




The Role of Productivity Measures in Economic Evaluations of Migraine Therapies


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BACKGROUND

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Migraine is a common neurological condition and a leading cause of disability worldwide, frequently affecting individuals during their most productive working years¹
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In addition to direct healthcare costs, migraine imposes a substantial indirect economic burden on society through lost productivity²
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The ISPOR value flower recognizes productivity as a key component of value in health economic evaluations, reflecting its broader societal impact³
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Approaches to measuring productivity losses and gains vary across studies, which may influence the estimated cost-effectiveness of migraine interventions

OBJECTIVE

To assess economic evaluations of migraine therapies that include productivity measures, examine methods for quantifying productivity, and evaluate their impact on incremental cost-effectiveness ratios (ICERs)

METHODS

To identify relevant studies, Embase was searched for English-language economic evaluations of migraine therapies including productivity inputs

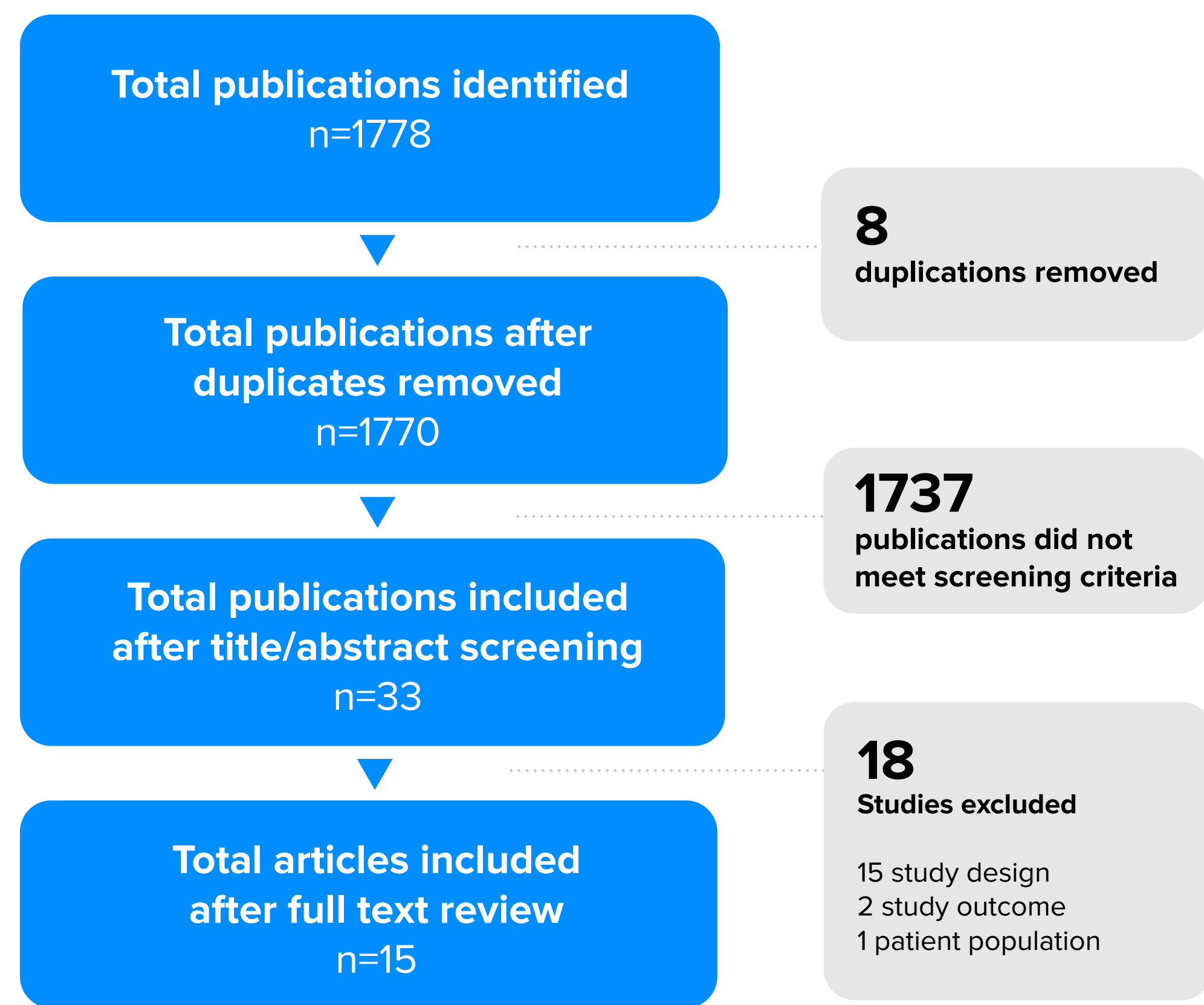
Two reviewers were used for title and abstract screening and one reviewer for full-text screening (Table 1). Data were extracted by a single reviewer (Figure 1)

