



WHO Collaborating Centre for
Palliative Care & Rehabilitation



Economic evaluation of palliative care

What is the state of the art?



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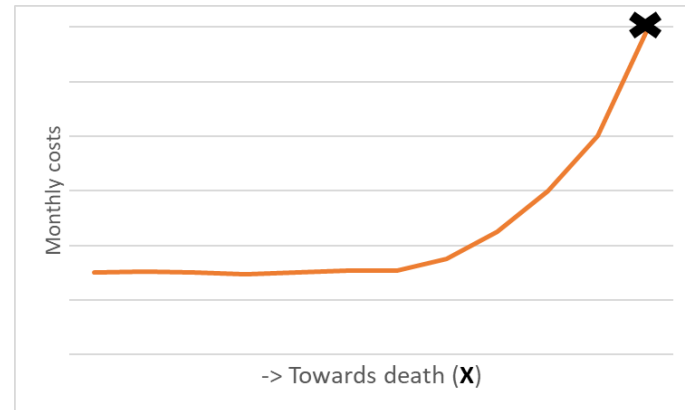
Declaration

- I have no relevant financial interests or other conflicts.

Economics of palliative care in three figures

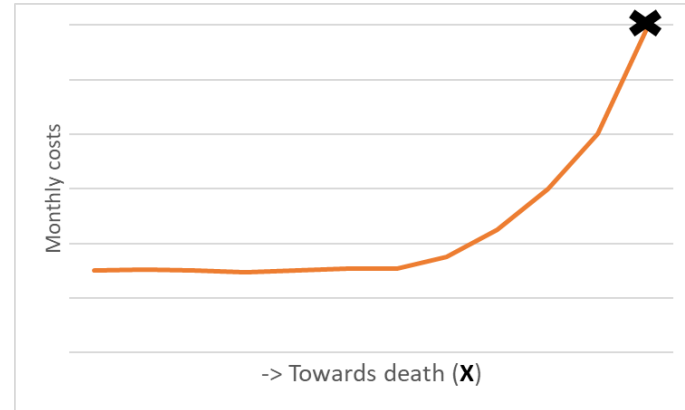
Healthcare costs highest in serious illness

(Scitovsky, 1984)

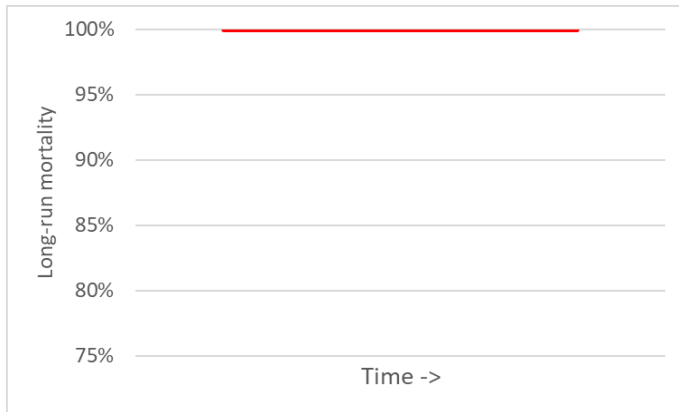


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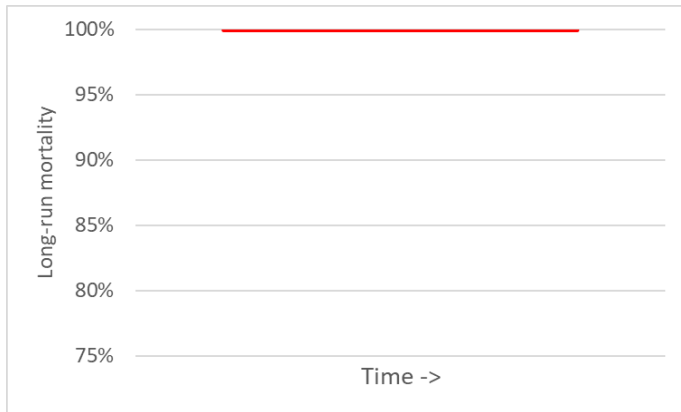
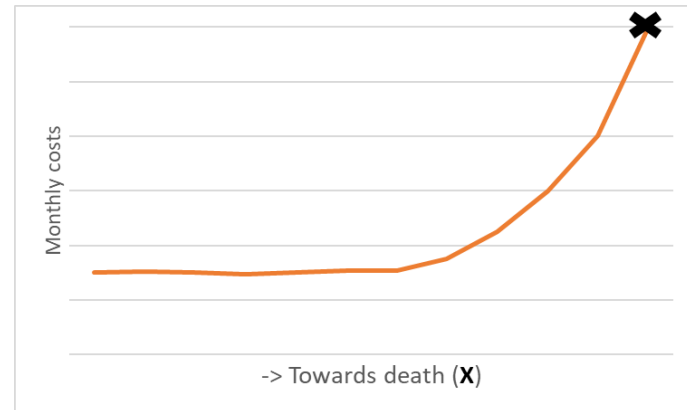


In the long run we're all dead
(Keynes, 1923)



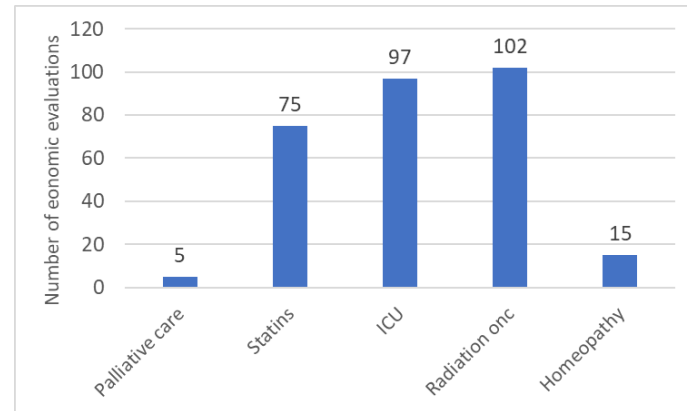
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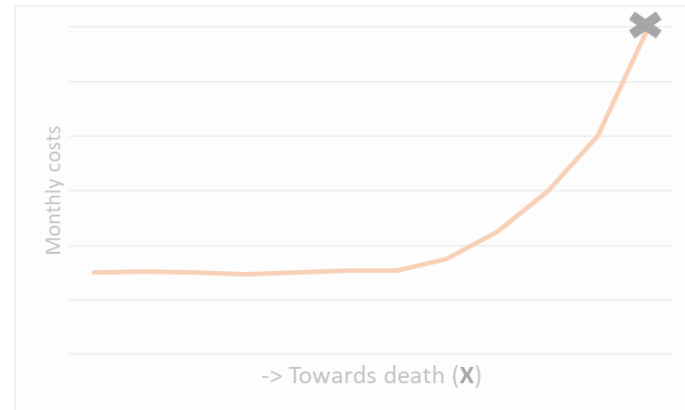
Lack of policy-relevant evidence
(per systematic reviews)



Economics of palliative care in three figures

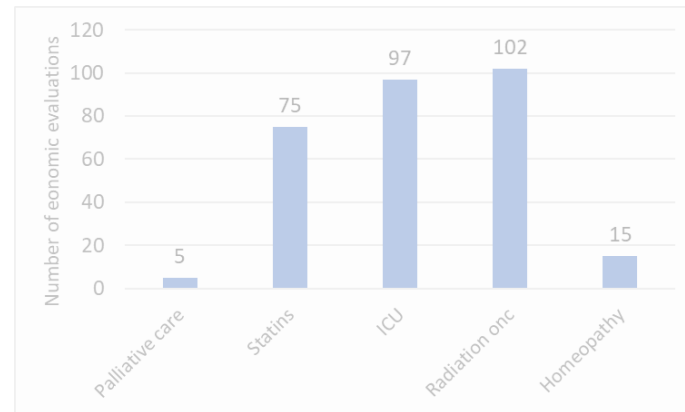


Healthcare costs highest in serious illness
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In the long run we're all dead
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Why is the evidence base so small relative to long-established economic and population health importance? How can we improve?

Overview

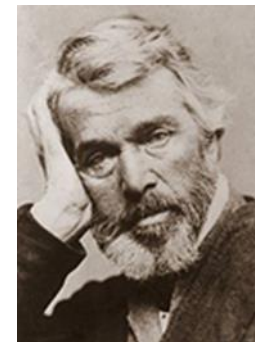
- Economic evaluation
 - Why?
 - What?
- Economic evidence on palliative care
 - Descriptive and predictive data
 - Evaluations and cost-effectiveness
 - Beyond CEA

Overview

- **Economic evaluation**
 - **Why?**
 - **What?**
- Economic evidence on palliative care
 - Descriptive and predictive data
 - Evaluations and cost-effectiveness
 - Beyond CEA

Why economic evaluation?

