The Fiscal Implications of Demographic Change in the Health Sector

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Outline

- **Introduction**
- **Data**
- **Model Components**
  - *Demographic Cost Drivers*
  - *Income and Residual Cost Drivers*
- **Projection Model**
- **Results**
- **Conclusions**

Introduction

- **Context**
  - Substantial increases over two decades preceding crisis of 2008 from low base (Wren,2004).
  - Fiscal retrenchment results in reduction in spending after crash. Expenditure plans of previous government imply restrained spending growth.
  - Demographic change proceeds apace, population (still) expanding and ageing. This has associated costs.

- **This working paper aims to**:
  - Quantify the costs associated with demographic change on overall current public health expenditure using a simple model.
  - Produce projections of public health spending to 2035.
  - Briefly highlight likely compositional changes to health spending induced by an ageing and expanding population.

Data

- **Data Sources include:**
  - CSO (2013) Population Projections M1F1 and M2F2 with attendant life expectancy and mortality rate projections by year cohort.
  - EU-15 Average Age and Gender Specific costs (EU AWG, 2012).
  - ➢ Irish data unavailable
  - NERI (2015) and OECD (2013) estimates of GDP growth.
  - SHA (2011) estimates of Current Public Health Expenditure (CSO, 2015).

Model Components

- **Demographic Component**
  - Age Composition - Literature indicates not very important (Zweifel et al.,1999; Anderson and Hussey, 2002).
  - Death Related Costs – More significant predictor of health costs, proximity to death. High concentration of cost immediately preceding death. (Stooker et al.,2001; McGrail et al.,2000)
  - Morbidity – Will increases in life expectancy result in a larger portion of life spent ill or healthy? (**Expansion vs Compression**)

- **Death related costs**
  - Hypothesis states that relevant factor in cost incidence and care demands is proximity to death rather than age per se (Gray, 2005).
  - Majority of lifetime healthcare costs accumulate at the end of an individuals life.
  - Death related costs higher for younger patients than old ones. Generally offset by lower mortality rates.

- **Morbidity Compression or Expansion**
  - Debate as to whether healthcare improvements characterised by expansions or contractions with respect morbidity.
  - Morbidity expansion implies that increases in life expectancy translate into more years spent in ill-health. Chronic illness and disability drives increases.
  - Morbidity compression proponents suggest that number of years spent in good health will increase as life expectancy increases. The relative portion of life spent in ill-health shrinks.
  - Some evidence for morbidity compression outpacing life expectancy gains within “treatment groups”-Hubert and Frees (1994), Chakravarty et al. (2008).

Income and Residual Cost Drivers

- **Income**
  - Response of health demanded to income changes. Measured via and income elasticity of health demand. For every 1% change in income, what is the percentage change in health demanded?

- **Residual**
  - Expenditure growth left unexplained by demographic or income related factors.

  - Thought to include factors such as:

I. Technology
II. Relative Prices
III. Institutional Arrangements and Policies

  - Difficult to forecast these factors. Relative Prices, “Baumol Effect” may be relevant for particular sectors, but can’t be assumed for health service as a whole. Data limitations also pose difficulties.

Projection Model

$$\Delta \ln\left(\frac{H}{N}\right)_t = \Delta \ln D_t + \varepsilon \Delta \ln\left(\frac{Y}{N}\right)_t + \Delta \ln \gamma_t$$

Per capita current public spending cost growth is a function of demographic cost pressure, the response of health demand to changes in income (Real GDP per Capita) and residual growth factors (OECD, 2015).

- Demographic cost growth:
  - Death Costs → Multiply age/gender specific per capita death costs by decedent population by cohort. Mortality rates from CSO.
  - Survivor Costs → Subtract cohort specific death costs from total health costs for that cohort and divide by the surviving population.
  - Under morbidity expansion, survivor and death per capita costs remain constant. Under compression, per capita survivor costs adjusted according to LE gains. Constant ratio between per capita survivor and death related costs used to calculate adjusted death costs in accordance with survivor adjustments.