Table 1: Screening Criteria

Study Characteristics	Screening Criteria
Patient Population	Patients with migraine
Intervention	Therapeutic interventions for migraine
Comparator	Alternative treatments (eg, placebo, supportive care, usual care)
Outcome	<ul style="list-style-type: none">Model typeModel perspectiveTime horizonData source for productivity assessment (eg, self-reported questionnaires such as the WPAI)Approach to valuing productivity loss (eg, human capital method, friction cost method)Difference in productivity-related costs between intervention and comparator armsInclusion of productivity in sensitivity analyses and associated impactCost-effectiveness conclusion (ie, whether the intervention was deemed cost-effective)ICER
Study Type	<ul style="list-style-type: none">CBAsCEAsCUAs
Time frame	January 1, 2014 to September 30, 2024
Geography	Global

CBA: Cost-benefit analysis; CEA: Cost-effectiveness analysis; CUA: Cost-utility analysis; ICER: Incremental cost-effectiveness ratio; WPAI: Work Productivity Activity Impairment

Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram

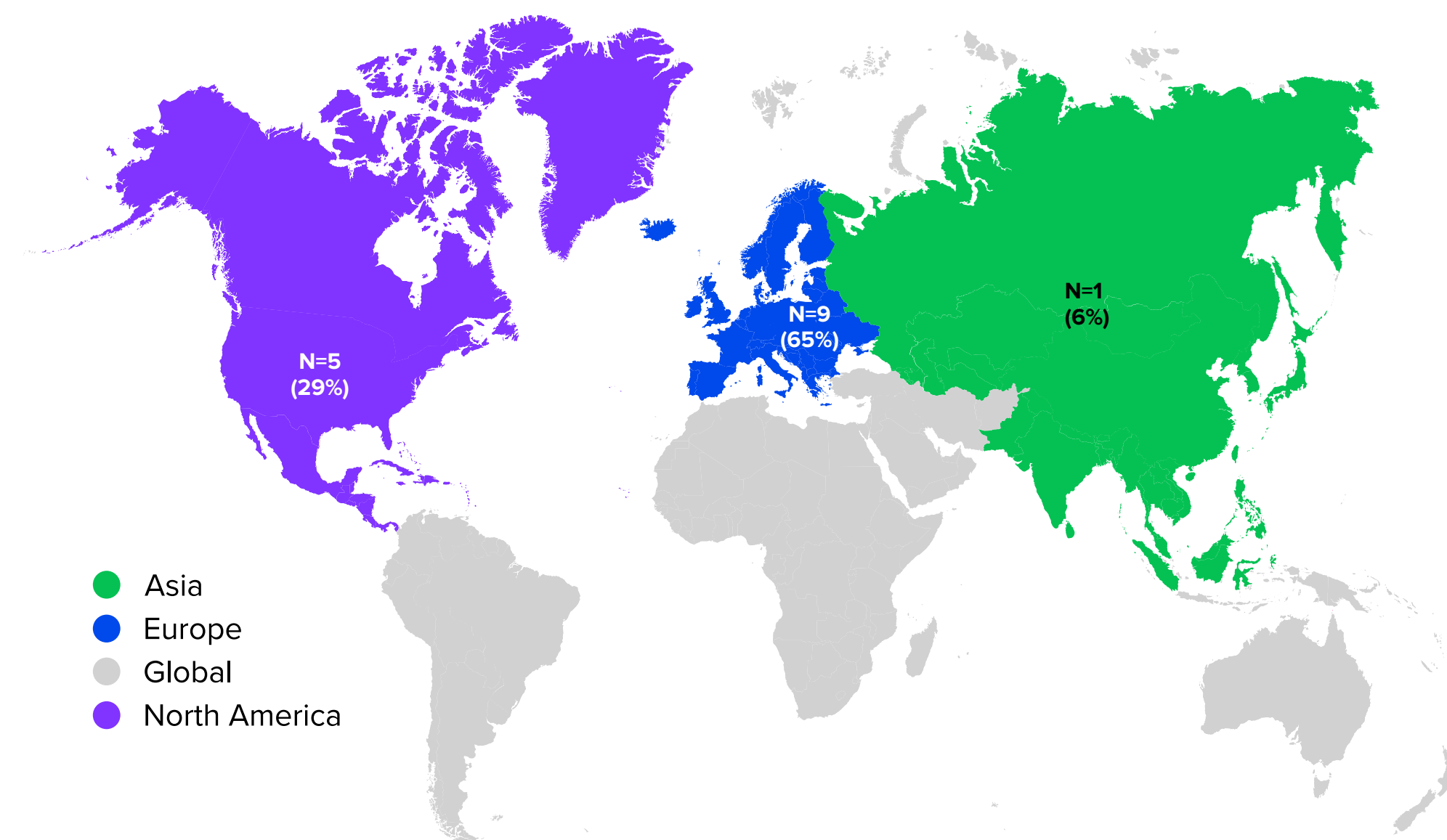


RESULTS

Study Characteristics

A majority of studies were conducted in Europe, followed by North America (Figure 2)