“The dismal science” – Thomas Carlyle (1795-1881)



- Why do we need economics in PEOLC?
 - **Scarcity**
 - Available resources < Cost of health-related demands
- Not an issue of budget but a fact of life
 - **Decisions** in allocation
 - We fund some things, not others
 - Every decision has an opportunity cost
 - Next best option not funded
- Imperative that services are a good use of scarce resources

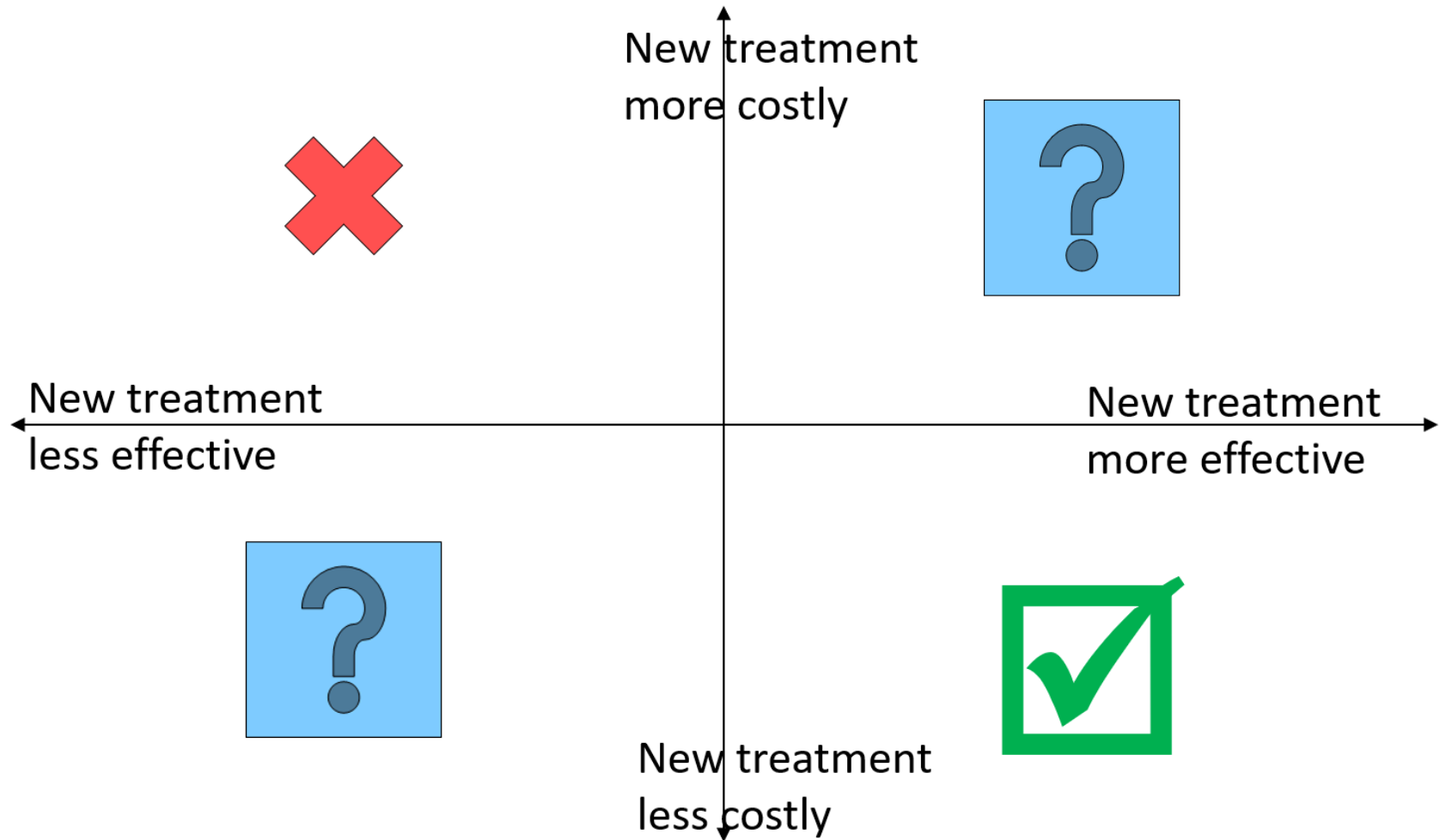


What is economic evaluation?

- ‘Full’ economic evaluation has two components:
 - Measuring treatment effect on costs
 - Formal costs: e.g. hospital, GP, nursing home, out-of-pocket pharma
 - Informal costs: care & help provided by friends, family
 - Measuring treatment effect on outcomes
 - Patient outcomes: e.g. survival, HRQoL
 - Family outcomes: e.g. caregiver HRQoL
- ‘Cost-consequence’ analysis
 - cost-effectiveness, cost-utility, cost-benefit, etc

Economic evaluation

Cost-consequence analysis



Everyday economic evaluation

Cost-consequence analysis



Everyday economic evaluation

- Full Sky subscription is ~£80 per month

Everyday economic evaluation

- Full Sky subscription is ~£80 per month
 - £960 per year

Everyday economic evaluation

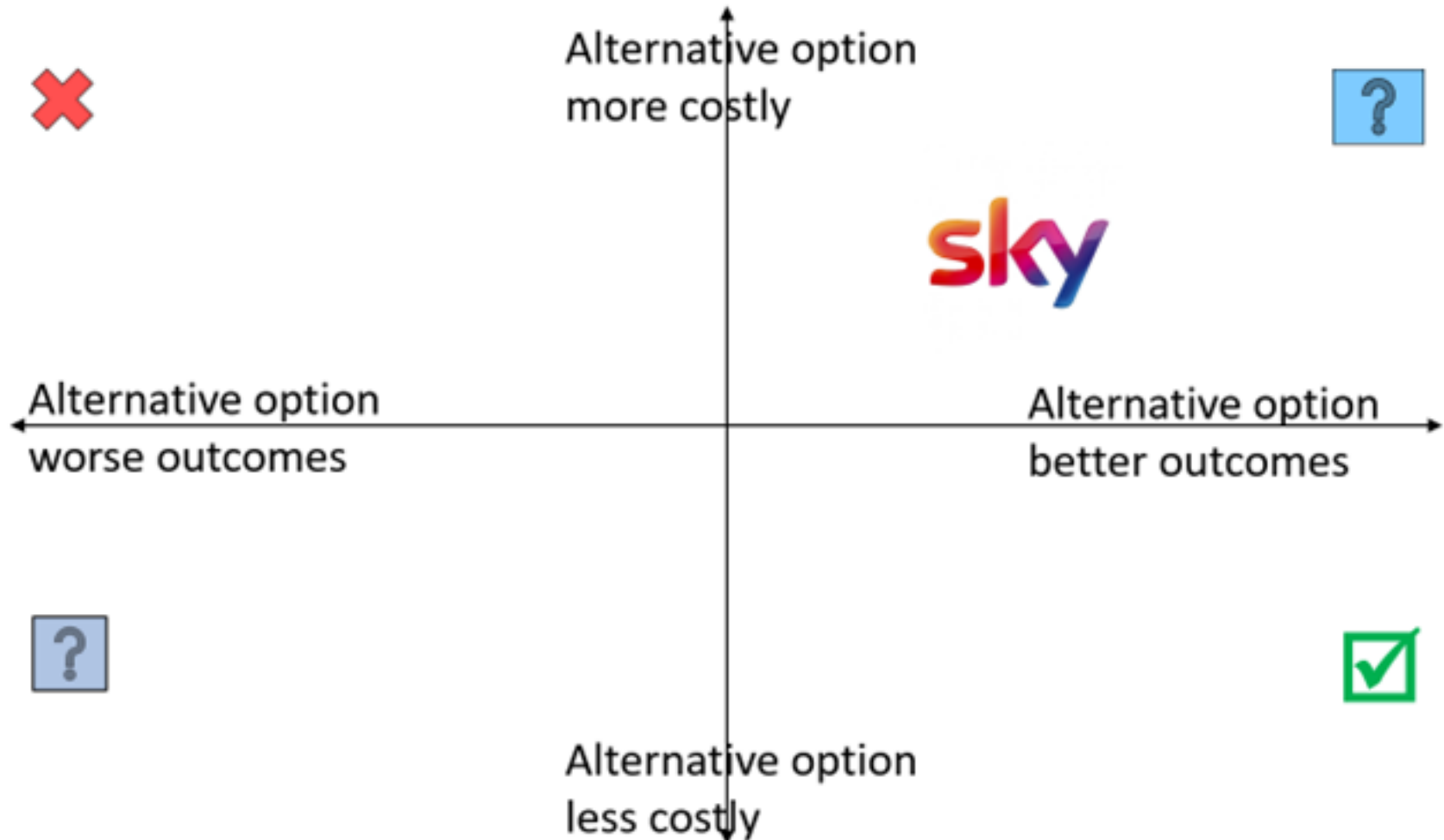
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 - £17,820 over an 18-year childhood

Everyday economic evaluation

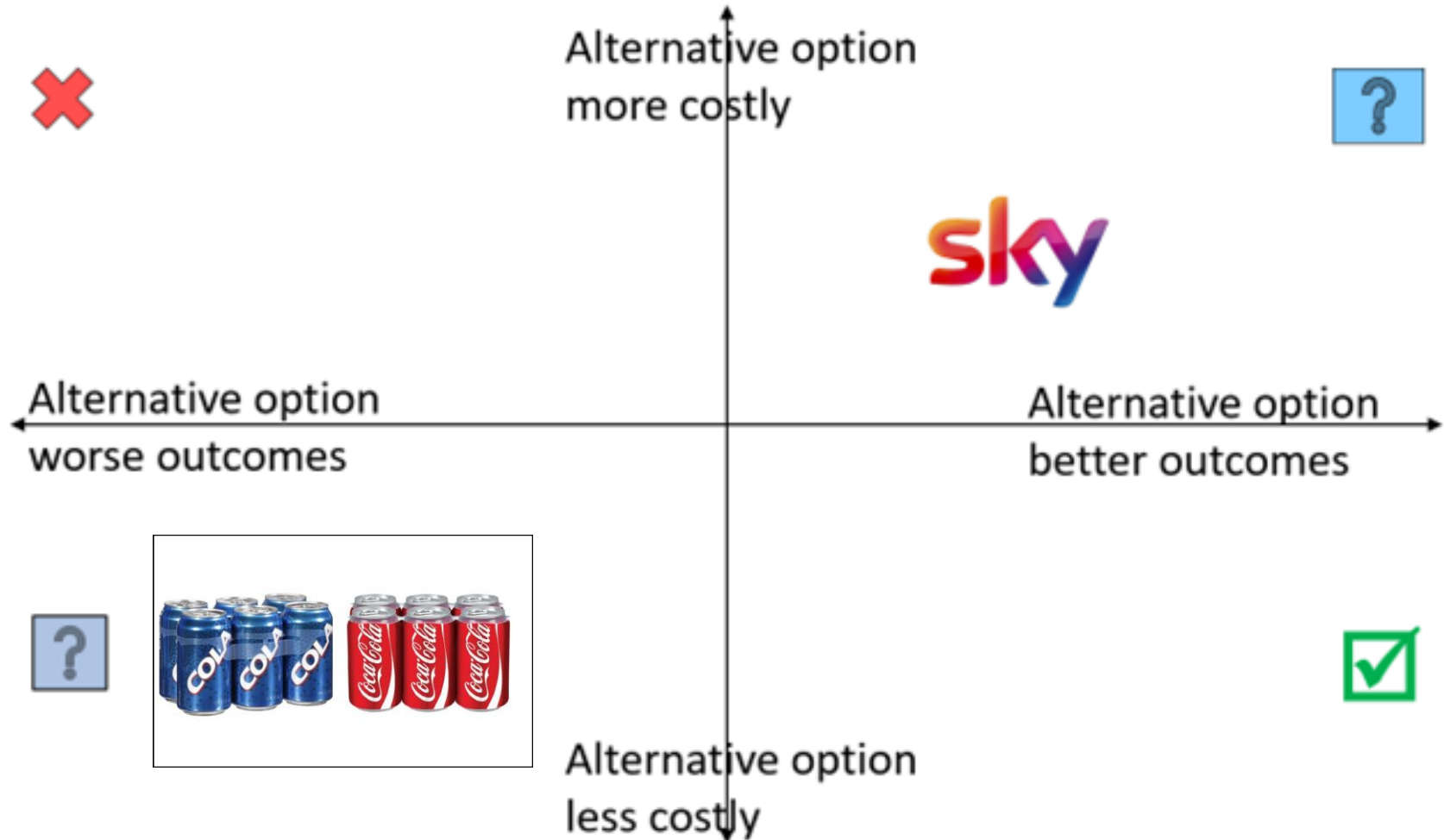
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- It's nice to have things we want
 - If we have the money, we can choose to spend it on Sky
 - BUT the decision has an opportunity cost – this money could instead go on a college fund, dental care, trumpet lessons...

