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The Next Frontier in Defining Value: Health Economics in LMICs

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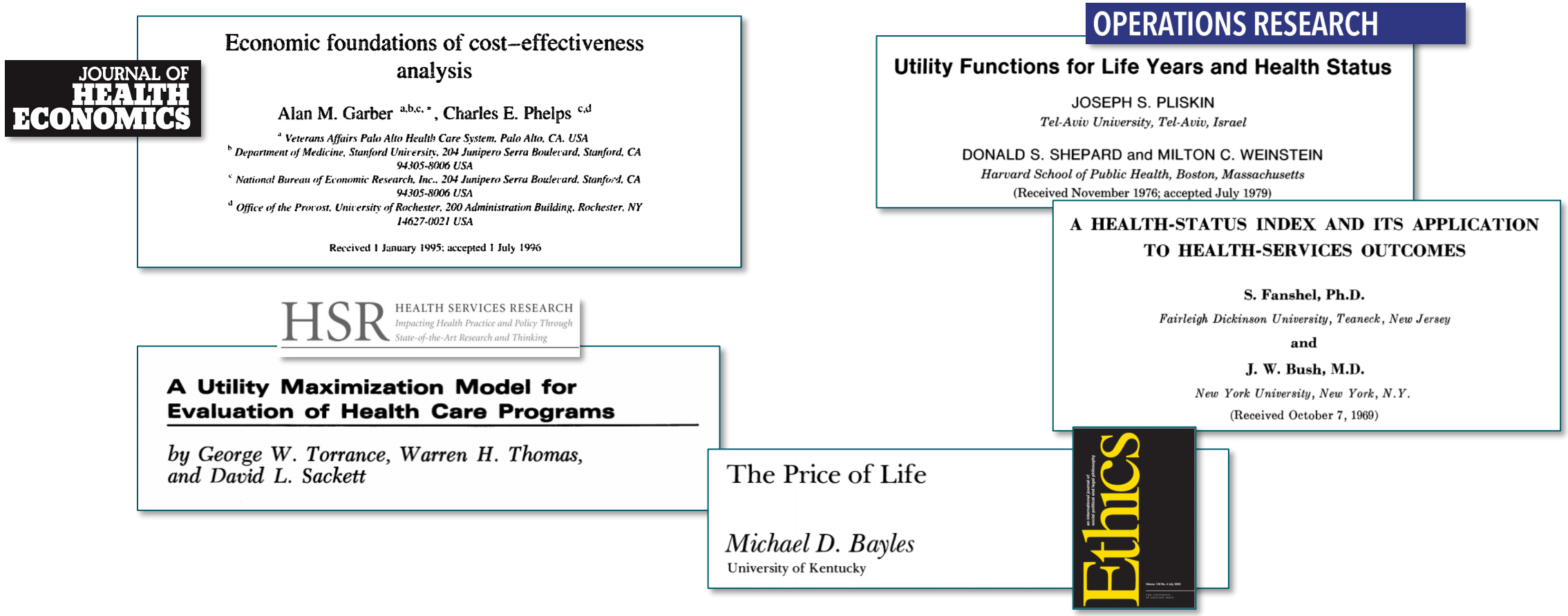
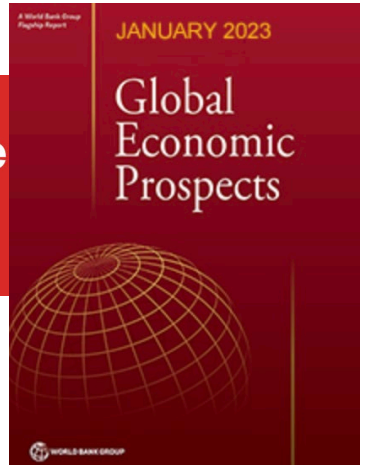
March 2023

