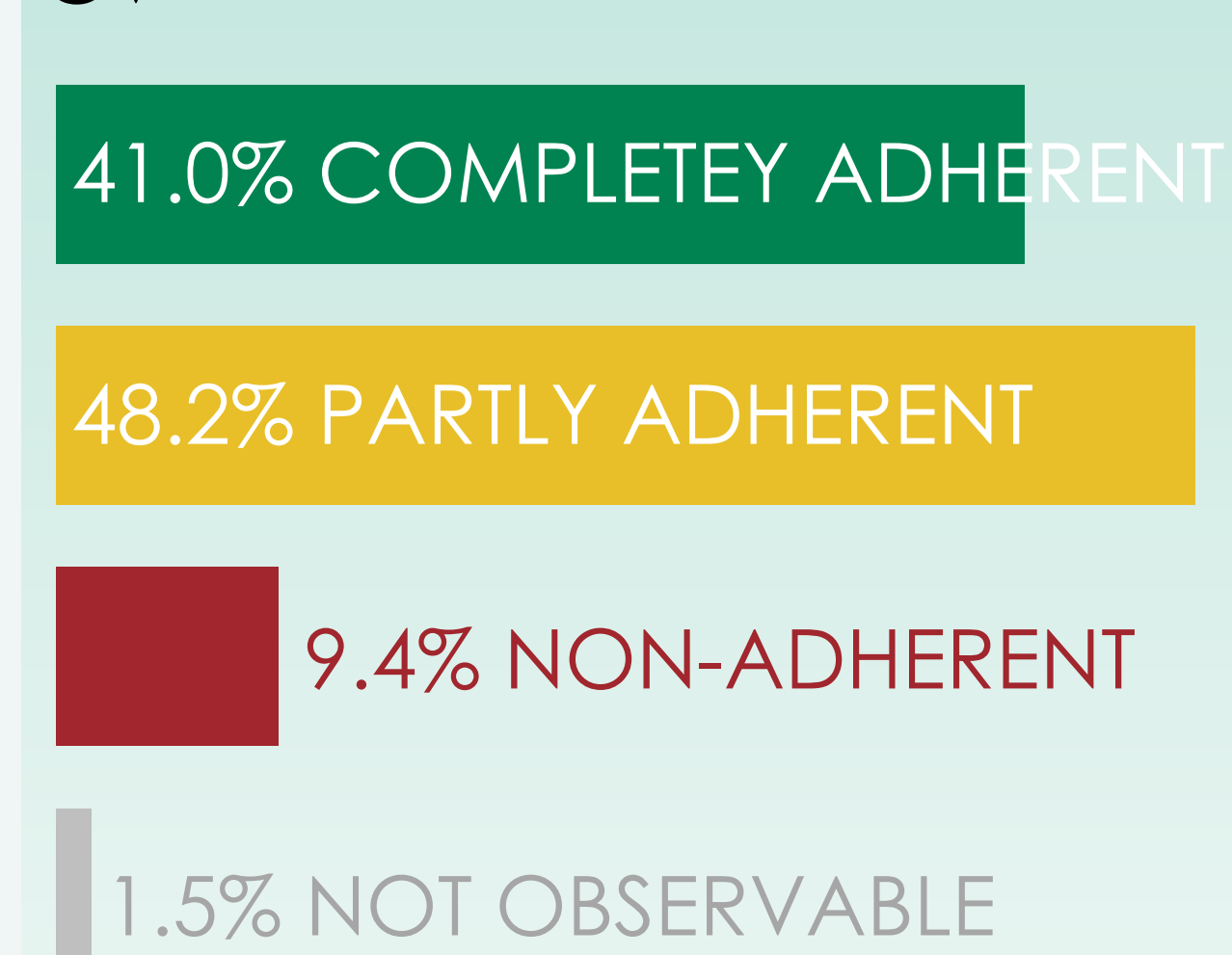


Fig. 3: MORTALITY – CV

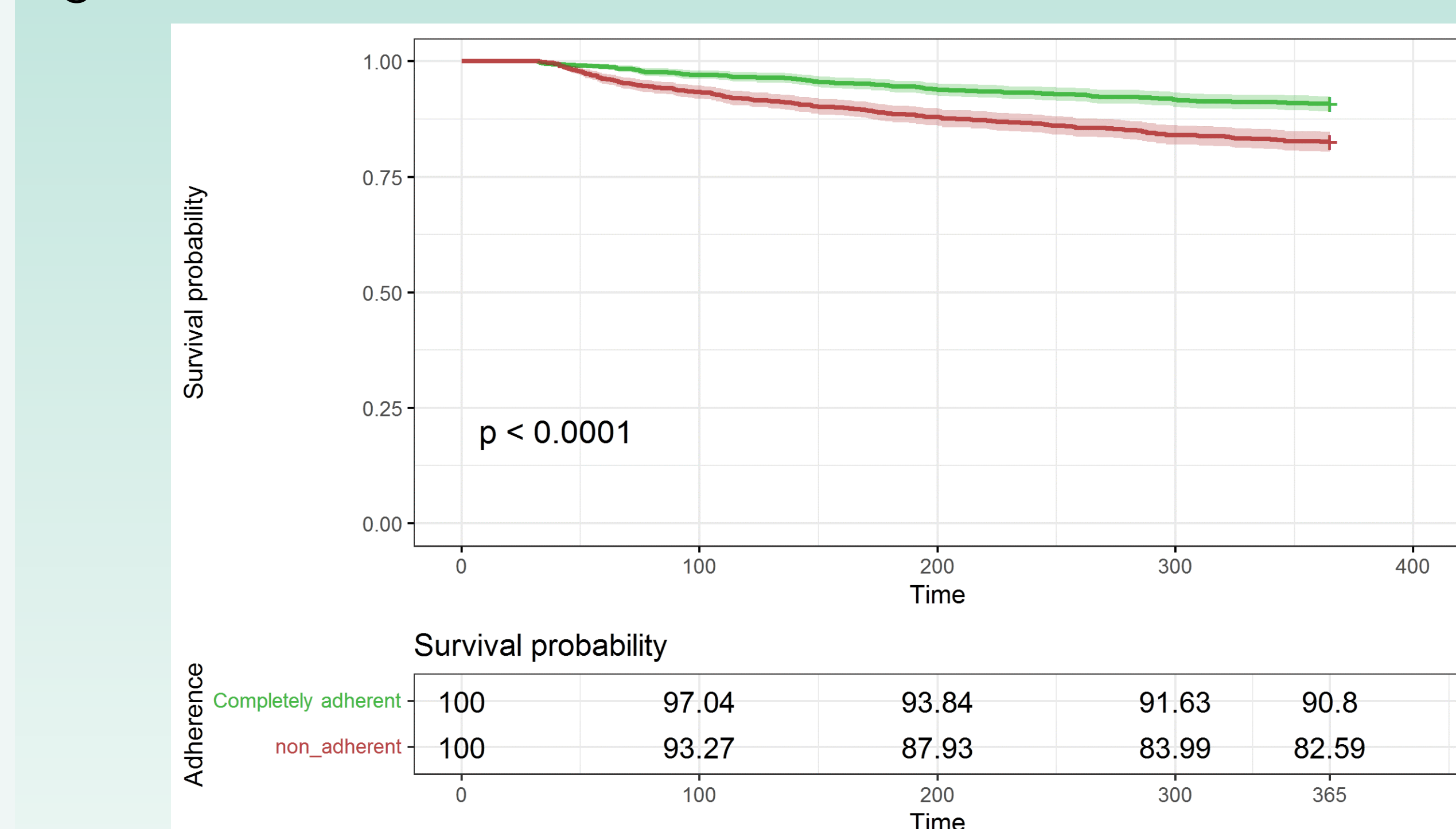


Fig. 4: ALL-CAUSE HOSPITALIZATION – CV

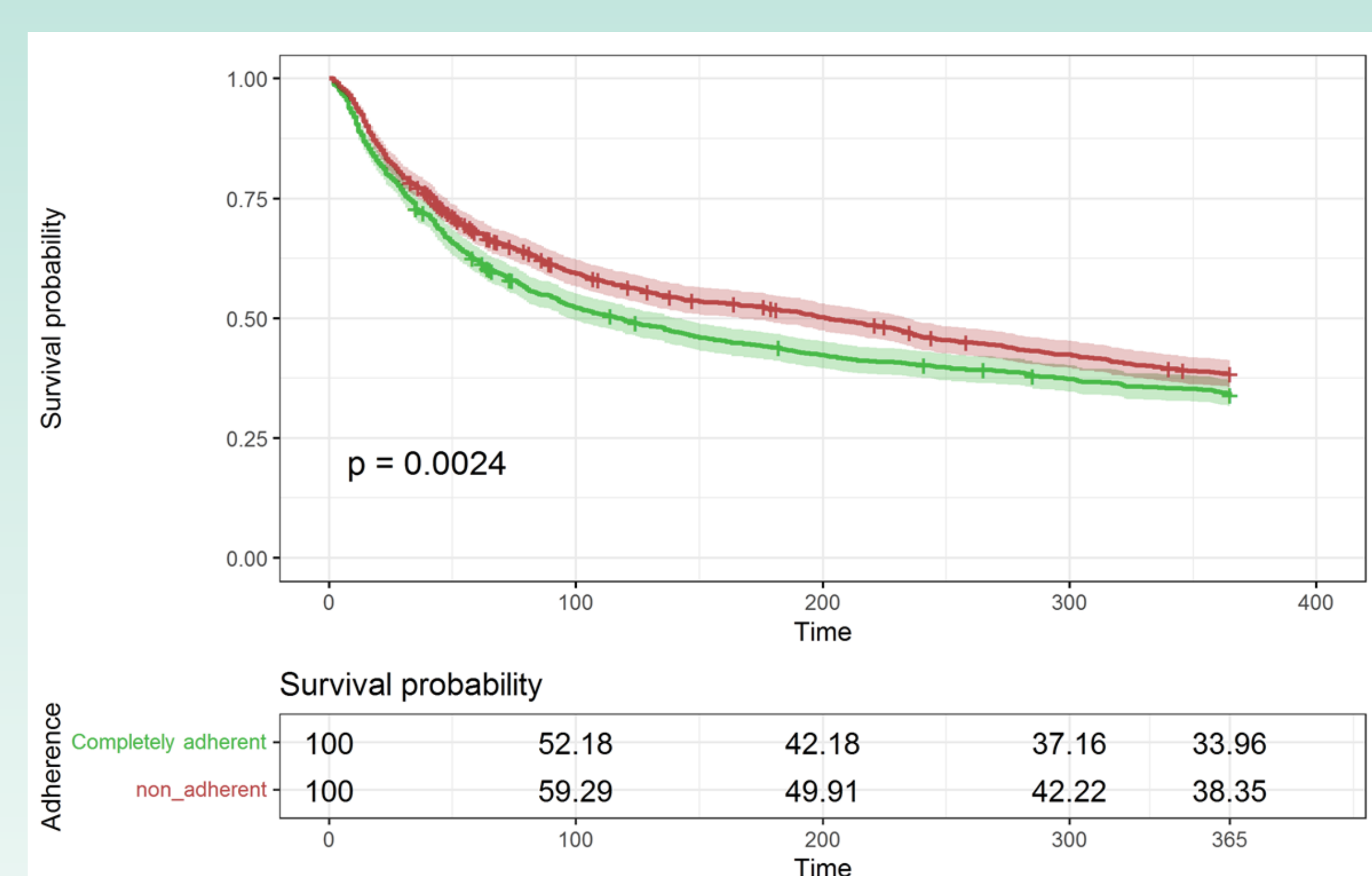