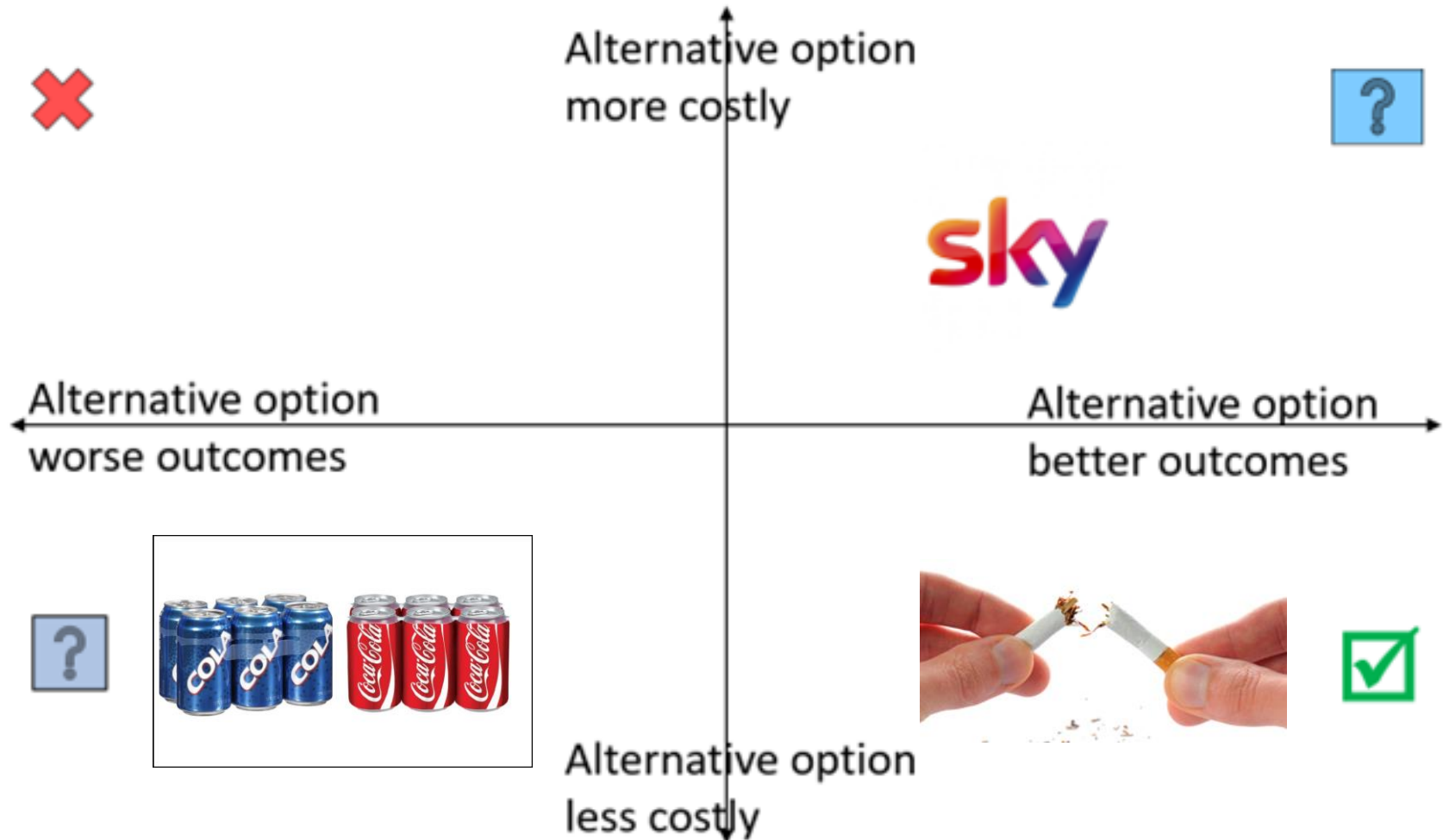
Everyday economic evaluation



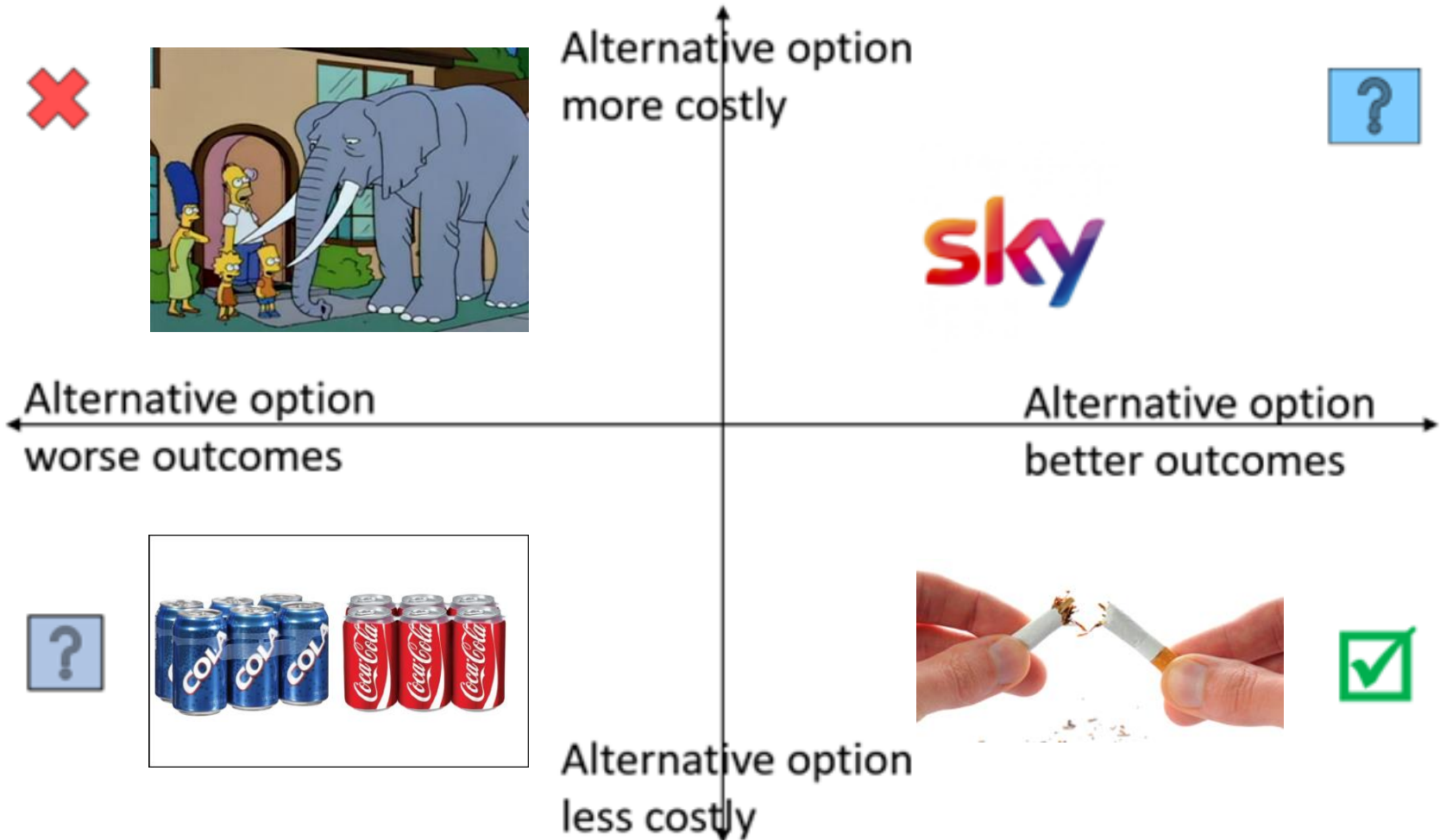
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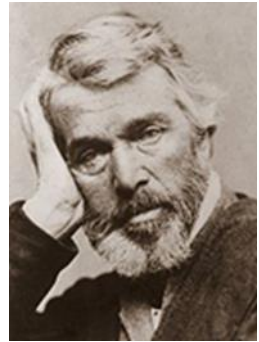


Everyday economic evaluation



Summary

"The dismal science" – Thomas Carlyle (1795-1881)



- Reality is dismal; scarcity a fact of life
 - Economic evaluation a tool to help manage (often unpalatable) choices
- Rationing is inevitable in all systems
 - Spending *per se* never the answer
- Does PC impact costs, outcomes?
 - Compared to the status quo, would more PC improve things?
 - A good use of scarce resources?