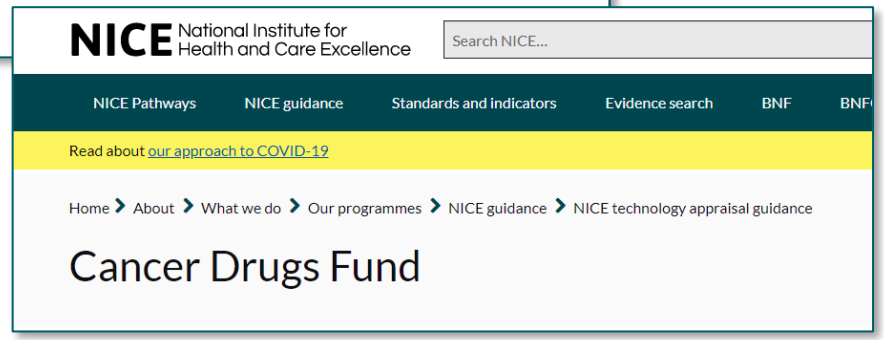
Researchers have been estimating cost-effectiveness in healthcare since at least the early ’70s



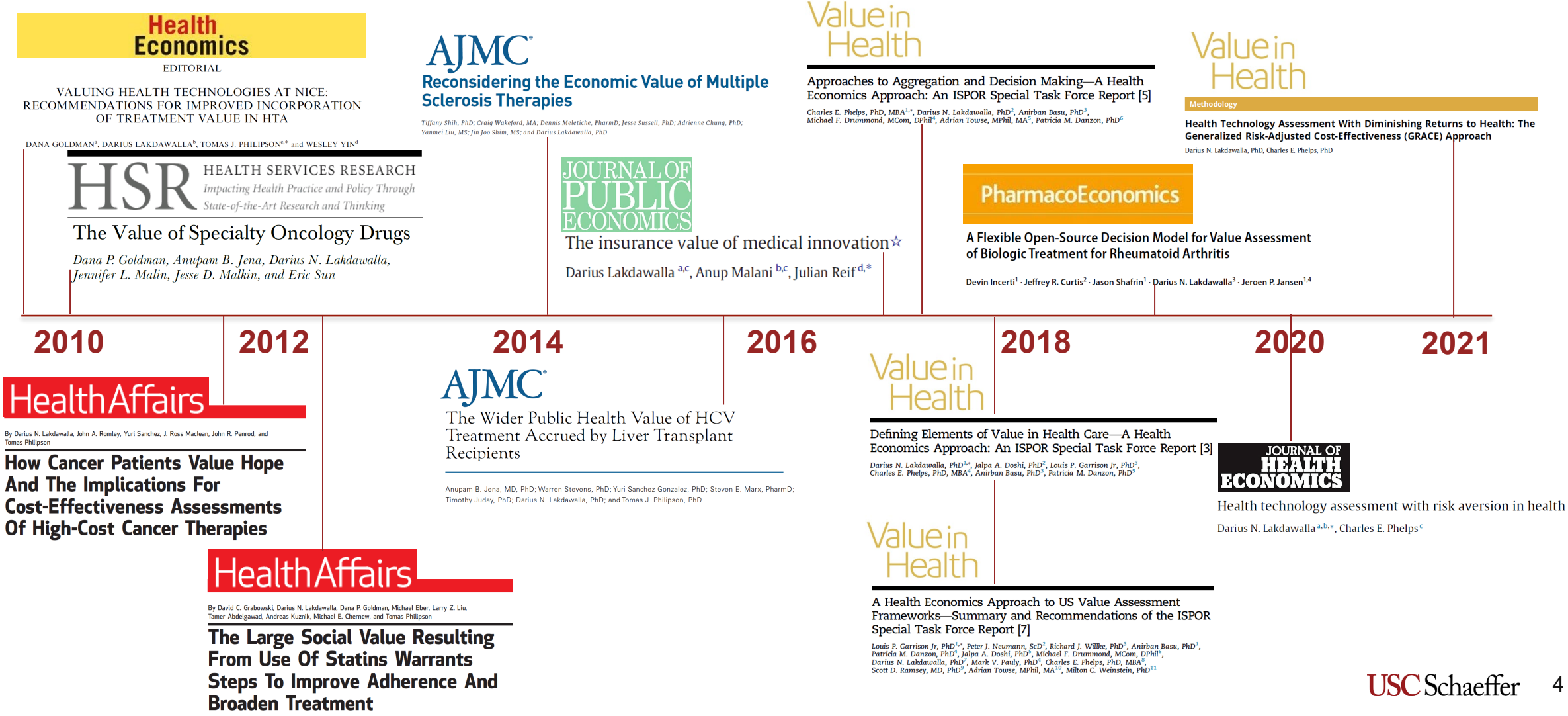
But the current approach struggles to explain the value of treating severe illness and treating illnesses in LMICs



New Study Finds Some Poor Countries Paying 20 to 30 Times More for Basic Medicines Than Others



A cottage industry has developed to deal with these anomalies



Why does cost effectiveness struggle to value treatment for the most vulnerable patients?