Fig. 5: COST DIFFERENCE [€/PY] BY GUIDELINE ADHERENCE – CV

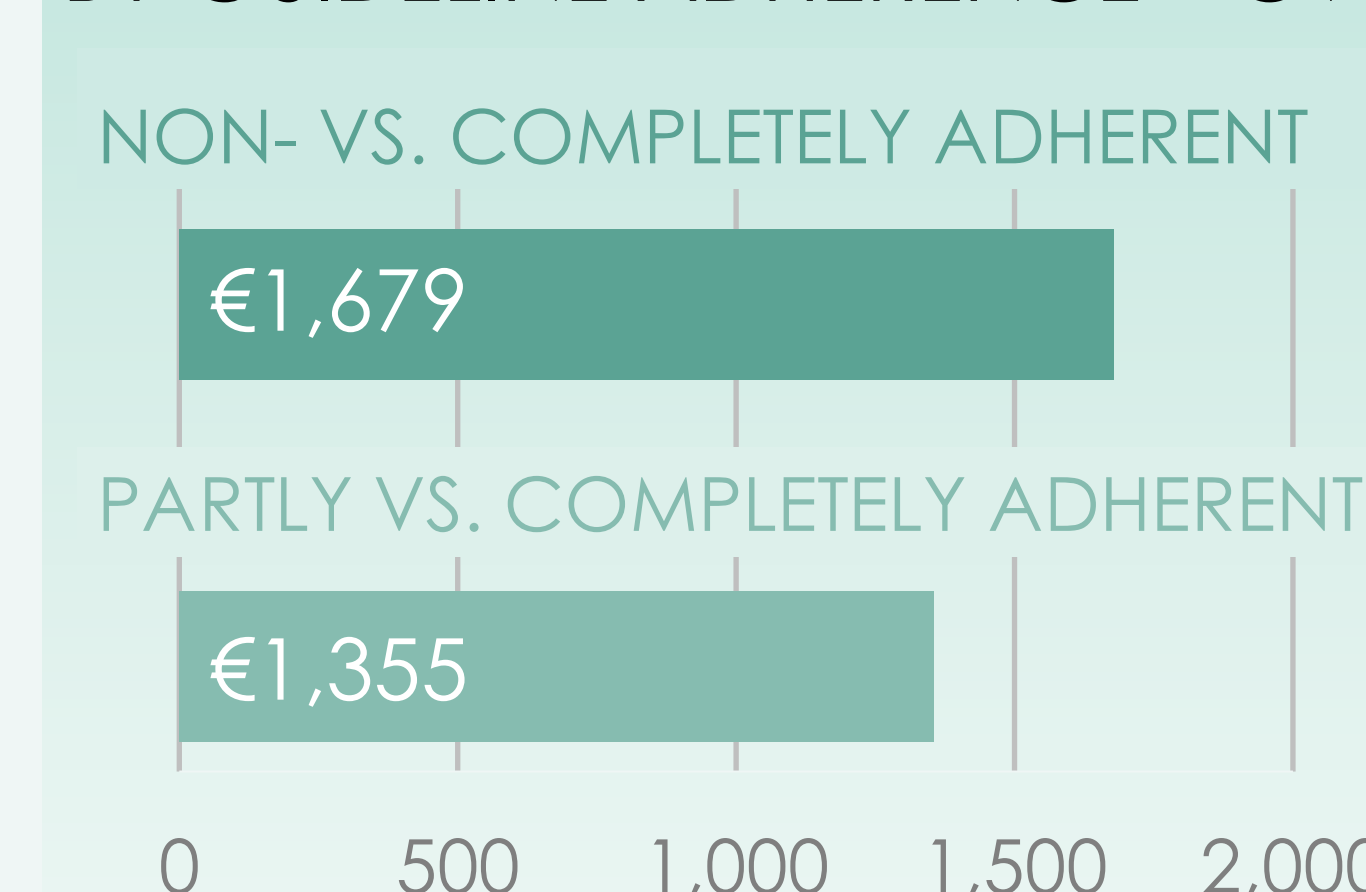
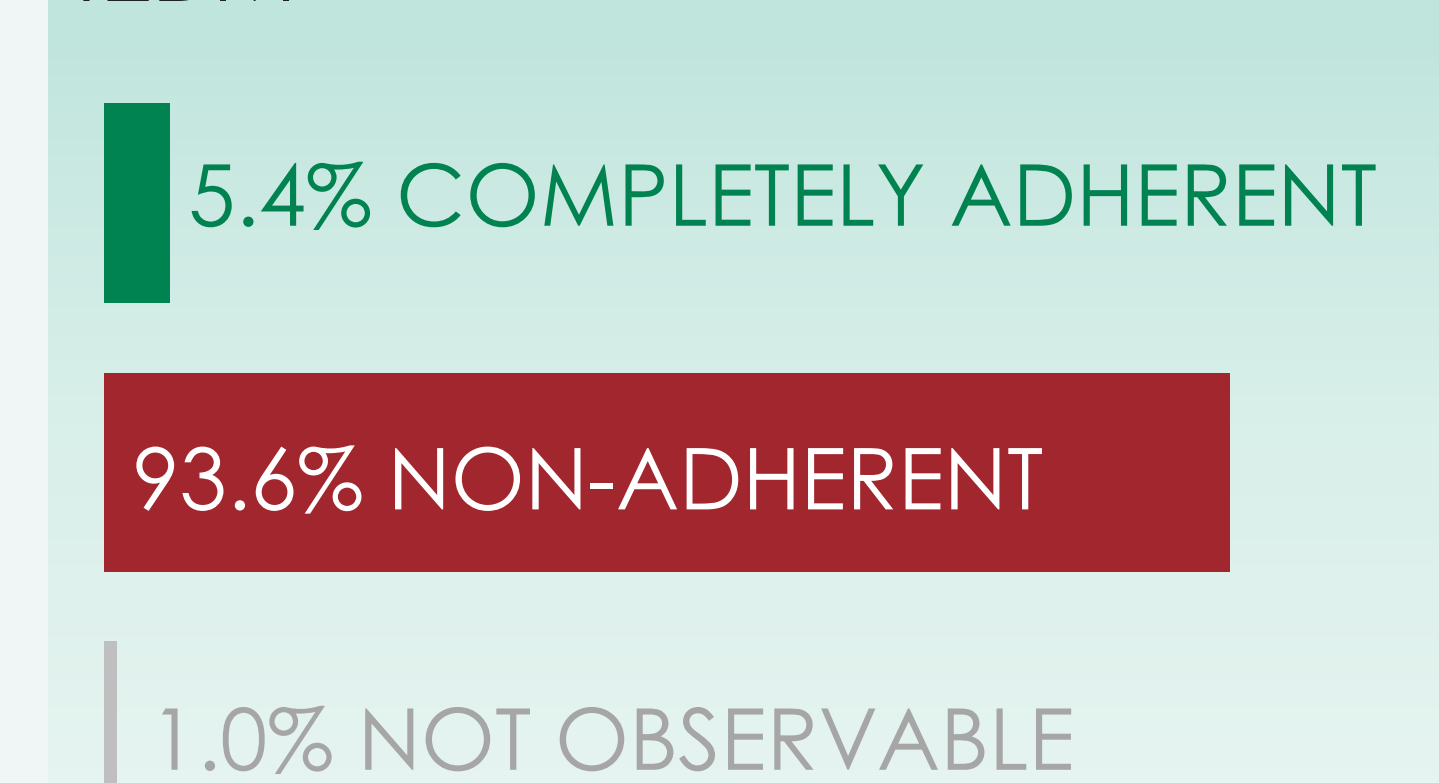


Fig. 6: GUIDELINE ADHERENCE – T2DM*



CONCLUSION

Our findings reveal potentially preventable deaths, and potential for optimization, both from a patient's perspective and an economical perspective. Adherence to guidelines must be improved, which requires joint efforts: improving the dissemination and communication of guidelines on the one hand and having continuous medical education for practitioners on the other hand.

TAKE AWAY MESSAGE

Treatment of T2DM patients with an incident CV diagnosis in Germany did often not follow guideline recommendations, which was associated with increased mortality and overall cost.

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