

# Cost-Effectiveness Thresholds in Healthcare Decision-Making: A Scoping Review of Methods, Interpretations, and Implication across Countries

Tom Belleman, Nicolas Xander, Mirjana Huic, Tomáš Tesař, Jülide Çelik, Maximilian Salcher-Konrad, Eline Aas, Anne Hendrickx, Kate Morgan, Maureen Rutten-van Mölken, Carin Uyl-de Groot

**Background** In several countries, an Incremental Cost-Effectiveness Ratio (ICER) is evaluated against a country-specific Cost-Effectiveness Threshold (CET) to determine the intervention's cost-effectiveness. A high CET can lead to inefficiencies and financial strain on healthcare budgets, while a low CET may restrict access to beneficial interventions, potentially compromising overall health system performance. Thus, establishing an appropriate CET is essential for balancing accessibility and affordability in healthcare technologies.

**Objective** This study aimed to review the current use of CETs in healthcare decision-making across various countries. It explored how CETs are determined, the variation in threshold values, the influence of modifiers on CETs, and their real-world application in evaluating the cost-effectiveness of interventions.

**Methods** A scoping review of scientific literature published between 2015 and September 2023 was conducted to explore methods for determining CETs and country-specific practices. Only English-language publications were included, sourced from databases like MedLine, Embase, and Web of Science Core Collection. The focus was on identifying estimation methods, variations in CET values, and the application of CETs in healthcare decision-making.