Many health economists have zealously argued that "a QALY is always a QALY," so context never matters

- But in health, context always matters—patients with bleak quality of life place great value on even modest gains

Economists widely agree: goods are more valuable when people have less

- Thus, people with less health ought to value QALY gains more than others (i.e., people are averse to health risks

Introducing risk-aversion and diminishing returns into CEA will produce new implications that better match preferences of real patients

Generalized Risk-Adjusted Framework (GRACE) works like the traditional CEA framework QALY

CEA

Reimburse if: $\frac{\Delta\$}{\Delta \text{QALY}} \leq \text{WTP}$

$\Delta\$$: Incremental cost of therapy

ΔQALY: Incremental QALYs gained

WTP: Willingness-to-Pay

GRACE

Reimburse if: $\frac{\Delta\$}{\Delta \text{GRA}-\text{QALY}} \leq \text{RASA}-\text{WTP}$

$\Delta\$$: Incremental cost of therapy

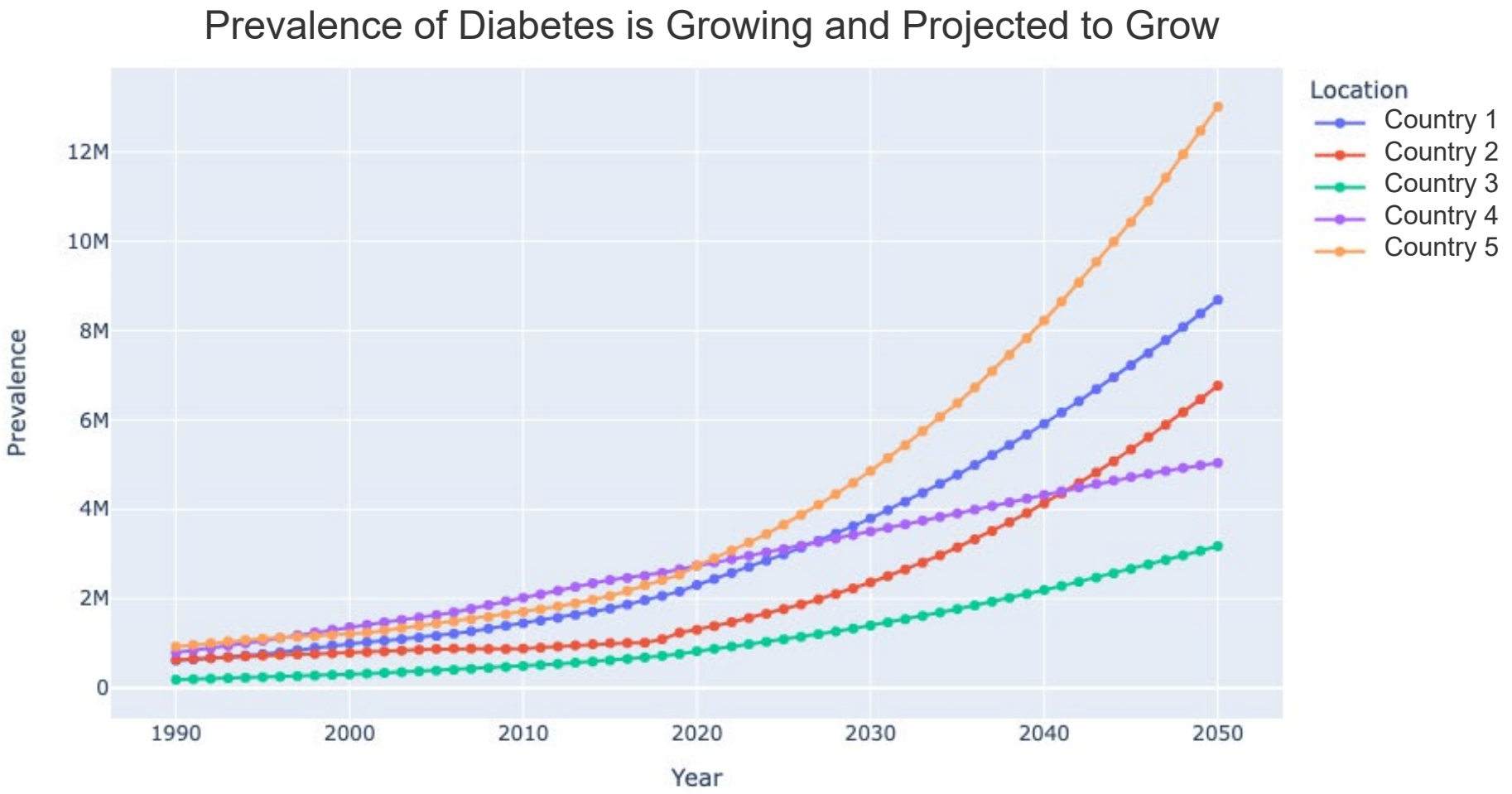
$\Delta \text{GRA} - \text{QALY}$: Incremental GRA-QALYs gained