Overview

- Economic evaluation
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 - **Descriptive and predictive data**
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 - **Beyond CEA**

Overview

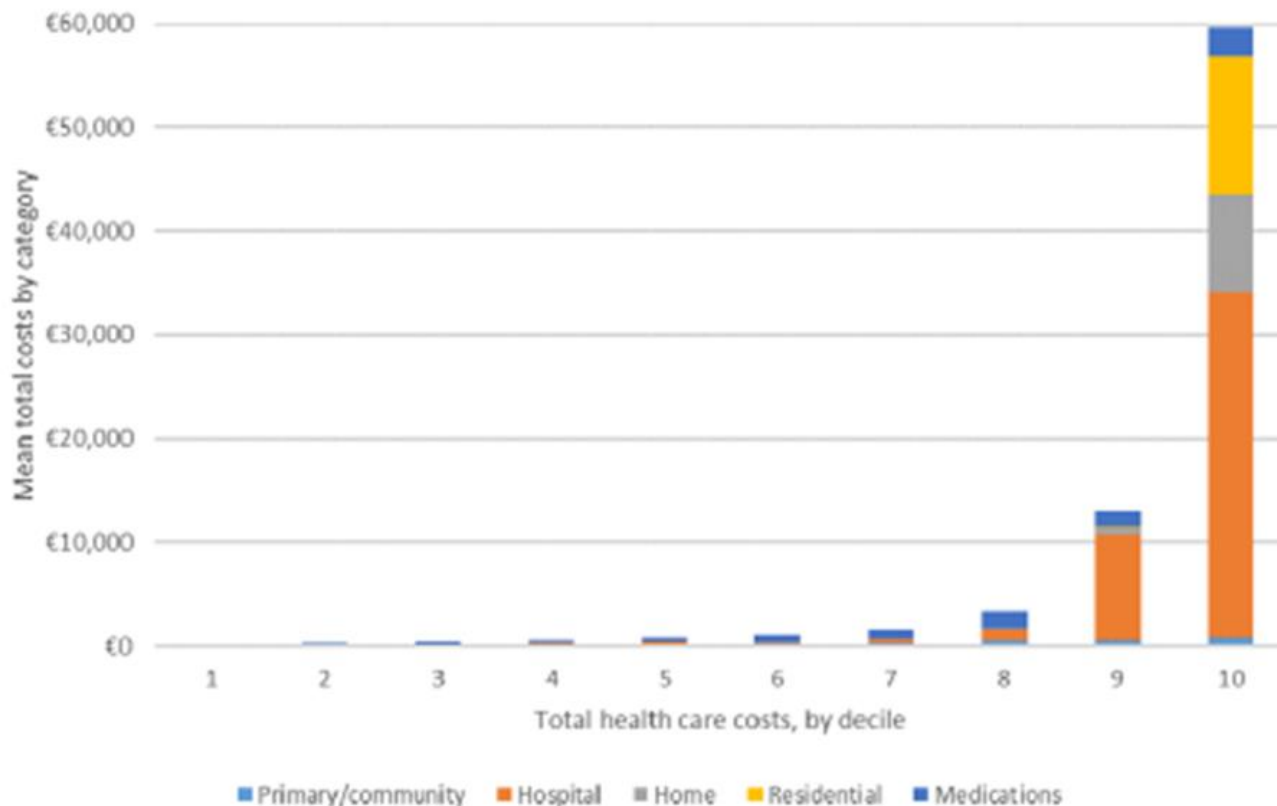
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Economic evidence on PEOLC

Descriptive data: costs in Ireland

- We analysed costs of formal health care in TILDA (N~8,000):

- Mean annual costs, aged 55+ = €8,053



May P, Moriarty F, Hurley E et al. Formal health care costs among older people in Ireland: methods and estimates using The Irish Longitudinal Study on Ageing (TILDA) [version 1]. HRB Open Res 2023, 6:16 (doi: 10.12688/hrbopenres.13692.1)

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Staidéar Fadaimseartha na hÉireann um Dhul in Aois

The Irish Longitudinal Study on Ageing

Economic evidence on PEOLC

Descriptive data: costs in Ireland

- We analysed costs of formal health care in TILDA (N~8,000):
 - Mean annual costs, aged 55+ = €8,053
 - Three very large predictors of costs:

	Marginal effect	95% CI
2+ IADLs	+€21,437	+12,763 to +30,112
Penultimate year of life	+€17,325	+8,439 to +26,210
Last year of life	+€17,865	+9,875 to +25,855

- Controlling for age, sex, education, medical card, insurance, marital status, urban/rural, diagnoses, physically active. Weighted to population by age, sex.

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The Irish Longitudinal
Study on Ageing

Economic evidence on PEOLC

Descriptive data: costs in Ireland

- We analysed family-reported LYOL experience (N=892):
 - Prevalence of potentially modifiable problems
 - Among those with cancer, major organ failure, ADRD, Parkinson's:

N=836	Prevalence
Moderate or severe pain	33%
Moderate or severe depression	33%
2+ ED visits	32%

- Excluding pain and depression preceding diagnosis of serious illness. Not weighted to the population.

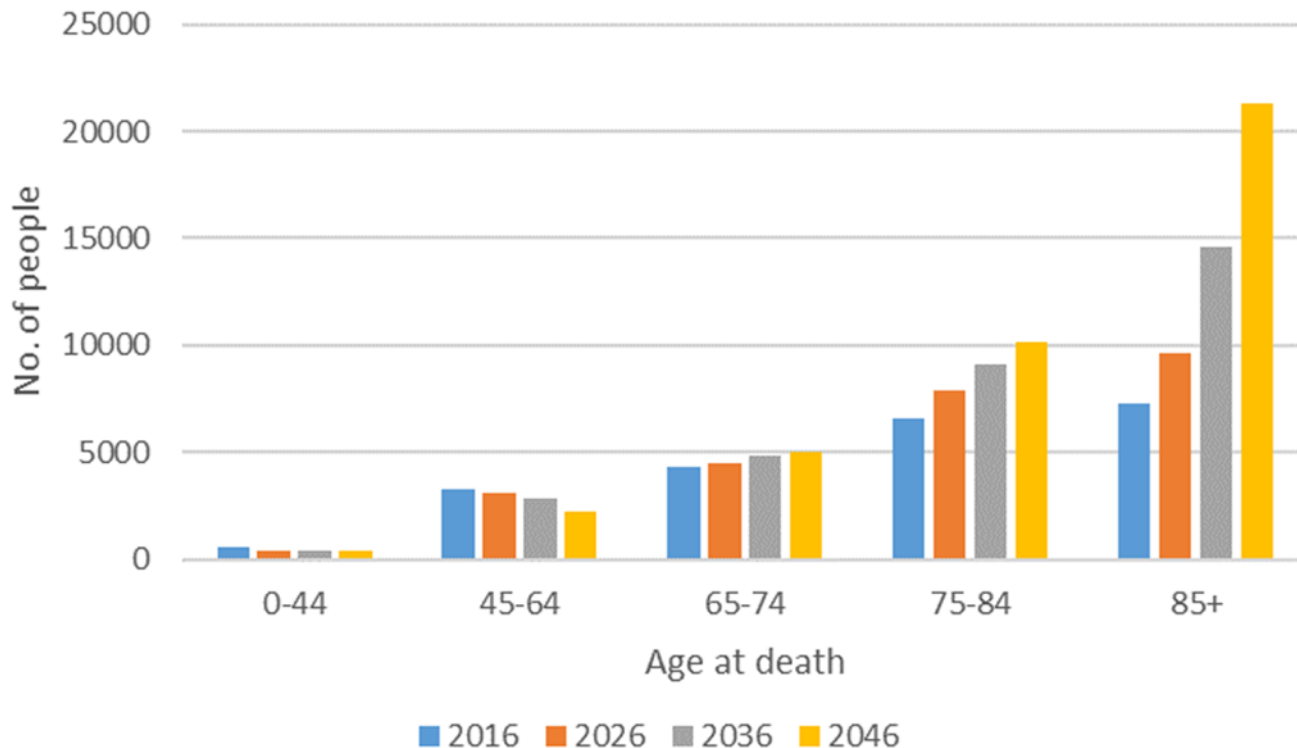
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Economic evidence on PEOLC

Future trends: needs

- How many people will live and die with serious illness in Ireland?
 - Projected deaths from a serious illness to rise 70% in 30 years



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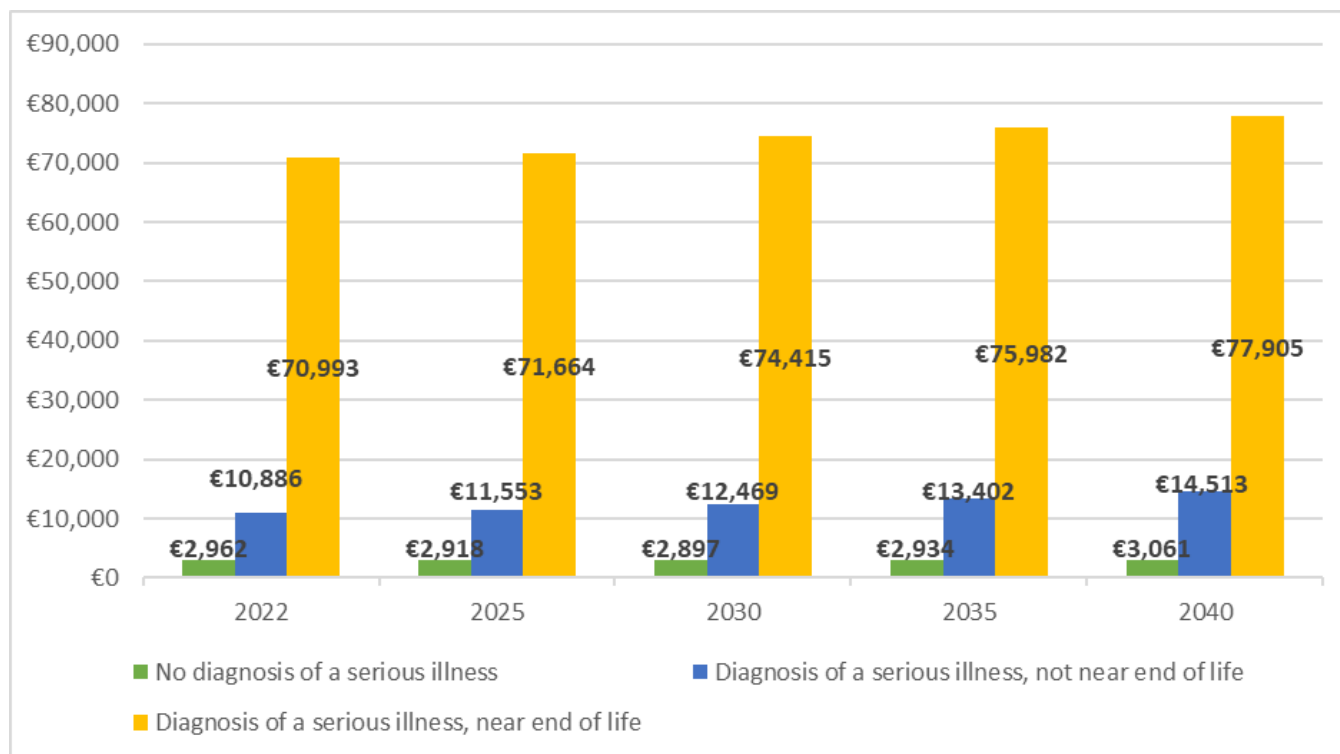
doi: 10.12688/hrbopenres.12975.2