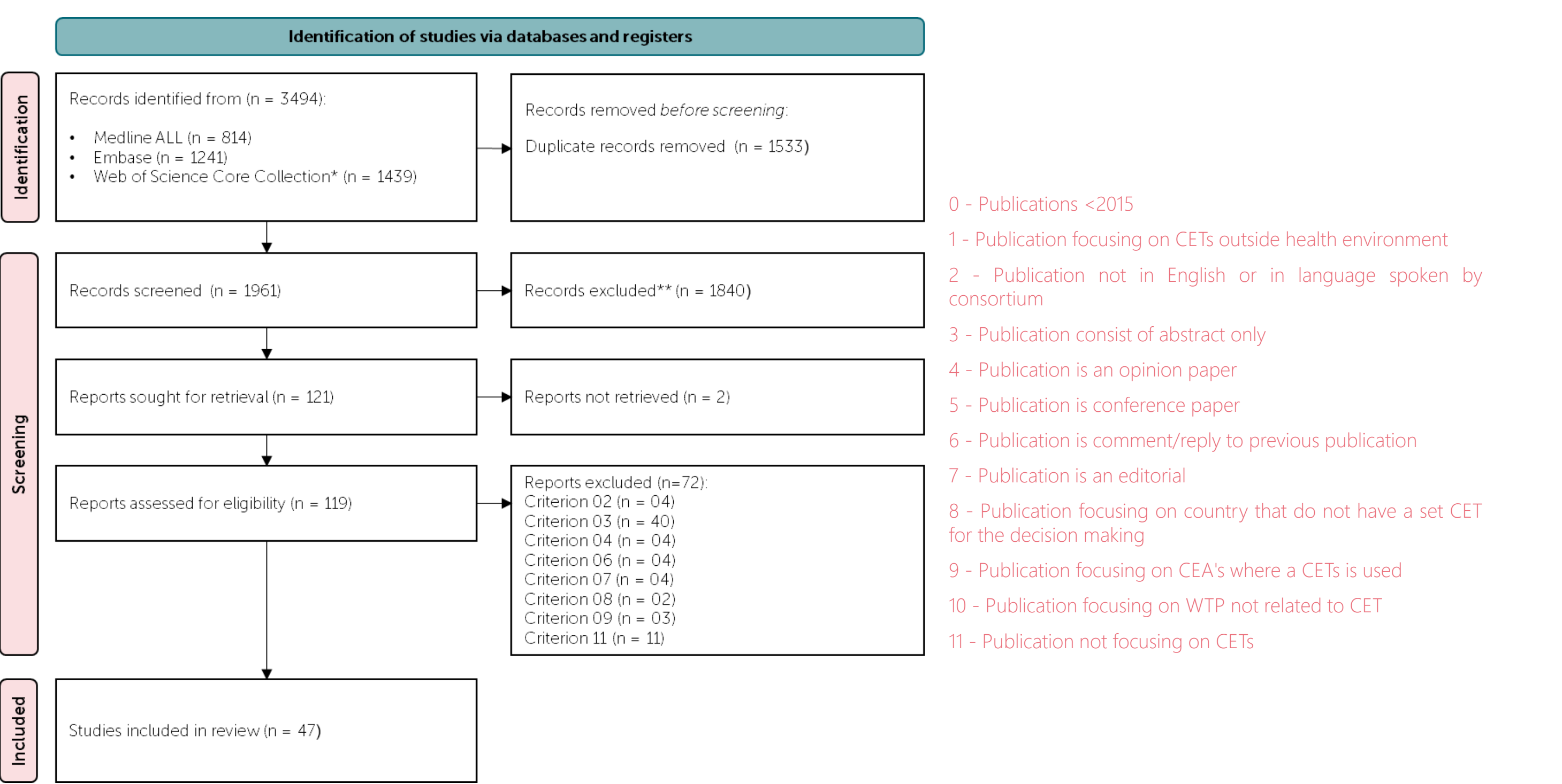


Figure 1: PRISMA Flow chart

- Determination methods**
- GDP per Capita Approach:** This approach sets the CET at 1-3 times the country's GDP per capita. Critics argue that this method lacks a direct link to healthcare budgets or societal values, leading to inefficient resource allocation.
  - Demand-Side Approach:** This approach suggests that individuals are best positioned to make decisions about maximizing their own health utility, emphasizing the importance of aligning budget allocation with societal preferences. In this context, CETs are determined by assessing willingness-to-pay through contingent valuation surveys or using value of statistical life methods.
  - Supply-Side Approach:** This approach suggests that healthcare resource allocation should be guided by the opportunity cost approach. When resources are reallocated, new investments displace existing services, so the CET should reflect the value of the health benefits forgone by the best alternative use of the resources. Key methods include league tables, which rank interventions by ICER.

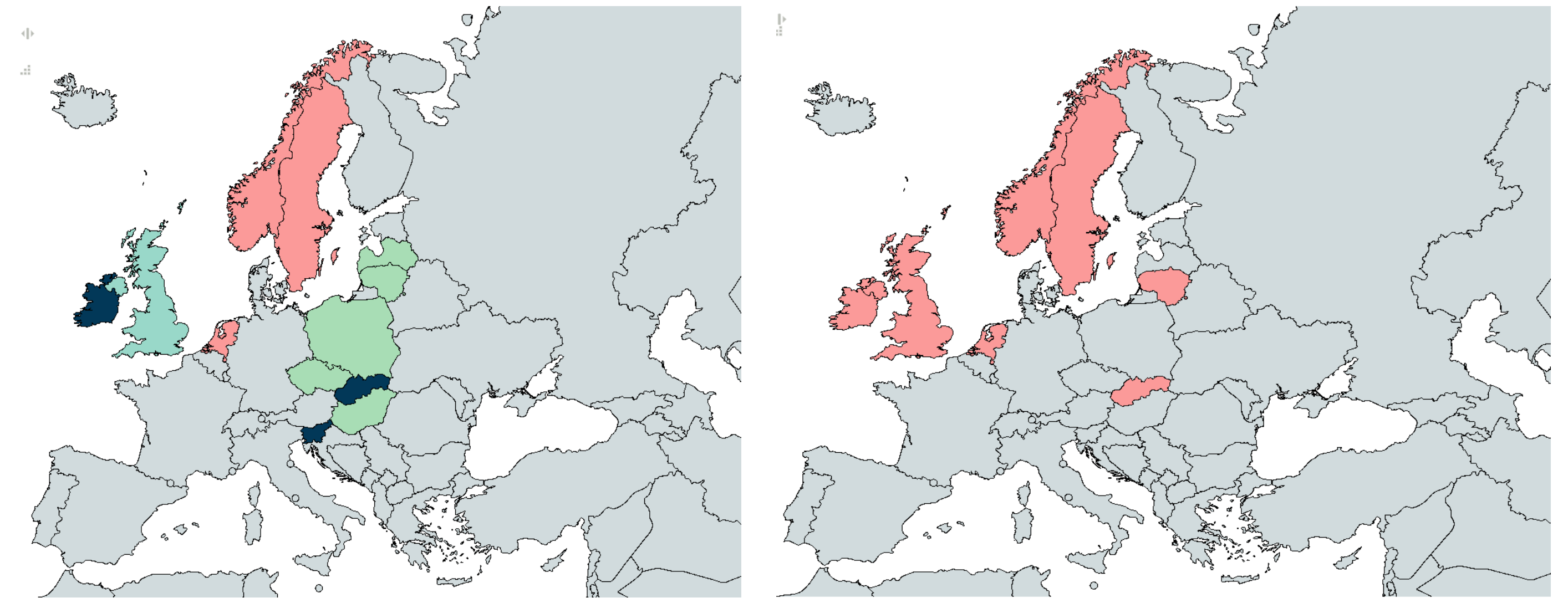


Figure 2: Overview of CET determination methods per country. Red: Demand, Turquoise: Supply, Green: GDP, Blue: Other