- Income Component
  - Central scenario sets ε at 0.8. Sensitivity performed for elasticities of 0.6 and 1.
  - M1F1 growth equals QEO projections to 2017, 3% annually thereafter (OECD).
  - M2F2 growth same to 2017. Rest of forecast growth=Employment Growth + Productivity Growth (1.5%).

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Table of Nomenclature for Results

Scenario	Gains in Life Expectancy= Gains in healthy life years	Cost Profile Remains Constant	Residual stays a constant 1.5%	Residual declines from 1.5% in 2013 to 0 in 2035
Scenario 1 Morbidity Expansion		✓	✓	
Scenario 1 Morbidity Compression	✓		✓	
Scenario 2 Morbidity Expansion		✓		✓
Scenario 2 Morbidity Compression	✓			✓

Results

Table 1: Average Annual Direct Demographic Cost Pressure (pg. 14)

Years (Inclusive)	*Million € Spending Pressure (at 2013 prices)*				*% Overall Annual Expenditure Growth due to demographics*			
	Morbidity Expansion		**Morbidity Compression**		**Morbidity Expansion**		**Morbidity Compression**	
Population Projection	*M1F1*	*M2F2*	*M1F1*	*M2F2*	*M1F1*	*M2F2*	*M1F1*	*M2F2*
2013-2015	€152.37	€142.42	€121.35	€111.40	1.16%	1.08%	0.92%	0.85%
2016-2018	€195.91	€167.46	€162.53	€134.16	1.44%	1.24%	1.21%	1.00%
2019-2021	€237.49	€189.23	€202.03	€154.01	1.67%	1.35%	1.44%	1.11%
2022-2024	€265.95	€202.07	€228.21	€164.80	1.78%	1.38%	1.56%	1.15%
2025-2027	€281.94	€210.23	€243.00	€171.96	1.79%	1.38%	1.58%	1.16%
2028-2030	€295.92	€220.25	€256.14	€181.40	1.78%	1.39%	1.59%	1.18%
2031-2033	€303.43	€223.18	€264.15	€185.17	1.73%	1.35%	1.57%	1.16%
2034-2035	€306.85	€222.16	€267.87	€184.82	1.68%	1.30%	1.53%	1.13%

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Figure 5: Cumulative Demographic Cost Pressure at 2013 Prices (pg.15)