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Economic evidence on PEOLC

Future trends: costs

- What are the associated costs?
 - Using microsimulation to capture changing profiles, costed in 2022€
 - Individual-level costs rise in serious illness, LYOL and not



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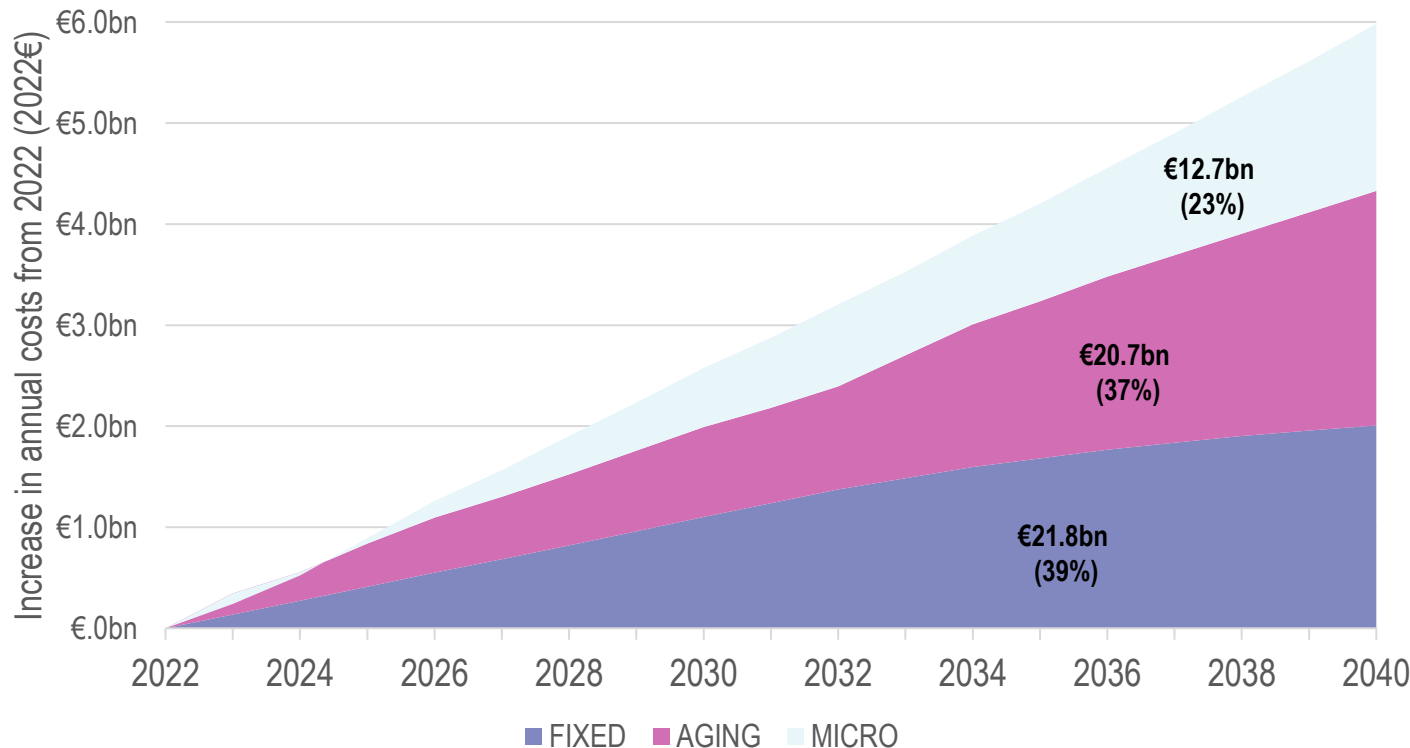
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Economic evidence on PEOLC

Future trends: growing complexity

- What is driving these cost increases?

- Not rising inputs, we're still in 2022€



FIXED= Cost increases due to absolute number of people
 AGEING=Cost increases due to ageing and life expectancy
 MICRO=Cost increases due to growing complexity of the population

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Economic evidence on PEOLC

Descriptive data: a powerful case for action

- Urgency to improve resource allocation clear:
 - Costs highest in last two years of life
 - Spending often yields poor value
 - Fast-rising population health needs
 - Costs rising faster: complexity, medicines, tech, staffing
- So, what can we do about it?
 - What does the *evaluative* evidence tell us?

Overview

- Economic evaluation
 - What?
 - Why?
- **Economic evidence on palliative care**
 - Descriptive data
 - **Evaluations and cost-effectiveness**
 - Beyond CEA

Economic evidence on PEOLC

Evaluations: observational data and cohort studies

- Lots of observational studies:

- Smith et al, 2014
- 46 papers
- Pattern of cost-saving

Review Article

Evidence on the cost and cost-effectiveness of palliative care: A literature review

Samantha Smith¹, Aoife Brick¹, Sinéad O'Hara¹
and Charles Normand²



Palliative Medicine
2014, Vol 28(2) 130-150
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DOI: 10.1177/02692163134993466
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Abstract

Background: In the context of limited resources, evidence on costs and cost-effectiveness of alternative methods of delivering health-care services is increasingly important to facilitate appropriate resource allocation. Palliative care services have been expanding worldwide with the aim of improving the experience of patients with terminal illness at the end of life through better symptom control, coordination of care and improved communication between professionals and the patient and family.

Aim: To present results from a comprehensive literature review of available international evidence on the costs and cost-effectiveness of palliative care interventions in any setting (e.g. hospital-based, home-based and hospice care) over the period 2002–2011.

Design: Key bibliographic and review databases were searched. Quality of retrieved papers was assessed against a set of 31 indicators developed for this review.

Data Sources: PubMed, EURONHEED, the Applied Social Sciences Index and the Cochrane library of databases.

Results: A total of 46 papers met the criteria for inclusion in the review, examining the cost and/or utilisation implications of a palliative care intervention with some form of comparator. The main focus of these studies was on direct costs with little focus on informal care or out-of-pocket costs. The overall quality of the studies is mixed, although a number of cohort studies do undertake multivariate regression analysis.

Conclusion: Despite wide variation in study type, characteristic and study quality, there are consistent patterns in the results.

Palliative care is most frequently found to be less costly relative to comparator groups, and in most cases, the difference in cost is statistically significant.

Economic evidence on PEOLC

Evaluations: observational data and cohort studies

- Lots of observational studies:

- Luta et al, 2021
- 43 reviews (!)
- Pattern of cost-saving

RESEARCH ARTICLE

Open Access

Evidence on the economic value of end-of-life and palliative care interventions: a narrative review of reviews



Xhyljeta Luta^{1,2*}, Baptiste Ottino¹, Peter Hall³, Joanna Bowden^{3,4,5}, Bee Wee⁶, Joanne Droney^{2,7}, Julia Riley^{2,7} and Joachim Marti^{1,2}

Abstract

Background: As the demand for palliative care increases, more information is needed on how efficient different types of palliative care models are for providing care to dying patients and their caregivers. Evidence on the economic value of treatments and interventions is key to informing resource allocation and ultimately improving the quality and efficiency of healthcare delivery. We assessed the available evidence on the economic value of palliative and end-of-life care interventions across various settings.

Methods: Reviews published between 2000 and 2019 were included. We included reviews that focused on cost-effectiveness, intervention costs and/or healthcare resource use. Two reviewers extracted data independently and in duplicate from the included studies. Data on the key characteristics of the studies were extracted, including the aim of the study, design, population, type of intervention and comparator, (cost-) effectiveness resource use, main findings and conclusions.

Results: A total of 43 reviews were included in the analysis. Overall, most evidence on cost-effectiveness relates to home-based interventions and suggests that they offer substantial savings to the health system, including a decrease in total healthcare costs, resource use and improvement in patient and caregivers' outcomes. The evidence of interventions delivered across other settings was generally inconsistent.

Conclusions: Some palliative care models may contribute to dual improvement in quality of care via lower rates of aggressive medicalization in the last phase of life accompanied by a reduction in costs. Hospital-based palliative care interventions may improve patient outcomes, healthcare utilization and costs. There is a need for greater consistency in reporting outcome measures, the informal costs of caring, and costs associated with hospice.

Keywords: End-of-life care, Terminal care, Palliative care, Cost - effectiveness, Health care costs

Economic evidence on PEOLC

Evaluations: observational data and cohort studies

- Economic reviews are widely cited:
 - Large number of 2ary data studies
 - Consistent story
 - Cost-savings in home care, hospital care
 - Less so inpatient hospice

Review Article



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 - **Trials show better outcomes**

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Effectiveness and cost-effectiveness of home palliative care services for adults with advanced illness and their caregivers (Review)

Gomes B, Calanzani N, Curiale V, McCrone P, Higginson IJ



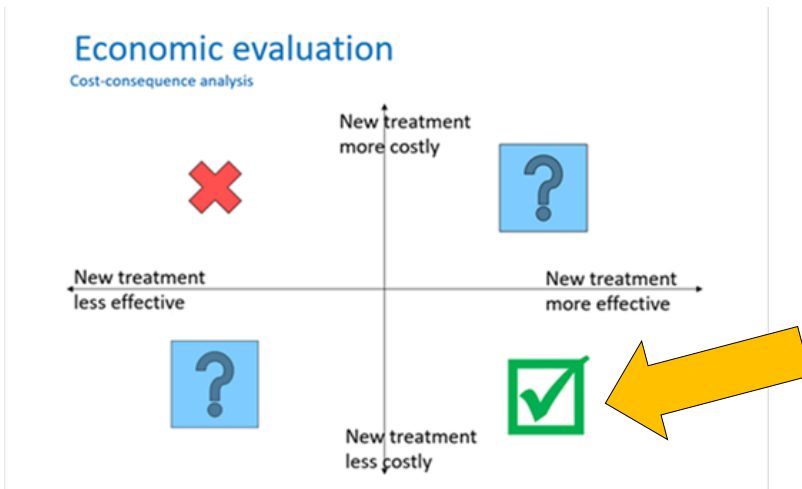
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 - Less so inpatient hospice
 - Trials show better outcomes
 - So... what's the problem?