$\text{RASA} - \text{WTP}$: Risk- and Severity-Adjusted WTP

Many implications follow from one generalization

Traditional CEA	GRACE	Data Needs for GRACE
QoL gains are **the same** regardless of how sick patients are	QoL gains **systematically varies** with disease severity	Disease severity (e.g., burden of illness estimates)
Only average treatment outcomes matter (b/c patients do not bear risk)	**Entire distribution** of treatment outcomes matter (patients are risk averse)	Variance and skewness in QoL outcomes (e.g., clinical trial data)
QoL and survival tradeoffs are fixed, regardless of health status	Patients are **allowed to value QoL more than survival** when they have less QoL	Literature estimates of risk preferences

Consider patients with Type 2 Diabetes Mellitus (T2DM) in five countries in Sub-Saharan Africa

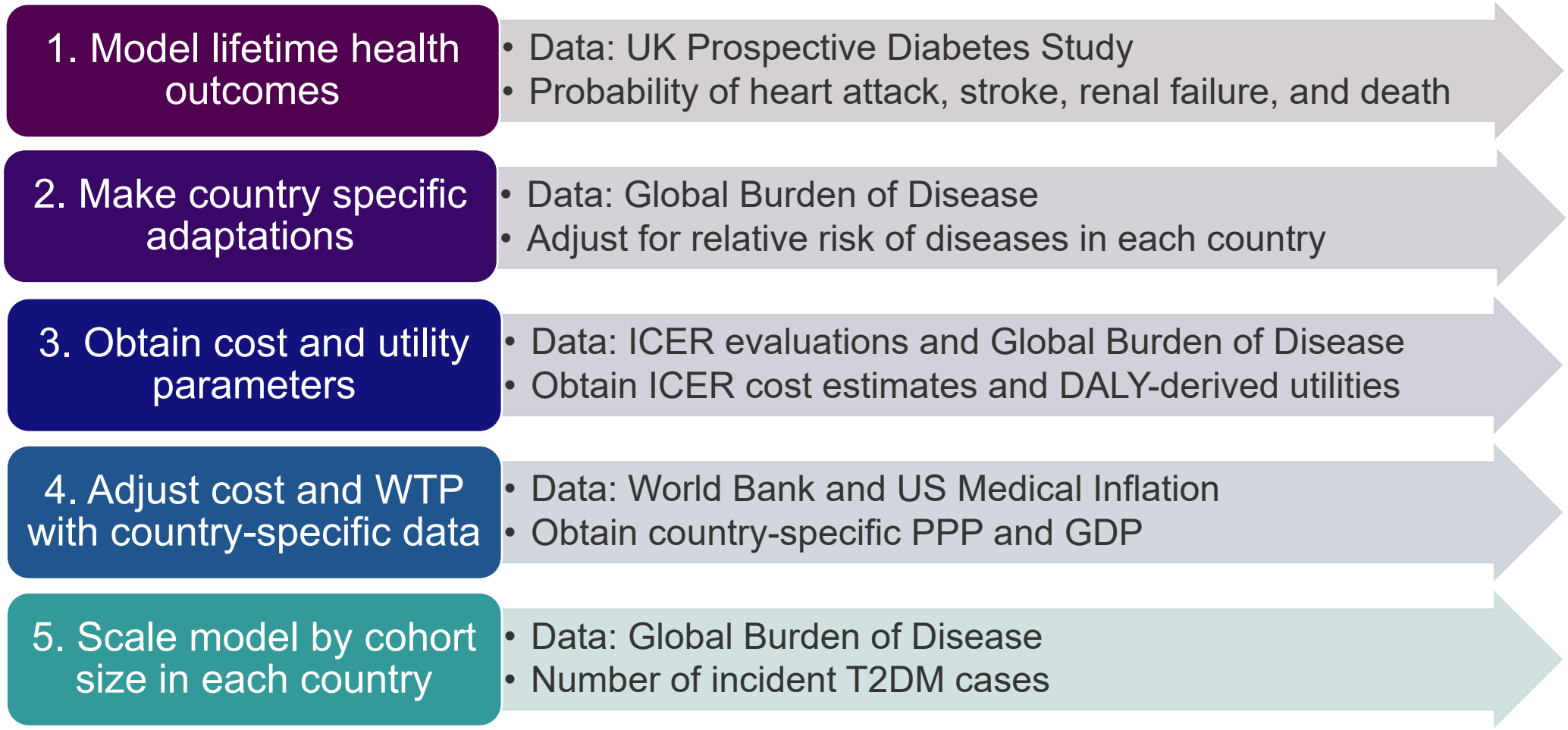


Consider three treatments for T2DM and their impacts on health outcomes