Figure 2: Country Perspective of Included Economic Evaluations

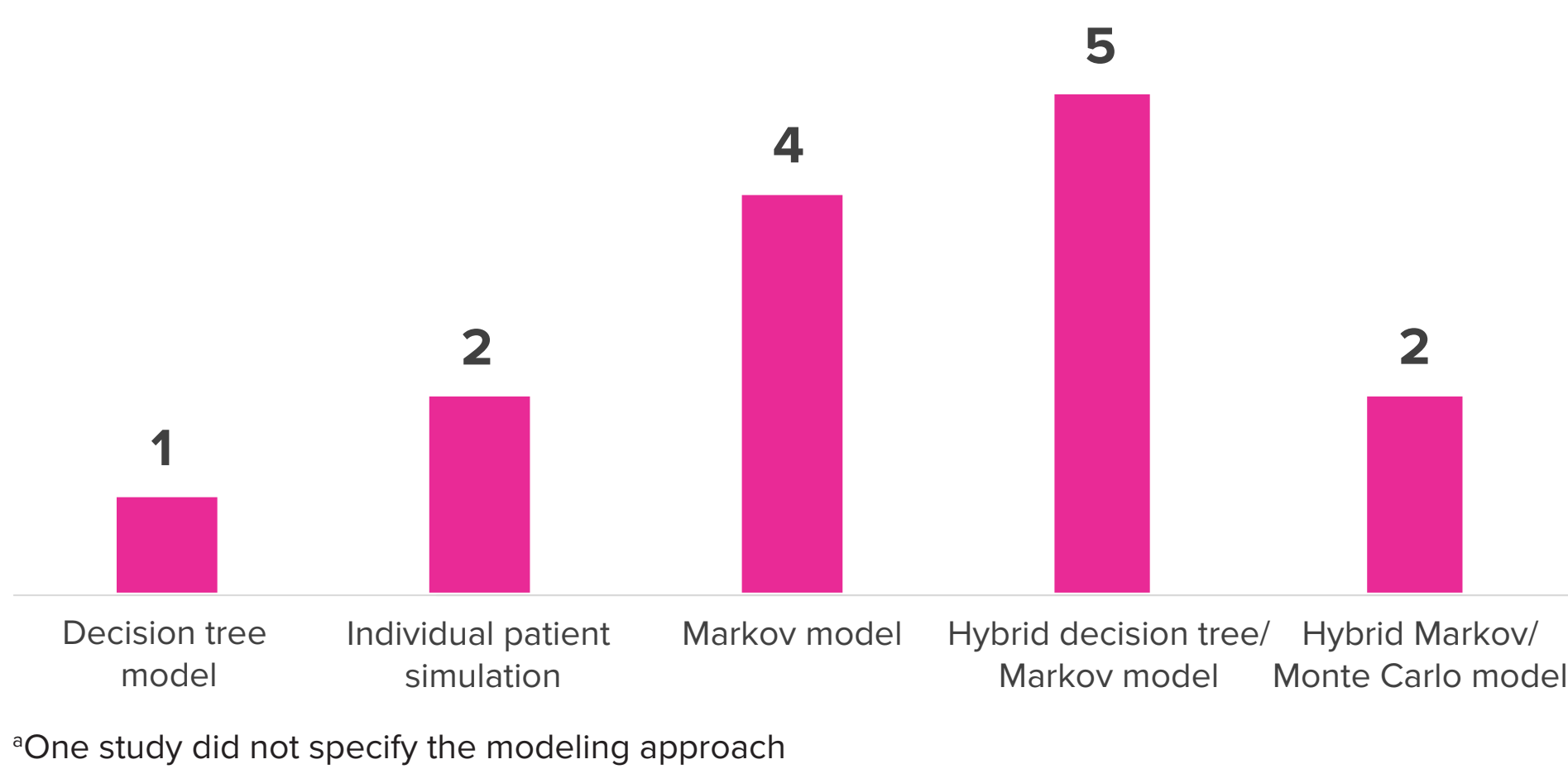


11 out of 15 studies were industry sponsored

Model Characteristics

- The majority of the economic evaluations were conducted as cost-effectiveness analyses (n=13), while only 2 studies were cost-benefit analyses
- Nearly half of the studies (7/15) utilized hybrid modeling approaches, including combinations of decision trees with Markov models (n=5) and Markov models with Monte Carlo simulations (n=2), as shown in Figure 3

Figure 3: Number of Studies by Model Type^a (n=14)



Methods for Measuring Productivity

- Eleven studies reported the tools used to measure productivity. Productivity was most commonly assessed using the Migraine Disability Assessment (MIDAS) scale (n=8) and the WPAI questionnaire (n=3), with data sourced from real-world surveys and clinical trials (Figure 4)
- Ten studies reported their methods for estimating total indirect costs. The majority (n=9) used the human capital approach, while only 1 study employed the friction cost method (Figure 5)

Figure 4: Productivity Measurement Tools Used in Studies (n=11)