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Cochrane Database of Systematic Reviews

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Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

1. Quality of cost evidence:

- Secondary data studies, no quality threshold
 - Unobserved confounding
 - Preferences, proximity to death
 - Sampling
 - Counting forwards vs backwards

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1. Quality of cost evidence:

- Secondary data studies, no quality threshold
 - Unobserved confounding
 - Preferences, proximity to death
 - Sampling
 - Counting forwards vs backwards
- Trial evidence more ambiguous
 - Improved QoL, reduced hospital deaths...
 - ... but not cost-effective (!?)

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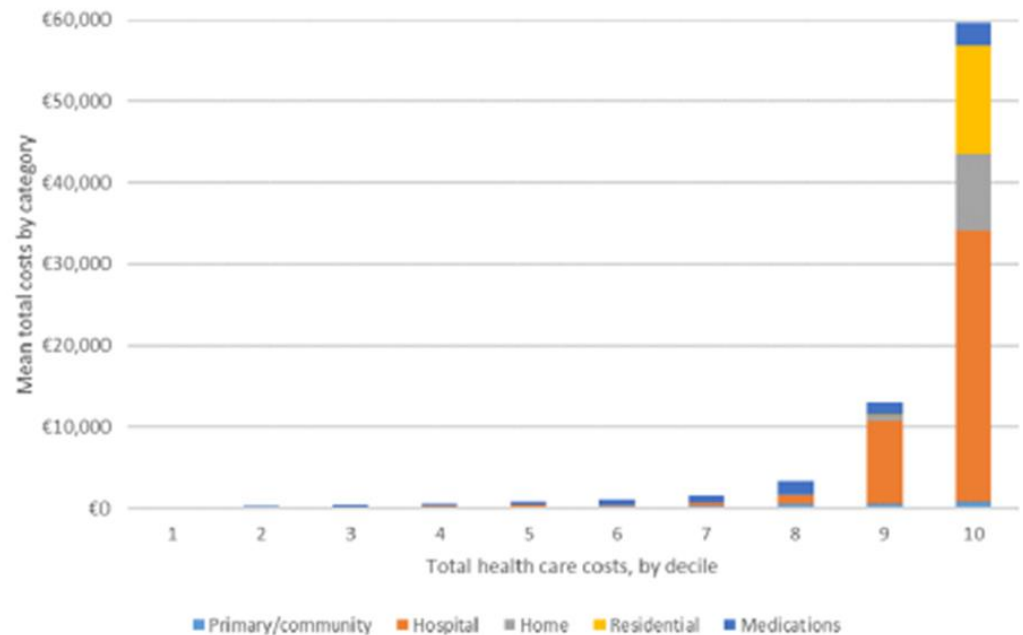
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Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

2. Devil in the distribution

- Long understood for population-level costs
- Pareto principle, or 80:20 rule
- E.g. formal costs for older people (55+) in Ireland:
 - Mean annual costs = €8,053



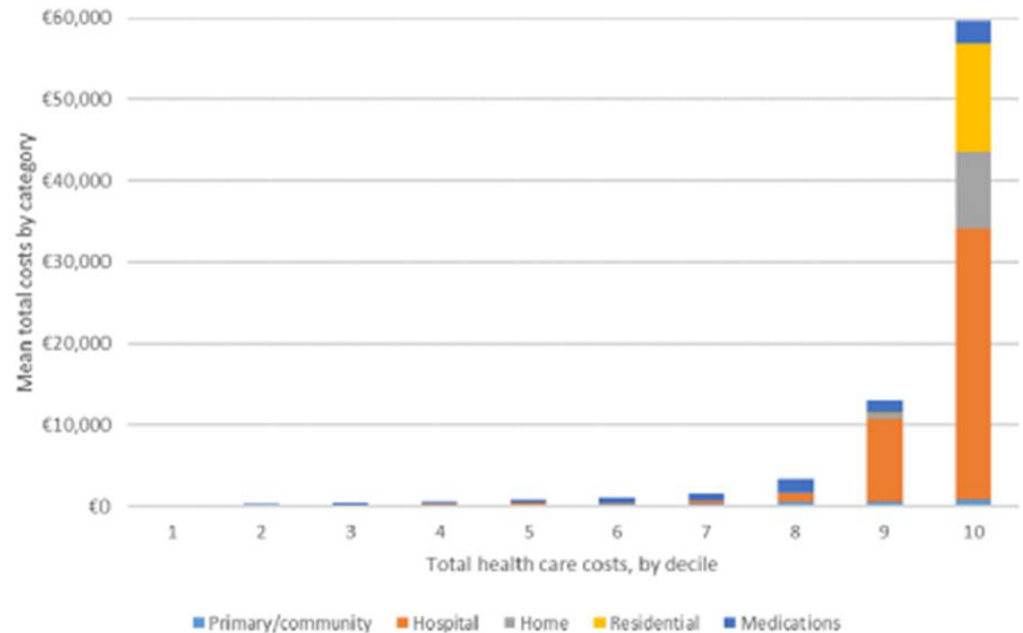
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Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