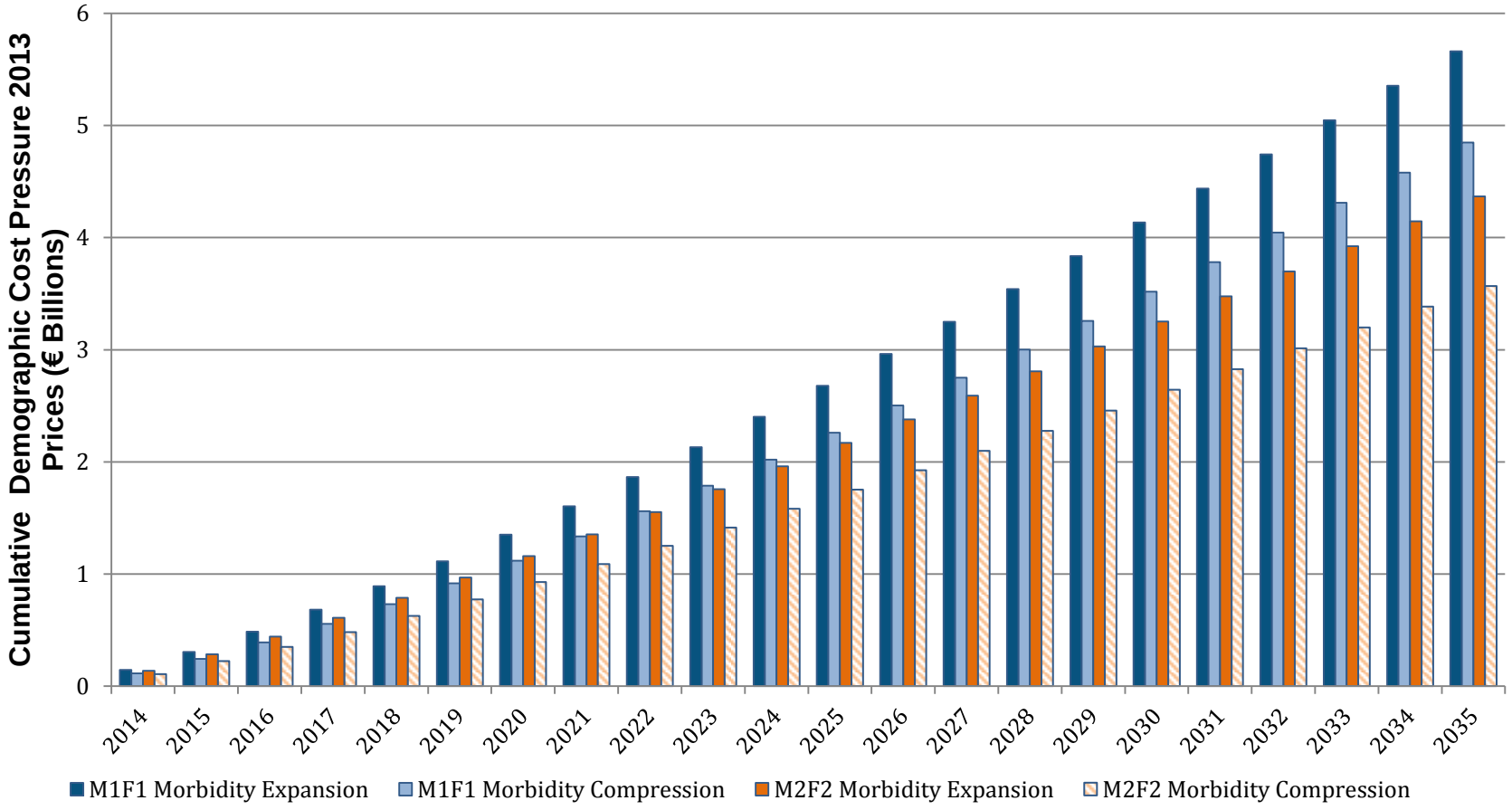

Figure 6: Decomposition of Real Average per Capita Current Health Expenditure growth 2013-2035 (pg.18)