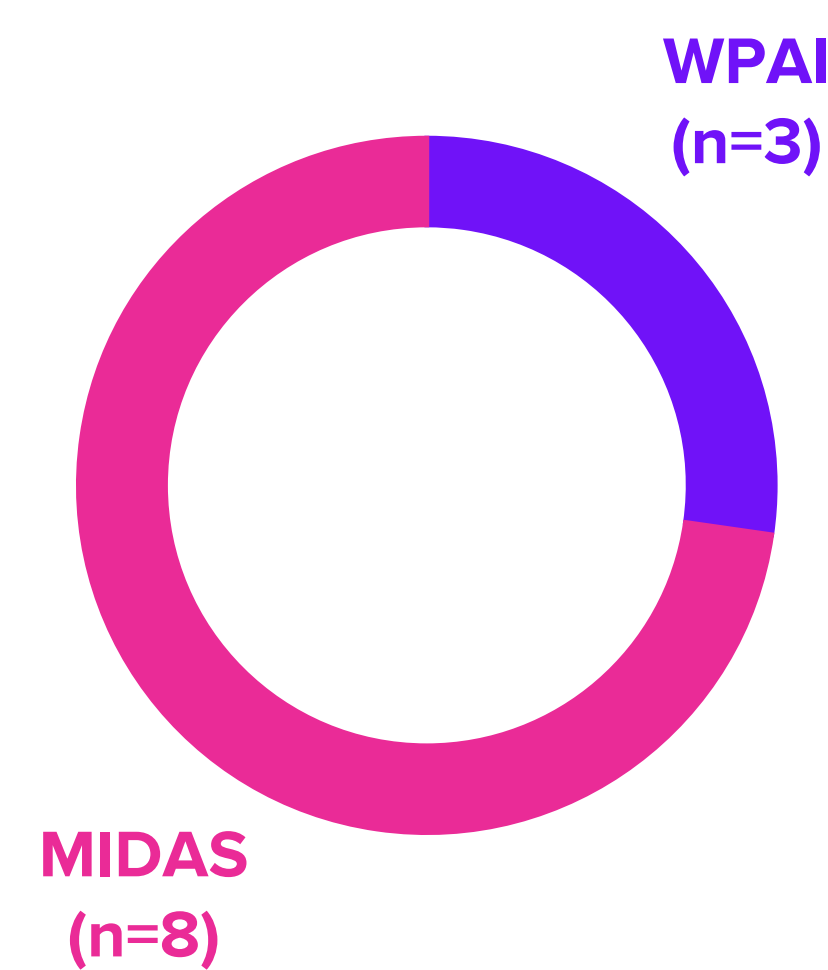