2. Devil in the distribution

- Perhaps less discussed - distribution among people with serious illness



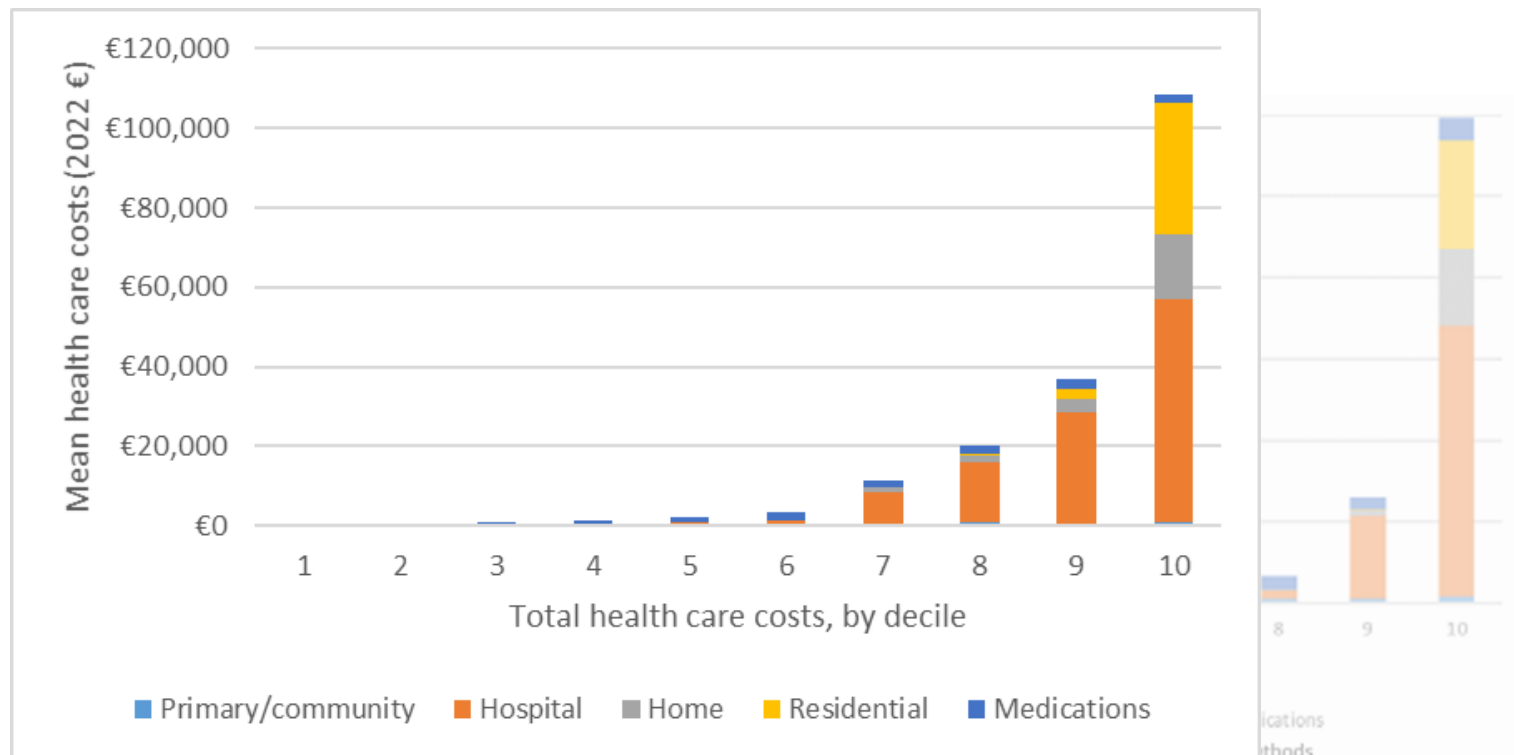
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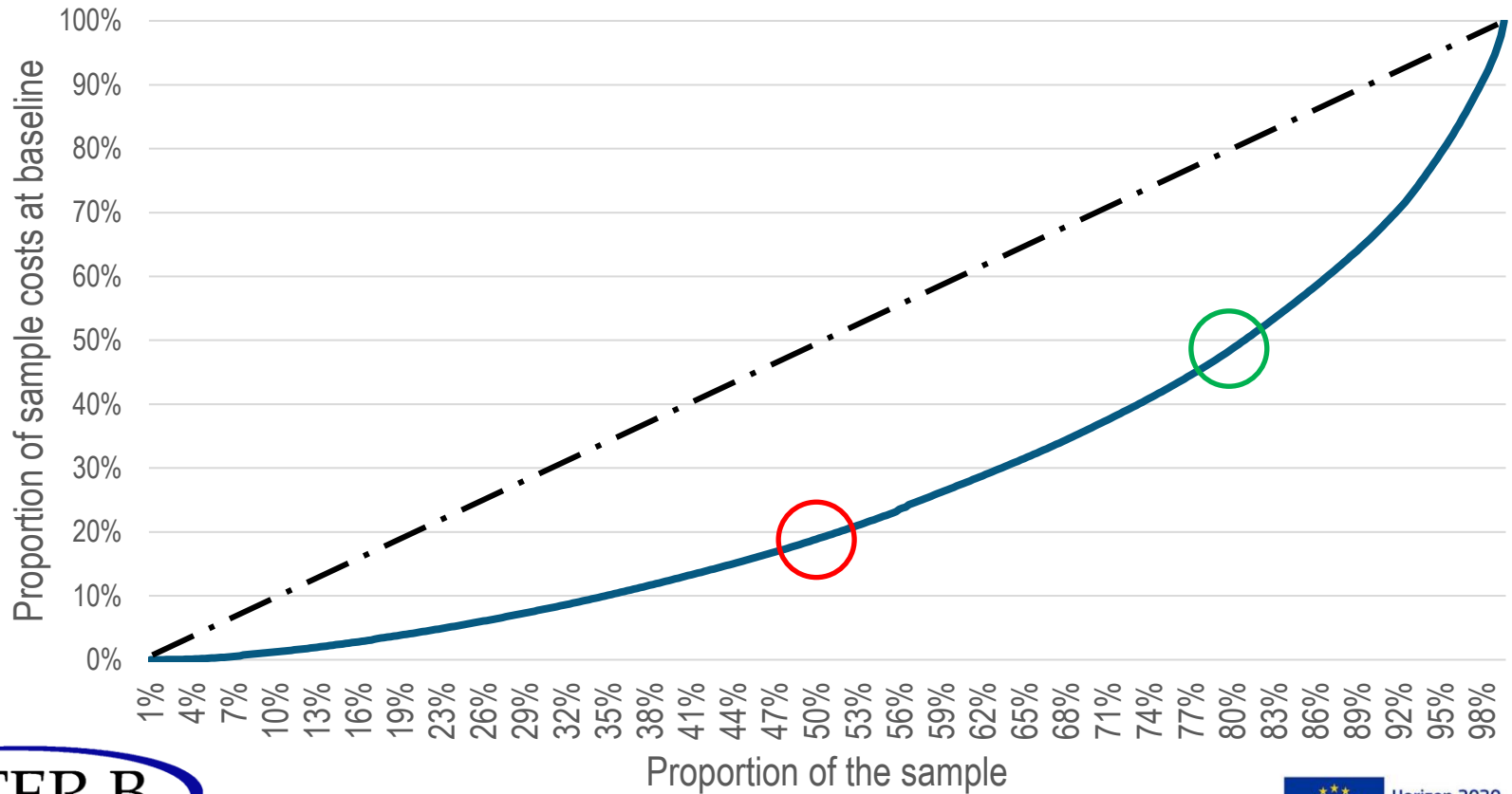
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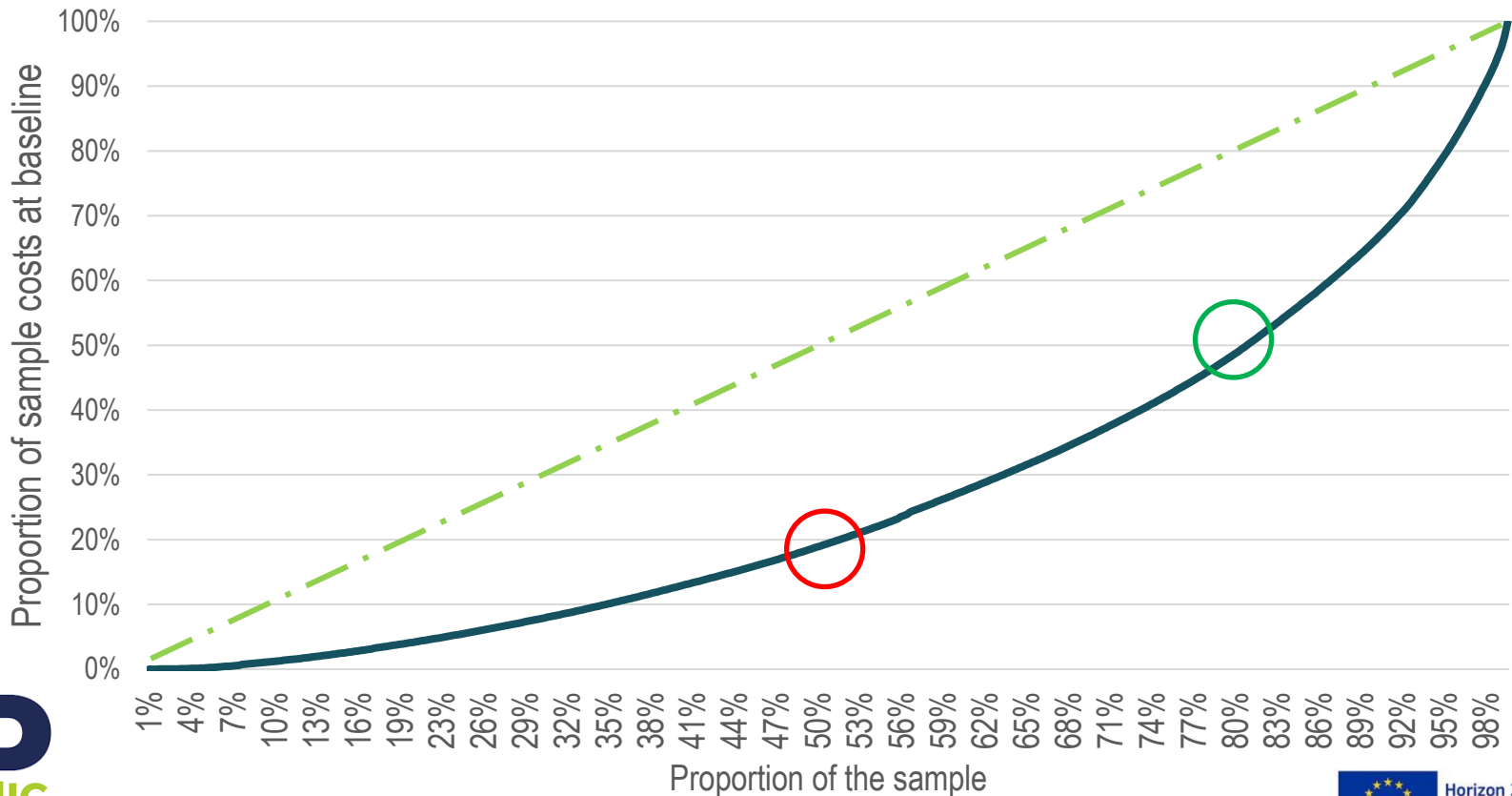


BETTER-B

Economic evidence on PEOLC

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Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

2. Devil in the distribution

- Important for trials/economic evaluation:
 - If cost-effectiveness depends on reduced hospital admissions/deaths...
 - ... we need to be recruiting the people who go to hospital

Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

3. Lack of full economic evaluations:

- Mathew et al (2020)
- Parackal et al (2021)
 - Five economic evaluations for all PEOLC

Review Article

Economic Evaluation of Palliative Care Interventions: A Review of the Evolution of Methods From 2011 to 2019

Anna Parackal, HBSc, MSc¹, Karishini Ramamoorthi, HBSc, MSc¹, and Jean-Eric Tarride, BA, MA, PhD^{1,2,3,4}

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Review Article

Economic evaluations of palliative care models: A systematic review

Christine Mathew¹, Amy T. Hsu^{1,2,3}, Michelle Prentice^{1,2}, Peter Lawlor^{1,4}, Kwadwo Kyeremanteng^{4,6}, Peter Tanuseputro^{1,4} and Vivian Welch^{1,5}



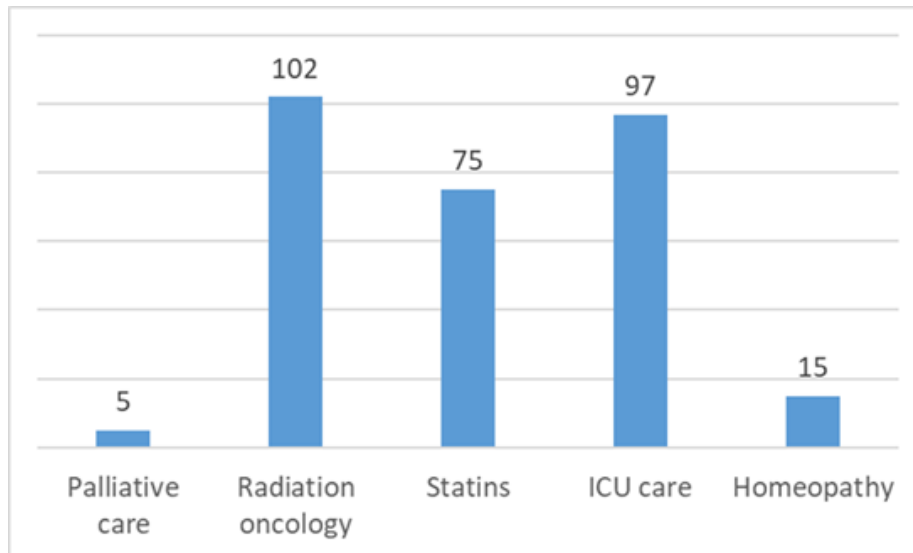
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Economic evidence on PEOLC

If it's a no-brainer, what's the problem?