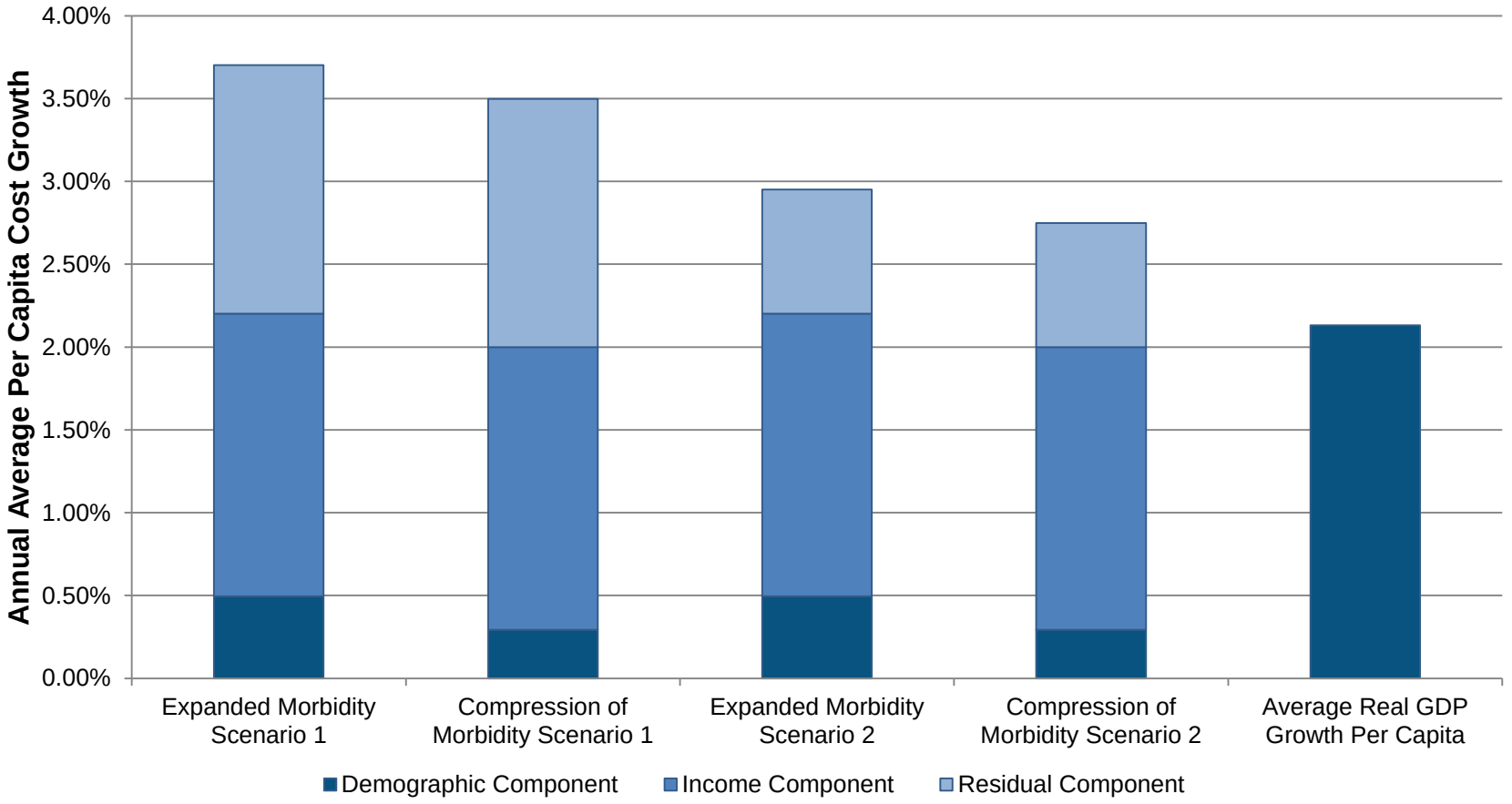

Figure 7: M1F1 Projections 2035 Sensitivity Analysis according in Income Elasticity (pg.19)