Figure 3: Overview of countries using modifiers in their CETs

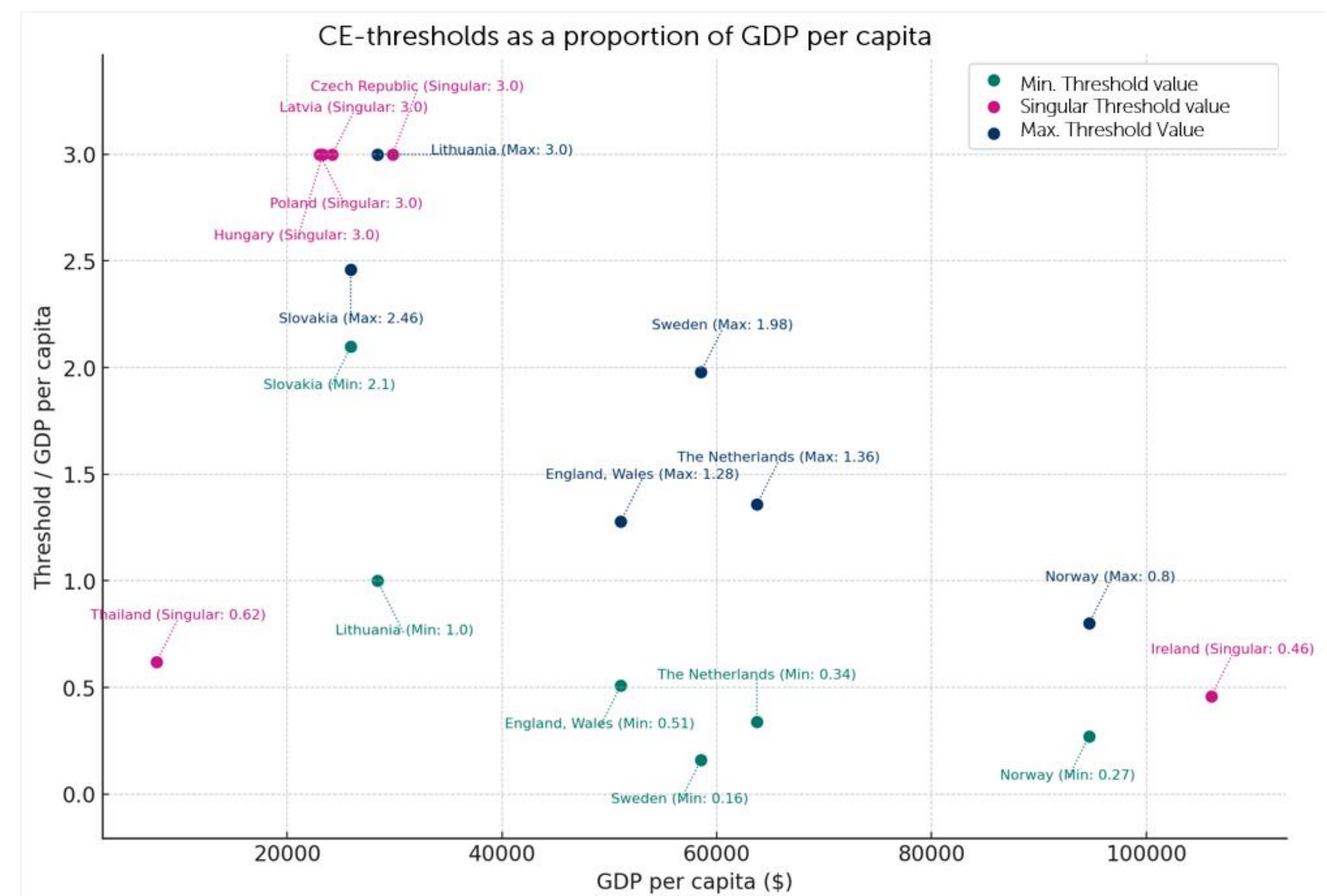


Figure 4: CE-threshold as a proportion of GDP per capita, depicting countries with singular values and multiple values with the minimum and the maximum and showing the ratio number of threshold/GDP per capita per countries.

**CET in practice** Nineteen countries were identified as utilizing CETs in their healthcare decision-making processes, revealing notable variation in principles and methods: 7 countries base their CET on GDP per capita, 3 countries employ a demand-side approach, 2 countries utilize a supply-side approach, the remaining countries adopt diverse methods.

Thirteen countries incorporate CETs into their routine decision-making processes, with five utilizing them explicitly and 16 implicitly. Additionally, ten countries apply one of more modifiers based on factors such as disease severity, rarity, and end-of-life considerations.

**Conclusion** The reliance on GDP per capita as the primary method for CET estimation presents significant limitations, especially when considering the varying economic realities and healthcare priorities across countries. Integrating both demand-side and supply-side approaches could provide a more balanced and comprehensive framework for decision-making.

- Integrating both demand and supply side approaches could provide a more balanced and comprehensive framework for decision-making
- Incorporating broader societal values, including factors beyond QALYs, is essential for ensuring that CETs reflect the diverse needs and preferences of different populations.
- Adapting CET frameworks to better align with national healthcare systems and economic conditions, particularly in low- and middle-income countries, is necessary to avoid overestimating CET values and ensure more efficient and equitable resource allocation.



Funded by the European Union

The ASCERTAIN project is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or HaDEA. Neither the European Union nor the granting authority can be held responsible for them. Grant 101094938.

Erasmus University Rotterdam Making Minds Matter