Treatment vs. Comparator Data From Clinical Trials

Three Treatment Options	Change in HbA1C	Change in BMI (kg/m2)	Change in Systolic Blood Pressure (mmHG)	RR of Cardiovascular Event
2nd Line	-1.63	-0.9	-4.16	92%
3rd Line	-1.68	0.6	0	100%
4th Line	-1.31	0.6	0	100%

Overview of methods and data



Novel treatments reduce the time spent in disability

Number of Years Spent in Disability (Post Stroke or Renal Failure)

Treatment Options	Country 1	Country 2	Country 3	Country 4	Country 5
2nd Line	-43,166	-19,816	-16,953	-59,008	-51,210
3rd Line	-21,476	-10,054	-8,428	-29,430	-25,415
4th Line	-17,014	-8,002	-6,675	-23,329	-20,122

Novel treatments also increase the number of healthy life years

Number of Healthy Years (Not Disabled or Dead)

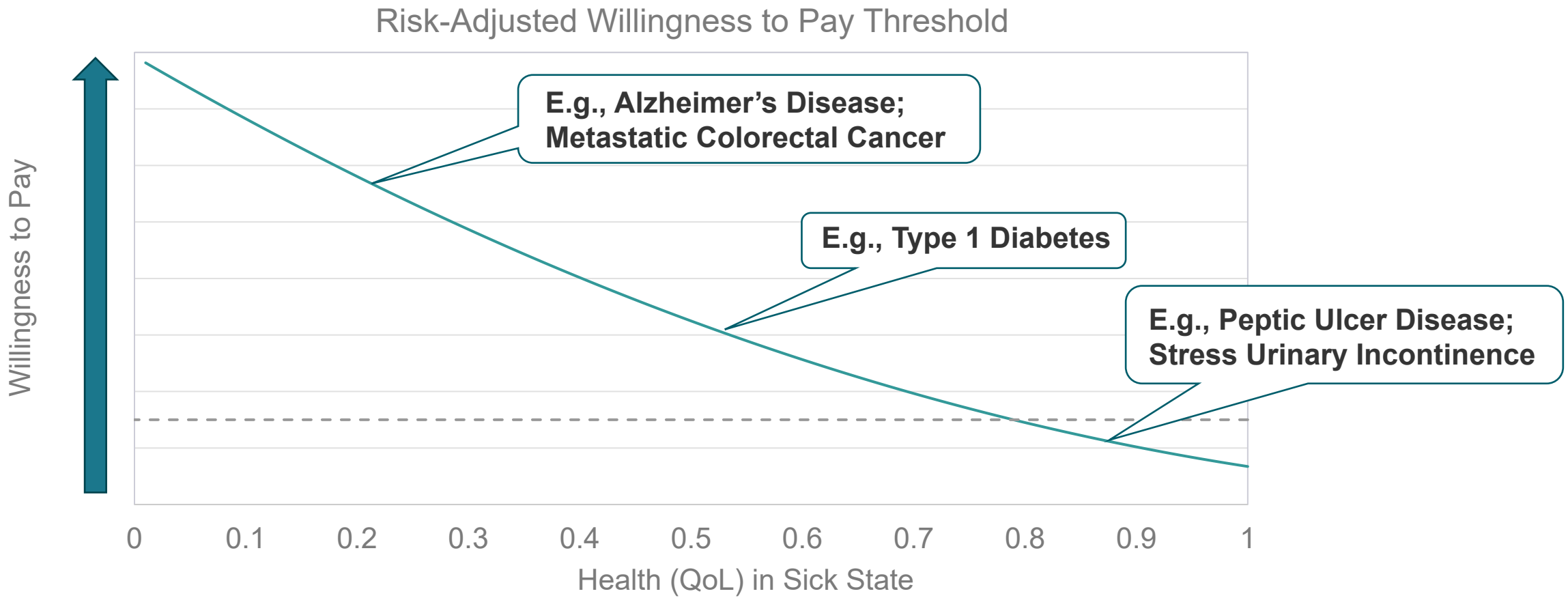
Treatment Options	Country 1	Country 2	Country 3	Country 4	Country 5
2nd Line	71,901	34,199	27,997	98,512	85,071
3rd Line	38,124	18,753	14,745	52,351	45,005
4th Line	30,728	14,965	11,711	41,607	35,716