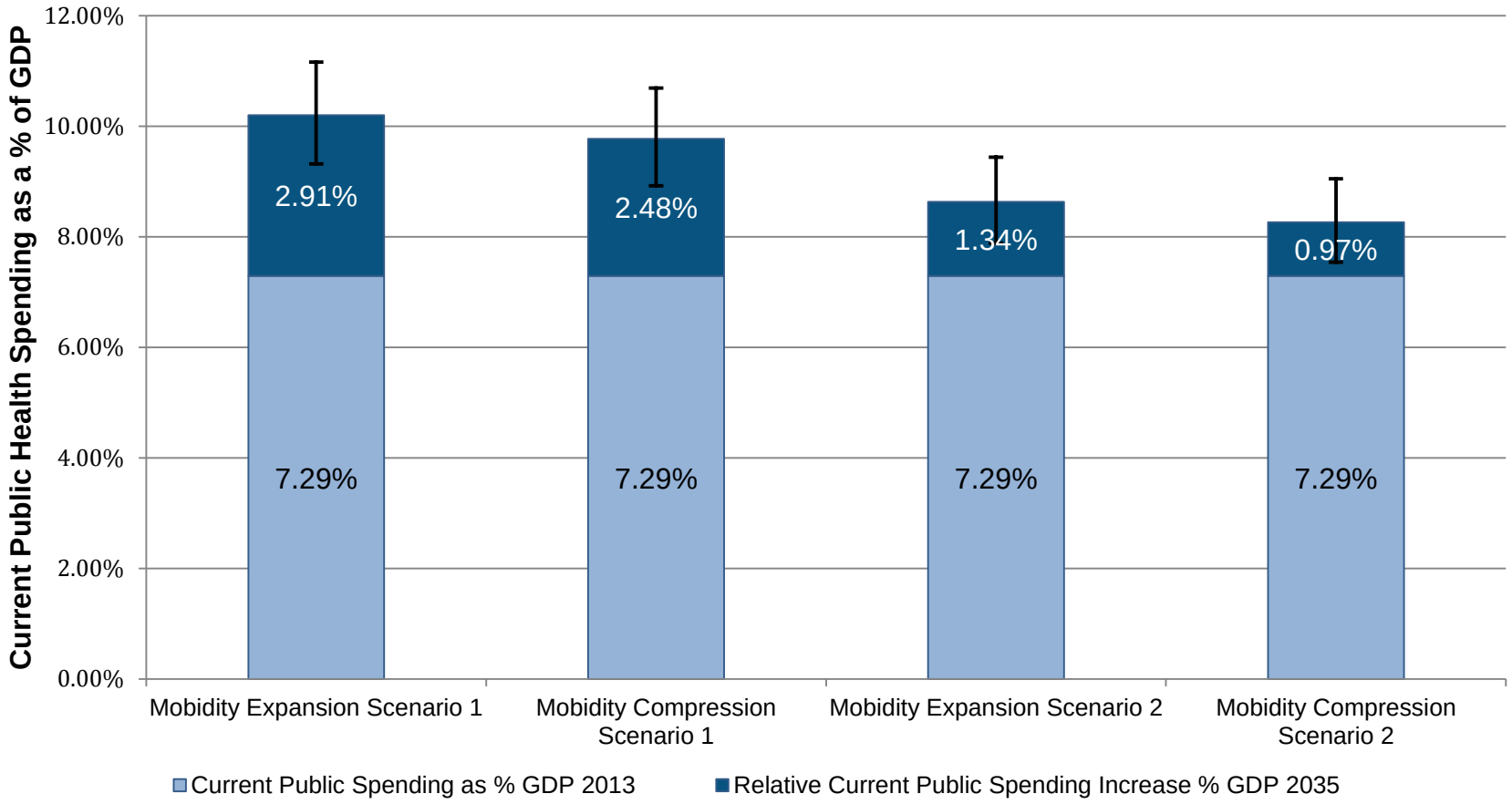

Figure 8: M2F2 Projections 2035 Sensitivity Analysis according in Income Elasticity (pg.21)