3. Lack of full economic evaluations:

- Mathew et al (2020)
- Parackal et al (2021)
 - Five economic evaluations for all PEOLC



Number of economic evaluations, per systematic reviews

Review Article

Economic Evaluation of Palliative Care Interventions: A Review of the Evolution of Methods From 2011 to 2019

Anna Parackal, HBSc, MSc¹, Karishini Ramamoorthi, HBSc, MSc¹, and Jean-Eric Tarride, BA, MA, PhD^{1,2,3,4}

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PALLIATIVE MEDICINE

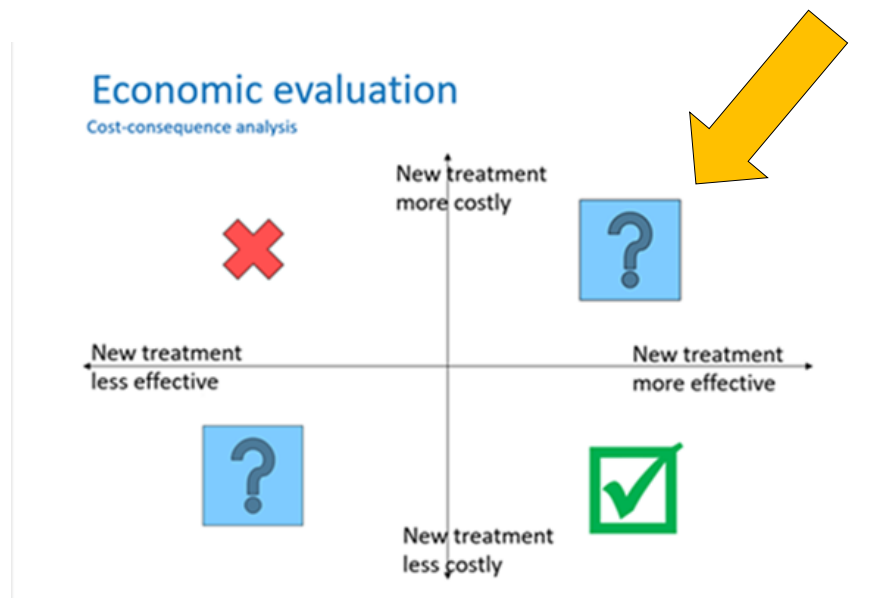
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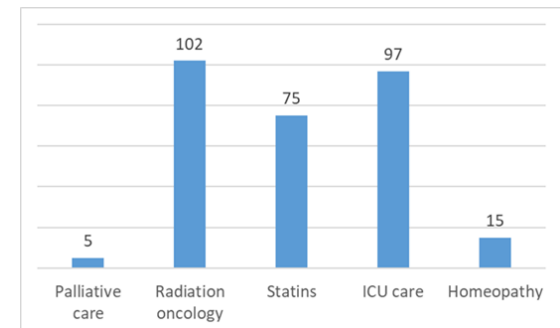
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Overview

- Economic evaluation
 - What?
 - Why?
- **Economic evidence on palliative care**
 - Descriptive data
 - Evaluations and cost-effectiveness
 - **Beyond CEA**

Economic evidence on PEOLC

New horizons: household economics

- More evidence that informal costs > formal
 - Health (not social) care in England: LYOL costs ~£25,000
 - Informal care per Johnson et al: ~£41,000
- Descriptively a huge issue
 - Less clear what to do interventionally
 - Measurement issues in recorded unpaid care
 - Many carer hours will persist regardless
 - Large-scale substitution financially unfeasible
- For now, our interest (again) in moving beyond LYOL
 - Into the bereavement period and beyond

Original Article

The cost of providing care by family and friends (informal care) in the last year of life: A population observational study

Miriam J Johnson¹, David C Currow², Jade Chynoweth³, Helen Weatherly⁴, Gamze Keser⁵, Ann Hutchinson¹, Annie Jones¹, Laurie Dunn⁶ and Victoria Allgar¹



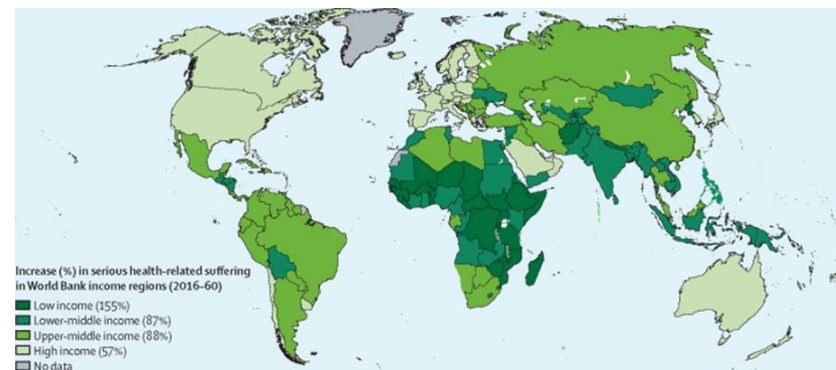
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Economic evidence on PEOLC

Beyond CEA: household economics

- Adverse health effects of bereavement clear
 - Especially in older adults
- But much more important may be opportunity costs of caring
 - For retired people, these are relatively low
 - For young people, e.g. leaving the workforce or education, they're huge
- In particular two areas of interest
 - Paediatric palliative care
 - LMIC settings



Sleeman KE, et al. The escalating global burden of serious health-related suffering. *Lancet Glob Health*. 2019 Jul;7(7):e883-e892.

Economic evidence on PEOLC

Beyond CEA: understanding decision-making

- In microeconomics 101 we learn that people
 - Aim to make decisions that get the best outcomes
 - Need good information to make good decisions
 - Healthcare is a paradigmatic example of challenges
 - Saini et al (2017) estimated 80% of h/care costs come from physician-patient decision-making, yet...
 - Physicians don't understand patient preferences
 - Patients and families don't understand options, outcomes, uncertainties

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ECONOMICS OF MEDICAL CARE

By KENNETH J. ARROW*

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 - Physicians don't understand patient preferences
 - Patients and families don't understand options, outcomes, uncertainties
- Care for serious illness intensifies these problems
 - Unequal access, understanding of available supports
 - Once accessed; empathy gaps, personal/cultural preferences, clinical uncertainty...
- It's not enough to have cost-effective models of care.
- We must think about every aspect of the patient and family decision-making process to improve access, process and so outcomes

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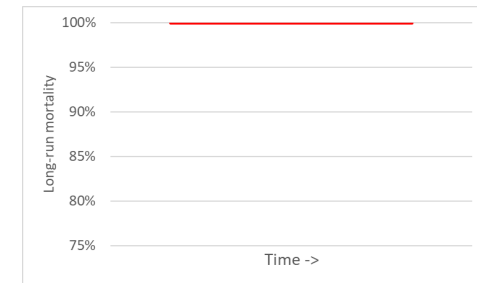
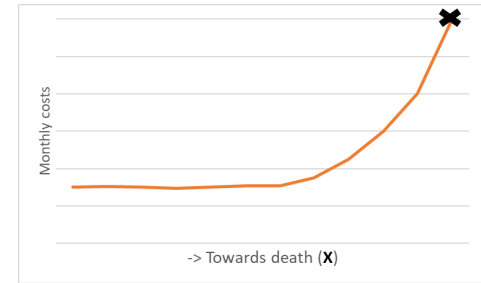
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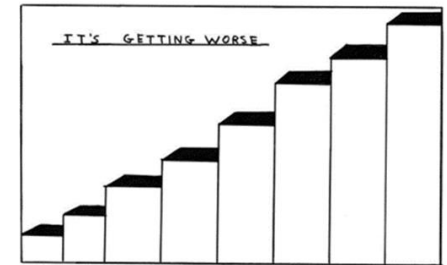
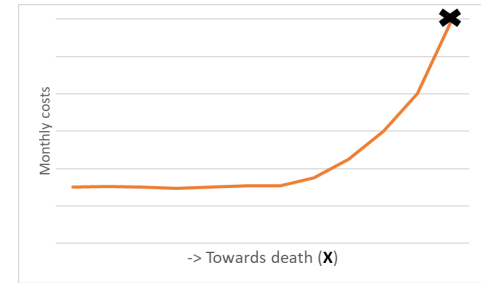
Conclusion

- Descriptive data eye-catching
 - Costs highest near EOL
 - High population need, modifiable problems



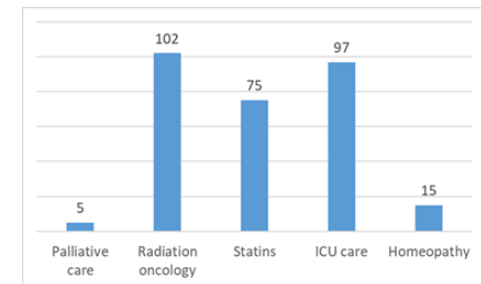
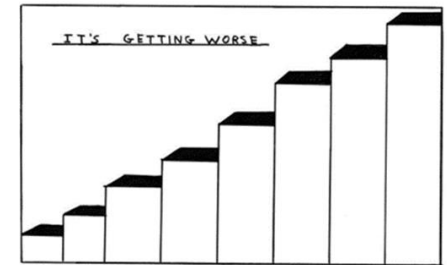
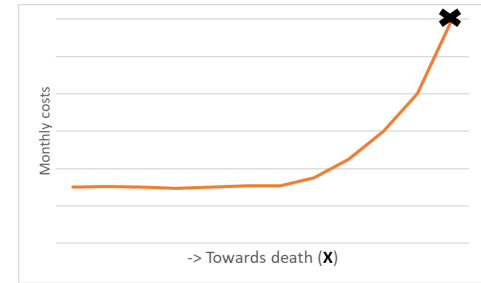
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 - Fast-growing needs in Ireland and globally
 - Costs growing faster still



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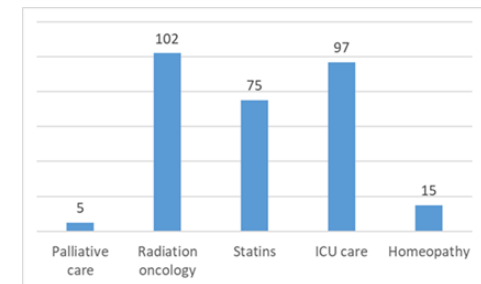
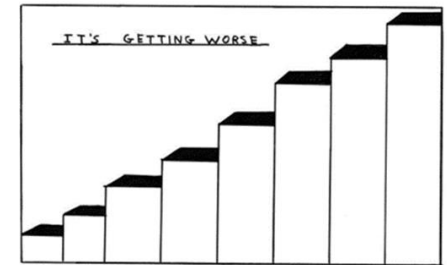
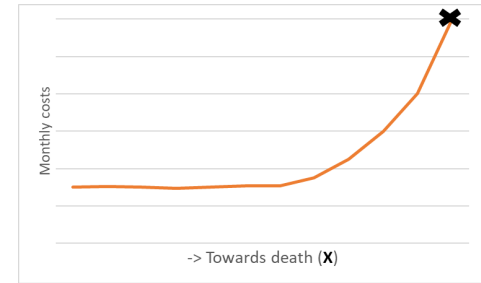
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 - Quality < Quantity of studies
 - (many good reasons for this...)
 - **Meeting current and future needs requires better evidence**
 - Through economic evaluation but other approaches too



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- Care for people with serious illness 🤝 Economics

Making better decisions





Cicely Saunders
International
Better care at the end of life

WHO Collaborating Centre for
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Comments? Questions?



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