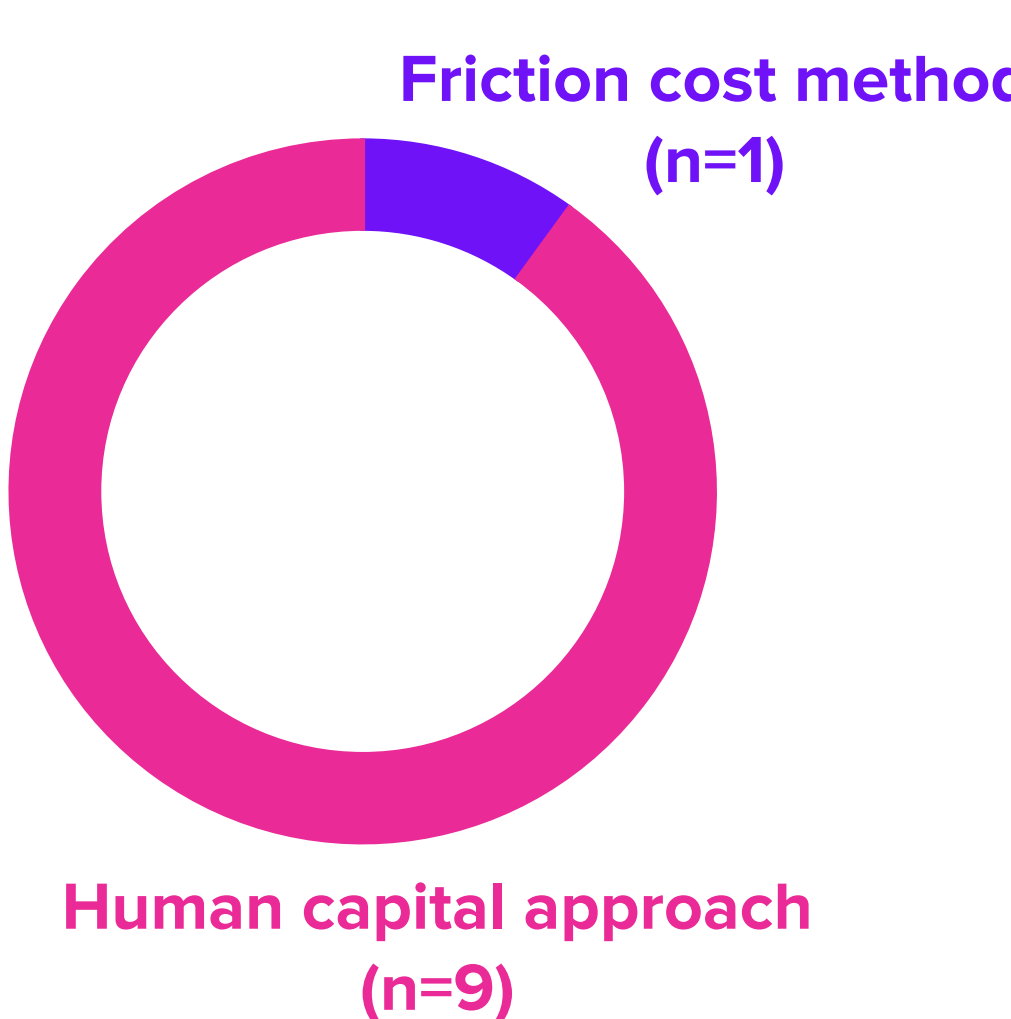