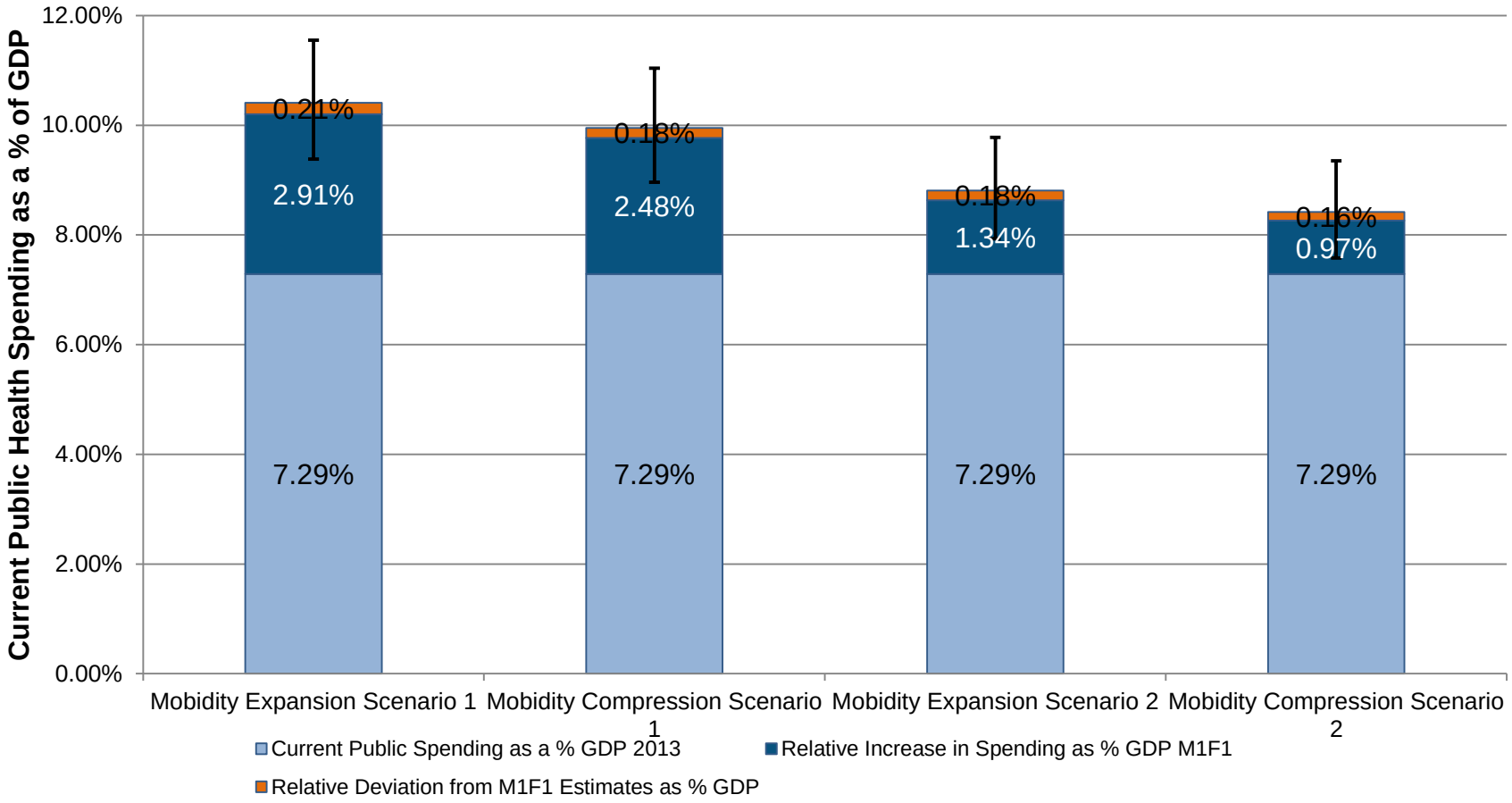

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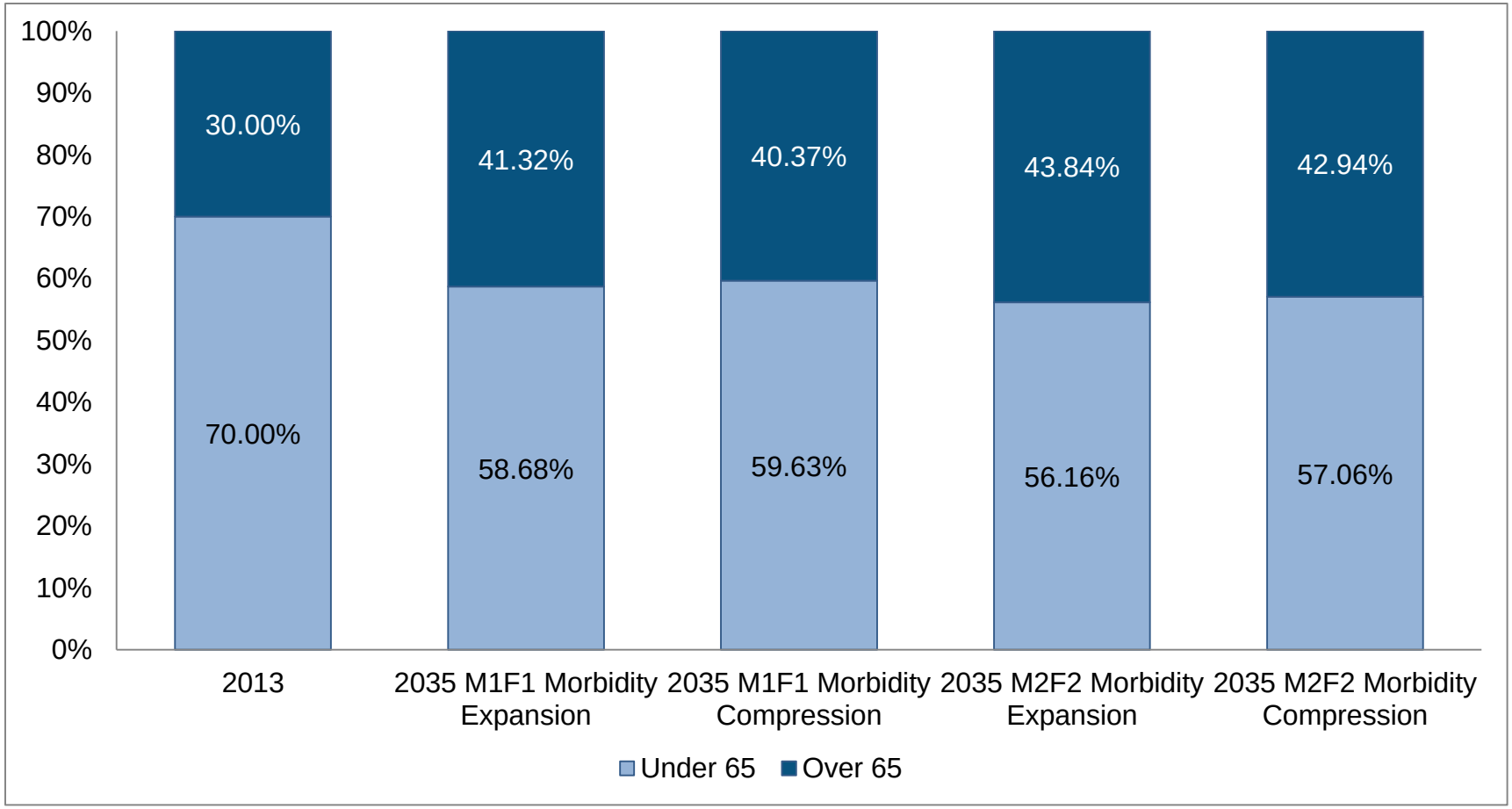
Figure 9: Age Decomposition of Current Health Expenditure Cost Growth (pg.22)



Conclusions

- **Significant demographic cost pressures exist in the forecast model.**
  - Annual cost pressure exceeds €100 million in all cases.
  - Doesn't attain €200 for MC M2F2. In all other cases, exceeds €200 million from 2019. Reaches €300 million in 2034 in ME M1F1.
  - Cost growth ≈ 1% annually
  - Cumulative demographic costs exceed €1 billion between 2019 and 2021. Range from €3.57 billion to €5.66 billion in 2035.

- **Current Public Health Spending will increase to 2035**.
  - Range of central estimates between 8.3 and 10.2% of forecast GDP in 2035, Though this is higher under the most pessimistic assumption set (maximum ≈ 11.6%).

- **Changes in composition of public health spending.**
  - Over 65s go from 30% to over 40% of spend 2013 to 2035.

- **Complicating factors to consider include:**
  - Possible inefficiency within the current system upwardly biasing forecast estimates.
  - Absence of Irish Specific cost profiles.
  - Residual cost growth accuracy given its lack of explanatory power.
  - European and domestic rules restraining expenditure growth.
  - Likely endogeneity between components.
  - Political Choices.

Policy Questions

- **What are appropriate investment levels?**
- **Are there efficiencies that can mitigate residual cost growth?**
- **What is the vision for the health service?**
- **What is a reasonable time frame for such a vision's realisation?**

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