Relative to GRACE, traditional CEA underestimated the economic value by 8-11% in this context

Percent Difference Between in GRACE ICER and Traditional CEA ICER

Treatment Options	Country 1	Country 2	Country 3	Country 4	Country 5
2nd Line	10.45%	10.13%	10.56%	10.44%	10.47%
3rd Line	9.22%	8.65%	9.36%	9.18%	9.28%
4th Line	9.01%	8.40%	9.15%	8.97%	9.08%

Key Implication: Under GRACE, quality of life improvement rises in value when the initial health state worsens



GRACE prioritizes conditions that cause the greatest burden of disease

How to Learn More about GRACE

Four articles in print: (Lakdawalla and Phelps)

Health Technology Assessment with Risk Aversion in Health

JHE
July 2020


Contents lists available at ScienceDirect

Journal of Health Economics

journal homepage: www.elsevier.com/locate/econbase

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Health technology assessment with risk aversion in health

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Health Technology Assessment w/ Diminishing Returns to Health: The Generalized Risk-Adjusted Cost-Effectiveness (GRACE) Model

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February 2021


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Contents lists available at sciencedirect.com
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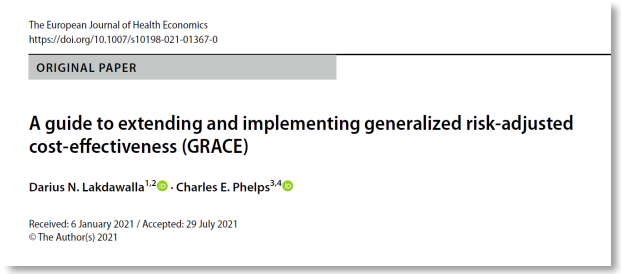
Methodology

Health Technology Assessment With Diminishing Returns to Health: The Generalized Risk-Adjusted Cost-Effectiveness (GRACE) Approach

Darius N. Lakdawalla, PhD, Charles E. Phelps, PhD

A Guide to Extending and Implementing Generalized Risk-Adjusted Cost-Effectiveness (GRACE)

EJHE
September 2021


The European Journal of Health Economics
https://doi.org/10.1007/s10198-021-01367-0

ORIGINAL PAPER

A guide to extending and implementing generalized risk-adjusted cost-effectiveness (GRACE)

Darius N. Lakdawalla[1,2] · Charles E. Phelps[3,4]

Received: 6 January 2021 / Accepted: 29 July 2021
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The Generalized Risk-Adjusted Cost-Effectiveness (GRACE) Model for Measuring the Value of Gains in Health: An Exact Formulation

Journal of Benefit-Cost Analysis
Forthcoming, 2023

COMING SOON! (Phelps and Lakdawalla)

The Generalized and Risk-Adjusted Cost Effectiveness (GRACE) Model: Overview and Implementation (textbook, scheduled publication in 8/2023)


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