Figure 5: Approaches to Indirect Cost Estimation (n=10)



MIDAS: Migraine Disability Assessment; WPAI: Work Productivity Activity Impairment

Impact of Societal Perspective on ICERs

Shifting from a societal perspective (including indirect costs) to a payer perspective (excluding indirect costs) led to higher ICERs in 4 studies, though ICERs remained cost-effective under both perspectives (Table 2)

Table 2: Impact of Perspective on ICERs in Economic Evaluations

Author Year	Societal Perspective ICER (including indirect costs)	Payer Perspective ICER (excluding indirect costs)
Mahon 2021 ⁴	Dominant	201,871 SEK/QALY
Pozo-Rosich 2024 ⁵	Dominant	€2,398/QALY
Skroumpelos 2021 ⁶	Dominant	£16,716/QALY
Sussman 2018 ⁷	\$15,360/QALY	\$65,720/QALY
Yesentharao 2022 ⁸	Dominant	Dominant

ICER: Incremental cost-effectiveness ratio; QALY: Quality-adjusted life year; SEK: Swedish Krona

Impact of Excluding Productivity on ICERs

2 studies showed higher ICERs in scenario analyses when productivity was excluded compared to the base case where it was included

Sensitivity Analysis Drivers

3 studies identified lost productivity (eg, missed workdays or impairment) as a top-3 driver in sensitivity analyses

CONCLUSION & NEXT STEPS

This review shows that incorporating productivity can meaningfully impact cost-effectiveness outcomes, highlighting the need for its consistent inclusion in migraine economic evaluations

Adopting a societal perspective that includes productivity costs may provide a more comprehensive understanding of the value of migraine therapies

These findings highlight the need for further research to clarify how the inclusion of productivity measures influences healthcare decision-making

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ABBREVIATIONS IN TABLES AND FIGURES

CBA, Cost-benefit analysis; CEA, Cost-effectiveness analysis; CUA, Cost-utility analysis; ICER, Incremental cost-effectiveness ratio; ISPOR, International Society for Pharmacoeconomics and Outcomes Research; MIDAS, Migraine Disability Assessment; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; QALY, Quality-adjusted life year; SEK, Swedish Krona; WPAI, Work Productivity and Activity Impairment.

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